

# *Planck* 2018 Results: Cosmological Parameter Tables

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## Abstract

These tables summarize the results of *Planck* 2018 parameter estimation exploration results. They are based on *Planck* HFI data and *Planck* lensing, as well as additional non-CMB data as detailed in the main parameter papers.

## 1 Introduction

The tables are arranged in groups, firstly by cosmological model, and then by data combination. The name tags match those of the full chains also provided on the PLA. The names all start with **base** to denote the baseline model, followed by the parameter tags of any additional parameters that are also varied (as defined in the parameter paper). Data combination tags are as follows (see the parameters paper for full description and references):

Data tag	Data used
<b>plikHM</b>	Baseline high- $\ell$ <i>Planck</i> power spectra ( <b>plik</b> cross-half-mission, $30 \leq \ell \leq 2508$ ).
<b>CamSpecHM</b>	<b>CamSpec</b> high- $\ell$ <i>Planck</i> power spectra.
<b>CleanedCamSpecHM</b>	Foreground-cleaned <b>CamSpec</b> high- $\ell$ <i>Planck</i> power spectra.
<b>lowl</b>	Low- $\ell$ <i>Planck</i> temperature ( <b>Commander</b> , $2 \leq \ell \leq 29$ ).
<b>lowE</b>	Low- $\ell$ HFI <i>EE</i> polarization only ( <b>SimAll</b> , $2 \leq \ell \leq 29$ ).
<b>lensing</b>	<i>Planck</i> lensing power spectrum reconstruction. When used without other CMB likelihoods, it is marginalized over the theory CMB spectra given.
<b>BAO</b>	Baryon oscillation data from BOSS DR12, MGS, and 6DF.
<b>Pantheon18</b>	Supernova data from the Pantheon sample, with updated main distance file with heliocentric redshifts.
<b>JLA</b>	Supernova data from the SDSS-II/SNLS3 Joint Light-curve Analysis.
<b>Riess18</b>	Hubble parameter measurement from SHOES (Riess et al. 2018a, $H_0 = 73.45 \pm 1.66$ ).
<b>BK15</b>	Bicep-Keck (+Planck/WMAP) 2015 analysis (arXiv:1810.05216).
<b>zre6p5</b>	A hard prior, $z_{\text{re}} > 6.5$ .
<b>reion</b>	A hard prior, $z_{\text{re}} > 6.5$ , combined with a Gaussian prior, $z_{\text{re}} = 7 \pm 1$ .
<b>lenspriors</b>	Standard base parameters with $n_s = 0.96 \pm 0.02$ , $\Omega_b h^2 = 0.0222 \pm 0.0005$ , $100 > H_0 > 40$ , $\tau = 0.055$ .
<b>DESpriors</b>	DES cosmological parameter priors (flat on $0.1 < \Omega_m < 0.9$ , $0.03 < \Omega_b < 0.07$ , $55 < H_0 < 91$ , $0.5 < 10^9 A_s < 5$ , $Y_P = 0.245341$ and, if varied, $0.05\text{eV} < \sum m_\nu < 1\text{eV}$ ).
<b>CookeDH</b>	A Gaussian prior $\Omega_b h^2 = 0.0222 \pm 0.0005$ (conservative, motivated by Cooke et al. 2017).
<b>Cooke17</b>	A Gaussian prior on D/H (Cooke et al. 2017), mean and error adjusted to approximately agree with <b>CookeDH</b> for $N_{\text{eff}} = 3.046$ .
<b>Aver15</b>	A Gaussian constraint on $Y_P^{\text{BBN}} = 0.2449 \pm 0.0040$ (Aver et al. 2015).
<b>theta</b>	A Gaussian prior $100\theta_{\text{MC}} = 1.0409 \pm 0.0006$ (acoustic scale from <i>Planck</i> CMB without LCDM assumption).
<b>WMAP</b>	The full WMAP (temperature and polarization) 9-year data.
<b>DES</b>	DES 1yr, cosmic shear+galaxy auto+cross.
<b>DESlens</b>	DES 1yr, cosmic shear only.
<b>DESw</b>	DES 1yr, galaxy auto+cross only.

The high- $\ell$  *Planck* likelihoods have TT, TE, EE variants from each spectrum alone, plus the TTTEEE joint constraint. Note that unless **nnu** is specified in the file name, the neutrino mass sum is fixed to  $\sum_\nu m_\nu = 0.06\text{eV}$  (including for DES chains). Non-linear corrections are modelled with HMCode in all cases (including when using DESpriors).

Data likelihoods are either included when running the chains, or by importance sampling. Data combinations that are added by importance sampling appear at the end of the list, following the **post\_** tag. Note that the best fits are merely examples of parameter combinations that fit the data well; due to parameter degeneracies there may be other combinations of parameters that fit the data nearly equally well.

Beneath each table is the  $\chi_{\text{eff}}^2 = -2\log(\text{likelihood})$  for each best-fit model, and also the contributions coming from each separate part of the likelihood. Mean minus log likelihoods are also given, as  $\bar{\chi}_{\text{eff}}^2$ . The tables also give the  $\chi_{\text{eff}}^2$  of the various component parts of the likelihood, where quoted values are the best-fit and mean, standard



deviation (in the case of  $1\sigma$  tables), or effective degrees of freedom ( $\nu$ , defined by  $\sigma^2/2$ ). Normalization of likelihoods is arbitrary, i.e., a constant can be added to log likelihoods without affecting any results. Only some likelihoods normalize so that the number is immediately interpretable as similar to a  $\chi^2$  for some number of data points.

The  $R - 1$  value is also given, which measures the convergence of the sampling chains, with small values being better converged. The sampling uncertainty on quoted mean values are typically of order  $R - 1$  in units of the standard deviation.

Parameter constraints were calculated from Monte Carlo chains from **CosmoMC** using **GetDist** ([getdist.readthedocs.org](http://getdist.readthedocs.org)).

Parameters and derived parameters, along with the name tags used in the chain files, are briefly described in the tables below.

Additional nuisance parameters for each likelihood are described in more detail in the respective papers.

Parameter	Tag	baseline	Definition
$\Omega_b h^2$	omegab2	...	Baryon density today
$\Omega_c h^2$	omegac2	...	Cold dark matter density today
$100\theta_{\text{MC}}$	theta	...	$100\times$ approximation to $r_s/D_M$ ( <b>CosmoMC</b> )
$\tau$	tau	...	Thomson scattering optical depth due to reionization
$\Omega_K$	omegak	0	$\Omega_{\text{tot}} = 1 - \Omega_K$
$\Sigma m_\nu$	mnu	0.06	Sum of active neutrino masses in eV
$m_{\nu, \text{sterile}}^{\text{eff}}$	meffsterile	0	Effective mass in sterile neutrinos in eV
$w_0$	w	-1	Dark energy equation of state, $w(a) = w_0 + (1 - a)w_a$
$w_a$	wa	0	As above (perturbations modelled using PPF)
$N_{\text{eff}}$	nnu	3.046	Total effective number of massive and massless neutrinos (see text)
$Y_P$	yhe	BBN	Fraction of baryonic mass in helium (only if varied independently of BBN)
$\alpha_{-1}$	alpha1	0	Fully correlated isocurvature amplitude parameter
$A_L$	Alens	1	Amplitude of the lensing power relative to the physical value
$A_L^{\phi\phi}$	Aphiphi	1	Amplitude of the lensing reconstruction power relative to the physical value
$A_L^{\text{fid}}$	Alensf	...	Amplitude of the lensing power relative to a fixed fiducial spectrum
$n_s$	ns	...	Scalar spectrum power-law index ( $k_0 = 0.05\text{Mpc}^{-1}$ )
$n_t$	nt	Inflation	Tensor spectrum power-law index ( $k_0 = 0.05\text{Mpc}^{-1}$ )
$d \ln n_s / d \ln k$	nrun	0	Running of the spectral index
$\log[10^{10} A_s]$	logA	...	Log power of the primordial curvature perturbations ( $k_0 = 0.05\text{Mpc}^{-1}$ )
$r_{0.05}$	r	0	Tensor power spectrum amplitude ( $k_0 = 0.05\text{Mpc}^{-1}$ )
$H_0$	H0	...	Current expansion rate in $\text{km s}^{-1}\text{Mpc}^{-1}$
$\Omega_m$	omegam	...	Matter density (incl. massive neutrinos) today divided by the critical density
$\Omega_\Lambda$	omegal	...	Dark energy density divided by the critical density today
$\Omega_m h^2$	omegamh2	...	Total matter density today (incl. massive neutrinos)
$\Omega_m h^3$	omegamh3	...	$h \times$ total matter density today
$\sigma_8$	sigma8	...	RMS matter fluctuations today in linear theory
$S_8$	S8	...	$\sigma_8(\Omega_m/0.3)^{0.5}$
$\sigma_8 \Omega_m^{0.5}$	s8omegamp5	...	$\sigma_8 \Omega_m^{0.5}$ constrained by low-redshift lensing
$\sigma_8 \Omega_m^{0.25}$	s8omegamp25	...	$\sigma_8 \Omega_m^{0.25}$ constrained by CMB lensing
$\sigma_8 / h^{0.5}$	s8h5	...	$\sigma_8 / h^{0.5}$
$\sigma_8 / h^{0.5}$	rdragh	...	$r_{\text{drag}} h$ in Mpc
$\langle d^2 \rangle^{1/2}$	rmsdeflect	...	RMS CMB lensing deflection angle in arcmin (approx. using $2 \leq L \leq 2000$ )
$z_{\text{re}}$	zrei	...	Redshift at which Universe is half reionized
$10^9 A_s$	A	...	Power of the primordial curvature perturbations ( $k_0 = 0.05\text{Mpc}^{-1}$ )
$10^9 A_s e^{-2\tau}$	clamp	...	Parameter determining the small-scale CMB power
$Y_P$	yheused	bbn	Fraction of baryonic mass in helium
$Y_P^{\text{BBN}}$	YpBBN	bbn	Nucleon fraction in helium
$10^5 \text{D/H}$	DHBBN	bbn	$10^5$ deuterium-helium ratio from <b>Parthenope</b> BBN prediction (pre-Marcucci rates)
Age/Gyr	age	...	Time since the start of the hot big bang



Parameter	Tag	baseline	Definitions
$z_*$	zstar	...	Redshift for which the optical depth equals unity
$r_* = r_s(z_*)$	rstar	...	Comoving size of the sound horizon at $z = z_*$
$100\theta_*$	thetastar	...	100× Angular size of the sound horizon at last scattering
$D_M/\text{Gpc}(z_*)$	DAstar	...	Comoving angular diameter distance to last scattering
$z_{\text{drag}}$	zdrag	...	Redshift at which baryon-drag optical depth equals unity
$r_{\text{drag}} = r_s(z_{\text{drag}})$	rdrag	...	Comoving size of the sound horizon at $z = z_{\text{drag}}$
$k_D$	kd	...	Characteristic damping comoving wavenumber ( $\text{Mpc}^{-1}$ )
$100\theta_D$	thetad	...	100× angular extent of photon diffusion at last scattering
$z_{\text{eq}}$	zeq	...	Redshift of matter-radiation equality (massless neutrinos)
$k_{\text{eq}}$	keq	...	$[a(z_{\text{eq}})H(z_{\text{eq}})]^{-1}$
$100\theta_{\text{eq}}$	thetaeq	...	100× angular size of the comoving Horizon at matter-radiation equality
$100\theta_{s,\text{eq}}$	thetarseq	...	100× angular size of the comoving sound Horizon at matter-radiation equality
$D_{40}$	D40	...	$\ell(\ell+1)C_\ell^{TT}/2\pi$ at $\ell = 40$ in $\mu\text{K}^2$
$D_{220}$	D200	...	$\ell(\ell+1)C_\ell^{TT}/2\pi$ at $\ell = 220$ in $\mu\text{K}^2$
$D_{810}$	D810	...	$\ell(\ell+1)C_\ell^{TT}/2\pi$ at $\ell = 810$ in $\mu\text{K}^2$
$D_{1420}$	D1420	...	$\ell(\ell+1)C_\ell^{TT}/2\pi$ at $\ell = 1420$ in $\mu\text{K}^2$
$D_{2000}$	D2000	...	$\ell(\ell+1)C_\ell^{TT}/2\pi$ at $\ell = 2000$ in $\mu\text{K}^2$
$n_{s,0.002}$	ns02	...	Scalar spectral index at $k = 0.002\text{Mpc}^{-1}$
$r_{0.002}$	r02	0	Tensor/scalar ratio at $k = 0.002\text{Mpc}^{-1}$
$r_{0.01}$	rBB	0	Tensor/scalar ratio at $k = 0.01\text{Mpc}^{-1}$ (roughly BB peak)
$r_{10}$	r10	0	Tensor-scalar temperature $C_\ell$ amplitude at $\ell = 10$
$A_t$	AT	0	$10^9 A_t$ ( $k_0 = 0.05\text{Mpc}^{-1}$ )
$10^9 A_t e^{-2\tau}$	ctlamp	0	Parameter determining $\ell \simeq 100$ tensor $C_\ell$ amplitude
$H(z)$	Hubble{100z}	...	Hubble parameter at redshift $z$ ( $\text{km s}^{-1}\text{Mpc}^{-1}$ )
$D_M(z)$	DM{100z}	...	Comoving angular diameter distance to redshift $z$ in Mpc
$f\sigma_8(z)$	fsigma8z{100z}	...	Growth parameter $f\sigma_8$ at redshift $z$
$\sigma_8(z)$	sigma8z{100z}	...	$\sigma_8$ at redshift $z$
$f_{2000}^{143}$	f2000_143	...	Total temperature foreground power at $\ell = 2000$ in 143GHz $C_\ell$
$f_{2000}^{143 \times 217}$	f2000_x	...	Total temperature foreground power at $\ell = 2000$ in $217\text{GHz} \times 143\text{GHz}$ $C_\ell$
$f_{2000}^{217}$	f2000_217	...	Total temperature foreground power at $\ell = 2000$ in 217GHz $C_\ell$
$\chi_x^2$	chi2_x	...	$-2\log(\text{likelihood})$ for likelihood $x$ ; (most are normalized like a $\chi^2$ ).



# Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
<b>2</b>	<b>Baseline model</b>	<b>24</b>
2.1	base_plikHM_TT_lowl_lowE . . . . .	24
2.2	base_plikHM_TT_lowl_lowE_post_BAO . . . . .	25
2.3	base_plikHM_TT_lowl_lowE_post_Riess18 . . . . .	26
2.4	base_plikHM_TT_lowl_lowE_post_zre6p5 . . . . .	27
2.5	base_plikHM_TT_lowl_lowE_post_BAO_zre6p5 . . . . .	28
2.6	base_plikHM_TT_lowl_lowE_post_Riess18_zre6p5 . . . . .	29
2.7	base_plikHM_TTTEEE_lowl_lowE . . . . .	30
2.8	base_plikHM_TTTEEE_lowl_lowE_post_BAO . . . . .	31
2.9	base_plikHM_TTTEEE_lowl_lowE_post_Riess18 . . . . .	32
2.10	base_plikHM_TTTEEE_lowl_lowE_post_zre6p5 . . . . .	33
2.11	base_plikHM_TTTEEE_lowl_lowE_post_BAO_zre6p5 . . . . .	34
2.12	base_plikHM_TTTEEE_lowl_lowE_post_Riess18_zre6p5 . . . . .	35
2.13	base_CamSpecHM_TT_lowl_lowE . . . . .	36
2.14	base_CamSpecHM_TT_lowl_lowE_post_BAO . . . . .	37
2.15	base_CamSpecHM_TT_lowl_lowE_post_Riess18 . . . . .	38
2.16	base_CamSpecHM_TT_lowl_lowE_post_zre6p5 . . . . .	39
2.17	base_CamSpecHM_TT_lowl_lowE_post_BAO_zre6p5 . . . . .	40
2.18	base_CamSpecHM_TT_lowl_lowE_post_Riess18_zre6p5 . . . . .	41
2.19	base_CamSpecHM_TTTEEE_lowl_lowE . . . . .	42
2.20	base_CamSpecHM_TTTEEE_lowl_lowE_post_BAO . . . . .	43
2.21	base_CamSpecHM_TTTEEE_lowl_lowE_post_Riess18 . . . . .	44
2.22	base_CamSpecHM_TTTEEE_lowl_lowE_post_zre6p5 . . . . .	45
2.23	base_CamSpecHM_TTTEEE_lowl_lowE_post_BAO_zre6p5 . . . . .	46
2.24	base_CamSpecHM_TTTEEE_lowl_lowE_post_Riess18_zre6p5 . . . . .	47
2.25	base_plikHM_TE_lowE . . . . .	48
2.26	base_plikHM_TE_lowE_post_zre6p5 . . . . .	49
2.27	base_plikHM_EE_lowE . . . . .	50
2.28	base_plikHM_EE_lowE_post_zre6p5 . . . . .	51
2.29	base_CamSpecHM_TE_lowE . . . . .	52
2.30	base_CamSpecHM_TE_lowE_post_zre6p5 . . . . .	53
2.31	base_CamSpecHM_EE_lowE . . . . .	54
2.32	base_CamSpecHM_EE_lowE_post_zre6p5 . . . . .	55
2.33	base_plikHM_TE_lowE_BAO . . . . .	56
2.34	base_plikHM_TE_lowE_BAO_post_lensing . . . . .	57
2.35	base_plikHM_TE_lowE_BAO_post_zre6p5 . . . . .	58
2.36	base_plikHM_TE_lowE_BAO_post_lensing_zre6p5 . . . . .	59
2.37	base_plikHM_EE_lowE_BAO . . . . .	60
2.38	base_plikHM_EE_lowE_BAO_post_lensing . . . . .	61
2.39	base_plikHM_EE_lowE_BAO_post_zre6p5 . . . . .	62
2.40	base_plikHM_EE_lowE_BAO_post_lensing_zre6p5 . . . . .	63
2.41	base_CamSpecHM_TE_lowE_BAO . . . . .	64
2.42	base_CamSpecHM_TE_lowE_BAO_post_lensing . . . . .	65
2.43	base_CamSpecHM_TE_lowE_BAO_post_zre6p5 . . . . .	66
2.44	base_CamSpecHM_TE_lowE_BAO_post_lensing_zre6p5 . . . . .	67
2.45	base_CamSpecHM_EE_lowE_BAO . . . . .	68
2.46	base_CamSpecHM_EE_lowE_BAO_post_lensing . . . . .	69
2.47	base_CamSpecHM_EE_lowE_BAO_post_zre6p5 . . . . .	70
2.48	base_CamSpecHM_EE_lowE_BAO_post_lensing_zre6p5 . . . . .	71
2.49	base_plikHM_TE_lowE_lensing . . . . .	72
2.50	base_plikHM_TE_lowE_lensing_post_zre6p5 . . . . .	73
2.51	base_plikHM_EE_lowE_lensing . . . . .	74
2.52	base_plikHM_EE_lowE_lensing_post_zre6p5 . . . . .	75
2.53	base_CamSpecHM_TE_lowE_lensing . . . . .	76
2.54	base_CamSpecHM_TE_lowE_lensing_post_zre6p5 . . . . .	77
2.55	base_CamSpecHM_EE_lowE_lensing . . . . .	78
2.56	base_CamSpecHM_EE_lowE_lensing_post_zre6p5 . . . . .	79
2.57	base_plikHM_TE_lowE_lensing_BAO_CookeDH . . . . .	80
2.58	base_plikHM_EE_lowE_lensing_BAO_CookeDH . . . . .	81
2.59	base_CamSpecHM_TE_lowE_lensing_BAO_CookeDH . . . . .	82
2.60	base_CamSpecHM_EE_lowE_lensing_BAO_CookeDH . . . . .	83
2.61	base_plikHM_TE_lowE_lensing_CookeDH . . . . .	84
2.62	base_plikHM_EE_lowE_lensing_CookeDH . . . . .	85
2.63	base_CamSpecHM_TE_lowE_lensing_CookeDH . . . . .	86
2.64	base_CamSpecHM_EE_lowE_lensing_CookeDH . . . . .	87



2.65	base_plikHM.TT_lowl	88
2.66	base_plikHM.TTTEEE_lowl	89
2.67	base_CamSpecHM.TT_lowl	90
2.68	base_CamSpecHM.TTTEEE_lowl	91
2.69	base_plikHM.TT_lowl.lensing	92
2.70	base_plikHM.TT_lowl.lensing_post_BAO	93
2.71	base_plikHM.TT_lowl.lensing_post_zre6p5	94
2.72	base_plikHM.TT_lowl.lensing_post_BAO_zre6p5	95
2.73	base_plikHM.TTTEEE_lowl.lensing	96
2.74	base_plikHM.TTTEEE_lowl.lensing_post_BAO	97
2.75	base_plikHM.TTTEEE_lowl.lensing_post_zre6p5	98
2.76	base_plikHM.TTTEEE_lowl.lensing_post_BAO_zre6p5	99
2.77	base_plikHM.TT_lowl.reion	100
2.78	base_plikHM.TT_lowl.reion_post_BAO	101
2.79	base_plikHM.TTTEEE_lowl.reion	102
2.80	base_plikHM.TTTEEE_lowl.reion_post_BAO	103
2.81	base_plikHM.TT_lowl_lowE.lensing	104
2.82	base_plikHM.TT_lowl_lowE.lensing_post_BAO	105
2.83	base_plikHM.TT_lowl_lowE.lensing_post_Riess18	106
2.84	base_plikHM.TT_lowl_lowE.lensing_post_BAO_Riess18	107
2.85	base_plikHM.TT_lowl_lowE.lensing_post_Pantheon18	108
2.86	base_plikHM.TT_lowl_lowE.lensing_post_BAO_JLA_Riess18	109
2.87	base_plikHM.TT_lowl_lowE.lensing_post_BAO_Pantheon18	110
2.88	base_plikHM.TT_lowl_lowE.lensing_post_BAO_Pantheon18_Riess18	111
2.89	base_plikHM.TT_lowl_lowE.lensing_post_zre6p5	112
2.90	base_plikHM.TT_lowl_lowE.lensing_post_BAO_zre6p5	113
2.91	base_plikHM.TT_lowl_lowE.lensing_post_Riess18_zre6p5	114
2.92	base_plikHM.TT_lowl_lowE.lensing_post_BAO_Riess18_zre6p5	115
2.93	base_plikHM.TT_lowl_lowE.lensing_post_Pantheon18_zre6p5	116
2.94	base_plikHM.TT_lowl_lowE.lensing_post_BAO_JLA_Riess18_zre6p5	117
2.95	base_plikHM.TT_lowl_lowE.lensing_post_BAO_Pantheon18_zre6p5	118
2.96	base_plikHM.TT_lowl_lowE.lensing_post_BAO_Pantheon18_Riess18_zre6p5	119
2.97	base_plikHM.TTTEEE_lowl_lowE.lensing	120
2.98	base_plikHM.TTTEEE_lowl_lowE.lensing_post_BAO	121
2.99	base_plikHM.TTTEEE_lowl_lowE.lensing_post_Riess18	122
2.100	base_plikHM.TTTEEE_lowl_lowE.lensing_post_BAO_Riess18	123
2.101	base_plikHM.TTTEEE_lowl_lowE.lensing_post_Pantheon18	124
2.102	base_plikHM.TTTEEE_lowl_lowE.lensing_post_BAO_JLA_Riess18	125
2.103	base_plikHM.TTTEEE_lowl_lowE.lensing_post_BAO_Pantheon18	126
2.104	base_plikHM.TTTEEE_lowl_lowE.lensing_post_BAO_Pantheon18_Riess18	127
2.105	base_plikHM.TTTEEE_lowl_lowE.lensing_post_zre6p5	128
2.106	base_plikHM.TTTEEE_lowl_lowE.lensing_post_BAO_zre6p5	129
2.107	base_plikHM.TTTEEE_lowl_lowE.lensing_post_Riess18_zre6p5	130
2.108	base_plikHM.TTTEEE_lowl_lowE.lensing_post_BAO_Riess18_zre6p5	131
2.109	base_plikHM.TTTEEE_lowl_lowE.lensing_post_Pantheon18_zre6p5	132
2.110	base_plikHM.TTTEEE_lowl_lowE.lensing_post_BAO_JLA_Riess18_zre6p5	133
2.111	base_plikHM.TTTEEE_lowl_lowE.lensing_post_BAO_Pantheon18_zre6p5	134
2.112	base_plikHM.TTTEEE_lowl_lowE.lensing_post_BAO_Pantheon18_Riess18_zre6p5	135
2.113	base_CamSpecHM.TT_lowl_lowE.lensing	136
2.114	base_CamSpecHM.TT_lowl_lowE.lensing_post_BAO	137
2.115	base_CamSpecHM.TT_lowl_lowE.lensing_post_Riess18	138
2.116	base_CamSpecHM.TT_lowl_lowE.lensing_post_BAO_Riess18	139
2.117	base_CamSpecHM.TT_lowl_lowE.lensing_post_Pantheon18	140
2.118	base_CamSpecHM.TT_lowl_lowE.lensing_post_BAO_JLA_Riess18	141
2.119	base_CamSpecHM.TT_lowl_lowE.lensing_post_BAO_Pantheon18	142
2.120	base_CamSpecHM.TT_lowl_lowE.lensing_post_BAO_Pantheon18_Riess18	143
2.121	base_CamSpecHM.TT_lowl_lowE.lensing_post_zre6p5	144
2.122	base_CamSpecHM.TT_lowl_lowE.lensing_post_BAO_zre6p5	145
2.123	base_CamSpecHM.TT_lowl_lowE.lensing_post_Riess18_zre6p5	146
2.124	base_CamSpecHM.TT_lowl_lowE.lensing_post_BAO_Riess18_zre6p5	147
2.125	base_CamSpecHM.TT_lowl_lowE.lensing_post_Pantheon18_zre6p5	148
2.126	base_CamSpecHM.TT_lowl_lowE.lensing_post_BAO_JLA_Riess18_zre6p5	149
2.127	base_CamSpecHM.TT_lowl_lowE.lensing_post_BAO_Pantheon18_zre6p5	150
2.128	base_CamSpecHM.TT_lowl_lowE.lensing_post_BAO_Pantheon18_Riess18_zre6p5	151
2.129	base_CamSpecHM.TTTEEE_lowl_lowE.lensing	152
2.130	base_CamSpecHM.TTTEEE_lowl_lowE.lensing_post_BAO	153
2.131	base_CamSpecHM.TTTEEE_lowl_lowE.lensing_post_Riess18	154
2.132	base_CamSpecHM.TTTEEE_lowl_lowE.lensing_post_BAO_Riess18	155



2.133	base_CamSpecHM.TTTEEE_lowl.lowE.lensing_post_Pantheon18 . . . . .	156
2.134	base_CamSpecHM.TTTEEE_lowl.lowE.lensing_post_BAO_JLA_Riess18 . . . . .	157
2.135	base_CamSpecHM.TTTEEE_lowl.lowE.lensing_post_BAO_Pantheon18 . . . . .	158
2.136	base_CamSpecHM.TTTEEE_lowl.lowE.lensing_post_BAO_Pantheon18_Riess18 . . . . .	159
2.137	base_CamSpecHM.TTTEEE_lowl.lowE.lensing_post_zre6p5 . . . . .	160
2.138	base_CamSpecHM.TTTEEE_lowl.lowE.lensing_post_BAO_zre6p5 . . . . .	161
2.139	base_CamSpecHM.TTTEEE_lowl.lowE.lensing_post_Riess18_zre6p5 . . . . .	162
2.140	base_CamSpecHM.TTTEEE_lowl.lowE.lensing_post_BAO_Riess18_zre6p5 . . . . .	163
2.141	base_CamSpecHM.TTTEEE_lowl.lowE.lensing_post_Pantheon18_zre6p5 . . . . .	164
2.142	base_CamSpecHM.TTTEEE_lowl.lowE.lensing_post_BAO_JLA_Riess18_zre6p5 . . . . .	165
2.143	base_CamSpecHM.TTTEEE_lowl.lowE.lensing_post_BAO_Pantheon18_zre6p5 . . . . .	166
2.144	base_CamSpecHM.TTTEEE_lowl.lowE.lensing_post_BAO_Pantheon18_Riess18_zre6p5 . . . . .	167
2.145	base_CleanedCamSpecHM.TT_lowl.lowE . . . . .	168
2.146	base_lensing_lenspriors . . . . .	169
2.147	base_lensing_lenspriors_post_Pantheon18 . . . . .	170
2.148	base_lensing_lenspriors_post_agr2 . . . . .	171
2.149	base_lensing_lenspriors_post_conslmin40 . . . . .	172
2.150	base_lensing_lenspriors_post_agrlmax425 . . . . .	173
2.151	base_lensing_lenspriors_post_ptt . . . . .	174
2.152	base_lensing_lenspriors_post_bfcl . . . . .	175
2.153	base_lensing_lenspriors_post_agr2bfcl . . . . .	176
2.154	base_lensing_lenspriors_post_linear . . . . .	177
2.155	base_lensing_lenspriors_post_acc . . . . .	178
2.156	base_lensing_lenspriors_post_agr2acc . . . . .	179
2.157	base_lensing_lenspriors_post_takahashi . . . . .	180
2.158	base_lensing_lenspriors_post_agr2takahashi . . . . .	181
2.159	base_lensing_lenspriors_post_Apr6 . . . . .	182
2.160	base_lensing_lenspriors_theta . . . . .	183
2.161	base_lensing_lenspriors_theta_post_Pantheon18 . . . . .	184
2.162	base_lensing_lenspriors_theta_post_agr2 . . . . .	185
2.163	base_lensing_lenspriors_theta_post_conslmin40 . . . . .	186
2.164	base_lensing_lenspriors_theta_post_agrlmax425 . . . . .	187
2.165	base_lensing_lenspriors_theta_post_ptt . . . . .	188
2.166	base_lensing_lenspriors_theta_post_bfcl . . . . .	189
2.167	base_lensing_lenspriors_theta_post_agr2bfcl . . . . .	190
2.168	base_lensing_lenspriors_theta_post_linear . . . . .	191
2.169	base_lensing_lenspriors_theta_post_acc . . . . .	192
2.170	base_lensing_lenspriors_theta_post_agr2acc . . . . .	193
2.171	base_lensing_lenspriors_theta_post_takahashi . . . . .	194
2.172	base_lensing_lenspriors_theta_post_agr2takahashi . . . . .	195
2.173	base_lensing_lenspriors_theta_post_Apr6 . . . . .	196
2.174	base_lensing_lenspriors_BAO . . . . .	197
2.175	base_lensing_lenspriors_BAO_post_Pantheon18 . . . . .	198
2.176	base_lensing_lenspriors_BAO_post_agr2 . . . . .	199
2.177	base_lensing_lenspriors_BAO_post_conslmin40 . . . . .	200
2.178	base_lensing_lenspriors_BAO_post_agrlmax425 . . . . .	201
2.179	base_lensing_lenspriors_BAO_post_ptt . . . . .	202
2.180	base_lensing_lenspriors_BAO_post_bfcl . . . . .	203
2.181	base_lensing_lenspriors_BAO_post_agr2bfcl . . . . .	204
2.182	base_lensing_lenspriors_BAO_post_linear . . . . .	205
2.183	base_lensing_lenspriors_BAO_post_acc . . . . .	206
2.184	base_lensing_lenspriors_BAO_post_agr2acc . . . . .	207
2.185	base_lensing_lenspriors_BAO_post_takahashi . . . . .	208
2.186	base_lensing_lenspriors_BAO_post_agr2takahashi . . . . .	209
2.187	base_lensing_lenspriors_BAO_post_Apr6 . . . . .	210
2.188	base_lensing_lenspriors_BAO_theta . . . . .	211
2.189	base_lensing_lenspriors_BAO_theta_post_Pantheon18 . . . . .	212
2.190	base_lensing_lenspriors_BAO_theta_post_agr2 . . . . .	213
2.191	base_lensing_lenspriors_BAO_theta_post_conslmin40 . . . . .	214
2.192	base_lensing_lenspriors_BAO_theta_post_agrlmax425 . . . . .	215
2.193	base_lensing_lenspriors_BAO_theta_post_ptt . . . . .	216
2.194	base_lensing_lenspriors_BAO_theta_post_bfcl . . . . .	217
2.195	base_lensing_lenspriors_BAO_theta_post_agr2bfcl . . . . .	218
2.196	base_lensing_lenspriors_BAO_theta_post_linear . . . . .	219
2.197	base_lensing_lenspriors_BAO_theta_post_acc . . . . .	220
2.198	base_lensing_lenspriors_BAO_theta_post_agr2acc . . . . .	221
2.199	base_lensing_lenspriors_BAO_theta_post_takahashi . . . . .	222
2.200	base_lensing_lenspriors_BAO_theta_post_agr2takahashi . . . . .	223



2.201	base_lensing_lenspriors_BAO_theta_post_Apr6 . . . . .	224
2.202	base_lensing_lenspriors_pttagr2 . . . . .	225
2.203	base_lensing_lenspriors_pttagr2_theta . . . . .	226
2.204	base_lensing_lenspriors_pttagr2_BAO . . . . .	227
2.205	base_lensing_lenspriors_pttagr2_BAO_theta . . . . .	228
2.206	base_lensing_DESpriors . . . . .	228
2.207	base_lensing_DESpriors_BAO . . . . .	228
2.208	base_lensing_DESpriors_CookeDH . . . . .	229
2.209	base_lensing_DESpriors_CookeDH_BAO . . . . .	229
2.210	base_plikHM_TT . . . . .	230
2.211	base_plikHM_TT_lowl . . . . .	231
2.212	base_plikHM_TT_lowl_post_BAO . . . . .	232
2.213	base_plikHM_TT_lowl_post_zre6p5 . . . . .	233
2.214	base_plikHM_TT_lowl_post_BAO_zre6p5 . . . . .	234
2.215	base_plikHM_TT_lowE . . . . .	235
2.216	base_plikHM_TTTEEE . . . . .	236
2.217	base_plikHM_TTTEEE_lowl . . . . .	237
2.218	base_plikHM_TTTEEE_lowl_post_BAO . . . . .	238
2.219	base_plikHM_TTTEEE_lowl_post_zre6p5 . . . . .	239
2.220	base_plikHM_TTTEEE_lowl_post_BAO_zre6p5 . . . . .	240
2.221	base_plikHM_TTTEEE_lowE . . . . .	241
2.222	base_CamSpecHM_TT . . . . .	242
2.223	base_CamSpecHM_TT_lowl . . . . .	243
2.224	base_CamSpecHM_TT_lowl_post_BAO . . . . .	244
2.225	base_CamSpecHM_TT_lowl_post_zre6p5 . . . . .	245
2.226	base_CamSpecHM_TT_lowl_post_BAO_zre6p5 . . . . .	246
2.227	base_CamSpecHM_TT_lowE . . . . .	247
2.228	base_CamSpecHM_TTTEEE . . . . .	248
2.229	base_CamSpecHM_TTTEEE_lowl . . . . .	249
2.230	base_CamSpecHM_TTTEEE_lowl_post_BAO . . . . .	250
2.231	base_CamSpecHM_TTTEEE_lowl_post_zre6p5 . . . . .	251
2.232	base_CamSpecHM_TTTEEE_lowl_post_BAO_zre6p5 . . . . .	252
2.233	base_CamSpecHM_TTTEEE_lowE . . . . .	253
2.234	base_WMAP . . . . .	254
2.235	base_WMAP_post_BAO . . . . .	255
2.236	base_DES_lenspriors . . . . .	256
2.237	base_DESlens_lenspriors . . . . .	257
2.238	base_DES_lenspriors_lensing . . . . .	258
2.239	base_DESlens_lenspriors_lensing . . . . .	259
2.240	base_DES_lenspriors_BAO . . . . .	260
2.241	base_DESlens_lenspriors_BAO . . . . .	261
2.242	base_DES_lenspriors_lensing_BAO . . . . .	262
2.243	base_DESlens_lenspriors_lensing_BAO . . . . .	263
2.244	base_DES_DESpriors . . . . .	263
2.245	base_DESlens_DESpriors . . . . .	264
2.246	base_DESwt_DESpriors . . . . .	264
2.247	base_DES_DESpriors_lensing . . . . .	264
2.248	base_DESlens_DESpriors_lensing . . . . .	265
2.249	base_DESwt_DESpriors_lensing . . . . .	265
2.250	base_DES_DESpriors_BAO_CookeDH . . . . .	266
2.251	base_DESlens_DESpriors_BAO_CookeDH . . . . .	266
2.252	base_DESwt_DESpriors_BAO_CookeDH . . . . .	267
2.253	base_DES_DESpriors_lensing_BAO_CookeDH . . . . .	267
2.254	base_DESlens_DESpriors_lensing_BAO_CookeDH . . . . .	268
2.255	base_DESwt_DESpriors_lensing_BAO_CookeDH . . . . .	268
2.256	base_plikHM_TTTEEE_lowl_lowE_DES . . . . .	269
2.257	base_plikHM_TTTEEE_lowl_lowE_DES_post_BAO . . . . .	270
2.258	base_plikHM_TTTEEE_lowl_lowE_DES_post_lensing . . . . .	271
2.259	base_plikHM_TTTEEE_lowl_lowE_DES_post_BAO_lensing . . . . .	272
2.260	base_plikHM_TTTEEE_lowl_lowE_DES_post_zre6p5 . . . . .	273
2.261	base_plikHM_TTTEEE_lowl_lowE_DES_post_BAO_zre6p5 . . . . .	274
2.262	base_plikHM_TTTEEE_lowl_lowE_DES_post_lensing_zre6p5 . . . . .	275
2.263	base_plikHM_TTTEEE_lowl_lowE_DES_post_BAO_lensing_zre6p5 . . . . .	276
2.264	base_plikHM_TTTEEE_lowl_lowE_DESlens . . . . .	277
2.265	base_plikHM_TTTEEE_lowl_lowE_DESlens_post_BAO . . . . .	278
2.266	base_plikHM_TTTEEE_lowl_lowE_DESlens_post_lensing . . . . .	279
2.267	base_plikHM_TTTEEE_lowl_lowE_DESlens_post_BAO_lensing . . . . .	280
2.268	base_plikHM_TTTEEE_lowl_lowE_DESlens_post_zre6p5 . . . . .	281



2.269	base_plikHM_TTTEEE_lowl_lowE_DESlens_post_BAO_zre6p5 . . . . .	282
2.270	base_plikHM_TTTEEE_lowl_lowE_DESlens_post_lensing_zre6p5 . . . . .	283
2.271	base_plikHM_TTTEEE_lowl_lowE_DESlens_post_BAO_lensing_zre6p5 . . . . .	284
2.272	base_BAO_Cooke17 . . . . .	285
2.273	base_BAO_Cooke17_Pantheon18 . . . . .	285
2.274	base_BAO_Cooke17_JLA . . . . .	286
2.275	base_BAO_Cooke17_Pantheon18_theta . . . . .	286
2.276	base_BAO_Cooke17_theta . . . . .	287
<b>3</b>	<b>Alens</b>	<b>288</b>
3.1	base_Alens_plikHM_TT_lowl_lowE . . . . .	288
3.2	base_Alens_plikHM_TT_lowl_lowE_post_BAO . . . . .	289
3.3	base_Alens_plikHM_TT_lowl_lowE_post_Riess18 . . . . .	290
3.4	base_Alens_plikHM_TT_lowl_lowE_post_zre6p5 . . . . .	291
3.5	base_Alens_plikHM_TT_lowl_lowE_post_BAO_zre6p5 . . . . .	292
3.6	base_Alens_plikHM_TT_lowl_lowE_post_Riess18_zre6p5 . . . . .	293
3.7	base_Alens_plikHM_TTTEEE_lowl_lowE . . . . .	294
3.8	base_Alens_plikHM_TTTEEE_lowl_lowE_post_BAO . . . . .	295
3.9	base_Alens_plikHM_TTTEEE_lowl_lowE_post_Riess18 . . . . .	296
3.10	base_Alens_plikHM_TTTEEE_lowl_lowE_post_zre6p5 . . . . .	297
3.11	base_Alens_plikHM_TTTEEE_lowl_lowE_post_BAO_zre6p5 . . . . .	298
3.12	base_Alens_plikHM_TTTEEE_lowl_lowE_post_Riess18_zre6p5 . . . . .	299
3.13	base_Alens_CamSpecHM_TT_lowl_lowE . . . . .	300
3.14	base_Alens_CamSpecHM_TT_lowl_lowE_post_BAO . . . . .	301
3.15	base_Alens_CamSpecHM_TT_lowl_lowE_post_Riess18 . . . . .	302
3.16	base_Alens_CamSpecHM_TT_lowl_lowE_post_zre6p5 . . . . .	303
3.17	base_Alens_CamSpecHM_TT_lowl_lowE_post_BAO_zre6p5 . . . . .	304
3.18	base_Alens_CamSpecHM_TT_lowl_lowE_post_Riess18_zre6p5 . . . . .	305
3.19	base_Alens_CamSpecHM_TTTEEE_lowl_lowE . . . . .	306
3.20	base_Alens_CamSpecHM_TTTEEE_lowl_lowE_post_BAO . . . . .	307
3.21	base_Alens_CamSpecHM_TTTEEE_lowl_lowE_post_Riess18 . . . . .	308
3.22	base_Alens_CamSpecHM_TTTEEE_lowl_lowE_post_zre6p5 . . . . .	309
3.23	base_Alens_CamSpecHM_TTTEEE_lowl_lowE_post_BAO_zre6p5 . . . . .	310
3.24	base_Alens_CamSpecHM_TTTEEE_lowl_lowE_post_Riess18_zre6p5 . . . . .	311
3.25	base_Alens_plikHM_TE_lowE . . . . .	312
3.26	base_Alens_plikHM_TE_lowE_post_BAO . . . . .	313
3.27	base_Alens_plikHM_TE_lowE_post_zre6p5 . . . . .	314
3.28	base_Alens_plikHM_TE_lowE_post_BAO_zre6p5 . . . . .	315
3.29	base_Alens_plikHM_EE_lowE . . . . .	316
3.30	base_Alens_plikHM_EE_lowE_post_BAO . . . . .	317
3.31	base_Alens_plikHM_EE_lowE_post_zre6p5 . . . . .	318
3.32	base_Alens_plikHM_EE_lowE_post_BAO_zre6p5 . . . . .	319
3.33	base_Alens_CamSpecHM_TE_lowE . . . . .	320
3.34	base_Alens_CamSpecHM_TE_lowE_post_BAO . . . . .	321
3.35	base_Alens_CamSpecHM_TE_lowE_post_zre6p5 . . . . .	322
3.36	base_Alens_CamSpecHM_TE_lowE_post_BAO_zre6p5 . . . . .	323
3.37	base_Alens_CamSpecHM_EE_lowE . . . . .	324
3.38	base_Alens_CamSpecHM_EE_lowE_post_BAO . . . . .	325
3.39	base_Alens_CamSpecHM_EE_lowE_post_zre6p5 . . . . .	326
3.40	base_Alens_CamSpecHM_EE_lowE_post_BAO_zre6p5 . . . . .	327
3.41	base_Alens_plikHM_TT_lowl_lensing . . . . .	328
3.42	base_Alens_plikHM_TT_lowl_lensing_post_BAO . . . . .	329
3.43	base_Alens_plikHM_TT_lowl_lensing_post_zre6p5 . . . . .	330
3.44	base_Alens_plikHM_TT_lowl_lensing_post_BAO_zre6p5 . . . . .	331
3.45	base_Alens_plikHM_TTTEEE_lowl_lensing . . . . .	332
3.46	base_Alens_plikHM_TTTEEE_lowl_lensing_post_BAO . . . . .	333
3.47	base_Alens_plikHM_TTTEEE_lowl_lensing_post_zre6p5 . . . . .	334
3.48	base_Alens_plikHM_TTTEEE_lowl_lensing_post_BAO_zre6p5 . . . . .	335
3.49	base_Alens_plikHM_TT_lowl_lowE_lensing . . . . .	336
3.50	base_Alens_plikHM_TT_lowl_lowE_lensing_post_BAO . . . . .	337
3.51	base_Alens_plikHM_TT_lowl_lowE_lensing_post_zre6p5 . . . . .	338
3.52	base_Alens_plikHM_TT_lowl_lowE_lensing_post_BAO_zre6p5 . . . . .	339
3.53	base_Alens_plikHM_TTTEEE_lowl_lowE_lensing . . . . .	340
3.54	base_Alens_plikHM_TTTEEE_lowl_lowE_lensing_post_BAO . . . . .	341
3.55	base_Alens_plikHM_TTTEEE_lowl_lowE_lensing_post_zre6p5 . . . . .	342
3.56	base_Alens_plikHM_TTTEEE_lowl_lowE_lensing_post_BAO_zre6p5 . . . . .	343
3.57	base_Alens_CamSpecHM_TTTEEE_lowl_lowE_lensing . . . . .	344
3.58	base_Alens_CamSpecHM_TTTEEE_lowl_lowE_lensing_post_BAO . . . . .	345



3.59	base_Alens_CamSpecHM_TTTEEE_lowl_lowE_lensing_post_zre6p5 . . . . .	346
3.60	base_Alens_CamSpecHM_TTTEEE_lowl_lowE_lensing_post_BAO_zre6p5 . . . . .	347
3.61	base_Alens_CleanedCamSpecHM_TT_lowl_lowE . . . . .	348
3.62	base_Alens_plikHM_TT . . . . .	349
3.63	base_Alens_plikHM_TT_post_zre6p5 . . . . .	350
3.64	base_Alens_plikHM_TT_lowl . . . . .	351
3.65	base_Alens_plikHM_TT_lowl_post_zre6p5 . . . . .	352
3.66	base_Alens_plikHM_TT_lowE . . . . .	353
3.67	base_Alens_plikHM_TTTEEE . . . . .	354
3.68	base_Alens_plikHM_TTTEEE_post_zre6p5 . . . . .	355
3.69	base_Alens_plikHM_TTTEEE_lowl . . . . .	356
3.70	base_Alens_plikHM_TTTEEE_lowl_post_zre6p5 . . . . .	357
3.71	base_Alens_plikHM_TTTEEE_lowE . . . . .	358
3.72	base_Alens_CamSpecHM_TT . . . . .	359
3.73	base_Alens_CamSpecHM_TT_post_BAO . . . . .	360
3.74	base_Alens_CamSpecHM_TT_post_zre6p5 . . . . .	361
3.75	base_Alens_CamSpecHM_TT_post_BAO_zre6p5 . . . . .	362
3.76	base_Alens_CamSpecHM_TT_lowl . . . . .	363
3.77	base_Alens_CamSpecHM_TT_lowl_post_BAO . . . . .	364
3.78	base_Alens_CamSpecHM_TT_lowl_post_zre6p5 . . . . .	365
3.79	base_Alens_CamSpecHM_TT_lowl_post_BAO_zre6p5 . . . . .	366
3.80	base_Alens_CamSpecHM_TT_lowE . . . . .	367
3.81	base_Alens_CamSpecHM_TTTEEE . . . . .	368
3.82	base_Alens_CamSpecHM_TTTEEE_post_BAO . . . . .	369
3.83	base_Alens_CamSpecHM_TTTEEE_post_zre6p5 . . . . .	370
3.84	base_Alens_CamSpecHM_TTTEEE_post_BAO_zre6p5 . . . . .	371
3.85	base_Alens_CamSpecHM_TTTEEE_lowl . . . . .	372
3.86	base_Alens_CamSpecHM_TTTEEE_lowl_post_BAO . . . . .	373
3.87	base_Alens_CamSpecHM_TTTEEE_lowl_post_zre6p5 . . . . .	374
3.88	base_Alens_CamSpecHM_TTTEEE_lowl_post_BAO_zre6p5 . . . . .	375
3.89	base_Alens_CamSpecHM_TTTEEE_lowE . . . . .	376
<b>4</b>	<b>Ahiphi</b>	<b>377</b>
4.1	base_Ahiphi_plikHM_TT_lowl_lowE_lensing . . . . .	377
4.2	base_Ahiphi_plikHM_TT_lowl_lowE_lensing_post_zre6p5 . . . . .	378
4.3	base_Ahiphi_plikHM_TTTEEE_lowl_lowE_lensing . . . . .	379
4.4	base_Ahiphi_plikHM_TTTEEE_lowl_lowE_lensing_post_zre6p5 . . . . .	380
<b>5</b>	<b>alpha1</b>	<b>381</b>
5.1	base_alpha1_plikHM_TT_lowl_lowE . . . . .	381
5.2	base_alpha1_plikHM_TT_lowl_lowE_post_BAO . . . . .	382
5.3	base_alpha1_plikHM_TT_lowl_lowE_post_lensing . . . . .	383
5.4	base_alpha1_plikHM_TT_lowl_lowE_post_BAO_lensing . . . . .	384
5.5	base_alpha1_plikHM_TT_lowl_lowE_post_zre6p5 . . . . .	385
5.6	base_alpha1_plikHM_TT_lowl_lowE_post_BAO_zre6p5 . . . . .	386
5.7	base_alpha1_plikHM_TT_lowl_lowE_post_lensing_zre6p5 . . . . .	387
5.8	base_alpha1_plikHM_TT_lowl_lowE_post_BAO_lensing_zre6p5 . . . . .	388
5.9	base_alpha1_plikHM_TTTEEE_lowl_lowE . . . . .	389
5.10	base_alpha1_plikHM_TTTEEE_lowl_lowE_post_BAO . . . . .	390
5.11	base_alpha1_plikHM_TTTEEE_lowl_lowE_post_lensing . . . . .	391
5.12	base_alpha1_plikHM_TTTEEE_lowl_lowE_post_BAO_lensing . . . . .	392
5.13	base_alpha1_plikHM_TTTEEE_lowl_lowE_post_Riess18 . . . . .	393
5.14	base_alpha1_plikHM_TTTEEE_lowl_lowE_post_zre6p5 . . . . .	394
5.15	base_alpha1_plikHM_TTTEEE_lowl_lowE_post_BAO_zre6p5 . . . . .	395
5.16	base_alpha1_plikHM_TTTEEE_lowl_lowE_post_lensing_zre6p5 . . . . .	396
5.17	base_alpha1_plikHM_TTTEEE_lowl_lowE_post_BAO_lensing_zre6p5 . . . . .	397
5.18	base_alpha1_plikHM_TTTEEE_lowl_lowE_post_Riess18_zre6p5 . . . . .	398
5.19	base_alpha1_CamSpecHM_TT_lowl_lowE . . . . .	399
5.20	base_alpha1_CamSpecHM_TT_lowl_lowE_post_BAO . . . . .	400
5.21	base_alpha1_CamSpecHM_TT_lowl_lowE_post_lensing . . . . .	401
5.22	base_alpha1_CamSpecHM_TT_lowl_lowE_post_BAO_lensing . . . . .	402
5.23	base_alpha1_CamSpecHM_TT_lowl_lowE_post_zre6p5 . . . . .	403
5.24	base_alpha1_CamSpecHM_TT_lowl_lowE_post_BAO_zre6p5 . . . . .	404
5.25	base_alpha1_CamSpecHM_TT_lowl_lowE_post_lensing_zre6p5 . . . . .	405
5.26	base_alpha1_CamSpecHM_TT_lowl_lowE_post_BAO_lensing_zre6p5 . . . . .	406



<b>6</b>	<b>mnu</b>	<b>407</b>
6.1	base_mnu_plikHM_TT_lowl_lowE . . . . .	407
6.2	base_mnu_plikHM_TT_lowl_lowE_post_zre6p5 . . . . .	408
6.3	base_mnu_plikHM_TTTEEE_lowl_lowE . . . . .	409
6.4	base_mnu_plikHM_TTTEEE_lowl_lowE_post_Riess18 . . . . .	410
6.5	base_mnu_plikHM_TTTEEE_lowl_lowE_post_zre6p5 . . . . .	411
6.6	base_mnu_plikHM_TTTEEE_lowl_lowE_post_Riess18_zre6p5 . . . . .	412
6.7	base_mnu_CamSpecHM_TT_lowl_lowE . . . . .	413
6.8	base_mnu_CamSpecHM_TT_lowl_lowE_post_zre6p5 . . . . .	414
6.9	base_mnu_CamSpecHM_TTTEEE_lowl_lowE . . . . .	415
6.10	base_mnu_CamSpecHM_TTTEEE_lowl_lowE_post_Riess18 . . . . .	416
6.11	base_mnu_CamSpecHM_TTTEEE_lowl_lowE_post_zre6p5 . . . . .	417
6.12	base_mnu_CamSpecHM_TTTEEE_lowl_lowE_post_Riess18_zre6p5 . . . . .	418
6.13	base_mnu_plikHM_TE_lowE . . . . .	419
6.14	base_mnu_plikHM_TE_lowE_post_zre6p5 . . . . .	420
6.15	base_mnu_plikHM_EE_lowE . . . . .	421
6.16	base_mnu_plikHM_EE_lowE_post_zre6p5 . . . . .	422
6.17	base_mnu_plikHM_TE_lowE_BAO . . . . .	423
6.18	base_mnu_plikHM_TE_lowE_BAO_post_lensing . . . . .	424
6.19	base_mnu_plikHM_TE_lowE_BAO_post_zre6p5 . . . . .	425
6.20	base_mnu_plikHM_TE_lowE_BAO_post_lensing_zre6p5 . . . . .	426
6.21	base_mnu_plikHM_EE_lowE_BAO . . . . .	427
6.22	base_mnu_plikHM_EE_lowE_BAO_post_lensing . . . . .	428
6.23	base_mnu_plikHM_EE_lowE_BAO_post_zre6p5 . . . . .	429
6.24	base_mnu_plikHM_EE_lowE_BAO_post_lensing_zre6p5 . . . . .	430
6.25	base_mnu_plikHM_TT_lowl_lensing . . . . .	431
6.26	base_mnu_plikHM_TT_lowl_lensing_post_BAO . . . . .	432
6.27	base_mnu_plikHM_TT_lowl_lensing_post_zre6p5 . . . . .	433
6.28	base_mnu_plikHM_TT_lowl_lensing_post_BAO_zre6p5 . . . . .	434
6.29	base_mnu_plikHM_TTTEEE_lowl_lensing . . . . .	435
6.30	base_mnu_plikHM_TTTEEE_lowl_lensing_post_BAO . . . . .	436
6.31	base_mnu_plikHM_TTTEEE_lowl_lensing_post_zre6p5 . . . . .	437
6.32	base_mnu_plikHM_TTTEEE_lowl_lensing_post_BAO_zre6p5 . . . . .	438
6.33	base_mnu_plikHM_TT_lowl_lowE_lensing . . . . .	439
6.34	base_mnu_plikHM_TT_lowl_lowE_lensing_post_zre6p5 . . . . .	440
6.35	base_mnu_plikHM_TTTEEE_lowl_lowE_lensing . . . . .	441
6.36	base_mnu_plikHM_TTTEEE_lowl_lowE_lensing_post_zre6p5 . . . . .	442
6.37	base_mnu_CamSpecHM_TTTEEE_lowl_lowE_lensing . . . . .	443
6.38	base_mnu_CamSpecHM_TTTEEE_lowl_lowE_lensing_post_zre6p5 . . . . .	444
6.39	base_mnu_plikHM_TT_lowl_lowE_BAO . . . . .	445
6.40	base_mnu_plikHM_TT_lowl_lowE_BAO_post_Pantheon18 . . . . .	446
6.41	base_mnu_plikHM_TT_lowl_lowE_BAO_post_zre6p5 . . . . .	447
6.42	base_mnu_plikHM_TT_lowl_lowE_BAO_post_Pantheon18_zre6p5 . . . . .	448
6.43	base_mnu_plikHM_TTTEEE_lowl_lowE_BAO . . . . .	449
6.44	base_mnu_plikHM_TTTEEE_lowl_lowE_BAO_post_Pantheon18 . . . . .	450
6.45	base_mnu_plikHM_TTTEEE_lowl_lowE_BAO_post_zre6p5 . . . . .	451
6.46	base_mnu_plikHM_TTTEEE_lowl_lowE_BAO_post_Pantheon18_zre6p5 . . . . .	452
6.47	base_mnu_CamSpecHM_TT_lowl_lowE_BAO . . . . .	453
6.48	base_mnu_CamSpecHM_TT_lowl_lowE_BAO_post_Pantheon18 . . . . .	454
6.49	base_mnu_CamSpecHM_TT_lowl_lowE_BAO_post_zre6p5 . . . . .	455
6.50	base_mnu_CamSpecHM_TT_lowl_lowE_BAO_post_Pantheon18_zre6p5 . . . . .	456
6.51	base_mnu_CamSpecHM_TTTEEE_lowl_lowE_BAO . . . . .	457
6.52	base_mnu_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_Pantheon18 . . . . .	458
6.53	base_mnu_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_zre6p5 . . . . .	459
6.54	base_mnu_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_Pantheon18_zre6p5 . . . . .	460
6.55	base_mnu_plikHM_TT_lowl_lowE_lensing_BAO . . . . .	461
6.56	base_mnu_plikHM_TT_lowl_lowE_lensing_BAO_post_Pantheon18 . . . . .	462
6.57	base_mnu_plikHM_TT_lowl_lowE_lensing_BAO_post_zre6p5 . . . . .	463
6.58	base_mnu_plikHM_TT_lowl_lowE_lensing_BAO_post_Pantheon18_zre6p5 . . . . .	464
6.59	base_mnu_plikHM_TTTEEE_lowl_lowE_lensing_BAO . . . . .	465
6.60	base_mnu_plikHM_TTTEEE_lowl_lowE_lensing_BAO_post_Pantheon18 . . . . .	466
6.61	base_mnu_plikHM_TTTEEE_lowl_lowE_lensing_BAO_post_zre6p5 . . . . .	467
6.62	base_mnu_plikHM_TTTEEE_lowl_lowE_lensing_BAO_post_Pantheon18_zre6p5 . . . . .	468
6.63	base_mnu_CamSpecHM_TTTEEE_lowl_lowE_lensing_BAO . . . . .	469
6.64	base_mnu_CamSpecHM_TTTEEE_lowl_lowE_lensing_BAO_post_Pantheon18 . . . . .	470
6.65	base_mnu_CamSpecHM_TTTEEE_lowl_lowE_lensing_BAO_post_zre6p5 . . . . .	471
6.66	base_mnu_CamSpecHM_TTTEEE_lowl_lowE_lensing_BAO_post_Pantheon18_zre6p5 . . . . .	472
6.67	base_mnu_CleanedCamSpecHM_TT_lowl_lowE . . . . .	473



6.68	base_mnu_lensing_lenspriors . . . . .	474
6.69	base_mnu_lensing_lenspriors_post_Pantheon18 . . . . .	475
6.70	base_mnu_lensing_lenspriors_post_agr2 . . . . .	476
6.71	base_mnu_lensing_lenspriors_post_conslmin40 . . . . .	477
6.72	base_mnu_lensing_lenspriors_post_agrlmax425 . . . . .	478
6.73	base_mnu_lensing_lenspriors_post_ptt . . . . .	479
6.74	base_mnu_lensing_lenspriors_post_bfcl . . . . .	480
6.75	base_mnu_lensing_lenspriors_post_agr2bfcl . . . . .	481
6.76	base_mnu_lensing_lenspriors_post_linear . . . . .	482
6.77	base_mnu_lensing_lenspriors_post_acc . . . . .	483
6.78	base_mnu_lensing_lenspriors_post_agr2acc . . . . .	484
6.79	base_mnu_lensing_lenspriors_post_takahashi . . . . .	485
6.80	base_mnu_lensing_lenspriors_post_agr2takahashi . . . . .	486
6.81	base_mnu_lensing_lenspriors_post_Apr6 . . . . .	487
6.82	base_mnu_lensing_lenspriors_theta . . . . .	488
6.83	base_mnu_lensing_lenspriors_theta_post_Pantheon18 . . . . .	489
6.84	base_mnu_lensing_lenspriors_theta_post_agr2 . . . . .	490
6.85	base_mnu_lensing_lenspriors_theta_post_conslmin40 . . . . .	491
6.86	base_mnu_lensing_lenspriors_theta_post_agrlmax425 . . . . .	492
6.87	base_mnu_lensing_lenspriors_theta_post_ptt . . . . .	493
6.88	base_mnu_lensing_lenspriors_theta_post_bfcl . . . . .	494
6.89	base_mnu_lensing_lenspriors_theta_post_agr2bfcl . . . . .	495
6.90	base_mnu_lensing_lenspriors_theta_post_linear . . . . .	496
6.91	base_mnu_lensing_lenspriors_theta_post_acc . . . . .	497
6.92	base_mnu_lensing_lenspriors_theta_post_agr2acc . . . . .	498
6.93	base_mnu_lensing_lenspriors_theta_post_takahashi . . . . .	499
6.94	base_mnu_lensing_lenspriors_theta_post_agr2takahashi . . . . .	500
6.95	base_mnu_lensing_lenspriors_theta_post_Apr6 . . . . .	501
6.96	base_mnu_lensing_lenspriors_BAO . . . . .	502
6.97	base_mnu_lensing_lenspriors_BAO_post_Pantheon18 . . . . .	503
6.98	base_mnu_lensing_lenspriors_BAO_post_agr2 . . . . .	504
6.99	base_mnu_lensing_lenspriors_BAO_post_conslmin40 . . . . .	505
6.100	base_mnu_lensing_lenspriors_BAO_post_agrlmax425 . . . . .	506
6.101	base_mnu_lensing_lenspriors_BAO_post_bfcl . . . . .	507
6.102	base_mnu_lensing_lenspriors_BAO_post_agr2bfcl . . . . .	508
6.103	base_mnu_lensing_lenspriors_BAO_post_linear . . . . .	509
6.104	base_mnu_lensing_lenspriors_BAO_post_acc . . . . .	510
6.105	base_mnu_lensing_lenspriors_BAO_post_agr2acc . . . . .	511
6.106	base_mnu_lensing_lenspriors_BAO_post_takahashi . . . . .	512
6.107	base_mnu_lensing_lenspriors_BAO_post_agr2takahashi . . . . .	513
6.108	base_mnu_lensing_lenspriors_BAO_post_Apr6 . . . . .	514
6.109	base_mnu_lensing_lenspriors_BAO_theta . . . . .	515
6.110	base_mnu_lensing_lenspriors_BAO_theta_post_Pantheon18 . . . . .	516
6.111	base_mnu_lensing_lenspriors_BAO_theta_post_agr2 . . . . .	517
6.112	base_mnu_lensing_lenspriors_BAO_theta_post_conslmin40 . . . . .	518
6.113	base_mnu_lensing_lenspriors_BAO_theta_post_agrlmax425 . . . . .	519
6.114	base_mnu_lensing_lenspriors_BAO_theta_post_ptt . . . . .	520
6.115	base_mnu_lensing_lenspriors_BAO_theta_post_bfcl . . . . .	521
6.116	base_mnu_lensing_lenspriors_BAO_theta_post_agr2bfcl . . . . .	522
6.117	base_mnu_lensing_lenspriors_BAO_theta_post_linear . . . . .	523
6.118	base_mnu_lensing_lenspriors_BAO_theta_post_acc . . . . .	524
6.119	base_mnu_lensing_lenspriors_BAO_theta_post_agr2acc . . . . .	525
6.120	base_mnu_lensing_lenspriors_BAO_theta_post_takahashi . . . . .	526
6.121	base_mnu_lensing_lenspriors_BAO_theta_post_agr2takahashi . . . . .	527
6.122	base_mnu_lensing_lenspriors_BAO_theta_post_Apr6 . . . . .	528
6.123	base_mnu_lensing_lenspriors_pttagr2 . . . . .	529
6.124	base_mnu_lensing_lenspriors_pttagr2_theta . . . . .	530
6.125	base_mnu_lensing_lenspriors_pttagr2_BAO . . . . .	531
6.126	base_mnu_lensing_lenspriors_pttagr2_BAO_theta . . . . .	532
6.127	base_mnu_lensing_DESpriors . . . . .	532
6.128	base_mnu_lensing_DESpriors_BAO . . . . .	533
6.129	base_mnu_lensing_DESpriors_CookeDH . . . . .	533
6.130	base_mnu_lensing_DESpriors_CookeDH_BAO . . . . .	533
6.131	base_mnu_DESlens_lenspriors . . . . .	534
6.132	base_mnu_DESlens_lenspriors . . . . .	535
6.133	base_mnu_DESlens_lenspriors_lensing . . . . .	536
6.134	base_mnu_DESlens_lenspriors_lensing . . . . .	537
6.135	base_mnu_DESlens_lenspriors_BAO . . . . .	538



6.136	base_mnu_DESlens_lenspriors_BAO	539
6.137	base_mnu_DES_lenspriors_lensing_BAO	540
6.138	base_mnu_DESlens_lenspriors_lensing_BAO	541
6.139	base_mnu_DES_DESpriors	542
6.140	base_mnu_DESlens_DESpriors	542
6.141	base_mnu_DESwt_DESpriors	542
6.142	base_mnu_DES_DESpriors_lensing	543
6.143	base_mnu_DESlens_DESpriors_lensing	543
6.144	base_mnu_DESwt_DESpriors_lensing	544
6.145	base_mnu_DES_DESpriors_BAO_CookeDH	544
6.146	base_mnu_DESlens_DESpriors_BAO_CookeDH	545
6.147	base_mnu_DESwt_DESpriors_BAO_CookeDH	545
6.148	base_mnu_DES_DESpriors_lensing_BAO_CookeDH	546
6.149	base_mnu_DESlens_DESpriors_lensing_BAO_CookeDH	546
6.150	base_mnu_DESwt_DESpriors_lensing_BAO_CookeDH	547
6.151	base_mnu_plikHM_TTTEEE_lowl_lowE_DES	548
6.152	base_mnu_plikHM_TTTEEE_lowl_lowE_DES_post_BAO	549
6.153	base_mnu_plikHM_TTTEEE_lowl_lowE_DES_post_lensing	550
6.154	base_mnu_plikHM_TTTEEE_lowl_lowE_DES_post_BAO_lensing	551
6.155	base_mnu_plikHM_TTTEEE_lowl_lowE_DES_post_zre6p5	552
6.156	base_mnu_plikHM_TTTEEE_lowl_lowE_DES_post_BAO_zre6p5	553
6.157	base_mnu_plikHM_TTTEEE_lowl_lowE_DES_post_lensing_zre6p5	554
6.158	base_mnu_plikHM_TTTEEE_lowl_lowE_DES_post_BAO_lensing_zre6p5	555
6.159	base_mnu_plikHM_TTTEEE_lowl_lowE_DESlens	556
6.160	base_mnu_plikHM_TTTEEE_lowl_lowE_DESlens_post_BAO	557
6.161	base_mnu_plikHM_TTTEEE_lowl_lowE_DESlens_post_lensing	558
6.162	base_mnu_plikHM_TTTEEE_lowl_lowE_DESlens_post_BAO_lensing	559
6.163	base_mnu_plikHM_TTTEEE_lowl_lowE_DESlens_post_zre6p5	560
6.164	base_mnu_plikHM_TTTEEE_lowl_lowE_DESlens_post_BAO_zre6p5	561
6.165	base_mnu_plikHM_TTTEEE_lowl_lowE_DESlens_post_lensing_zre6p5	562
6.166	base_mnu_plikHM_TTTEEE_lowl_lowE_DESlens_post_BAO_lensing_zre6p5	563
6.167	base_mnu_BAO_Cooke17	564
6.168	base_mnu_BAO_Cooke17_Pantheon18	564
6.169	base_mnu_BAO_Cooke17_Pantheon18_theta	565
6.170	base_mnu_BAO_Cooke17_theta	565
<b>7</b>	<b>nnu</b>	<b>566</b>
7.1	base_nnu_plikHM_TT_lowl_lowE	566
7.2	base_nnu_plikHM_TT_lowl_lowE_post_lensing	567
7.3	base_nnu_plikHM_TT_lowl_lowE_post_Cooke17_Aver15	568
7.4	base_nnu_plikHM_TT_lowl_lowE_post_zre6p5	569
7.5	base_nnu_plikHM_TT_lowl_lowE_post_lensing_zre6p5	570
7.6	base_nnu_plikHM_TT_lowl_lowE_post_Cooke17_Aver15_zre6p5	571
7.7	base_nnu_plikHM_TTTEEE_lowl_lowE	572
7.8	base_nnu_plikHM_TTTEEE_lowl_lowE_post_lensing	573
7.9	base_nnu_plikHM_TTTEEE_lowl_lowE_post_Cooke17_Aver15	574
7.10	base_nnu_plikHM_TTTEEE_lowl_lowE_post_zre6p5	575
7.11	base_nnu_plikHM_TTTEEE_lowl_lowE_post_lensing_zre6p5	576
7.12	base_nnu_plikHM_TTTEEE_lowl_lowE_post_Cooke17_Aver15_zre6p5	577
7.13	base_nnu_CamSpecHM_TT_lowl_lowE	578
7.14	base_nnu_CamSpecHM_TT_lowl_lowE_post_lensing	579
7.15	base_nnu_CamSpecHM_TT_lowl_lowE_post_Cooke17_Aver15	580
7.16	base_nnu_CamSpecHM_TT_lowl_lowE_post_zre6p5	581
7.17	base_nnu_CamSpecHM_TT_lowl_lowE_post_lensing_zre6p5	582
7.18	base_nnu_CamSpecHM_TT_lowl_lowE_post_Cooke17_Aver15_zre6p5	583
7.19	base_nnu_CamSpecHM_TTTEEE_lowl_lowE	584
7.20	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_post_lensing	585
7.21	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_post_Cooke17_Aver15	586
7.22	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_post_zre6p5	587
7.23	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_post_lensing_zre6p5	588
7.24	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_post_Cooke17_Aver15_zre6p5	589
7.25	base_nnu_plikHM_TE_lowE	590
7.26	base_nnu_plikHM_TE_lowE_post_zre6p5	591
7.27	base_nnu_plikHM_EE_lowE	592
7.28	base_nnu_plikHM_EE_lowE_post_zre6p5	593
7.29	base_nnu_plikHM_TE_lowE_BAO	594
7.30	base_nnu_plikHM_TE_lowE_BAO_post_lensing	595
7.31	base_nnu_plikHM_TE_lowE_BAO_post_zre6p5	596



7.32	base_nnu_plikHM_TE_lowE_BAO_post_lensing_zre6p5 . . . . .	597
7.33	base_nnu_plikHM_EE_lowE_BAO . . . . .	598
7.34	base_nnu_plikHM_EE_lowE_BAO_post_lensing . . . . .	599
7.35	base_nnu_plikHM_EE_lowE_BAO_post_zre6p5 . . . . .	600
7.36	base_nnu_plikHM_EE_lowE_BAO_post_lensing_zre6p5 . . . . .	601
7.37	base_nnu_plikHM_TT_lowl_lowE_BAO . . . . .	602
7.38	base_nnu_plikHM_TT_lowl_lowE_BAO_post_lensing_JLA . . . . .	603
7.39	base_nnu_plikHM_TT_lowl_lowE_BAO_post_lensing_Pantheon18 . . . . .	604
7.40	base_nnu_plikHM_TT_lowl_lowE_BAO_post_lensing . . . . .	605
7.41	base_nnu_plikHM_TT_lowl_lowE_BAO_post_Aver15 . . . . .	606
7.42	base_nnu_plikHM_TT_lowl_lowE_BAO_post_Cooke17_Aver15 . . . . .	607
7.43	base_nnu_plikHM_TT_lowl_lowE_BAO_post_zre6p5 . . . . .	608
7.44	base_nnu_plikHM_TT_lowl_lowE_BAO_post_lensing_JLA_zre6p5 . . . . .	609
7.45	base_nnu_plikHM_TT_lowl_lowE_BAO_post_lensing_Pantheon18_zre6p5 . . . . .	610
7.46	base_nnu_plikHM_TT_lowl_lowE_BAO_post_lensing_zre6p5 . . . . .	611
7.47	base_nnu_plikHM_TT_lowl_lowE_BAO_post_Aver15_zre6p5 . . . . .	612
7.48	base_nnu_plikHM_TT_lowl_lowE_BAO_post_Cooke17_Aver15_zre6p5 . . . . .	613
7.49	base_nnu_plikHM_TTTEEE_lowl_lowE_BAO . . . . .	614
7.50	base_nnu_plikHM_TTTEEE_lowl_lowE_BAO_post_lensing_JLA . . . . .	615
7.51	base_nnu_plikHM_TTTEEE_lowl_lowE_BAO_post_lensing_Pantheon18 . . . . .	616
7.52	base_nnu_plikHM_TTTEEE_lowl_lowE_BAO_post_lensing . . . . .	617
7.53	base_nnu_plikHM_TTTEEE_lowl_lowE_BAO_post_Aver15 . . . . .	618
7.54	base_nnu_plikHM_TTTEEE_lowl_lowE_BAO_post_Cooke17_Aver15 . . . . .	619
7.55	base_nnu_plikHM_TTTEEE_lowl_lowE_BAO_post_zre6p5 . . . . .	620
7.56	base_nnu_plikHM_TTTEEE_lowl_lowE_BAO_post_lensing_JLA_zre6p5 . . . . .	621
7.57	base_nnu_plikHM_TTTEEE_lowl_lowE_BAO_post_lensing_Pantheon18_zre6p5 . . . . .	622
7.58	base_nnu_plikHM_TTTEEE_lowl_lowE_BAO_post_lensing_zre6p5 . . . . .	623
7.59	base_nnu_plikHM_TTTEEE_lowl_lowE_BAO_post_Aver15_zre6p5 . . . . .	624
7.60	base_nnu_plikHM_TTTEEE_lowl_lowE_BAO_post_Cooke17_Aver15_zre6p5 . . . . .	625
7.61	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_BAO . . . . .	626
7.62	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_lensing_JLA . . . . .	627
7.63	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_lensing_Pantheon18 . . . . .	628
7.64	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_lensing . . . . .	629
7.65	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_Aver15 . . . . .	630
7.66	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_Cooke17_Aver15 . . . . .	631
7.67	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_zre6p5 . . . . .	632
7.68	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_lensing_JLA_zre6p5 . . . . .	633
7.69	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_lensing_Pantheon18_zre6p5 . . . . .	634
7.70	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_lensing_zre6p5 . . . . .	635
7.71	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_Aver15_zre6p5 . . . . .	636
7.72	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_Cooke17_Aver15_zre6p5 . . . . .	637
7.73	base_nnu_plikHM_TT_lowl_lowE_Riess18 . . . . .	638
7.74	base_nnu_plikHM_TT_lowl_lowE_Riess18_post_BAO . . . . .	639
7.75	base_nnu_plikHM_TT_lowl_lowE_Riess18_post_BAO_Pantheon18 . . . . .	640
7.76	base_nnu_plikHM_TT_lowl_lowE_Riess18_post_lensing . . . . .	641
7.77	base_nnu_plikHM_TT_lowl_lowE_Riess18_post_BAO_lensing . . . . .	642
7.78	base_nnu_plikHM_TT_lowl_lowE_Riess18_post_BAO_lensing_Pantheon18 . . . . .	643
7.79	base_nnu_plikHM_TT_lowl_lowE_Riess18_post_zre6p5 . . . . .	644
7.80	base_nnu_plikHM_TT_lowl_lowE_Riess18_post_BAO_zre6p5 . . . . .	645
7.81	base_nnu_plikHM_TT_lowl_lowE_Riess18_post_BAO_Pantheon18_zre6p5 . . . . .	646
7.82	base_nnu_plikHM_TT_lowl_lowE_Riess18_post_lensing_zre6p5 . . . . .	647
7.83	base_nnu_plikHM_TT_lowl_lowE_Riess18_post_BAO_lensing_Pantheon18_zre6p5 . . . . .	648
7.84	base_nnu_plikHM_TTTEEE_lowl_lowE_Riess18 . . . . .	649
7.85	base_nnu_plikHM_TTTEEE_lowl_lowE_Riess18_post_BAO . . . . .	650
7.86	base_nnu_plikHM_TTTEEE_lowl_lowE_Riess18_post_BAO_Pantheon18 . . . . .	651
7.87	base_nnu_plikHM_TTTEEE_lowl_lowE_Riess18_post_lensing . . . . .	652
7.88	base_nnu_plikHM_TTTEEE_lowl_lowE_Riess18_post_BAO_lensing . . . . .	653
7.89	base_nnu_plikHM_TTTEEE_lowl_lowE_Riess18_post_BAO_lensing_Pantheon18 . . . . .	654
7.90	base_nnu_plikHM_TTTEEE_lowl_lowE_Riess18_post_zre6p5 . . . . .	655
7.91	base_nnu_plikHM_TTTEEE_lowl_lowE_Riess18_post_BAO_zre6p5 . . . . .	656
7.92	base_nnu_plikHM_TTTEEE_lowl_lowE_Riess18_post_BAO_Pantheon18_zre6p5 . . . . .	657
7.93	base_nnu_plikHM_TTTEEE_lowl_lowE_Riess18_post_lensing_zre6p5 . . . . .	658
7.94	base_nnu_plikHM_TTTEEE_lowl_lowE_Riess18_post_BAO_lensing_Pantheon18_zre6p5 . . . . .	659
7.95	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_Riess18 . . . . .	660
7.96	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_Riess18_post_BAO . . . . .	661
7.97	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_Riess18_post_BAO_Pantheon18 . . . . .	662
7.98	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_Riess18_post_lensing . . . . .	663
7.99	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_Riess18_post_BAO_lensing . . . . .	664



7.100	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_Riess18_post_BAO_lensing_Pantheon18	665
7.101	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_Riess18_post_zre6p5	666
7.102	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_Riess18_post_BAO_zre6p5	667
7.103	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_Riess18_post_BAO_Pantheon18_zre6p5	668
7.104	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_Riess18_post_lensing_zre6p5	669
7.105	base_nnu_CamSpecHM_TTTEEE_lowl_lowE_Riess18_post_BAO_lensing_Pantheon18_zre6p5	670
7.106	base_nnu_CleanedCamSpecHM_TT_lowl_lowE	671
7.107	base_nnu_lensing_lenspriors_BAO_Cooke17_Aver15	672
7.108	base_nnu_lensing_lenspriors_BAO_Cooke17_Aver15_post_Pantheon18	673
7.109	base_nnu_lensing_lenspriors_BAO_Cooke17_Aver15_theta	674
7.110	base_nnu_lensing_lenspriors_BAO_Cooke17_Aver15_theta_post_Pantheon18	675
7.111	base_nnu_BAO_Cooke17_Aver15	676
7.112	base_nnu_BAO_Cooke17_Aver15_Pantheon18	676
7.113	base_nnu_BAO_Cooke17_Aver15_theta	677
7.114	base_nnu_BAO_Cooke17_Aver15_Pantheon18_theta	677
7.115	base_nnu_BAO_Cooke17Marc_Aver15	678
7.116	base_nnu_BAO_Cooke17Marc_Aver15_Pantheon18	678
7.117	base_nnu_BAO_Cooke17Marc_Aver15_theta	679
7.118	base_nnu_BAO_Cooke17Marc_Aver15_Pantheon18_theta	679
7.119	base_nnu_BAO_Cooke17Adel_Aver15	680
7.120	base_nnu_BAO_Cooke17Adel_Aver15_Pantheon18	680
7.121	base_nnu_BAO_Cooke17Adel_Aver15_theta	681
7.122	base_nnu_BAO_Cooke17Adel_Aver15_Pantheon18_theta	681
<b>8</b>	<b>nnu+meffsterile</b>	<b>682</b>
8.1	base_nnu_meffsterile_plikHM_TT_lowl_lowE	682
8.2	base_nnu_meffsterile_plikHM_TT_lowl_lowE_post_lensing	683
8.3	base_nnu_meffsterile_plikHM_TT_lowl_lowE_post_zre6p5	684
8.4	base_nnu_meffsterile_plikHM_TT_lowl_lowE_post_lensing_zre6p5	685
8.5	base_nnu_meffsterile_plikHM_TTTEEE_lowl_lowE	686
8.6	base_nnu_meffsterile_plikHM_TTTEEE_lowl_lowE_post_lensing	687
8.7	base_nnu_meffsterile_plikHM_TTTEEE_lowl_lowE_post_zre6p5	688
8.8	base_nnu_meffsterile_plikHM_TTTEEE_lowl_lowE_post_lensing_zre6p5	689
8.9	base_nnu_meffsterile_CamSpecHM_TTTEEE_lowl_lowE	690
8.10	base_nnu_meffsterile_CamSpecHM_TTTEEE_lowl_lowE_post_lensing	691
8.11	base_nnu_meffsterile_CamSpecHM_TTTEEE_lowl_lowE_post_zre6p5	692
8.12	base_nnu_meffsterile_CamSpecHM_TTTEEE_lowl_lowE_post_lensing_zre6p5	693
8.13	base_nnu_meffsterile_plikHM_TT_lowl_lowE_BAO	694
8.14	base_nnu_meffsterile_plikHM_TT_lowl_lowE_BAO_post_Pantheon18	695
8.15	base_nnu_meffsterile_plikHM_TT_lowl_lowE_BAO_post_Aver15	696
8.16	base_nnu_meffsterile_plikHM_TT_lowl_lowE_BAO_post_Cooke17_Aver15	697
8.17	base_nnu_meffsterile_plikHM_TT_lowl_lowE_BAO_post_zre6p5	698
8.18	base_nnu_meffsterile_plikHM_TT_lowl_lowE_BAO_post_Pantheon18_zre6p5	699
8.19	base_nnu_meffsterile_plikHM_TT_lowl_lowE_BAO_post_Aver15_zre6p5	700
8.20	base_nnu_meffsterile_plikHM_TT_lowl_lowE_BAO_post_Cooke17_Aver15_zre6p5	701
8.21	base_nnu_meffsterile_plikHM_TTTEEE_lowl_lowE_BAO	702
8.22	base_nnu_meffsterile_plikHM_TTTEEE_lowl_lowE_BAO_post_Pantheon18	703
8.23	base_nnu_meffsterile_plikHM_TTTEEE_lowl_lowE_BAO_post_Aver15	704
8.24	base_nnu_meffsterile_plikHM_TTTEEE_lowl_lowE_BAO_post_Cooke17_Aver15	705
8.25	base_nnu_meffsterile_plikHM_TTTEEE_lowl_lowE_BAO_post_zre6p5	706
8.26	base_nnu_meffsterile_plikHM_TTTEEE_lowl_lowE_BAO_post_Pantheon18_zre6p5	707
8.27	base_nnu_meffsterile_plikHM_TTTEEE_lowl_lowE_BAO_post_Aver15_zre6p5	708
8.28	base_nnu_meffsterile_plikHM_TTTEEE_lowl_lowE_BAO_post_Cooke17_Aver15_zre6p5	709
8.29	base_nnu_meffsterile_CamSpecHM_TTTEEE_lowl_lowE_BAO	710
8.30	base_nnu_meffsterile_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_Pantheon18	711
8.31	base_nnu_meffsterile_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_Aver15	712
8.32	base_nnu_meffsterile_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_Cooke17_Aver15	713
8.33	base_nnu_meffsterile_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_zre6p5	714
8.34	base_nnu_meffsterile_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_Pantheon18_zre6p5	715
8.35	base_nnu_meffsterile_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_Aver15_zre6p5	716
8.36	base_nnu_meffsterile_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_Cooke17_Aver15_zre6p5	717
8.37	base_nnu_meffsterile_plikHM_TT_lowl_lowE_lensing_BAO	718
8.38	base_nnu_meffsterile_plikHM_TT_lowl_lowE_lensing_BAO_post_Pantheon18	719
8.39	base_nnu_meffsterile_plikHM_TT_lowl_lowE_lensing_BAO_post_Aver15	720
8.40	base_nnu_meffsterile_plikHM_TT_lowl_lowE_lensing_BAO_post_Cooke17_Aver15	721
8.41	base_nnu_meffsterile_plikHM_TT_lowl_lowE_lensing_BAO_post_zre6p5	722
8.42	base_nnu_meffsterile_plikHM_TT_lowl_lowE_lensing_BAO_post_Pantheon18_zre6p5	723
8.43	base_nnu_meffsterile_plikHM_TT_lowl_lowE_lensing_BAO_post_Aver15_zre6p5	724



8.44	base_nnu_meffsterile_plikHM_TT_lowl_lowE_lensing_BAO_post_Cooke17_Aver15_zre6p5 . . . . .	725
8.45	base_nnu_meffsterile_plikHM_TTTEEE_lowl_lowE_lensing_BAO . . . . .	726
8.46	base_nnu_meffsterile_plikHM_TTTEEE_lowl_lowE_lensing_BAO_post_Pantheon18 . . . . .	727
8.47	base_nnu_meffsterile_plikHM_TTTEEE_lowl_lowE_lensing_BAO_post_Aver15 . . . . .	728
8.48	base_nnu_meffsterile_plikHM_TTTEEE_lowl_lowE_lensing_BAO_post_Cooke17_Aver15 . . . . .	729
8.49	base_nnu_meffsterile_plikHM_TTTEEE_lowl_lowE_lensing_BAO_post_zre6p5 . . . . .	730
8.50	base_nnu_meffsterile_plikHM_TTTEEE_lowl_lowE_lensing_BAO_post_Pantheon18_zre6p5 . . . . .	731
8.51	base_nnu_meffsterile_plikHM_TTTEEE_lowl_lowE_lensing_BAO_post_Aver15_zre6p5 . . . . .	732
8.52	base_nnu_meffsterile_plikHM_TTTEEE_lowl_lowE_lensing_BAO_post_Cooke17_Aver15_zre6p5 . . . . .	733
8.53	base_nnu_meffsterile_CamSpecHM_TTTEEE_lowl_lowE_lensing_BAO . . . . .	734
8.54	base_nnu_meffsterile_CamSpecHM_TTTEEE_lowl_lowE_lensing_BAO_post_Pantheon18 . . . . .	735
8.55	base_nnu_meffsterile_CamSpecHM_TTTEEE_lowl_lowE_lensing_BAO_post_Aver15 . . . . .	736
8.56	base_nnu_meffsterile_CamSpecHM_TTTEEE_lowl_lowE_lensing_BAO_post_Cooke17_Aver15 . . . . .	737
8.57	base_nnu_meffsterile_CamSpecHM_TTTEEE_lowl_lowE_lensing_BAO_post_zre6p5 . . . . .	738
8.58	base_nnu_meffsterile_CamSpecHM_TTTEEE_lowl_lowE_lensing_BAO_post_Pantheon18_zre6p5 . . . . .	739
8.59	base_nnu_meffsterile_CamSpecHM_TTTEEE_lowl_lowE_lensing_BAO_post_Aver15_zre6p5 . . . . .	740
8.60	base_nnu_meffsterile_CamSpecHM_TTTEEE_lowl_lowE_lensing_BAO_post_Cooke17_Aver15_zre6p5 . . . . .	741
<b>9</b>	<b>nnu+mnu</b>	<b>742</b>
9.1	base_nnu_mnu_plikHM_TT_lowl_lowE . . . . .	742
9.2	base_nnu_mnu_plikHM_TT_lowl_lowE_post_lensing . . . . .	743
9.3	base_nnu_mnu_plikHM_TTTEEE_lowl_lowE . . . . .	744
9.4	base_nnu_mnu_plikHM_TTTEEE_lowl_lowE_post_lensing . . . . .	745
9.5	base_nnu_mnu_CamSpecHM_TT_lowl_lowE . . . . .	746
9.6	base_nnu_mnu_CamSpecHM_TT_lowl_lowE_post_lensing . . . . .	747
9.7	base_nnu_mnu_CamSpecHM_TTTEEE_lowl_lowE . . . . .	748
9.8	base_nnu_mnu_CamSpecHM_TTTEEE_lowl_lowE_post_lensing . . . . .	749
9.9	base_nnu_mnu_plikHM_TT_lowl_lowE_BAO . . . . .	750
9.10	base_nnu_mnu_plikHM_TT_lowl_lowE_BAO_post_Pantheon18 . . . . .	751
9.11	base_nnu_mnu_plikHM_TT_lowl_lowE_BAO_post_Aver15 . . . . .	752
9.12	base_nnu_mnu_plikHM_TT_lowl_lowE_BAO_post_Cooke17_Aver15 . . . . .	753
9.13	base_nnu_mnu_plikHM_TT_lowl_lowE_BAO_post_Pantheon18_zre6p5 . . . . .	754
9.14	base_nnu_mnu_plikHM_TTTEEE_lowl_lowE_BAO . . . . .	755
9.15	base_nnu_mnu_plikHM_TTTEEE_lowl_lowE_BAO_post_Pantheon18 . . . . .	756
9.16	base_nnu_mnu_plikHM_TTTEEE_lowl_lowE_BAO_post_Aver15 . . . . .	757
9.17	base_nnu_mnu_plikHM_TTTEEE_lowl_lowE_BAO_post_Cooke17_Aver15 . . . . .	758
9.18	base_nnu_mnu_plikHM_TTTEEE_lowl_lowE_BAO_post_Pantheon18_zre6p5 . . . . .	759
9.19	base_nnu_mnu_CamSpecHM_TT_lowl_lowE_BAO . . . . .	760
9.20	base_nnu_mnu_CamSpecHM_TT_lowl_lowE_BAO_post_Pantheon18 . . . . .	761
9.21	base_nnu_mnu_CamSpecHM_TT_lowl_lowE_BAO_post_Aver15 . . . . .	762
9.22	base_nnu_mnu_CamSpecHM_TT_lowl_lowE_BAO_post_Cooke17_Aver15 . . . . .	763
9.23	base_nnu_mnu_CamSpecHM_TT_lowl_lowE_BAO_post_Pantheon18_zre6p5 . . . . .	764
9.24	base_nnu_mnu_CamSpecHM_TTTEEE_lowl_lowE_BAO . . . . .	765
9.25	base_nnu_mnu_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_Pantheon18 . . . . .	766
9.26	base_nnu_mnu_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_Aver15 . . . . .	767
9.27	base_nnu_mnu_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_Cooke17_Aver15 . . . . .	768
9.28	base_nnu_mnu_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_Pantheon18_zre6p5 . . . . .	769
9.29	base_nnu_mnu_plikHM_TT_lowl_lowE_lensing_BAO . . . . .	770
9.30	base_nnu_mnu_plikHM_TT_lowl_lowE_lensing_BAO_post_Pantheon18 . . . . .	771
9.31	base_nnu_mnu_plikHM_TT_lowl_lowE_lensing_BAO_post_Aver15 . . . . .	772
9.32	base_nnu_mnu_plikHM_TT_lowl_lowE_lensing_BAO_post_Cooke17_Aver15 . . . . .	773
9.33	base_nnu_mnu_plikHM_TT_lowl_lowE_lensing_BAO_post_Pantheon18_zre6p5 . . . . .	774
9.34	base_nnu_mnu_plikHM_TTTEEE_lowl_lowE_lensing_BAO . . . . .	775
9.35	base_nnu_mnu_plikHM_TTTEEE_lowl_lowE_lensing_BAO_post_Pantheon18 . . . . .	776
9.36	base_nnu_mnu_plikHM_TTTEEE_lowl_lowE_lensing_BAO_post_Aver15 . . . . .	777
9.37	base_nnu_mnu_plikHM_TTTEEE_lowl_lowE_lensing_BAO_post_Cooke17_Aver15 . . . . .	778
9.38	base_nnu_mnu_plikHM_TTTEEE_lowl_lowE_lensing_BAO_post_Pantheon18_zre6p5 . . . . .	779
9.39	base_nnu_mnu_CamSpecHM_TT_lowl_lowE_lensing_BAO . . . . .	780
9.40	base_nnu_mnu_CamSpecHM_TT_lowl_lowE_lensing_BAO_post_Pantheon18 . . . . .	781
9.41	base_nnu_mnu_CamSpecHM_TT_lowl_lowE_lensing_BAO_post_Aver15 . . . . .	782
9.42	base_nnu_mnu_CamSpecHM_TT_lowl_lowE_lensing_BAO_post_Cooke17_Aver15 . . . . .	783
9.43	base_nnu_mnu_CamSpecHM_TT_lowl_lowE_lensing_BAO_post_Pantheon18_zre6p5 . . . . .	784
9.44	base_nnu_mnu_CamSpecHM_TTTEEE_lowl_lowE_lensing_BAO . . . . .	785
9.45	base_nnu_mnu_CamSpecHM_TTTEEE_lowl_lowE_lensing_BAO_post_Pantheon18 . . . . .	786
9.46	base_nnu_mnu_CamSpecHM_TTTEEE_lowl_lowE_lensing_BAO_post_Aver15 . . . . .	787
9.47	base_nnu_mnu_CamSpecHM_TTTEEE_lowl_lowE_lensing_BAO_post_Cooke17_Aver15 . . . . .	788
9.48	base_nnu_mnu_CamSpecHM_TTTEEE_lowl_lowE_lensing_BAO_post_Pantheon18_zre6p5 . . . . .	789
9.49	base_nnu_mnu_lensing_lenspriors_BAO_Cooke17_Aver15 . . . . .	790



9.50	base_nnu_mnu_lensing_lenspriors_BAO_Cooke17_Aver15_post_Pantheon18	791
9.51	base_nnu_mnu_lensing_lenspriors_BAO_Cooke17_Aver15_theta	792
9.52	base_nnu_mnu_lensing_lenspriors_BAO_Cooke17_Aver15_theta_post_Pantheon18	793
9.53	base_nnu_mnu_BAO_Cooke17_Aver15	794
9.54	base_nnu_mnu_BAO_Cooke17_Aver15_Pantheon18	794
9.55	base_nnu_mnu_BAO_Cooke17_Aver15_theta	795
9.56	base_nnu_mnu_BAO_Cooke17_Aver15_Pantheon18_theta	795
9.57	base_nnu_mnu_BAO_Cooke17Marc_Aver15	796
9.58	base_nnu_mnu_BAO_Cooke17Marc_Aver15_Pantheon18	796
9.59	base_nnu_mnu_BAO_Cooke17Marc_Aver15_theta	797
9.60	base_nnu_mnu_BAO_Cooke17Marc_Aver15_Pantheon18_theta	797
9.61	base_nnu_mnu_BAO_Cooke17Adel_Aver15	798
9.62	base_nnu_mnu_BAO_Cooke17Adel_Aver15_Pantheon18	798
9.63	base_nnu_mnu_BAO_Cooke17Adel_Aver15_theta	799
9.64	base_nnu_mnu_BAO_Cooke17Adel_Aver15_Pantheon18_theta	799
<b>10</b>	<b>nnu+nrn</b>	<b>800</b>
10.1	base_nnu_nrun_plikHM_TTTEEE_lowl_lowE	800
10.2	base_nnu_nrun_plikHM_TTTEEE_lowl_lowE_post_BAO	801
10.3	base_nnu_nrun_plikHM_TTTEEE_lowl_lowE_post_lensing	802
10.4	base_nnu_nrun_plikHM_TTTEEE_lowl_lowE_post_BAO_lensing	803
10.5	base_nnu_nrun_plikHM_TTTEEE_lowl_lowE_post_zre6p5	804
10.6	base_nnu_nrun_plikHM_TTTEEE_lowl_lowE_post_BAO_zre6p5	805
10.7	base_nnu_nrun_plikHM_TTTEEE_lowl_lowE_post_lensing_zre6p5	806
10.8	base_nnu_nrun_plikHM_TTTEEE_lowl_lowE_post_BAO_lensing_zre6p5	807
<b>11</b>	<b>nnu+yhe</b>	<b>808</b>
11.1	base_nnu_yhe_plikHM_TT_lowl_lowE	808
11.2	base_nnu_yhe_plikHM_TT_lowl_lowE_post_BAO	809
11.3	base_nnu_yhe_plikHM_TT_lowl_lowE_post_lensing	810
11.4	base_nnu_yhe_plikHM_TT_lowl_lowE_post_BAO_lensing	811
11.5	base_nnu_yhe_plikHM_TT_lowl_lowE_post_zre6p5	812
11.6	base_nnu_yhe_plikHM_TT_lowl_lowE_post_BAO_zre6p5	813
11.7	base_nnu_yhe_plikHM_TT_lowl_lowE_post_lensing_zre6p5	814
11.8	base_nnu_yhe_plikHM_TT_lowl_lowE_post_BAO_lensing_zre6p5	815
11.9	base_nnu_yhe_plikHM_TTTEEE_lowl_lowE	816
11.10	base_nnu_yhe_plikHM_TTTEEE_lowl_lowE_post_BAO	817
11.11	base_nnu_yhe_plikHM_TTTEEE_lowl_lowE_post_lensing	818
11.12	base_nnu_yhe_plikHM_TTTEEE_lowl_lowE_post_BAO_lensing	819
11.13	base_nnu_yhe_plikHM_TTTEEE_lowl_lowE_post_zre6p5	820
11.14	base_nnu_yhe_plikHM_TTTEEE_lowl_lowE_post_BAO_zre6p5	821
11.15	base_nnu_yhe_plikHM_TTTEEE_lowl_lowE_post_lensing_zre6p5	822
11.16	base_nnu_yhe_plikHM_TTTEEE_lowl_lowE_post_BAO_lensing_zre6p5	823
11.17	base_nnu_yhe_CamSpecHM_TTTEEE_lowl_lowE	824
11.18	base_nnu_yhe_CamSpecHM_TTTEEE_lowl_lowE_post_BAO	825
11.19	base_nnu_yhe_CamSpecHM_TTTEEE_lowl_lowE_post_lensing	826
11.20	base_nnu_yhe_CamSpecHM_TTTEEE_lowl_lowE_post_BAO_lensing	827
11.21	base_nnu_yhe_CamSpecHM_TTTEEE_lowl_lowE_post_zre6p5	828
11.22	base_nnu_yhe_CamSpecHM_TTTEEE_lowl_lowE_post_BAO_zre6p5	829
11.23	base_nnu_yhe_CamSpecHM_TTTEEE_lowl_lowE_post_lensing_zre6p5	830
11.24	base_nnu_yhe_CamSpecHM_TTTEEE_lowl_lowE_post_BAO_lensing_zre6p5	831
11.25	base_nnu_yhe_plikHM_TT_lowl_lowE_Aver15	832
11.26	base_nnu_yhe_plikHM_TT_lowl_lowE_Aver15_post_BAO	833
11.27	base_nnu_yhe_plikHM_TT_lowl_lowE_Aver15_post_lensing	834
11.28	base_nnu_yhe_plikHM_TT_lowl_lowE_Aver15_post_BAO_lensing	835
11.29	base_nnu_yhe_plikHM_TT_lowl_lowE_Aver15_post_zre6p5	836
11.30	base_nnu_yhe_plikHM_TT_lowl_lowE_Aver15_post_BAO_zre6p5	837
11.31	base_nnu_yhe_plikHM_TT_lowl_lowE_Aver15_post_lensing_zre6p5	838
11.32	base_nnu_yhe_plikHM_TT_lowl_lowE_Aver15_post_BAO_lensing_zre6p5	839
11.33	base_nnu_yhe_plikHM_TTTEEE_lowl_lowE_Aver15	840
11.34	base_nnu_yhe_plikHM_TTTEEE_lowl_lowE_Aver15_post_BAO	841
11.35	base_nnu_yhe_plikHM_TTTEEE_lowl_lowE_Aver15_post_lensing	842
11.36	base_nnu_yhe_plikHM_TTTEEE_lowl_lowE_Aver15_post_BAO_lensing	843
11.37	base_nnu_yhe_plikHM_TTTEEE_lowl_lowE_Aver15_post_zre6p5	844
11.38	base_nnu_yhe_plikHM_TTTEEE_lowl_lowE_Aver15_post_BAO_zre6p5	845
11.39	base_nnu_yhe_plikHM_TTTEEE_lowl_lowE_Aver15_post_lensing_zre6p5	846
11.40	base_nnu_yhe_plikHM_TTTEEE_lowl_lowE_Aver15_post_BAO_lensing_zre6p5	847
11.41	base_nnu_yhe_CamSpecHM_TTTEEE_lowl_lowE_Aver15	848
11.42	base_nnu_yhe_CamSpecHM_TTTEEE_lowl_lowE_Aver15_post_BAO	849



11.43	base_nnu_yhe_CamSpecHM_TTTEEE_lowl_lowE_Aver15_post_lensing	850
11.44	base_nnu_yhe_CamSpecHM_TTTEEE_lowl_lowE_Aver15_post_BAO_lensing	851
11.45	base_nnu_yhe_CamSpecHM_TTTEEE_lowl_lowE_Aver15_post_zre6p5	852
11.46	base_nnu_yhe_CamSpecHM_TTTEEE_lowl_lowE_Aver15_post_BAO_zre6p5	853
11.47	base_nnu_yhe_CamSpecHM_TTTEEE_lowl_lowE_Aver15_post_lensing_zre6p5	854
11.48	base_nnu_yhe_CamSpecHM_TTTEEE_lowl_lowE_Aver15_post_BAO_lensing_zre6p5	855
<b>12</b>	<b>nrn</b>	<b>856</b>
12.1	base_nrn_plikHM_TT_lowl_lowE	856
12.2	base_nrn_plikHM_TT_lowl_lowE_post_BAO	857
12.3	base_nrn_plikHM_TT_lowl_lowE_post_lensing	858
12.4	base_nrn_plikHM_TT_lowl_lowE_post_BAO_lensing	859
12.5	base_nrn_plikHM_TT_lowl_lowE_post_Riess18	860
12.6	base_nrn_plikHM_TT_lowl_lowE_post_zre6p5	861
12.7	base_nrn_plikHM_TT_lowl_lowE_post_BAO_zre6p5	862
12.8	base_nrn_plikHM_TT_lowl_lowE_post_lensing_zre6p5	863
12.9	base_nrn_plikHM_TT_lowl_lowE_post_BAO_lensing_zre6p5	864
12.10	base_nrn_plikHM_TT_lowl_lowE_post_Riess18_zre6p5	865
12.11	base_nrn_plikHM_TTTEEE_lowl_lowE	866
12.12	base_nrn_plikHM_TTTEEE_lowl_lowE_post_BAO	867
12.13	base_nrn_plikHM_TTTEEE_lowl_lowE_post_lensing	868
12.14	base_nrn_plikHM_TTTEEE_lowl_lowE_post_BAO_lensing	869
12.15	base_nrn_plikHM_TTTEEE_lowl_lowE_post_Riess18	870
12.16	base_nrn_plikHM_TTTEEE_lowl_lowE_post_zre6p5	871
12.17	base_nrn_plikHM_TTTEEE_lowl_lowE_post_BAO_zre6p5	872
12.18	base_nrn_plikHM_TTTEEE_lowl_lowE_post_lensing_zre6p5	873
12.19	base_nrn_plikHM_TTTEEE_lowl_lowE_post_BAO_lensing_zre6p5	874
12.20	base_nrn_plikHM_TTTEEE_lowl_lowE_post_Riess18_zre6p5	875
12.21	base_nrn_CamSpecHM_TT_lowl_lowE	876
12.22	base_nrn_CamSpecHM_TT_lowl_lowE_post_BAO	877
12.23	base_nrn_CamSpecHM_TT_lowl_lowE_post_lensing	878
12.24	base_nrn_CamSpecHM_TT_lowl_lowE_post_BAO_lensing	879
12.25	base_nrn_CamSpecHM_TT_lowl_lowE_post_zre6p5	880
12.26	base_nrn_CamSpecHM_TT_lowl_lowE_post_BAO_zre6p5	881
12.27	base_nrn_CamSpecHM_TT_lowl_lowE_post_lensing_zre6p5	882
12.28	base_nrn_CamSpecHM_TT_lowl_lowE_post_BAO_lensing_zre6p5	883
12.29	base_nrn_CamSpecHM_TTTEEE_lowl_lowE	884
12.30	base_nrn_CamSpecHM_TTTEEE_lowl_lowE_post_BAO	885
12.31	base_nrn_CamSpecHM_TTTEEE_lowl_lowE_post_lensing	886
12.32	base_nrn_CamSpecHM_TTTEEE_lowl_lowE_post_BAO_lensing	887
12.33	base_nrn_CamSpecHM_TTTEEE_lowl_lowE_post_Riess18	888
12.34	base_nrn_CamSpecHM_TTTEEE_lowl_lowE_post_zre6p5	889
12.35	base_nrn_CamSpecHM_TTTEEE_lowl_lowE_post_BAO_zre6p5	890
12.36	base_nrn_CamSpecHM_TTTEEE_lowl_lowE_post_lensing_zre6p5	891
12.37	base_nrn_CamSpecHM_TTTEEE_lowl_lowE_post_BAO_lensing_zre6p5	892
12.38	base_nrn_CamSpecHM_TTTEEE_lowl_lowE_post_Riess18_zre6p5	893
12.39	base_nrn_plikHM_TE_lowE	894
12.40	base_nrn_plikHM_TE_lowE_post_BAO	895
12.41	base_nrn_plikHM_TE_lowE_post_zre6p5	896
12.42	base_nrn_plikHM_TE_lowE_post_BAO_zre6p5	897
12.43	base_nrn_plikHM_EE_lowE	898
12.44	base_nrn_plikHM_EE_lowE_post_BAO	899
12.45	base_nrn_plikHM_EE_lowE_post_zre6p5	900
12.46	base_nrn_plikHM_EE_lowE_post_BAO_zre6p5	901
12.47	base_nrn_CleanedCamSpecHM_TT_lowl_lowE	902
<b>13</b>	<b>nrn+nnu+w+mnu</b>	<b>903</b>
13.1	base_nrn_nnu_w_mnu_plikHM_TTTEEE_lowl_lowE_BAO_Riess18_Pantheon18_lensing	903
13.2	base_nrn_nnu_w_mnu_plikHM_TTTEEE_lowl_lowE_BAO_Riess18_Pantheon18_lensing_post_zre6p5	904
<b>14</b>	<b>nrn+nrnrun</b>	<b>905</b>
14.1	base_nrn_nrnrun_plikHM_TTTEEE_lowl_lowE	905
14.2	base_nrn_nrnrun_plikHM_TTTEEE_lowl_lowE_post_BAO	906
14.3	base_nrn_nrnrun_plikHM_TTTEEE_lowl_lowE_post_lensing	907
14.4	base_nrn_nrnrun_plikHM_TTTEEE_lowl_lowE_post_BAO_lensing	908
14.5	base_nrn_nrnrun_plikHM_TTTEEE_lowl_lowE_post_zre6p5	909
14.6	base_nrn_nrnrun_plikHM_TTTEEE_lowl_lowE_post_BAO_zre6p5	910
14.7	base_nrn_nrnrun_plikHM_TTTEEE_lowl_lowE_post_lensing_zre6p5	911
14.8	base_nrn_nrnrun_plikHM_TTTEEE_lowl_lowE_post_BAO_lensing_zre6p5	912



<b>15</b>	<b>nrun+r</b>	<b>913</b>
15.1	base_nrun_r_plikHM_TT_lowl_lowE . . . . .	913
15.2	base_nrun_r_plikHM_TT_lowl_lowE_post_BAO . . . . .	914
15.3	base_nrun_r_plikHM_TT_lowl_lowE_post_Riess18 . . . . .	915
15.4	base_nrun_r_plikHM_TT_lowl_lowE_post_zre6p5 . . . . .	916
15.5	base_nrun_r_plikHM_TT_lowl_lowE_post_BAO_zre6p5 . . . . .	917
15.6	base_nrun_r_plikHM_TT_lowl_lowE_post_Riess18_zre6p5 . . . . .	918
15.7	base_nrun_r_plikHM_TTTEEE_lowl_lowE . . . . .	919
15.8	base_nrun_r_plikHM_TTTEEE_lowl_lowE_post_BAO . . . . .	920
15.9	base_nrun_r_plikHM_TTTEEE_lowl_lowE_post_Riess18 . . . . .	921
15.10	base_nrun_r_plikHM_TTTEEE_lowl_lowE_post_zre6p5 . . . . .	922
15.11	base_nrun_r_plikHM_TTTEEE_lowl_lowE_post_BAO_zre6p5 . . . . .	923
15.12	base_nrun_r_plikHM_TTTEEE_lowl_lowE_post_Riess18_zre6p5 . . . . .	924
15.13	base_nrun_r_CamSpecHM_TT_lowl_lowE . . . . .	925
15.14	base_nrun_r_CamSpecHM_TT_lowl_lowE_post_BAO . . . . .	926
15.15	base_nrun_r_CamSpecHM_TT_lowl_lowE_post_zre6p5 . . . . .	927
15.16	base_nrun_r_CamSpecHM_TT_lowl_lowE_post_BAO_zre6p5 . . . . .	928
15.17	base_nrun_r_plikHM_TT_lowl_lowE_lensing . . . . .	929
15.18	base_nrun_r_plikHM_TT_lowl_lowE_lensing_post_BAO . . . . .	930
15.19	base_nrun_r_plikHM_TT_lowl_lowE_lensing_post_zre6p5 . . . . .	931
15.20	base_nrun_r_plikHM_TT_lowl_lowE_lensing_post_BAO_zre6p5 . . . . .	932
15.21	base_nrun_r_plikHM_TTTEEE_lowl_lowE_lensing . . . . .	933
15.22	base_nrun_r_plikHM_TTTEEE_lowl_lowE_lensing_post_BAO . . . . .	934
15.23	base_nrun_r_plikHM_TTTEEE_lowl_lowE_lensing_post_zre6p5 . . . . .	935
15.24	base_nrun_r_plikHM_TTTEEE_lowl_lowE_lensing_post_BAO_zre6p5 . . . . .	936
15.25	base_nrun_r_CamSpecHM_TTTEEE_lowl_lowE_lensing . . . . .	937
15.26	base_nrun_r_CamSpecHM_TTTEEE_lowl_lowE_lensing_post_BAO . . . . .	938
15.27	base_nrun_r_CamSpecHM_TTTEEE_lowl_lowE_lensing_post_zre6p5 . . . . .	939
15.28	base_nrun_r_CamSpecHM_TTTEEE_lowl_lowE_lensing_post_BAO_zre6p5 . . . . .	940
15.29	base_nrun_r_plikHM_TT_lowl_lowE_BK15 . . . . .	941
15.30	base_nrun_r_plikHM_TT_lowl_lowE_BK15_post_BAO . . . . .	942
15.31	base_nrun_r_plikHM_TT_lowl_lowE_BK15_post_lensing . . . . .	943
15.32	base_nrun_r_plikHM_TT_lowl_lowE_BK15_post_BAO_lensing . . . . .	944
15.33	base_nrun_r_plikHM_TT_lowl_lowE_BK15_post_zre6p5 . . . . .	945
15.34	base_nrun_r_plikHM_TT_lowl_lowE_BK15_post_BAO_zre6p5 . . . . .	946
15.35	base_nrun_r_plikHM_TT_lowl_lowE_BK15_post_lensing_zre6p5 . . . . .	947
15.36	base_nrun_r_plikHM_TT_lowl_lowE_BK15_post_BAO_lensing_zre6p5 . . . . .	948
15.37	base_nrun_r_plikHM_TTTEEE_lowl_lowE_BK15 . . . . .	949
15.38	base_nrun_r_plikHM_TTTEEE_lowl_lowE_BK15_post_BAO . . . . .	950
15.39	base_nrun_r_plikHM_TTTEEE_lowl_lowE_BK15_post_zre6p5 . . . . .	951
15.40	base_nrun_r_plikHM_TTTEEE_lowl_lowE_BK15_post_BAO_zre6p5 . . . . .	952
15.41	base_nrun_r_CamSpecHM_TT_lowl_lowE_BK15 . . . . .	953
15.42	base_nrun_r_CamSpecHM_TT_lowl_lowE_BK15_post_BAO . . . . .	954
15.43	base_nrun_r_CamSpecHM_TT_lowl_lowE_BK15_post_lensing . . . . .	955
15.44	base_nrun_r_CamSpecHM_TT_lowl_lowE_BK15_post_BAO_lensing . . . . .	956
15.45	base_nrun_r_CamSpecHM_TT_lowl_lowE_BK15_post_zre6p5 . . . . .	957
15.46	base_nrun_r_CamSpecHM_TT_lowl_lowE_BK15_post_BAO_zre6p5 . . . . .	958
15.47	base_nrun_r_CamSpecHM_TT_lowl_lowE_BK15_post_lensing_zre6p5 . . . . .	959
15.48	base_nrun_r_CamSpecHM_TT_lowl_lowE_BK15_post_BAO_lensing_zre6p5 . . . . .	960
15.49	base_nrun_r_CamSpecHM_TTTEEE_lowl_lowE_BK15 . . . . .	961
15.50	base_nrun_r_CamSpecHM_TTTEEE_lowl_lowE_BK15_post_BAO . . . . .	962
15.51	base_nrun_r_CamSpecHM_TTTEEE_lowl_lowE_BK15_post_lensing . . . . .	963
15.52	base_nrun_r_CamSpecHM_TTTEEE_lowl_lowE_BK15_post_BAO_lensing . . . . .	964
15.53	base_nrun_r_CamSpecHM_TTTEEE_lowl_lowE_BK15_post_zre6p5 . . . . .	965
15.54	base_nrun_r_CamSpecHM_TTTEEE_lowl_lowE_BK15_post_BAO_zre6p5 . . . . .	966
15.55	base_nrun_r_CamSpecHM_TTTEEE_lowl_lowE_BK15_post_lensing_zre6p5 . . . . .	967
15.56	base_nrun_r_CamSpecHM_TTTEEE_lowl_lowE_BK15_post_BAO_lensing_zre6p5 . . . . .	968
15.57	base_nrun_r_plikHM_TTTEEE_lowl_lowE_BK15_lensing . . . . .	969
15.58	base_nrun_r_plikHM_TTTEEE_lowl_lowE_BK15_lensing_post_BAO . . . . .	970
15.59	base_nrun_r_plikHM_TTTEEE_lowl_lowE_BK15_lensing_post_zre6p5 . . . . .	971
15.60	base_nrun_r_plikHM_TTTEEE_lowl_lowE_BK15_lensing_post_BAO_zre6p5 . . . . .	972



<b>16</b>	<b>omegak</b>	<b>973</b>
16.1	base_omegak_plikHM.TT_lowl_lowE . . . . .	973
16.2	base_omegak_plikHM.TT_lowl_lowE_post_zre6p5 . . . . .	974
16.3	base_omegak_plikHM.TTTEEE_lowl_lowE . . . . .	975
16.4	base_omegak_plikHM.TTTEEE_lowl_lowE_post_zre6p5 . . . . .	976
16.5	base_omegak_CamSpecHM.TT_lowl_lowE . . . . .	977
16.6	base_omegak_CamSpecHM.TT_lowl_lowE_post_zre6p5 . . . . .	978
16.7	base_omegak_CamSpecHM.TTTEEE_lowl_lowE . . . . .	979
16.8	base_omegak_CamSpecHM.TTTEEE_lowl_lowE_post_zre6p5 . . . . .	980
16.9	base_omegak_plikHM.TT_lowl_lowE_BAO . . . . .	981
16.10	base_omegak_plikHM.TT_lowl_lowE_BAO_post_lensing . . . . .	982
16.11	base_omegak_plikHM.TT_lowl_lowE_BAO_post_lensing_Pantheon18 . . . . .	983
16.12	base_omegak_plikHM.TT_lowl_lowE_BAO_post_zre6p5 . . . . .	984
16.13	base_omegak_plikHM.TT_lowl_lowE_BAO_post_lensing_zre6p5 . . . . .	985
16.14	base_omegak_plikHM.TT_lowl_lowE_BAO_post_lensing_Pantheon18_zre6p5 . . . . .	986
16.15	base_omegak_plikHM.TTTEEE_lowl_lowE_BAO . . . . .	987
16.16	base_omegak_plikHM.TTTEEE_lowl_lowE_BAO_post_lensing . . . . .	988
16.17	base_omegak_plikHM.TTTEEE_lowl_lowE_BAO_post_lensing_Pantheon18 . . . . .	989
16.18	base_omegak_plikHM.TTTEEE_lowl_lowE_BAO_post_zre6p5 . . . . .	990
16.19	base_omegak_plikHM.TTTEEE_lowl_lowE_BAO_post_lensing_zre6p5 . . . . .	991
16.20	base_omegak_plikHM.TTTEEE_lowl_lowE_BAO_post_lensing_Pantheon18_zre6p5 . . . . .	992
16.21	base_omegak_CamSpecHM.TT_lowl_lowE_BAO . . . . .	993
16.22	base_omegak_CamSpecHM.TT_lowl_lowE_BAO_post_lensing . . . . .	994
16.23	base_omegak_CamSpecHM.TT_lowl_lowE_BAO_post_lensing_Pantheon18 . . . . .	995
16.24	base_omegak_CamSpecHM.TT_lowl_lowE_BAO_post_zre6p5 . . . . .	996
16.25	base_omegak_CamSpecHM.TT_lowl_lowE_BAO_post_lensing_zre6p5 . . . . .	997
16.26	base_omegak_CamSpecHM.TT_lowl_lowE_BAO_post_lensing_Pantheon18_zre6p5 . . . . .	998
16.27	base_omegak_CamSpecHM.TTTEEE_lowl_lowE_BAO . . . . .	999
16.28	base_omegak_CamSpecHM.TTTEEE_lowl_lowE_BAO_post_lensing . . . . .	1000
16.29	base_omegak_CamSpecHM.TTTEEE_lowl_lowE_BAO_post_lensing_Pantheon18 . . . . .	1001
16.30	base_omegak_CamSpecHM.TTTEEE_lowl_lowE_BAO_post_zre6p5 . . . . .	1002
16.31	base_omegak_CamSpecHM.TTTEEE_lowl_lowE_BAO_post_lensing_zre6p5 . . . . .	1003
16.32	base_omegak_CamSpecHM.TTTEEE_lowl_lowE_BAO_post_lensing_Pantheon18_zre6p5 . . . . .	1004
16.33	base_omegak_plikHM.TT_lowl_lowE_BAO_Riess18_JLA . . . . .	1005
16.34	base_omegak_plikHM.TT_lowl_lowE_BAO_Riess18_JLA_post_lensing . . . . .	1006
16.35	base_omegak_plikHM.TT_lowl_lowE_BAO_Riess18_JLA_post_zre6p5 . . . . .	1007
16.36	base_omegak_plikHM.TT_lowl_lowE_BAO_Riess18_JLA_post_lensing_zre6p5 . . . . .	1008
16.37	base_omegak_plikHM.TTTEEE_lowl_lowE_BAO_Riess18_JLA . . . . .	1009
16.38	base_omegak_plikHM.TTTEEE_lowl_lowE_BAO_Riess18_JLA_post_lensing . . . . .	1010
16.39	base_omegak_plikHM.TTTEEE_lowl_lowE_BAO_Riess18_JLA_post_zre6p5 . . . . .	1011
16.40	base_omegak_plikHM.TTTEEE_lowl_lowE_BAO_Riess18_JLA_post_lensing_zre6p5 . . . . .	1012
16.41	base_omegak_plikHM.TT_lowl_lowE_lensing . . . . .	1013
16.42	base_omegak_plikHM.TT_lowl_lowE_lensing_post_zre6p5 . . . . .	1014
16.43	base_omegak_plikHM.TTTEEE_lowl_lowE_lensing . . . . .	1015
16.44	base_omegak_plikHM.TTTEEE_lowl_lowE_lensing_post_zre6p5 . . . . .	1016
16.45	base_omegak_CamSpecHM.TT_lowl_lowE_lensing . . . . .	1017
16.46	base_omegak_CamSpecHM.TT_lowl_lowE_lensing_post_zre6p5 . . . . .	1018
16.47	base_omegak_CamSpecHM.TTTEEE_lowl_lowE_lensing . . . . .	1019
16.48	base_omegak_CamSpecHM.TTTEEE_lowl_lowE_lensing_post_zre6p5 . . . . .	1020
16.49	base_omegak_CleanedCamSpecHM.TT_lowl_lowE . . . . .	1021
<b>17</b>	<b>r</b>	<b>1022</b>
17.1	base_r_plikHM.TT_lowl_lowE . . . . .	1022
17.2	base_r_plikHM.TT_lowl_lowE_post_BAO . . . . .	1023
17.3	base_r_plikHM.TT_lowl_lowE_post_Riess18 . . . . .	1024
17.4	base_r_plikHM.TT_lowl_lowE_post_zre6p5 . . . . .	1025
17.5	base_r_plikHM.TT_lowl_lowE_post_BAO_zre6p5 . . . . .	1026
17.6	base_r_plikHM.TT_lowl_lowE_post_Riess18_zre6p5 . . . . .	1027
17.7	base_r_plikHM.TTTEEE_lowl_lowE . . . . .	1028
17.8	base_r_plikHM.TTTEEE_lowl_lowE_post_BAO . . . . .	1029
17.9	base_r_plikHM.TTTEEE_lowl_lowE_post_Riess18 . . . . .	1030
17.10	base_r_plikHM.TTTEEE_lowl_lowE_post_zre6p5 . . . . .	1031
17.11	base_r_plikHM.TTTEEE_lowl_lowE_post_BAO_zre6p5 . . . . .	1032
17.12	base_r_plikHM.TTTEEE_lowl_lowE_post_Riess18_zre6p5 . . . . .	1033
17.13	base_r_CamSpecHM.TT_lowl_lowE . . . . .	1034
17.14	base_r_CamSpecHM.TT_lowl_lowE_post_BAO . . . . .	1035
17.15	base_r_CamSpecHM.TT_lowl_lowE_post_zre6p5 . . . . .	1036
17.16	base_r_CamSpecHM.TT_lowl_lowE_post_BAO_zre6p5 . . . . .	1037



17.17	base_r_CamSpecHM_TTTEEE_lowl_lowE . . . . .	1038
17.18	base_r_CamSpecHM_TTTEEE_lowl_lowE_post_BAO . . . . .	1039
17.19	base_r_CamSpecHM_TTTEEE_lowl_lowE_post_zre6p5 . . . . .	1040
17.20	base_r_CamSpecHM_TTTEEE_lowl_lowE_post_BAO_zre6p5 . . . . .	1041
17.21	base_r_plikHM_TE_lowE . . . . .	1042
17.22	base_r_plikHM_TE_lowE_post_BAO . . . . .	1043
17.23	base_r_plikHM_TE_lowE_post_zre6p5 . . . . .	1044
17.24	base_r_plikHM_TE_lowE_post_BAO_zre6p5 . . . . .	1045
17.25	base_r_plikHM_EE_lowE . . . . .	1046
17.26	base_r_plikHM_EE_lowE_post_BAO . . . . .	1047
17.27	base_r_plikHM_EE_lowE_post_zre6p5 . . . . .	1048
17.28	base_r_plikHM_EE_lowE_post_BAO_zre6p5 . . . . .	1049
17.29	base_r_plikHM_TT_lowl_lowE_lensing . . . . .	1050
17.30	base_r_plikHM_TT_lowl_lowE_lensing_post_BAO . . . . .	1051
17.31	base_r_plikHM_TT_lowl_lowE_lensing_post_zre6p5 . . . . .	1052
17.32	base_r_plikHM_TT_lowl_lowE_lensing_post_BAO_zre6p5 . . . . .	1053
17.33	base_r_plikHM_TTTEEE_lowl_lowE_lensing . . . . .	1054
17.34	base_r_plikHM_TTTEEE_lowl_lowE_lensing_post_BAO . . . . .	1055
17.35	base_r_plikHM_TTTEEE_lowl_lowE_lensing_post_zre6p5 . . . . .	1056
17.36	base_r_plikHM_TTTEEE_lowl_lowE_lensing_post_BAO_zre6p5 . . . . .	1057
17.37	base_r_CamSpecHM_TTTEEE_lowl_lowE_lensing . . . . .	1058
17.38	base_r_CamSpecHM_TTTEEE_lowl_lowE_lensing_post_BAO . . . . .	1059
17.39	base_r_CamSpecHM_TTTEEE_lowl_lowE_lensing_post_zre6p5 . . . . .	1060
17.40	base_r_CamSpecHM_TTTEEE_lowl_lowE_lensing_post_BAO_zre6p5 . . . . .	1061
17.41	base_r_CleanedCamSpecHM_TT_lowl_lowE . . . . .	1062
17.42	base_r_plikHM_TT_lowl_lowE_BK15 . . . . .	1063
17.43	base_r_plikHM_TT_lowl_lowE_BK15_post_BAO . . . . .	1064
17.44	base_r_plikHM_TT_lowl_lowE_BK15_post_lensing . . . . .	1065
17.45	base_r_plikHM_TT_lowl_lowE_BK15_post_BAO_lensing . . . . .	1066
17.46	base_r_plikHM_TT_lowl_lowE_BK15_post_zre6p5 . . . . .	1067
17.47	base_r_plikHM_TT_lowl_lowE_BK15_post_BAO_zre6p5 . . . . .	1068
17.48	base_r_plikHM_TT_lowl_lowE_BK15_post_lensing_zre6p5 . . . . .	1069
17.49	base_r_plikHM_TT_lowl_lowE_BK15_post_BAO_lensing_zre6p5 . . . . .	1070
17.50	base_r_plikHM_TTTEEE_lowl_lowE_BK15 . . . . .	1071
17.51	base_r_plikHM_TTTEEE_lowl_lowE_BK15_post_BAO . . . . .	1072
17.52	base_r_plikHM_TTTEEE_lowl_lowE_BK15_post_zre6p5 . . . . .	1073
17.53	base_r_plikHM_TTTEEE_lowl_lowE_BK15_post_BAO_zre6p5 . . . . .	1074
17.54	base_r_CamSpecHM_TT_lowl_lowE_BK15 . . . . .	1075
17.55	base_r_CamSpecHM_TT_lowl_lowE_BK15_post_BAO . . . . .	1076
17.56	base_r_CamSpecHM_TT_lowl_lowE_BK15_post_lensing . . . . .	1077
17.57	base_r_CamSpecHM_TT_lowl_lowE_BK15_post_BAO_lensing . . . . .	1078
17.58	base_r_CamSpecHM_TT_lowl_lowE_BK15_post_zre6p5 . . . . .	1079
17.59	base_r_CamSpecHM_TT_lowl_lowE_BK15_post_BAO_zre6p5 . . . . .	1080
17.60	base_r_CamSpecHM_TT_lowl_lowE_BK15_post_lensing_zre6p5 . . . . .	1081
17.61	base_r_CamSpecHM_TT_lowl_lowE_BK15_post_BAO_lensing_zre6p5 . . . . .	1082
17.62	base_r_CamSpecHM_TTTEEE_lowl_lowE_BK15 . . . . .	1083
17.63	base_r_CamSpecHM_TTTEEE_lowl_lowE_BK15_post_BAO . . . . .	1084
17.64	base_r_CamSpecHM_TTTEEE_lowl_lowE_BK15_post_lensing . . . . .	1085
17.65	base_r_CamSpecHM_TTTEEE_lowl_lowE_BK15_post_BAO_lensing . . . . .	1086
17.66	base_r_CamSpecHM_TTTEEE_lowl_lowE_BK15_post_zre6p5 . . . . .	1087
17.67	base_r_CamSpecHM_TTTEEE_lowl_lowE_BK15_post_BAO_zre6p5 . . . . .	1088
17.68	base_r_CamSpecHM_TTTEEE_lowl_lowE_BK15_post_lensing_zre6p5 . . . . .	1089
17.69	base_r_CamSpecHM_TTTEEE_lowl_lowE_BK15_post_BAO_lensing_zre6p5 . . . . .	1090
17.70	base_r_plikHM_TTTEEE_lowl_lowE_BK15_lensing . . . . .	1091
17.71	base_r_plikHM_TTTEEE_lowl_lowE_BK15_lensing_post_BAO . . . . .	1092
17.72	base_r_plikHM_TTTEEE_lowl_lowE_BK15_lensing_post_zre6p5 . . . . .	1093
17.73	base_r_plikHM_TTTEEE_lowl_lowE_BK15_lensing_post_BAO_zre6p5 . . . . .	1094
<b>18</b>	<b>w</b>	<b>1095</b>
18.1	base_w_plikHM_TT_lowl_lowE . . . . .	1095
18.2	base_w_plikHM_TT_lowl_lowE_post_lensing . . . . .	1096
18.3	base_w_plikHM_TT_lowl_lowE_post_Riess18 . . . . .	1097
18.4	base_w_plikHM_TT_lowl_lowE_post_zre6p5 . . . . .	1098
18.5	base_w_plikHM_TT_lowl_lowE_post_lensing_zre6p5 . . . . .	1099
18.6	base_w_plikHM_TT_lowl_lowE_post_Riess18_zre6p5 . . . . .	1100
18.7	base_w_plikHM_TTTEEE_lowl_lowE . . . . .	1101
18.8	base_w_plikHM_TTTEEE_lowl_lowE_post_lensing . . . . .	1102
18.9	base_w_plikHM_TTTEEE_lowl_lowE_post_Riess18 . . . . .	1103



18.10	base_w_plikHM_TTTEEE_lowl_lowE_post_zre6p5 . . . . .	1104
18.11	base_w_plikHM_TTTEEE_lowl_lowE_post_lensing_zre6p5 . . . . .	1105
18.12	base_w_plikHM_TTTEEE_lowl_lowE_post_Riess18_zre6p5 . . . . .	1106
18.13	base_w_CamSpecHM_TT_lowl_lowE . . . . .	1107
18.14	base_w_CamSpecHM_TT_lowl_lowE_post_lensing . . . . .	1108
18.15	base_w_CamSpecHM_TT_lowl_lowE_post_zre6p5 . . . . .	1109
18.16	base_w_CamSpecHM_TT_lowl_lowE_post_lensing_zre6p5 . . . . .	1110
18.17	base_w_CamSpecHM_TTTEEE_lowl_lowE . . . . .	1111
18.18	base_w_CamSpecHM_TTTEEE_lowl_lowE_post_lensing . . . . .	1112
18.19	base_w_CamSpecHM_TTTEEE_lowl_lowE_post_Riess18 . . . . .	1113
18.20	base_w_CamSpecHM_TTTEEE_lowl_lowE_post_zre6p5 . . . . .	1114
18.21	base_w_CamSpecHM_TTTEEE_lowl_lowE_post_lensing_zre6p5 . . . . .	1115
18.22	base_w_CamSpecHM_TTTEEE_lowl_lowE_post_Riess18_zre6p5 . . . . .	1116
18.23	base_w_plikHM_TT_lowl_lowE_BAO . . . . .	1117
18.24	base_w_plikHM_TT_lowl_lowE_BAO_post_lensing . . . . .	1118
18.25	base_w_plikHM_TT_lowl_lowE_BAO_post_zre6p5 . . . . .	1119
18.26	base_w_plikHM_TT_lowl_lowE_BAO_post_lensing_zre6p5 . . . . .	1120
18.27	base_w_plikHM_TTTEEE_lowl_lowE_BAO . . . . .	1121
18.28	base_w_plikHM_TTTEEE_lowl_lowE_BAO_post_lensing . . . . .	1122
18.29	base_w_plikHM_TTTEEE_lowl_lowE_BAO_post_zre6p5 . . . . .	1123
18.30	base_w_plikHM_TTTEEE_lowl_lowE_BAO_post_lensing_zre6p5 . . . . .	1124
18.31	base_w_CamSpecHM_TTTEEE_lowl_lowE_BAO . . . . .	1125
18.32	base_w_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_lensing . . . . .	1126
18.33	base_w_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_zre6p5 . . . . .	1127
18.34	base_w_CamSpecHM_TTTEEE_lowl_lowE_BAO_post_lensing_zre6p5 . . . . .	1128
18.35	base_w_plikHM_TT_lowl_lowE_BAO_Riess18_JLA . . . . .	1129
18.36	base_w_plikHM_TT_lowl_lowE_BAO_Riess18_JLA_post_lensing . . . . .	1130
18.37	base_w_plikHM_TT_lowl_lowE_BAO_Riess18_JLA_post_zre6p5 . . . . .	1131
18.38	base_w_plikHM_TT_lowl_lowE_BAO_Riess18_JLA_post_lensing_zre6p5 . . . . .	1132
18.39	base_w_plikHM_TTTEEE_lowl_lowE_BAO_Riess18_JLA . . . . .	1133
18.40	base_w_plikHM_TTTEEE_lowl_lowE_BAO_Riess18_JLA_post_lensing . . . . .	1134
18.41	base_w_plikHM_TTTEEE_lowl_lowE_BAO_Riess18_JLA_post_zre6p5 . . . . .	1135
18.42	base_w_plikHM_TTTEEE_lowl_lowE_BAO_Riess18_JLA_post_lensing_zre6p5 . . . . .	1136
18.43	base_w_plikHM_TT_lowl_lowE_BAO_Pantheon18 . . . . .	1137
18.44	base_w_plikHM_TT_lowl_lowE_BAO_Pantheon18_post_lensing . . . . .	1138
18.45	base_w_plikHM_TT_lowl_lowE_BAO_Pantheon18_post_zre6p5 . . . . .	1139
18.46	base_w_plikHM_TT_lowl_lowE_BAO_Pantheon18_post_lensing_zre6p5 . . . . .	1140
18.47	base_w_plikHM_TTTEEE_lowl_lowE_BAO_Pantheon18 . . . . .	1141
18.48	base_w_plikHM_TTTEEE_lowl_lowE_BAO_Pantheon18_post_lensing . . . . .	1142
18.49	base_w_plikHM_TTTEEE_lowl_lowE_BAO_Pantheon18_post_zre6p5 . . . . .	1143
18.50	base_w_plikHM_TTTEEE_lowl_lowE_BAO_Pantheon18_post_lensing_zre6p5 . . . . .	1144
18.51	base_w_CamSpecHM_TT_lowl_lowE_BAO_Pantheon18 . . . . .	1145
18.52	base_w_CamSpecHM_TT_lowl_lowE_BAO_Pantheon18_post_lensing . . . . .	1146
18.53	base_w_CamSpecHM_TT_lowl_lowE_BAO_Pantheon18_post_zre6p5 . . . . .	1147
18.54	base_w_CamSpecHM_TT_lowl_lowE_BAO_Pantheon18_post_lensing_zre6p5 . . . . .	1148
18.55	base_w_CamSpecHM_TTTEEE_lowl_lowE_BAO_Pantheon18 . . . . .	1149
18.56	base_w_CamSpecHM_TTTEEE_lowl_lowE_BAO_Pantheon18_post_lensing . . . . .	1150
18.57	base_w_CamSpecHM_TTTEEE_lowl_lowE_BAO_Pantheon18_post_zre6p5 . . . . .	1151
18.58	base_w_CamSpecHM_TTTEEE_lowl_lowE_BAO_Pantheon18_post_lensing_zre6p5 . . . . .	1152
18.59	base_w_plikHM_TT_lowl_lowE_BAO_Riess18_Pantheon18 . . . . .	1153
18.60	base_w_plikHM_TT_lowl_lowE_BAO_Riess18_Pantheon18_post_lensing . . . . .	1154
18.61	base_w_plikHM_TT_lowl_lowE_BAO_Riess18_Pantheon18_post_zre6p5 . . . . .	1155
18.62	base_w_plikHM_TT_lowl_lowE_BAO_Riess18_Pantheon18_post_lensing_zre6p5 . . . . .	1156
18.63	base_w_plikHM_TTTEEE_lowl_lowE_BAO_Riess18_Pantheon18 . . . . .	1157
18.64	base_w_plikHM_TTTEEE_lowl_lowE_BAO_Riess18_Pantheon18_post_lensing . . . . .	1158
18.65	base_w_plikHM_TTTEEE_lowl_lowE_BAO_Riess18_Pantheon18_post_zre6p5 . . . . .	1159
18.66	base_w_plikHM_TTTEEE_lowl_lowE_BAO_Riess18_Pantheon18_post_lensing_zre6p5 . . . . .	1160
18.67	base_w_CamSpecHM_TT_lowl_lowE_BAO_Riess18_Pantheon18 . . . . .	1161
18.68	base_w_CamSpecHM_TT_lowl_lowE_BAO_Riess18_Pantheon18_post_lensing . . . . .	1162
18.69	base_w_CamSpecHM_TT_lowl_lowE_BAO_Riess18_Pantheon18_post_zre6p5 . . . . .	1163
18.70	base_w_CamSpecHM_TT_lowl_lowE_BAO_Riess18_Pantheon18_post_lensing_zre6p5 . . . . .	1164
18.71	base_w_CamSpecHM_TTTEEE_lowl_lowE_BAO_Riess18_Pantheon18 . . . . .	1165
18.72	base_w_CamSpecHM_TTTEEE_lowl_lowE_BAO_Riess18_Pantheon18_post_lensing . . . . .	1166
18.73	base_w_CamSpecHM_TTTEEE_lowl_lowE_BAO_Riess18_Pantheon18_post_zre6p5 . . . . .	1167
18.74	base_w_CamSpecHM_TTTEEE_lowl_lowE_BAO_Riess18_Pantheon18_post_lensing_zre6p5 . . . . .	1168
18.75	base_w_CleanedCamSpecHM_TT_lowl_lowE . . . . .	1169



<b>19</b>	<b>w+wa</b>	<b>1170</b>
19.1	base_w_wa_plikHM_TT_lowl_lowE_BAO . . . . .	1170
19.2	base_w_wa_plikHM_TT_lowl_lowE_BAO_post_lensing . . . . .	1171
19.3	base_w_wa_plikHM_TT_lowl_lowE_BAO_post_zre6p5 . . . . .	1172
19.4	base_w_wa_plikHM_TT_lowl_lowE_BAO_post_lensing_zre6p5 . . . . .	1173
19.5	base_w_wa_plikHM_TTTEEE_lowl_lowE_BAO . . . . .	1174
19.6	base_w_wa_plikHM_TTTEEE_lowl_lowE_BAO_post_lensing . . . . .	1175
19.7	base_w_wa_plikHM_TTTEEE_lowl_lowE_BAO_post_zre6p5 . . . . .	1176
19.8	base_w_wa_plikHM_TTTEEE_lowl_lowE_BAO_post_lensing_zre6p5 . . . . .	1177
19.9	base_w_wa_plikHM_TT_lowl_lowE_BAO_Riess18_JLA . . . . .	1178
19.10	base_w_wa_plikHM_TT_lowl_lowE_BAO_Riess18_JLA_post_lensing . . . . .	1179
19.11	base_w_wa_plikHM_TT_lowl_lowE_BAO_Riess18_JLA_post_zre6p5 . . . . .	1180
19.12	base_w_wa_plikHM_TT_lowl_lowE_BAO_Riess18_JLA_post_lensing_zre6p5 . . . . .	1181
19.13	base_w_wa_plikHM_TTTEEE_lowl_lowE_BAO_Riess18_JLA . . . . .	1182
19.14	base_w_wa_plikHM_TTTEEE_lowl_lowE_BAO_Riess18_JLA_post_lensing . . . . .	1183
19.15	base_w_wa_plikHM_TTTEEE_lowl_lowE_BAO_Riess18_JLA_post_zre6p5 . . . . .	1184
19.16	base_w_wa_plikHM_TTTEEE_lowl_lowE_BAO_Riess18_JLA_post_lensing_zre6p5 . . . . .	1185
19.17	base_w_wa_plikHM_TT_lowl_lowE_BAO_Pantheon18 . . . . .	1186
19.18	base_w_wa_plikHM_TT_lowl_lowE_BAO_Pantheon18_post_lensing . . . . .	1187
19.19	base_w_wa_plikHM_TT_lowl_lowE_BAO_Pantheon18_post_zre6p5 . . . . .	1188
19.20	base_w_wa_plikHM_TT_lowl_lowE_BAO_Pantheon18_post_lensing_zre6p5 . . . . .	1189
19.21	base_w_wa_plikHM_TTTEEE_lowl_lowE_BAO_Pantheon18 . . . . .	1190
19.22	base_w_wa_plikHM_TTTEEE_lowl_lowE_BAO_Pantheon18_post_lensing . . . . .	1191
19.23	base_w_wa_plikHM_TTTEEE_lowl_lowE_BAO_Pantheon18_post_zre6p5 . . . . .	1192
19.24	base_w_wa_plikHM_TTTEEE_lowl_lowE_BAO_Pantheon18_post_lensing_zre6p5 . . . . .	1193
19.25	base_w_wa_CamSpecHM_TT_lowl_lowE_BAO_Pantheon18 . . . . .	1194
19.26	base_w_wa_CamSpecHM_TT_lowl_lowE_BAO_Pantheon18_post_lensing . . . . .	1195
19.27	base_w_wa_CamSpecHM_TT_lowl_lowE_BAO_Pantheon18_post_zre6p5 . . . . .	1196
19.28	base_w_wa_CamSpecHM_TT_lowl_lowE_BAO_Pantheon18_post_lensing_zre6p5 . . . . .	1197
19.29	base_w_wa_CamSpecHM_TTTEEE_lowl_lowE_BAO_Pantheon18 . . . . .	1198
19.30	base_w_wa_CamSpecHM_TTTEEE_lowl_lowE_BAO_Pantheon18_post_lensing . . . . .	1199
19.31	base_w_wa_CamSpecHM_TTTEEE_lowl_lowE_BAO_Pantheon18_post_zre6p5 . . . . .	1200
19.32	base_w_wa_CamSpecHM_TTTEEE_lowl_lowE_BAO_Pantheon18_post_lensing_zre6p5 . . . . .	1201
19.33	base_w_wa_plikHM_TT_lowl_lowE_BAO_Riess18_Pantheon18 . . . . .	1202
19.34	base_w_wa_plikHM_TT_lowl_lowE_BAO_Riess18_Pantheon18_post_lensing . . . . .	1203
19.35	base_w_wa_plikHM_TT_lowl_lowE_BAO_Riess18_Pantheon18_post_zre6p5 . . . . .	1204
19.36	base_w_wa_plikHM_TT_lowl_lowE_BAO_Riess18_Pantheon18_post_lensing_zre6p5 . . . . .	1205
19.37	base_w_wa_plikHM_TTTEEE_lowl_lowE_BAO_Riess18_Pantheon18 . . . . .	1206
19.38	base_w_wa_plikHM_TTTEEE_lowl_lowE_BAO_Riess18_Pantheon18_post_lensing . . . . .	1207
19.39	base_w_wa_plikHM_TTTEEE_lowl_lowE_BAO_Riess18_Pantheon18_post_zre6p5 . . . . .	1208
19.40	base_w_wa_plikHM_TTTEEE_lowl_lowE_BAO_Riess18_Pantheon18_post_lensing_zre6p5 . . . . .	1209
19.41	base_w_wa_CamSpecHM_TT_lowl_lowE_BAO_Riess18_Pantheon18 . . . . .	1210
19.42	base_w_wa_CamSpecHM_TT_lowl_lowE_BAO_Riess18_Pantheon18_post_lensing . . . . .	1211
19.43	base_w_wa_CamSpecHM_TT_lowl_lowE_BAO_Riess18_Pantheon18_post_zre6p5 . . . . .	1212
19.44	base_w_wa_CamSpecHM_TT_lowl_lowE_BAO_Riess18_Pantheon18_post_lensing_zre6p5 . . . . .	1213
19.45	base_w_wa_CamSpecHM_TTTEEE_lowl_lowE_BAO_Riess18_Pantheon18 . . . . .	1214
19.46	base_w_wa_CamSpecHM_TTTEEE_lowl_lowE_BAO_Riess18_Pantheon18_post_lensing . . . . .	1215
19.47	base_w_wa_CamSpecHM_TTTEEE_lowl_lowE_BAO_Riess18_Pantheon18_post_zre6p5 . . . . .	1216
19.48	base_w_wa_CamSpecHM_TTTEEE_lowl_lowE_BAO_Riess18_Pantheon18_post_lensing_zre6p5 . . . . .	1217
<b>20</b>	<b>yhe</b>	<b>1218</b>
20.1	base_yhe_plikHM_TT_lowl_lowE . . . . .	1218
20.2	base_yhe_plikHM_TT_lowl_lowE_post_BAO . . . . .	1219
20.3	base_yhe_plikHM_TT_lowl_lowE_post_lensing . . . . .	1220
20.4	base_yhe_plikHM_TT_lowl_lowE_post_BAO_lensing . . . . .	1221
20.5	base_yhe_plikHM_TT_lowl_lowE_post_Riess18 . . . . .	1222
20.6	base_yhe_plikHM_TT_lowl_lowE_post_zre6p5 . . . . .	1223
20.7	base_yhe_plikHM_TT_lowl_lowE_post_BAO_zre6p5 . . . . .	1224
20.8	base_yhe_plikHM_TT_lowl_lowE_post_lensing_zre6p5 . . . . .	1225
20.9	base_yhe_plikHM_TT_lowl_lowE_post_BAO_lensing_zre6p5 . . . . .	1226
20.10	base_yhe_plikHM_TT_lowl_lowE_post_Riess18_zre6p5 . . . . .	1227
20.11	base_yhe_plikHM_TTTEEE_lowl_lowE . . . . .	1228
20.12	base_yhe_plikHM_TTTEEE_lowl_lowE_post_BAO . . . . .	1229
20.13	base_yhe_plikHM_TTTEEE_lowl_lowE_post_lensing . . . . .	1230
20.14	base_yhe_plikHM_TTTEEE_lowl_lowE_post_BAO_lensing . . . . .	1231
20.15	base_yhe_plikHM_TTTEEE_lowl_lowE_post_Riess18 . . . . .	1232
20.16	base_yhe_plikHM_TTTEEE_lowl_lowE_post_zre6p5 . . . . .	1233
20.17	base_yhe_plikHM_TTTEEE_lowl_lowE_post_BAO_zre6p5 . . . . .	1234



20.18	base_yhe.plikHM.TTTEEE_lowl_lowE_post_lensing_zre6p5	1235
20.19	base_yhe.plikHM.TTTEEE_lowl_lowE_post_BAO_lensing_zre6p5	1236
20.20	base_yhe.plikHM.TTTEEE_lowl_lowE_post_Riess18_zre6p5	1237
20.21	base_yhe.CamSpecHM.TT_lowl_lowE	1238
20.22	base_yhe.CamSpecHM.TT_lowl_lowE_post_BAO	1239
20.23	base_yhe.CamSpecHM.TT_lowl_lowE_post_lensing	1240
20.24	base_yhe.CamSpecHM.TT_lowl_lowE_post_BAO_lensing	1241
20.25	base_yhe.CamSpecHM.TT_lowl_lowE_post_zre6p5	1242
20.26	base_yhe.CamSpecHM.TT_lowl_lowE_post_BAO_zre6p5	1243
20.27	base_yhe.CamSpecHM.TT_lowl_lowE_post_lensing_zre6p5	1244
20.28	base_yhe.CamSpecHM.TT_lowl_lowE_post_BAO_lensing_zre6p5	1245
20.29	base_yhe.CamSpecHM.TTTEEE_lowl_lowE	1246
20.30	base_yhe.CamSpecHM.TTTEEE_lowl_lowE_post_BAO	1247
20.31	base_yhe.CamSpecHM.TTTEEE_lowl_lowE_post_lensing	1248
20.32	base_yhe.CamSpecHM.TTTEEE_lowl_lowE_post_BAO_lensing	1249
20.33	base_yhe.CamSpecHM.TTTEEE_lowl_lowE_post_Riess18	1250
20.34	base_yhe.CamSpecHM.TTTEEE_lowl_lowE_post_zre6p5	1251
20.35	base_yhe.CamSpecHM.TTTEEE_lowl_lowE_post_BAO_zre6p5	1252
20.36	base_yhe.CamSpecHM.TTTEEE_lowl_lowE_post_lensing_zre6p5	1253
20.37	base_yhe.CamSpecHM.TTTEEE_lowl_lowE_post_BAO_lensing_zre6p5	1254
20.38	base_yhe.CamSpecHM.TTTEEE_lowl_lowE_post_Riess18_zre6p5	1255
20.39	base_yhe.plikHM.TE_lowE	1256
20.40	base_yhe.plikHM.TE_lowE_post_BAO	1257
20.41	base_yhe.plikHM.TE_lowE_post_zre6p5	1258
20.42	base_yhe.plikHM.TE_lowE_post_BAO_zre6p5	1259
20.43	base_yhe.plikHM.EE_lowE	1260
20.44	base_yhe.plikHM.EE_lowE_post_BAO	1261
20.45	base_yhe.plikHM.EE_lowE_post_zre6p5	1262
20.46	base_yhe.plikHM.EE_lowE_post_BAO_zre6p5	1263
20.47	base_yhe.plikHM.TT_lowl_lowE_Aver15	1264
20.48	base_yhe.plikHM.TT_lowl_lowE_Aver15_post_BAO	1265
20.49	base_yhe.plikHM.TT_lowl_lowE_Aver15_post_lensing	1266
20.50	base_yhe.plikHM.TT_lowl_lowE_Aver15_post_BAO_lensing	1267
20.51	base_yhe.plikHM.TT_lowl_lowE_Aver15_post_zre6p5	1268
20.52	base_yhe.plikHM.TT_lowl_lowE_Aver15_post_BAO_zre6p5	1269
20.53	base_yhe.plikHM.TT_lowl_lowE_Aver15_post_lensing_zre6p5	1270
20.54	base_yhe.plikHM.TT_lowl_lowE_Aver15_post_BAO_lensing_zre6p5	1271
20.55	base_yhe.plikHM.TTTEEE_lowl_lowE_Aver15	1272
20.56	base_yhe.plikHM.TTTEEE_lowl_lowE_Aver15_post_BAO	1273
20.57	base_yhe.plikHM.TTTEEE_lowl_lowE_Aver15_post_lensing	1274
20.58	base_yhe.plikHM.TTTEEE_lowl_lowE_Aver15_post_BAO_lensing	1275
20.59	base_yhe.plikHM.TTTEEE_lowl_lowE_Aver15_post_zre6p5	1276
20.60	base_yhe.plikHM.TTTEEE_lowl_lowE_Aver15_post_BAO_zre6p5	1277
20.61	base_yhe.plikHM.TTTEEE_lowl_lowE_Aver15_post_lensing_zre6p5	1278
20.62	base_yhe.plikHM.TTTEEE_lowl_lowE_Aver15_post_BAO_lensing_zre6p5	1279
20.63	base_yhe.CamSpecHM.TTTEEE_lowl_lowE_Aver15	1280
20.64	base_yhe.CamSpecHM.TTTEEE_lowl_lowE_Aver15_post_BAO	1281
20.65	base_yhe.CamSpecHM.TTTEEE_lowl_lowE_Aver15_post_lensing	1282
20.66	base_yhe.CamSpecHM.TTTEEE_lowl_lowE_Aver15_post_BAO_lensing	1283
20.67	base_yhe.CamSpecHM.TTTEEE_lowl_lowE_Aver15_post_zre6p5	1284
20.68	base_yhe.CamSpecHM.TTTEEE_lowl_lowE_Aver15_post_BAO_zre6p5	1285
20.69	base_yhe.CamSpecHM.TTTEEE_lowl_lowE_Aver15_post_lensing_zre6p5	1286
20.70	base_yhe.CamSpecHM.TTTEEE_lowl_lowE_Aver15_post_BAO_lensing_zre6p5	1287
20.71	base_yhe.CleanedCamSpecHM.TT_lowl_lowE	1288



## 2 Baseline model

### 2.1 base\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022126	$0.02212 \pm 0.00022$	$\sigma_8 \Omega_m^{0.25}$	0.6116	$0.611 \pm 0.012$	$H(0.15)$	72.23	$72.25 \pm 0.78$
$\Omega_c h^2$	0.12068	$0.1206 \pm 0.0021$	$\sigma_8/h^{0.5}$	0.9938	$0.993 \pm 0.016$	$D_M(0.15)$	647.8	$647.7 \pm 7.9$
$100\theta_{MC}$	1.040748	$1.04077 \pm 0.00047$	$r_{drag}h$	98.40	$98.5 \pm 1.6$	$H(0.38)$	82.50	$82.52 \pm 0.56$
$\tau$	0.0523	$0.0522 \pm 0.0080$	$\langle d^2 \rangle^{1/2}$	2.4537	$2.454 \pm 0.038$	$D_M(0.38)$	1542.6	$1542 \pm 16$
$\ln(10^{10} A_s)$	3.0413	$3.040 \pm 0.016$	$z_{re}$	7.54	$7.50 \pm 0.82$	$H(0.51)$	89.310	$89.32 \pm 0.44$
$n_s$	0.9635	$0.9626 \pm 0.0057$	$10^9 A_s$	2.0933	$2.092 \pm 0.034$	$D_M(0.51)$	1996.8	$1997 \pm 18$
$y_{cal}$	1.00046	$1.0004 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8853	$1.884 \pm 0.014$	$H(0.61)$	94.998	$95.01 \pm 0.35$
$A_{217}^{CIB}$	48.5	$48 \pm 7$	$D_{40}$	1231.7	$1234 \pm 15$	$D_M(0.61)$	2322.3	$2322 \pm 20$
$\xi^{tSZ \times CIB}$	0.32	—	$D_{220}$	5710.4	$5713 \pm 42$	$H(2.33)$	236.75	$236.7 \pm 1.3$
$A_{143}^{tSZ}$	7.03	$5.1 \pm 2.0$	$D_{810}$	2538.2	$2536 \pm 14$	$D_M(2.33)$	5777.8	$5778 \pm 16$
$A_{100}^{PS}$	254.9	$263 \pm 28$	$D_{1420}$	815.5	$814.4 \pm 5.1$	$f\sigma_8(0.15)$	0.4642	$0.464 \pm 0.012$
$A_{143}^{PS}$	49.8	$49 \pm 8$	$D_{2000}$	229.94	$229.5 \pm 1.8$	$\sigma_8(0.15)$	0.7500	$0.7492 \pm 0.0075$
$A_{143 \times 217}^{PS}$	47.3	$44 \pm 9$	$n_{s,0.002}$	0.9635	$0.9626 \pm 0.0057$	$f\sigma_8(0.38)$	0.4804	$0.4798 \pm 0.0095$
$A_{217}^{PS}$	119.9	$115 \pm 10$	$Y_P$	0.245295	$0.24529^{+0.00011}_{-0.000088}$	$\sigma_8(0.38)$	0.6638	$0.6631 \pm 0.0060$
$A^{kSZ}$	0.00	$< 4.84$	$Y_P^{BBN}$	0.246621	$0.24661^{+0.00011}_{-0.000089}$	$f\sigma_8(0.51)$	0.4779	$0.4773 \pm 0.0082$
$A_{100}^{dustTT}$	8.86	$8.9 \pm 1.8$	$10^5 D/H$	2.6321	$2.634 \pm 0.042$	$\sigma_8(0.51)$	0.6208	$0.6202 \pm 0.0055$
$A_{143}^{dustTT}$	10.80	$10.7 \pm 1.8$	Age/Gyr	13.8300	$13.830 \pm 0.037$	$f\sigma_8(0.61)$	0.4722	$0.4716 \pm 0.0072$
$A_{143 \times 217}^{dustTT}$	19.43	$18.3 \pm 3.3$	$z_*$	1090.292	$1090.30 \pm 0.41$	$\sigma_8(0.61)$	0.5904	$0.5899 \pm 0.0051$
$A_{217}^{dustTT}$	94.8	$93.3 \pm 7.4$	$r_*$	144.442	$144.46 \pm 0.48$	$f\sigma_8(2.33)$	0.29733	$0.2971 \pm 0.0025$
$c_{100}$	0.99965	$0.99961 \pm 0.00061$	$100\theta_*$	1.040956	$1.04097 \pm 0.00046$	$\sigma_8(2.33)$	0.30613	$0.3059 \pm 0.0027$
$c_{217}$	0.99825	$0.99826 \pm 0.00063$	$D_M(z_*)/\text{Gpc}$	13.8759	$13.878 \pm 0.044$	$f_{2000}^{143}$	30.49	$31.2 \pm 3.0$
$H_0$	66.86	$66.88 \pm 0.92$	$z_{drag}$	1059.437	$1059.39 \pm 0.46$	$f_{2000}^{143 \times 217}$	33.34	$33.6 \pm 2.0$
$\Omega_\Lambda$	0.6791	$0.679 \pm 0.013$	$r_{drag}$	147.182	$147.21 \pm 0.48$	$f_{2000}^{217}$	107.77	$108.2 \pm 1.9$
$\Omega_m$	0.3209	$0.321 \pm 0.013$	$k_D$	0.14058	$0.14054 \pm 0.00052$	$\chi_{small}^2$	395.88	$397.0 \pm 1.7$
$\Omega_m h^2$	0.14345	$0.1434 \pm 0.0020$	$100\theta_D$	0.161051	$0.16107 \pm 0.00027$	$\chi_{lowl}^2$	23.60	$23.9 \pm 1.3$
$\Omega_m h^3$	0.095909	$0.09589 \pm 0.00046$	$z_{eq}$	3412.7	$3411 \pm 48$	$\chi_{plik}^2$	758.7	$771.4 \pm 5.5$
$\sigma_8$	0.8126	$0.8118 \pm 0.0089$	$k_{eq}$	0.010416	$0.01041 \pm 0.00014$	$\chi_{prior}^2$	1.35	$7.3 \pm 3.7$
$S_8$	0.8405	$0.840 \pm 0.024$	$100\theta_{eq}$	0.8106	$0.8109 \pm 0.0089$	$\chi_{CMB}^2$	1178.2	$1192.3 \pm 5.5$
$\sigma_8 \Omega_m^{0.5}$	0.4604	$0.460 \pm 0.013$	$100\theta_{s,eq}$	0.44817	$0.4483 \pm 0.0046$			

Best-fit  $\chi_{eff}^2 = 1179.58$ ;  $\bar{\chi}_{eff}^2 = 1199.58$ ;  $R - 1 = 0.00927$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.88 commander\_dx12\_v3.2\_29: 23.60 plik\_rd12\_HM\_v22\_TT: 758.75



## 2.2 base\_plikHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022225	$0.02222 \pm 0.00020$	$\sigma_8/h^{0.5}$	0.9814	$0.982 \pm 0.012$	$H(0.38)$	82.969	$82.96 \pm 0.35$
$\Omega_c h^2$	0.11898	$0.1190 \pm 0.0012$	$r_{\text{drag}} h$	99.76	$99.76 \pm 0.94$	$D_M(0.38)$	1529.5	$1529.7 \pm 9.4$
$100\theta_{\text{MC}}$	1.041017	$1.04098 \pm 0.00041$	$\langle d^2 \rangle^{1/2}$	2.4251	$2.429 \pm 0.028$	$H(0.51)$	89.668	$89.66 \pm 0.29$
$\tau$	0.0532	$0.0539^{+0.0075}_{-0.0085}$	$z_{\text{re}}$	7.59	$7.64 \pm 0.83$	$D_M(0.51)$	1981.5	$1982 \pm 11$
$\ln(10^{10} A_s)$	3.0390	$3.040 \pm 0.017$	$10^9 A_s$	2.0885	$2.091^{+0.033}_{-0.037}$	$H(0.61)$	95.272	$95.26 \pm 0.25$
$n_s$	0.96734	$0.9664 \pm 0.0043$	$10^9 A_s e^{-2\tau}$	1.8777	$1.877 \pm 0.012$	$D_M(0.61)$	2305.9	$2306 \pm 12$
$y_{\text{cal}}$	1.00044	$1.0005 \pm 0.0025$	$D_{40}$	1223.2	$1226 \pm 13$	$H(2.33)$	235.75	$235.73 \pm 0.79$
$A_{217}^{\text{CIB}}$	49.2	$48 \pm 7$	$D_{220}$	5716.9	$5721 \pm 41$	$D_M(2.33)$	5766.2	$5767 \pm 12$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.26	—	$D_{810}$	2536.8	$2536 \pm 14$	$f\sigma_8(0.15)$	0.4542	$0.4543 \pm 0.0077$
$A_{143}^{\text{tSZ}}$	7.06	$5.1^{+2.2}_{-2.0}$	$D_{1420}$	816.26	$815.4 \pm 5.0$	$\sigma_8(0.15)$	0.7459	$0.7461 \pm 0.0070$
$A_{100}^{\text{PS}}$	254.6	$264 \pm 29$	$D_{2000}$	230.24	$229.9 \pm 1.8$	$f\sigma_8(0.38)$	0.4727	$0.4729 \pm 0.0065$
$A_{143}^{\text{PS}}$	48.1	$48 \pm 8$	$n_{s,0.002}$	0.96734	$0.9664 \pm 0.0043$	$\sigma_8(0.38)$	0.6613	$0.6615 \pm 0.0060$
$A_{143 \times 217}^{\text{PS}}$	44.9	$43 \pm 9$	$Y_{\text{P}}$	0.245336	$0.245329^{+0.000090}_{-0.000075}$	$f\sigma_8(0.51)$	0.4715	$0.4716 \pm 0.0058$
$A_{217}^{\text{PS}}$	118.4	$114 \pm 10$	$Y_{\text{P}}^{\text{BBN}}$	0.246663	$0.246655^{+0.000090}_{-0.000075}$	$\sigma_8(0.51)$	0.6190	$0.6191^{+0.0051}_{-0.0057}$
$A^{\text{kSZ}}$	0.01	$< 4.84$	$10^5 \text{D}/\text{H}$	2.6131	$2.615 \pm 0.038$	$f\sigma_8(0.61)$	0.4666	$0.4667 \pm 0.0054$
$A_{100}^{\text{dustTT}}$	8.85	$9.0 \pm 1.8$	Age/Gyr	13.8050	$13.807 \pm 0.028$	$\sigma_8(0.61)$	0.5890	$0.5891^{+0.0049}_{-0.0054}$
$A_{143}^{\text{dustTT}}$	10.85	$10.8 \pm 1.8$	$z_*$	1090.014	$1090.03 \pm 0.30$	$f\sigma_8(2.33)$	0.29703	$0.2971^{+0.0024}_{-0.0027}$
$A_{143 \times 217}^{\text{dustTT}}$	19.36	$18.3 \pm 3.4$	$r_*$	144.806	$144.82 \pm 0.32$	$\sigma_8(2.33)$	0.30628	$0.3063^{+0.0025}_{-0.0028}$
$A_{217}^{\text{dustTT}}$	94.4	$93.3 \pm 7.5$	$100\theta_*$	1.041213	$1.04118 \pm 0.00041$	$f_{2000}^{143}$	30.25	$30.9 \pm 2.9$
$c_{100}$	0.99963	$0.99961 \pm 0.00063$	$D_M(z_*)/\text{Gpc}$	13.9074	$13.909 \pm 0.031$	$f_{2000}^{143 \times 217}$	33.11	$33.3 \pm 2.0$
$c_{217}$	0.99826	$0.99827 \pm 0.00062$	$z_{\text{drag}}$	1059.513	$1059.50 \pm 0.45$	$f_{2000}^{217}$	107.61	$107.9 \pm 1.9$
$H_0$	67.62	$67.61 \pm 0.55$	$r_{\text{drag}}$	147.524	$147.54 \pm 0.35$	$\chi_{\text{small}}^2$	395.89	$397.1 \pm 1.9$
$\Omega_\Lambda$	0.6898	$0.6897 \pm 0.0073$	$k_{\text{D}}$	0.140301	$0.14027 \pm 0.00045$	$\chi_{\text{lowl}}^2$	22.83	$23.09 \pm 0.93$
$\Omega_{\text{m}}$	0.3102	$0.3103 \pm 0.0073$	$100\theta_{\text{D}}$	0.161006	$0.16102 \pm 0.00026$	$\chi_{\text{plik}}^2$	760.1	$772.2 \pm 5.5$
$\Omega_{\text{m}} h^2$	0.14185	$0.1418 \pm 0.0012$	$z_{\text{eq}}$	3374.4	$3374 \pm 29$	$\chi_{6\text{DF}}^2$	0.0217	$0.059 \pm 0.077$
$\Omega_{\text{m}} h^3$	0.095926	$0.09589 \pm 0.00046$	$k_{\text{eq}}$	0.010299	$0.010297 \pm 0.000087$	$\chi_{\text{MGS}}^2$	1.28	$1.35 \pm 0.52$
$\sigma_8$	0.8071	$0.8073 \pm 0.0078$	$100\theta_{\text{eq}}$	0.8180	$0.8181 \pm 0.0053$	$\chi_{\text{DR12BAO}}^2$	4.18	$4.8 \pm 1.6$
$S_8$	0.8207	$0.821 \pm 0.015$	$100\theta_{s,\text{eq}}$	0.45193	$0.4520 \pm 0.0027$	$\chi_{\text{prior}}^2$	1.44	$7.4 \pm 3.7$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4495	$0.4497 \pm 0.0081$	$H(0.15)$	72.887	$72.88 \pm 0.47$	$\chi_{\text{BAO}}^2$	5.49	$6.2 \pm 1.3$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6023	$0.6025 \pm 0.0080$	$D_M(0.15)$	641.18	$641.3 \pm 4.7$	$\chi_{\text{CMB}}^2$	1178.8	$1192.4 \pm 5.5$

Best-fit  $\chi_{\text{eff}}^2 = 1185.74$ ;  $\bar{\chi}_{\text{eff}}^2 = 1206.02$ ;  $R - 1 = 0.01940$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.28 DR12BAO: 4.18 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.89 commander\_dx12\_v3.2.29: 22.83 plik\_rd12\_HM\_v22.TT: 760.10



### 2.3 base\_plikHM\_TT\_lowl\_lowE\_post\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022379	$0.02237 \pm 0.00022$	$\sigma_8 \Omega_m^{0.25}$	0.5933	$0.593 \pm 0.011$	$H(0.15)$	73.62	$73.65 \pm 0.73$
$\Omega_c h^2$	0.11720	$0.1171 \pm 0.0019$	$\sigma_8/h^{0.5}$	0.9695	$0.969 \pm 0.016$	$D_M(0.15)$	634.0	$633.8 \pm 7.1$
$100\theta_{MC}$	1.041273	$1.04127 \pm 0.00047$	$r_{drag}h$	101.22	$101.3 \pm 1.5$	$H(0.38)$	83.50	$83.52 \pm 0.54$
$\tau$	0.0554	$0.0562 \pm 0.0083$	$\langle d^2 \rangle^{1/2}$	2.3979	$2.400 \pm 0.037$	$D_M(0.38)$	1515.0	$1515 \pm 14$
$\ln(10^{10} A_s)$	3.0399	$3.041 \pm 0.018$	$z_{re}$	7.74	$7.80 \pm 0.82$	$H(0.51)$	90.089	$90.10 \pm 0.43$
$n_s$	0.9719	$0.9710 \pm 0.0053$	$10^9 A_s$	2.0903	$2.093 \pm 0.037$	$D_M(0.51)$	1964.6	$1964 \pm 17$
$y_{cal}$	1.00067	$1.0006 \pm 0.0026$	$10^9 A_s e^{-2\tau}$	1.8711	$1.870 \pm 0.013$	$H(0.61)$	95.607	$95.62 \pm 0.35$
$A_{217}^{CIB}$	48.4	$48 \pm 7$	$D_{40}$	1214.7	$1217 \pm 15$	$D_M(0.61)$	2287.7	$2287 \pm 18$
$\xi^{tSZ \times CIB}$	0.35	—	$D_{220}$	5729.5	$5732 \pm 42$	$H(2.33)$	234.75	$234.7 \pm 1.2$
$A_{143}^{tSZ}$	7.07	$5.2^{+2.3}_{-2.0}$	$D_{810}$	2537.4	$2535 \pm 14$	$D_M(2.33)$	5751.9	$5752 \pm 16$
$A_{100}^{PS}$	252.8	$262 \pm 28$	$D_{1420}$	818.14	$816.9 \pm 4.9$	$f\sigma_8(0.15)$	0.4442	$0.444 \pm 0.011$
$A_{143}^{PS}$	48.0	$47^{+9}_{-8}$	$D_{2000}$	231.01	$230.6 \pm 1.7$	$\sigma_8(0.15)$	0.7426	$0.7424 \pm 0.0080$
$A_{143 \times 217}^{PS}$	46.4	$43 \pm 10$	$n_{s,0.002}$	0.9719	$0.9710 \pm 0.0053$	$f\sigma_8(0.38)$	0.4652	$0.4648^{+0.0097}_{-0.0088}$
$A_{217}^{PS}$	118.6	$114 \pm 10$	$Y_P$	0.245399	$0.245393 \pm 0.000086$	$\sigma_8(0.38)$	0.6596	$0.6595 \pm 0.0065$
$A^{kSZ}$	0.01	$< 4.76$	$Y_P^{BBN}$	0.246725	$0.246720 \pm 0.000086$	$f\sigma_8(0.51)$	0.4652	$0.4649^{+0.0085}_{-0.0076}$
$A_{100}^{dustTT}$	8.96	$9.1 \pm 1.8$	$10^5 D/H$	2.5839	$2.586 \pm 0.040$	$\sigma_8(0.51)$	0.6178	$0.6177 \pm 0.0059$
$A_{143}^{dustTT}$	10.84	$10.7 \pm 1.8$	Age/Gyr	13.7739	$13.774 \pm 0.035$	$f\sigma_8(0.61)$	0.4613	$0.4610^{+0.0076}_{-0.0069}$
$A_{143 \times 217}^{dustTT}$	19.43	$18.1 \pm 3.2$	$z_*$	1089.662	$1089.67 \pm 0.37$	$\sigma_8(0.61)$	0.5882	$0.5881 \pm 0.0055$
$A_{217}^{dustTT}$	94.7	$93.1 \pm 7.3$	$r_*$	145.154	$145.18 \pm 0.45$	$f\sigma_8(2.33)$	0.29710	$0.2971 \pm 0.0027$
$c_{100}$	0.99967	$0.99962 \pm 0.00063$	$100\theta_*$	1.041458	$1.04146 \pm 0.00046$	$\sigma_8(2.33)$	0.30686	$0.3069 \pm 0.0028$
$c_{217}$	0.99826	$0.99826 \pm 0.00059$	$D_M(z_*)/\text{Gpc}$	13.9375	$13.940 \pm 0.042$	$f_{2000}^{143}$	29.50	$30.2 \pm 2.9$
$H_0$	68.47	$68.50 \pm 0.85$	$z_{drag}$	1059.742	$1059.73 \pm 0.46$	$f_{2000}^{143 \times 217}$	32.53	$32.8 \pm 2.0$
$\Omega_\Lambda$	0.7009	$0.701 \pm 0.011$	$r_{drag}$	147.829	$147.86 \pm 0.47$	$f_{2000}^{217}$	107.06	$107.4 \pm 1.9$
$\Omega_m$	0.2991	$0.299 \pm 0.011$	$k_D$	0.14010	$0.14006 \pm 0.00053$	$\chi_{small}^2$	396.07	$397.3 \pm 2.1$
$\Omega_m h^2$	0.14022	$0.1401 \pm 0.0018$	$100\theta_D$	0.160892	$0.16091 \pm 0.00026$	$\chi_{lowl}^2$	22.09	$22.35 \pm 0.98$
$\Omega_m h^3$	0.096015	$0.09599 \pm 0.00047$	$z_{eq}$	3335.4	$3333 \pm 43$	$\chi_{plik}^2$	763.0	$775.9 \pm 6.9$
$\sigma_8$	0.8023	$0.8020 \pm 0.0094$	$k_{eq}$	0.010180	$0.01017 \pm 0.00013$	$\chi_{H073p45}^2$	8.99	$9.1 \pm 3.1$
$S_8$	0.8010	$0.800 \pm 0.022$	$100\theta_{eq}$	0.8257	$0.8262 \pm 0.0084$	$\chi_{prior}^2$	1.41	$7.4 \pm 3.8$
$\sigma_8 \Omega_m^{0.5}$	0.4387	$0.438 \pm 0.012$	$100\theta_{s,eq}$	0.45587	$0.4561 \pm 0.0043$	$\chi_{CMB}^2$	1181.2	$1195.6 \pm 6.5$

Best-fit  $\chi_{eff}^2 = 1191.57$ ;  $\bar{\chi}_{eff}^2 = 1212.08$ ;  $R - 1 = 0.09494$

$\chi_{eff}^2$ : CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.07 commander\_dx12\_v3.2\_29: 22.09 plik\_rd12\_HM\_v22\_TT: 763.02 Hubble - H073p45: 8.98



## 2.4 base\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02212 \pm 0.00022$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.612 \pm 0.012$	$H(0.15)$	$72.28 \pm 0.78$
$\Omega_{\text{c}}h^2$	$0.1206 \pm 0.0021$	$\sigma_8/h^{0.5}$	$0.994 \pm 0.016$	$D_{\text{M}}(0.15)$	$647.4 \pm 7.9$
$100\theta_{\text{MC}}$	$1.04077 \pm 0.00047$	$r_{\text{drag}}h$	$98.5 \pm 1.6$	$H(0.38)$	$82.54 \pm 0.56$
$\tau$	$0.0538^{+0.0047}_{-0.0084}$	$\langle d^2 \rangle^{1/2}$	$2.457 \pm 0.037$	$D_{\text{M}}(0.38)$	$1542 \pm 16$
$\ln(10^{10}A_{\text{s}})$	$3.044^{+0.012}_{-0.016}$	$z_{\text{re}}$	$7.68^{+0.53}_{-0.84}$	$H(0.51)$	$89.34 \pm 0.44$
$n_{\text{s}}$	$0.9629 \pm 0.0057$	$10^9 A_{\text{s}}$	$2.098^{+0.025}_{-0.034}$	$D_{\text{M}}(0.51)$	$1996 \pm 18$
$y_{\text{cal}}$	$1.0004 \pm 0.0025$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.884 \pm 0.014$	$H(0.61)$	$95.02 \pm 0.35$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{40}$	$1234 \pm 15$	$D_{\text{M}}(0.61)$	$2321 \pm 20$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{220}$	$5713 \pm 42$	$H(2.33)$	$236.7 \pm 1.3$
$A_{143}^{\text{tSZ}}$	$5.1^{+2.2}_{-2.0}$	$D_{810}$	$2536 \pm 14$	$D_{\text{M}}(2.33)$	$5777 \pm 16$
$A_{100}^{\text{PS}}$	$263 \pm 28$	$D_{1420}$	$814.4 \pm 5.1$	$f\sigma_8(0.15)$	$0.464 \pm 0.012$
$A_{143}^{\text{PS}}$	$49 \pm 8$	$D_{2000}$	$229.6 \pm 1.8$	$\sigma_8(0.15)$	$0.7502 \pm 0.0070$
$A_{143 \times 217}^{\text{PS}}$	$44 \pm 9$	$n_{\text{s},0.002}$	$0.9629 \pm 0.0057$	$f\sigma_8(0.38)$	$0.4803 \pm 0.0095$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$Y_{\text{P}}$	$0.24529^{+0.00010}_{-0.000088}$	$\sigma_8(0.38)$	$0.6641^{+0.0051}_{-0.0059}$
$A^{\text{kSZ}}$	$< 4.79$	$Y_{\text{P}}^{\text{BBN}}$	$0.24661^{+0.00011}_{-0.000088}$	$f\sigma_8(0.51)$	$0.4778 \pm 0.0081$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$10^5 \text{D/H}$	$2.633 \pm 0.042$	$\sigma_8(0.51)$	$0.6211^{+0.0044}_{-0.0054}$
$A_{143}^{\text{dustTT}}$	$10.7 \pm 1.8$	$\text{Age/Gyr}$	$13.829 \pm 0.037$	$f\sigma_8(0.61)$	$0.4721 \pm 0.0071$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3 \pm 3.3$	$z_*$	$1090.29 \pm 0.41$	$\sigma_8(0.61)$	$0.5907^{+0.0040}_{-0.0050}$
$A_{217}^{\text{dustTT}}$	$93.3 \pm 7.4$	$r_*$	$144.48 \pm 0.48$	$f\sigma_8(2.33)$	$0.2975^{+0.0018}_{-0.0025}$
$c_{100}$	$0.99961 \pm 0.00062$	$100\theta_*$	$1.04098 \pm 0.00046$	$\sigma_8(2.33)$	$0.3064^{+0.0019}_{-0.0027}$
$c_{217}$	$0.99826 \pm 0.00063$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.879 \pm 0.044$	$f_{2000}^{143}$	$31.1 \pm 2.9$
$H_0$	$66.91 \pm 0.92$	$z_{\text{drag}}$	$1059.40 \pm 0.46$	$f_{2000}^{143 \times 217}$	$33.5 \pm 2.0$
$\Omega_{\Lambda}$	$0.680 \pm 0.013$	$r_{\text{drag}}$	$147.22 \pm 0.48$	$f_{2000}^{217}$	$108.1 \pm 1.9$
$\Omega_{\text{m}}$	$0.320 \pm 0.013$	$k_{\text{D}}$	$0.14054 \pm 0.00052$	$\chi_{\text{simall}}^2$	$396.9 \pm 1.7$
$\Omega_{\text{m}}h^2$	$0.1433 \pm 0.0020$	$100\theta_{\text{D}}$	$0.16107 \pm 0.00027$	$\chi_{\text{lowl}}^2$	$23.9 \pm 1.3$
$\Omega_{\text{m}}h^3$	$0.09589 \pm 0.00046$	$z_{\text{eq}}$	$3410 \pm 47$	$\chi_{\text{plik}}^2$	$771.3 \pm 5.4$
$\sigma_8$	$0.8128 \pm 0.0085$	$k_{\text{eq}}$	$0.01041 \pm 0.00014$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.7$
$S_8$	$0.840 \pm 0.024$	$100\theta_{\text{eq}}$	$0.8113 \pm 0.0088$	$\chi_{\text{CMB}}^2$	$1192.0 \pm 5.4$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.460 \pm 0.013$	$100\theta_{\text{s,eq}}$	$0.4485 \pm 0.0046$		

$\bar{\chi}_{\text{eff}}^2 = 1199.32$ ;  $R - 1 = 0.00921$



## 2.5 base\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02222 \pm 0.00020$	$\sigma_8/h^{0.5}$	$0.983 \pm 0.011$	$H(0.38)$	$82.97 \pm 0.35$
$\Omega_c h^2$	$0.1189 \pm 0.0012$	$r_{\text{drag}} h$	$99.78 \pm 0.94$	$D_M(0.38)$	$1529.5 \pm 9.4$
$100\theta_{\text{MC}}$	$1.04099 \pm 0.00041$	$\langle d^2 \rangle^{1/2}$	$2.431 \pm 0.027$	$H(0.51)$	$89.66 \pm 0.29$
$\tau$	$0.0552^{+0.0053}_{-0.0087}$	$z_{\text{re}}$	$7.77^{+0.58}_{-0.89}$	$D_M(0.51)$	$1982 \pm 11$
$\ln(10^{10} A_s)$	$3.043^{+0.012}_{-0.017}$	$10^9 A_s$	$2.097^{+0.026}_{-0.037}$	$H(0.61)$	$95.27 \pm 0.25$
$n_s$	$0.9665 \pm 0.0043$	$10^9 A_s e^{-2\tau}$	$1.877 \pm 0.012$	$D_M(0.61)$	$2306 \pm 12$
$y_{\text{cal}}$	$1.0005 \pm 0.0025$	$D_{40}$	$1226 \pm 13$	$H(2.33)$	$235.72 \pm 0.79$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{220}$	$5721 \pm 41$	$D_M(2.33)$	$5767 \pm 12$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{810}$	$2536 \pm 14$	$f\sigma_8(0.15)$	$0.4548 \pm 0.0076$
$A_{143}^{\text{tSZ}}$	$5.1^{+2.2}_{-2.0}$	$D_{1420}$	$815.4 \pm 5.0$	$\sigma_8(0.15)$	$0.7469^{+0.0057}_{-0.0070}$
$A_{100}^{\text{PS}}$	$263 \pm 29$	$D_{2000}$	$230.0 \pm 1.8$	$f\sigma_8(0.38)$	$0.4733 \pm 0.0063$
$A_{143}^{\text{PS}}$	$48 \pm 8$	$n_{s,0.002}$	$0.9665 \pm 0.0043$	$\sigma_8(0.38)$	$0.6623^{+0.0047}_{-0.0061}$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9$	$Y_{\text{P}}$	$0.245331^{+0.000090}_{-0.000075}$	$f\sigma_8(0.51)$	$0.4721 \pm 0.0056$
$A_{217}^{\text{PS}}$	$114 \pm 10$	$Y_{\text{P}}^{\text{BBN}}$	$0.246657^{+0.000091}_{-0.000075}$	$\sigma_8(0.51)$	$0.6198^{+0.0043}_{-0.0056}$
$A^{\text{kSZ}}$	$< 4.77$	$10^5 \text{D}/\text{H}$	$2.615 \pm 0.038$	$f\sigma_8(0.61)$	$0.4673 \pm 0.0052$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$\text{Age}/\text{Gyr}$	$13.806 \pm 0.028$	$\sigma_8(0.61)$	$0.5898^{+0.0040}_{-0.0053}$
$A_{143}^{\text{dustTT}}$	$10.8 \pm 1.8$	$z_*$	$1090.02 \pm 0.30$	$f\sigma_8(2.33)$	$0.2974^{+0.0020}_{-0.0027}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3 \pm 3.3$	$r_*$	$144.82 \pm 0.32$	$\sigma_8(2.33)$	$0.3067^{+0.0020}_{-0.0028}$
$A_{217}^{\text{dustTT}}$	$93.3 \pm 7.5$	$100\theta_*$	$1.04119 \pm 0.00041$	$f_{2000}^{143}$	$30.8 \pm 2.9$
$c_{100}$	$0.99961 \pm 0.00063$	$D_M(z_*)/\text{Gpc}$	$13.909 \pm 0.031$	$f_{2000}^{143 \times 217}$	$33.3 \pm 2.0$
$c_{217}$	$0.99827 \pm 0.00062$	$z_{\text{drag}}$	$1059.51 \pm 0.45$	$f_{2000}^{217}$	$107.9 \pm 1.9$
$H_0$	$67.63 \pm 0.55$	$r_{\text{drag}}$	$147.54 \pm 0.35$	$\chi_{\text{simall}}^2$	$397.1 \pm 2.0$
$\Omega_\Lambda$	$0.6898 \pm 0.0073$	$k_{\text{D}}$	$0.14028 \pm 0.00045$	$\chi_{\text{lowl}}^2$	$23.11 \pm 0.93$
$\Omega_{\text{m}}$	$0.3102 \pm 0.0073$	$100\theta_{\text{D}}$	$0.16101 \pm 0.00026$	$\chi_{\text{plik}}^2$	$772.0 \pm 5.4$
$\Omega_{\text{m}} h^2$	$0.1418 \pm 0.0012$	$z_{\text{eq}}$	$3373 \pm 29$	$\chi_{6\text{DF}}^2$	$0.058 \pm 0.075$
$\Omega_{\text{m}} h^3$	$0.09589 \pm 0.00046$	$k_{\text{eq}}$	$0.010296 \pm 0.000087$	$\chi_{\text{MGS}}^2$	$1.36 \pm 0.53$
$\sigma_8$	$0.8082^{+0.0066}_{-0.0079}$	$100\theta_{\text{eq}}$	$0.8182 \pm 0.0053$	$\chi_{\text{DR12BAO}}^2$	$4.8 \pm 1.6$
$S_8$	$0.822 \pm 0.015$	$100\theta_{\text{s,eq}}$	$0.4520 \pm 0.0027$	$\chi_{\text{prior}}^2$	$7.4 \pm 3.7$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4501 \pm 0.0081$	$H(0.15)$	$72.89 \pm 0.47$	$\chi_{\text{BAO}}^2$	$6.2 \pm 1.3$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.6031 \pm 0.0078$	$D_M(0.15)$	$641.2 \pm 4.7$	$\chi_{\text{CMB}}^2$	$1192.2 \pm 5.5$
$\bar{\chi}_{\text{eff}}^2 = 1205.76; R - 1 = 0.02069$					



## 2.6 base\_plikHM\_TT\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02237 \pm 0.00021$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.594 \pm 0.011$	$H(0.15)$	$73.64 \pm 0.72$
$\Omega_{\mathrm{c}}h^2$	$0.1171 \pm 0.0019$	$\sigma_8/h^{0.5}$	$0.970 \pm 0.015$	$D_{\mathrm{M}}(0.15)$	$633.8 \pm 6.9$
$100\theta_{\mathrm{MC}}$	$1.04127 \pm 0.00046$	$r_{\mathrm{drag}}h$	$101.3 \pm 1.5$	$H(0.38)$	$83.52 \pm 0.53$
$\tau$	$0.0573^{+0.0067}_{-0.0082}$	$\langle d^2 \rangle^{1/2}$	$2.403 \pm 0.035$	$D_{\mathrm{M}}(0.38)$	$1515 \pm 14$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.014}_{-0.017}$	$z_{\mathrm{re}}$	$7.92^{+0.69}_{-0.82}$	$H(0.51)$	$90.10 \pm 0.42$
$n_{\mathrm{s}}$	$0.9710 \pm 0.0053$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.029}_{-0.036}$	$D_{\mathrm{M}}(0.51)$	$1964 \pm 16$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0026$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.870 \pm 0.013$	$H(0.61)$	$95.62 \pm 0.34$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{40}$	$1217 \pm 15$	$D_{\mathrm{M}}(0.61)$	$2287 \pm 18$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{220}$	$5732 \pm 43$	$H(2.33)$	$234.7 \pm 1.1$
$A_{143}^{\mathrm{tSZ}}$	$5.2^{+2.3}_{-2.0}$	$D_{810}$	$2535 \pm 14$	$D_{\mathrm{M}}(2.33)$	$5752 \pm 15$
$A_{100}^{\mathrm{PS}}$	$262 \pm 28$	$D_{1420}$	$816.9 \pm 4.9$	$f\sigma_8(0.15)$	$0.444 \pm 0.011$
$A_{143}^{\mathrm{PS}}$	$47^{+9}_{-8}$	$D_{2000}$	$230.6 \pm 1.7$	$\sigma_8(0.15)$	$0.7432 \pm 0.0075$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9$	$n_{\mathrm{s},0.002}$	$0.9710 \pm 0.0053$	$f\sigma_8(0.38)$	$0.4654 \pm 0.0090$
$A_{217}^{\mathrm{PS}}$	$114 \pm 10$	$Y_{\mathrm{P}}$	$0.245394 \pm 0.000085$	$\sigma_8(0.38)$	$0.6602^{+0.0054}_{-0.0063}$
$A^{\mathrm{kSZ}}$	$< 4.76$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246720 \pm 0.000086$	$f\sigma_8(0.51)$	$0.4655 \pm 0.0078$
$A_{100}^{\mathrm{dust}TT}$	$9.1 \pm 1.8$	$10^5 \mathrm{D}/\mathrm{H}$	$2.586 \pm 0.040$	$\sigma_8(0.51)$	$0.6184^{+0.0048}_{-0.0057}$
$A_{143}^{\mathrm{dust}TT}$	$10.6 \pm 1.8$	$\mathrm{Age}/\mathrm{Gyr}$	$13.774 \pm 0.034$	$f\sigma_8(0.61)$	$0.4616 \pm 0.0070$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.1 \pm 3.2$	$z_*$	$1089.66 \pm 0.36$	$\sigma_8(0.61)$	$0.5888^{+0.0045}_{-0.0054}$
$A_{217}^{\mathrm{dust}TT}$	$93.1 \pm 7.3$	$r_*$	$145.18 \pm 0.45$	$f\sigma_8(2.33)$	$0.2974^{+0.0022}_{-0.0026}$
$c_{100}$	$0.99962 \pm 0.00064$	$100\theta_*$	$1.04145 \pm 0.00045$	$\sigma_8(2.33)$	$0.3072^{+0.0023}_{-0.0027}$
$c_{217}$	$0.99827 \pm 0.00059$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.940 \pm 0.042$	$f_{2000}^{143}$	$30.2 \pm 2.9$
$H_0$	$68.50 \pm 0.83$	$z_{\mathrm{drag}}$	$1059.74 \pm 0.46$	$f_{2000}^{143 \times 217}$	$32.7 \pm 2.0$
$\Omega_{\Lambda}$	$0.701 \pm 0.011$	$r_{\mathrm{drag}}$	$147.85 \pm 0.46$	$f_{2000}^{217}$	$107.4 \pm 1.9$
$\Omega_{\mathrm{m}}$	$0.299 \pm 0.011$	$k_{\mathrm{D}}$	$0.14007 \pm 0.00053$	$\chi_{\mathrm{small}}^2$	$397.3 \pm 2.1$
$\Omega_{\mathrm{m}}h^2$	$0.1401 \pm 0.0018$	$100\theta_{\mathrm{D}}$	$0.16090 \pm 0.00026$	$\chi_{\mathrm{lowl}}^2$	$22.37 \pm 0.98$
$\Omega_{\mathrm{m}}h^3$	$0.09599 \pm 0.00048$	$z_{\mathrm{eq}}$	$3334 \pm 43$	$\chi_{\mathrm{plik}}^2$	$775.6 \pm 6.7$
$\sigma_8$	$0.8029 \pm 0.0088$	$k_{\mathrm{eq}}$	$0.01017 \pm 0.00013$	$\chi_{\mathrm{H073p45}}^2$	$9.1 \pm 3.0$
$S_8$	$0.801 \pm 0.021$	$100\theta_{\mathrm{eq}}$	$0.8261 \pm 0.0083$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.7$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.439 \pm 0.012$	$100\theta_{\mathrm{s,eq}}$	$0.4561 \pm 0.0042$	$\chi_{\mathrm{CMB}}^2$	$1195.3 \pm 6.3$

$\bar{\chi}_{\mathrm{eff}}^2 = 1211.81$ ;  $R - 1 = 0.08503$



## 2.7 base\_plikHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022377	$0.02236 \pm 0.00015$ (+1.1 $\sigma$ )	$\Omega_m h^3$	0.096355	$0.09633 \pm 0.00029$ (+1.0 $\sigma$ )	$100\theta_{\text{eq}}$	0.8128	$0.8125 \pm 0.0058$ (+0.2 $\sigma$ )
$\Omega_c h^2$	0.12010	$0.1202 \pm 0.0014$ (−0.2 $\sigma$ )	$\sigma_8$	0.8120	$0.8120 \pm 0.0073$ (+0.0 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.44914	$0.4490 \pm 0.0030$ (+0.1 $\sigma$ )
$100\theta_{\text{MC}}$	1.040920	$1.04090 \pm 0.00031$ (+0.3 $\sigma$ )	$S_8$	0.8331	$0.834 \pm 0.016$ (−0.2 $\sigma$ )	$H(0.15)$	72.65	$72.61 \pm 0.52$ (+0.5 $\sigma$ )
$\tau$	0.0543	$0.0544^{+0.0070}_{-0.0081}$ (+0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4563	$0.4568 \pm 0.0087$ (−0.2 $\sigma$ )	$D_{\text{M}}(0.15)$	643.7	$644.1 \pm 5.2$ (−0.4 $\sigma$ )
$\ln(10^{10} A_s)$	3.0447	$3.045 \pm 0.016$ (+0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6087	$0.6090 \pm 0.0081$ (−0.2 $\sigma$ )	$H(0.38)$	82.848	$82.82 \pm 0.37$ (+0.5 $\sigma$ )
$n_s$	0.96589	$0.9649 \pm 0.0044$ (+0.4 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9896	$0.990 \pm 0.012$ (−0.2 $\sigma$ )	$D_{\text{M}}(0.38)$	1534.0	$1535 \pm 10$ (−0.5 $\sigma$ )
$y_{\text{cal}}$	1.00061	$1.0005 \pm 0.0025$ (+0.0 $\sigma$ )	$r_{\text{drag}} h$	99.00	$98.9 \pm 1.0$ (+0.3 $\sigma$ )	$H(0.51)$	89.614	$89.59 \pm 0.29$ (+0.6 $\sigma$ )
$A_{217}^{\text{CIB}}$	47.2	$47 \pm 7$ (−0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4451	$2.448 \pm 0.028$ (−0.2 $\sigma$ )	$D_{\text{M}}(0.51)$	1986.5	$1988 \pm 12$ (−0.5 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.42	—	$z_{\text{re}}$	7.68	$7.68 \pm 0.79$ (+0.2 $\sigma$ )	$H(0.61)$	95.270	$95.25 \pm 0.24$ (+0.7 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.23	$5.5^{+2.2}_{-1.9}$ (+0.2 $\sigma$ )	$10^9 A_s$	2.1004	$2.101^{+0.031}_{-0.034}$ (+0.3 $\sigma$ )	$D_{\text{M}}(0.61)$	2311.1	$2312 \pm 13$ (−0.5 $\sigma$ )
$A_{100}^{\text{PS}}$	250.5	$258 \pm 28$ (−0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8843	$1.884 \pm 0.012$ (−0.0 $\sigma$ )	$H(2.33)$	236.64	$236.68 \pm 0.82$ (−0.0 $\sigma$ )
$A_{143}^{\text{PS}}$	47.4	$46 \pm 8$ (−0.4 $\sigma$ )	$D_{40}$	1229.3	$1232 \pm 13$ (−0.1 $\sigma$ )	$D_{\text{M}}(2.33)$	5763.6	$5765 \pm 11$ (−0.8 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	47.3	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{220}$	5730.4	$5731 \pm 39$ (+0.4 $\sigma$ )	$f\sigma_8(0.15)$	0.4605	$0.4610 \pm 0.0081$ (−0.2 $\sigma$ )
$A_{217}^{\text{PS}}$	119.8	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{810}$	2541.1	$2539 \pm 14$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7499	$0.7498 \pm 0.0065$ (+0.1 $\sigma$ )
$A^{\text{kSZ}}$	0.01	$< 4.22$ (−0.2 $\sigma$ )	$D_{1420}$	818.28	$817.2 \pm 4.9$ (+0.5 $\sigma$ )	$f\sigma_8(0.38)$	0.4779	$0.4782 \pm 0.0066$ (−0.2 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.86	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$D_{2000}$	231.26	$230.9 \pm 1.6$ (+0.7 $\sigma$ )	$\sigma_8(0.38)$	0.6642	$0.6641 \pm 0.0055$ (+0.2 $\sigma$ )
$A_{143}^{\text{dustTT}}$	11.10	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$n_{\text{s},0.002}$	0.96589	$0.9649 \pm 0.0044$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.4760	$0.4762 \pm 0.0058$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	19.83	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\text{P}}$	0.245398	$0.245389^{+0.000062}_{-0.000055}$ (+1.1 $\sigma$ )	$\sigma_8(0.51)$	0.6214	$0.6213 \pm 0.0051$ (+0.2 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.1	$93.8 \pm 7.3$ (+0.1 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.246725	$0.246716^{+0.000062}_{-0.000055}$ (+1.1 $\sigma$ )	$f\sigma_8(0.61)$	0.4707	$0.4708 \pm 0.0053$ (−0.1 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1142	$0.114 \pm 0.038$	$10^5 \text{D/H}$	2.5841	$2.588 \pm 0.028$ (−1.1 $\sigma$ )	$\sigma_8(0.61)$	0.59117	$0.5910 \pm 0.0048$ (+0.2 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1345	$0.135 \pm 0.030$	Age/Gyr	13.7973	$13.800 \pm 0.024$ (−0.8 $\sigma$ )	$f\sigma_8(2.33)$	0.29790	$0.2978 \pm 0.0024$ (+0.3 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.480 \pm 0.085$	$z_*$	1089.920	$1089.95 \pm 0.27$ (−0.9 $\sigma$ )	$\sigma_8(2.33)$	0.30694	$0.3068^{+0.0024}_{-0.0026}$ (+0.4 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.224	$0.226 \pm 0.053$	$r_*$	144.399	$144.39 \pm 0.30$ (−0.2 $\sigma$ )	$f_{2000}^{143}$	28.90	$29.5 \pm 2.7$ (−0.6 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.664	$0.666 \pm 0.080$	$100\theta_*$	1.041097	$1.04109 \pm 0.00030$ (+0.2 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.04	$32.2 \pm 1.9$ (−0.7 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.081	$2.09 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8699	$13.869 \pm 0.028$ (−0.2 $\sigma$ )	$f_{2000}^{217}$	106.69	$107.0 \pm 1.8$ (−0.6 $\sigma$ )
$c_{100}$	0.99969	$0.99966 \pm 0.00062$ (+0.1 $\sigma$ )	$z_{\text{drag}}$	1059.971	$1059.93 \pm 0.30$ (+1.2 $\sigma$ )	$\chi_{\text{simall}}^2$	396.05	$397.1 \pm 2.0$ (+0.1 $\sigma$ )
$c_{217}$	0.99816	$0.99819 \pm 0.00062$ (−0.1 $\sigma$ )	$r_{\text{drag}}$	147.055	$147.05 \pm 0.30$ (−0.3 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.26	$23.55 \pm 0.97$ (−0.3 $\sigma$ )
$H_0$	67.32	$67.27 \pm 0.60$ (+0.4 $\sigma$ )	$k_{\text{D}}$	0.140910	$0.14090 \pm 0.00032$ (+0.7 $\sigma$ )	$\chi_{\text{plik}}^2$	2344.6	$2359.5 \pm 5.8$ (+291.4 $\sigma$ )
$\Omega_{\Lambda}$	0.6842	$0.6834 \pm 0.0084$ (+0.3 $\sigma$ )	$100\theta_{\text{D}}$	0.160744	$0.16077 \pm 0.00017$ (−1.2 $\sigma$ )	$\chi_{\text{prior}}^2$	1.82	$11.6 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_{\text{m}}$	0.3158	$0.3166 \pm 0.0084$ (−0.3 $\sigma$ )	$z_{\text{eq}}$	3404.9	$3407 \pm 31$ (−0.1 $\sigma$ )	$\chi_{\text{CMB}}^2$	2764.0	$2780.2 \pm 5.8$ (+289.2 $\sigma$ )
$\Omega_{\text{m}} h^2$	0.14313	$0.1432 \pm 0.0013$ (−0.1 $\sigma$ )	$k_{\text{eq}}$	0.010392	$0.010398 \pm 0.000094$ (−0.1 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 2765.77$ ;  $\Delta\chi_{\text{eff}}^2 = 1586.20$ ;  $\bar{\chi}_{\text{eff}}^2 = 2791.77$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1592.19$ ;  $R - 1 = 0.01231$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.05 ( $\Delta$  0.17) commander\_dx12\_v3.2.29: 23.26 ( $\Delta$  -0.34) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.65



## 2.8 base\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022432	$0.02242 \pm 0.00013$ (+1.0 $\sigma$ )	$\sigma_8$	0.8098	$0.8099 \pm 0.0071$ (+0.3 $\sigma$ )	$H(0.15)$	72.968	$72.94 \pm 0.39$ (+0.1 $\sigma$ )
$\Omega_c h^2$	0.11926	$0.1193 \pm 0.0010$ (+0.3 $\sigma$ )	$S_8$	0.8240	$0.825 \pm 0.012$ (+0.2 $\sigma$ )	$D_M(0.15)$	640.50	$640.8 \pm 3.8$ (-0.1 $\sigma$ )
$100\theta_{MC}$	1.041000	$1.04101 \pm 0.00029$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4513	$0.4517 \pm 0.0068$ (+0.2 $\sigma$ )	$H(0.38)$	83.072	$83.05 \pm 0.28$ (+0.3 $\sigma$ )
$\tau$	0.0553	$0.0559^{+0.0068}_{-0.0084}$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6046	$0.6048 \pm 0.0068$ (+0.3 $\sigma$ )	$D_M(0.38)$	1527.8	$1528.3 \pm 7.7$ (-0.2 $\sigma$ )
$\ln(10^{10} A_s)$	3.0452	$3.046^{+0.015}_{-0.017}$ (+0.3 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9843	$0.985 \pm 0.010$ (+0.2 $\sigma$ )	$H(0.51)$	89.785	$89.77 \pm 0.23$ (+0.4 $\sigma$ )
$n_s$	0.96801	$0.9670 \pm 0.0038$ (+0.1 $\sigma$ )	$r_{drag} h$	99.66	$99.62 \pm 0.78$ (-0.2 $\sigma$ )	$D_M(0.51)$	1979.2	$1979.8 \pm 9.0$ (-0.2 $\sigma$ )
$y_{cal}$	1.00071	$1.0006 \pm 0.0025$ (+0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4326	$2.436 \pm 0.024$ (+0.3 $\sigma$ )	$H(0.61)$	95.401	$95.39 \pm 0.19$ (+0.5 $\sigma$ )
$A_{217}^{CIB}$	46.7	$47 \pm 7$ (-0.2 $\sigma$ )	$z_{re}$	7.76	$7.80^{+0.72}_{-0.81}$ (+0.2 $\sigma$ )	$D_M(0.61)$	2303.2	$2303.8 \pm 9.7$ (-0.2 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.54	—	$10^9 A_s$	2.1014	$2.103^{+0.030}_{-0.036}$ (+0.3 $\sigma$ )	$H(2.33)$	236.14	$236.17 \pm 0.62$ (+0.6 $\sigma$ )
$A_{143}^{tSZ}$	7.12	$5.5^{+2.1}_{-1.8}$ (+0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8813	$1.880 \pm 0.011$ (+0.2 $\sigma$ )	$D_M(2.33)$	5758.2	$5758.8 \pm 8.9$ (-0.7 $\sigma$ )
$A_{100}^{PS}$	248.9	$258 \pm 28$ (-0.2 $\sigma$ )	$D_{40}$	1225.2	$1227 \pm 12$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4560	$0.4563 \pm 0.0064$ (+0.3 $\sigma$ )
$A_{143}^{PS}$	48.6	$45 \pm 8$ (-0.4 $\sigma$ )	$D_{220}$	5735.3	$5735 \pm 38$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7484	$0.7485 \pm 0.0064$ (+0.3 $\sigma$ )
$A_{143 \times 217}^{PS}$	49.8	$42 \pm 9$ (-0.1 $\sigma$ )	$D_{810}$	2541.5	$2539 \pm 13$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.4745	$0.4747 \pm 0.0055$ (+0.3 $\sigma$ )
$A_{217}^{PS}$	120.4	$115.0 \pm 9.9$ (+0.1 $\sigma$ )	$D_{1420}$	819.11	$817.8 \pm 4.8$ (+0.5 $\sigma$ )	$\sigma_8(0.38)$	0.6635	$0.6635^{+0.0051}_{-0.0058}$ (+0.3 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.18$ (-0.2 $\sigma$ )	$D_{2000}$	231.58	$231.1 \pm 1.6$ (+0.7 $\sigma$ )	$f\sigma_8(0.51)$	0.47322	$0.4734 \pm 0.0050$ (+0.3 $\sigma$ )
$A_{100}^{dustTT}$	8.89	$8.9 \pm 1.8$ (-0.0 $\sigma$ )	$n_{s,0.002}$	0.96801	$0.9670 \pm 0.0038$ (+0.1 $\sigma$ )	$\sigma_8(0.51)$	0.6210	$0.6210^{+0.0047}_{-0.0054}$ (+0.3 $\sigma$ )
$A_{143}^{dustTT}$	11.01	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P$	0.245420	$0.245413^{+0.000055}_{-0.000048}$ (+1.0 $\sigma$ )	$f\sigma_8(0.61)$	0.46832	$0.4685 \pm 0.0047$ (+0.3 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.94	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246746	$0.246739^{+0.000055}_{-0.000048}$ (+1.0 $\sigma$ )	$\sigma_8(0.61)$	0.59088	$0.5909^{+0.0045}_{-0.0051}$ (+0.3 $\sigma$ )
$A_{217}^{dustTT}$	95.2	$93.8 \pm 7.2$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5740	$2.577 \pm 0.025$ (-1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.29796	$0.2979^{+0.0022}_{-0.0026}$ (+0.3 $\sigma$ )
$A_{100}^{dustTE}$	0.1145	$0.113 \pm 0.038$	Age/Gyr	13.7857	$13.787 \pm 0.020$ (-0.7 $\sigma$ )	$\sigma_8(2.33)$	0.30722	$0.3072^{+0.0023}_{-0.0027}$ (+0.3 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1349	$0.135 \pm 0.030$	$z_*$	1089.776	$1089.80 \pm 0.22$ (-0.8 $\sigma$ )	$f_{2000}^{143}$	28.52	$29.3 \pm 2.7$ (-0.6 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.481	$0.479 \pm 0.086$	$r_*$	144.576	$144.57 \pm 0.24$ (-0.8 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.78	$32.0 \pm 1.9$ (-0.7 $\sigma$ )
$A_{143}^{dustTE}$	0.225	$0.225 \pm 0.054$	$100\theta_*$	1.041178	$1.04119 \pm 0.00028$ (+0.0 $\sigma$ )	$f_{2000}^{217}$	106.39	$106.8 \pm 1.7$ (-0.6 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.666	$0.665 \pm 0.080$	$D_M(z_*)/\text{Gpc}$	13.8858	$13.885 \pm 0.023$ (-0.8 $\sigma$ )	$\chi_{simall}^2$	396.20	$397.3 \pm 2.2$ (+0.1 $\sigma$ )
$A_{217}^{dustTE}$	2.081	$2.09 \pm 0.26$	$z_{drag}$	1060.009	$1060.00 \pm 0.29$ (+1.1 $\sigma$ )	$\chi_{lowl}^2$	22.87	$23.13 \pm 0.82$ (+0.0 $\sigma$ )
$c_{100}$	0.99971	$0.99966 \pm 0.00063$ (+0.1 $\sigma$ )	$r_{drag}$	147.221	$147.22 \pm 0.24$ (-0.9 $\sigma$ )	$\chi_{plik}^2$	2345.5	$2359.6 \pm 5.8$ (+289.2 $\sigma$ )
$c_{217}$	0.99817	$0.99817 \pm 0.00061$ (-0.1 $\sigma$ )	$k_D$	0.140779	$0.14077 \pm 0.00029$ (+1.1 $\sigma$ )	$\chi_{6DF}^2$	0.0288	$0.057 \pm 0.066$ (-0.0 $\sigma$ )
$H_0$	67.693	$67.67 \pm 0.45$ (+0.1 $\sigma$ )	$100\theta_D$	0.160709	$0.16073 \pm 0.00017$ (-1.1 $\sigma$ )	$\chi_{MGS}^2$	1.217	$1.25 \pm 0.42$ (-0.2 $\sigma$ )
$\Omega_\Lambda$	0.6894	$0.6890 \pm 0.0061$ (-0.1 $\sigma$ )	$z_{eq}$	3385.9	$3387 \pm 23$ (+0.5 $\sigma$ )	$\chi_{DR12BAO}^2$	4.41	$4.9 \pm 1.4$ (+0.1 $\sigma$ )
$\Omega_m$	0.3106	$0.3110 \pm 0.0061$ (+0.1 $\sigma$ )	$k_{eq}$	0.010334	$0.010338 \pm 0.000070$ (+0.5 $\sigma$ )	$\chi_{prior}^2$	1.68	$11.6 \pm 4.6$ (+1.1 $\sigma$ )
$\Omega_m h^2$	0.14233	$0.14238 \pm 0.00096$ (+0.5 $\sigma$ )	$100\theta_{eq}$	0.81645	$0.8162 \pm 0.0043$ (-0.3 $\sigma$ )	$\chi_{BAO}^2$	5.66	$6.2 \pm 1.2$ (-0.0 $\sigma$ )
$\Omega_m h^3$	0.096350	$0.09634 \pm 0.00028$ (+1.0 $\sigma$ )	$100\theta_{s,eq}$	0.45098	$0.4509 \pm 0.0022$ (-0.4 $\sigma$ )	$\chi_{CMB}^2$	2764.6	$2780.1 \pm 5.7$ (+286.5 $\sigma$ )

Best-fit  $\chi_{eff}^2 = 2771.92$ ;  $\Delta\chi_{eff}^2 = 1586.17$ ;  $\bar{\chi}_{eff}^2 = 2797.91$ ;  $\Delta\bar{\chi}_{eff}^2 = 1591.88$ ;  $R - 1 = 0.01929$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.03 ( $\Delta$  0.01) MGS: 1.22 ( $\Delta$  -0.06) DR12BAO: 4.41 ( $\Delta$  0.23) CMB - simall-100x143-offlike5\_EE\_Aplanck\_B: 396.20 ( $\Delta$  0.31) commander-dx12.v3.2.29: 22.87 ( $\Delta$  0.04) plik-rd12\_HM\_v22b\_TTTEEE: 2345.51



## 2.9 base\_plikHM\_TTTEEE\_lowl\_lowE\_post\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022507	$0.02249^{+0.00015}_{-0.00013}$ (+0.5 $\sigma$ )	$\Omega_m h^3$	0.096417	$0.09638 \pm 0.00027$ (+0.8 $\sigma$ )	$100\theta_{\text{eq}}$	0.8195	$0.8192 \pm 0.0055$ (−0.8 $\sigma$ )
$\Omega_c h^2$	0.11853	$0.1186 \pm 0.0013$ (+0.8 $\sigma$ )	$\sigma_8$	0.8085	$0.8084 \pm 0.0077$ (+0.7 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.45255	$0.4524 \pm 0.0028$ (−0.9 $\sigma$ )
$100\theta_{\text{MC}}$	1.041114	$1.04109 \pm 0.00030$ (−0.4 $\sigma$ )	$S_8$	0.8165	$0.817 \pm 0.015$ (+0.8 $\sigma$ )	$H(0.15)$	73.276	$73.23 \pm 0.48$ (−0.6 $\sigma$ )
$\tau$	0.0570	$0.0573^{+0.0073}_{-0.0090}$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4472	$0.4477 \pm 0.0082$ (+0.8 $\sigma$ )	$D_{\text{M}}(0.15)$	637.47	$638.0 \pm 4.8$ (+0.6 $\sigma$ )
$\ln(10^{10} A_s)$	3.0469	$3.047^{+0.015}_{-0.018}$ (+0.4 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6013	$0.6016 \pm 0.0079$ (+0.8 $\sigma$ )	$H(0.38)$	83.299	$83.26 \pm 0.35$ (−0.5 $\sigma$ )
$n_s$	0.97011	$0.9687 \pm 0.0042$ (−0.4 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9801	$0.980 \pm 0.011$ (+0.7 $\sigma$ )	$D_{\text{M}}(0.38)$	1521.7	$1522.6 \pm 9.6$ (+0.6 $\sigma$ )
$y_{\text{cal}}$	1.00063	$1.0006 \pm 0.0025$ (+0.0 $\sigma$ )	$r_{\text{drag}} h$	100.25	$100.18 \pm 0.99$ (−0.7 $\sigma$ )	$H(0.51)$	89.966	$89.94 \pm 0.28$ (−0.4 $\sigma$ )
$A_{217}^{\text{CIB}}$	45.8	$46 \pm 7$ (−0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4226	$2.427 \pm 0.027$ (+0.7 $\sigma$ )	$D_{\text{M}}(0.51)$	1972.0	$1973 \pm 11$ (+0.5 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.68	—	$z_{\text{re}}$	7.90	$7.91^{+0.76}_{-0.85}$ (+0.1 $\sigma$ )	$H(0.61)$	95.547	$95.52 \pm 0.22$ (−0.3 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.08	$5.6^{+2.2}_{-1.8}$ (+0.2 $\sigma$ )	$10^9 A_s$	2.1051	$2.105^{+0.031}_{-0.038}$ (+0.4 $\sigma$ )	$D_{\text{M}}(0.61)$	2295.5	$2297 \pm 12$ (+0.5 $\sigma$ )
$A_{100}^{\text{PS}}$	246.6	$257 \pm 28$ (−0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8782	$1.877 \pm 0.012$ (+0.6 $\sigma$ )	$H(2.33)$	235.75	$235.78 \pm 0.76$ (+0.9 $\sigma$ )
$A_{143}^{\text{PS}}$	49.4	$45 \pm 8$ (−0.3 $\sigma$ )	$D_{40}$	1221.2	$1224 \pm 12$ (+0.5 $\sigma$ )	$D_{\text{M}}(2.33)$	5751.8	$5753 \pm 10$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	52.7	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{220}$	5738.8	$5740 \pm 37$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4522	$0.4526 \pm 0.0077$ (+0.8 $\sigma$ )
$A_{217}^{\text{PS}}$	121.3	$115 \pm 10$ (+0.1 $\sigma$ )	$D_{810}$	2541.3	$2539 \pm 14$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7476	$0.7475 \pm 0.0068$ (+0.6 $\sigma$ )
$A^{\text{kSZ}}$	0.01	$< 4.12$ (−0.1 $\sigma$ )	$D_{1420}$	819.91	$818.4 \pm 4.8$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4718	$0.4720 \pm 0.0065$ (+0.8 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.83	$8.8 \pm 1.9$ (−0.2 $\sigma$ )	$D_{2000}$	231.96	$231.4 \pm 1.6$ (+0.5 $\sigma$ )	$\sigma_8(0.38)$	0.6633	$0.6631^{+0.0054}_{-0.0061}$ (+0.6 $\sigma$ )
$A_{143}^{\text{dustTT}}$	11.00	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$n_{\text{s},0.002}$	0.97011	$0.9687 \pm 0.0042$ (−0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.4710	$0.4712 \pm 0.0058$ (+0.8 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	20.02	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\text{P}}$	0.245447	$0.245438^{+0.000057}_{-0.000046}$ (+0.5 $\sigma$ )	$\sigma_8(0.51)$	0.6210	$0.6208^{+0.0050}_{-0.0057}$ (+0.5 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.3	$93.6 \pm 7.2$ (+0.1 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.246774	$0.246765^{+0.000057}_{-0.000046}$ (+0.5 $\sigma$ )	$f\sigma_8(0.61)$	0.4665	$0.4666 \pm 0.0053$ (+0.8 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1131	$0.113 \pm 0.039$	$10^5 \text{D/H}$	2.5606	$2.565^{+0.023}_{-0.027}$ (−0.5 $\sigma$ )	$\sigma_8(0.61)$	0.5911	$0.5908^{+0.0047}_{-0.0054}$ (+0.5 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1346	$0.134 \pm 0.029$	Age/Gyr	13.7716	$13.775 \pm 0.022$ (+0.0 $\sigma$ )	$f\sigma_8(2.33)$	0.29824	$0.2981^{+0.0023}_{-0.0027}$ (+0.4 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.479	$0.478 \pm 0.087$	$z_*$	1089.620	$1089.66 \pm 0.25$ (−0.0 $\sigma$ )	$\sigma_8(2.33)$	0.30772	$0.3076^{+0.0024}_{-0.0029}$ (+0.2 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.224	$0.224 \pm 0.055$	$r_*$	144.706	$144.70 \pm 0.29$ (−1.1 $\sigma$ )	$f_{2000}^{143}$	27.88	$28.9 \pm 2.8$ (−0.5 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.663	$0.664 \pm 0.080$	$100\theta_*$	1.041286	$1.04127 \pm 0.00029$ (−0.4 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.41	$31.7 \pm 1.9$ (−0.6 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.075	$2.07 \pm 0.26$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8968	$13.897 \pm 0.027$ (−1.0 $\sigma$ )	$f_{2000}^{217}$	105.97	$106.6 \pm 1.8$ (−0.5 $\sigma$ )
$c_{100}$	0.99975	$0.99966 \pm 0.00062$ (+0.1 $\sigma$ )	$z_{\text{drag}}$	1060.162	$1060.10^{+0.30}_{-0.26}$ (+0.8 $\sigma$ )	$\chi_{\text{simall}}^2$	396.47	$397.6 \pm 2.5$ (+0.2 $\sigma$ )
$c_{217}$	0.99817	$0.99817 \pm 0.00061$ (−0.2 $\sigma$ )	$r_{\text{drag}}$	147.326	$147.33 \pm 0.28$ (−1.1 $\sigma$ )	$\chi_{\text{lowl}}^2$	22.54	$22.86 \pm 0.85$ (+0.5 $\sigma$ )
$H_0$	68.05	$68.00 \pm 0.56$ (−0.6 $\sigma$ )	$k_{\text{D}}$	0.140722	$0.14070^{+0.00028}_{-0.00033}$ (+1.2 $\sigma$ )	$\chi_{\text{plik}}^2$	2346.8	$2361.0 \pm 6.5$ (+230.7 $\sigma$ )
$\Omega_{\Lambda}$	0.6940	$0.6933 \pm 0.0076$ (−0.7 $\sigma$ )	$100\theta_{\text{D}}$	0.160647	$0.16067^{+0.00015}_{-0.00017}$ (−0.9 $\sigma$ )	$\chi_{\text{H073p45}}^2$	10.58	$10.9 \pm 2.2$ (+0.6 $\sigma$ )
$\Omega_{\text{m}}$	0.3060	$0.3067 \pm 0.0076$ (+0.7 $\sigma$ )	$z_{\text{eq}}$	3370.4	$3372 \pm 29$ (+0.9 $\sigma$ )	$\chi_{\text{prior}}^2$	1.58	$11.7 \pm 4.8$ (+1.2 $\sigma$ )
$\Omega_{\text{m}} h^2$	0.14169	$0.1418 \pm 0.0012$ (+0.9 $\sigma$ )	$k_{\text{eq}}$	0.010287	$0.010292 \pm 0.000088$ (+0.9 $\sigma$ )	$\chi_{\text{CMB}}^2$	2765.8	$2781.5 \pm 6.4$ (+244.0 $\sigma$ )

Best-fit  $\chi_{\text{eff}}^2 = 2777.94$ ;  $\Delta\chi_{\text{eff}}^2 = 1586.36$ ;  $\bar{\chi}_{\text{eff}}^2 = 2804.16$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1592.08$ ;  $R - 1 = 0.03140$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.47 ( $\Delta$  0.40) commander\_dx12\_v3.2.29: 22.54 ( $\Delta$  0.46) plik\_rd12\_HM\_v22b\_TTTEEE: 2346.76 Hubble - H073p45: 10.59 ( $\Delta$  1.60)



## 2.10 base\_plikHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02236 \pm 0.00015 \quad (+1.1\sigma)$	$\Omega_{\text{m}}h^3$	$0.09633 \pm 0.00029 \quad (+1.0\sigma)$	$100\theta_{\text{eq}}$	$0.8126 \pm 0.0058 \quad (+0.2\sigma)$
$\Omega_{\text{c}}h^2$	$0.1202 \pm 0.0014 \quad (-0.2\sigma)$	$\sigma_8$	$0.8127^{+0.0063}_{-0.0073} \quad (-0.0\sigma)$	$100\theta_{\text{s,eq}}$	$0.4490 \pm 0.0029 \quad (+0.1\sigma)$
$100\theta_{\text{MC}}$	$1.04091 \pm 0.00031 \quad (+0.3\sigma)$	$S_8$	$0.834 \pm 0.016 \quad (-0.2\sigma)$	$H(0.15)$	$72.62 \pm 0.51 \quad (+0.4\sigma)$
$\tau$	$0.0555^{+0.0051}_{-0.0084} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4571 \pm 0.0087 \quad (-0.2\sigma)$	$D_{\text{M}}(0.15)$	$644.0 \pm 5.2 \quad (-0.4\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.047^{+0.012}_{-0.016} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6094 \pm 0.0080 \quad (-0.2\sigma)$	$H(0.38)$	$82.83 \pm 0.37 \quad (+0.5\sigma)$
$n_{\text{s}}$	$0.9650 \pm 0.0044 \quad (+0.4\sigma)$	$\sigma_8/h^{0.5}$	$0.991 \pm 0.011 \quad (-0.2\sigma)$	$D_{\text{M}}(0.38)$	$1535 \pm 10 \quad (-0.4\sigma)$
$y_{\text{cal}}$	$1.0005 \pm 0.0025 \quad (+0.0\sigma)$	$r_{\text{drag}}h$	$99.0 \pm 1.0 \quad (+0.3\sigma)$	$H(0.51)$	$89.60 \pm 0.29 \quad (+0.6\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.450 \pm 0.027 \quad (-0.2\sigma)$	$D_{\text{M}}(0.51)$	$1987 \pm 12 \quad (-0.5\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$z_{\text{re}}$	$7.79^{+0.56}_{-0.83} \quad (+0.2\sigma)$	$H(0.61)$	$95.26 \pm 0.23 \quad (+0.7\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.2}_{-1.9} \quad (+0.2\sigma)$	$10^9 A_{\text{s}}$	$2.105^{+0.025}_{-0.034} \quad (+0.2\sigma)$	$D_{\text{M}}(0.61)$	$2312 \pm 13 \quad (-0.5\sigma)$
$A_{100}^{\text{PS}}$	$258 \pm 28 \quad (-0.2\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.884 \pm 0.012 \quad (-0.0\sigma)$	$H(2.33)$	$236.66 \pm 0.81 \quad (-0.0\sigma)$
$A_{143}^{\text{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{40}$	$1232 \pm 13 \quad (-0.1\sigma)$	$D_{\text{M}}(2.33)$	$5764 \pm 11 \quad (-0.8\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{220}$	$5731 \pm 38 \quad (+0.4\sigma)$	$f\sigma_8(0.15)$	$0.4612 \pm 0.0080 \quad (-0.2\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{810}$	$2539 \pm 14 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.7505^{+0.0054}_{-0.0065} \quad (+0.0\sigma)$
$A^{\text{kSZ}}$	$< 4.21 \quad (-0.2\sigma)$	$D_{1420}$	$817.2 \pm 4.9 \quad (+0.5\sigma)$	$f\sigma_8(0.38)$	$0.4785 \pm 0.0065 \quad (-0.2\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$D_{2000}$	$230.9 \pm 1.6 \quad (+0.7\sigma)$	$\sigma_8(0.38)$	$0.6647^{+0.0044}_{-0.0056} \quad (+0.1\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$n_{\text{s},0.002}$	$0.9650 \pm 0.0044 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4766 \pm 0.0057 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.245391^{+0.000061}_{-0.000055} \quad (+1.0\sigma)$	$\sigma_8(0.51)$	$0.6219^{+0.0040}_{-0.0052} \quad (+0.2\sigma)$
$A_{217}^{\text{dustTT}}$	$93.8 \pm 7.3 \quad (+0.1\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246717^{+0.000062}_{-0.000055} \quad (+1.0\sigma)$	$f\sigma_8(0.61)$	$0.4712 \pm 0.0051 \quad (-0.1\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$10^5 \text{D/H}$	$2.587 \pm 0.027 \quad (-1.1\sigma)$	$\sigma_8(0.61)$	$0.5916^{+0.0038}_{-0.0049} \quad (+0.2\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.029$	$\text{Age/Gyr}$	$13.799 \pm 0.024 \quad (-0.8\sigma)$	$f\sigma_8(2.33)$	$0.2981^{+0.0018}_{-0.0025} \quad (+0.3\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.480 \pm 0.085$	$z_*$	$1089.94 \pm 0.27 \quad (-0.8\sigma)$	$\sigma_8(2.33)$	$0.3071^{+0.0019}_{-0.0026} \quad (+0.3\sigma)$
$A_{143}^{\text{dustTE}}$	$0.226 \pm 0.053$	$r_*$	$144.40 \pm 0.30 \quad (-0.2\sigma)$	$f_{2000}^{143}$	$29.4 \pm 2.7 \quad (-0.6\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.666 \pm 0.080$	$100\theta_*$	$1.04109 \pm 0.00030 \quad (+0.2\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 1.9 \quad (-0.7\sigma)$
$A_{217}^{\text{dustTE}}$	$2.09 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.870 \pm 0.028 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.8 \quad (-0.6\sigma)$
$c_{100}$	$0.99966 \pm 0.00062 \quad (+0.1\sigma)$	$z_{\text{drag}}$	$1059.93 \pm 0.30 \quad (+1.1\sigma)$	$\chi_{\text{small}}^2$	$397.1 \pm 2.0 \quad (+0.1\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$r_{\text{drag}}$	$147.06 \pm 0.30 \quad (-0.3\sigma)$	$\chi_{\text{lowl}}^2$	$23.56 \pm 0.97 \quad (-0.3\sigma)$
$H_0$	$67.29 \pm 0.60 \quad (+0.4\sigma)$	$k_{\text{D}}$	$0.14090 \pm 0.00032 \quad (+0.7\sigma)$	$\chi_{\text{plik}}^2$	$2359.3 \pm 5.7 \quad (+292.4\sigma)$
$\Omega_{\Lambda}$	$0.6837 \pm 0.0084 \quad (+0.3\sigma)$	$100\theta_{\text{D}}$	$0.16076 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{\text{prior}}^2$	$11.6 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\text{m}}$	$0.3163 \pm 0.0084 \quad (-0.3\sigma)$	$z_{\text{eq}}$	$3406 \pm 31 \quad (-0.1\sigma)$	$\chi_{\text{CMB}}^2$	$2779.9 \pm 5.7 \quad (+292.3\sigma)$
$\Omega_{\text{m}}h^2$	$0.1432 \pm 0.0013 \quad (-0.1\sigma)$	$k_{\text{eq}}$	$0.010395 \pm 0.000094 \quad (-0.1\sigma)$		

$\bar{\chi}_{\text{eff}}^2 = 2791.53$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1592.22$ ;  $R - 1 = 0.01241$



## 2.11 base\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02242 \pm 0.00013 \quad (+1.0\sigma)$	$\sigma_8$	$0.8105^{+0.0060}_{-0.0072} \quad (+0.3\sigma)$	$H(0.15)$	$72.95 \pm 0.39 \quad (+0.1\sigma)$
$\Omega_c h^2$	$0.1193 \pm 0.0010 \quad (+0.3\sigma)$	$S_8$	$0.825 \pm 0.012 \quad (+0.2\sigma)$	$D_M(0.15)$	$640.7 \pm 3.8 \quad (-0.1\sigma)$
$100\theta_{MC}$	$1.04101 \pm 0.00029 \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4519 \pm 0.0067 \quad (+0.2\sigma)$	$H(0.38)$	$83.06 \pm 0.28 \quad (+0.3\sigma)$
$\tau$	$0.0566^{+0.0053}_{-0.0086} \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6052 \pm 0.0067 \quad (+0.3\sigma)$	$D_M(0.38)$	$1528.1 \pm 7.7 \quad (-0.1\sigma)$
$\ln(10^{10} A_s)$	$3.047^{+0.012}_{-0.017} \quad (+0.3\sigma)$	$\sigma_8/h^{0.5}$	$0.9852^{+0.0091}_{-0.010} \quad (+0.2\sigma)$	$H(0.51)$	$89.78 \pm 0.23 \quad (+0.4\sigma)$
$n_s$	$0.9670 \pm 0.0037 \quad (+0.1\sigma)$	$r_{\text{drag}} h$	$99.63 \pm 0.78 \quad (-0.2\sigma)$	$D_M(0.51)$	$1979.6 \pm 9.0 \quad (-0.2\sigma)$
$y_{\text{cal}}$	$1.0006 \pm 0.0025 \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.437 \pm 0.023 \quad (+0.2\sigma)$	$H(0.61)$	$95.39 \pm 0.19 \quad (+0.5\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$z_{\text{re}}$	$7.88^{+0.58}_{-0.85} \quad (+0.1\sigma)$	$D_M(0.61)$	$2303.6 \pm 9.7 \quad (-0.2\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s$	$2.106^{+0.025}_{-0.036} \quad (+0.3\sigma)$	$H(2.33)$	$236.16 \pm 0.62 \quad (+0.6\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.1}_{-1.8} \quad (+0.2\sigma)$	$10^9 A_s e^{-2\tau}$	$1.880 \pm 0.011 \quad (+0.2\sigma)$	$D_M(2.33)$	$5758.7 \pm 8.8 \quad (-0.6\sigma)$
$A_{100}^{\text{PS}}$	$258 \pm 28 \quad (-0.2\sigma)$	$D_{40}$	$1227 \pm 11 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4565 \pm 0.0063 \quad (+0.2\sigma)$
$A_{143}^{\text{PS}}$	$45 \pm 8 \quad (-0.4\sigma)$	$D_{220}$	$5735 \pm 37 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7490^{+0.0053}_{-0.0066} \quad (+0.3\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4750 \pm 0.0054 \quad (+0.3\sigma)$
$A_{217}^{\text{PS}}$	$115.0 \pm 9.9 \quad (+0.1\sigma)$	$D_{1420}$	$817.8 \pm 4.8 \quad (+0.5\sigma)$	$\sigma_8(0.38)$	$0.6640^{+0.0044}_{-0.0058} \quad (+0.3\sigma)$
$A^{\text{kSZ}}$	$< 4.17 \quad (-0.2\sigma)$	$D_{2000}$	$231.1 \pm 1.6 \quad (+0.7\sigma)$	$f\sigma_8(0.51)$	$0.4737 \pm 0.0049 \quad (+0.3\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$n_{s,0.002}$	$0.9670 \pm 0.0037 \quad (+0.1\sigma)$	$\sigma_8(0.51)$	$0.6214^{+0.0041}_{-0.0054} \quad (+0.3\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_P$	$0.245414^{+0.000055}_{-0.000048} \quad (+1.0\sigma)$	$f\sigma_8(0.61)$	$0.4687^{+0.0042}_{-0.0047} \quad (+0.3\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.2 \quad (+0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.246740^{+0.000055}_{-0.000048} \quad (+1.0\sigma)$	$\sigma_8(0.61)$	$0.5913^{+0.0038}_{-0.0052} \quad (+0.3\sigma)$
$A_{217}^{\text{dustTT}}$	$93.7 \pm 7.2 \quad (+0.1\sigma)$	$10^5 D/H$	$2.577 \pm 0.025 \quad (-1.0\sigma)$	$f\sigma_8(2.33)$	$0.2982^{+0.0019}_{-0.0026} \quad (+0.3\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	Age/Gyr	$13.787 \pm 0.020 \quad (-0.7\sigma)$	$\sigma_8(2.33)$	$0.3074^{+0.0020}_{-0.0027} \quad (+0.3\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$z_*$	$1089.80 \pm 0.22 \quad (-0.8\sigma)$	$f_{2000}^{143}$	$29.2 \pm 2.7 \quad (-0.5\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.478 \pm 0.086$	$r_*$	$144.57 \pm 0.23 \quad (-0.8\sigma)$	$f_{2000}^{143 \times 217}$	$31.9 \pm 1.9 \quad (-0.7\sigma)$
$A_{143}^{\text{dustTE}}$	$0.225 \pm 0.054$	$100\theta_*$	$1.04119 \pm 0.00028 \quad (+0.0\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.7 \quad (-0.6\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.665 \pm 0.080$	$D_M(z_*)/\text{Gpc}$	$13.886 \pm 0.023 \quad (-0.8\sigma)$	$\chi_{\text{simall}}^2$	$397.3 \pm 2.2 \quad (+0.1\sigma)$
$A_{217}^{\text{dustTE}}$	$2.09 \pm 0.27$	$z_{\text{drag}}$	$1060.00 \pm 0.29 \quad (+1.1\sigma)$	$\chi_{\text{lowl}}^2$	$23.14 \pm 0.81 \quad (+0.0\sigma)$
$c_{100}$	$0.99966 \pm 0.00063 \quad (+0.1\sigma)$	$r_{\text{drag}}$	$147.22 \pm 0.24 \quad (-0.9\sigma)$	$\chi_{\text{plik}}^2$	$2359.5 \pm 5.7 \quad (+291.6\sigma)$
$c_{217}$	$0.99817 \pm 0.00061 \quad (-0.2\sigma)$	$k_D$	$0.14077 \pm 0.00029 \quad (+1.1\sigma)$	$\chi_{6\text{DF}}^2$	$0.056 \pm 0.065 \quad (-0.0\sigma)$
$H_0$	$67.67 \pm 0.45 \quad (+0.1\sigma)$	$100\theta_D$	$0.16072 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{\text{MGS}}^2$	$1.26 \pm 0.42 \quad (-0.2\sigma)$
$\Omega_\Lambda$	$0.6891 \pm 0.0061 \quad (-0.1\sigma)$	$z_{\text{eq}}$	$3387 \pm 23 \quad (+0.5\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.9 \pm 1.4 \quad (+0.1\sigma)$
$\Omega_m$	$0.3109 \pm 0.0061 \quad (+0.1\sigma)$	$k_{\text{eq}}$	$0.010336 \pm 0.000070 \quad (+0.5\sigma)$	$\chi_{\text{prior}}^2$	$11.6 \pm 4.6 \quad (+1.1\sigma)$
$\Omega_m h^2$	$0.14237 \pm 0.00096 \quad (+0.5\sigma)$	$100\theta_{\text{eq}}$	$0.8163 \pm 0.0043 \quad (-0.3\sigma)$	$\chi_{\text{BAO}}^2$	$6.2 \pm 1.1 \quad (-0.0\sigma)$
$\Omega_m h^3$	$0.09634 \pm 0.00028 \quad (+1.0\sigma)$	$100\theta_{s,\text{eq}}$	$0.4509 \pm 0.0022 \quad (-0.4\sigma)$	$\chi_{\text{CMB}}^2$	$2779.9 \pm 5.6 \quad (+290.3\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 2797.72; \Delta\bar{\chi}_{\text{eff}}^2 = 1591.96; R - 1 = 0.02064$$



## 2.12 base\_plikHM\_TTTEEE\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02249^{+0.00015}_{-0.00013} \quad (+0.5\sigma)$	$\Omega_{\text{m}}h^3$	$0.09638 \pm 0.00027 \quad (+0.8\sigma)$	$100\theta_{\text{eq}}$	$0.8193 \pm 0.0054 \quad (-0.8\sigma)$
$\Omega_{\text{c}}h^2$	$0.1186 \pm 0.0013 \quad (+0.8\sigma)$	$\sigma_8$	$0.8089 \pm 0.0072 \quad (+0.7\sigma)$	$100\theta_{\text{s,eq}}$	$0.4524 \pm 0.0028 \quad (-0.9\sigma)$
$100\theta_{\text{MC}}$	$1.04110 \pm 0.00030 \quad (-0.4\sigma)$	$S_8$	$0.818 \pm 0.015 \quad (+0.8\sigma)$	$H(0.15)$	$73.24 \pm 0.48 \quad (-0.6\sigma)$
$\tau$	$0.0579^{+0.0060}_{-0.0091} \quad (+0.1\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4479 \pm 0.0080 \quad (+0.8\sigma)$	$D_{\text{M}}(0.15)$	$637.9 \pm 4.7 \quad (+0.6\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.048^{+0.013}_{-0.018} \quad (+0.3\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6019 \pm 0.0077 \quad (+0.8\sigma)$	$H(0.38)$	$83.27 \pm 0.35 \quad (-0.5\sigma)$
$n_{\text{s}}$	$0.9687 \pm 0.0042 \quad (-0.4\sigma)$	$\sigma_8/h^{0.5}$	$0.981 \pm 0.011 \quad (+0.7\sigma)$	$D_{\text{M}}(0.38)$	$1522.5 \pm 9.5 \quad (+0.6\sigma)$
$y_{\text{cal}}$	$1.0006 \pm 0.0024 \quad (+0.0\sigma)$	$r_{\text{drag}}h$	$100.19 \pm 0.98 \quad (-0.7\sigma)$	$H(0.51)$	$89.94 \pm 0.28 \quad (-0.4\sigma)$
$A_{217}^{\text{CIB}}$	$46 \pm 7 \quad (-0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.428 \pm 0.026 \quad (+0.7\sigma)$	$D_{\text{M}}(0.51)$	$1973 \pm 11 \quad (+0.5\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$z_{\text{re}}$	$7.98^{+0.63}_{-0.90} \quad (+0.1\sigma)$	$H(0.61)$	$95.52 \pm 0.22 \quad (-0.3\sigma)$
$A_{143}^{\text{tSZ}}$	$5.6^{+2.1}_{-1.8} \quad (+0.2\sigma)$	$10^9 A_{\text{s}}$	$2.108^{+0.027}_{-0.038} \quad (+0.3\sigma)$	$D_{\text{M}}(0.61)$	$2297 \pm 12 \quad (+0.5\sigma)$
$A_{100}^{\text{PS}}$	$257 \pm 28 \quad (-0.2\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.877 \pm 0.011 \quad (+0.6\sigma)$	$H(2.33)$	$235.78 \pm 0.76 \quad (+0.9\sigma)$
$A_{143}^{\text{PS}}$	$45 \pm 8 \quad (-0.3\sigma)$	$D_{40}$	$1224 \pm 12 \quad (+0.5\sigma)$	$D_{\text{M}}(2.33)$	$5753 \pm 10 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{220}$	$5741 \pm 37 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4528 \pm 0.0075 \quad (+0.8\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7480^{+0.0059}_{-0.0069} \quad (+0.6\sigma)$
$A^{\text{kSZ}}$	$< 4.10 \quad (-0.1\sigma)$	$D_{1420}$	$818.4 \pm 4.7 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4722 \pm 0.0063 \quad (+0.8\sigma)$
$A_{100}^{\text{dustTT}}$	$8.8 \pm 1.8 \quad (-0.2\sigma)$	$D_{2000}$	$231.4 \pm 1.6 \quad (+0.5\sigma)$	$\sigma_8(0.38)$	$0.6635^{+0.0048}_{-0.0061} \quad (+0.6\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$n_{\text{s},0.002}$	$0.9687 \pm 0.0042 \quad (-0.4\sigma)$	$f\sigma_8(0.51)$	$0.4714 \pm 0.0056 \quad (+0.8\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.245438^{+0.000057}_{-0.000046} \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.6212^{+0.0044}_{-0.0057} \quad (+0.5\sigma)$
$A_{217}^{\text{dustTT}}$	$93.6 \pm 7.2 \quad (+0.1\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246765^{+0.000057}_{-0.000046} \quad (+0.5\sigma)$	$f\sigma_8(0.61)$	$0.4669 \pm 0.0051 \quad (+0.8\sigma)$
$A_{100}^{\text{dustTE}}$	$0.113 \pm 0.039$	$10^5 \text{D}/\text{H}$	$2.565^{+0.023}_{-0.027} \quad (-0.5\sigma)$	$\sigma_8(0.61)$	$0.5912^{+0.0041}_{-0.0054} \quad (+0.5\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134 \pm 0.029$	$\text{Age}/\text{Gyr}$	$13.774 \pm 0.022 \quad (+0.0\sigma)$	$f\sigma_8(2.33)$	$0.2983^{+0.0020}_{-0.0028} \quad (+0.4\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.478 \pm 0.087$	$z_*$	$1089.65^{+0.24}_{-0.27} \quad (-0.0\sigma)$	$\sigma_8(2.33)$	$0.3078^{+0.0020}_{-0.0029} \quad (+0.2\sigma)$
$A_{143}^{\text{dustTE}}$	$0.223 \pm 0.055$	$r_*$	$144.70 \pm 0.28 \quad (-1.1\sigma)$	$f_{2000}^{143}$	$28.9 \pm 2.8 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.663 \pm 0.080$	$100\theta_*$	$1.04127 \pm 0.00029 \quad (-0.4\sigma)$	$f_{2000}^{143 \times 217}$	$31.7 \pm 1.9 \quad (-0.5\sigma)$
$A_{217}^{\text{dustTE}}$	$2.07 \pm 0.26$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.897 \pm 0.027 \quad (-1.0\sigma)$	$f_{2000}^{217}$	$106.5 \pm 1.8 \quad (-0.4\sigma)$
$c_{100}$	$0.99966 \pm 0.00062 \quad (+0.1\sigma)$	$z_{\text{drag}}$	$1060.11^{+0.29}_{-0.26} \quad (+0.8\sigma)$	$\chi_{\text{small}}^2$	$397.6 \pm 2.6 \quad (+0.1\sigma)$
$c_{217}$	$0.99817 \pm 0.00061 \quad (-0.2\sigma)$	$r_{\text{drag}}$	$147.33 \pm 0.28 \quad (-1.1\sigma)$	$\chi_{\text{lowl}}^2$	$22.87 \pm 0.85 \quad (+0.5\sigma)$
$H_0$	$68.00 \pm 0.56 \quad (-0.6\sigma)$	$k_{\text{D}}$	$0.14070^{+0.00028}_{-0.00033} \quad (+1.2\sigma)$	$\chi_{\text{plik}}^2$	$2360.9 \pm 6.4 \quad (+237.3\sigma)$
$\Omega_{\Lambda}$	$0.6934 \pm 0.0075 \quad (-0.7\sigma)$	$100\theta_{\text{D}}$	$0.16067^{+0.00015}_{-0.00017} \quad (-0.9\sigma)$	$\chi_{\text{H073p45}}^2$	$10.9 \pm 2.2 \quad (+0.6\sigma)$
$\Omega_{\text{m}}$	$0.3066 \pm 0.0075 \quad (+0.7\sigma)$	$z_{\text{eq}}$	$3372 \pm 29 \quad (+0.9\sigma)$	$\chi_{\text{prior}}^2$	$11.6 \pm 4.6 \quad (+1.1\sigma)$
$\Omega_{\text{m}}h^2$	$0.1417 \pm 0.0012 \quad (+0.9\sigma)$	$k_{\text{eq}}$	$0.010291 \pm 0.000087 \quad (+0.9\sigma)$	$\chi_{\text{CMB}}^2$	$2781.4 \pm 6.3 \quad (+250.6\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 2803.89; \Delta\bar{\chi}_{\text{eff}}^2 = 1592.08; R - 1 = 0.03660$$



### 2.13 base\_CamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022132	$0.02214 \pm 0.00022$	$\sigma_8 \Omega_m^{0.5}$	0.4585	$0.458 \pm 0.013$	$100\theta_{s,eq}$	0.44861	$0.4487 \pm 0.0046$
$\Omega_c h^2$	0.12049	$0.1205 \pm 0.0021$	$\sigma_8 \Omega_m^{0.25}$	0.6098	$0.610 \pm 0.012$	$H(0.15)$	72.32	$72.34 \pm 0.79$
$100\theta_{MC}$	1.040846	$1.04084 \pm 0.00048$	$\sigma_8/h^{0.5}$	0.9911	$0.991 \pm 0.016$	$D_M(0.15)$	646.9	$646.8 \pm 8.0$
$\tau$	0.0519	$0.0521 \pm 0.0080$	$r_{drag}h$	98.58	$98.6 \pm 1.6$	$H(0.38)$	82.57	$82.59 \pm 0.57$
$\ln(10^{10} A_s)$	3.0384	$3.039 \pm 0.016$	$\langle d^2 \rangle^{1/2}$	2.4473	$2.448 \pm 0.038$	$D_M(0.38)$	1540.8	$1541 \pm 16$
$n_s$	0.9639	$0.9638 \pm 0.0058$	$z_{re}$	7.50	$7.49^{+0.83}_{-0.75}$	$H(0.51)$	89.362	$89.38 \pm 0.44$
$y_{cal}$	1.00037	$1.0005 \pm 0.0025$	$10^9 A_s$	2.0872	$2.089 \pm 0.034$	$D_M(0.51)$	1994.7	$1994 \pm 19$
$A_{100}^{PS}$	238.8	$242 \pm 25$	$10^9 A_s e^{-2\tau}$	1.8813	$1.882 \pm 0.014$	$H(0.61)$	95.040	$95.05 \pm 0.35$
$A_{143}^{PS}$	41.3	$41 \pm 8$	$D_{40}$	1228.7	$1230 \pm 15$	$D_M(0.61)$	2320.0	$2320 \pm 20$
$A_{217}^{PS}$	100.6	$101 \pm 10$	$D_{220}$	5701.7	$5704 \pm 43$	$H(2.33)$	236.64	$236.6 \pm 1.3$
$A_{217}^{CIB}$	45.0	$41^{+7}_{-8}$	$D_{810}$	2534.0	$2534 \pm 14$	$D_M(2.33)$	5775.9	$5775 \pm 16$
$A_{143}^{tSZ}$	5.89	$3.7^{+1.8}_{-2.6}$	$D_{1420}$	814.3	$814.3 \pm 5.2$	$f\sigma_8(0.15)$	0.4624	$0.462 \pm 0.012$
$r_{143 \times 217}^{PS}$	0.582	$0.65 \pm 0.13$	$D_{2000}$	229.56	$229.6 \pm 1.8$	$\sigma_8(0.15)$	0.7486	$0.7486 \pm 0.0075$
$r_{143 \times 217}^{CIB}$	0.791	$> 0.456$	$n_{s,0.002}$	0.9639	$0.9638 \pm 0.0058$	$f\sigma_8(0.38)$	0.4789	$0.4788 \pm 0.0096$
$\xi^{tSZ \times CIB}$	0.12	—	$Y_P$	0.245298	$0.24529^{+0.00010}_{-0.000082}$	$\sigma_8(0.38)$	0.6627	$0.6627 \pm 0.0060$
$A^{kSZ}$	1.2	—	$Y_P^{BBN}$	0.246624	$0.24662^{+0.00010}_{-0.000082}$	$f\sigma_8(0.51)$	0.4766	$0.4765 \pm 0.0082$
$A_{100}^{dust}$	1.011	$1.01 \pm 0.19$	$10^5 D/H$	2.6309	$2.630 \pm 0.042$	$\sigma_8(0.51)$	0.6199	$0.6198 \pm 0.0054$
$A_{143}^{dust}$	0.991	$0.98 \pm 0.18$	Age/Gyr	13.8257	$13.825 \pm 0.037$	$f\sigma_8(0.61)$	0.4710	$0.4708 \pm 0.0073$
$A_{217}^{dust}$	0.966	$0.97 \pm 0.10$	$z_*$	1090.266	$1090.26 \pm 0.41$	$\sigma_8(0.61)$	0.5896	$0.5896 \pm 0.0051$
$A_{143 \times 217}^{dust}$	0.995	$1.03 \pm 0.16$	$r_*$	144.485	$144.49 \pm 0.48$	$f\sigma_8(2.33)$	0.29696	$0.2970 \pm 0.0025$
$c_{100}$	0.99755	$0.9975 \pm 0.0011$	$100\theta_*$	1.041053	$1.04105 \pm 0.00047$	$\sigma_8(2.33)$	0.30581	$0.3058 \pm 0.0027$
$c_{217}$	1.00139	$1.0012 \pm 0.0016$	$D_M(z_*)/Gpc$	13.8788	$13.879 \pm 0.044$	$f_{2000}^{143}$	31.12	$30.8 \pm 3.0$
$H_0$	66.96	$66.98 \pm 0.92$	$z_{drag}$	1059.437	$1059.43 \pm 0.45$	$f_{2000}^{217}$	107.60	$107.6 \pm 2.0$
$\Omega_\Lambda$	0.6805	$0.680 \pm 0.013$	$r_{drag}$	147.225	$147.23 \pm 0.48$	$f_{2000}^{143 \times 217}$	32.96	$33.0 \pm 2.1$
$\Omega_m$	0.3195	$0.320 \pm 0.013$	$k_D$	0.14054	$0.14054 \pm 0.00052$	$\chi_{small}^2$	395.83	$396.9 \pm 1.6$
$\Omega_m h^2$	0.14327	$0.1432 \pm 0.0020$	$100\theta_D$	0.161064	$0.16106 \pm 0.00026$	$\chi_{lowl}^2$	23.40	$23.5 \pm 1.3$
$\Omega_m h^3$	0.095935	$0.09593 \pm 0.00045$	$z_{eq}$	3408.3	$3408 \pm 48$	$\chi_{CamSpec}^2$	7050.3	$7063.4 \pm 5.4$
$\sigma_8$	0.8110	$0.8110 \pm 0.0089$	$k_{eq}$	0.010403	$0.01040 \pm 0.00015$	$\chi_{prior}^2$	2.17	$7.7 \pm 3.6$
$S_8$	0.8370	$0.837 \pm 0.024$	$100\theta_{eq}$	0.8115	$0.8117 \pm 0.0089$	$\chi_{CMB}^2$	7469.6	$7483.8 \pm 5.5$

Best-fit  $\chi_{eff}^2 = 7471.74$ ;  $\bar{\chi}_{eff}^2 = 7491.54$ ;  $R - 1 = 0.00710$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.83 commander\_dx12\_v3.2\_29: 23.40 CamSpec like\_10.7HM: 7050.34



## 2.14 base\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02223 \pm 0.00019$	$\sigma_8/h^{0.5}$	$0.981 \pm 0.012$	$D_{\mathrm{M}}(0.38)$	$1528.8 \pm 9.3$
$\Omega_{\mathrm{c}}h^2$	$0.1189 \pm 0.0012$	$r_{\mathrm{drag}}h$	$99.84 \pm 0.94$	$H(0.51)$	$89.69 \pm 0.29$
$100\theta_{\mathrm{MC}}$	$1.04105 \pm 0.00042$	$\langle d^2 \rangle^{1/2}$	$2.424 \pm 0.028$	$D_{\mathrm{M}}(0.51)$	$1981 \pm 11$
$\tau$	$0.0537 \pm 0.0079$	$z_{\mathrm{re}}$	$7.61 \pm 0.81$	$H(0.61)$	$95.29 \pm 0.24$
$\ln(10^{10}A_{\mathrm{s}})$	$3.039 \pm 0.017$	$10^9 A_{\mathrm{s}}$	$2.088 \pm 0.035$	$D_{\mathrm{M}}(0.61)$	$2305 \pm 12$
$n_{\mathrm{s}}$	$0.9674 \pm 0.0042$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.875 \pm 0.012$	$H(2.33)$	$235.71 \pm 0.78$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{40}$	$1222 \pm 13$	$D_{\mathrm{M}}(2.33)$	$5765 \pm 12$
$A_{100}^{\mathrm{PS}}$	$241 \pm 25$	$D_{220}$	$5711 \pm 42$	$f\sigma_8(0.15)$	$0.4537 \pm 0.0077$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8$	$D_{810}$	$2534 \pm 14$	$\sigma_8(0.15)$	$0.7456 \pm 0.0069$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{1420}$	$815.3 \pm 5.1$	$f\sigma_8(0.38)$	$0.4723 \pm 0.0065$
$A_{217}^{\mathrm{CIB}}$	$41_{-8}^{+7}$	$D_{2000}$	$229.9 \pm 1.8$	$\sigma_8(0.38)$	$0.6611 \pm 0.0059$
$A_{143}^{\mathrm{tSZ}}$	$3.9_{-2.5}^{+1.9}$	$n_{\mathrm{s},0.002}$	$0.9674 \pm 0.0042$	$f\sigma_8(0.51)$	$0.4711 \pm 0.0059$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	$0.245334_{-0.000072}^{+0.000085}$	$\sigma_8(0.51)$	$0.6188 \pm 0.0055$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.458$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246660_{-0.000073}^{+0.000085}$	$f\sigma_8(0.61)$	$0.4663 \pm 0.0054$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.613 \pm 0.037$	$\sigma_8(0.61)$	$0.5888 \pm 0.0052$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.803 \pm 0.027$	$f\sigma_8(2.33)$	$0.2970 \pm 0.0026$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$z_*$	$1090.01 \pm 0.29$	$\sigma_8(2.33)$	$0.3062 \pm 0.0027$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	$r_*$	$144.82 \pm 0.32$	$f_{2000}^{143}$	$30.4 \pm 3.0$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04125 \pm 0.00041$	$f_{2000}^{217}$	$107.4 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.17$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.909 \pm 0.031$	$f_{2000}^{143 \times 217}$	$32.7 \pm 2.1$
$c_{100}$	$0.9975 \pm 0.0010$	$z_{\mathrm{drag}}$	$1059.52 \pm 0.44$	$\chi_{\mathrm{small}}^2$	$397.0 \pm 1.7$
$c_{217}$	$1.0012 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.54 \pm 0.34$	$\chi_{\mathrm{lowl}}^2$	$22.81 \pm 0.89$
$H_0$	$67.67 \pm 0.54$	$k_{\mathrm{D}}$	$0.14028 \pm 0.00044$	$\chi_{\mathrm{CamSpec}}^2$	$7063.9 \pm 5.3$
$\Omega_{\Lambda}$	$0.6902 \pm 0.0073$	$100\theta_{\mathrm{D}}$	$0.16102 \pm 0.00026$	$\chi_{6\mathrm{DF}}^2$	$0.054 \pm 0.072$
$\Omega_{\mathrm{m}}$	$0.3098 \pm 0.0073$	$z_{\mathrm{eq}}$	$3373 \pm 28$	$\chi_{\mathrm{MGS}}^2$	$1.39 \pm 0.53$
$\Omega_{\mathrm{m}}h^2$	$0.1418 \pm 0.0012$	$k_{\mathrm{eq}}$	$0.010294 \pm 0.000087$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.6$
$\Omega_{\mathrm{m}}h^3$	$0.09593 \pm 0.00045$	$100\theta_{\mathrm{eq}}$	$0.8183 \pm 0.0053$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.5$
$\sigma_8$	$0.8067 \pm 0.0078$	$100\theta_{\mathrm{s,eq}}$	$0.4521 \pm 0.0027$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.3$
$S_8$	$0.820 \pm 0.015$	$H(0.15)$	$72.92 \pm 0.47$	$\chi_{\mathrm{CMB}}^2$	$7483.8 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4490 \pm 0.0082$	$D_{\mathrm{M}}(0.15)$	$640.9 \pm 4.6$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6018 \pm 0.0080$	$H(0.38)$	$83.00 \pm 0.35$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7497.55$ ;  $R - 1 = 0.01113$



## 2.15 base\_CamSpecHM\_TT\_lowl\_lowE\_post\_Riess18

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02239 \pm 0.00022$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.592 \pm 0.011$	$D_{\mathrm{M}}(0.15)$	$633.5 \pm 7.0$
$\Omega_{\mathrm{c}} h^2$	$0.1171 \pm 0.0018$	$\sigma_8 / h^{0.5}$	$0.968 \pm 0.015$	$H(0.38)$	$83.55^{+0.50}_{-0.55}$
$100\theta_{\mathrm{MC}}$	$1.04132 \pm 0.00046$	$r_{\mathrm{drag}} h$	$101.3 \pm 1.5$	$D_{\mathrm{M}}(0.38)$	$1514 \pm 14$
$\tau$	$0.0558 \pm 0.0082$	$\langle d^2 \rangle^{1/2}$	$2.396 \pm 0.034$	$H(0.51)$	$90.13^{+0.40}_{-0.45}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.039 \pm 0.016$	$z_{\mathrm{re}}$	$7.76 \pm 0.81$	$D_{\mathrm{M}}(0.51)$	$1963 \pm 17$
$n_{\mathrm{s}}$	$0.9718 \pm 0.0053$	$10^9 A_{\mathrm{s}}$	$2.089 \pm 0.034$	$H(0.61)$	$95.64^{+0.32}_{-0.37}$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0026$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.868 \pm 0.013$	$D_{\mathrm{M}}(0.61)$	$2286 \pm 18$
$A_{100}^{\mathrm{PS}}$	$240 \pm 25$	$D_{40}$	$1214 \pm 14$	$H(2.33)$	$234.7 \pm 1.1$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8$	$D_{220}$	$5724 \pm 43$	$D_{\mathrm{M}}(2.33)$	$5750^{+17}_{-15}$
$A_{217}^{\mathrm{PS}}$	$101^{+10}_{-10}$	$D_{810}$	$2534 \pm 14$	$f\sigma_8(0.15)$	$0.443 \pm 0.011$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7$	$D_{1420}$	$816.9^{+5.3}_{-4.8}$	$\sigma_8(0.15)$	$0.7419 \pm 0.0074$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.9}_{-2.4}$	$D_{2000}$	$230.6 \pm 1.8$	$f\sigma_8(0.38)$	$0.4644 \pm 0.0088$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9718 \pm 0.0053$	$\sigma_8(0.38)$	$0.6591 \pm 0.0060$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.417$	$Y_{\mathrm{P}}$	$0.245400 \pm 0.000086$	$f\sigma_8(0.51)$	$0.4646 \pm 0.0077$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246726 \pm 0.000086$	$\sigma_8(0.51)$	$0.6174 \pm 0.0054$
$A^{\mathrm{kSZ}}$	$4.9 \pm 2.7$	$10^5 \mathrm{D}/\mathrm{H}$	$2.583 \pm 0.040$	$f\sigma_8(0.61)$	$0.4607 \pm 0.0069$
$A_{100}^{\mathrm{dust}}$	$1.02 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.771 \pm 0.035$	$\sigma_8(0.61)$	$0.5878 \pm 0.0051$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	$z_*$	$1089.65 \pm 0.38$	$f\sigma_8(2.33)$	$0.2969 \pm 0.0025$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$r_*$	$145.17 \pm 0.43$	$\sigma_8(2.33)$	$0.3067 \pm 0.0026$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04151 \pm 0.00045$	$f_{2000}^{143}$	$29.9^{+2.8}_{-3.1}$
$c_{100}$	$0.9975 \pm 0.0010$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.938 \pm 0.040$	$f_{2000}^{217}$	$106.9 \pm 2.0$
$c_{217}$	$1.0012 \pm 0.0015$	$z_{\mathrm{drag}}$	$1059.77 \pm 0.45$	$f_{2000}^{143 \times 217}$	$32.2 \pm 2.1$
$H_0$	$68.54 \pm 0.84$	$r_{\mathrm{drag}}$	$147.84 \pm 0.43$	$\chi_{\mathrm{small}}^2$	$397.2 \pm 1.9$
$\Omega_{\Lambda}$	$0.701 \pm 0.011$	$k_{\mathrm{D}}$	$0.14009 \pm 0.00049$	$\chi_{\mathrm{lowl}}^2$	$22.13 \pm 0.92$
$\Omega_{\mathrm{m}}$	$0.299 \pm 0.011$	$100\theta_{\mathrm{D}}$	$0.16089 \pm 0.00026$	$\chi_{\mathrm{CamSpec}}^2$	$7067.0 \pm 6.0$
$\Omega_{\mathrm{m}} h^2$	$0.1401 \pm 0.0017$	$z_{\mathrm{eq}}$	$3334 \pm 42$	$\chi_{\mathrm{H073p45}}^2$	$9.0 \pm 3.0$
$\Omega_{\mathrm{m}} h^3$	$0.09604 \pm 0.00045$	$k_{\mathrm{eq}}$	$0.01017 \pm 0.00013$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.4$
$\sigma_8$	$0.8015 \pm 0.0086$	$100\theta_{\mathrm{eq}}$	$0.8262 \pm 0.0081$	$\chi_{\mathrm{CMB}}^2$	$7486.3 \pm 5.9$
$S_8$	$0.800 \pm 0.021$	$100\theta_{\mathrm{s,eq}}$	$0.4561 \pm 0.0042$		
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.438 \pm 0.011$	$H(0.15)$	$73.68 \pm 0.73$		
$\bar{\chi}_{\mathrm{eff}}^2 = 7502.88; R - 1 = 0.07941$					



## 2.16 base\_CamSpecHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02214 \pm 0.00022$	$\sigma_8 \Omega_m^{0.5}$	$0.459 \pm 0.013$	$100\theta_{s,eq}$	$0.4489 \pm 0.0046$
$\Omega_c h^2$	$0.1204 \pm 0.0021$	$\sigma_8 \Omega_m^{0.25}$	$0.610 \pm 0.012$	$H(0.15)$	$72.38 \pm 0.78$
$100\theta_{MC}$	$1.04086 \pm 0.00047$	$\sigma_8/h^{0.5}$	$0.992 \pm 0.016$	$D_M(0.15)$	$646.4 \pm 7.9$
$\tau$	$0.0538^{+0.0048}_{-0.0082}$	$r_{drag}h$	$98.7 \pm 1.6$	$H(0.38)$	$82.61 \pm 0.56$
$\ln(10^{10} A_s)$	$3.042^{+0.012}_{-0.016}$	$\langle d^2 \rangle^{1/2}$	$2.450 \pm 0.037$	$D_M(0.38)$	$1540 \pm 16$
$n_s$	$0.9641 \pm 0.0058$	$z_{re}$	$7.67^{+0.54}_{-0.81}$	$H(0.51)$	$89.40 \pm 0.44$
$y_{cal}$	$1.0005 \pm 0.0025$	$10^9 A_s$	$2.095^{+0.025}_{-0.033}$	$D_M(0.51)$	$1994 \pm 18$
$A_{100}^{PS}$	$242 \pm 25$	$10^9 A_s e^{-2\tau}$	$1.881 \pm 0.014$	$H(0.61)$	$95.07 \pm 0.35$
$A_{143}^{PS}$	$41 \pm 8$	$D_{40}$	$1229 \pm 15$	$D_M(0.61)$	$2319 \pm 20$
$A_{217}^{PS}$	$101 \pm 10$	$D_{220}$	$5704 \pm 42$	$H(2.33)$	$236.6 \pm 1.3$
$A_{217}^{CIB}$	$41 \pm 7$	$D_{810}$	$2534 \pm 14$	$D_M(2.33)$	$5775 \pm 16$
$A_{143}^{tSZ}$	$3.8^{+1.8}_{-2.6}$	$D_{1420}$	$814.4 \pm 5.2$	$f\sigma_8(0.15)$	$0.463 \pm 0.012$
$r_{143 \times 217}^{PS}$	$0.65 \pm 0.13$	$D_{2000}$	$229.6 \pm 1.8$	$\sigma_8(0.15)$	$0.7496 \pm 0.0069$
$r_{143 \times 217}^{CIB}$	$> 0.455$	$n_{s,0.002}$	$0.9641 \pm 0.0058$	$f\sigma_8(0.38)$	$0.4792 \pm 0.0095$
$\xi^{tSZ \times CIB}$	—	$Y_P$	$0.24530^{+0.00010}_{-0.000082}$	$\sigma_8(0.38)$	$0.6637^{+0.0051}_{-0.0057}$
$A^{kSZ}$	—	$Y_P^{BBN}$	$0.24662^{+0.00010}_{-0.000082}$	$f\sigma_8(0.51)$	$0.4769 \pm 0.0081$
$A_{100}^{dust}$	$1.01 \pm 0.20$	$10^5 D/H$	$2.629 \pm 0.041$	$\sigma_8(0.51)$	$0.6208^{+0.0044}_{-0.0052}$
$A_{143}^{dust}$	$0.98 \pm 0.18$	Age/Gyr	$13.824 \pm 0.036$	$f\sigma_8(0.61)$	$0.4713 \pm 0.0071$
$A_{217}^{dust}$	$0.97 \pm 0.10$	$z_*$	$1090.24 \pm 0.41$	$\sigma_8(0.61)$	$0.5905^{+0.0040}_{-0.0049}$
$A_{143 \times 217}^{dust}$	$1.03 \pm 0.16$	$r_*$	$144.51 \pm 0.48$	$f\sigma_8(2.33)$	$0.2974^{+0.0019}_{-0.0024}$
$c_{100}$	$0.9975 \pm 0.0011$	$100\theta_*$	$1.04106 \pm 0.00046$	$\sigma_8(2.33)$	$0.3063^{+0.0020}_{-0.0026}$
$c_{217}$	$1.0012 \pm 0.0016$	$D_M(z_*)/\text{Gpc}$	$13.881 \pm 0.044$	$f_{2000}^{143}$	$30.7 \pm 3.0$
$H_0$	$67.02 \pm 0.92$	$z_{drag}$	$1059.44 \pm 0.45$	$f_{2000}^{217}$	$107.5 \pm 2.0$
$\Omega_\Lambda$	$0.681 \pm 0.013$	$r_{drag}$	$147.25 \pm 0.48$	$f_{2000}^{143 \times 217}$	$32.9 \pm 2.1$
$\Omega_m$	$0.319 \pm 0.013$	$k_D$	$0.14053 \pm 0.00051$	$\chi_{simall}^2$	$396.8 \pm 1.6$
$\Omega_m h^2$	$0.1432 \pm 0.0020$	$100\theta_D$	$0.16106 \pm 0.00026$	$\chi_{lowl}^2$	$23.5 \pm 1.3$
$\Omega_m h^3$	$0.09594 \pm 0.00045$	$z_{eq}$	$3406 \pm 48$	$\chi_{CamSpec}^2$	$7063.2 \pm 5.4$
$\sigma_8$	$0.8120 \pm 0.0084$	$k_{eq}$	$0.01040 \pm 0.00014$	$\chi_{prior}^2$	$7.7 \pm 3.5$
$S_8$	$0.837 \pm 0.024$	$100\theta_{eq}$	$0.8121 \pm 0.0089$	$\chi_{CMB}^2$	$7483.6 \pm 5.4$

$\bar{\chi}_{eff}^2 = 7491.26$ ;  $R - 1 = 0.00680$



## 2.17 base\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02223 \pm 0.00019$	$\sigma_8/h^{0.5}$	$0.982 \pm 0.011$	$D_{\mathrm{M}}(0.38)$	$1528.7 \pm 9.3$
$\Omega_{\mathrm{c}}h^2$	$0.1189 \pm 0.0012$	$r_{\mathrm{drag}}h$	$99.85 \pm 0.94$	$H(0.51)$	$89.70 \pm 0.29$
$100\theta_{\mathrm{MC}}$	$1.04105 \pm 0.00042$	$\langle d^2 \rangle^{1/2}$	$2.427 \pm 0.026$	$D_{\mathrm{M}}(0.51)$	$1981 \pm 11$
$\tau$	$0.0550^{+0.0055}_{-0.0080}$	$z_{\mathrm{re}}$	$7.75^{+0.60}_{-0.81}$	$H(0.61)$	$95.30 \pm 0.24$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.013}_{-0.016}$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.026}_{-0.034}$	$D_{\mathrm{M}}(0.61)$	$2305 \pm 12$
$n_{\mathrm{s}}$	$0.9675 \pm 0.0042$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.875 \pm 0.012$	$H(2.33)$	$235.71 \pm 0.78$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{40}$	$1222^{+12}_{-14}$	$D_{\mathrm{M}}(2.33)$	$5765 \pm 12$
$A_{100}^{\mathrm{PS}}$	$241 \pm 25$	$D_{220}$	$5711 \pm 41$	$f\sigma_8(0.15)$	$0.4542 \pm 0.0075$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8$	$D_{810}$	$2534 \pm 14$	$\sigma_8(0.15)$	$0.7466^{+0.0057}_{-0.0066}$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{1420}$	$815.3 \pm 5.0$	$f\sigma_8(0.38)$	$0.4729 \pm 0.0063$
$A_{217}^{\mathrm{CIB}}$	$41^{+7}_{-8}$	$D_{2000}$	$230.0 \pm 1.7$	$\sigma_8(0.38)$	$0.6620^{+0.0047}_{-0.0056}$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+2.0}_{-2.5}$	$n_{\mathrm{s},0.002}$	$0.9675 \pm 0.0042$	$f\sigma_8(0.51)$	$0.4717 \pm 0.0056$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	$0.245335^{+0.000084}_{-0.000073}$	$\sigma_8(0.51)$	$0.6196^{+0.0043}_{-0.0052}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.457$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246662^{+0.000084}_{-0.000073}$	$f\sigma_8(0.61)$	$0.4669 \pm 0.0051$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.613 \pm 0.036$	$\sigma_8(0.61)$	$0.5896^{+0.0041}_{-0.0049}$
$A^{\mathrm{kSZ}}$	—	Age/Gyr	$13.803 \pm 0.027$	$f\sigma_8(2.33)$	$0.2974^{+0.0020}_{-0.0025}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$z_*$	$1090.00 \pm 0.29$	$\sigma_8(2.33)$	$0.3067^{+0.0020}_{-0.0026}$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.18$	$r_*$	$144.83 \pm 0.31$	$f_{2000}^{143}$	$30.4 \pm 3.0$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04125 \pm 0.00041$	$f_{2000}^{217}$	$107.3 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.17$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.909 \pm 0.031$	$f_{2000}^{143 \times 217}$	$32.7 \pm 2.1$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.53 \pm 0.44$	$\chi_{\mathrm{small}}^2$	$396.9 \pm 1.7$
$c_{217}$	$1.0011 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.54 \pm 0.34$	$\chi_{\mathrm{lowl}}^2$	$22.83 \pm 0.89$
$H_0$	$67.67 \pm 0.54$	$k_{\mathrm{D}}$	$0.14028 \pm 0.00044$	$\chi_{\mathrm{CamSpec}}^2$	$7063.8 \pm 5.3$
$\Omega_{\Lambda}$	$0.6904 \pm 0.0073$	$100\theta_{\mathrm{D}}$	$0.16101 \pm 0.00025$	$\chi_{6\mathrm{DF}}^2$	$0.054 \pm 0.071$
$\Omega_{\mathrm{m}}$	$0.3096 \pm 0.0073$	$z_{\mathrm{eq}}$	$3372 \pm 28$	$\chi_{\mathrm{MGS}}^2$	$1.40 \pm 0.53$
$\Omega_{\mathrm{m}}h^2$	$0.1418 \pm 0.0012$	$k_{\mathrm{eq}}$	$0.010293 \pm 0.000087$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.5$
$\Omega_{\mathrm{m}}h^3$	$0.09594 \pm 0.00045$	$100\theta_{\mathrm{eq}}$	$0.8184 \pm 0.0053$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.5$
$\sigma_8$	$0.8078^{+0.0066}_{-0.0075}$	$100\theta_{\mathrm{s,eq}}$	$0.4522 \pm 0.0027$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.2$
$S_8$	$0.821 \pm 0.015$	$H(0.15)$	$72.93 \pm 0.47$	$\chi_{\mathrm{CMB}}^2$	$7483.5 \pm 5.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4495 \pm 0.0080$	$D_{\mathrm{M}}(0.15)$	$640.8 \pm 4.6$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6025 \pm 0.0077$	$H(0.38)$	$83.00 \pm 0.35$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7497.31; R - 1 = 0.01176$$



## 2.18 base\_CamSpecHM\_TT\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02240 \pm 0.00022$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.593 \pm 0.011$	$D_{\mathrm{M}}(0.15)$	$633.4 \pm 7.0$
$\Omega_{\mathrm{c}} h^2$	$0.1171 \pm 0.0018$	$\sigma_8 / h^{0.5}$	$0.969 \pm 0.015$	$H(0.38)$	$83.57^{+0.50}_{-0.56}$
$100\theta_{\mathrm{MC}}$	$1.04133 \pm 0.00046$	$r_{\mathrm{drag}} h$	$101.4 \pm 1.5$	$D_{\mathrm{M}}(0.38)$	$1514 \pm 14$
$\tau$	$0.0568^{+0.0063}_{-0.0081}$	$\langle d^2 \rangle^{1/2}$	$2.398 \pm 0.034$	$H(0.51)$	$90.14^{+0.40}_{-0.45}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.041^{+0.013}_{-0.016}$	$z_{\mathrm{re}}$	$7.86^{+0.64}_{-0.83}$	$D_{\mathrm{M}}(0.51)$	$1963 \pm 17$
$n_{\mathrm{s}}$	$0.9719 \pm 0.0052$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.028}_{-0.033}$	$H(0.61)$	$95.65^{+0.33}_{-0.37}$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0026$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.868 \pm 0.012$	$D_{\mathrm{M}}(0.61)$	$2286 \pm 18$
$A_{100}^{\mathrm{PS}}$	$240 \pm 25$	$D_{40}$	$1214 \pm 14$	$H(2.33)$	$234.7 \pm 1.1$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8$	$D_{220}$	$5725 \pm 43$	$D_{\mathrm{M}}(2.33)$	$5750^{+17}_{-15}$
$A_{217}^{\mathrm{PS}}$	$101^{+10}_{-10}$	$D_{810}$	$2534^{+14}_{-13}$	$f\sigma_8(0.15)$	$0.444 \pm 0.011$
$A_{217}^{\mathrm{CIB}}$	$40^{+7}_{-8}$	$D_{1420}$	$816.9^{+5.3}_{-4.8}$	$\sigma_8(0.15)$	$0.7425^{+0.0064}_{-0.0076}$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.9}_{-2.4}$	$D_{2000}$	$230.7 \pm 1.7$	$f\sigma_8(0.38)$	$0.4647 \pm 0.0088$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9719 \pm 0.0052$	$\sigma_8(0.38)$	$0.6597^{+0.0049}_{-0.0061}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.417$	$Y_{\mathrm{P}}$	$0.245402 \pm 0.000086$	$f\sigma_8(0.51)$	$0.4648 \pm 0.0076$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246728 \pm 0.000086$	$\sigma_8(0.51)$	$0.6180^{+0.0044}_{-0.0055}$
$A^{\mathrm{kSZ}}$	$4.9 \pm 2.7$	$10^5 \mathrm{D}/\mathrm{H}$	$2.582 \pm 0.040$	$f\sigma_8(0.61)$	$0.4610 \pm 0.0068$
$A_{100}^{\mathrm{dust}}$	$1.02 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.770 \pm 0.035$	$\sigma_8(0.61)$	$0.5884^{+0.0040}_{-0.0051}$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	$z_*$	$1089.63 \pm 0.38$	$f\sigma_8(2.33)$	$0.2972^{+0.0019}_{-0.0025}$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$r_*$	$145.18 \pm 0.43$	$\sigma_8(2.33)$	$0.3070^{+0.0021}_{-0.0025}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04151 \pm 0.00045$	$f_{2000}^{143}$	$29.8^{+2.7}_{-3.1}$
$c_{100}$	$0.9975 \pm 0.0010$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.939 \pm 0.040$	$f_{2000}^{217}$	$106.9 \pm 2.0$
$c_{217}$	$1.0012 \pm 0.0015$	$z_{\mathrm{drag}}$	$1059.78 \pm 0.45$	$f_{2000}^{143 \times 217}$	$32.2 \pm 2.1$
$H_0$	$68.56 \pm 0.84$	$r_{\mathrm{drag}}$	$147.85 \pm 0.43$	$\chi_{\mathrm{small}}^2$	$397.2 \pm 2.0$
$\Omega_{\Lambda}$	$0.702 \pm 0.011$	$k_{\mathrm{D}}$	$0.14009 \pm 0.00048$	$\chi_{\mathrm{lowl}}^2$	$22.13 \pm 0.92$
$\Omega_{\mathrm{m}}$	$0.298 \pm 0.011$	$100\theta_{\mathrm{D}}$	$0.16089 \pm 0.00026$	$\chi_{\mathrm{CamSpec}}^2$	$7066.9 \pm 5.9$
$\Omega_{\mathrm{m}} h^2$	$0.1401 \pm 0.0017$	$z_{\mathrm{eq}}$	$3333 \pm 42$	$\chi_{\mathrm{H073p45}}^2$	$8.9 \pm 3.0$
$\Omega_{\mathrm{m}} h^3$	$0.09605 \pm 0.00045$	$k_{\mathrm{eq}}$	$0.01017 \pm 0.00013$	$\chi_{\mathrm{prior}}^2$	$7.5 \pm 3.4$
$\sigma_8$	$0.8021^{+0.0079}_{-0.0088}$	$100\theta_{\mathrm{eq}}$	$0.8264 \pm 0.0081$	$\chi_{\mathrm{CMB}}^2$	$7486.2 \pm 5.8$
$S_8$	$0.800 \pm 0.021$	$100\theta_{\mathrm{s,eq}}$	$0.4562 \pm 0.0042$		
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.438 \pm 0.012$	$H(0.15)$	$73.70 \pm 0.73$		
$\bar{\chi}_{\mathrm{eff}}^2 = 7502.64; R - 1 = 0.09766$					



## 2.19 base\_CamSpecHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022297	$0.02229 \pm 0.00016$ (+0.7 $\sigma$ )	$S_8$	0.8261	$0.827 \pm 0.016$ (−0.4 $\sigma$ )	$100\theta_{s,eq}$	0.45045	$0.4503 \pm 0.0030$ (+0.3 $\sigma$ )
$\Omega_c h^2$	0.11956	$0.1196 \pm 0.0014$ (−0.4 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4525	$0.4529 \pm 0.0089$ (−0.4 $\sigma$ )	$H(0.15)$	72.73	$72.71 \pm 0.53$ (+0.5 $\sigma$ )
$100\theta_{MC}$	1.040870	$1.04088 \pm 0.00032$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6047	$0.6050 \pm 0.0083$ (−0.4 $\sigma$ )	$D_M(0.15)$	642.8	$643.0 \pm 5.3$ (−0.5 $\sigma$ )
$\tau$	0.0531	$0.0528 \pm 0.0080$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9843	$0.985 \pm 0.012$ (−0.4 $\sigma$ )	$H(0.38)$	82.874	$82.86 \pm 0.38$ (+0.5 $\sigma$ )
$\ln(10^{10} A_s)$	3.0390	$3.039 \pm 0.016$ (−0.0 $\sigma$ )	$r_{drag} h$	99.32	$99.3 \pm 1.1$ (+0.4 $\sigma$ )	$D_M(0.38)$	1532.6	$1533 \pm 11$ (−0.5 $\sigma$ )
$n_s$	0.96623	$0.9658 \pm 0.0045$ (+0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4329	$2.434 \pm 0.028$ (−0.4 $\sigma$ )	$H(0.51)$	89.610	$89.60 \pm 0.30$ (+0.5 $\sigma$ )
$y_{cal}$	1.00034	$1.0005 \pm 0.0025$ (−0.0 $\sigma$ )	$z_{re}$	7.56	$7.52^{+0.83}_{-0.75}$ (+0.0 $\sigma$ )	$D_M(0.51)$	1985.0	$1985 \pm 12$ (−0.5 $\sigma$ )
$A_{100}^{PS}$	234.8	$240 \pm 25$ (−0.1 $\sigma$ )	$10^9 A_s$	2.0884	$2.088 \pm 0.034$ (−0.0 $\sigma$ )	$H(0.61)$	95.243	$95.24 \pm 0.24$ (+0.5 $\sigma$ )
$A_{143}^{PS}$	41.1	$40 \pm 8$ (−0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8780	$1.879 \pm 0.011$ (−0.2 $\sigma$ )	$D_M(0.61)$	2309.6	$2310 \pm 13$ (−0.5 $\sigma$ )
$A_{217}^{PS}$	101.9	$102 \pm 10$ (+0.1 $\sigma$ )	$D_{40}$	1225.0	$1226 \pm 13$ (−0.2 $\sigma$ )	$H(2.33)$	236.19	$236.24 \pm 0.83$ (−0.3 $\sigma$ )
$A_{217}^{CIB}$	44.3	$40 \pm 7$ (−0.2 $\sigma$ )	$D_{220}$	5716.0	$5718 \pm 39$ (+0.3 $\sigma$ )	$D_M(2.33)$	5766.4	$5767 \pm 11$ (−0.5 $\sigma$ )
$A_{143}^{tSZ}$	6.43	$3.9^{+1.8}_{-2.5}$ (+0.1 $\sigma$ )	$D_{810}$	2534.7	$2535 \pm 13$ (+0.0 $\sigma$ )	$f\sigma_8(0.15)$	0.4569	$0.4572 \pm 0.0083$ (−0.4 $\sigma$ )
$r_{143 \times 217}^{PS}$	0.629	$0.66 \pm 0.13$ (+0.0 $\sigma$ )	$D_{1420}$	815.77	$815.6 \pm 4.8$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7467	$0.7467 \pm 0.0067$ (−0.3 $\sigma$ )
$r_{143 \times 217}^{CIB}$	0.764	$0.56^{+0.40}_{-0.17}$ (−0.1 $\sigma$ )	$D_{2000}$	230.27	$230.2 \pm 1.6$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4748	$0.4750 \pm 0.0068$ (−0.4 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.20	—	$n_{s,0.002}$	0.96623	$0.9658 \pm 0.0045$ (+0.3 $\sigma$ )	$\sigma_8(0.38)$	0.6616	$0.6616 \pm 0.0057$ (−0.2 $\sigma$ )
$A^{kSZ}$	0.26	$4.7^{+2.2}_{-4.0}$ (−0.1 $\sigma$ )	$Y_P$	0.245366	$0.245362^{+0.000068}_{-0.000059}$ (+0.7 $\sigma$ )	$f\sigma_8(0.51)$	0.4731	$0.4733 \pm 0.0060$ (−0.4 $\sigma$ )
$A_{100}^{dust}$	1.003	$1.01 \pm 0.20$ (−0.0 $\sigma$ )	$Y_P^{BBN}$	0.246692	$0.246689^{+0.000068}_{-0.000059}$ (+0.7 $\sigma$ )	$\sigma_8(0.51)$	0.6191	$0.6190 \pm 0.0053$ (−0.1 $\sigma$ )
$A_{143}^{dust}$	0.980	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	$10^5 D/H$	2.5994	$2.601 \pm 0.030$ (−0.7 $\sigma$ )	$f\sigma_8(0.61)$	0.4680	$0.4681 \pm 0.0055$ (−0.4 $\sigma$ )
$A_{217}^{dust}$	0.966	$0.97 \pm 0.10$ (+0.1 $\sigma$ )	Age/Gyr	13.8046	$13.805 \pm 0.025$ (−0.6 $\sigma$ )	$\sigma_8(0.61)$	0.58903	$0.5890 \pm 0.0050$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{dust}$	1.012	$1.03 \pm 0.16$ (+0.0 $\sigma$ )	$z_*$	1089.976	$1089.99 \pm 0.28$ (−0.7 $\sigma$ )	$f\sigma_8(2.33)$	0.29692	$0.2969 \pm 0.0025$ (−0.0 $\sigma$ )
$c_{100}$	0.99760	$0.9975 \pm 0.0010$ (+0.1 $\sigma$ )	$r_*$	144.600	$144.58 \pm 0.31$ (+0.2 $\sigma$ )	$\sigma_8(2.33)$	0.30603	$0.3060 \pm 0.0026$ (+0.0 $\sigma$ )
$c_{217}$	1.00127	$1.0011 \pm 0.0016$ (−0.0 $\sigma$ )	$100\theta_*$	1.041058	$1.04107 \pm 0.00031$ (+0.1 $\sigma$ )	$f_{2000}^{143}$	30.03	$29.8 \pm 2.8$ (−0.3 $\sigma$ )
$c_{TE}$	0.99645	$0.9968 \pm 0.0049$	$D_M(z_*)/\text{Gpc}$	13.8897	$13.888 \pm 0.029$ (+0.2 $\sigma$ )	$f_{2000}^{217}$	106.72	$106.9 \pm 1.9$ (−0.3 $\sigma$ )
$c_{EE}$	0.99197	$0.9921 \pm 0.0049$	$z_{drag}$	1059.742	$1059.73 \pm 0.33$ (+0.7 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.23	$32.2 \pm 2.0$ (−0.4 $\sigma$ )
$H_0$	67.43	$67.41 \pm 0.62$ (+0.5 $\sigma$ )	$r_{drag}$	147.288	$147.27 \pm 0.31$ (+0.1 $\sigma$ )	$\chi_{small}^2$	395.90	$396.9 \pm 1.7$ (+0.0 $\sigma$ )
$\Omega_\Lambda$	0.6866	$0.6861 \pm 0.0085$ (+0.4 $\sigma$ )	$k_D$	0.140603	$0.14061 \pm 0.00034$ (+0.2 $\sigma$ )	$\chi_{lowl}^2$	23.00	$23.16 \pm 0.94$ (−0.3 $\sigma$ )
$\Omega_m$	0.3134	$0.3139 \pm 0.0085$ (−0.4 $\sigma$ )	$100\theta_D$	0.160865	$0.16087 \pm 0.00019$ (−0.7 $\sigma$ )	$\chi_{CamSpec}^2$	11499.6	$11514.5 \pm 5.6$ (+817.8 $\sigma$ )
$\Omega_m h^2$	0.14250	$0.1426 \pm 0.0013$ (−0.3 $\sigma$ )	$z_{eq}$	3390.0	$3392 \pm 31$ (−0.3 $\sigma$ )	$\chi_{prior}^2$	2.22	$7.8 \pm 3.5$ (+0.0 $\sigma$ )
$\Omega_m h^3$	0.096089	$0.09610 \pm 0.00031$ (+0.4 $\sigma$ )	$k_{eq}$	0.010347	$0.010352 \pm 0.000095$ (−0.3 $\sigma$ )	$\chi_{CMB}^2$	11918.5	$11934.6 \pm 5.7$ (+808.6 $\sigma$ )
$\sigma_8$	0.8082	$0.8083 \pm 0.0076$ (−0.3 $\sigma$ )	$100\theta_{eq}$	0.8152	$0.8150 \pm 0.0059$ (+0.4 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 11920.76$ ;  $\Delta\chi_{eff}^2 = 4449.03$ ;  $\bar{\chi}_{eff}^2 = 11942.46$ ;  $\Delta\bar{\chi}_{eff}^2 = 4450.92$ ;  $R - 1 = 0.01233$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.90 ( $\Delta$  0.07) commander\_dx12\_v3.2.29: 23.00 ( $\Delta$  -0.39) CamSpec like\_10.7HM\_1400\_unified: 11499.65



## 2.20 base\_CamSpecHM\_TTTEE\_lowl\_lowE\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02234 \pm 0.00015 \quad (+0.6\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4488 \pm 0.0070 \quad (-0.0\sigma)$	$D_{\text{M}}(0.15)$	$640.4 \pm 3.9 \quad (-0.1\sigma)$
$\Omega_{\text{c}}h^2$	$0.1190 \pm 0.0010 \quad (+0.0\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6017 \pm 0.0070 \quad (-0.0\sigma)$	$H(0.38)$	$83.05 \pm 0.29 \quad (+0.2\sigma)$
$100\theta_{\text{MC}}$	$1.04097 \pm 0.00030 \quad (-0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.980 \pm 0.010 \quad (-0.0\sigma)$	$D_{\text{M}}(0.38)$	$1527.8 \pm 7.8 \quad (-0.1\sigma)$
$\tau$	$0.0538 \pm 0.0079 \quad (+0.0\sigma)$	$r_{\text{drag}}h$	$99.81 \pm 0.79 \quad (-0.0\sigma)$	$H(0.51)$	$89.75 \pm 0.24 \quad (+0.2\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.039 \pm 0.016 \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.425 \pm 0.025 \quad (+0.0\sigma)$	$D_{\text{M}}(0.51)$	$1979.4 \pm 9.2 \quad (-0.1\sigma)$
$n_{\text{s}}$	$0.9674 \pm 0.0039 \quad (-0.0\sigma)$	$z_{\text{re}}$	$7.60^{+0.83}_{-0.73} \quad (-0.0\sigma)$	$H(0.61)$	$95.35 \pm 0.20 \quad (+0.2\sigma)$
$y_{\text{cal}}$	$1.0005 \pm 0.0025 \quad (-0.0\sigma)$	$10^9 A_{\text{s}}$	$2.089 \pm 0.034 \quad (+0.0\sigma)$	$D_{\text{M}}(0.61)$	$2303.5 \pm 9.9 \quad (-0.1\sigma)$
$A_{100}^{\text{PS}}$	$240 \pm 25 \quad (-0.0\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.876 \pm 0.011 \quad (+0.1\sigma)$	$H(2.33)$	$235.84 \pm 0.64 \quad (+0.2\sigma)$
$A_{143}^{\text{PS}}$	$39 \pm 8 \quad (-0.1\sigma)$	$D_{40}$	$1223 \pm 12 \quad (+0.1\sigma)$	$D_{\text{M}}(2.33)$	$5761.9 \pm 9.3 \quad (-0.3\sigma)$
$A_{217}^{\text{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{220}$	$5722 \pm 39 \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4535 \pm 0.0066 \quad (-0.0\sigma)$
$A_{217}^{\text{CIB}}$	$40 \pm 7 \quad (-0.1\sigma)$	$D_{810}$	$2535 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7455 \pm 0.0065 \quad (-0.0\sigma)$
$A_{143}^{\text{tSZ}}$	$3.9^{+1.8}_{-2.6} \quad (+0.0\sigma)$	$D_{1420}$	$816.1 \pm 4.7 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4722 \pm 0.0057 \quad (-0.0\sigma)$
$r_{143 \times 217}^{\text{PS}}$	$0.66 \pm 0.13 \quad (+0.0\sigma)$	$D_{2000}$	$230.4 \pm 1.6 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6611 \pm 0.0057 \quad (-0.0\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	$0.56^{+0.37}_{-0.20} \quad (-0.1\sigma)$	$n_{\text{s},0.002}$	$0.9674 \pm 0.0039 \quad (-0.0\sigma)$	$f\sigma_8(0.51)$	$0.4710 \pm 0.0052 \quad (-0.0\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}$	$0.245381^{+0.000061}_{-0.000053} \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.6187 \pm 0.0053 \quad (-0.0\sigma)$
$A^{\text{kSZ}}$	$4.7^{+2.1}_{-4.0} \quad (-0.1\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246707^{+0.000062}_{-0.000054} \quad (+0.6\sigma)$	$f\sigma_8(0.61)$	$0.4662 \pm 0.0048 \quad (-0.0\sigma)$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.19 \quad (+0.0\sigma)$	$10^5 \text{D}/\text{H}$	$2.592 \pm 0.027 \quad (-0.6\sigma)$	$\sigma_8(0.61)$	$0.5888 \pm 0.0050 \quad (-0.0\sigma)$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$\text{Age}/\text{Gyr}$	$13.795 \pm 0.021 \quad (-0.3\sigma)$	$f\sigma_8(2.33)$	$0.2969 \pm 0.0025 \quad (-0.0\sigma)$
$A_{217}^{\text{dust}}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$z_*$	$1089.87 \pm 0.23 \quad (-0.5\sigma)$	$\sigma_8(2.33)$	$0.3062 \pm 0.0026 \quad (-0.0\sigma)$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16 \quad (+0.0\sigma)$	$r_*$	$144.73 \pm 0.25 \quad (-0.3\sigma)$	$f_{2000}^{143}$	$29.6 \pm 2.8 \quad (-0.3\sigma)$
$c_{100}$	$0.9975 \pm 0.0010 \quad (+0.0\sigma)$	$100\theta_*$	$1.04116 \pm 0.00030 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.9 \quad (-0.3\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.901 \pm 0.024 \quad (-0.3\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.0 \quad (-0.3\sigma)$
$c_{TE}$	$0.9969 \pm 0.0049$	$z_{\text{drag}}$	$1059.79 \pm 0.32 \quad (+0.6\sigma)$	$\chi_{\text{small}}^2$	$397.0 \pm 1.7 \quad (-0.0\sigma)$
$c_{EE}$	$0.9924 \pm 0.0049$	$r_{\text{drag}}$	$147.40 \pm 0.26 \quad (-0.4\sigma)$	$\chi_{\text{lowl}}^2$	$22.87 \pm 0.82 \quad (+0.1\sigma)$
$H_0$	$67.71 \pm 0.46 \quad (+0.1\sigma)$	$k_{\text{D}}$	$0.14051 \pm 0.00032 \quad (+0.5\sigma)$	$\chi_{\text{CamSpec}}^2$	$11514.6 \pm 5.7 \quad (+833.3\sigma)$
$\Omega_{\Lambda}$	$0.6904 \pm 0.0062 \quad (+0.0\sigma)$	$100\theta_{\text{D}}$	$0.16084 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{6\text{DF}}^2$	$0.045 \pm 0.057 \quad (-0.1\sigma)$
$\Omega_{\text{m}}$	$0.3096 \pm 0.0062 \quad (-0.0\sigma)$	$z_{\text{eq}}$	$3377 \pm 24 \quad (+0.1\sigma)$	$\chi_{\text{MGS}}^2$	$1.36 \pm 0.45 \quad (-0.1\sigma)$
$\Omega_{\text{m}}h^2$	$0.14194 \pm 0.00098 \quad (+0.1\sigma)$	$k_{\text{eq}}$	$0.010305 \pm 0.000072 \quad (+0.1\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.6 \pm 1.3 \quad (-0.1\sigma)$
$\Omega_{\text{m}}h^3$	$0.09611 \pm 0.00031 \quad (+0.4\sigma)$	$100\theta_{\text{eq}}$	$0.8179 \pm 0.0044 \quad (-0.1\sigma)$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.4 \quad (+0.0\sigma)$
$\sigma_8$	$0.8066 \pm 0.0073 \quad (-0.0\sigma)$	$100\theta_{\text{s,eq}}$	$0.4518 \pm 0.0023 \quad (-0.1\sigma)$	$\chi_{\text{BAO}}^2$	$6.0 \pm 1.0 \quad (-0.1\sigma)$
$S_8$	$0.819 \pm 0.013 \quad (-0.0\sigma)$	$H(0.15)$	$72.97 \pm 0.39 \quad (+0.1\sigma)$	$\chi_{\text{CMB}}^2$	$11934.5 \pm 5.7 \quad (+827.1\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 11948.28; \Delta\bar{\chi}_{\text{eff}}^2 = 4450.73; R - 1 = 0.01864$$



## 2.21 base\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Riess18

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02242 \pm 0.00015 \quad (+0.1\sigma)$	$S_8$	$0.810 \pm 0.015 \quad (+0.5\sigma)$	$100\theta_{s,eq}$	$0.4538 \pm 0.0029 \quad (-0.6\sigma)$
$\Omega_c h^2$	$0.1181 \pm 0.0013 \quad (+0.5\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4435 \pm 0.0083 \quad (+0.5\sigma)$	$H(0.15)$	$73.34 \pm 0.50 \quad (-0.5\sigma)$
$100\theta_{MC}$	$1.04108^{+0.00032}_{-0.00028} \quad (-0.5\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.5973 \pm 0.0080 \quad (+0.5\sigma)$	$D_M(0.15)$	$636.8 \pm 4.9 \quad (+0.5\sigma)$
$\tau$	$0.0553 \pm 0.0079 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.974 \pm 0.011 \quad (+0.4\sigma)$	$H(0.38)$	$83.32 \pm 0.36 \quad (-0.4\sigma)$
$\ln(10^{10} A_s)$	$3.041 \pm 0.016 \quad (+0.1\sigma)$	$r_{drag} h$	$100.5 \pm 1.0 \quad (-0.5\sigma)$	$D_M(0.38)$	$1520.5 \pm 9.7 \quad (+0.5\sigma)$
$n_s$	$0.9696 \pm 0.0043 \quad (-0.4\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.412 \pm 0.027 \quad (+0.5\sigma)$	$H(0.51)$	$89.96 \pm 0.29 \quad (-0.4\sigma)$
$y_{cal}$	$1.0006 \pm 0.0025 \quad (-0.0\sigma)$	$z_{re}$	$7.72^{+0.83}_{-0.71} \quad (-0.0\sigma)$	$D_M(0.51)$	$1971 \pm 11 \quad (+0.5\sigma)$
$A_{100}^{PS}$	$240 \pm 25 \quad (-0.0\sigma)$	$10^9 A_s$	$2.092 \pm 0.034 \quad (+0.1\sigma)$	$H(0.61)$	$95.52 \pm 0.23 \quad (-0.4\sigma)$
$A_{143}^{PS}$	$38 \pm 8 \quad (-0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.873 \pm 0.011 \quad (+0.4\sigma)$	$D_M(0.61)$	$2294 \pm 12 \quad (+0.4\sigma)$
$A_{217}^{PS}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{40}$	$1219 \pm 13 \quad (+0.4\sigma)$	$H(2.33)$	$235.34 \pm 0.79 \quad (+0.6\sigma)$
$A_{217}^{CIB}$	$39 \pm 7 \quad (-0.1\sigma)$	$D_{220}$	$5729 \pm 39 \quad (+0.1\sigma)$	$D_M(2.33)$	$5755 \pm 11 \quad (+0.3\sigma)$
$A_{143}^{tSZ}$	$3.9^{+1.8}_{-2.7} \quad (+0.0\sigma)$	$D_{810}$	$2535 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4487 \pm 0.0078 \quad (+0.5\sigma)$
$r_{143 \times 217}^{PS}$	$0.66 \pm 0.13 \quad (+0.0\sigma)$	$D_{1420}$	$817.0 \pm 4.8 \quad (+0.0\sigma)$	$\sigma_8(0.15)$	$0.7440 \pm 0.0066 \quad (+0.3\sigma)$
$r_{143 \times 217}^{CIB}$	$0.55^{+0.35}_{-0.22} \quad (-0.1\sigma)$	$D_{2000}$	$230.8 \pm 1.6 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4685 \pm 0.0065 \quad (+0.5\sigma)$
$\xi^{tSZ \times CIB}$	—	$n_{s,0.002}$	$0.9696 \pm 0.0043 \quad (-0.4\sigma)$	$\sigma_8(0.38)$	$0.6604 \pm 0.0057 \quad (+0.2\sigma)$
$A^{kSZ}$	$4.6^{+1.8}_{-4.2} \quad (-0.1\sigma)$	$Y_P$	$0.245413^{+0.000063}_{-0.000053} \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4680 \pm 0.0058 \quad (+0.4\sigma)$
$A_{100}^{dust}$	$1.02 \pm 0.20 \quad (-0.0\sigma)$	$Y_P^{BBN}$	$0.246739^{+0.000063}_{-0.000054} \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6183 \pm 0.0052 \quad (+0.2\sigma)$
$A_{143}^{dust}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$10^5 D/H$	$2.577^{+0.026}_{-0.029} \quad (-0.2\sigma)$	$f\sigma_8(0.61)$	$0.4637 \pm 0.0054 \quad (+0.4\sigma)$
$A_{217}^{dust}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	Age/Gyr	$13.779 \pm 0.023 \quad (+0.2\sigma)$	$\sigma_8(0.61)$	$0.5886 \pm 0.0049 \quad (+0.1\sigma)$
$A_{143 \times 217}^{dust}$	$1.03 \pm 0.16 \quad (+0.0\sigma)$	$z_*$	$1089.69 \pm 0.26 \quad (+0.1\sigma)$	$f\sigma_8(2.33)$	$0.2971 \pm 0.0025 \quad (+0.1\sigma)$
$c_{100}$	$0.9976 \pm 0.0010 \quad (+0.1\sigma)$	$r_*$	$144.90 \pm 0.30 \quad (-0.6\sigma)$	$\sigma_8(2.33)$	$0.3066 \pm 0.0026 \quad (-0.0\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$100\theta_*$	$1.04126^{+0.00031}_{-0.00028} \quad (-0.5\sigma)$	$f_{2000}^{143}$	$29.2 \pm 2.8 \quad (-0.2\sigma)$
$c_{TE}$	$0.9969 \pm 0.0049$	$D_M(z_*)/\text{Gpc}$	$13.916 \pm 0.028 \quad (-0.6\sigma)$	$f_{2000}^{217}$	$106.5 \pm 1.9 \quad (-0.2\sigma)$
$c_{EE}$	$0.9925 \pm 0.0049$	$z_{drag}$	$1059.91 \pm 0.32 \quad (+0.3\sigma)$	$f_{2000}^{143 \times 217}$	$31.8 \pm 2.0 \quad (-0.2\sigma)$
$H_0$	$68.14 \pm 0.58 \quad (-0.5\sigma)$	$r_{drag}$	$147.55 \pm 0.31 \quad (-0.7\sigma)$	$\chi_{small}^2$	$397.1 \pm 1.8 \quad (-0.0\sigma)$
$\Omega_\Lambda$	$0.6960 \pm 0.0077 \quad (-0.5\sigma)$	$k_D$	$0.14042 \pm 0.00034 \quad (+0.7\sigma)$	$\chi_{lowl}^2$	$22.52 \pm 0.83 \quad (+0.4\sigma)$
$\Omega_m$	$0.3040 \pm 0.0077 \quad (+0.5\sigma)$	$100\theta_D$	$0.16078 \pm 0.00018 \quad (-0.4\sigma)$	$\chi_{CamSpec}^2$	$11516.4 \pm 6.4 \quad (+737.7\sigma)$
$\Omega_m h^2$	$0.1411 \pm 0.0012 \quad (+0.6\sigma)$	$z_{eq}$	$3357 \pm 30 \quad (+0.6\sigma)$	$\chi_{H073p45}^2$	$10.3 \pm 2.2 \quad (+0.4\sigma)$
$\Omega_m h^3$	$0.09615 \pm 0.00031 \quad (+0.3\sigma)$	$k_{eq}$	$0.010245 \pm 0.000090 \quad (+0.6\sigma)$	$\chi_{prior}^2$	$7.8 \pm 3.5 \quad (+0.1\sigma)$
$\sigma_8$	$0.8044 \pm 0.0075 \quad (+0.3\sigma)$	$100\theta_{eq}$	$0.8218 \pm 0.0057 \quad (-0.5\sigma)$	$\chi_{CMB}^2$	$11936.1 \pm 6.3 \quad (+752.9\sigma)$

$\bar{\chi}_{eff}^2 = 11954.26$ ;  $\Delta\bar{\chi}_{eff}^2 = 4451.38$ ;  $R - 1 = 0.03390$



## 2.22 base\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02230 \pm 0.00016 \quad (+0.7\sigma)$	$S_8$	$0.828 \pm 0.016 \quad (-0.4\sigma)$	$100\theta_{s,eq}$	$0.4504 \pm 0.0030 \quad (+0.3\sigma)$
$\Omega_c h^2$	$0.1196 \pm 0.0014 \quad (-0.4\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4533 \pm 0.0088 \quad (-0.4\sigma)$	$H(0.15)$	$72.73 \pm 0.53 \quad (+0.5\sigma)$
$100\theta_{MC}$	$1.04089 \pm 0.00031 \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6057 \pm 0.0081 \quad (-0.4\sigma)$	$D_M(0.15)$	$642.8 \pm 5.3 \quad (-0.5\sigma)$
$\tau$	$0.0545^{+0.0049}_{-0.0082} \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.986 \pm 0.011 \quad (-0.4\sigma)$	$H(0.38)$	$82.88 \pm 0.38 \quad (+0.5\sigma)$
$\ln(10^{10} A_s)$	$3.042^{+0.011}_{-0.016} \quad (-0.0\sigma)$	$r_{drag} h$	$99.3 \pm 1.1 \quad (+0.4\sigma)$	$D_M(0.38)$	$1533 \pm 11 \quad (-0.5\sigma)$
$n_s$	$0.9660 \pm 0.0044 \quad (+0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.437 \pm 0.027 \quad (-0.3\sigma)$	$H(0.51)$	$89.62 \pm 0.30 \quad (+0.5\sigma)$
$y_{cal}$	$1.0005 \pm 0.0025 \quad (-0.0\sigma)$	$z_{re}$	$7.69^{+0.55}_{-0.81} \quad (+0.0\sigma)$	$D_M(0.51)$	$1985 \pm 12 \quad (-0.5\sigma)$
$A_{100}^{PS}$	$240 \pm 25 \quad (-0.1\sigma)$	$10^9 A_s$	$2.095^{+0.023}_{-0.034} \quad (-0.0\sigma)$	$H(0.61)$	$95.25 \pm 0.24 \quad (+0.5\sigma)$
$A_{143}^{PS}$	$39 \pm 8 \quad (-0.2\sigma)$	$10^9 A_s e^{-2\tau}$	$1.878 \pm 0.011 \quad (-0.2\sigma)$	$D_M(0.61)$	$2310 \pm 13 \quad (-0.5\sigma)$
$A_{217}^{PS}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{40}$	$1226 \pm 13 \quad (-0.2\sigma)$	$H(2.33)$	$236.22 \pm 0.83 \quad (-0.3\sigma)$
$A_{217}^{CIB}$	$40 \pm 7 \quad (-0.2\sigma)$	$D_{220}$	$5718 \pm 39 \quad (+0.3\sigma)$	$D_M(2.33)$	$5766 \pm 11 \quad (-0.5\sigma)$
$A_{143}^{tSZ}$	$3.9^{+1.9}_{-2.5} \quad (+0.1\sigma)$	$D_{810}$	$2535 \pm 13 \quad (+0.0\sigma)$	$f\sigma_8(0.15)$	$0.4577 \pm 0.0082 \quad (-0.4\sigma)$
$r_{143 \times 217}^{PS}$	$0.66 \pm 0.13 \quad (+0.0\sigma)$	$D_{1420}$	$815.7 \pm 4.9 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7477^{+0.0054}_{-0.0064} \quad (-0.3\sigma)$
$r_{143 \times 217}^{CIB}$	$0.56^{+0.40}_{-0.17} \quad (-0.1\sigma)$	$D_{2000}$	$230.3 \pm 1.6 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4755 \pm 0.0066 \quad (-0.4\sigma)$
$\xi^{tSZ \times CIB}$	—	$n_{s,0.002}$	$0.9660 \pm 0.0044 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6626^{+0.0043}_{-0.0055} \quad (-0.2\sigma)$
$A^{kSZ}$	$4.7^{+2.1}_{-4.1} \quad (-0.1\sigma)$	$Y_P$	$0.245364^{+0.000068}_{-0.000059} \quad (+0.7\sigma)$	$f\sigma_8(0.51)$	$0.4738 \pm 0.0058 \quad (-0.4\sigma)$
$A_{100}^{dust}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$Y_P^{BBN}$	$0.246691^{+0.000068}_{-0.000059} \quad (+0.7\sigma)$	$\sigma_8(0.51)$	$0.6200^{+0.0039}_{-0.0051} \quad (-0.2\sigma)$
$A_{143}^{dust}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$10^5 D/H$	$2.600 \pm 0.030 \quad (-0.7\sigma)$	$f\sigma_8(0.61)$	$0.4687 \pm 0.0052 \quad (-0.4\sigma)$
$A_{217}^{dust}$	$0.97 \pm 0.10 \quad (+0.1\sigma)$	$Age/Gyr$	$13.804 \pm 0.025 \quad (-0.5\sigma)$	$\sigma_8(0.61)$	$0.5899^{+0.0036}_{-0.0048} \quad (-0.1\sigma)$
$A_{143 \times 217}^{dust}$	$1.03 \pm 0.16 \quad (+0.0\sigma)$	$z_*$	$1089.98 \pm 0.28 \quad (-0.7\sigma)$	$f\sigma_8(2.33)$	$0.2973^{+0.0018}_{-0.0024} \quad (-0.0\sigma)$
$c_{100}$	$0.9975 \pm 0.0010 \quad (+0.1\sigma)$	$r_*$	$144.59 \pm 0.31 \quad (+0.2\sigma)$	$\sigma_8(2.33)$	$0.3065^{+0.0018}_{-0.0026} \quad (+0.1\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$100\theta_*$	$1.04108 \pm 0.00031 \quad (+0.0\sigma)$	$f_{2000}^{143}$	$29.7 \pm 2.8 \quad (-0.3\sigma)$
$c_{TE}$	$0.9966 \pm 0.0049$	$D_M(z_*)/Gpc$	$13.889 \pm 0.029 \quad (+0.2\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.9 \quad (-0.3\sigma)$
$c_{EE}$	$0.9921 \pm 0.0049$	$z_{drag}$	$1059.74 \pm 0.33 \quad (+0.7\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 2.0 \quad (-0.4\sigma)$
$H_0$	$67.43 \pm 0.61 \quad (+0.4\sigma)$	$r_{drag}$	$147.28 \pm 0.31 \quad (+0.1\sigma)$	$\chi_{small}^2$	$396.8 \pm 1.7 \quad (+0.0\sigma)$
$\Omega_\Lambda$	$0.6864 \pm 0.0085 \quad (+0.4\sigma)$	$k_D$	$0.14061 \pm 0.00035 \quad (+0.2\sigma)$	$\chi_{lowl}^2$	$23.17 \pm 0.94 \quad (-0.3\sigma)$
$\Omega_m$	$0.3136 \pm 0.0085 \quad (-0.4\sigma)$	$100\theta_D$	$0.16087 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{CamSpec}^2$	$11514.3 \pm 5.6 \quad (+822.1\sigma)$
$\Omega_m h^2$	$0.1425 \pm 0.0013 \quad (-0.3\sigma)$	$z_{eq}$	$3391 \pm 31 \quad (-0.3\sigma)$	$\chi_{prior}^2$	$7.8 \pm 3.5 \quad (+0.0\sigma)$
$\Omega_m h^3$	$0.09610 \pm 0.00031 \quad (+0.4\sigma)$	$k_{eq}$	$0.010349 \pm 0.000095 \quad (-0.3\sigma)$	$\chi_{CMB}^2$	$11934.4 \pm 5.7 \quad (+823.9\sigma)$
$\sigma_8$	$0.8094^{+0.0065}_{-0.0073} \quad (-0.3\sigma)$	$100\theta_{eq}$	$0.8152 \pm 0.0059 \quad (+0.4\sigma)$		

$\bar{\chi}_{eff}^2 = 11942.19$ ;  $\Delta\bar{\chi}_{eff}^2 = 4450.93$ ;  $R - 1 = 0.01099$



## 2.23 base\_CamSpecHM\_TTTEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02234 \pm 0.00015 \quad (+0.6\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4493 \pm 0.0068 \quad (-0.0\sigma)$	$D_M(0.15)$	$640.3 \pm 3.9 \quad (-0.1\sigma)$
$\Omega_c h^2$	$0.1189 \pm 0.0010 \quad (+0.0\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6024 \pm 0.0067 \quad (-0.0\sigma)$	$H(0.38)$	$83.06 \pm 0.29 \quad (+0.2\sigma)$
$100\theta_{MC}$	$1.04097 \pm 0.00030 \quad (-0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.9814 \pm 0.0097 \quad (-0.0\sigma)$	$D_M(0.38)$	$1527.5 \pm 7.8 \quad (-0.1\sigma)$
$\tau$	$0.0552^{+0.0054}_{-0.0079} \quad (+0.0\sigma)$	$r_{drag} h$	$99.83 \pm 0.79 \quad (-0.0\sigma)$	$H(0.51)$	$89.75 \pm 0.23 \quad (+0.2\sigma)$
$\ln(10^{10} A_s)$	$3.042^{+0.012}_{-0.016} \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.427 \pm 0.023 \quad (+0.0\sigma)$	$D_M(0.51)$	$1979.1 \pm 9.2 \quad (-0.1\sigma)$
$n_s$	$0.9675 \pm 0.0039 \quad (-0.0\sigma)$	$z_{re}$	$7.75^{+0.59}_{-0.79} \quad (-0.0\sigma)$	$H(0.61)$	$95.36 \pm 0.20 \quad (+0.2\sigma)$
$y_{cal}$	$1.0005 \pm 0.0025 \quad (-0.0\sigma)$	$10^9 A_s$	$2.095^{+0.025}_{-0.034} \quad (+0.1\sigma)$	$D_M(0.61)$	$2303.2 \pm 9.9 \quad (-0.1\sigma)$
$A_{100}^{PS}$	$240 \pm 25 \quad (-0.0\sigma)$	$10^9 A_s e^{-2\tau}$	$1.876 \pm 0.011 \quad (+0.1\sigma)$	$H(2.33)$	$235.83 \pm 0.64 \quad (+0.2\sigma)$
$A_{143}^{PS}$	$39 \pm 8 \quad (-0.1\sigma)$	$D_{40}$	$1223 \pm 12 \quad (+0.1\sigma)$	$D_M(2.33)$	$5761.6 \pm 9.3 \quad (-0.3\sigma)$
$A_{217}^{PS}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{220}$	$5722 \pm 39 \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4540 \pm 0.0065 \quad (-0.0\sigma)$
$A_{217}^{CIB}$	$40 \pm 7 \quad (-0.1\sigma)$	$D_{810}$	$2535 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7465^{+0.0052}_{-0.0063} \quad (-0.0\sigma)$
$A_{143}^{tSZ}$	$3.9^{+1.8}_{-2.5} \quad (+0.0\sigma)$	$D_{1420}$	$816.1 \pm 4.8 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4727 \pm 0.0055 \quad (-0.0\sigma)$
$r_{143 \times 217}^{PS}$	$0.66 \pm 0.13 \quad (+0.0\sigma)$	$D_{2000}$	$230.4 \pm 1.6 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6620^{+0.0044}_{-0.0055} \quad (-0.0\sigma)$
$r_{143 \times 217}^{CIB}$	$0.56^{+0.37}_{-0.20} \quad (-0.1\sigma)$	$n_{s,0.002}$	$0.9675 \pm 0.0039 \quad (-0.0\sigma)$	$f\sigma_8(0.51)$	$0.4716 \pm 0.0049 \quad (-0.0\sigma)$
$\xi^{tSZ \times CIB}$	—	$Y_P$	$0.245382^{+0.000061}_{-0.000053} \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.6196^{+0.0041}_{-0.0051} \quad (-0.0\sigma)$
$A^{kSZ}$	$4.7^{+2.1}_{-4.0} \quad (-0.1\sigma)$	$Y_P^{BBN}$	$0.246709^{+0.000061}_{-0.000053} \quad (+0.6\sigma)$	$f\sigma_8(0.61)$	$0.4668 \pm 0.0045 \quad (-0.0\sigma)$
$A_{100}^{dust}$	$1.01 \pm 0.19 \quad (-0.0\sigma)$	$10^5 D/H$	$2.591 \pm 0.027 \quad (-0.6\sigma)$	$\sigma_8(0.61)$	$0.5896^{+0.0038}_{-0.0049} \quad (-0.0\sigma)$
$A_{143}^{dust}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$Age/Gyr$	$13.794 \pm 0.021 \quad (-0.3\sigma)$	$f\sigma_8(2.33)$	$0.2974^{+0.0019}_{-0.0025} \quad (-0.0\sigma)$
$A_{217}^{dust}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$z_*$	$1089.86 \pm 0.23 \quad (-0.5\sigma)$	$\sigma_8(2.33)$	$0.3067^{+0.0020}_{-0.0026} \quad (-0.0\sigma)$
$A_{143 \times 217}^{dust}$	$1.03 \pm 0.16 \quad (+0.0\sigma)$	$r_*$	$144.73 \pm 0.25 \quad (-0.3\sigma)$	$f_{2000}^{143}$	$29.5 \pm 2.8 \quad (-0.3\sigma)$
$c_{100}$	$0.9975 \pm 0.0010 \quad (+0.0\sigma)$	$100\theta_*$	$1.04116 \pm 0.00029 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$106.7 \pm 1.9 \quad (-0.3\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$D_M(z_*)/Gpc$	$13.901 \pm 0.024 \quad (-0.3\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.0 \quad (-0.3\sigma)$
$c_{TE}$	$0.9968 \pm 0.0048$	$z_{drag}$	$1059.79 \pm 0.32 \quad (+0.6\sigma)$	$\chi_{small}^2$	$396.9 \pm 1.7 \quad (-0.0\sigma)$
$c_{EE}$	$0.9923 \pm 0.0049$	$r_{drag}$	$147.41 \pm 0.26 \quad (-0.4\sigma)$	$\chi_{lowl}^2$	$22.88 \pm 0.82 \quad (+0.1\sigma)$
$H_0$	$67.73 \pm 0.46 \quad (+0.1\sigma)$	$k_D$	$0.14051 \pm 0.00032 \quad (+0.5\sigma)$	$\chi_{CamSpec}^2$	$11514.4 \pm 5.6 \quad (+837.7\sigma)$
$\Omega_\Lambda$	$0.6905 \pm 0.0061 \quad (+0.0\sigma)$	$100\theta_D$	$0.16084 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{6DF}^2$	$0.044 \pm 0.056 \quad (-0.1\sigma)$
$\Omega_m$	$0.3095 \pm 0.0061 \quad (-0.0\sigma)$	$z_{eq}$	$3376 \pm 23 \quad (+0.1\sigma)$	$\chi_{MGS}^2$	$1.37 \pm 0.45 \quad (-0.0\sigma)$
$\Omega_m h^2$	$0.14192 \pm 0.00098 \quad (+0.1\sigma)$	$k_{eq}$	$0.010304 \pm 0.000072 \quad (+0.1\sigma)$	$\chi_{DR12BAO}^2$	$4.5 \pm 1.3 \quad (-0.1\sigma)$
$\Omega_m h^3$	$0.09611 \pm 0.00032 \quad (+0.4\sigma)$	$100\theta_{eq}$	$0.8180 \pm 0.0044 \quad (-0.1\sigma)$	$\chi_{prior}^2$	$7.8 \pm 3.4 \quad (+0.0\sigma)$
$\sigma_8$	$0.8076^{+0.0060}_{-0.0071} \quad (-0.0\sigma)$	$100\theta_{s,eq}$	$0.4519 \pm 0.0023 \quad (-0.1\sigma)$	$\chi_{BAO}^2$	$5.96 \pm 0.97 \quad (-0.1\sigma)$
$S_8$	$0.820 \pm 0.013 \quad (-0.0\sigma)$	$H(0.15)$	$72.98 \pm 0.39 \quad (+0.1\sigma)$	$\chi_{CMB}^2$	$11934.2 \pm 5.7 \quad (+838.0\sigma)$

$$\bar{\chi}_{eff}^2 = 11947.99; \Delta\bar{\chi}_{eff}^2 = 4450.67; R - 1 = 0.01741$$



## 2.24 base\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02242 \pm 0.00015 \quad (+0.1\sigma)$	$S_8$	$0.810 \pm 0.015 \quad (+0.5\sigma)$	$100\theta_{s,eq}$	$0.4539 \pm 0.0029 \quad (-0.6\sigma)$
$\Omega_c h^2$	$0.1180 \pm 0.0013 \quad (+0.5\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4438 \pm 0.0083 \quad (+0.5\sigma)$	$H(0.15)$	$73.36 \pm 0.49 \quad (-0.5\sigma)$
$100\theta_{MC}$	$1.04108^{+0.00032}_{-0.00028} \quad (-0.5\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.5977 \pm 0.0078 \quad (+0.5\sigma)$	$D_M(0.15)$	$636.6 \pm 4.8 \quad (+0.5\sigma)$
$\tau$	$0.0564^{+0.0062}_{-0.0076} \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.975 \pm 0.011 \quad (+0.4\sigma)$	$H(0.38)$	$83.33 \pm 0.36 \quad (-0.4\sigma)$
$\ln(10^{10} A_s)$	$3.043^{+0.013}_{-0.016} \quad (+0.1\sigma)$	$r_{drag} h$	$100.6 \pm 1.0 \quad (-0.5\sigma)$	$D_M(0.38)$	$1520.2 \pm 9.7 \quad (+0.5\sigma)$
$n_s$	$0.9697 \pm 0.0043 \quad (-0.4\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.414 \pm 0.026 \quad (+0.5\sigma)$	$H(0.51)$	$89.97 \pm 0.29 \quad (-0.4\sigma)$
$y_{cal}$	$1.0006 \pm 0.0025 \quad (-0.0\sigma)$	$z_{re}$	$7.84^{+0.65}_{-0.75} \quad (-0.0\sigma)$	$D_M(0.51)$	$1971 \pm 11 \quad (+0.5\sigma)$
$A_{100}^{PS}$	$239 \pm 25 \quad (-0.0\sigma)$	$10^9 A_s$	$2.096^{+0.027}_{-0.033} \quad (+0.1\sigma)$	$H(0.61)$	$95.53 \pm 0.23 \quad (-0.4\sigma)$
$A_{143}^{PS}$	$38 \pm 8 \quad (-0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.873 \pm 0.011 \quad (+0.4\sigma)$	$D_M(0.61)$	$2294 \pm 12 \quad (+0.5\sigma)$
$A_{217}^{PS}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{40}$	$1219 \pm 13 \quad (+0.4\sigma)$	$H(2.33)$	$235.32 \pm 0.79 \quad (+0.6\sigma)$
$A_{217}^{CIB}$	$39 \pm 7 \quad (-0.1\sigma)$	$D_{220}$	$5729 \pm 39 \quad (+0.1\sigma)$	$D_M(2.33)$	$5754 \pm 10 \quad (+0.3\sigma)$
$A_{143}^{tSZ}$	$3.9^{+1.8}_{-2.7} \quad (+0.0\sigma)$	$D_{810}$	$2535 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4489 \pm 0.0078 \quad (+0.5\sigma)$
$r_{143 \times 217}^{PS}$	$0.66 \pm 0.13 \quad (+0.0\sigma)$	$D_{1420}$	$817.0 \pm 4.8 \quad (+0.0\sigma)$	$\sigma_8(0.15)$	$0.7448^{+0.0057}_{-0.0064} \quad (+0.3\sigma)$
$r_{143 \times 217}^{CIB}$	$0.55^{+0.35}_{-0.22} \quad (-0.1\sigma)$	$D_{2000}$	$230.8 \pm 1.6 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4689 \pm 0.0064 \quad (+0.5\sigma)$
$\xi^{tSZ \times CIB}$	—	$n_{s,0.002}$	$0.9697 \pm 0.0043 \quad (-0.4\sigma)$	$\sigma_8(0.38)$	$0.6610^{+0.0047}_{-0.0055} \quad (+0.2\sigma)$
$A^{kSZ}$	$4.6^{+1.8}_{-4.2} \quad (-0.1\sigma)$	$Y_P$	$0.245414^{+0.000062}_{-0.000053} \quad (+0.1\sigma)$	$f\sigma_8(0.51)$	$0.4684 \pm 0.0057 \quad (+0.5\sigma)$
$A_{100}^{dust}$	$1.02 \pm 0.20 \quad (-0.0\sigma)$	$Y_P^{BBN}$	$0.246741^{+0.000062}_{-0.000054} \quad (+0.1\sigma)$	$\sigma_8(0.51)$	$0.6190^{+0.0043}_{-0.0050} \quad (+0.2\sigma)$
$A_{143}^{dust}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$10^5 D/H$	$2.576^{+0.026}_{-0.029} \quad (-0.1\sigma)$	$f\sigma_8(0.61)$	$0.4641 \pm 0.0052 \quad (+0.4\sigma)$
$A_{217}^{dust}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$Age/Gyr$	$13.778 \pm 0.023 \quad (+0.3\sigma)$	$\sigma_8(0.61)$	$0.5892^{+0.0041}_{-0.0048} \quad (+0.2\sigma)$
$A_{143 \times 217}^{dust}$	$1.03 \pm 0.16 \quad (+0.0\sigma)$	$z_*$	$1089.68 \pm 0.26 \quad (+0.1\sigma)$	$f\sigma_8(2.33)$	$0.2974^{+0.0020}_{-0.0024} \quad (+0.1\sigma)$
$c_{100}$	$0.9976 \pm 0.0010 \quad (+0.1\sigma)$	$r_*$	$144.91 \pm 0.30 \quad (-0.6\sigma)$	$\sigma_8(2.33)$	$0.3069^{+0.0021}_{-0.0025} \quad (-0.0\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$100\theta_*$	$1.04126^{+0.00031}_{-0.00027} \quad (-0.6\sigma)$	$f_{2000}^{143}$	$29.1 \pm 2.8 \quad (-0.2\sigma)$
$c_{TE}$	$0.9968 \pm 0.0049$	$D_M(z_*)/Gpc$	$13.916 \pm 0.028 \quad (-0.6\sigma)$	$f_{2000}^{217}$	$106.5 \pm 1.9 \quad (-0.2\sigma)$
$c_{EE}$	$0.9925 \pm 0.0049$	$z_{drag}$	$1059.92 \pm 0.32 \quad (+0.3\sigma)$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.0 \quad (-0.2\sigma)$
$H_0$	$68.16 \pm 0.57 \quad (-0.5\sigma)$	$r_{drag}$	$147.56 \pm 0.31 \quad (-0.7\sigma)$	$\chi_{small}^2$	$397.1 \pm 1.8 \quad (-0.0\sigma)$
$\Omega_\Lambda$	$0.6962 \pm 0.0077 \quad (-0.5\sigma)$	$k_D$	$0.14041 \pm 0.00034 \quad (+0.7\sigma)$	$\chi_{lowl}^2$	$22.52 \pm 0.83 \quad (+0.4\sigma)$
$\Omega_m$	$0.3038 \pm 0.0077 \quad (+0.5\sigma)$	$100\theta_D$	$0.16077 \pm 0.00018 \quad (-0.4\sigma)$	$\chi_{CamSpec}^2$	$11516.3 \pm 6.5 \quad (+748.0\sigma)$
$\Omega_m h^2$	$0.1411 \pm 0.0012 \quad (+0.6\sigma)$	$z_{eq}$	$3356 \pm 30 \quad (+0.6\sigma)$	$\chi_{H073p45}^2$	$10.3 \pm 2.2 \quad (+0.5\sigma)$
$\Omega_m h^3$	$0.09615 \pm 0.00031 \quad (+0.2\sigma)$	$k_{eq}$	$0.010243 \pm 0.000090 \quad (+0.6\sigma)$	$\chi_{prior}^2$	$7.8 \pm 3.5 \quad (+0.1\sigma)$
$\sigma_8$	$0.8052^{+0.0066}_{-0.0073} \quad (+0.4\sigma)$	$100\theta_{eq}$	$0.8220 \pm 0.0056 \quad (-0.5\sigma)$	$\chi_{CMB}^2$	$11935.9 \pm 6.3 \quad (+765.8\sigma)$

$$\bar{\chi}_{eff}^2 = 11954.01; \Delta\bar{\chi}_{eff}^2 = 4451.37; R - 1 = 0.03572$$



## 2.25 base\_plikHM\_TE\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022460	$0.02249 \pm 0.00025$	$\langle d^2 \rangle^{1/2}$	2.3883	$2.384 \pm 0.043$	$H(0.15)$	73.51	$73.61 \pm 0.78$
$\Omega_c h^2$	0.11788	$0.1177 \pm 0.0020$	$z_{\text{re}}$	7.09	$7.11^{+0.91}_{-0.75}$	$D_{\text{M}}(0.15)$	635.2	$634.3 \pm 7.6$
$100\theta_{\text{MC}}$	1.041369	$1.04139 \pm 0.00049$	$10^9 A_{\text{s}}$	2.0440	$2.045 \pm 0.041$	$H(0.38)$	83.46	$83.54 \pm 0.57$
$\tau$	0.0491	$0.0496 \pm 0.0085$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8528	$1.851 \pm 0.018$	$D_{\text{M}}(0.38)$	1517.1	$1515 \pm 15$
$\ln(10^{10} A_{\text{s}})$	3.0175	$3.018^{+0.020}_{-0.018}$	$D_{40}$	1214.8	$1212 \pm 26$	$H(0.51)$	90.081	$90.15^{+0.43}_{-0.48}$
$n_{\text{s}}$	0.9660	$0.967 \pm 0.011$	$D_{220}$	5695	$5693 \pm 57$	$D_{\text{M}}(0.51)$	1966.8	$1965 \pm 18$
$A_{100}^{\text{dustTE}}$	0.1132	$0.114 \pm 0.038$	$D_{810}$	2507.0	$2507 \pm 25$	$H(0.61)$	95.628	$95.68^{+0.35}_{-0.40}$
$A_{100 \times 143}^{\text{dustTE}}$	0.1362	$0.136 \pm 0.030$	$D_{1420}$	806.8	$807 \pm 12$	$D_{\text{M}}(0.61)$	2289.8	$2287 \pm 19$
$A_{100 \times 217}^{\text{dustTE}}$	0.477	$0.478 \pm 0.085$	$D_{2000}$	227.46	$227.6 \pm 4.3$	$H(2.33)$	235.29	$235.2 \pm 1.2$
$A_{143}^{\text{dustTE}}$	0.222	$0.221 \pm 0.055$	$n_{\text{s},0.002}$	0.9660	$0.967 \pm 0.011$	$D_{\text{M}}(2.33)$	5749.0	$5747 \pm 17$
$A_{143 \times 217}^{\text{dustTE}}$	0.657	$0.657 \pm 0.081$	$Y_{\text{P}}$	0.245430	$0.24544 \pm 0.00010$	$f\sigma_8(0.15)$	0.4413	$0.440 \pm 0.012$
$A_{217}^{\text{dustTE}}$	2.038	$2.04 \pm 0.27$	$Y_{\text{P}}^{\text{BBN}}$	0.246756	$0.24676 \pm 0.00010$	$\sigma_8(0.15)$	0.7343	$0.7339 \pm 0.0096$
$c_{100}$	1.00017	$1.00017 \pm 0.00070$	$10^5 \text{D}/\text{H}$	2.5691	$2.565 \pm 0.046$	$f\sigma_8(0.38)$	0.4614	$0.460 \pm 0.010$
$c_{217}$	0.99799	$0.99799 \pm 0.00065$	Age/Gyr	13.7661	$13.761 \pm 0.038$	$\sigma_8(0.38)$	0.6519	$0.6517 \pm 0.0080$
$y_{\text{cal}}$	1.00005	$0.99999 \pm 0.0025$	$z_*$	1089.621	$1089.57 \pm 0.42$	$f\sigma_8(0.51)$	0.4611	$0.4604 \pm 0.0090$
$H_0$	68.33	$68.44 \pm 0.91$	$r_*$	144.914	$144.95 \pm 0.48$	$\sigma_8(0.51)$	0.6105	$0.6104 \pm 0.0073$
$\Omega_{\Lambda}$	0.6980	$0.699 \pm 0.012$	$100\theta_*$	1.041540	$1.04156 \pm 0.00049$	$f\sigma_8(0.61)$	0.4570	$0.4563 \pm 0.0082$
$\Omega_{\text{m}}$	0.3020	$0.301 \pm 0.012$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9134	$13.917 \pm 0.045$	$\sigma_8(0.61)$	0.5812	$0.5811 \pm 0.0069$
$\Omega_{\text{m}} h^2$	0.14098	$0.1408 \pm 0.0019$	$z_{\text{drag}}$	1060.01	$1060.03 \pm 0.54$	$f\sigma_8(2.33)$	0.29342	$0.2934 \pm 0.0034$
$\Omega_{\text{m}} h^3$	0.09633	$0.09635 \pm 0.00051$	$r_{\text{drag}}$	147.554	$147.59 \pm 0.49$	$\sigma_8(2.33)$	0.30292	$0.3030 \pm 0.0035$
$\sigma_8$	0.7936	$0.793 \pm 0.011$	$k_{\text{D}}$	0.14044	$0.14043 \pm 0.00057$	$\chi_{\text{small}}^2$	395.69	$396.8 \pm 1.5$
$S_8$	0.7962	$0.794 \pm 0.024$	$100\theta_{\text{D}}$	0.160772	$0.16075 \pm 0.00031$	$\chi_{\text{plikTE}}^2$	852.85	$859.8 \pm 3.7$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4361	$0.435 \pm 0.013$	$z_{\text{eq}}$	3353.6	$3349 \pm 46$	$\chi_{\text{prior}}^2$	0.44	$7.4 \pm 3.7$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5883	$0.587 \pm 0.012$	$k_{\text{eq}}$	0.010235	$0.01022 \pm 0.00014$	$\chi_{\text{CMB}}^2$	1248.54	$1256.6 \pm 4.0$
$\sigma_8/h^{0.5}$	0.9601	$0.959 \pm 0.017$	$100\theta_{\text{eq}}$	0.8227	$0.8237 \pm 0.0088$			
$r_{\text{drag}} h$	100.82	$101.0 \pm 1.6$	$100\theta_{\text{s,eq}}$	0.45423	$0.4547 \pm 0.0045$			

Best-fit  $\chi_{\text{eff}}^2 = 1248.98$ ;  $\bar{\chi}_{\text{eff}}^2 = 1264.01$ ;  $R - 1 = 0.00711$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.69 plik\_rd12\_HM\_v22\_TE: 852.85



## 2.26 base\_plikHM\_TE\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02250 \pm 0.00025$	$\langle d^2 \rangle^{1/2}$	$2.390 \pm 0.041$	$H(0.15)$	$73.65 \pm 0.77$
$\Omega_{\mathrm{c}}h^2$	$0.1176 \pm 0.0020$	$z_{\mathrm{re}}$	$7.45^{+0.33}_{-0.86}$	$D_{\mathrm{M}}(0.15)$	$633.9 \pm 7.5$
$100\theta_{\mathrm{MC}}$	$1.04139 \pm 0.00049$	$10^9 A_{\mathrm{s}}$	$2.058^{+0.027}_{-0.036}$	$H(0.38)$	$83.56 \pm 0.57$
$\tau$	$0.0528^{+0.0036}_{-0.0079}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.852 \pm 0.018$	$D_{\mathrm{M}}(0.38)$	$1515 \pm 15$
$\ln(10^{10} A_{\mathrm{s}})$	$3.024^{+0.013}_{-0.017}$	$D_{40}$	$1212 \pm 26$	$H(0.51)$	$90.17 \pm 0.46$
$n_{\mathrm{s}}$	$0.968 \pm 0.011$	$D_{220}$	$5693 \pm 57$	$D_{\mathrm{M}}(0.51)$	$1964 \pm 18$
$A_{100}^{\mathrm{dustTE}}$	$0.114 \pm 0.038$	$D_{810}$	$2508 \pm 25$	$H(0.61)$	$95.70^{+0.35}_{-0.39}$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.136 \pm 0.030$	$D_{1420}$	$808 \pm 12$	$D_{\mathrm{M}}(0.61)$	$2287 \pm 19$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.478 \pm 0.085$	$D_{2000}$	$227.9 \pm 4.2$	$H(2.33)$	$235.1 \pm 1.2$
$A_{143}^{\mathrm{dustTE}}$	$0.220 \pm 0.055$	$n_{\mathrm{s},0.002}$	$0.968 \pm 0.011$	$D_{\mathrm{M}}(2.33)$	$5746 \pm 17$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.657 \pm 0.081$	$Y_{\mathrm{P}}$	$0.24544 \pm 0.00010$	$f\sigma_8(0.15)$	$0.441 \pm 0.012$
$A_{217}^{\mathrm{dustTE}}$	$2.03 \pm 0.27$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24677 \pm 0.00010$	$\sigma_8(0.15)$	$0.7363 \pm 0.0085$
$c_{100}$	$1.00018 \pm 0.00070$	$10^5 \mathrm{D}/\mathrm{H}$	$2.563 \pm 0.046$	$f\sigma_8(0.38)$	$0.4618 \pm 0.0098$
$c_{217}$	$0.99800 \pm 0.00065$	$\mathrm{Age}/\mathrm{Gyr}$	$13.760 \pm 0.038$	$\sigma_8(0.38)$	$0.6539^{+0.0064}_{-0.0073}$
$y_{\mathrm{cal}}$	$1.0000 \pm 0.0025$	$z_{*}$	$1089.55 \pm 0.42$	$f\sigma_8(0.51)$	$0.4617 \pm 0.0086$
$H_0$	$68.48 \pm 0.90$	$r_{*}$	$144.96 \pm 0.48$	$\sigma_8(0.51)$	$0.6125^{+0.0057}_{-0.0067}$
$\Omega_{\Lambda}$	$0.700 \pm 0.012$	$100\theta_{*}$	$1.04157 \pm 0.00048$	$f\sigma_8(0.61)$	$0.4577 \pm 0.0078$
$\Omega_{\mathrm{m}}$	$0.300 \pm 0.012$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.918 \pm 0.045$	$\sigma_8(0.61)$	$0.5831^{+0.0053}_{-0.0063}$
$\Omega_{\mathrm{m}}h^2$	$0.1407 \pm 0.0019$	$z_{\mathrm{drag}}$	$1060.05 \pm 0.54$	$f\sigma_8(2.33)$	$0.2945^{+0.0025}_{-0.0031}$
$\Omega_{\mathrm{m}}h^3$	$0.09636 \pm 0.00052$	$r_{\mathrm{drag}}$	$147.60 \pm 0.49$	$\sigma_8(2.33)$	$0.3041^{+0.0026}_{-0.0032}$
$\sigma_8$	$0.796 \pm 0.010$	$k_{\mathrm{D}}$	$0.14043 \pm 0.00057$	$\chi_{\mathrm{simall}}^2$	$396.4 \pm 1.1$
$S_8$	$0.796 \pm 0.023$	$100\theta_{\mathrm{D}}$	$0.16074 \pm 0.00031$	$\chi_{\mathrm{plikTE}}^2$	$859.8 \pm 3.7$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.436 \pm 0.013$	$z_{\mathrm{eq}}$	$3347 \pm 46$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.7$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.589 \pm 0.012$	$k_{\mathrm{eq}}$	$0.01022 \pm 0.00014$	$\chi_{\mathrm{CMB}}^2$	$1256.2 \pm 3.9$
$\sigma_8/h^{0.5}$	$0.962 \pm 0.017$	$100\theta_{\mathrm{eq}}$	$0.8241 \pm 0.0088$		
$r_{\mathrm{drag}}h$	$101.1 \pm 1.6$	$100\theta_{\mathrm{s,eq}}$	$0.4549 \pm 0.0045$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1263.64$ ;  $R - 1 = 0.00713$



## 2.27 base\_plikHM\_EE\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02372	$0.0240 \pm 0.0012$	$D_{220}$	5924	$5959 \pm 190$	$H(0.38)$	84.36	$84.7^{+1.8}_{-2.0}$
$\Omega_c h^2$	0.11641	$0.1158 \pm 0.0046$	$D_{810}$	2585.1	$2590 \pm 38$	$D_M(0.38)$	1496.6	$1489 \pm 46$
$100\theta_{MC}$	1.04002	$1.03999 \pm 0.00089$	$D_{1420}$	841.3	$844 \pm 19$	$H(0.51)$	90.91	$91.3^{+1.5}_{-1.8}$
$\tau$	0.0526	$0.0527 \pm 0.0090$	$D_{2000}$	240.2	$241.2 \pm 7.2$	$D_M(0.51)$	1942	$1933 \pm 55$
$\ln(10^{10} A_s)$	3.0504	$3.052 \pm 0.022$	$n_{s,0.002}$	0.9781	$0.980 \pm 0.015$	$H(0.61)$	96.40	$96.7^{+1.3}_{-1.6}$
$n_s$	0.9781	$0.980 \pm 0.015$	$Y_P$	0.245954	$0.24603^{+0.00043}_{-0.00053}$	$D_M(0.61)$	2262	$2252 \pm 60$
$y_{cal}$	1.00009	$0.9999 \pm 0.0025$	$Y_P^{BBN}$	0.247283	$0.24736^{+0.00043}_{-0.00053}$	$H(2.33)$	235.47	$235.3^{+1.9}_{-2.2}$
$H_0$	69.46	$69.9 \pm 2.7$	$10^5 D/H$	2.352	$2.32^{+0.18}_{-0.20}$	$D_M(2.33)$	5709	$5695^{+71}_{-62}$
$\Omega_\Lambda$	0.7082	$0.711^{+0.033}_{-0.026}$	Age/Gyr	13.672	$13.64^{+0.16}_{-0.14}$	$f\sigma_8(0.15)$	0.4374	$0.433 \pm 0.029$
$\Omega_m$	0.2918	$0.289^{+0.026}_{-0.033}$	$z_*$	1088.01	$1087.8^{+1.6}_{-1.7}$	$\sigma_8(0.15)$	0.7399	$0.737 \pm 0.014$
$\Omega_m h^2$	0.14078	$0.1404^{+0.0034}_{-0.0039}$	$r_*$	144.33	$144.29 \pm 0.64$	$f\sigma_8(0.38)$	0.4598	$0.456 \pm 0.023$
$\Omega_m h^3$	0.09778	$0.0981^{+0.0016}_{-0.0018}$	$100\theta_*$	1.04007	$1.04001 \pm 0.00086$	$\sigma_8(0.38)$	0.6581	$0.656^{+0.011}_{-0.0095}$
$\sigma_8$	0.7986	$0.796 \pm 0.018$	$D_M(z_*)/\text{Gpc}$	13.877	$13.874 \pm 0.060$	$f\sigma_8(0.51)$	0.4608	$0.457 \pm 0.020$
$S_8$	0.788	$0.781^{+0.052}_{-0.060}$	$z_{drag}$	1062.76	$1063.2 \pm 2.4$	$\sigma_8(0.51)$	0.6168	$0.6152^{+0.0091}_{-0.0081}$
$\sigma_8 \Omega_m^{0.5}$	0.4314	$0.427^{+0.028}_{-0.033}$	$r_{drag}$	146.55	$146.46 \pm 0.70$	$f\sigma_8(0.61)$	0.4575	$0.454 \pm 0.017$
$\sigma_8 \Omega_m^{0.25}$	0.5870	$0.583 \pm 0.027$	$k_D$	0.14239	$0.1426 \pm 0.0012$	$\sigma_8(0.61)$	0.5874	$0.5861^{+0.0081}_{-0.0073}$
$\sigma_8/h^{0.5}$	0.9583	$0.952 \pm 0.039$	$100\theta_D$	0.15899	$0.1588^{+0.0011}_{-0.0013}$	$f\sigma_8(2.33)$	0.29698	$0.2965 \pm 0.0035$
$r_{drag} h$	101.79	$102.4 \pm 4.0$	$z_{eq}$	3349	$3340^{+81}_{-92}$	$\sigma_8(2.33)$	0.30709	$0.3069 \pm 0.0037$
$\langle d^2 \rangle^{1/2}$	2.384	$2.375 \pm 0.075$	$k_{eq}$	0.010221	$0.01019^{+0.00025}_{-0.00028}$	$\chi^2_{small}$	395.59	$396.7 \pm 1.6$
$z_{re}$	7.17	$7.10^{+0.87}_{-0.73}$	$100\theta_{eq}$	0.8261	$0.829 \pm 0.019$	$\chi^2_{plikEE}$	738.96	$743.9 \pm 3.1$
$10^9 A_s$	2.1123	$2.116 \pm 0.047$	$100\theta_{s,eq}$	0.4550	$0.4562 \pm 0.0092$	$\chi^2_{prior}$	0.001	$0.98 \pm 1.4$
$10^9 A_s e^{-2\tau}$	1.9014	$1.904 \pm 0.024$	$H(0.15)$	74.55	$75.0 \pm 2.4$	$\chi^2_{CMB}$	1134.55	$1140.6 \pm 3.4$
$D_{40}$	1229.3	$1230 \pm 30$	$D_M(0.15)$	625.6	$622 \pm 22$			

Best-fit  $\chi^2_{eff} = 1134.55$ ;  $\bar{\chi}^2_{eff} = 1141.61$ ;  $R - 1 = 0.00482$

$\chi^2_{eff}$ : CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.59 plik\_rd12\_HM\_v22\_EE: 738.96



## 2.28 base\_plikHM\_EE\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.0240 \pm 0.0012$	$D_{220}$	$5954 \pm 190$	$H(0.38)$	$84.7^{+1.8}_{-2.0}$
$\Omega_{\mathrm{c}}h^2$	$0.1158^{+0.0044}_{-0.0049}$	$D_{810}$	$2589 \pm 39$	$D_{\mathrm{M}}(0.38)$	$1489 \pm 46$
$100\theta_{\mathrm{MC}}$	$1.04000 \pm 0.00089$	$D_{1420}$	$844 \pm 19$	$H(0.51)$	$91.3^{+1.5}_{-1.8}$
$\tau$	$0.0559^{+0.0049}_{-0.0080}$	$D_{2000}$	$241.2 \pm 7.3$	$D_{\mathrm{M}}(0.51)$	$1933 \pm 56$
$\ln(10^{10}A_{\mathrm{s}})$	$3.058^{+0.017}_{-0.020}$	$n_{\mathrm{s},0.002}$	$0.981 \pm 0.015$	$H(0.61)$	$96.7^{+1.3}_{-1.6}$
$n_{\mathrm{s}}$	$0.981 \pm 0.015$	$Y_{\mathrm{P}}$	$0.24602^{+0.00043}_{-0.00053}$	$D_{\mathrm{M}}(0.61)$	$2252 \pm 61$
$y_{\mathrm{cal}}$	$0.99996 \pm 0.0025$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24735^{+0.00044}_{-0.00053}$	$H(2.33)$	$235.3^{+1.9}_{-2.2}$
$H_0$	$69.9 \pm 2.8$	$10^5 D/H$	$2.33^{+0.18}_{-0.20}$	$D_{\mathrm{M}}(2.33)$	$5696^{+71}_{-63}$
$\Omega_{\Lambda}$	$0.711^{+0.033}_{-0.026}$	Age/Gyr	$13.65 \pm 0.15$	$f\sigma_8(0.15)$	$0.435^{+0.027}_{-0.030}$
$\Omega_{\mathrm{m}}$	$0.289^{+0.026}_{-0.033}$	$z_*$	$1087.8^{+1.6}_{-1.8}$	$\sigma_8(0.15)$	$0.740 \pm 0.014$
$\Omega_{\mathrm{m}}h^2$	$0.1404^{+0.0034}_{-0.0039}$	$r_*$	$144.32 \pm 0.64$	$f\sigma_8(0.38)$	$0.458 \pm 0.023$
$\Omega_{\mathrm{m}}h^3$	$0.0981^{+0.0016}_{-0.0019}$	$100\theta_*$	$1.04002 \pm 0.00086$	$\sigma_8(0.38)$	$0.6583 \pm 0.0095$
$\sigma_8$	$0.798 \pm 0.018$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.876 \pm 0.061$	$f\sigma_8(0.51)$	$0.459 \pm 0.020$
$S_8$	$0.783^{+0.051}_{-0.060}$	$z_{\mathrm{drag}}$	$1063.2 \pm 2.4$	$\sigma_8(0.51)$	$0.6172 \pm 0.0079$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.429^{+0.028}_{-0.033}$	$r_{\mathrm{drag}}$	$146.49 \pm 0.70$	$f\sigma_8(0.61)$	$0.456 \pm 0.017$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.585 \pm 0.027$	$k_{\mathrm{D}}$	$0.1426 \pm 0.0013$	$\sigma_8(0.61)$	$0.5880 \pm 0.0070$
$\sigma_8/h^{0.5}$	$0.955 \pm 0.039$	$100\theta_{\mathrm{D}}$	$0.1588^{+0.0012}_{-0.0014}$	$f\sigma_8(2.33)$	$0.2974^{+0.0028}_{-0.0032}$
$r_{\mathrm{drag}}h$	$102.5 \pm 4.0$	$z_{\mathrm{eq}}$	$3339^{+81}_{-93}$	$\sigma_8(2.33)$	$0.3079^{+0.0029}_{-0.0034}$
$\langle d^2 \rangle^{1/2}$	$2.381 \pm 0.075$	$k_{\mathrm{eq}}$	$0.01019^{+0.00025}_{-0.00028}$	$\chi_{\mathrm{simall}}^2$	$396.4 \pm 1.3$
$z_{\mathrm{re}}$	$7.43^{+0.33}_{-0.82}$	$100\theta_{\mathrm{eq}}$	$0.829 \pm 0.019$	$\chi_{\mathrm{plikEE}}^2$	$743.9 \pm 3.2$
$10^9 A_{\mathrm{s}}$	$2.128^{+0.036}_{-0.043}$	$100\theta_{\mathrm{s,eq}}$	$0.4563 \pm 0.0093$	$\chi_{\mathrm{prior}}^2$	$1.0 \pm 1.4$
$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.903 \pm 0.024$	$H(0.15)$	$75.0 \pm 2.4$	$\chi_{\mathrm{CMB}}^2$	$1140.3 \pm 3.4$
$D_{40}$	$1229 \pm 30$	$D_{\mathrm{M}}(0.15)$	$622 \pm 22$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1141.31; R - 1 = 0.00558$$



## 2.29 base\_CamSpecHM\_TE\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022470	$0.02248 \pm 0.00026$	$D_{220}$	5719	$5716 \pm 61$	$H(0.38)$	83.66	$83.69 \pm 0.59$
$\Omega_c h^2$	0.11696	$0.1169 \pm 0.0021$	$D_{810}$	2547.9	$2546 \pm 26$	$D_M(0.38)$	1511.4	$1511 \pm 16$
$100\theta_{MC}$	1.04140	$1.04141 \pm 0.00051$	$D_{1420}$	824.6	$824 \pm 12$	$H(0.51)$	90.225	$90.26 \pm 0.47$
$\tau$	0.0518	$0.0504 \pm 0.0088$	$D_{2000}$	233.38	$233.3 \pm 4.4$	$D_M(0.51)$	1960.2	$1959 \pm 18$
$\ln(10^{10} A_s)$	3.0345	$3.031 \pm 0.021$	$n_{s,0.002}$	0.9781	$0.978 \pm 0.011$	$H(0.61)$	95.730	$95.76 \pm 0.39$
$n_s$	0.9781	$0.978 \pm 0.011$	$Y_P$	0.245433	$0.24544 \pm 0.00010$	$D_M(0.61)$	2282.8	$2282 \pm 20$
$y_{cal}$	1.00007	$0.99999 \pm 0.0025$	$Y_P^{BBN}$	0.246760	$0.24676 \pm 0.00010$	$H(2.33)$	234.70	$234.7 \pm 1.3$
$H_0$	68.68	$68.72 \pm 0.93$	$10^5 D/H$	2.5673	$2.566 \pm 0.047$	$D_M(2.33)$	5745.7	$5745 \pm 17$
$\Omega_\Lambda$	0.7030	$0.703 \pm 0.012$	Age/Gyr	13.7598	$13.757 \pm 0.039$	$f\sigma_8(0.15)$	0.4421	$0.441 \pm 0.013$
$\Omega_m$	0.2970	$0.297 \pm 0.012$	$z_*$	1089.531	$1089.51 \pm 0.42$	$\sigma_8(0.15)$	0.7415	$0.740 \pm 0.010$
$\Omega_m h^2$	0.14007	$0.1400 \pm 0.0020$	$r_*$	145.146	$145.15 \pm 0.50$	$f\sigma_8(0.38)$	0.4634	$0.462 \pm 0.011$
$\Omega_m h^3$	0.09620	$0.09622 \pm 0.00054$	$100\theta_*$	1.04158	$1.04158 \pm 0.00050$	$\sigma_8(0.38)$	0.6589	$0.6576 \pm 0.0084$
$\sigma_8$	0.8009	$0.799 \pm 0.012$	$D_M(z_*)/\text{Gpc}$	13.9352	$13.936 \pm 0.047$	$f\sigma_8(0.51)$	0.4638	$0.4626 \pm 0.0095$
$S_8$	0.7968	$0.795 \pm 0.025$	$z_{drag}$	1059.93	$1059.98 \pm 0.55$	$\sigma_8(0.51)$	0.6173	$0.6161 \pm 0.0077$
$\sigma_8 \Omega_m^{0.5}$	0.4364	$0.435 \pm 0.013$	$r_{drag}$	147.79	$147.79 \pm 0.52$	$f\sigma_8(0.61)$	0.4600	$0.4589 \pm 0.0086$
$\sigma_8 \Omega_m^{0.25}$	0.5912	$0.590 \pm 0.013$	$k_D$	0.14021	$0.14021 \pm 0.00060$	$\sigma_8(0.61)$	0.5878	$0.5866 \pm 0.0072$
$\sigma_8/h^{0.5}$	0.9664	$0.964 \pm 0.018$	$100\theta_D$	0.160793	$0.16078 \pm 0.00032$	$f\sigma_8(2.33)$	0.29696	$0.2964 \pm 0.0036$
$r_{drag} h$	101.50	$101.6 \pm 1.6$	$z_{eq}$	3331.9	$3331 \pm 48$	$\sigma_8(2.33)$	0.30681	$0.3063 \pm 0.0037$
$\langle d^2 \rangle^{1/2}$	2.3760	$2.370 \pm 0.043$	$k_{eq}$	0.010169	$0.01017 \pm 0.00014$	$\chi_{small}^2$	395.67	$396.9 \pm 1.6$
$z_{re}$	7.36	$7.18_{-0.75}^{+0.93}$	$100\theta_{eq}$	0.8267	$0.8271 \pm 0.0092$	$\chi_{CamSpec}^2$	2575.95	$2581.0 \pm 3.2$
$10^9 A_s$	2.0790	$2.072 \pm 0.042$	$100\theta_{s,eq}$	0.45633	$0.4565 \pm 0.0047$	$\chi_{prior}^2$	10.03	$11.0 \pm 1.4$
$10^9 A_s e^{-2\tau}$	1.8744	$1.873 \pm 0.019$	$H(0.15)$	73.80	$73.85 \pm 0.80$	$\chi_{CMB}^2$	2971.61	$2977.9 \pm 3.6$
$D_{40}$	1201.3	$1200 \pm 26$	$D_M(0.15)$	632.3	$632.0 \pm 7.7$			

Best-fit  $\chi_{eff}^2 = 2981.64$ ;  $\bar{\chi}_{eff}^2 = 2988.91$ ;  $R - 1 = 0.00640$

$\chi_{eff}^2$ : CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.67 CamSpec like\_10.7HM\_1400\_unified: 2575.95



### 2.30 base\_CamSpecHM\_TE\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02249 \pm 0.00026$	$D_{220}$	$5716 \pm 61$	$H(0.38)$	$83.72 \pm 0.59$
$\Omega_{\text{c}}h^2$	$0.1168 \pm 0.0021$	$D_{810}$	$2547 \pm 26$	$D_{\text{M}}(0.38)$	$1510 \pm 16$
$100\theta_{\text{MC}}$	$1.04141 \pm 0.00051$	$D_{1420}$	$825 \pm 12$	$H(0.51)$	$90.28 \pm 0.47$
$\tau$	$0.0535^{+0.0039}_{-0.0081}$	$D_{2000}$	$233.6 \pm 4.4$	$D_{\text{M}}(0.51)$	$1959 \pm 18$
$\ln(10^{10}A_{\text{s}})$	$3.037^{+0.015}_{-0.018}$	$n_{\text{s},0.002}$	$0.979 \pm 0.011$	$H(0.61)$	$95.77 \pm 0.39$
$n_{\text{s}}$	$0.979 \pm 0.011$	$Y_{\text{P}}$	$0.24544 \pm 0.00010$	$D_{\text{M}}(0.61)$	$2281 \pm 20$
$y_{\text{cal}}$	$0.99997 \pm 0.0025$	$Y_{\text{P}}^{\text{BBN}}$	$0.24677 \pm 0.00010$	$H(2.33)$	$234.6 \pm 1.3$
$H_0$	$68.76 \pm 0.93$	$10^5 D/\text{H}$	$2.564 \pm 0.047$	$D_{\text{M}}(2.33)$	$5744 \pm 17$
$\Omega_{\Lambda}$	$0.704 \pm 0.012$	Age/Gyr	$13.756 \pm 0.039$	$f\sigma_8(0.15)$	$0.442 \pm 0.013$
$\Omega_{\text{m}}$	$0.296 \pm 0.012$	$z_*$	$1089.49 \pm 0.42$	$\sigma_8(0.15)$	$0.7423 \pm 0.0091$
$\Omega_{\text{m}}h^2$	$0.1400 \pm 0.0020$	$r_*$	$145.17 \pm 0.50$	$f\sigma_8(0.38)$	$0.464 \pm 0.010$
$\Omega_{\text{m}}h^3$	$0.09622 \pm 0.00053$	$100\theta_*$	$1.04159 \pm 0.00050$	$\sigma_8(0.38)$	$0.6597 \pm 0.0074$
$\sigma_8$	$0.802 \pm 0.011$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.937 \pm 0.047$	$f\sigma_8(0.51)$	$0.4639 \pm 0.0091$
$S_8$	$0.797 \pm 0.024$	$z_{\text{drag}}$	$1059.99 \pm 0.55$	$\sigma_8(0.51)$	$0.6181 \pm 0.0067$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.436 \pm 0.013$	$r_{\text{drag}}$	$147.80 \pm 0.52$	$f\sigma_8(0.61)$	$0.4602 \pm 0.0083$
$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.591 \pm 0.013$	$k_{\text{D}}$	$0.14021 \pm 0.00060$	$\sigma_8(0.61)$	$0.5885^{+0.0058}_{-0.0065}$
$\sigma_8/h^{0.5}$	$0.967 \pm 0.017$	$100\theta_{\text{D}}$	$0.16077 \pm 0.00032$	$f\sigma_8(2.33)$	$0.2974^{+0.0027}_{-0.0032}$
$r_{\text{drag}}h$	$101.6 \pm 1.6$	$z_{\text{eq}}$	$3329 \pm 47$	$\sigma_8(2.33)$	$0.3073^{+0.0027}_{-0.0033}$
$\langle d^2 \rangle^{1/2}$	$2.376 \pm 0.042$	$k_{\text{eq}}$	$0.01016 \pm 0.00014$	$\chi_{\text{simall}}^2$	$396.4 \pm 1.2$
$z_{\text{re}}$	$7.51^{+0.40}_{-0.84}$	$100\theta_{\text{eq}}$	$0.8274 \pm 0.0092$	$\chi_{\text{CamSpec}}^2$	$2581.0 \pm 3.2$
$10^9 A_{\text{s}}$	$2.085^{+0.030}_{-0.037}$	$100\theta_{\text{s,eq}}$	$0.4567 \pm 0.0047$	$\chi_{\text{prior}}^2$	$11.0 \pm 1.4$
$10^9 A_{\text{s}}e^{-2\tau}$	$1.873 \pm 0.019$	$H(0.15)$	$73.88 \pm 0.80$	$\chi_{\text{CMB}}^2$	$2977.5 \pm 3.4$
$D_{40}$	$1199 \pm 26$	$D_{\text{M}}(0.15)$	$631.7 \pm 7.7$		

$\bar{\chi}_{\text{eff}}^2 = 2988.52$ ;  $R - 1 = 0.00517$



## 2.31 base\_CamSpecHM\_EE\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02320	$0.0233 \pm 0.0012$	$D_{220}$	5947	$5950 \pm 190$	$H(0.38)$	83.13	$83.3^{+1.7}_{-1.9}$
$\Omega_{\text{c}}h^2$	0.11965	$0.1192 \pm 0.0047$	$D_{810}$	2597.7	$2597 \pm 39$	$D_{\text{M}}(0.38)$	1527.9	$1525 \pm 46$
$100\theta_{\text{MC}}$	1.03933	$1.03928 \pm 0.00087$	$D_{1420}$	839.2	$840 \pm 19$	$H(0.51)$	89.90	$90.1^{+1.4}_{-1.6}$
$\tau$	0.0500	$0.0504 \pm 0.0088$	$D_{2000}$	238.6	$238.8 \pm 7.1$	$D_{\text{M}}(0.51)$	1979	$1975 \pm 54$
$\ln(10^{10}A_{\text{s}})$	3.0583	$3.058 \pm 0.022$	$n_{\text{s},0.002}$	0.9650	$0.967 \pm 0.014$	$H(0.61)$	95.55	$95.7^{+1.1}_{-1.4}$
$n_{\text{s}}$	0.9650	$0.967 \pm 0.014$	$Y_{\text{P}}$	0.245745	$0.24575 \pm 0.00047$	$D_{\text{M}}(0.61)$	2302	$2298 \pm 59$
$y_{\text{cal}}$	0.99999	$1.0000 \pm 0.0025$	$Y_{\text{P}}^{\text{BBN}}$	0.247073	$0.24708 \pm 0.00047$	$H(2.33)$	237.00	$236.8 \pm 2.2$
$H_0$	67.63	$67.9 \pm 2.6$	$10^5 D/H$	2.439	$2.44^{+0.18}_{-0.21}$	$D_{\text{M}}(2.33)$	5748	$5743^{+66}_{-59}$
$\Omega_{\Lambda}$	0.6863	$0.687^{+0.035}_{-0.028}$	Age/Gyr	13.760	$13.75 \pm 0.14$	$f\sigma_8(0.15)$	0.4585	$0.456 \pm 0.029$
$\Omega_{\text{m}}$	0.3137	$0.313^{+0.028}_{-0.035}$	$z_*$	1088.88	$1088.8^{+1.6}_{-1.8}$	$\sigma_8(0.15)$	0.7490	$0.747^{+0.015}_{-0.013}$
$\Omega_{\text{m}}h^2$	0.14350	$0.1431 \pm 0.0038$	$r_*$	143.89	$143.94 \pm 0.66$	$f\sigma_8(0.38)$	0.4764	$0.474 \pm 0.023$
$\Omega_{\text{m}}h^3$	0.09705	$0.0971^{+0.0015}_{-0.0017}$	$100\theta_*$	1.03943	$1.03937 \pm 0.00084$	$\sigma_8(0.38)$	0.6637	$0.662^{+0.010}_{-0.0089}$
$\sigma_8$	0.8108	$0.809^{+0.019}_{-0.017}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.843	$13.849 \pm 0.062$	$f\sigma_8(0.51)$	0.4747	$0.473 \pm 0.019$
$S_8$	0.829	$0.825 \pm 0.058$	$z_{\text{drag}}$	1061.80	$1061.9 \pm 2.3$	$\sigma_8(0.51)$	0.6210	$0.6198^{+0.0087}_{-0.0077}$
$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4541	$0.452 \pm 0.032$	$r_{\text{drag}}$	146.27	$146.31 \pm 0.69$	$f\sigma_8(0.61)$	0.4696	$0.468^{+0.017}_{-0.016}$
$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6068	$0.604 \pm 0.028$	$k_{\text{D}}$	0.14235	$0.1423 \pm 0.0012$	$\sigma_8(0.61)$	0.5908	$0.5898 \pm 0.0076$
$\sigma_8/h^{0.5}$	0.9859	$0.982 \pm 0.039$	$100\theta_{\text{D}}$	0.15943	$0.1594^{+0.0012}_{-0.0014}$	$f\sigma_8(2.33)$	0.29780	$0.2974 \pm 0.0035$
$r_{\text{drag}}h$	98.92	$99.3 \pm 3.9$	$z_{\text{eq}}$	3414	$3405 \pm 90$	$\sigma_8(2.33)$	0.30692	$0.3067 \pm 0.0037$
$\langle d^2 \rangle^{1/2}$	2.457	$2.449 \pm 0.075$	$k_{\text{eq}}$	0.010419	$0.01039 \pm 0.00027$	$\chi_{\text{small}}^2$	395.62	$396.8 \pm 1.6$
$z_{\text{re}}$	7.06	$7.06^{+0.90}_{-0.76}$	$100\theta_{\text{eq}}$	0.8123	$0.814 \pm 0.019$	$\chi_{\text{CamSpec}}^2$	1886.52	$1891.5 \pm 3.1$
$10^9 A_{\text{s}}$	2.1292	$2.130 \pm 0.046$	$100\theta_{\text{s,eq}}$	0.4482	$0.4492 \pm 0.0091$	$\chi_{\text{prior}}^2$	10.03	$11.0 \pm 1.4$
$10^9 A_{\text{s}}e^{-2\tau}$	1.9264	$1.925 \pm 0.024$	$H(0.15)$	72.95	$73.2 \pm 2.3$	$\chi_{\text{CMB}}^2$	2282.13	$2288.3 \pm 3.5$
$D_{40}$	1264.6	$1260 \pm 31$	$D_{\text{M}}(0.15)$	640.9	$639 \pm 22$			

Best-fit  $\chi_{\text{eff}}^2 = 2292.16$ ;  $\bar{\chi}_{\text{eff}}^2 = 2299.35$ ;  $R - 1 = 0.00959$

$\chi_{\text{eff}}^2$ : CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.62 CamSpec like\_10.7HM\_1400\_unified: 1886.52



## 2.32 base\_CamSpecHM\_EE\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.0233 \pm 0.0011$	$D_{220}$	$5943 \pm 190$	$H(0.38)$	$83.3^{+1.7}_{-1.9}$
$\Omega_{\text{c}}h^2$	$0.1192 \pm 0.0047$	$D_{810}$	$2596 \pm 39$	$D_{\text{M}}(0.38)$	$1525 \pm 46$
$100\theta_{\text{MC}}$	$1.03928 \pm 0.00087$	$D_{1420}$	$839 \pm 19$	$H(0.51)$	$90.0^{+1.4}_{-1.6}$
$\tau$	$0.0539^{+0.0046}_{-0.0079}$	$D_{2000}$	$238.8 \pm 7.0$	$D_{\text{M}}(0.51)$	$1976 \pm 55$
$\ln(10^{10}A_{\text{s}})$	$3.065^{+0.017}_{-0.019}$	$n_{\text{s},0.002}$	$0.968^{+0.013}_{-0.014}$	$H(0.61)$	$95.7^{+1.1}_{-1.4}$
$n_{\text{s}}$	$0.968^{+0.013}_{-0.014}$	$Y_{\text{P}}$	$0.24574 \pm 0.00046$	$D_{\text{M}}(0.61)$	$2299 \pm 59$
$y_{\text{cal}}$	$1.0000 \pm 0.0025$	$Y_{\text{P}}^{\text{BBN}}$	$0.24707 \pm 0.00047$	$H(2.33)$	$236.8 \pm 2.2$
$H_0$	$67.9 \pm 2.6$	$10^5\text{D}/\text{H}$	$2.44^{+0.18}_{-0.20}$	$D_{\text{M}}(2.33)$	$5744^{+66}_{-58}$
$\Omega_{\Lambda}$	$0.687^{+0.035}_{-0.028}$	Age/Gyr	$13.75 \pm 0.14$	$f\sigma_8(0.15)$	$0.458 \pm 0.029$
$\Omega_{\text{m}}$	$0.313^{+0.028}_{-0.035}$	$z_*$	$1088.9^{+1.6}_{-1.8}$	$\sigma_8(0.15)$	$0.750^{+0.014}_{-0.012}$
$\Omega_{\text{m}}h^2$	$0.1431 \pm 0.0038$	$r_*$	$143.96 \pm 0.66$	$f\sigma_8(0.38)$	$0.476 \pm 0.023$
$\Omega_{\text{m}}h^3$	$0.0970^{+0.0015}_{-0.0017}$	$100\theta_*$	$1.03938 \pm 0.00084$	$\sigma_8(0.38)$	$0.6647^{+0.0092}_{-0.0083}$
$\sigma_8$	$0.812^{+0.018}_{-0.016}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.851 \pm 0.062$	$f\sigma_8(0.51)$	$0.474 \pm 0.019$
$S_8$	$0.829 \pm 0.058$	$z_{\text{drag}}$	$1061.8 \pm 2.3$	$\sigma_8(0.51)$	$0.6220 \pm 0.0075$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.454 \pm 0.032$	$r_{\text{drag}}$	$146.34 \pm 0.68$	$f\sigma_8(0.61)$	$0.469^{+0.017}_{-0.015}$
$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.607 \pm 0.027$	$k_{\text{D}}$	$0.1423 \pm 0.0012$	$\sigma_8(0.61)$	$0.5919 \pm 0.0067$
$\sigma_8/h^{0.5}$	$0.986 \pm 0.038$	$100\theta_{\text{D}}$	$0.1595^{+0.0012}_{-0.0014}$	$f\sigma_8(2.33)$	$0.2984^{+0.0028}_{-0.0031}$
$r_{\text{drag}}h$	$99.3 \pm 3.9$	$z_{\text{eq}}$	$3405 \pm 90$	$\sigma_8(2.33)$	$0.3078 \pm 0.0033$
$\langle d^2 \rangle^{1/2}$	$2.456 \pm 0.074$	$k_{\text{eq}}$	$0.01039 \pm 0.00027$	$\chi_{\text{simall}}^2$	$396.5 \pm 1.4$
$z_{\text{re}}$	$7.43^{+0.30}_{-0.85}$	$100\theta_{\text{eq}}$	$0.814 \pm 0.019$	$\chi_{\text{CamSpec}}^2$	$1891.4 \pm 3.1$
$10^9A_{\text{s}}$	$2.144^{+0.035}_{-0.042}$	$100\theta_{\text{s,eq}}$	$0.4492 \pm 0.0091$	$\chi_{\text{prior}}^2$	$11.0 \pm 1.4$
$10^9A_{\text{s}}e^{-2\tau}$	$1.924 \pm 0.024$	$H(0.15)$	$73.2 \pm 2.3$	$\chi_{\text{CMB}}^2$	$2287.9 \pm 3.4$
$D_{40}$	$1260 \pm 31$	$D_{\text{M}}(0.15)$	$640 \pm 22$		

$\bar{\chi}_{\text{eff}}^2 = 2298.97$ ;  $R - 1 = 0.00869$



### 2.33 base\_plikHM\_TE\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022421	$0.02245 \pm 0.00024$	$z_{\text{re}}$	7.08	$7.04^{+0.93}_{-0.74}$	$H(0.38)$	83.350	$83.40 \pm 0.36$
$\Omega_c h^2$	0.11820	$0.1181 \pm 0.0012$	$10^9 A_s$	2.0421	$2.044 \pm 0.041$	$D_M(0.38)$	1519.9	$1518.9 \pm 9.3$
$100\theta_{\text{MC}}$	1.041301	$1.04133 \pm 0.00046$	$10^9 A_s e^{-2\tau}$	1.8520	$1.854 \pm 0.017$	$H(0.51)$	89.994	$90.04 \pm 0.30$
$\tau$	0.0488	$0.0488^{+0.0085}_{-0.0076}$	$D_{40}$	1217.9	$1217 \pm 24$	$D_M(0.51)$	1970.1	$1969 \pm 11$
$\ln(10^{10} A_s)$	3.0166	$3.017 \pm 0.020$	$D_{220}$	5692	$5695 \pm 56$	$H(0.61)$	95.557	$95.60 \pm 0.26$
$n_s$	0.9641	$0.965 \pm 0.010$	$D_{810}$	2503.5	$2507 \pm 25$	$D_M(0.61)$	2293.5	$2292 \pm 12$
$y_{\text{cal}}$	0.99984	$1.0000 \pm 0.0025$	$D_{1420}$	804.8	$806 \pm 12$	$H(2.33)$	235.46	$235.45 \pm 0.80$
$A_{100}^{\text{dustTE}}$	0.1139	$0.114 \pm 0.038$	$D_{2000}$	226.76	$227.4 \pm 4.2$	$D_M(2.33)$	5752.2	$5750 \pm 13$
$A_{100 \times 143}^{\text{dustTE}}$	0.1364	$0.136 \pm 0.030$	$n_{s,0.002}$	0.9641	$0.965 \pm 0.010$	$f\sigma_8(0.15)$	0.4428	$0.4427 \pm 0.0083$
$A_{100 \times 217}^{\text{dustTE}}$	0.481	$0.477 \pm 0.085$	$Y_{\text{P}}$	0.245416	$0.245424 \pm 0.000093$	$\sigma_8(0.15)$	0.7343	$0.7347 \pm 0.0091$
$A_{143}^{\text{dustTE}}$	0.222	$0.221 \pm 0.055$	$Y_{\text{P}}^{\text{BBN}}$	0.246742	$0.246751 \pm 0.000093$	$f\sigma_8(0.38)$	0.4624	$0.4624 \pm 0.0074$
$A_{143 \times 217}^{\text{dustTE}}$	0.658	$0.659 \pm 0.081$	$10^5 D/H$	2.5760	$2.571 \pm 0.043$	$\sigma_8(0.38)$	0.6517	$0.6521 \pm 0.0079$
$A_{217}^{\text{dustTE}}$	2.036	$2.04 \pm 0.27$	Age/Gyr	13.7732	$13.769 \pm 0.031$	$f\sigma_8(0.51)$	0.4619	$0.4619 \pm 0.0069$
$c_{100}$	1.00016	$1.00017 \pm 0.00070$	$z_*$	1089.698	$1089.66 \pm 0.33$	$\sigma_8(0.51)$	0.6102	$0.6106 \pm 0.0073$
$c_{217}$	0.99800	$0.99799 \pm 0.00065$	$r_*$	144.860	$144.85 \pm 0.34$	$f\sigma_8(0.61)$	0.4576	$0.4577 \pm 0.0065$
$H_0$	68.16	$68.22 \pm 0.55$	$100\theta_*$	1.041484	$1.04151 \pm 0.00046$	$\sigma_8(0.61)$	0.5809	$0.5812 \pm 0.0070$
$\Omega_\Lambda$	0.6959	$0.6965 \pm 0.0071$	$D_M(z_*)/\text{Gpc}$	13.9090	$13.908 \pm 0.033$	$f\sigma_8(2.33)$	0.29316	$0.2934 \pm 0.0035$
$\Omega_m$	0.3041	$0.3035 \pm 0.0071$	$z_{\text{drag}}$	1059.93	$1059.99 \pm 0.53$	$\sigma_8(2.33)$	0.30257	$0.3028 \pm 0.0036$
$\Omega_m h^2$	0.14126	$0.1412 \pm 0.0012$	$r_{\text{drag}}$	147.512	$147.50 \pm 0.38$	$\chi_{\text{small}}^2$	395.66	$396.9 \pm 1.7$
$\Omega_m h^3$	0.09629	$0.09634 \pm 0.00053$	$k_D$	0.14046	$0.14050 \pm 0.00051$	$\chi_{\text{plikTE}}^2$	852.94	$859.3 \pm 3.5$
$\sigma_8$	0.7939	$0.794 \pm 0.010$	$100\theta_D$	0.160805	$0.16077 \pm 0.00031$	$\chi_{6\text{DF}}^2$	0.0002	$0.037 \pm 0.052$
$S_8$	0.7992	$0.799 \pm 0.016$	$z_{\text{eq}}$	3360.3	$3360 \pm 29$	$\chi_{\text{MGS}}^2$	1.75	$1.85 \pm 0.58$
$\sigma_8 \Omega_m^{0.5}$	0.4377	$0.4376 \pm 0.0087$	$k_{\text{eq}}$	0.010256	$0.010254 \pm 0.000088$	$\chi_{\text{DR12BAO}}^2$	3.440	$3.98 \pm 0.86$
$\sigma_8 \Omega_m^{0.25}$	0.5895	$0.5895 \pm 0.0092$	$100\theta_{\text{eq}}$	0.8213	$0.8216 \pm 0.0053$	$\chi_{\text{prior}}^2$	0.45	$7.4 \pm 3.7$
$\sigma_8/h^{0.5}$	0.9616	$0.962 \pm 0.014$	$100\theta_{s,\text{eq}}$	0.45353	$0.4537 \pm 0.0027$	$\chi_{\text{BAO}}^2$	5.19	$5.87 \pm 0.94$
$r_{\text{drag}} h$	100.55	$100.62 \pm 0.93$	$H(0.15)$	73.365	$73.42 \pm 0.47$	$\chi_{\text{CMB}}^2$	1248.60	$1256.1 \pm 3.8$
$\langle d^2 \rangle^{1/2}$	2.3945	$2.393 \pm 0.032$	$D_M(0.15)$	636.56	$636.1 \pm 4.6$			

Best-fit  $\chi_{\text{eff}}^2 = 1254.23$ ;  $\bar{\chi}_{\text{eff}}^2 = 1269.42$ ;  $R - 1 = 0.00891$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.44 CMB - small\_100x143.offlike5\_EE\_Aplanck\_B: 395.66 plik\_rd12\_HM\_v22\_TE: 852.93



### 2.34 base\_plikHM\_TE\_lowE\_BAO\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02251 \pm 0.00023$	$z_{\mathrm{re}}$	$7.66 \pm 0.74$	$H(0.38)$	$83.28 \pm 0.35$
$\Omega_{\mathrm{c}}h^2$	$0.1189 \pm 0.0011$	$10^9 A_{\mathrm{s}}$	$2.087 \pm 0.031$	$D_{\mathrm{M}}(0.38)$	$1522.7 \pm 9.1$
$100\theta_{\mathrm{MC}}$	$1.04129 \pm 0.00045$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.871 \pm 0.013$	$H(0.51)$	$89.97 \pm 0.30$
$\tau$	$0.0547 \pm 0.0074$	$D_{40}$	$1222 \pm 24$	$D_{\mathrm{M}}(0.51)$	$1973 \pm 11$
$\ln(10^{10}A_{\mathrm{s}})$	$3.038 \pm 0.015$	$D_{220}$	$5721 \pm 54$	$H(0.61)$	$95.56 \pm 0.26$
$n_{\mathrm{s}}$	$0.9676 \pm 0.0098$	$D_{810}$	$2529 \pm 20$	$D_{\mathrm{M}}(0.61)$	$2297 \pm 12$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{1420}$	$815.0 \pm 9.8$	$H(2.33)$	$236.01 \pm 0.70$
$A_{100}^{\mathrm{dustTE}}$	$0.113 \pm 0.038$	$D_{2000}$	$230.4 \pm 3.6$	$D_{\mathrm{M}}(2.33)$	$5750 \pm 13$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.136 \pm 0.029$	$n_{\mathrm{s},0.002}$	$0.9676 \pm 0.0098$	$f\sigma_8(0.15)$	$0.4516 \pm 0.0064$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.479 \pm 0.083$	$Y_{\mathrm{P}}$	$0.245446 \pm 0.000092$	$\sigma_8(0.15)$	$0.7449 \pm 0.0063$
$A_{143}^{\mathrm{dustTE}}$	$0.221 \pm 0.055$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246773 \pm 0.000092$	$f\sigma_8(0.38)$	$0.4707 \pm 0.0054$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.663 \pm 0.082$	$10^5 \mathrm{D}/\mathrm{H}$	$2.561 \pm 0.042$	$\sigma_8(0.38)$	$0.6607 \pm 0.0056$
$A_{217}^{\mathrm{dustTE}}$	$2.06 \pm 0.28$	$\mathrm{Age}/\mathrm{Gyr}$	$13.768 \pm 0.031$	$f\sigma_8(0.51)$	$0.4698 \pm 0.0049$
$c_{100}$	$1.00018 \pm 0.00069$	$z_{*}$	$1089.65 \pm 0.33$	$\sigma_8(0.51)$	$0.6185 \pm 0.0052$
$c_{217}$	$0.99800 \pm 0.00064$	$r_{*}$	$144.61 \pm 0.29$	$f\sigma_8(0.61)$	$0.4652 \pm 0.0046$
$H_0$	$67.98 \pm 0.52$	$100\theta_{*}$	$1.04146 \pm 0.00044$	$\sigma_8(0.61)$	$0.5887 \pm 0.0050$
$\Omega_{\Lambda}$	$0.6925 \pm 0.0067$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.885 \pm 0.029$	$f\sigma_8(2.33)$	$0.2970 \pm 0.0026$
$\Omega_{\mathrm{m}}$	$0.3075 \pm 0.0067$	$z_{\mathrm{drag}}$	$1060.18 \pm 0.52$	$\sigma_8(2.33)$	$0.3063 \pm 0.0027$
$\Omega_{\mathrm{m}}h^2$	$0.1421 \pm 0.0011$	$r_{\mathrm{drag}}$	$147.23 \pm 0.33$	$\chi_{\mathrm{lensing}}^2$	$10.5 \pm 1.8$
$\Omega_{\mathrm{m}}h^3$	$0.09657 \pm 0.00050$	$k_{\mathrm{D}}$	$0.14083 \pm 0.00047$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.7$
$\sigma_8$	$0.8057 \pm 0.0070$	$100\theta_{\mathrm{D}}$	$0.16066 \pm 0.00031$	$\chi_{\mathrm{plikTE}}^2$	$860.0 \pm 3.5$
$S_8$	$0.816 \pm 0.012$	$z_{\mathrm{eq}}$	$3379 \pm 26$	$\chi_{6\mathrm{DF}}^2$	$0.038 \pm 0.052$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4468 \pm 0.0068$	$k_{\mathrm{eq}}$	$0.010314 \pm 0.000078$	$\chi_{\mathrm{MGS}}^2$	$1.52 \pm 0.50$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5999 \pm 0.0067$	$100\theta_{\mathrm{eq}}$	$0.8181 \pm 0.0047$	$\chi_{\mathrm{DR12BAO}}^2$	$4.3 \pm 1.2$
$\sigma_8/h^{0.5}$	$0.9772 \pm 0.0097$	$100\theta_{\mathrm{s,eq}}$	$0.4518 \pm 0.0024$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.6$
$r_{\mathrm{drag}}h$	$100.09 \pm 0.86$	$H(0.15)$	$73.23 \pm 0.46$	$\chi_{\mathrm{CMB}}^2$	$1267.4 \pm 3.8$
$\langle d^2 \rangle^{1/2}$	$2.421 \pm 0.029$	$D_{\mathrm{M}}(0.15)$	$638.1 \pm 4.5$	$\chi_{\mathrm{BAO}}^2$	$5.87 \pm 0.91$

$\bar{\chi}_{\mathrm{eff}}^2 = 1280.69$ ;  $R - 1 = 0.02724$



### 2.35 base\_plikHM\_TE\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02246 \pm 0.00024$	$z_{\mathrm{re}}$	$7.43^{+0.27}_{-0.89}$	$H(0.38)$	$83.41 \pm 0.36$
$\Omega_{\mathrm{c}}h^2$	$0.1181 \pm 0.0012$	$10^9 A_{\mathrm{s}}$	$2.059^{+0.027}_{-0.036}$	$D_{\mathrm{M}}(0.38)$	$1518.6 \pm 9.4$
$100\theta_{\mathrm{MC}}$	$1.04133 \pm 0.00046$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.854 \pm 0.017$	$H(0.51)$	$90.05 \pm 0.30$
$\tau$	$0.0524^{+0.0034}_{-0.0077}$	$D_{40}$	$1216 \pm 23$	$D_{\mathrm{M}}(0.51)$	$1968 \pm 11$
$\ln(10^{10}A_{\mathrm{s}})$	$3.025^{+0.014}_{-0.017}$	$D_{220}$	$5694 \pm 56$	$H(0.61)$	$95.61 \pm 0.26$
$n_{\mathrm{s}}$	$0.966 \pm 0.010$	$D_{810}$	$2508 \pm 25$	$D_{\mathrm{M}}(0.61)$	$2292 \pm 12$
$y_{\mathrm{cal}}$	$1.0000 \pm 0.0025$	$D_{1420}$	$807 \pm 12$	$H(2.33)$	$235.44 \pm 0.81$
$A_{100}^{\mathrm{dustTE}}$	$0.114 \pm 0.038$	$D_{2000}$	$227.7 \pm 4.2$	$D_{\mathrm{M}}(2.33)$	$5750 \pm 13$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.136 \pm 0.030$	$n_{\mathrm{s},0.002}$	$0.966 \pm 0.010$	$f\sigma_8(0.15)$	$0.4442 \pm 0.0080$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.477 \pm 0.085$	$Y_{\mathrm{P}}$	$0.245428 \pm 0.000093$	$\sigma_8(0.15)$	$0.7375^{+0.0071}_{-0.0081}$
$A_{143}^{\mathrm{dustTE}}$	$0.221 \pm 0.054$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246754 \pm 0.000093$	$f\sigma_8(0.38)$	$0.4641 \pm 0.0069$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.659 \pm 0.081$	$10^5 \mathrm{D}/\mathrm{H}$	$2.570 \pm 0.043$	$\sigma_8(0.38)$	$0.6546^{+0.0060}_{-0.0070}$
$A_{217}^{\mathrm{dustTE}}$	$2.04 \pm 0.27$	$\mathrm{Age}/\mathrm{Gyr}$	$13.768 \pm 0.031$	$f\sigma_8(0.51)$	$0.4636 \pm 0.0063$
$c_{100}$	$1.00017 \pm 0.00070$	$z_*$	$1089.64 \pm 0.33$	$\sigma_8(0.51)$	$0.6130^{+0.0056}_{-0.0065}$
$c_{217}$	$0.99799 \pm 0.00065$	$r_*$	$144.85 \pm 0.34$	$f\sigma_8(0.61)$	$0.4594 \pm 0.0059$
$H_0$	$68.24 \pm 0.55$	$100\theta_*$	$1.04151 \pm 0.00045$	$\sigma_8(0.61)$	$0.5835^{+0.0053}_{-0.0061}$
$\Omega_{\Lambda}$	$0.6967 \pm 0.0071$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.908 \pm 0.033$	$f\sigma_8(2.33)$	$0.2945^{+0.0026}_{-0.0031}$
$\Omega_{\mathrm{m}}$	$0.3033 \pm 0.0071$	$z_{\mathrm{drag}}$	$1060.01 \pm 0.53$	$\sigma_8(2.33)$	$0.3040^{+0.0027}_{-0.0032}$
$\Omega_{\mathrm{m}}h^2$	$0.1412 \pm 0.0012$	$r_{\mathrm{drag}}$	$147.49 \pm 0.38$	$\chi_{\mathrm{small}}^2$	$396.4 \pm 1.2$
$\Omega_{\mathrm{m}}h^3$	$0.09636 \pm 0.00053$	$k_{\mathrm{D}}$	$0.14051 \pm 0.00052$	$\chi_{\mathrm{plikTE}}^2$	$859.3 \pm 3.5$
$\sigma_8$	$0.7972^{+0.0080}_{-0.0090}$	$100\theta_{\mathrm{D}}$	$0.16076 \pm 0.00031$	$\chi_{6\mathrm{DF}}^2$	$0.038 \pm 0.053$
$S_8$	$0.802 \pm 0.015$	$z_{\mathrm{eq}}$	$3359 \pm 29$	$\chi_{\mathrm{MGS}}^2$	$1.87 \pm 0.59$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4391 \pm 0.0084$	$k_{\mathrm{eq}}$	$0.010252 \pm 0.000088$	$\chi_{\mathrm{DR12BAO}}^2$	$3.98 \pm 0.86$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5916 \pm 0.0085$	$100\theta_{\mathrm{eq}}$	$0.8217 \pm 0.0053$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.7$
$\sigma_8/h^{0.5}$	$0.965 \pm 0.012$	$100\theta_{\mathrm{s,eq}}$	$0.4537 \pm 0.0028$	$\chi_{\mathrm{BAO}}^2$	$5.89 \pm 0.95$
$r_{\mathrm{drag}}h$	$100.65 \pm 0.94$	$H(0.15)$	$73.44 \pm 0.48$	$\chi_{\mathrm{CMB}}^2$	$1255.7 \pm 3.7$
$\langle d^2 \rangle^{1/2}$	$2.399 \pm 0.030$	$D_{\mathrm{M}}(0.15)$	$635.9 \pm 4.6$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1269.00$ ;  $R - 1 = 0.00969$



### 2.36 base\_plikHM\_TE\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02251 \pm 0.00023$	$z_{\mathrm{re}}$	$7.75^{+0.57}_{-0.78}$	$H(0.38)$	$83.29 \pm 0.36$
$\Omega_{\mathrm{c}}h^2$	$0.1189 \pm 0.0011$	$10^9 A_{\mathrm{s}}$	$2.091^{+0.024}_{-0.032}$	$D_{\mathrm{M}}(0.38)$	$1522.5 \pm 9.1$
$100\theta_{\mathrm{MC}}$	$1.04129 \pm 0.00045$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.871 \pm 0.013$	$H(0.51)$	$89.97 \pm 0.30$
$\tau$	$0.0556^{+0.0053}_{-0.0078}$	$D_{40}$	$1222 \pm 24$	$D_{\mathrm{M}}(0.51)$	$1973 \pm 11$
$\ln(10^{10}A_{\mathrm{s}})$	$3.040^{+0.012}_{-0.015}$	$D_{220}$	$5720 \pm 54$	$H(0.61)$	$95.56 \pm 0.26$
$n_{\mathrm{s}}$	$0.9677 \pm 0.0097$	$D_{810}$	$2528 \pm 20$	$D_{\mathrm{M}}(0.61)$	$2296 \pm 12$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{1420}$	$814.9 \pm 9.8$	$H(2.33)$	$236.00 \pm 0.70$
$A_{100}^{\mathrm{dustTE}}$	$0.113 \pm 0.038$	$D_{2000}$	$230.4 \pm 3.6$	$D_{\mathrm{M}}(2.33)$	$5750 \pm 13$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.030$	$n_{\mathrm{s},0.002}$	$0.9677 \pm 0.0097$	$f\sigma_8(0.15)$	$0.4518 \pm 0.0064$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.479 \pm 0.083$	$Y_{\mathrm{P}}$	$0.245447 \pm 0.000092$	$\sigma_8(0.15)$	$0.7454^{+0.0055}_{-0.0064}$
$A_{143}^{\mathrm{dustTE}}$	$0.221 \pm 0.055$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246773 \pm 0.000093$	$f\sigma_8(0.38)$	$0.4710 \pm 0.0053$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.662 \pm 0.082$	$10^5 \mathrm{D}/\mathrm{H}$	$2.561 \pm 0.042$	$\sigma_8(0.38)$	$0.6612^{+0.0048}_{-0.0056}$
$A_{217}^{\mathrm{dustTE}}$	$2.05 \pm 0.28$	$\mathrm{Age}/\mathrm{Gyr}$	$13.768 \pm 0.031$	$f\sigma_8(0.51)$	$0.4701 \pm 0.0048$
$c_{100}$	$1.00018 \pm 0.00070$	$z_*$	$1089.65 \pm 0.33$	$\sigma_8(0.51)$	$0.6190^{+0.0045}_{-0.0053}$
$c_{217}$	$0.99800 \pm 0.00064$	$r_*$	$144.62 \pm 0.29$	$f\sigma_8(0.61)$	$0.4655^{+0.0042}_{-0.0047}$
$H_0$	$67.99 \pm 0.53$	$100\theta_*$	$1.04146 \pm 0.00044$	$\sigma_8(0.61)$	$0.5891^{+0.0043}_{-0.0050}$
$\Omega_{\Lambda}$	$0.6927 \pm 0.0067$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.886 \pm 0.029$	$f\sigma_8(2.33)$	$0.2972^{+0.0022}_{-0.0026}$
$\Omega_{\mathrm{m}}$	$0.3073 \pm 0.0067$	$z_{\mathrm{drag}}$	$1060.18 \pm 0.52$	$\sigma_8(2.33)$	$0.3066^{+0.0024}_{-0.0027}$
$\Omega_{\mathrm{m}}h^2$	$0.1420 \pm 0.0011$	$r_{\mathrm{drag}}$	$147.23 \pm 0.33$	$\chi_{\mathrm{lensing}}^2$	$10.4 \pm 1.8$
$\Omega_{\mathrm{m}}h^3$	$0.09657 \pm 0.00050$	$k_{\mathrm{D}}$	$0.14082 \pm 0.00047$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.7$
$\sigma_8$	$0.8063^{+0.0060}_{-0.0071}$	$100\theta_{\mathrm{D}}$	$0.16066 \pm 0.00031$	$\chi_{\mathrm{plikTE}}^2$	$859.9 \pm 3.5$
$S_8$	$0.816 \pm 0.012$	$z_{\mathrm{eq}}$	$3379 \pm 26$	$\chi_{6\mathrm{DF}}^2$	$0.037 \pm 0.052$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4470 \pm 0.0068$	$k_{\mathrm{eq}}$	$0.010312 \pm 0.000078$	$\chi_{\mathrm{MGS}}^2$	$1.54 \pm 0.51$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6003 \pm 0.0066$	$100\theta_{\mathrm{eq}}$	$0.8182 \pm 0.0047$	$\chi_{\mathrm{DR12BAO}}^2$	$4.3 \pm 1.1$
$\sigma_8/h^{0.5}$	$0.9778^{+0.0088}_{-0.010}$	$100\theta_{\mathrm{s,eq}}$	$0.4519 \pm 0.0024$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.6$
$r_{\mathrm{drag}}h$	$100.11 \pm 0.86$	$H(0.15)$	$73.23 \pm 0.46$	$\chi_{\mathrm{CMB}}^2$	$1267.2 \pm 3.7$
$\langle d^2 \rangle^{1/2}$	$2.422 \pm 0.029$	$D_{\mathrm{M}}(0.15)$	$638.0 \pm 4.5$	$\chi_{\mathrm{BAO}}^2$	$5.86 \pm 0.91$

$\bar{\chi}_{\mathrm{eff}}^2 = 1280.53$ ;  $R - 1 = 0.02893$



## 2.37 base\_plikHM\_EE\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02355	$0.02347 \pm 0.00066$	$D_{810}$	2581.1	$2580 \pm 34$	$H(0.51)$	90.59	$90.51 \pm 0.60$
$\Omega_c h^2$	0.11753	$0.1176 \pm 0.0014$	$D_{1420}$	838.8	$838 \pm 15$	$D_M(0.51)$	1953.7	$1956 \pm 18$
$100\theta_{MC}$	1.03988	$1.03987 \pm 0.00081$	$D_{2000}$	239.2	$238.8 \pm 5.5$	$H(0.61)$	96.13	$96.06 \pm 0.56$
$\tau$	0.0521	$0.0517 \pm 0.0084$	$n_{s,0.002}$	0.9755	$0.9752 \pm 0.0098$	$D_M(0.61)$	2275.0	$2278 \pm 20$
$\ln(10^{10} A_s)$	3.0498	$3.049 \pm 0.021$	$Y_P$	0.245885	$0.24584^{+0.00028}_{-0.00023}$	$H(2.33)$	236.02	$235.99 \pm 0.99$
$n_s$	0.9755	$0.9752 \pm 0.0098$	$Y_P^{BBN}$	0.247214	$0.24716^{+0.00028}_{-0.00023}$	$D_M(2.33)$	5720.6	$5724 \pm 30$
$y_{cal}$	0.99972	$1.0000 \pm 0.0025$	$10^5 D/H$	2.380	$2.40^{+0.10}_{-0.12}$	$f\sigma_8(0.15)$	0.4441	$0.4449 \pm 0.0098$
$H_0$	68.86	$68.76 \pm 0.85$	Age/Gyr	13.699	$13.708 \pm 0.069$	$\sigma_8(0.15)$	0.7426	$0.7427 \pm 0.0091$
$\Omega_\Lambda$	0.7011	$0.7000 \pm 0.0090$	$z_*$	1088.30	$1088.42 \pm 0.80$	$f\sigma_8(0.38)$	0.4651	$0.4656 \pm 0.0084$
$\Omega_m$	0.2989	$0.3000 \pm 0.0090$	$r_*$	144.17	$144.21 \pm 0.52$	$\sigma_8(0.38)$	0.6597	$0.6596 \pm 0.0078$
$\Omega_m h^2$	0.14173	$0.1417 \pm 0.0014$	$100\theta_*$	1.03995	$1.03994 \pm 0.00082$	$f\sigma_8(0.51)$	0.4652	$0.4656 \pm 0.0076$
$\Omega_m h^3$	0.09759	$0.0975 \pm 0.0012$	$D_M(z_*)/\text{Gpc}$	13.863	$13.867 \pm 0.051$	$\sigma_8(0.51)$	0.6179	$0.6178 \pm 0.0072$
$\sigma_8$	0.8023	$0.802 \pm 0.010$	$z_{drag}$	1062.45	$1062.2 \pm 1.4$	$f\sigma_8(0.61)$	0.4613	$0.4616 \pm 0.0070$
$S_8$	0.8008	$0.802 \pm 0.019$	$r_{drag}$	146.44	$146.52 \pm 0.70$	$\sigma_8(0.61)$	0.5883	$0.5882 \pm 0.0069$
$\sigma_8 \Omega_m^{0.5}$	0.4386	$0.439 \pm 0.010$	$k_D$	0.14240	$0.1423 \pm 0.0012$	$f\sigma_8(2.33)$	0.29713	$0.2970 \pm 0.0034$
$\sigma_8 \Omega_m^{0.25}$	0.5932	$0.594 \pm 0.010$	$100\theta_D$	0.15914	$0.15926^{+0.00076}_{-0.00087}$	$\sigma_8(2.33)$	0.30690	$0.3068 \pm 0.0036$
$\sigma_8/h^{0.5}$	0.9668	$0.968 \pm 0.015$	$z_{eq}$	3371.4	$3372 \pm 33$	$\chi_{small}^2$	395.61	$396.8 \pm 1.5$
$r_{drag} h$	100.84	$100.7 \pm 1.1$	$k_{eq}$	0.010290	$0.01029 \pm 0.00010$	$\chi_{plikEE}^2$	739.04	$743.2 \pm 2.9$
$\langle d^2 \rangle^{1/2}$	2.4015	$2.403 \pm 0.035$	$100\theta_{eq}$	0.8213	$0.8211 \pm 0.0060$	$\chi_{6DF}^2$	0.0044	$0.056 \pm 0.078$
$z_{re}$	7.17	$7.13^{+0.86}_{-0.76}$	$100\theta_{s,eq}$	0.45266	$0.4526 \pm 0.0031$	$\chi_{MGS}^2$	1.89	$1.91 \pm 0.71$
$10^9 A_s$	2.1112	$2.110 \pm 0.045$	$H(0.15)$	74.03	$73.94 \pm 0.77$	$\chi_{DR12BAO}^2$	3.60	$4.4 \pm 1.2$
$10^9 A_s e^{-2\tau}$	1.9024	$1.902 \pm 0.025$	$D_M(0.15)$	630.5	$631.4 \pm 7.2$	$\chi_{prior}^2$	0.012	$1.0 \pm 1.5$
$D_{40}$	1231.6	$1232 \pm 30$	$H(0.38)$	83.97	$83.89 \pm 0.66$	$\chi_{BAO}^2$	5.49	$6.4 \pm 1.3$
$D_{220}$	5898	$5891 \pm 130$	$D_M(0.38)$	1506.6	$1509 \pm 15$	$\chi_{CMB}^2$	1134.66	$1139.9 \pm 3.3$

Best-fit  $\chi_{eff}^2 = 1140.16$ ;  $\bar{\chi}_{eff}^2 = 1147.36$ ;  $R - 1 = 0.00786$

$\chi_{eff}^2$ : BAO - 6DF: 0.00 MGS: 1.89 DR12BAO: 3.60 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.61 plik\_rd12\_HM\_v22\_EE: 739.04



## 2.38 base\_plikHM\_EE\_lowE\_BAO\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02342 \pm 0.00055$	$D_{1420}$	$835 \pm 12$	$H(0.61)$	$96.05 \pm 0.52$
$\Omega_{\mathrm{c}}h^2$	$0.1174 \pm 0.0014$	$D_{2000}$	$237.9 \pm 4.4$	$D_{\mathrm{M}}(0.61)$	$2277 \pm 19$
$100\theta_{\mathrm{MC}}$	$1.03986 \pm 0.00080$	$n_{\mathrm{s},0.002}$	$0.9744 \pm 0.0097$	$H(2.33)$	$235.79 \pm 0.79$
$\tau$	$0.0509 \pm 0.0079$	$Y_{\mathrm{P}}$	$0.24582^{+0.00025}_{-0.00019}$	$D_{\mathrm{M}}(2.33)$	$5726 \pm 27$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045 \pm 0.016$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24715^{+0.00025}_{-0.00019}$	$f\sigma_8(0.15)$	$0.4429 \pm 0.0086$
$n_{\mathrm{s}}$	$0.9744 \pm 0.0097$	$10^5\mathrm{D}/\mathrm{H}$	$2.404 \pm 0.092$	$\sigma_8(0.15)$	$0.7405 \pm 0.0070$
$y_{\mathrm{cal}}$	$0.99996 \pm 0.0024$	Age/Gyr	$13.712 \pm 0.062$	$f\sigma_8(0.38)$	$0.4638 \pm 0.0071$
$H_0$	$68.80 \pm 0.82$	$z_*$	$1088.45 \pm 0.70$	$\sigma_8(0.38)$	$0.6578 \pm 0.0060$
$\Omega_{\Lambda}$	$0.7010 \pm 0.0087$	$r_*$	$144.30 \pm 0.38$	$f\sigma_8(0.51)$	$0.4639 \pm 0.0063$
$\Omega_{\mathrm{m}}$	$0.2990 \pm 0.0087$	$100\theta_*$	$1.03994 \pm 0.00081$	$\sigma_8(0.51)$	$0.6161 \pm 0.0055$
$\Omega_{\mathrm{m}}h^2$	$0.1415 \pm 0.0012$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.876 \pm 0.040$	$f\sigma_8(0.61)$	$0.4599 \pm 0.0057$
$\Omega_{\mathrm{m}}h^3$	$0.0973 \pm 0.0010$	$z_{\mathrm{drag}}$	$1062.1 \pm 1.2$	$\sigma_8(0.61)$	$0.5866 \pm 0.0053$
$\sigma_8$	$0.8000 \pm 0.0079$	$r_{\mathrm{drag}}$	$146.63 \pm 0.52$	$f\sigma_8(2.33)$	$0.2963 \pm 0.0027$
$S_8$	$0.799 \pm 0.017$	$k_{\mathrm{D}}$	$0.14211 \pm 0.00088$	$\sigma_8(2.33)$	$0.3060 \pm 0.0028$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4374 \pm 0.0091$	$100\theta_{\mathrm{D}}$	$0.15932 \pm 0.00068$	$\chi_{\mathrm{lensing}}^2$	$9.1 \pm 1.1$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5916 \pm 0.0086$	$z_{\mathrm{eq}}$	$3365 \pm 28$	$\chi_{\mathrm{simall}}^2$	$396.6 \pm 1.4$
$\sigma_8/h^{0.5}$	$0.965 \pm 0.013$	$k_{\mathrm{eq}}$	$0.010270 \pm 0.000085$	$\chi_{\mathrm{plikEE}}^2$	$742.6 \pm 2.6$
$r_{\mathrm{drag}}h$	$100.9 \pm 1.1$	$100\theta_{\mathrm{eq}}$	$0.8222 \pm 0.0054$	$\chi_{6\mathrm{DF}}^2$	$0.056 \pm 0.078$
$\langle d^2 \rangle^{1/2}$	$2.398 \pm 0.030$	$100\theta_{\mathrm{s,eq}}$	$0.4532 \pm 0.0027$	$\chi_{\mathrm{MGS}}^2$	$1.99 \pm 0.69$
$z_{\mathrm{re}}$	$7.06^{+0.82}_{-0.74}$	$H(0.15)$	$73.97 \pm 0.75$	$\chi_{\mathrm{DR12BAO}}^2$	$4.3 \pm 1.1$
$10^9A_{\mathrm{s}}$	$2.101 \pm 0.033$	$D_{\mathrm{M}}(0.15)$	$631.1 \pm 7.0$	$\chi_{\mathrm{prior}}^2$	$0.9 \pm 1.4$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.898 \pm 0.017$	$H(0.38)$	$83.89 \pm 0.62$	$\chi_{\mathrm{CMB}}^2$	$1148.4 \pm 3.3$
$D_{40}$	$1231 \pm 28$	$D_{\mathrm{M}}(0.38)$	$1508 \pm 15$	$\chi_{\mathrm{BAO}}^2$	$6.4 \pm 1.3$
$D_{220}$	$5883 \pm 110$	$H(0.51)$	$90.51 \pm 0.56$		
$D_{810}$	$2574 \pm 26$	$D_{\mathrm{M}}(0.51)$	$1956 \pm 18$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1155.69$ ;  $R - 1 = 0.01010$



### 2.39 base\_plikHM\_EE\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02344 \pm 0.00065$	$D_{810}$	$2579 \pm 34$	$H(0.51)$	$90.49 \pm 0.60$
$\Omega_{\mathrm{c}}h^2$	$0.1176 \pm 0.0014$	$D_{1420}$	$838 \pm 15$	$D_{\mathrm{M}}(0.51)$	$1957 \pm 18$
$100\theta_{\mathrm{MC}}$	$1.03987 \pm 0.00081$	$D_{2000}$	$238.8 \pm 5.5$	$H(0.61)$	$96.05 \pm 0.56$
$\tau$	$0.0548^{+0.0041}_{-0.0078}$	$n_{\mathrm{s},0.002}$	$0.9755 \pm 0.0099$	$D_{\mathrm{M}}(0.61)$	$2278 \pm 20$
$\ln(10^{10}A_{\mathrm{s}})$	$3.055 \pm 0.019$	$Y_{\mathrm{P}}$	$0.24583^{+0.00028}_{-0.00023}$	$H(2.33)$	$235.97 \pm 0.98$
$n_{\mathrm{s}}$	$0.9755 \pm 0.0099$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24715^{+0.00028}_{-0.00023}$	$D_{\mathrm{M}}(2.33)$	$5726 \pm 30$
$y_{\mathrm{cal}}$	$1.0000 \pm 0.0025$	$10^5\mathrm{D}/\mathrm{H}$	$2.40^{+0.10}_{-0.11}$	$f\sigma_8(0.15)$	$0.4464 \pm 0.0094$
$H_0$	$68.74 \pm 0.85$	Age/Gyr	$13.711 \pm 0.069$	$\sigma_8(0.15)$	$0.7450^{+0.0076}_{-0.0084}$
$\Omega_{\Lambda}$	$0.6999 \pm 0.0090$	$z_*$	$1088.45 \pm 0.80$	$f\sigma_8(0.38)$	$0.4671 \pm 0.0079$
$\Omega_{\mathrm{m}}$	$0.3001 \pm 0.0090$	$r_*$	$144.23 \pm 0.52$	$\sigma_8(0.38)$	$0.6616^{+0.0064}_{-0.0072}$
$\Omega_{\mathrm{m}}h^2$	$0.1417 \pm 0.0014$	$100\theta_*$	$1.03995 \pm 0.00082$	$f\sigma_8(0.51)$	$0.4671 \pm 0.0071$
$\Omega_{\mathrm{m}}h^3$	$0.0974 \pm 0.0012$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.869 \pm 0.051$	$\sigma_8(0.51)$	$0.6197^{+0.0059}_{-0.0067}$
$\sigma_8$	$0.8050 \pm 0.0091$	$z_{\mathrm{drag}}$	$1062.2 \pm 1.4$	$f\sigma_8(0.61)$	$0.4631 \pm 0.0065$
$S_8$	$0.805 \pm 0.018$	$r_{\mathrm{drag}}$	$146.55 \pm 0.70$	$\sigma_8(0.61)$	$0.5900^{+0.0056}_{-0.0064}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4410 \pm 0.0099$	$k_{\mathrm{D}}$	$0.1422 \pm 0.0012$	$f\sigma_8(2.33)$	$0.2979^{+0.0028}_{-0.0032}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5958 \pm 0.0096$	$100\theta_{\mathrm{D}}$	$0.15930^{+0.00076}_{-0.00087}$	$\sigma_8(2.33)$	$0.3077 \pm 0.0032$
$\sigma_8/h^{0.5}$	$0.971 \pm 0.014$	$z_{\mathrm{eq}}$	$3371 \pm 33$	$\chi_{\mathrm{simall}}^2$	$396.5 \pm 1.4$
$r_{\mathrm{drag}}h$	$100.7 \pm 1.1$	$k_{\mathrm{eq}}$	$0.01029 \pm 0.00010$	$\chi_{\mathrm{plikEE}}^2$	$743.2 \pm 2.9$
$\langle d^2 \rangle^{1/2}$	$2.409 \pm 0.034$	$100\theta_{\mathrm{eq}}$	$0.8211 \pm 0.0059$	$\chi_{6\mathrm{DF}}^2$	$0.056 \pm 0.079$
$z_{\mathrm{re}}$	$7.45^{+0.32}_{-0.87}$	$100\theta_{\mathrm{s,eq}}$	$0.4526 \pm 0.0031$	$\chi_{\mathrm{MGS}}^2$	$1.90 \pm 0.71$
$10^9A_{\mathrm{s}}$	$2.122 \pm 0.040$	$H(0.15)$	$73.92 \pm 0.77$	$\chi_{\mathrm{DR12BAO}}^2$	$4.4 \pm 1.2$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.901 \pm 0.024$	$D_{\mathrm{M}}(0.15)$	$631.6 \pm 7.2$	$\chi_{\mathrm{prior}}^2$	$1.0 \pm 1.5$
$D_{40}$	$1231 \pm 31$	$H(0.38)$	$83.87 \pm 0.66$	$\chi_{\mathrm{BAO}}^2$	$6.4 \pm 1.3$
$D_{220}$	$5885 \pm 130$	$D_{\mathrm{M}}(0.38)$	$1509 \pm 15$	$\chi_{\mathrm{CMB}}^2$	$1139.7 \pm 3.2$

$$\bar{\chi}_{\mathrm{eff}}^2 = 1147.07; R - 1 = 0.01186$$



## 2.40 base\_plikHM\_EE\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02337 \pm 0.00055$	$D_{1420}$	$834 \pm 12$	$H(0.61)$	$96.02 \pm 0.51$
$\Omega_{\text{c}}h^2$	$0.1173 \pm 0.0014$	$D_{2000}$	$237.6 \pm 4.4$	$D_{\text{M}}(0.61)$	$2278 \pm 19$
$100\theta_{\text{MC}}$	$1.03988 \pm 0.00081$	$n_{\text{s},0.002}$	$0.9747 \pm 0.0099$	$H(2.33)$	$235.71 \pm 0.78$
$\tau$	$0.0540^{+0.0036}_{-0.0071}$	$Y_{\text{P}}$	$0.24580^{+0.00025}_{-0.00019}$	$D_{\text{M}}(2.33)$	$5728 \pm 27$
$\ln(10^{10}A_{\text{s}})$	$3.050 \pm 0.013$	$Y_{\text{P}}^{\text{BBN}}$	$0.24713^{+0.00025}_{-0.00019}$	$f\sigma_8(0.15)$	$0.4440 \pm 0.0083$
$n_{\text{s}}$	$0.9747 \pm 0.0099$	$10^5\text{D}/\text{H}$	$2.413 \pm 0.092$	$\sigma_8(0.15)$	$0.7425^{+0.0057}_{-0.0064}$
$y_{\text{cal}}$	$0.9999 \pm 0.0024$	Age/Gyr	$13.717 \pm 0.062$	$f\sigma_8(0.38)$	$0.4650 \pm 0.0068$
$H_0$	$68.78 \pm 0.83$	$z_*$	$1088.51 \pm 0.70$	$\sigma_8(0.38)$	$0.6595^{+0.0048}_{-0.0054}$
$\Omega_{\Lambda}$	$0.7010 \pm 0.0087$	$r_*$	$144.36 \pm 0.37$	$f\sigma_8(0.51)$	$0.4651 \pm 0.0059$
$\Omega_{\text{m}}$	$0.2990 \pm 0.0087$	$100\theta_*$	$1.03996 \pm 0.00081$	$\sigma_8(0.51)$	$0.6178^{+0.0045}_{-0.0050}$
$\Omega_{\text{m}}h^2$	$0.1414 \pm 0.0012$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.881 \pm 0.039$	$f\sigma_8(0.61)$	$0.4611 \pm 0.0053$
$\Omega_{\text{m}}h^3$	$0.0972 \pm 0.0010$	$z_{\text{drag}}$	$1062.0 \pm 1.2$	$\sigma_8(0.61)$	$0.5882^{+0.0042}_{-0.0047}$
$\sigma_8$	$0.8021 \pm 0.0070$	$r_{\text{drag}}$	$146.70 \pm 0.50$	$f\sigma_8(2.33)$	$0.2971 \pm 0.0023$
$S_8$	$0.801 \pm 0.016$	$k_{\text{D}}$	$0.14199 \pm 0.00087$	$\sigma_8(2.33)$	$0.3069 \pm 0.0025$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4386 \pm 0.0089$	$100\theta_{\text{D}}$	$0.15939 \pm 0.00068$	$\chi_{\text{lensing}}^2$	$9.1 \pm 1.1$
$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.5931 \pm 0.0082$	$z_{\text{eq}}$	$3362 \pm 28$	$\chi_{\text{simall}}^2$	$396.3 \pm 1.1$
$\sigma_8/h^{0.5}$	$0.967 \pm 0.012$	$k_{\text{eq}}$	$0.010262 \pm 0.000084$	$\chi_{\text{plikEE}}^2$	$742.6 \pm 2.7$
$r_{\text{drag}}h$	$100.9 \pm 1.1$	$100\theta_{\text{eq}}$	$0.8225 \pm 0.0054$	$\chi_{6\text{DF}}^2$	$0.056 \pm 0.078$
$\langle d^2 \rangle^{1/2}$	$2.403 \pm 0.029$	$100\theta_{\text{s,eq}}$	$0.4534 \pm 0.0026$	$\chi_{\text{MGS}}^2$	$2.01 \pm 0.69$
$z_{\text{re}}$	$7.39^{+0.24}_{-0.87}$	$H(0.15)$	$73.94 \pm 0.75$	$\chi_{\text{DR12BAO}}^2$	$4.3 \pm 1.0$
$10^9 A_{\text{s}}$	$2.112^{+0.026}_{-0.030}$	$D_{\text{M}}(0.15)$	$631.3 \pm 7.0$	$\chi_{\text{prior}}^2$	$0.9 \pm 1.4$
$10^9 A_{\text{s}}e^{-2\tau}$	$1.895 \pm 0.017$	$H(0.38)$	$83.87 \pm 0.62$	$\chi_{\text{CMB}}^2$	$1148.1 \pm 3.3$
$D_{40}$	$1229 \pm 28$	$D_{\text{M}}(0.38)$	$1509 \pm 15$	$\chi_{\text{BAO}}^2$	$6.4 \pm 1.3$
$D_{220}$	$5870 \pm 110$	$H(0.51)$	$90.48 \pm 0.56$		
$D_{810}$	$2571 \pm 25$	$D_{\text{M}}(0.51)$	$1956 \pm 18$		

$\bar{\chi}_{\text{eff}}^2 = 1155.39$ ;  $R - 1 = 0.01205$



## 2.41 base\_CamSpecHM\_TE\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022423	$0.02242 \pm 0.00023$	$D_{810}$	2547.3	$2547 \pm 25$	$H(0.51)$	90.035	$90.04 \pm 0.30$
$\Omega_c h^2$	0.11784	$0.1179 \pm 0.0012$	$D_{1420}$	824.1	$824 \pm 12$	$D_M(0.51)$	1968.0	$1968 \pm 11$
$100\theta_{MC}$	1.041276	$1.04131 \pm 0.00047$	$D_{2000}$	233.21	$233.0 \pm 4.2$	$H(0.61)$	95.582	$95.59 \pm 0.26$
$\tau$	0.0511	$0.0496 \pm 0.0084$	$n_{s,0.002}$	0.9766	$0.976 \pm 0.010$	$D_M(0.61)$	2291.2	$2291 \pm 12$
$\ln(10^{10} A_s)$	3.0345	$3.032^{+0.021}_{-0.018}$	$Y_P$	0.245416	$0.245412 \pm 0.000092$	$H(2.33)$	235.22	$235.23 \pm 0.80$
$n_s$	0.9766	$0.976 \pm 0.010$	$Y_P^{BBN}$	0.246743	$0.246738 \pm 0.000092$	$D_M(2.33)$	5751.7	$5751 \pm 13$
$y_{cal}$	0.99984	$0.99996 \pm 0.0025$	$10^5 D/H$	2.5756	$2.577 \pm 0.043$	$f\sigma_8(0.15)$	0.4471	$0.4464 \pm 0.0083$
$H_0$	68.28	$68.29 \pm 0.54$	Age/Gyr	13.7724	$13.771 \pm 0.030$	$\sigma_8(0.15)$	0.7435	$0.7423 \pm 0.0090$
$\Omega_\Lambda$	0.6977	$0.6977 \pm 0.0069$	$z_*$	1089.664	$1089.67 \pm 0.32$	$f\sigma_8(0.38)$	0.4673	$0.4665 \pm 0.0074$
$\Omega_m$	0.3023	$0.3023 \pm 0.0069$	$r_*$	144.951	$144.95 \pm 0.34$	$\sigma_8(0.38)$	0.6601	$0.6590 \pm 0.0078$
$\Omega_m h^2$	0.14091	$0.1409 \pm 0.0012$	$100\theta_*$	1.041451	$1.04149 \pm 0.00047$	$f\sigma_8(0.51)$	0.4670	$0.4662 \pm 0.0068$
$\Omega_m h^3$	0.09621	$0.09623 \pm 0.00052$	$D_M(z_*)/\text{Gpc}$	13.9182	$13.918 \pm 0.033$	$\sigma_8(0.51)$	0.6181	$0.6171 \pm 0.0073$
$\sigma_8$	0.8036	$0.802 \pm 0.010$	$z_{drag}$	1059.89	$1059.90 \pm 0.53$	$f\sigma_8(0.61)$	0.4628	$0.4621 \pm 0.0065$
$S_8$	0.8066	$0.805 \pm 0.016$	$r_{drag}$	147.606	$147.61 \pm 0.38$	$\sigma_8(0.61)$	0.5884	$0.5875 \pm 0.0069$
$\sigma_8 \Omega_m^{0.5}$	0.4418	$0.4411 \pm 0.0086$	$k_D$	0.14036	$0.14036 \pm 0.00051$	$f\sigma_8(2.33)$	0.29706	$0.2966 \pm 0.0035$
$\sigma_8 \Omega_m^{0.25}$	0.5958	$0.5949 \pm 0.0091$	$100\theta_D$	0.160809	$0.16082 \pm 0.00031$	$\sigma_8(2.33)$	0.30667	$0.3062 \pm 0.0036$
$\sigma_8/h^{0.5}$	0.9725	$0.971 \pm 0.013$	$z_{eq}$	3351.9	$3352 \pm 29$	$\chi_{small}^2$	395.71	$396.8 \pm 1.5$
$r_{drag} h$	100.78	$100.80 \pm 0.92$	$k_{eq}$	0.010230	$0.010231 \pm 0.000087$	$\chi_{CamSpec}^2$	2576.15	$2580.4 \pm 2.9$
$\langle d^2 \rangle^{1/2}$	2.3882	$2.387 \pm 0.032$	$100\theta_{eq}$	0.8228	$0.8228 \pm 0.0053$	$\chi_{6DF}^2$	0.0038	$0.040 \pm 0.054$
$z_{re}$	7.31	$7.13^{+0.91}_{-0.73}$	$100\theta_{s,eq}$	0.45432	$0.4543 \pm 0.0027$	$\chi_{MGS}^2$	1.89	$1.96 \pm 0.58$
$10^9 A_s$	2.0791	$2.074 \pm 0.041$	$H(0.15)$	73.461	$73.47 \pm 0.47$	$\chi_{DR12BAO}^2$	3.370	$3.93 \pm 0.78$
$10^9 A_s e^{-2\tau}$	1.8770	$1.877 \pm 0.017$	$D_M(0.15)$	635.59	$635.5 \pm 4.5$	$\chi_{prior}^2$	10.03	$11.0 \pm 1.4$
$D_{40}$	1203.3	$1206 \pm 24$	$H(0.38)$	83.411	$83.42 \pm 0.36$	$\chi_{BAO}^2$	5.266	$5.93 \pm 0.98$
$D_{220}$	5710	$5715 \pm 59$	$D_M(0.38)$	1518.1	$1517.9 \pm 9.2$	$\chi_{CMB}^2$	2971.85	$2977.2 \pm 3.3$

Best-fit  $\chi_{eff}^2 = 2987.15$ ;  $\bar{\chi}_{eff}^2 = 2994.10$ ;  $R - 1 = 0.00951$

$\chi_{eff}^2$ : BAO - 6DF: 0.00 MGS: 1.89 DR12BAO: 3.37 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.71 CamSpec like\_10.7HM\_1400\_unified: 2576.15



## 2.42 base\_CamSpecHM\_TE\_lowE\_BAO\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02245 \pm 0.00023$	$D_{1420}$	$827 \pm 10$	$H(0.61)$	$95.58 \pm 0.26$
$\Omega_{\text{c}}h^2$	$0.1181 \pm 0.0011$	$D_{2000}$	$234.1 \pm 3.7$	$D_{\text{M}}(0.61)$	$2292 \pm 12$
$100\theta_{\text{MC}}$	$1.04128 \pm 0.00046$	$n_{\text{s},0.002}$	$0.9761 \pm 0.0099$	$H(2.33)$	$235.42 \pm 0.72$
$\tau$	$0.0522 \pm 0.0073$	$Y_{\text{P}}$	$0.245422^{+0.000092}_{-0.000082}$	$D_{\text{M}}(2.33)$	$5751 \pm 13$
$\ln(10^{10}A_{\text{s}})$	$3.041 \pm 0.015$	$Y_{\text{P}}^{\text{BBN}}$	$0.246749^{+0.000092}_{-0.000083}$	$f\sigma_8(0.15)$	$0.4496 \pm 0.0062$
$n_{\text{s}}$	$0.9761 \pm 0.0099$	$10^5\text{D}/\text{H}$	$2.572 \pm 0.041$	$\sigma_8(0.15)$	$0.7462 \pm 0.0063$
$y_{\text{cal}}$	$1.0002 \pm 0.0025$	Age/Gyr	$13.771 \pm 0.030$	$f\sigma_8(0.38)$	$0.4696 \pm 0.0052$
$H_0$	$68.21 \pm 0.52$	$z_*$	$1089.66 \pm 0.32$	$\sigma_8(0.38)$	$0.6623 \pm 0.0056$
$\Omega_{\Lambda}$	$0.6965 \pm 0.0066$	$r_*$	$144.87 \pm 0.30$	$f\sigma_8(0.51)$	$0.4692 \pm 0.0047$
$\Omega_{\text{m}}$	$0.3035 \pm 0.0066$	$100\theta_*$	$1.04146 \pm 0.00046$	$\sigma_8(0.51)$	$0.6202 \pm 0.0053$
$\Omega_{\text{m}}h^2$	$0.1412 \pm 0.0011$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.910 \pm 0.030$	$f\sigma_8(0.61)$	$0.4649 \pm 0.0044$
$\Omega_{\text{m}}h^3$	$0.09631 \pm 0.00049$	$z_{\text{drag}}$	$1059.98 \pm 0.51$	$\sigma_8(0.61)$	$0.5904 \pm 0.0050$
$\sigma_8$	$0.8067 \pm 0.0068$	$r_{\text{drag}}$	$147.51 \pm 0.33$	$f\sigma_8(2.33)$	$0.2980 \pm 0.0026$
$S_8$	$0.811 \pm 0.012$	$k_{\text{D}}$	$0.14048 \pm 0.00046$	$\sigma_8(2.33)$	$0.3076 \pm 0.0028$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4444 \pm 0.0065$	$100\theta_{\text{D}}$	$0.16077 \pm 0.00030$	$\chi^2_{\text{lensing}}$	$9.6 \pm 1.1$
$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.5987 \pm 0.0064$	$z_{\text{eq}}$	$3359 \pm 26$	$\chi^2_{\text{simall}}$	$396.6 \pm 1.2$
$\sigma_8/h^{0.5}$	$0.9767 \pm 0.0093$	$k_{\text{eq}}$	$0.010251 \pm 0.000079$	$\chi^2_{\text{CamSpec}}$	$2580.2 \pm 2.7$
$r_{\text{drag}}h$	$100.62 \pm 0.87$	$100\theta_{\text{eq}}$	$0.8217 \pm 0.0048$	$\chi^2_{6\text{DF}}$	$0.032 \pm 0.044$
$\langle d^2 \rangle^{1/2}$	$2.399 \pm 0.028$	$100\theta_{\text{s,eq}}$	$0.4537 \pm 0.0025$	$\chi^2_{\text{MGS}}$	$1.85 \pm 0.54$
$z_{\text{re}}$	$7.40 \pm 0.74$	$H(0.15)$	$73.41 \pm 0.45$	$\chi^2_{\text{DR12BAO}}$	$3.91 \pm 0.76$
$10^9A_{\text{s}}$	$2.092 \pm 0.031$	$D_{\text{M}}(0.15)$	$636.1 \pm 4.4$	$\chi^2_{\text{prior}}$	$11.0 \pm 1.4$
$10^9A_{\text{s}}e^{-2\tau}$	$1.884 \pm 0.013$	$H(0.38)$	$83.39 \pm 0.35$	$\chi^2_{\text{CMB}}$	$2986.4 \pm 3.3$
$D_{40}$	$1210 \pm 24$	$D_{\text{M}}(0.38)$	$1519.1 \pm 8.9$	$\chi^2_{\text{BAO}}$	$5.79 \pm 0.79$
$D_{220}$	$5731 \pm 57$	$H(0.51)$	$90.02 \pm 0.29$		
$D_{810}$	$2556 \pm 20$	$D_{\text{M}}(0.51)$	$1969 \pm 11$		

$$\bar{\chi}^2_{\text{eff}} = 3003.21; R - 1 = 0.01219$$



## 2.43 base\_CamSpecHM\_TE\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02243 \pm 0.00023$	$D_{810}$	$2549 \pm 25$	$H(0.51)$	$90.06 \pm 0.30$
$\Omega_c h^2$	$0.1178 \pm 0.0012$	$D_{1420}$	$824 \pm 11$	$D_M(0.51)$	$1967 \pm 11$
$100\theta_{MC}$	$1.04131 \pm 0.00047$	$D_{2000}$	$233.4 \pm 4.2$	$H(0.61)$	$95.60 \pm 0.26$
$\tau$	$0.0528^{+0.0036}_{-0.0079}$	$n_{s,0.002}$	$0.976 \pm 0.010$	$D_M(0.61)$	$2291 \pm 12$
$\ln(10^{10} A_s)$	$3.038^{+0.014}_{-0.017}$	$Y_P$	$0.245416 \pm 0.000092$	$H(2.33)$	$235.23 \pm 0.80$
$n_s$	$0.976 \pm 0.010$	$Y_P^{BBN}$	$0.246742 \pm 0.000092$	$D_M(2.33)$	$5751 \pm 13$
$y_{cal}$	$0.99998 \pm 0.0025$	$10^5 D/H$	$2.575 \pm 0.043$	$f\sigma_8(0.15)$	$0.4478 \pm 0.0079$
$H_0$	$68.31 \pm 0.54$	Age/Gyr	$13.770 \pm 0.030$	$\sigma_8(0.15)$	$0.7449 \pm 0.0076$
$\Omega_\Lambda$	$0.6979^{+0.0074}_{-0.0066}$	$z_*$	$1089.66 \pm 0.32$	$f\sigma_8(0.38)$	$0.4681 \pm 0.0068$
$\Omega_m$	$0.3021^{+0.0066}_{-0.0074}$	$r_*$	$144.95 \pm 0.34$	$\sigma_8(0.38)$	$0.6613^{+0.0061}_{-0.0070}$
$\Omega_m h^2$	$0.1409 \pm 0.0012$	$100\theta_*$	$1.04149 \pm 0.00047$	$f\sigma_8(0.51)$	$0.4678 \pm 0.0062$
$\Omega_m h^3$	$0.09624 \pm 0.00053$	$D_M(z_*)/\text{Gpc}$	$13.918 \pm 0.033$	$\sigma_8(0.51)$	$0.6193^{+0.0056}_{-0.0065}$
$\sigma_8$	$0.8051 \pm 0.0085$	$z_{drag}$	$1059.92 \pm 0.53$	$f\sigma_8(0.61)$	$0.4636 \pm 0.0058$
$S_8$	$0.808 \pm 0.015$	$r_{drag}$	$147.60 \pm 0.38$	$\sigma_8(0.61)$	$0.5895^{+0.0053}_{-0.0061}$
$\sigma_8 \Omega_m^{0.5}$	$0.4425 \pm 0.0083$	$k_D$	$0.14037 \pm 0.00052$	$f\sigma_8(2.33)$	$0.2976^{+0.0026}_{-0.0031}$
$\sigma_8 \Omega_m^{0.25}$	$0.5968 \pm 0.0084$	$100\theta_D$	$0.16081 \pm 0.00031$	$\sigma_8(2.33)$	$0.3073^{+0.0027}_{-0.0032}$
$\sigma_8/h^{0.5}$	$0.974 \pm 0.012$	$z_{eq}$	$3352 \pm 29$	$\chi_{small}^2$	$396.4 \pm 1.0$
$r_{drag} h$	$100.82 \pm 0.92$	$k_{eq}$	$0.010230 \pm 0.000087$	$\chi_{CamSpec}^2$	$2580.4 \pm 2.9$
$\langle d^2 \rangle^{1/2}$	$2.393 \pm 0.030$	$100\theta_{eq}$	$0.8229 \pm 0.0053$	$\chi_{6DF}^2$	$0.040 \pm 0.055$
$z_{re}$	$7.46^{+0.35}_{-0.85}$	$100\theta_{s,eq}$	$0.4544 \pm 0.0027$	$\chi_{MGS}^2$	$1.98 \pm 0.59$
$10^9 A_s$	$2.087^{+0.028}_{-0.036}$	$H(0.15)$	$73.49 \pm 0.47$	$\chi_{DR12BAO}^2$	$3.92 \pm 0.78$
$10^9 A_s e^{-2\tau}$	$1.878 \pm 0.017$	$D_M(0.15)$	$635.4 \pm 4.5$	$\chi_{prior}^2$	$11.0 \pm 1.4$
$D_{40}$	$1206 \pm 24$	$H(0.38)$	$83.43 \pm 0.36$	$\chi_{BAO}^2$	$5.94 \pm 0.99$
$D_{220}$	$5716 \pm 59$	$D_M(0.38)$	$1517.6 \pm 9.2$	$\chi_{CMB}^2$	$2976.8 \pm 3.1$
$\bar{\chi}_{eff}^2 = 2993.70; R - 1 = 0.01568$					



## 2.44 base\_CamSpecHM\_TE\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02245 \pm 0.00022$	$D_{1420}$	$827 \pm 10$	$H(0.61)$	$95.59 \pm 0.26$
$\Omega_c h^2$	$0.1180 \pm 0.0011$	$D_{2000}$	$234.1 \pm 3.7$	$D_M(0.61)$	$2292 \pm 11$
$100\theta_{MC}$	$1.04128 \pm 0.00046$	$n_{s,0.002}$	$0.9763 \pm 0.0099$	$H(2.33)$	$235.38 \pm 0.71$
$\tau$	$0.0538^{+0.0047}_{-0.0074}$	$Y_P$	$0.245423^{+0.000091}_{-0.000082}$	$D_M(2.33)$	$5751 \pm 13$
$\ln(10^{10} A_s)$	$3.043^{+0.012}_{-0.014}$	$Y_P^{BBN}$	$0.246749^{+0.000091}_{-0.000083}$	$f\sigma_8(0.15)$	$0.4499 \pm 0.0061$
$n_s$	$0.9763 \pm 0.0099$	$10^5 D/H$	$2.572 \pm 0.041$	$\sigma_8(0.15)$	$0.7471 \pm 0.0057$
$y_{cal}$	$1.0002 \pm 0.0024$	Age/Gyr	$13.770 \pm 0.030$	$f\sigma_8(0.38)$	$0.4700 \pm 0.0051$
$H_0$	$68.24 \pm 0.51$	$z_*$	$1089.65 \pm 0.32$	$\sigma_8(0.38)$	$0.6632^{+0.0048}_{-0.0054}$
$\Omega_\Lambda$	$0.6968 \pm 0.0065$	$r_*$	$144.88 \pm 0.29$	$f\sigma_8(0.51)$	$0.4696 \pm 0.0046$
$\Omega_m$	$0.3032 \pm 0.0065$	$100\theta_*$	$1.04146 \pm 0.00046$	$\sigma_8(0.51)$	$0.6210^{+0.0045}_{-0.0051}$
$\Omega_m h^2$	$0.1411 \pm 0.0011$	$D_M(z_*)/\text{Gpc}$	$13.911 \pm 0.029$	$f\sigma_8(0.61)$	$0.4653 \pm 0.0042$
$\Omega_m h^3$	$0.09630 \pm 0.00049$	$z_{drag}$	$1059.97 \pm 0.50$	$\sigma_8(0.61)$	$0.5912^{+0.0043}_{-0.0049}$
$\sigma_8$	$0.8076 \pm 0.0063$	$r_{drag}$	$147.53 \pm 0.33$	$f\sigma_8(2.33)$	$0.2984^{+0.0022}_{-0.0025}$
$S_8$	$0.812 \pm 0.012$	$k_D$	$0.14047 \pm 0.00046$	$\sigma_8(2.33)$	$0.3080^{+0.0023}_{-0.0027}$
$\sigma_8 \Omega_m^{0.5}$	$0.4447 \pm 0.0065$	$100\theta_D$	$0.16077 \pm 0.00030$	$\chi^2_{lensing}$	$9.5 \pm 1.0$
$\sigma_8 \Omega_m^{0.25}$	$0.5993 \pm 0.0062$	$z_{eq}$	$3357 \pm 26$	$\chi^2_{small}$	$396.5 \pm 1.1$
$\sigma_8/h^{0.5}$	$0.9777 \pm 0.0089$	$k_{eq}$	$0.010246 \pm 0.000078$	$\chi^2_{CamSpec}$	$2580.1 \pm 2.7$
$r_{drag} h$	$100.67 \pm 0.86$	$100\theta_{eq}$	$0.8220 \pm 0.0048$	$\chi^2_{6DF}$	$0.032 \pm 0.044$
$\langle d^2 \rangle^{1/2}$	$2.401 \pm 0.027$	$100\theta_{s,eq}$	$0.4539 \pm 0.0025$	$\chi^2_{MGS}$	$1.88 \pm 0.54$
$z_{re}$	$7.57^{+0.51}_{-0.74}$	$H(0.15)$	$73.43 \pm 0.45$	$\chi^2_{DR12BAO}$	$3.88 \pm 0.72$
$10^9 A_s$	$2.098^{+0.024}_{-0.030}$	$D_M(0.15)$	$635.9 \pm 4.3$	$\chi^2_{prior}$	$11.0 \pm 1.4$
$10^9 A_s e^{-2\tau}$	$1.884 \pm 0.013$	$H(0.38)$	$83.40 \pm 0.35$	$\chi^2_{CMB}$	$2986.1 \pm 3.1$
$D_{40}$	$1209 \pm 24$	$D_M(0.38)$	$1518.7 \pm 8.9$	$\chi^2_{BAO}$	$5.79 \pm 0.80$
$D_{220}$	$5730 \pm 57$	$H(0.51)$	$90.03 \pm 0.29$		
$D_{810}$	$2555 \pm 20$	$D_M(0.51)$	$1969 \pm 11$		

$\bar{\chi}^2_{eff} = 3002.87$ ;  $R - 1 = 0.01685$



## 2.45 base\_CamSpecHM\_EE\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02359	$0.02355^{+0.00060}_{-0.00067}$	$D_{810}$	2607.3	$2605 \pm 33$	$H(0.51)$	90.47	$90.45 \pm 0.58$
$\Omega_c h^2$	0.11770	$0.1178 \pm 0.0014$	$D_{1420}$	845.0	$844 \pm 14$	$D_M(0.51)$	1957.7	$1958 \pm 18$
$100\theta_{MC}$	1.03937	$1.03946 \pm 0.00079$	$D_{2000}$	240.8	$240.4 \pm 5.3$	$H(0.61)$	96.03	$96.01^{+0.51}_{-0.57}$
$\tau$	0.0511	$0.0511 \pm 0.0081$	$n_{s,0.002}$	0.9701	$0.9702 \pm 0.0094$	$D_M(0.61)$	2279.5	$2280 \pm 20$
$\ln(10^{10} A_s)$	3.0603	$3.059 \pm 0.021$	$Y_P$	0.245904	$0.24587^{+0.00026}_{-0.00023}$	$H(2.33)$	236.12	$236.12 \pm 0.99$
$n_s$	0.9701	$0.9702 \pm 0.0094$	$Y_P^{BBN}$	0.247232	$0.24720^{+0.00026}_{-0.00023}$	$D_M(2.33)$	5725.6	$5727 \pm 29$
$y_{cal}$	1.00012	$1.0001 \pm 0.0025$	$10^5 D/H$	2.373	$2.38 \pm 0.10$	$f\sigma_8(0.15)$	0.4469	$0.4472 \pm 0.0096$
$H_0$	68.66	$68.64 \pm 0.83$	Age/Gyr	13.710	$13.713 \pm 0.067$	$\sigma_8(0.15)$	0.7447	$0.7447 \pm 0.0088$
$\Omega_\Lambda$	0.6989	$0.6986 \pm 0.0089$	$z_*$	1088.26	$1088.34 \pm 0.77$	$f\sigma_8(0.38)$	0.4675	$0.4676 \pm 0.0082$
$\Omega_m$	0.3011	$0.3014 \pm 0.0089$	$r_*$	144.09	$144.11 \pm 0.52$	$\sigma_8(0.38)$	0.6613	$0.6612 \pm 0.0075$
$\Omega_m h^2$	0.14194	$0.1419 \pm 0.0014$	$100\theta_*$	1.03943	$1.03952 \pm 0.00080$	$f\sigma_8(0.51)$	0.4673	$0.4674 \pm 0.0074$
$\Omega_m h^3$	0.09746	$0.0974 \pm 0.0012$	$D_M(z_*)/\text{Gpc}$	13.862	$13.863 \pm 0.051$	$\sigma_8(0.51)$	0.6193	$0.6193 \pm 0.0069$
$\sigma_8$	0.8048	$0.8048 \pm 0.0098$	$z_{drag}$	1062.57	$1062.4 \pm 1.4$	$f\sigma_8(0.61)$	0.4632	$0.4633 \pm 0.0068$
$S_8$	0.8062	$0.807 \pm 0.018$	$r_{drag}$	146.35	$146.39 \pm 0.69$	$\sigma_8(0.61)$	0.5896	$0.5895 \pm 0.0066$
$\sigma_8 \Omega_m^{0.5}$	0.4416	$0.442 \pm 0.010$	$k_D$	0.14253	$0.1424 \pm 0.0011$	$f\sigma_8(2.33)$	0.29769	$0.2977 \pm 0.0033$
$\sigma_8 \Omega_m^{0.25}$	0.5961	$0.596 \pm 0.010$	$100\theta_D$	0.15901	$0.15910 \pm 0.00079$	$\sigma_8(2.33)$	0.30738	$0.3073 \pm 0.0034$
$\sigma_8/h^{0.5}$	0.9712	$0.972 \pm 0.015$	$z_{eq}$	3376.6	$3377 \pm 33$	$\chi_{small}^2$	395.59	$396.7 \pm 1.4$
$r_{drag} h$	100.49	$100.5 \pm 1.1$	$k_{eq}$	0.010306	$0.01031 \pm 0.00010$	$\chi_{CamSpec}^2$	1886.67	$1890.8 \pm 2.8$
$\langle d^2 \rangle^{1/2}$	2.4275	$2.427 \pm 0.035$	$100\theta_{eq}$	0.8201	$0.8201 \pm 0.0060$	$\chi_{6DF}^2$	0.0000	$0.053 \pm 0.073$
$z_{re}$	7.07	$7.06^{+0.84}_{-0.73}$	$100\theta_{s,eq}$	0.45198	$0.4520 \pm 0.0031$	$\chi_{MGS}^2$	1.68	$1.75 \pm 0.68$
$10^9 A_s$	2.1333	$2.132 \pm 0.044$	$H(0.15)$	73.86	$73.84 \pm 0.75$	$\chi_{DR12BAO}^2$	3.85	$4.6 \pm 1.4$
$10^9 A_s e^{-2\tau}$	1.9260	$1.924 \pm 0.024$	$D_M(0.15)$	632.1	$632.4 \pm 7.1$	$\chi_{prior}^2$	10.03	$11.0 \pm 1.4$
$D_{40}$	1260.4	$1259 \pm 30$	$H(0.38)$	83.83	$83.81 \pm 0.64$	$\chi_{BAO}^2$	5.52	$6.4 \pm 1.3$
$D_{220}$	6001	$5991 \pm 130$	$D_M(0.38)$	1510.0	$1511 \pm 15$	$\chi_{CMB}^2$	2282.26	$2287.4 \pm 3.2$

Best-fit  $\chi_{eff}^2 = 2297.82$ ;  $\bar{\chi}_{eff}^2 = 2304.89$ ;  $R - 1 = 0.00669$

$\chi_{eff}^2$ : BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.85 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.59 CamSpec like\_10.7HM\_1400\_unified: 1886.67



## 2.46 base\_CamSpecHM\_EE\_lowE\_BAO\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02326 \pm 0.00054$	$D_{1420}$	$835 \pm 11$	$H(0.61)$	$95.86 \pm 0.50$
$\Omega_{\mathrm{c}}h^2$	$0.1172 \pm 0.0014$	$D_{2000}$	$237.0 \pm 4.2$	$D_{\mathrm{M}}(0.61)$	$2282 \pm 19$
$100\theta_{\mathrm{MC}}$	$1.03953 \pm 0.00079$	$n_{\mathrm{s},0.002}$	$0.9690 \pm 0.0093$	$H(2.33)$	$235.46 \pm 0.80$
$\tau$	$0.0485^{+0.0079}_{-0.0069}$	$Y_{\mathrm{P}}$	$0.24576 \pm 0.00022$	$D_{\mathrm{M}}(2.33)$	$5737 \pm 26$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.016}_{-0.014}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24708 \pm 0.00022$	$f\sigma_8(0.15)$	$0.4423 \pm 0.0085$
$n_{\mathrm{s}}$	$0.9690 \pm 0.0093$	$10^5D/H$	$2.432 \pm 0.092$	$\sigma_8(0.15)$	$0.7385 \pm 0.0068$
$y_{\mathrm{cal}}$	$0.9998 \pm 0.0025$	Age/Gyr	$13.737 \pm 0.061$	$f\sigma_8(0.38)$	$0.4629 \pm 0.0070$
$H_0$	$68.62 \pm 0.81$	$z_*$	$1088.62 \pm 0.69$	$\sigma_8(0.38)$	$0.6559 \pm 0.0058$
$\Omega_{\Lambda}$	$0.7002 \pm 0.0087$	$r_*$	$144.48 \pm 0.38$	$f\sigma_8(0.51)$	$0.4629 \pm 0.0062$
$\Omega_{\mathrm{m}}$	$0.2998 \pm 0.0087$	$100\theta_*$	$1.03963 \pm 0.00080$	$\sigma_8(0.51)$	$0.6144 \pm 0.0054$
$\Omega_{\mathrm{m}}h^2$	$0.1411 \pm 0.0012$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.897 \pm 0.040$	$f\sigma_8(0.61)$	$0.4589 \pm 0.0056$
$\Omega_{\mathrm{m}}h^3$	$0.09682 \pm 0.00098$	$z_{\mathrm{drag}}$	$1061.7 \pm 1.2$	$\sigma_8(0.61)$	$0.5849 \pm 0.0051$
$\sigma_8$	$0.7979 \pm 0.0077$	$r_{\mathrm{drag}}$	$146.86 \pm 0.51$	$f\sigma_8(2.33)$	$0.2954 \pm 0.0026$
$S_8$	$0.798 \pm 0.016$	$k_{\mathrm{D}}$	$0.14175 \pm 0.00087$	$\sigma_8(2.33)$	$0.3051 \pm 0.0027$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4369 \pm 0.0090$	$100\theta_{\mathrm{D}}$	$0.15948 \pm 0.00068$	$\chi^2_{\mathrm{lensing}}$	$9.3 \pm 1.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5904 \pm 0.0085$	$z_{\mathrm{eq}}$	$3356 \pm 28$	$\chi^2_{\mathrm{simall}}$	$396.7 \pm 1.4$
$\sigma_8/h^{0.5}$	$0.963 \pm 0.013$	$k_{\mathrm{eq}}$	$0.010244 \pm 0.000086$	$\chi^2_{\mathrm{CamSpec}}$	$1890.9 \pm 2.7$
$r_{\mathrm{drag}}h$	$100.8 \pm 1.1$	$100\theta_{\mathrm{eq}}$	$0.8230 \pm 0.0054$	$\chi^2_{6\mathrm{DF}}$	$0.052 \pm 0.072$
$\langle d^2 \rangle^{1/2}$	$2.408 \pm 0.029$	$100\theta_{\mathrm{s,eq}}$	$0.4538 \pm 0.0027$	$\chi^2_{\mathrm{MGS}}$	$1.93 \pm 0.68$
$z_{\mathrm{re}}$	$6.85^{+0.86}_{-0.70}$	$H(0.15)$	$73.79 \pm 0.73$	$\chi^2_{\mathrm{DR12BAO}}$	$4.3 \pm 1.1$
$10^9A_{\mathrm{s}}$	$2.101^{+0.033}_{-0.029}$	$D_{\mathrm{M}}(0.15)$	$632.7 \pm 6.9$	$\chi^2_{\mathrm{prior}}$	$11.0 \pm 1.4$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.906 \pm 0.017$	$H(0.38)$	$83.71 \pm 0.61$	$\chi^2_{\mathrm{CMB}}$	$2296.9 \pm 3.2$
$D_{40}$	$1249 \pm 27$	$D_{\mathrm{M}}(0.38)$	$1512 \pm 14$	$\chi^2_{\mathrm{BAO}}$	$6.3 \pm 1.2$
$D_{220}$	$5930 \pm 110$	$H(0.51)$	$90.32 \pm 0.55$		
$D_{810}$	$2582 \pm 25$	$D_{\mathrm{M}}(0.51)$	$1960 \pm 17$		

$\bar{\chi}^2_{\mathrm{eff}} = 2314.19$ ;  $R - 1 = 0.00959$



## 2.47 base\_CamSpecHM\_EE\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02353^{+0.00060}_{-0.00067}$	$D_{810}$	$2603 \pm 33$	$H(0.51)$	$90.44 \pm 0.58$
$\Omega_{\mathrm{c}}h^2$	$0.1177 \pm 0.0014$	$D_{1420}$	$843 \pm 14$	$D_{\mathrm{M}}(0.51)$	$1959 \pm 18$
$100\theta_{\mathrm{MC}}$	$1.03946 \pm 0.00079$	$D_{2000}$	$240.3 \pm 5.2$	$H(0.61)$	$96.00 \pm 0.54$
$\tau$	$0.0543^{+0.0037}_{-0.0072}$	$n_{\mathrm{s},0.002}$	$0.9704 \pm 0.0093$	$D_{\mathrm{M}}(0.61)$	$2281 \pm 20$
$\ln(10^{10}A_{\mathrm{s}})$	$3.065^{+0.017}_{-0.018}$	$Y_{\mathrm{P}}$	$0.24586^{+0.00026}_{-0.00023}$	$H(2.33)$	$236.09 \pm 0.98$
$n_{\mathrm{s}}$	$0.9704 \pm 0.0093$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24719^{+0.00026}_{-0.00023}$	$D_{\mathrm{M}}(2.33)$	$5727 \pm 29$
$y_{\mathrm{cal}}$	$1.0001 \pm 0.0024$	$10^5 D/H$	$2.39 \pm 0.11$	$f\sigma_8(0.15)$	$0.4486 \pm 0.0093$
$H_0$	$68.63 \pm 0.83$	Age/Gyr	$13.715 \pm 0.067$	$\sigma_8(0.15)$	$0.7470 \pm 0.0078$
$\Omega_{\Lambda}$	$0.6985 \pm 0.0089$	$z_*$	$1088.36 \pm 0.77$	$f\sigma_8(0.38)$	$0.4691 \pm 0.0078$
$\Omega_{\mathrm{m}}$	$0.3015 \pm 0.0089$	$r_*$	$144.13 \pm 0.52$	$\sigma_8(0.38)$	$0.6633 \pm 0.0066$
$\Omega_{\mathrm{m}}h^2$	$0.1419 \pm 0.0014$	$100\theta_*$	$1.03952 \pm 0.00080$	$f\sigma_8(0.51)$	$0.4689 \pm 0.0070$
$\Omega_{\mathrm{m}}h^3$	$0.0974 \pm 0.0012$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.865 \pm 0.051$	$\sigma_8(0.51)$	$0.6212 \pm 0.0061$
$\sigma_8$	$0.8073 \pm 0.0089$	$z_{\mathrm{drag}}$	$1062.4 \pm 1.4$	$f\sigma_8(0.61)$	$0.4647 \pm 0.0064$
$S_8$	$0.809 \pm 0.018$	$r_{\mathrm{drag}}$	$146.42 \pm 0.69$	$\sigma_8(0.61)$	$0.5914 \pm 0.0058$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4432 \pm 0.0098$	$k_{\mathrm{D}}$	$0.1424 \pm 0.0011$	$f\sigma_8(2.33)$	$0.2986^{+0.0027}_{-0.0030}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5982 \pm 0.0095$	$100\theta_{\mathrm{D}}$	$0.15912 \pm 0.00080$	$\sigma_8(2.33)$	$0.3083^{+0.0028}_{-0.0031}$
$\sigma_8/h^{0.5}$	$0.975 \pm 0.014$	$z_{\mathrm{eq}}$	$3376 \pm 33$	$\chi_{\mathrm{simall}}^2$	$396.4 \pm 1.3$
$r_{\mathrm{drag}}h$	$100.5 \pm 1.1$	$k_{\mathrm{eq}}$	$0.01030 \pm 0.00010$	$\chi_{\mathrm{CamSpec}}^2$	$1890.7 \pm 2.8$
$\langle d^2 \rangle^{1/2}$	$2.434 \pm 0.033$	$100\theta_{\mathrm{eq}}$	$0.8202 \pm 0.0059$	$\chi_{6\mathrm{DF}}^2$	$0.052 \pm 0.071$
$z_{\mathrm{re}}$	$7.39^{+0.30}_{-0.81}$	$100\theta_{\mathrm{s,eq}}$	$0.4521 \pm 0.0030$	$\chi_{\mathrm{MGS}}^2$	$1.75 \pm 0.67$
$10^9 A_{\mathrm{s}}$	$2.144^{+0.035}_{-0.040}$	$H(0.15)$	$73.82 \pm 0.75$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.4$
$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.923 \pm 0.024$	$D_{\mathrm{M}}(0.15)$	$632.5 \pm 7.0$	$\chi_{\mathrm{prior}}^2$	$11.0 \pm 1.3$
$D_{40}$	$1259 \pm 30$	$H(0.38)$	$83.80 \pm 0.63$	$\chi_{\mathrm{BAO}}^2$	$6.4 \pm 1.2$
$D_{220}$	$5986 \pm 130$	$D_{\mathrm{M}}(0.38)$	$1511 \pm 15$	$\chi_{\mathrm{CMB}}^2$	$2287.1 \pm 3.1$
$\bar{\chi}_{\mathrm{eff}}^2 = 2304.51; R - 1 = 0.01190$					



## 2.48 base\_CamSpecHM\_EE\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02319 \pm 0.00053$	$D_{1420}$	$833 \pm 11$	$H(0.61)$	$95.82 \pm 0.49$
$\Omega_c h^2$	$0.1171 \pm 0.0014$	$D_{2000}$	$236.5 \pm 4.1$	$D_M(0.61)$	$2283 \pm 19$
$100\theta_{MC}$	$1.03953 \pm 0.00077$	$n_{s,0.002}$	$0.9695 \pm 0.0092$	$H(2.33)$	$235.33 \pm 0.77$
$\tau$	$0.0526^{+0.0034}_{-0.0061}$	$Y_P$	$0.24573 \pm 0.00022$	$D_M(2.33)$	$5739 \pm 25$
$\ln(10^{10} A_s)$	$3.051^{+0.011}_{-0.013}$	$Y_P^{BBN}$	$0.24706 \pm 0.00022$	$f\sigma_8(0.15)$	$0.4435 \pm 0.0083$
$n_s$	$0.9695 \pm 0.0092$	$10^5 D/H$	$2.443 \pm 0.091$	$\sigma_8(0.15)$	$0.7409 \pm 0.0059$
$y_{cal}$	$0.9997 \pm 0.0024$	Age/Gyr	$13.744 \pm 0.059$	$f\sigma_8(0.38)$	$0.4643 \pm 0.0068$
$H_0$	$68.61 \pm 0.80$	$z_*$	$1088.69 \pm 0.69$	$\sigma_8(0.38)$	$0.6580 \pm 0.0049$
$\Omega_\Lambda$	$0.7005 \pm 0.0086$	$r_*$	$144.56 \pm 0.37$	$f\sigma_8(0.51)$	$0.4643 \pm 0.0059$
$\Omega_m$	$0.2995 \pm 0.0086$	$100\theta_*$	$1.03963 \pm 0.00078$	$\sigma_8(0.51)$	$0.6164 \pm 0.0045$
$\Omega_m h^2$	$0.1409 \pm 0.0012$	$D_M(z_*)/\text{Gpc}$	$13.905 \pm 0.038$	$f\sigma_8(0.61)$	$0.4603 \pm 0.0053$
$\Omega_m h^3$	$0.09667 \pm 0.00094$	$z_{drag}$	$1061.6 \pm 1.2$	$\sigma_8(0.61)$	$0.5868^{+0.0039}_{-0.0044}$
$\sigma_8$	$0.8005 \pm 0.0068$	$r_{drag}$	$146.96 \pm 0.49$	$f\sigma_8(2.33)$	$0.2964^{+0.0019}_{-0.0022}$
$S_8$	$0.800 \pm 0.016$	$k_D$	$0.14159 \pm 0.00085$	$\sigma_8(2.33)$	$0.3061^{+0.0021}_{-0.0024}$
$\sigma_8 \Omega_m^{0.5}$	$0.4381 \pm 0.0089$	$100\theta_D$	$0.15957 \pm 0.00067$	$\chi^2_{lensing}$	$9.4 \pm 1.5$
$\sigma_8 \Omega_m^{0.25}$	$0.5922 \pm 0.0082$	$z_{eq}$	$3352 \pm 28$	$\chi^2_{small}$	$396.15 \pm 0.81$
$\sigma_8/h^{0.5}$	$0.966 \pm 0.012$	$k_{eq}$	$0.010231 \pm 0.000084$	$\chi^2_{CamSpec}$	$1890.9 \pm 2.8$
$r_{drag} h$	$100.8 \pm 1.1$	$100\theta_{eq}$	$0.8236 \pm 0.0054$	$\chi^2_{6DF}$	$0.052 \pm 0.071$
$\langle d^2 \rangle^{1/2}$	$2.414 \pm 0.028$	$100\theta_{s,eq}$	$0.4541 \pm 0.0026$	$\chi^2_{MGS}$	$1.96 \pm 0.67$
$z_{re}$	$< 7.49$	$H(0.15)$	$73.77 \pm 0.72$	$\chi^2_{DR12BAO}$	$4.3 \pm 1.0$
$10^9 A_s$	$2.114^{+0.023}_{-0.027}$	$D_M(0.15)$	$632.8 \pm 6.8$	$\chi^2_{prior}$	$11.0 \pm 1.3$
$10^9 A_s e^{-2\tau}$	$1.903 \pm 0.016$	$H(0.38)$	$83.68 \pm 0.60$	$\chi^2_{CMB}$	$2296.5 \pm 3.2$
$D_{40}$	$1246 \pm 27$	$D_M(0.38)$	$1512 \pm 14$	$\chi^2_{BAO}$	$6.3 \pm 1.2$
$D_{220}$	$5914 \pm 110$	$H(0.51)$	$90.29 \pm 0.53$		
$D_{810}$	$2577 \pm 24$	$D_M(0.51)$	$1961 \pm 17$		

$\bar{\chi}^2_{eff} = 2313.75$ ;  $R - 1 = 0.00861$



## 2.49 base\_plikHM\_TE\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022450	$0.02246 \pm 0.00025$	$\langle d^2 \rangle^{1/2}$	2.4302	$2.427 \pm 0.034$	$H(0.15)$	72.97	$73.00 \pm 0.67$
$\Omega_c h^2$	0.11952	$0.1195 \pm 0.0017$	$z_{\text{re}}$	7.53	$7.53^{+0.79}_{-0.71}$	$D_{\text{M}}(0.15)$	640.6	$640.3 \pm 6.6$
$100\theta_{\text{MC}}$	1.041199	$1.04120 \pm 0.00049$	$10^9 A_{\text{s}}$	2.0822	$2.083 \pm 0.032$	$H(0.38)$	83.089	$83.12 \pm 0.50$
$\tau$	0.0531	$0.0533 \pm 0.0077$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8725	$1.872 \pm 0.014$	$D_{\text{M}}(0.38)$	1527.7	$1527 \pm 13$
$\ln(10^{10} A_{\text{s}})$	3.0360	$3.036 \pm 0.015$	$D_{40}$	1227.4	$1224 \pm 25$	$H(0.51)$	89.814	$89.84 \pm 0.41$
$n_{\text{s}}$	0.9645	$0.966 \pm 0.011$	$D_{220}$	5722	$5716 \pm 56$	$D_{\text{M}}(0.51)$	1979.1	$1978 \pm 16$
$y_{\text{cal}}$	1.00049	$1.0004 \pm 0.0025$	$D_{810}$	2526.5	$2527 \pm 22$	$H(0.61)$	95.440	$95.46^{+0.32}_{-0.35}$
$A_{100}^{\text{dustTE}}$	0.1138	$0.114 \pm 0.038$	$D_{1420}$	813.1	$814 \pm 11$	$D_{\text{M}}(0.61)$	2302.9	$2302 \pm 17$
$A_{100 \times 143}^{\text{dustTE}}$	0.1364	$0.136 \pm 0.029$	$D_{2000}$	229.62	$229.9 \pm 4.0$	$H(2.33)$	236.35	$236.3 \pm 1.0$
$A_{100 \times 217}^{\text{dustTE}}$	0.479	$0.478 \pm 0.085$	$n_{\text{s},0.002}$	0.9645	$0.966 \pm 0.011$	$D_{\text{M}}(2.33)$	5755.5	$5755 \pm 16$
$A_{143}^{\text{dustTE}}$	0.224	$0.223 \pm 0.054$	$Y_{\text{P}}$	0.245426	$0.24543 \pm 0.00010$	$f\sigma_8(0.15)$	0.4543	$0.4542 \pm 0.0085$
$A_{143 \times 217}^{\text{dustTE}}$	0.664	$0.662 \pm 0.080$	$Y_{\text{P}}^{\text{BBN}}$	0.246753	$0.24675 \pm 0.00010$	$\sigma_8(0.15)$	0.7448	$0.7450 \pm 0.0063$
$A_{217}^{\text{dustTE}}$	2.064	$2.06 \pm 0.27$	$10^5 \text{D}/\text{H}$	2.5707	$2.570 \pm 0.046$	$f\sigma_8(0.38)$	0.4726	$0.4725 \pm 0.0066$
$c_{100}$	1.00017	$1.00017 \pm 0.00070$	Age/Gyr	13.7791	$13.777 \pm 0.037$	$\sigma_8(0.38)$	0.6603	$0.6604 \pm 0.0056$
$c_{217}$	0.99800	$0.99800 \pm 0.00065$	$z_*$	1089.778	$1089.76 \pm 0.40$	$f\sigma_8(0.51)$	0.4712	$0.4712 \pm 0.0057$
$H_0$	67.68	$67.71 \pm 0.78$	$r_*$	144.493	$144.50 \pm 0.38$	$\sigma_8(0.51)$	0.6179	$0.6181 \pm 0.0053$
$\Omega_{\Lambda}$	0.6886	$0.689 \pm 0.010$	$100\theta_*$	1.041375	$1.04138 \pm 0.00048$	$f\sigma_8(0.61)$	0.4663	$0.4663 \pm 0.0051$
$\Omega_{\text{m}}$	0.3114	$0.311 \pm 0.010$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8752	$13.876 \pm 0.037$	$\sigma_8(0.61)$	0.5879	$0.5881 \pm 0.0051$
$\Omega_{\text{m}} h^2$	0.14262	$0.1426 \pm 0.0016$	$z_{\text{drag}}$	1060.09	$1060.11 \pm 0.53$	$f\sigma_8(2.33)$	0.29645	$0.2966 \pm 0.0027$
$\Omega_{\text{m}} h^3$	0.09653	$0.09654 \pm 0.00051$	$r_{\text{drag}}$	147.128	$147.13 \pm 0.40$	$\sigma_8(2.33)$	0.30563	$0.3058 \pm 0.0030$
$\sigma_8$	0.8060	$0.8062 \pm 0.0070$	$k_{\text{D}}$	0.140890	$0.14089 \pm 0.00049$	$\chi_{\text{lensing}}^2$	9.54	$10.4 \pm 1.8$
$S_8$	0.8212	$0.821 \pm 0.017$	$100\theta_{\text{D}}$	0.160706	$0.16070 \pm 0.00031$	$\chi_{\text{simall}}^2$	395.85	$396.8 \pm 1.5$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4498	$0.4496 \pm 0.0092$	$z_{\text{eq}}$	3392.8	$3392 \pm 38$	$\chi_{\text{plikTE}}^2$	854.38	$860.7 \pm 3.7$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6021	$0.6020 \pm 0.0081$	$k_{\text{eq}}$	0.010355	$0.01035 \pm 0.00012$	$\chi_{\text{prior}}^2$	0.46	$7.4 \pm 3.7$
$\sigma_8/h^{0.5}$	0.9798	$0.980 \pm 0.011$	$100\theta_{\text{eq}}$	0.8154	$0.8157 \pm 0.0072$	$\chi_{\text{CMB}}^2$	1259.78	$1268.0 \pm 4.1$
$r_{\text{drag}} h$	99.58	$99.6 \pm 1.3$	$100\theta_{\text{s,eq}}$	0.45044	$0.4506 \pm 0.0037$			

Best-fit  $\chi_{\text{eff}}^2 = 1260.24$ ;  $\bar{\chi}_{\text{eff}}^2 = 1275.40$ ;  $R - 1 = 0.00470$

$\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8: 9.54 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.85 plik\_rd12\_HM\_v22\_TE: 854.38



## 2.50 base\_plikHM\_TE\_lowE\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02247 \pm 0.00025$	$\langle d^2 \rangle^{1/2}$	$2.429 \pm 0.033$	$H(0.15)$	$73.03 \pm 0.66$
$\Omega_{\text{c}}h^2$	$0.1194 \pm 0.0017$	$z_{\text{re}}$	$7.68^{+0.55}_{-0.76}$	$D_{\text{M}}(0.15)$	$640.0 \pm 6.5$
$100\theta_{\text{MC}}$	$1.04121 \pm 0.00049$	$10^9 A_{\text{s}}$	$2.088^{+0.025}_{-0.032}$	$H(0.38)$	$83.14 \pm 0.50$
$\tau$	$0.0547^{+0.0052}_{-0.0077}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.871 \pm 0.014$	$D_{\text{M}}(0.38)$	$1527 \pm 13$
$\ln(10^{10} A_{\text{s}})$	$3.039^{+0.012}_{-0.015}$	$D_{40}$	$1223 \pm 25$	$H(0.51)$	$89.86^{+0.37}_{-0.42}$
$n_{\text{s}}$	$0.966 \pm 0.011$	$D_{220}$	$5715 \pm 56$	$D_{\text{M}}(0.51)$	$1978 \pm 15$
$y_{\text{cal}}$	$1.0004 \pm 0.0025$	$D_{810}$	$2526 \pm 22$	$H(0.61)$	$95.47^{+0.31}_{-0.35}$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$D_{1420}$	$814 \pm 11$	$D_{\text{M}}(0.61)$	$2301 \pm 17$
$A_{100 \times 143}^{\text{dustTE}}$	$0.136 \pm 0.030$	$D_{2000}$	$229.9 \pm 4.0$	$H(2.33)$	$236.26 \pm 0.99$
$A_{100 \times 217}^{\text{dustTE}}$	$0.478 \pm 0.085$	$n_{\text{s},0.002}$	$0.966 \pm 0.011$	$D_{\text{M}}(2.33)$	$5754 \pm 16$
$A_{143}^{\text{dustTE}}$	$0.222 \pm 0.055$	$Y_{\text{P}}$	$0.24543 \pm 0.00010$	$f\sigma_8(0.15)$	$0.4542 \pm 0.0085$
$A_{143 \times 217}^{\text{dustTE}}$	$0.662 \pm 0.080$	$Y_{\text{P}}^{\text{BBN}}$	$0.24676 \pm 0.00010$	$\sigma_8(0.15)$	$0.7457^{+0.0056}_{-0.0062}$
$A_{217}^{\text{dustTE}}$	$2.06 \pm 0.27$	$10^5 \text{D}/\text{H}$	$2.569 \pm 0.046$	$f\sigma_8(0.38)$	$0.4727 \pm 0.0066$
$c_{100}$	$1.00017 \pm 0.00070$	$\text{Age}/\text{Gyr}$	$13.776 \pm 0.036$	$\sigma_8(0.38)$	$0.6612^{+0.0048}_{-0.0055}$
$c_{217}$	$0.99800 \pm 0.00065$	$z_*$	$1089.75 \pm 0.40$	$f\sigma_8(0.51)$	$0.4714 \pm 0.0057$
$H_0$	$67.76 \pm 0.77$	$r_*$	$144.52 \pm 0.38$	$\sigma_8(0.51)$	$0.6188^{+0.0045}_{-0.0053}$
$\Omega_{\Lambda}$	$0.689 \pm 0.010$	$100\theta_*$	$1.04138 \pm 0.00048$	$f\sigma_8(0.61)$	$0.4665 \pm 0.0050$
$\Omega_{\text{m}}$	$0.311 \pm 0.010$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.878 \pm 0.036$	$\sigma_8(0.61)$	$0.5888^{+0.0043}_{-0.0051}$
$\Omega_{\text{m}}h^2$	$0.1425 \pm 0.0015$	$z_{\text{drag}}$	$1060.11 \pm 0.53$	$f\sigma_8(2.33)$	$0.2969^{+0.0022}_{-0.0027}$
$\Omega_{\text{m}}h^3$	$0.09653 \pm 0.00050$	$r_{\text{drag}}$	$147.16 \pm 0.39$	$\sigma_8(2.33)$	$0.3062^{+0.0025}_{-0.0030}$
$\sigma_8$	$0.8069 \pm 0.0067$	$k_{\text{D}}$	$0.14087 \pm 0.00048$	$\chi_{\text{lensing}}^2$	$10.3 \pm 1.8$
$S_8$	$0.821 \pm 0.017$	$100\theta_{\text{D}}$	$0.16070 \pm 0.00031$	$\chi_{\text{simall}}^2$	$396.8 \pm 1.5$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4496 \pm 0.0092$	$z_{\text{eq}}$	$3389 \pm 37$	$\chi_{\text{plikTE}}^2$	$860.6 \pm 3.7$
$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6023 \pm 0.0080$	$k_{\text{eq}}$	$0.01034 \pm 0.00011$	$\chi_{\text{prior}}^2$	$7.5 \pm 3.7$
$\sigma_8/h^{0.5}$	$0.980 \pm 0.011$	$100\theta_{\text{eq}}$	$0.8162 \pm 0.0070$	$\chi_{\text{CMB}}^2$	$1267.7 \pm 4.0$
$r_{\text{drag}}h$	$99.7 \pm 1.3$	$100\theta_{\text{s,eq}}$	$0.4508 \pm 0.0036$		

$\bar{\chi}_{\text{eff}}^2 = 1275.15$ ;  $R - 1 = 0.00477$



## 2.51 base\_plikHM\_EE\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02393	$0.0240 \pm 0.0010$	$D_{220}$	5958	$5969 \pm 170$	$H(0.38)$	84.66	$84.8^{+1.4}_{-1.6}$
$\Omega_c h^2$	0.11566	$0.1155 \pm 0.0031$	$D_{810}$	2588.4	$2590 \pm 35$	$D_M(0.38)$	1489.4	$1487 \pm 34$
$100\theta_{MC}$	1.03995	$1.03998 \pm 0.00082$	$D_{1420}$	843.0	$844 \pm 17$	$H(0.51)$	91.16	$91.3^{+1.2}_{-1.4}$
$\tau$	0.0529	$0.0528^{+0.0086}_{-0.0077}$	$D_{2000}$	240.9	$241.3 \pm 6.6$	$D_M(0.51)$	1933.3	$1930 \pm 41$
$\ln(10^{10} A_s)$	3.0513	$3.052 \pm 0.019$	$n_{s,0.002}$	0.9790	$0.980 \pm 0.013$	$H(0.61)$	96.62	$96.7^{+1.0}_{-1.2}$
$n_s$	0.9790	$0.980 \pm 0.013$	$Y_P$	0.246021	$0.24605 \pm 0.00039$	$D_M(0.61)$	2252.8	$2250 \pm 45$
$y_{cal}$	0.99998	$0.99996 \pm 0.0026$	$Y_P^{BBN}$	0.247349	$0.24738 \pm 0.00040$	$H(2.33)$	235.17	$235.2 \pm 1.2$
$H_0$	69.88	$70.0 \pm 2.0$	$10^5 D/H$	2.319	$2.31 \pm 0.16$	$D_M(2.33)$	5699	$5693 \pm 54$
$\Omega_\Lambda$	0.7128	$0.713^{+0.022}_{-0.019}$	Age/Gyr	13.650	$13.64 \pm 0.12$	$f\sigma_8(0.15)$	0.4327	$0.432 \pm 0.018$
$\Omega_m$	0.2872	$0.287^{+0.019}_{-0.022}$	$z_*$	1087.72	$1087.7 \pm 1.3$	$\sigma_8(0.15)$	0.7376	$0.7368^{+0.0086}_{-0.0077}$
$\Omega_m h^2$	0.14023	$0.1402 \pm 0.0023$	$r_*$	144.364	$144.33 \pm 0.40$	$f\sigma_8(0.38)$	0.4560	$0.455 \pm 0.014$
$\Omega_m h^3$	0.09799	$0.0982^{+0.0015}_{-0.0016}$	$100\theta_*$	1.03998	$1.04000 \pm 0.00081$	$\sigma_8(0.38)$	0.6565	$0.6560 \pm 0.0062$
$\sigma_8$	0.7956	$0.795^{+0.011}_{-0.0097}$	$D_M(z_*)/\text{Gpc}$	13.8814	$13.878 \pm 0.040$	$f\sigma_8(0.51)$	0.4575	$0.456^{+0.013}_{-0.011}$
$S_8$	0.7784	$0.777 \pm 0.036$	$z_{drag}$	1063.14	$1063.3 \pm 2.0$	$\sigma_8(0.51)$	0.6155	$0.6151 \pm 0.0055$
$\sigma_8 \Omega_m^{0.5}$	0.4263	$0.425 \pm 0.020$	$r_{drag}$	146.53	$146.47 \pm 0.55$	$f\sigma_8(0.61)$	0.4545	$0.454^{+0.011}_{-0.0098}$
$\sigma_8 \Omega_m^{0.25}$	0.5824	$0.581 \pm 0.017$	$k_D$	0.14255	$0.1426 \pm 0.0011$	$\sigma_8(0.61)$	0.5864	$0.5860 \pm 0.0052$
$\sigma_8/h^{0.5}$	0.9517	$0.950 \pm 0.024$	$100\theta_D$	0.15876	$0.1587^{+0.0010}_{-0.0011}$	$f\sigma_8(2.33)$	0.29665	$0.2965 \pm 0.0027$
$r_{drag} h$	102.39	$102.6 \pm 2.8$	$z_{eq}$	3336	$3335 \pm 54$	$\sigma_8(2.33)$	0.30698	$0.3069 \pm 0.0032$
$\langle d^2 \rangle^{1/2}$	2.3752	$2.372 \pm 0.048$	$k_{eq}$	0.010181	$0.01018 \pm 0.00017$	$\chi^2_{lensing}$	8.16	$9.2 \pm 1.1$
$z_{re}$	7.15	$7.10^{+0.83}_{-0.68}$	$100\theta_{eq}$	0.8290	$0.830 \pm 0.013$	$\chi^2_{small}$	395.58	$396.6 \pm 1.3$
$10^9 A_s$	2.1142	$2.115 \pm 0.040$	$100\theta_{s,eq}$	0.4564	$0.4566 \pm 0.0059$	$\chi^2_{plikEE}$	738.95	$742.9 \pm 2.6$
$10^9 A_s e^{-2\tau}$	1.9019	$1.903 \pm 0.019$	$H(0.15)$	74.93	$75.1 \pm 1.8$	$\chi^2_{prior}$	0.00	$1.0 \pm 1.5$
$D_{40}$	1231.3	$1231 \pm 27$	$D_M(0.15)$	622.1	$621 \pm 16$	$\chi^2_{CMB}$	1142.69	$1148.7 \pm 3.4$

Best-fit  $\chi^2_{eff} = 1142.70$ ;  $\bar{\chi}^2_{eff} = 1149.74$ ;  $R - 1 = 0.00580$

$\chi^2_{eff}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.16 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.58 plik\_rd12\_HM\_v22\_EE: 738.95



## 2.52 base\_plikHM\_EE\_lowE\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.0240 \pm 0.0010$	$D_{220}$	$5967 \pm 170$	$H(0.38)$	$84.9 \pm 1.5$
$\Omega_{\text{c}}h^2$	$0.1152 \pm 0.0030$	$D_{810}$	$2589 \pm 35$	$D_{\text{M}}(0.38)$	$1485 \pm 34$
$100\theta_{\text{MC}}$	$1.04001 \pm 0.00082$	$D_{1420}$	$844 \pm 17$	$H(0.51)$	$91.4 \pm 1.3$
$\tau$	$0.0558^{+0.0047}_{-0.0074}$	$D_{2000}$	$241.3 \pm 6.6$	$D_{\text{M}}(0.51)$	$1928 \pm 41$
$\ln(10^{10}A_{\text{s}})$	$3.057 \pm 0.016$	$n_{\text{s},0.002}$	$0.981 \pm 0.013$	$H(0.61)$	$96.8^{+1.1}_{-1.2}$
$n_{\text{s}}$	$0.981 \pm 0.013$	$Y_{\text{P}}$	$0.24605 \pm 0.00040$	$D_{\text{M}}(0.61)$	$2247 \pm 45$
$y_{\text{cal}}$	$0.9999 \pm 0.0026$	$Y_{\text{P}}^{\text{BBN}}$	$0.24738 \pm 0.00040$	$H(2.33)$	$235.0 \pm 1.2$
$H_0$	$70.2 \pm 2.0$	$10^5\text{D}/\text{H}$	$2.31^{+0.15}_{-0.17}$	$D_{\text{M}}(2.33)$	$5692 \pm 54$
$\Omega_{\Lambda}$	$0.715^{+0.022}_{-0.019}$	Age/Gyr	$13.64 \pm 0.12$	$f\sigma_8(0.15)$	$0.431 \pm 0.018$
$\Omega_{\text{m}}$	$0.285^{+0.019}_{-0.022}$	$z_*$	$1087.6^{+1.3}_{-1.4}$	$\sigma_8(0.15)$	$0.7381^{+0.0083}_{-0.0074}$
$\Omega_{\text{m}}h^2$	$0.1399 \pm 0.0022$	$r_*$	$144.39 \pm 0.38$	$f\sigma_8(0.38)$	$0.455 \pm 0.014$
$\Omega_{\text{m}}h^3$	$0.0981 \pm 0.0016$	$100\theta_*$	$1.04002 \pm 0.00080$	$\sigma_8(0.38)$	$0.6573 \pm 0.0057$
$\sigma_8$	$0.796^{+0.011}_{-0.0095}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.883 \pm 0.039$	$f\sigma_8(0.51)$	$0.457 \pm 0.012$
$S_8$	$0.776 \pm 0.036$	$z_{\text{drag}}$	$1063.3 \pm 2.0$	$\sigma_8(0.51)$	$0.6164 \pm 0.0050$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.425 \pm 0.020$	$r_{\text{drag}}$	$146.53 \pm 0.54$	$f\sigma_8(0.61)$	$0.454^{+0.011}_{-0.010}$
$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.581 \pm 0.017$	$k_{\text{D}}$	$0.1426 \pm 0.0011$	$\sigma_8(0.61)$	$0.5873 \pm 0.0046$
$\sigma_8/h^{0.5}$	$0.951 \pm 0.024$	$100\theta_{\text{D}}$	$0.15872^{+0.00099}_{-0.0011}$	$f\sigma_8(2.33)$	$0.2972^{+0.0022}_{-0.0025}$
$r_{\text{drag}}h$	$102.8 \pm 2.7$	$z_{\text{eq}}$	$3328 \pm 53$	$\sigma_8(2.33)$	$0.3078 \pm 0.0029$
$\langle d^2 \rangle^{1/2}$	$2.373 \pm 0.048$	$k_{\text{eq}}$	$0.01016 \pm 0.00016$	$\chi_{\text{lensing}}^2$	$9.2 \pm 1.1$
$z_{\text{re}}$	$7.40^{+0.35}_{-0.76}$	$100\theta_{\text{eq}}$	$0.831 \pm 0.012$	$\chi_{\text{simall}}^2$	$396.3 \pm 1.1$
$10^9A_{\text{s}}$	$2.126^{+0.033}_{-0.036}$	$100\theta_{\text{s,eq}}$	$0.4573 \pm 0.0057$	$\chi_{\text{plikEE}}^2$	$742.9 \pm 2.6$
$10^9A_{\text{s}}e^{-2\tau}$	$1.901 \pm 0.019$	$H(0.15)$	$75.2 \pm 1.8$	$\chi_{\text{prior}}^2$	$1.0 \pm 1.5$
$D_{40}$	$1229 \pm 27$	$D_{\text{M}}(0.15)$	$620 \pm 16$	$\chi_{\text{CMB}}^2$	$1148.3 \pm 3.2$

$\bar{\chi}_{\text{eff}}^2 = 1149.40$ ;  $R - 1 = 0.00683$



### 2.53 base\_CamSpecHM\_TE\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022467	$0.02248 \pm 0.00026$	$D_{220}$	5733	$5734 \pm 57$	$H(0.38)$	83.45	$83.46 \pm 0.51$
$\Omega_c h^2$	0.11787	$0.1179 \pm 0.0017$	$D_{810}$	2557.1	$2557 \pm 22$	$D_M(0.38)$	1517.4	$1517 \pm 13$
$100\theta_{MC}$	1.041288	$1.04130 \pm 0.00049$	$D_{1420}$	827.6	$827 \pm 11$	$H(0.51)$	90.070	$90.08 \pm 0.41$
$\tau$	0.0528	$0.0527 \pm 0.0078$	$D_{2000}$	234.38	$234.3 \pm 4.0$	$D_M(0.51)$	1967.1	$1967 \pm 16$
$\ln(10^{10} A_s)$	3.0418	$3.041 \pm 0.015$	$n_{s,0.002}$	0.9770	$0.977 \pm 0.011$	$H(0.61)$	95.618	$95.63 \pm 0.35$
$n_s$	0.9770	$0.977 \pm 0.011$	$Y_P$	0.245433	$0.24543 \pm 0.00010$	$D_M(0.61)$	2290.2	$2290 \pm 17$
$y_{cal}$	1.00021	$1.0001 \pm 0.0025$	$Y_P^{BBN}$	0.246759	$0.24676 \pm 0.00010$	$H(2.33)$	235.28	$235.3 \pm 1.0$
$H_0$	68.31	$68.33 \pm 0.78$	$10^5 D/H$	2.5677	$2.567 \pm 0.047$	$D_M(2.33)$	5749.6	$5749 \pm 16$
$\Omega_\Lambda$	0.6979	$0.698 \pm 0.010$	Age/Gyr	13.7675	$13.766 \pm 0.037$	$f\sigma_8(0.15)$	0.4486	$0.4484 \pm 0.0085$
$\Omega_m$	0.3021	$0.302 \pm 0.010$	$z_*$	1089.611	$1089.61 \pm 0.40$	$\sigma_8(0.15)$	0.7463	$0.7459 \pm 0.0064$
$\Omega_m h^2$	0.14098	$0.1410 \pm 0.0016$	$r_*$	144.911	$144.91 \pm 0.39$	$f\sigma_8(0.38)$	0.4690	$0.4687 \pm 0.0067$
$\Omega_m h^3$	0.09631	$0.09632 \pm 0.00052$	$100\theta_*$	1.041468	$1.04147 \pm 0.00049$	$\sigma_8(0.38)$	0.6625	$0.6622 \pm 0.0057$
$\sigma_8$	0.8066	$0.8062 \pm 0.0071$	$D_M(z_*)/\text{Gpc}$	13.9141	$13.914 \pm 0.037$	$f\sigma_8(0.51)$	0.4687	$0.4684 \pm 0.0058$
$S_8$	0.8094	$0.809 \pm 0.017$	$z_{drag}$	1060.01	$1060.02 \pm 0.55$	$\sigma_8(0.51)$	0.6205	$0.6202 \pm 0.0054$
$\sigma_8 \Omega_m^{0.5}$	0.4433	$0.4431 \pm 0.0092$	$r_{drag}$	147.550	$147.54 \pm 0.40$	$f\sigma_8(0.61)$	0.4645	$0.4642 \pm 0.0052$
$\sigma_8 \Omega_m^{0.25}$	0.5980	$0.5977 \pm 0.0081$	$k_D$	0.14046	$0.14047 \pm 0.00050$	$\sigma_8(0.61)$	0.5906	$0.5904 \pm 0.0051$
$\sigma_8/h^{0.5}$	0.9759	$0.975 \pm 0.011$	$100\theta_D$	0.160751	$0.16075 \pm 0.00032$	$f\sigma_8(2.33)$	0.29819	$0.2981 \pm 0.0027$
$r_{drag} h$	100.80	$100.8 \pm 1.3$	$z_{eq}$	3353.5	$3354 \pm 37$	$\sigma_8(2.33)$	0.30784	$0.3077 \pm 0.0030$
$\langle d^2 \rangle^{1/2}$	2.3961	$2.396 \pm 0.034$	$k_{eq}$	0.010235	$0.01024 \pm 0.00011$	$\chi_{lensing}^2$	8.95	$9.7 \pm 1.3$
$z_{re}$	7.48	$7.44^{+0.82}_{-0.71}$	$100\theta_{eq}$	0.8227	$0.8227 \pm 0.0072$	$\chi_{small}^2$	395.77	$396.7 \pm 1.3$
$10^9 A_s$	2.0943	$2.093 \pm 0.032$	$100\theta_{s,eq}$	0.45421	$0.4542 \pm 0.0037$	$\chi_{CamSpec}^2$	2576.31	$2580.7 \pm 2.9$
$10^9 A_s e^{-2\tau}$	1.8842	$1.884 \pm 0.014$	$H(0.15)$	73.50	$73.51 \pm 0.67$	$\chi_{prior}^2$	10.04	$11.0 \pm 1.5$
$D_{40}$	1207.8	$1208 \pm 25$	$D_M(0.15)$	635.3	$635.2 \pm 6.5$	$\chi_{CMB}^2$	2981.03	$2987.1 \pm 3.4$

Best-fit  $\chi_{eff}^2 = 2991.07$ ;  $\bar{\chi}_{eff}^2 = 2998.15$ ;  $R - 1 = 0.00781$

$\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.95 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.77 CamSpec like\_10.7HM\_1400\_unified: 2576.31



## 2.54 base\_CamSpecHM\_TE\_lowE\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02248 \pm 0.00026$	$D_{220}$	$5732 \pm 57$	$H(0.38)$	$83.49 \pm 0.50$
$\Omega_{\mathrm{c}}h^2$	$0.1177 \pm 0.0016$	$D_{810}$	$2556 \pm 22$	$D_{\mathrm{M}}(0.38)$	$1516 \pm 13$
$100\theta_{\mathrm{MC}}$	$1.04131 \pm 0.00049$	$D_{1420}$	$827 \pm 11$	$H(0.51)$	$90.11 \pm 0.41$
$\tau$	$0.0544^{+0.0048}_{-0.0080}$	$D_{2000}$	$234.4 \pm 4.0$	$D_{\mathrm{M}}(0.51)$	$1966 \pm 15$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044^{+0.012}_{-0.015}$	$n_{\mathrm{s},0.002}$	$0.977 \pm 0.011$	$H(0.61)$	$95.65 \pm 0.35$
$n_{\mathrm{s}}$	$0.977 \pm 0.011$	$Y_{\mathrm{P}}$	$0.24544 \pm 0.00010$	$D_{\mathrm{M}}(0.61)$	$2289 \pm 17$
$y_{\mathrm{cal}}$	$1.0001 \pm 0.0025$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24676 \pm 0.00010$	$H(2.33)$	$235.22 \pm 0.98$
$H_0$	$68.38 \pm 0.77$	$10^5 D/\mathrm{H}$	$2.566 \pm 0.047$	$D_{\mathrm{M}}(2.33)$	$5748 \pm 16$
$\Omega_{\Lambda}$	$0.6986 \pm 0.0098$	Age/Gyr	$13.765 \pm 0.037$	$f\sigma_8(0.15)$	$0.4485 \pm 0.0085$
$\Omega_{\mathrm{m}}$	$0.3014 \pm 0.0098$	$z_{*}$	$1089.59 \pm 0.40$	$\sigma_8(0.15)$	$0.7468 \pm 0.0059$
$\Omega_{\mathrm{m}}h^2$	$0.1409 \pm 0.0015$	$r_{*}$	$144.93 \pm 0.38$	$f\sigma_8(0.38)$	$0.4689 \pm 0.0067$
$\Omega_{\mathrm{m}}h^3$	$0.09632 \pm 0.00052$	$100\theta_{*}$	$1.04148 \pm 0.00049$	$\sigma_8(0.38)$	$0.6631^{+0.0049}_{-0.0054}$
$\sigma_8$	$0.8071 \pm 0.0067$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.916 \pm 0.036$	$f\sigma_8(0.51)$	$0.4687 \pm 0.0058$
$S_8$	$0.809 \pm 0.017$	$z_{\mathrm{drag}}$	$1060.03 \pm 0.55$	$\sigma_8(0.51)$	$0.6211^{+0.0046}_{-0.0052}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4431 \pm 0.0092$	$r_{\mathrm{drag}}$	$147.57 \pm 0.40$	$f\sigma_8(0.61)$	$0.4646 \pm 0.0052$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5980 \pm 0.0081$	$k_{\mathrm{D}}$	$0.14045 \pm 0.00050$	$\sigma_8(0.61)$	$0.5912^{+0.0044}_{-0.0050}$
$\sigma_8/h^{0.5}$	$0.976 \pm 0.011$	$100\theta_{\mathrm{D}}$	$0.16074 \pm 0.00032$	$f\sigma_8(2.33)$	$0.2985^{+0.0023}_{-0.0026}$
$r_{\mathrm{drag}}h$	$100.9 \pm 1.3$	$z_{\mathrm{eq}}$	$3351 \pm 37$	$\sigma_8(2.33)$	$0.3082^{+0.0025}_{-0.0029}$
$\langle d^2 \rangle^{1/2}$	$2.397 \pm 0.033$	$k_{\mathrm{eq}}$	$0.01023 \pm 0.00011$	$\chi_{\mathrm{lensing}}^2$	$9.7 \pm 1.2$
$z_{\mathrm{re}}$	$7.62^{+0.52}_{-0.78}$	$100\theta_{\mathrm{eq}}$	$0.8233 \pm 0.0071$	$\chi_{\mathrm{simall}}^2$	$396.6 \pm 1.3$
$10^9 A_{\mathrm{s}}$	$2.100^{+0.025}_{-0.032}$	$100\theta_{\mathrm{s,eq}}$	$0.4545 \pm 0.0036$	$\chi_{\mathrm{CamSpec}}^2$	$2580.6 \pm 2.9$
$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.883 \pm 0.014$	$H(0.15)$	$73.56 \pm 0.67$	$\chi_{\mathrm{prior}}^2$	$11.0 \pm 1.5$
$D_{40}$	$1207 \pm 25$	$D_{\mathrm{M}}(0.15)$	$634.8 \pm 6.5$	$\chi_{\mathrm{CMB}}^2$	$2986.8 \pm 3.3$

$\bar{\chi}_{\mathrm{eff}}^2 = 2997.86$ ;  $R - 1 = 0.00847$



## 2.55 base\_CamSpecHM\_EE\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02359	$0.02359 \pm 0.00095$	$D_{220}$	5980	$5980 \pm 160$	$H(0.38)$	84.21	$84.2 \pm 1.4$
$\Omega_c h^2$	0.11600	$0.1162 \pm 0.0030$	$D_{810}$	2590.4	$2591 \pm 34$	$D_M(0.38)$	1499.4	$1501 \pm 33$
$100\theta_{MC}$	1.03953	$1.03954 \pm 0.00084$	$D_{1420}$	839.4	$839 \pm 17$	$H(0.51)$	90.74	$90.7^{+1.1}_{-1.3}$
$\tau$	0.0500	$0.0487^{+0.0090}_{-0.0079}$	$D_{2000}$	238.9	$238.8 \pm 6.3$	$D_M(0.51)$	1945.4	$1947 \pm 39$
$\ln(10^{10} A_s)$	3.0489	$3.047 \pm 0.019$	$n_{s,0.002}$	0.9718	$0.972 \pm 0.012$	$H(0.61)$	96.22	$96.24^{+0.99}_{-1.1}$
$n_s$	0.9718	$0.972 \pm 0.012$	$Y_P$	0.245904	$0.24588 \pm 0.00038$	$D_M(0.61)$	2266.3	$2268 \pm 43$
$y_{cal}$	0.99978	$0.9999 \pm 0.0024$	$Y_P^{BBN}$	0.247232	$0.24721 \pm 0.00038$	$H(2.33)$	235.02	$235.1 \pm 1.2$
$H_0$	69.33	$69.3 \pm 1.9$	$10^5 D/H$	2.373	$2.38^{+0.15}_{-0.17}$	$D_M(2.33)$	5719	$5719 \pm 51$
$\Omega_\Lambda$	0.7082	$0.707^{+0.022}_{-0.019}$	Age/Gyr	13.698	$13.70 \pm 0.12$	$f\sigma_8(0.15)$	0.4353	$0.436 \pm 0.018$
$\Omega_m$	0.2918	$0.293^{+0.019}_{-0.022}$	$z_*$	1088.12	$1088.2 \pm 1.3$	$\sigma_8(0.15)$	0.7364	$0.7357^{+0.0087}_{-0.0077}$
$\Omega_m h^2$	0.14024	$0.1404 \pm 0.0022$	$r_*$	144.530	$144.49 \pm 0.41$	$f\sigma_8(0.38)$	0.4576	$0.458 \pm 0.014$
$\Omega_m h^3$	0.09723	$0.0973 \pm 0.0015$	$100\theta_*$	1.03959	$1.03960 \pm 0.00082$	$\sigma_8(0.38)$	0.6549	$0.6542^{+0.0066}_{-0.0059}$
$\sigma_8$	0.7948	$0.794^{+0.011}_{-0.0097}$	$D_M(z_*)/\text{Gpc}$	13.9026	$13.899 \pm 0.041$	$f\sigma_8(0.51)$	0.4585	$0.458 \pm 0.012$
$S_8$	0.7838	$0.785 \pm 0.035$	$z_{drag}$	1062.45	$1062.4 \pm 1.9$	$\sigma_8(0.51)$	0.6138	$0.6131 \pm 0.0057$
$\sigma_8 \Omega_m^{0.5}$	0.4293	$0.430 \pm 0.019$	$r_{drag}$	146.80	$146.77 \pm 0.54$	$f\sigma_8(0.61)$	0.4552	$0.455 \pm 0.010$
$\sigma_8 \Omega_m^{0.25}$	0.5841	$0.584 \pm 0.016$	$k_D$	0.14204	$0.1420 \pm 0.0011$	$\sigma_8(0.61)$	0.5846	$0.5839 \pm 0.0054$
$\sigma_8/h^{0.5}$	0.9545	$0.954 \pm 0.024$	$100\theta_D$	0.15909	$0.15915^{+0.00099}_{-0.0011}$	$f\sigma_8(2.33)$	0.29556	$0.2952 \pm 0.0028$
$r_{drag} h$	101.77	$101.7 \pm 2.7$	$z_{eq}$	3336	$3340 \pm 54$	$\sigma_8(2.33)$	0.30562	$0.3052 \pm 0.0033$
$\langle d^2 \rangle^{1/2}$	2.3931	$2.392 \pm 0.046$	$k_{eq}$	0.010182	$0.01019 \pm 0.00016$	$\chi^2_{lensing}$	8.34	$9.4 \pm 1.4$
$z_{re}$	6.93	$6.77^{+0.92}_{-0.70}$	$100\theta_{eq}$	0.8277	$0.827 \pm 0.012$	$\chi^2_{small}$	395.63	$396.8 \pm 1.7$
$10^9 A_s$	2.1091	$2.105 \pm 0.040$	$100\theta_{s,eq}$	0.4559	$0.4556 \pm 0.0057$	$\chi^2_{CamSpec}$	1887.54	$1891.5 \pm 2.9$
$10^9 A_s e^{-2\tau}$	1.9083	$1.910 \pm 0.018$	$H(0.15)$	74.41	$74.4 \pm 1.7$	$\chi^2_{prior}$	10.04	$11.0 \pm 1.3$
$D_{40}$	1249.5	$1249 \pm 27$	$D_M(0.15)$	626.7	$627 \pm 16$	$\chi^2_{CMB}$	2291.51	$2297.7 \pm 3.6$

Best-fit  $\chi^2_{eff} = 2301.54$ ;  $\bar{\chi}^2_{eff} = 2308.71$ ;  $R - 1 = 0.00642$

$\chi^2_{eff}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.34 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.63 CamSpec like\_10.7HM\_1400\_unified: 1887.54



## 2.56 base\_CamSpecHM\_EE\_lowE\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02360 \pm 0.00095$	$D_{220}$	$5975 \pm 160$	$H(0.38)$	$84.3^{+1.3}_{-1.5}$
$\Omega_{\text{c}}h^2$	$0.1158 \pm 0.0029$	$D_{810}$	$2589 \pm 34$	$D_{\text{M}}(0.38)$	$1498 \pm 33$
$100\theta_{\text{MC}}$	$1.03956 \pm 0.00083$	$D_{1420}$	$839 \pm 17$	$H(0.51)$	$90.8^{+1.1}_{-1.3}$
$\tau$	$0.0535^{+0.0039}_{-0.0071}$	$D_{2000}$	$238.8 \pm 6.3$	$D_{\text{M}}(0.51)$	$1944 \pm 39$
$\ln(10^{10}A_{\text{s}})$	$3.055^{+0.014}_{-0.017}$	$n_{\text{s},0.002}$	$0.973 \pm 0.012$	$H(0.61)$	$96.28^{+0.97}_{-1.1}$
$n_{\text{s}}$	$0.973 \pm 0.012$	$Y_{\text{P}}$	$0.24588 \pm 0.00038$	$D_{\text{M}}(0.61)$	$2265 \pm 43$
$y_{\text{cal}}$	$0.9998 \pm 0.0024$	$Y_{\text{P}}^{\text{BBN}}$	$0.24721 \pm 0.00038$	$H(2.33)$	$234.9 \pm 1.2$
$H_0$	$69.4^{+1.8}_{-2.0}$	$10^5\text{D}/\text{H}$	$2.38 \pm 0.16$	$D_{\text{M}}(2.33)$	$5718^{+54}_{-49}$
$\Omega_{\Lambda}$	$0.709 \pm 0.020$	Age/Gyr	$13.70 \pm 0.12$	$f\sigma_8(0.15)$	$0.436 \pm 0.018$
$\Omega_{\text{m}}$	$0.291 \pm 0.020$	$z_*$	$1088.1 \pm 1.3$	$\sigma_8(0.15)$	$0.7380^{+0.0079}_{-0.0071}$
$\Omega_{\text{m}}h^2$	$0.1400 \pm 0.0022$	$r_*$	$144.58 \pm 0.39$	$f\sigma_8(0.38)$	$0.458 \pm 0.014$
$\Omega_{\text{m}}h^3$	$0.0972^{+0.0014}_{-0.0016}$	$100\theta_*$	$1.03962 \pm 0.00081$	$\sigma_8(0.38)$	$0.6565 \pm 0.0054$
$\sigma_8$	$0.796^{+0.010}_{-0.0092}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.907 \pm 0.039$	$f\sigma_8(0.51)$	$0.459^{+0.012}_{-0.011}$
$S_8$	$0.785 \pm 0.035$	$z_{\text{drag}}$	$1062.4 \pm 1.9$	$\sigma_8(0.51)$	$0.6153 \pm 0.0048$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.430 \pm 0.019$	$r_{\text{drag}}$	$146.86 \pm 0.53$	$f\sigma_8(0.61)$	$0.456^{+0.011}_{-0.0093}$
$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.585 \pm 0.016$	$k_{\text{D}}$	$0.1419 \pm 0.0011$	$\sigma_8(0.61)$	$0.5861 \pm 0.0044$
$\sigma_8/h^{0.5}$	$0.956 \pm 0.023$	$100\theta_{\text{D}}$	$0.1592 \pm 0.0010$	$f\sigma_8(2.33)$	$0.2964^{+0.0022}_{-0.0024}$
$r_{\text{drag}}h$	$102.0 \pm 2.6$	$z_{\text{eq}}$	$3331 \pm 52$	$\sigma_8(2.33)$	$0.3065 \pm 0.0028$
$\langle d^2 \rangle^{1/2}$	$2.396 \pm 0.046$	$k_{\text{eq}}$	$0.01017 \pm 0.00016$	$\chi^2_{\text{lensing}}$	$9.4 \pm 1.5$
$z_{\text{re}}$	$< 7.45$	$100\theta_{\text{eq}}$	$0.829 \pm 0.012$	$\chi^2_{\text{simall}}$	$396.18 \pm 0.94$
$10^9 A_{\text{s}}$	$2.122^{+0.029}_{-0.035}$	$100\theta_{\text{s,eq}}$	$0.4565 \pm 0.0056$	$\chi^2_{\text{CamSpec}}$	$1891.6 \pm 2.9$
$10^9 A_{\text{s}}e^{-2\tau}$	$1.907 \pm 0.018$	$H(0.15)$	$74.5^{+1.6}_{-1.8}$	$\chi^2_{\text{prior}}$	$11.0 \pm 1.4$
$D_{40}$	$1247 \pm 27$	$D_{\text{M}}(0.15)$	$626 \pm 16$	$\chi^2_{\text{CMB}}$	$2297.2 \pm 3.3$

$\bar{\chi}^2_{\text{eff}} = 2308.23$ ;  $R - 1 = 0.00344$



## 2.57 base\_plikHM\_TE\_lowE\_lensing\_BAO\_CookeDH

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022450	$0.02245 \pm 0.00021$	$z_{\text{re}}$	7.56	$7.66 \pm 0.74$	$H(0.38)$	83.208	$83.22 \pm 0.34$
$\Omega_c h^2$	0.11900	$0.1190 \pm 0.0011$	$10^9 A_s$	2.0820	$2.086 \pm 0.031$	$D_M(0.38)$	1524.3	$1524.0 \pm 8.8$
$100\theta_{\text{MC}}$	1.041266	$1.04128 \pm 0.00047$	$10^9 A_s e^{-2\tau}$	1.8709	$1.870 \pm 0.013$	$H(0.51)$	89.900	$89.91 \pm 0.28$
$\tau$	0.0535	$0.0546 \pm 0.0073$	$D_{40}$	1223.3	$1224 \pm 24$	$D_M(0.51)$	1975.1	$1975 \pm 10$
$\ln(10^{10} A_s)$	3.0359	$3.038 \pm 0.015$	$D_{220}$	5720	$5720 \pm 56$	$H(0.61)$	95.500	$95.51 \pm 0.25$
$n_s$	0.9664	$0.9664 \pm 0.0099$	$D_{810}$	2527.6	$2527 \pm 21$	$D_M(0.61)$	2298.7	$2298 \pm 11$
$y_{\text{cal}}$	1.00065	$1.0005 \pm 0.0025$	$D_{1420}$	814.0	$814 \pm 10$	$H(2.33)$	236.01	$236.00 \pm 0.72$
$A_{100}^{\text{dustTE}}$	0.1138	$0.114 \pm 0.038$	$D_{2000}$	229.89	$229.8 \pm 3.6$	$D_M(2.33)$	5753.4	$5753 \pm 12$
$A_{100 \times 143}^{\text{dustTE}}$	0.1366	$0.136 \pm 0.030$	$n_{s,0.002}$	0.9664	$0.9664 \pm 0.0099$	$f\sigma_8(0.15)$	0.4517	$0.4520 \pm 0.0062$
$A_{100 \times 217}^{\text{dustTE}}$	0.477	$0.477 \pm 0.085$	$Y_{\text{P}}$	0.245426	$0.245425 \pm 0.000082$	$\sigma_8(0.15)$	0.7440	$0.7447 \pm 0.0063$
$A_{143}^{\text{dustTE}}$	0.226	$0.223 \pm 0.054$	$Y_{\text{P}}^{\text{BBN}}$	0.246753	$0.246752 \pm 0.000082$	$f\sigma_8(0.38)$	0.4706	$0.4710 \pm 0.0053$
$A_{143 \times 217}^{\text{dustTE}}$	0.661	$0.662 \pm 0.079$	$10^5 \text{D/H}$	2.5707	$2.571 \pm 0.038$	$\sigma_8(0.38)$	0.6599	$0.6605 \pm 0.0056$
$A_{217}^{\text{dustTE}}$	2.056	$2.06 \pm 0.27$	Age/Gyr	13.7749	$13.774 \pm 0.028$	$f\sigma_8(0.51)$	0.46962	$0.4700 \pm 0.0048$
$c_{100}$	1.00018	$1.00018 \pm 0.00069$	$z_*$	1089.734	$1089.73 \pm 0.30$	$\sigma_8(0.51)$	0.6177	$0.6183 \pm 0.0052$
$c_{217}$	0.99800	$0.99801 \pm 0.00065$	$r_*$	144.629	$144.63 \pm 0.29$	$f\sigma_8(0.61)$	0.46493	$0.4653 \pm 0.0045$
$H_0$	67.89	$67.91 \pm 0.51$	$100\theta_*$	1.041440	$1.04145 \pm 0.00047$	$\sigma_8(0.61)$	0.58783	$0.5884 \pm 0.0050$
$\Omega_\Lambda$	0.6917	$0.6918 \pm 0.0066$	$D_M(z_*)/\text{Gpc}$	13.8874	$13.888 \pm 0.029$	$f\sigma_8(2.33)$	0.29652	$0.2968 \pm 0.0026$
$\Omega_{\text{m}}$	0.3083	$0.3082 \pm 0.0066$	$z_{\text{drag}}$	1060.047	$1060.06 \pm 0.47$	$\sigma_8(2.33)$	0.30583	$0.3061 \pm 0.0028$
$\Omega_{\text{m}} h^2$	0.14209	$0.1421 \pm 0.0011$	$r_{\text{drag}}$	147.268	$147.27 \pm 0.33$	$\chi_{\text{lensing}}^2$	9.99	$10.5 \pm 1.8$
$\Omega_{\text{m}} h^3$	0.096464	$0.09647 \pm 0.00048$	$k_{\text{D}}$	0.140743	$0.14074 \pm 0.00044$	$\chi_{\text{small}}^2$	395.87	$396.9 \pm 1.7$
$\sigma_8$	0.8049	$0.8055 \pm 0.0069$	$100\theta_{\text{D}}$	0.160731	$0.16073 \pm 0.00028$	$\chi_{\text{plikTE}}^2$	854.02	$860.0 \pm 3.5$
$S_8$	0.8159	$0.816 \pm 0.012$	$z_{\text{eq}}$	3380.1	$3380 \pm 26$	$\chi_{6\text{DF}}^2$	0.0108	$0.041 \pm 0.055$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4469	$0.4472 \pm 0.0066$	$k_{\text{eq}}$	0.010316	$0.010315 \pm 0.000080$	$\chi_{\text{MGS}}^2$	1.407	$1.48 \pm 0.50$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5997	$0.6002 \pm 0.0065$	$100\theta_{\text{eq}}$	0.81775	$0.8179 \pm 0.0048$	$\chi_{\text{DR12BAO}}^2$	3.93	$4.4 \pm 1.2$
$\sigma_8/h^{0.5}$	0.9768	$0.9776 \pm 0.0094$	$100\theta_{\text{s,eq}}$	0.45166	$0.4517 \pm 0.0025$	$\chi_{\text{prior}}^2$	0.76	$7.8 \pm 3.7$
$r_{\text{drag}} h$	99.98	$100.01 \pm 0.86$	$H(0.15)$	73.141	$73.16 \pm 0.44$	$\chi_{\text{CMB}}^2$	1259.87	$1267.4 \pm 3.8$
$\langle d^2 \rangle^{1/2}$	2.4211	$2.423 \pm 0.028$	$D_{\text{M}}(0.15)$	638.81	$638.7 \pm 4.3$	$\chi_{\text{BAO}}^2$	5.343	$5.90 \pm 0.95$

Best-fit  $\chi_{\text{eff}}^2 = 1265.98$ ;  $\bar{\chi}_{\text{eff}}^2 = 1281.13$ ;  $R - 1 = 0.00651$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.92 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 9.99 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 plik\_rd12\_HM\_v22\_TE: 854.02



## 2.58 base\_plikHM\_EE\_lowE\_lensing\_BAO\_CookeDH

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022763	$0.02275 \pm 0.00036$	$D_{1420}$	826.3	$825.8 \pm 9.9$	$H(0.61)$	95.489	$95.48 \pm 0.36$
$\Omega_c h^2$	0.11823	$0.1183 \pm 0.0013$	$D_{2000}$	234.35	$234.2 \pm 3.6$	$D_M(0.61)$	2297.3	$2298 \pm 14$
$100\theta_{MC}$	1.03995	$1.03995 \pm 0.00079$	$n_{s,0.002}$	0.9735	$0.9732 \pm 0.0097$	$H(2.33)$	235.69	$235.70 \pm 0.80$
$\tau$	0.0522	$0.0519 \pm 0.0077$	$Y_P$	0.245541	$0.24555^{+0.00014}_{-0.00016}$	$D_M(2.33)$	5755.0	$5755 \pm 19$
$\ln(10^{10} A_s)$	3.0407	$3.040 \pm 0.015$	$Y_P^{BBN}$	0.246868	$0.24687^{+0.00014}_{-0.00016}$	$f\sigma_8(0.15)$	0.4500	$0.4500 \pm 0.0073$
$n_s$	0.9735	$0.9732 \pm 0.0097$	$10^5 D/H$	2.516	$2.518 \pm 0.065$	$\sigma_8(0.15)$	0.7433	$0.7430 \pm 0.0066$
$y_{cal}$	1.00004	$1.0000 \pm 0.0025$	Age/Gyr	13.7792	$13.780 \pm 0.043$	$f\sigma_8(0.38)$	0.4693	$0.4692 \pm 0.0062$
$H_0$	67.98	$67.96 \pm 0.62$	$z_*$	1089.279	$1089.30 \pm 0.49$	$\sigma_8(0.38)$	0.6594	$0.6591 \pm 0.0057$
$\Omega_\Lambda$	0.6935	$0.6932 \pm 0.0075$	$r_*$	144.590	$144.59 \pm 0.34$	$f\sigma_8(0.51)$	0.4685	$0.4684 \pm 0.0055$
$\Omega_m$	0.3065	$0.3068 \pm 0.0075$	$100\theta_*$	1.04010	$1.04010 \pm 0.00080$	$\sigma_8(0.51)$	0.6173	$0.6170 \pm 0.0054$
$\Omega_m h^2$	0.14163	$0.1417 \pm 0.0012$	$D_M(z_*)/\text{Gpc}$	13.9016	$13.902 \pm 0.036$	$f\sigma_8(0.61)$	0.4639	$0.4638 \pm 0.0051$
$\Omega_m h^3$	0.09628	$0.09627 \pm 0.00074$	$z_{drag}$	1060.70	$1060.69 \pm 0.80$	$\sigma_8(0.61)$	0.5875	$0.5873 \pm 0.0051$
$\sigma_8$	0.8038	$0.8035 \pm 0.0074$	$r_{drag}$	147.127	$147.13 \pm 0.42$	$f\sigma_8(2.33)$	0.29644	$0.2963 \pm 0.0026$
$S_8$	0.8125	$0.813 \pm 0.014$	$k_D$	0.14112	$0.14111 \pm 0.00065$	$\sigma_8(2.33)$	0.30584	$0.3057 \pm 0.0027$
$\sigma_8 \Omega_m^{0.5}$	0.4450	$0.4451 \pm 0.0078$	$100\theta_D$	0.160134	$0.16015 \pm 0.00049$	$\chi^2_{lensing}$	8.54	$9.3 \pm 1.0$
$\sigma_8 \Omega_m^{0.25}$	0.5981	$0.5980 \pm 0.0076$	$z_{eq}$	3369.2	$3370 \pm 28$	$\chi^2_{small}$	395.71	$396.7 \pm 1.3$
$\sigma_8/h^{0.5}$	0.9749	$0.975 \pm 0.011$	$k_{eq}$	0.010283	$0.010285 \pm 0.000086$	$\chi^2_{plikEE}$	740.14	$743.4 \pm 2.6$
$r_{drag} h$	100.02	$99.99 \pm 0.94$	$100\theta_{eq}$	0.8196	$0.8195 \pm 0.0052$	$\chi^2_{6DF}$	0.0099	$0.048 \pm 0.066$
$\langle d^2 \rangle^{1/2}$	2.4067	$2.407 \pm 0.030$	$100\theta_{s,eq}$	0.45234	$0.4523 \pm 0.0026$	$\chi^2_{MGS}$	1.41	$1.46 \pm 0.54$
$z_{re}$	7.35	$7.30^{+0.81}_{-0.73}$	$H(0.15)$	73.21	$73.19 \pm 0.55$	$\chi^2_{DR12BAO}$	4.10	$4.7 \pm 1.5$
$10^9 A_s$	2.0921	$2.091 \pm 0.031$	$D_M(0.15)$	638.1	$638.3 \pm 5.3$	$\chi^2_{prior}$	1.27	$2.7 \pm 2.3$
$10^9 A_s e^{-2\tau}$	1.8847	$1.884 \pm 0.015$	$H(0.38)$	83.238	$83.23 \pm 0.44$	$\chi^2_{CMB}$	1144.39	$1149.3 \pm 3.4$
$D_{40}$	1217.2	$1218 \pm 27$	$D_M(0.38)$	1523.0	$1523 \pm 11$	$\chi^2_{BAO}$	5.52	$6.2 \pm 1.2$
$D_{220}$	5770	$5769 \pm 86$	$H(0.51)$	89.907	$89.90 \pm 0.39$			
$D_{810}$	2553.4	$2552 \pm 21$	$D_M(0.51)$	1973.7	$1974 \pm 13$			

Best-fit  $\chi^2_{eff} = 1151.17$ ;  $\bar{\chi}^2_{eff} = 1158.27$ ;  $R - 1 = 0.00909$   
 $\chi^2_{eff}$ : BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 4.10 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.54 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.71 plik\_rd12\_HM\_v22\_EE: 740.14



## 2.59 base\_CamSpecHM\_TE\_lowE\_lensing\_BAO\_CookeDH

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022416	$0.02240 \pm 0.00021$	$D_{1420}$	825.5	$825.3 \pm 9.8$	$H(0.61)$	95.551	$95.54 \pm 0.24$
$\Omega_{\text{c}}h^2$	0.11819	$0.1182 \pm 0.0011$	$D_{2000}$	233.56	$233.5 \pm 3.6$	$D_{\text{M}}(0.61)$	2293.6	$2294 \pm 11$
$100\theta_{\text{MC}}$	1.041295	$1.04127 \pm 0.00047$	$n_{\text{s},0.002}$	0.9746	$0.9749 \pm 0.0098$	$H(2.33)$	235.45	$235.43 \pm 0.71$
$\tau$	0.0520	$0.0525 \pm 0.0073$	$Y_{\text{P}}$	0.245414	$0.245405 \pm 0.000082$	$D_{\text{M}}(2.33)$	5752.6	$5753 \pm 12$
$\ln(10^{10}A_{\text{s}})$	3.0401	$3.041 \pm 0.015$	$Y_{\text{P}}^{\text{BBN}}$	0.246740	$0.246732 \pm 0.000082$	$f\sigma_{\text{s}}(0.15)$	0.4499	$0.4501 \pm 0.0062$
$n_{\text{s}}$	0.9746	$0.9749 \pm 0.0098$	$10^5 D/\text{H}$	2.5769	$2.580 \pm 0.038$	$\sigma_{\text{s}}(0.15)$	0.7460	$0.7462 \pm 0.0062$
$y_{\text{cal}}$	1.00021	$1.0001 \pm 0.0024$	Age/Gyr	13.7739	$13.776 \pm 0.028$	$f\sigma_{\text{s}}(0.38)$	0.4698	$0.4700 \pm 0.0052$
$H_0$	68.156	$68.15 \pm 0.50$	$z_*$	1089.704	$1089.72 \pm 0.30$	$\sigma_{\text{s}}(0.38)$	0.6621	$0.6623 \pm 0.0055$
$\Omega_{\Lambda}$	0.6959	$0.6958 \pm 0.0064$	$r_*$	144.865	$144.88 \pm 0.29$	$f\sigma_{\text{s}}(0.51)$	0.46926	$0.4694 \pm 0.0048$
$\Omega_{\text{m}}$	0.3041	$0.3042 \pm 0.0064$	$100\theta_*$	1.041476	$1.04145 \pm 0.00047$	$\sigma_{\text{s}}(0.51)$	0.6199	$0.6201 \pm 0.0052$
$\Omega_{\text{m}}h^2$	0.14125	$0.1412 \pm 0.0011$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9096	$13.911 \pm 0.029$	$f\sigma_{\text{s}}(0.61)$	0.46491	$0.4651 \pm 0.0044$
$\Omega_{\text{m}}h^3$	0.096272	$0.09624 \pm 0.00048$	$z_{\text{drag}}$	1059.895	$1059.88 \pm 0.47$	$\sigma_{\text{s}}(0.61)$	0.59007	$0.5903 \pm 0.0049$
$\sigma_{\text{s}}$	0.8065	$0.8068 \pm 0.0068$	$r_{\text{drag}}$	147.522	$147.54 \pm 0.33$	$f\sigma_{\text{s}}(2.33)$	0.29782	$0.2979 \pm 0.0025$
$S_{\text{s}}$	0.8119	$0.812 \pm 0.012$	$k_{\text{D}}$	0.140450	$0.14042 \pm 0.00044$	$\sigma_{\text{s}}(2.33)$	0.30737	$0.3075 \pm 0.0027$
$\sigma_{\text{s}}\Omega_{\text{m}}^{0.5}$	0.4447	$0.4449 \pm 0.0065$	$100\theta_{\text{D}}$	0.160811	$0.16083 \pm 0.00028$	$\chi_{\text{lensing}}^2$	8.95	$9.6 \pm 1.1$
$\sigma_{\text{s}}\Omega_{\text{m}}^{0.25}$	0.5989	$0.5991 \pm 0.0064$	$z_{\text{eq}}$	3360.1	$3359 \pm 26$	$\chi_{\text{small}}^2$	395.71	$396.7 \pm 1.3$
$\sigma_{\text{s}}/h^{0.5}$	0.9769	$0.9773 \pm 0.0094$	$k_{\text{eq}}$	0.010255	$0.010254 \pm 0.000078$	$\chi_{\text{CamSpec}}^2$	2576.42	$2580.2 \pm 2.7$
$r_{\text{drag}}h$	100.55	$100.54 \pm 0.85$	$100\theta_{\text{eq}}$	0.82132	$0.8214 \pm 0.0048$	$\chi_{6\text{DF}}^2$	0.0002	$0.030 \pm 0.043$
$\langle d^2 \rangle^{1/2}$	2.4024	$2.403 \pm 0.028$	$100\theta_{\text{s,eq}}$	0.45354	$0.4536 \pm 0.0025$	$\chi_{\text{MGS}}^2$	1.75	$1.80 \pm 0.52$
$z_{\text{re}}$	7.41	$7.44 \pm 0.75$	$H(0.15)$	73.360	$73.35 \pm 0.44$	$\chi_{\text{DR12BAO}}^2$	3.439	$3.91 \pm 0.79$
$10^9 A_{\text{s}}$	2.0907	$2.092 \pm 0.031$	$D_{\text{M}}(0.15)$	636.61	$636.7 \pm 4.2$	$\chi_{\text{prior}}^2$	10.22	$11.3 \pm 1.4$
$10^9 A_{\text{s}}e^{-2\tau}$	1.8842	$1.884 \pm 0.013$	$H(0.38)$	83.344	$83.33 \pm 0.33$	$\chi_{\text{CMB}}^2$	2981.08	$2986.5 \pm 3.2$
$D_{40}$	1212.4	$1212 \pm 24$	$D_{\text{M}}(0.38)$	1520.0	$1520.3 \pm 8.6$	$\chi_{\text{BAO}}^2$	5.187	$5.74 \pm 0.77$
$D_{220}$	5733	$5729 \pm 56$	$H(0.51)$	89.988	$89.98 \pm 0.28$			
$D_{810}$	2554.2	$2553 \pm 20$	$D_{\text{M}}(0.51)$	1970.3	$1971 \pm 10$			

Best-fit  $\chi_{\text{eff}}^2 = 2996.49$ ;  $\bar{\chi}_{\text{eff}}^2 = 3003.53$ ;  $R - 1 = 0.00799$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.44 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p-teb\_consext8: 8.95 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.71 CamSpec like\_10.7HM\_1400\_unified: 2576.42



## 2.60 base\_CamSpecHM\_EE\_lowE\_lensing\_BAO\_CookeDH

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022686	$0.02268 \pm 0.00037$	$D_{1420}$	825.9	$827 \pm 10$	$H(0.61)$	95.368	$95.36 \pm 0.36$
$\Omega_c h^2$	0.11790	$0.1179 \pm 0.0013$	$D_{2000}$	233.61	$233.8 \pm 3.6$	$D_M(0.61)$	2300.1	$2301 \pm 15$
$100\theta_{MC}$	1.03957	$1.03953 \pm 0.00077$	$n_{s,0.002}$	0.9678	$0.9683 \pm 0.0096$	$H(2.33)$	235.36	$235.37 \pm 0.80$
$\tau$	0.0499	$0.0491 \pm 0.0077$	$Y_P$	0.245511	$0.24552^{+0.00014}_{-0.00016}$	$D_M(2.33)$	5762.5	$5763 \pm 19$
$\ln(10^{10} A_s)$	3.0408	$3.040 \pm 0.015$	$Y_P^{BBN}$	0.246838	$0.24684^{+0.00014}_{-0.00016}$	$f\sigma_8(0.15)$	0.4482	$0.4484 \pm 0.0074$
$n_s$	0.9678	$0.9683 \pm 0.0096$	$10^5 D/H$	2.529	$2.531 \pm 0.066$	$\sigma_8(0.15)$	0.7407	$0.7405 \pm 0.0067$
$y_{cal}$	0.99971	$0.9999 \pm 0.0025$	Age/Gyr	13.7970	$13.799 \pm 0.044$	$f\sigma_8(0.38)$	0.4675	$0.4676 \pm 0.0062$
$H_0$	67.90	$67.88 \pm 0.63$	$z_*$	1089.35	$1089.36 \pm 0.50$	$\sigma_8(0.38)$	0.6571	$0.6569 \pm 0.0058$
$\Omega_\Lambda$	0.6937	$0.6933 \pm 0.0076$	$r_*$	144.733	$144.73 \pm 0.34$	$f\sigma_8(0.51)$	0.4668	$0.4667 \pm 0.0056$
$\Omega_m$	0.3063	$0.3067 \pm 0.0076$	$100\theta_*$	1.03972	$1.03968 \pm 0.00077$	$\sigma_8(0.51)$	0.6152	$0.6150 \pm 0.0054$
$\Omega_m h^2$	0.14123	$0.1413 \pm 0.0012$	$D_M(z_*)/\text{Gpc}$	13.9204	$13.921 \pm 0.036$	$f\sigma_8(0.61)$	0.4622	$0.4622 \pm 0.0052$
$\Omega_m h^3$	0.09590	$0.09588 \pm 0.00073$	$z_{drag}$	1060.51	$1060.50 \pm 0.82$	$\sigma_8(0.61)$	0.58550	$0.5853 \pm 0.0051$
$\sigma_8$	0.8010	$0.8008 \pm 0.0074$	$r_{drag}$	147.298	$147.30 \pm 0.42$	$f\sigma_8(2.33)$	0.29542	$0.2953 \pm 0.0026$
$S_8$	0.8093	$0.810 \pm 0.014$	$k_D$	0.14089	$0.14088 \pm 0.00066$	$\sigma_8(2.33)$	0.30479	$0.3047 \pm 0.0027$
$\sigma_8 \Omega_m^{0.5}$	0.4433	$0.4435 \pm 0.0079$	$100\theta_D$	0.160187	$0.16020 \pm 0.00050$	$\chi^2_{lensing}$	8.37	$9.1 \pm 1.1$
$\sigma_8 \Omega_m^{0.25}$	0.5959	$0.5959 \pm 0.0077$	$z_{eq}$	3359.6	$3360 \pm 28$	$\chi^2_{small}$	395.66	$396.7 \pm 1.4$
$\sigma_8/h^{0.5}$	0.9720	$0.972 \pm 0.011$	$k_{eq}$	0.010254	$0.010256 \pm 0.000086$	$\chi^2_{CamSpec}$	1888.53	$1891.7 \pm 2.8$
$r_{drag} h$	100.02	$99.98 \pm 0.95$	$100\theta_{eq}$	0.8208	$0.8207 \pm 0.0052$	$\chi^2_{6DF}$	0.0098	$0.049 \pm 0.066$
$\langle d^2 \rangle^{1/2}$	2.4164	$2.415 \pm 0.030$	$100\theta_{s,eq}$	0.45303	$0.4530 \pm 0.0027$	$\chi^2_{MGS}$	1.41	$1.46 \pm 0.54$
$z_{re}$	7.12	$7.03^{+0.83}_{-0.70}$	$H(0.15)$	73.12	$73.10 \pm 0.56$	$\chi^2_{DR12BAO}$	4.12	$4.8 \pm 1.5$
$10^9 A_s$	2.0922	$2.090 \pm 0.031$	$D_M(0.15)$	638.8	$639.1 \pm 5.4$	$\chi^2_{prior}$	10.99	$12.5 \pm 2.2$
$10^9 A_s e^{-2\tau}$	1.8935	$1.895 \pm 0.015$	$H(0.38)$	83.136	$83.12 \pm 0.45$	$\chi^2_{CMB}$	2292.56	$2297.5 \pm 3.4$
$D_{40}$	1237.3	$1237 \pm 27$	$D_M(0.38)$	1524.8	$1525 \pm 11$	$\chi^2_{BAO}$	5.53	$6.3 \pm 1.2$
$D_{220}$	5829	$5829 \pm 87$	$H(0.51)$	89.794	$89.78 \pm 0.39$			
$D_{810}$	2561.5	$2563 \pm 22$	$D_M(0.51)$	1976.0	$1977 \pm 13$			

Best-fit  $\chi^2_{eff} = 2309.08$ ;  $\bar{\chi}^2_{eff} = 2316.30$ ;  $R - 1 = 0.00893$   
 $\chi^2_{eff}$ : BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 4.12 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.37 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.66 CamSpec like\_10.7HM\_1400\_unified: 1888.53



## 2.61 base\_plikHM\_TE\_lowE\_lensing\_CookeDH

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022415	$0.02242 \pm 0.00022$	$\langle d^2 \rangle^{1/2}$	2.4306	$2.432 \pm 0.032$	$H(0.15)$	72.91	$72.91 \pm 0.62$
$\Omega_c h^2$	0.11958	$0.1196 \pm 0.0016$	$z_{\text{re}}$	7.53	$7.54 \pm 0.77$	$D_{\text{M}}(0.15)$	641.1	$641.2 \pm 6.2$
$100\theta_{\text{MC}}$	1.041174	$1.04119 \pm 0.00048$	$10^9 A_{\text{s}}$	2.0810	$2.082 \pm 0.031$	$H(0.38)$	83.044	$83.05 \pm 0.46$
$\tau$	0.0530	$0.0533 \pm 0.0077$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8717	$1.871 \pm 0.013$	$D_{\text{M}}(0.38)$	1528.8	$1529 \pm 12$
$\ln(10^{10} A_{\text{s}})$	3.0355	$3.036 \pm 0.015$	$D_{40}$	1226.6	$1227 \pm 25$	$H(0.51)$	89.773	$89.78 \pm 0.37$
$n_{\text{s}}$	0.9645	$0.964 \pm 0.011$	$D_{220}$	5716	$5715 \pm 55$	$D_{\text{M}}(0.51)$	1980.4	$1981 \pm 15$
$y_{\text{cal}}$	1.00049	$1.0004 \pm 0.0025$	$D_{810}$	2525.2	$2524 \pm 21$	$H(0.61)$	95.401	$95.41^{+0.29}_{-0.33}$
$A_{100}^{\text{dustTE}}$	0.1126	$0.114 \pm 0.038$	$D_{1420}$	812.5	$812 \pm 10$	$D_{\text{M}}(0.61)$	2304.4	$2305 \pm 16$
$A_{100 \times 143}^{\text{dustTE}}$	0.1372	$0.137 \pm 0.030$	$D_{2000}$	229.39	$229.3 \pm 3.7$	$H(2.33)$	236.35	$236.39 \pm 0.97$
$A_{100 \times 217}^{\text{dustTE}}$	0.477	$0.478 \pm 0.085$	$n_{\text{s},0.002}$	0.9645	$0.964 \pm 0.011$	$D_{\text{M}}(2.33)$	5757.6	$5757 \pm 15$
$A_{143}^{\text{dustTE}}$	0.224	$0.223 \pm 0.054$	$Y_{\text{P}}$	0.245413	$0.245410 \pm 0.000088$	$f\sigma_8(0.15)$	0.4547	$0.4550 \pm 0.0080$
$A_{143 \times 217}^{\text{dustTE}}$	0.662	$0.663 \pm 0.081$	$Y_{\text{P}}^{\text{BBN}}$	0.246740	$0.246736 \pm 0.000088$	$\sigma_8(0.15)$	0.7448	$0.7450 \pm 0.0061$
$A_{217}^{\text{dustTE}}$	2.066	$2.06 \pm 0.27$	$10^5 \text{D}/\text{H}$	2.5772	$2.578 \pm 0.041$	$f\sigma_8(0.38)$	0.4729	$0.4731 \pm 0.0063$
$c_{100}$	1.00023	$1.00018 \pm 0.00070$	Age/Gyr	13.7838	$13.783 \pm 0.033$	$\sigma_8(0.38)$	0.6602	$0.6603 \pm 0.0054$
$c_{217}$	0.99800	$0.99800 \pm 0.00065$	$z_*$	1089.826	$1089.83 \pm 0.36$	$f\sigma_8(0.51)$	0.4714	$0.4716 \pm 0.0054$
$H_0$	67.62	$67.61 \pm 0.72$	$r_*$	144.506	$144.49 \pm 0.37$	$\sigma_8(0.51)$	0.6178	$0.6179 \pm 0.0052$
$\Omega_{\Lambda}$	0.6881	$0.6877 \pm 0.0098$	$100\theta_*$	1.041349	$1.04136 \pm 0.00048$	$f\sigma_8(0.61)$	0.46646	$0.4666 \pm 0.0049$
$\Omega_{\text{m}}$	0.3119	$0.3123 \pm 0.0098$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8768	$13.875 \pm 0.036$	$\sigma_8(0.61)$	0.58785	$0.5880 \pm 0.0050$
$\Omega_{\text{m}} h^2$	0.14264	$0.1427 \pm 0.0015$	$z_{\text{drag}}$	1060.009	$1060.01 \pm 0.48$	$f\sigma_8(2.33)$	0.29638	$0.2964 \pm 0.0026$
$\Omega_{\text{m}} h^3$	0.096454	$0.09647 \pm 0.00047$	$r_{\text{drag}}$	147.153	$147.14 \pm 0.39$	$\sigma_8(2.33)$	0.30553	$0.3056 \pm 0.0029$
$\sigma_8$	0.8061	$0.8063 \pm 0.0068$	$k_{\text{D}}$	0.140835	$0.14085 \pm 0.00047$	$\chi_{\text{lensing}}^2$	9.61	$10.3 \pm 1.7$
$S_8$	0.8220	$0.823 \pm 0.016$	$100\theta_{\text{D}}$	0.160749	$0.16075 \pm 0.00028$	$\chi_{\text{small}}^2$	395.85	$396.9 \pm 1.6$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4502	$0.4506 \pm 0.0087$	$z_{\text{eq}}$	3393.2	$3394 \pm 36$	$\chi_{\text{plikTE}}^2$	854.31	$860.6 \pm 3.7$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6024	$0.6027 \pm 0.0077$	$k_{\text{eq}}$	0.010356	$0.01036 \pm 0.00011$	$\chi_{\text{prior}}^2$	0.69	$7.9 \pm 3.7$
$\sigma_8/h^{0.5}$	0.9803	$0.981 \pm 0.011$	$100\theta_{\text{eq}}$	0.8152	$0.8151 \pm 0.0068$	$\chi_{\text{CMB}}^2$	1259.77	$1267.7 \pm 3.9$
$r_{\text{drag}} h$	99.51	$99.5 \pm 1.2$	$100\theta_{\text{s,eq}}$	0.45036	$0.4503 \pm 0.0035$			

Best-fit  $\chi_{\text{eff}}^2 = 1260.45$ ;  $\bar{\chi}_{\text{eff}}^2 = 1275.56$ ;  $R - 1 = 0.00845$

$\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 9.61 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.85 plik\_rd12\_HM\_v22\_TE: 854.31



## 2.62 base\_plikHM\_EE\_lowE\_lensing\_CookeDH

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022564	$0.02255 \pm 0.00043$	$D_{220}$	5747	$5745 \pm 91$	$H(0.38)$	82.80	$82.77 \pm 0.69$
$\Omega_{\text{c}}h^2$	0.11950	$0.1196 \pm 0.0020$	$D_{810}$	2546.2	$2546 \pm 23$	$D_{\text{M}}(0.38)$	1534.6	$1536 \pm 18$
$100\theta_{\text{MC}}$	1.03980	$1.03975 \pm 0.00080$	$D_{1420}$	821.9	$822 \pm 11$	$H(0.51)$	89.55	$89.53 \pm 0.58$
$\tau$	0.0504	$0.0497 \pm 0.0080$	$D_{2000}$	232.65	$232.6 \pm 4.1$	$D_{\text{M}}(0.51)$	1987.4	$1989 \pm 21$
$\ln(10^{10}A_{\text{s}})$	3.0373	$3.036 \pm 0.016$	$n_{\text{s},0.002}$	0.9689	$0.969 \pm 0.011$	$H(0.61)$	95.195	$95.18 \pm 0.50$
$n_{\text{s}}$	0.9689	$0.969 \pm 0.011$	$Y_{\text{P}}$	0.245467	$0.24547 \pm 0.00018$	$D_{\text{M}}(0.61)$	2312.1	$2313 \pm 23$
$y_{\text{cal}}$	0.99990	$0.9999 \pm 0.0025$	$Y_{\text{P}}^{\text{BBN}}$	0.246794	$0.24679 \pm 0.00018$	$H(2.33)$	236.32	$236.4 \pm 1.1$
$H_0$	67.31	$67.3 \pm 1.0$	$10^5 D/\text{H}$	2.551	$2.554 \pm 0.079$	$D_{\text{M}}(2.33)$	5768.6	$5770 \pm 25$
$\Omega_{\Lambda}$	0.6851	$0.684^{+0.014}_{-0.012}$	Age/Gyr	13.809	$13.812 \pm 0.057$	$f\sigma_8(0.15)$	0.4566	$0.457 \pm 0.011$
$\Omega_{\text{m}}$	0.3149	$0.316 \pm 0.013$	$z_*$	1089.63	$1089.66 \pm 0.66$	$\sigma_8(0.15)$	0.7445	$0.7440 \pm 0.0066$
$\Omega_{\text{m}}h^2$	0.14271	$0.1428 \pm 0.0018$	$r_*$	144.412	$144.40 \pm 0.40$	$f\sigma_8(0.38)$	0.4741	$0.4742 \pm 0.0084$
$\Omega_{\text{m}}h^3$	0.09606	$0.09604 \pm 0.00077$	$100\theta_*$	1.03996	$1.03991 \pm 0.00080$	$\sigma_8(0.38)$	0.6596	$0.6591 \pm 0.0056$
$\sigma_8$	0.8060	$0.8056 \pm 0.0077$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8863	$13.885 \pm 0.040$	$f\sigma_8(0.51)$	0.4723	$0.4722 \pm 0.0071$
$S_8$	0.8259	$0.827 \pm 0.022$	$z_{\text{drag}}$	1060.35	$1060.33 \pm 0.91$	$\sigma_8(0.51)$	0.6171	$0.6166 \pm 0.0053$
$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4524	$0.453 \pm 0.012$	$r_{\text{drag}}$	147.008	$147.00 \pm 0.43$	$f\sigma_8(0.61)$	0.4671	$0.4670 \pm 0.0062$
$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6038	$0.604 \pm 0.010$	$k_{\text{D}}$	0.14110	$0.14110 \pm 0.00064$	$\sigma_8(0.61)$	0.58707	$0.5866 \pm 0.0050$
$\sigma_8/h^{0.5}$	0.9824	$0.982 \pm 0.014$	$100\theta_{\text{D}}$	0.16033	$0.16035 \pm 0.00055$	$f\sigma_8(2.33)$	0.29587	$0.2956 \pm 0.0027$
$r_{\text{drag}}h$	98.96	$98.9 \pm 1.6$	$z_{\text{eq}}$	3394.9	$3397 \pm 42$	$\sigma_8(2.33)$	0.30488	$0.3046 \pm 0.0030$
$\langle d^2 \rangle^{1/2}$	2.4259	$2.425 \pm 0.036$	$k_{\text{eq}}$	0.010361	$0.01037 \pm 0.00013$	$\chi_{\text{lensing}}^2$	8.67	$9.6 \pm 1.3$
$z_{\text{re}}$	7.23	$7.13^{+0.84}_{-0.73}$	$100\theta_{\text{eq}}$	0.8143	$0.8139 \pm 0.0082$	$\chi_{\text{simall}}^2$	395.68	$396.7 \pm 1.4$
$10^9 A_{\text{s}}$	2.0849	$2.082 \pm 0.032$	$100\theta_{\text{s,eq}}$	0.44972	$0.4495 \pm 0.0041$	$\chi_{\text{plikEE}}^2$	740.29	$743.7 \pm 2.8$
$10^9 A_{\text{s}}e^{-2\tau}$	1.8851	$1.885 \pm 0.015$	$H(0.15)$	72.63	$72.59 \pm 0.90$	$\chi_{\text{prior}}^2$	0.53	$2.3 \pm 2.2$
$D_{40}$	1223.2	$1223 \pm 27$	$D_{\text{M}}(0.15)$	643.8	$644.3 \pm 8.9$	$\chi_{\text{CMB}}^2$	1144.64	$1150.0 \pm 3.6$

Best-fit  $\chi_{\text{eff}}^2 = 1145.17$ ;  $\bar{\chi}_{\text{eff}}^2 = 1152.26$ ;  $R - 1 = 0.00449$

$\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.67 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.68 plik\_rd12\_HM\_v22\_EE: 740.29



### 2.63 base\_CamSpecHM\_TE\_lowE\_lensing\_CookeDH

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022406	$0.02242 \pm 0.00023$	$D_{220}$	5730	$5729 \pm 60$	$H(0.38)$	83.354	$83.40 \pm 0.47$
$\Omega_c h^2$	0.11806	$0.1180 \pm 0.0016$	$D_{810}$	2554.0	$2554 \pm 21$	$D_M(0.38)$	1519.6	$1519 \pm 12$
$100\theta_{MC}$	1.041261	$1.04129 \pm 0.00049$	$D_{1420}$	825.6	$826 \pm 11$	$H(0.51)$	89.991	$90.03 \pm 0.38$
$\tau$	0.0521	$0.0527 \pm 0.0080$	$D_{2000}$	233.60	$233.7 \pm 3.9$	$D_M(0.51)$	1969.8	$1969 \pm 15$
$\ln(10^{10} A_s)$	3.0398	$3.041 \pm 0.016$	$n_{s,0.002}$	0.9752	$0.976 \pm 0.011$	$H(0.61)$	95.548	$95.58 \pm 0.32$
$n_s$	0.9752	$0.976 \pm 0.011$	$Y_P$	0.245410	$0.245410^{+0.000094}_{-0.000083}$	$D_M(0.61)$	2293.2	$2292 \pm 16$
$y_{cal}$	1.00019	$1.0002 \pm 0.0025$	$Y_P^{BBN}$	0.246736	$0.246737^{+0.000094}_{-0.000083}$	$H(2.33)$	235.35	$235.30 \pm 0.99$
$H_0$	68.19	$68.25 \pm 0.74$	$10^5 D/H$	2.5787	$2.578 \pm 0.042$	$D_M(2.33)$	5753.0	$5752 \pm 15$
$\Omega_\Lambda$	0.6965	$0.6971 \pm 0.0096$	Age/Gyr	13.7753	$13.773 \pm 0.034$	$f\sigma_8(0.15)$	0.4493	$0.4489 \pm 0.0082$
$\Omega_m$	0.3035	$0.3029 \pm 0.0096$	$z_*$	1089.704	$1089.68 \pm 0.37$	$\sigma_8(0.15)$	0.7457	$0.7459 \pm 0.0064$
$\Omega_m h^2$	0.14111	$0.1410 \pm 0.0015$	$r_*$	144.907	$144.93 \pm 0.38$	$f\sigma_8(0.38)$	0.4693	$0.4691 \pm 0.0065$
$\Omega_m h^3$	0.096215	$0.09623 \pm 0.00048$	$100\theta_*$	1.041445	$1.04147 \pm 0.00048$	$\sigma_8(0.38)$	0.6619	$0.6621 \pm 0.0057$
$\sigma_8$	0.8061	$0.8062 \pm 0.0071$	$D_M(z_*)/\text{Gpc}$	13.9141	$13.916 \pm 0.037$	$f\sigma_8(0.51)$	0.4689	$0.4687 \pm 0.0057$
$S_8$	0.8108	$0.810 \pm 0.016$	$z_{drag}$	1059.895	$1059.90 \pm 0.49$	$\sigma_8(0.51)$	0.6198	$0.6200 \pm 0.0054$
$\sigma_8 \Omega_m^{0.5}$	0.4441	$0.4437 \pm 0.0088$	$r_{drag}$	147.565	$147.58 \pm 0.40$	$f\sigma_8(0.61)$	0.4646	$0.4644 \pm 0.0051$
$\sigma_8 \Omega_m^{0.25}$	0.5983	$0.5981 \pm 0.0079$	$k_D$	0.140393	$0.14038 \pm 0.00049$	$\sigma_8(0.61)$	0.5899	$0.5902 \pm 0.0052$
$\sigma_8/h^{0.5}$	0.9762	$0.976 \pm 0.011$	$100\theta_D$	0.160824	$0.16082 \pm 0.00029$	$f\sigma_8(2.33)$	0.29778	$0.2979 \pm 0.0027$
$r_{drag} h$	100.62	$100.7 \pm 1.3$	$z_{eq}$	3356.6	$3354 \pm 37$	$\sigma_8(2.33)$	0.30735	$0.3076 \pm 0.0030$
$\langle d^2 \rangle^{1/2}$	2.3996	$2.399 \pm 0.033$	$k_{eq}$	0.010245	$0.01024 \pm 0.00011$	$\chi^2_{lensing}$	9.01	$9.7 \pm 1.3$
$z_{re}$	7.41	$7.45 \pm 0.80$	$100\theta_{eq}$	0.8219	$0.8224 \pm 0.0070$	$\chi^2_{small}$	395.72	$396.8 \pm 1.5$
$10^9 A_s$	2.0901	$2.092 \pm 0.033$	$100\theta_{s,eq}$	0.45385	$0.4541 \pm 0.0036$	$\chi^2_{CamSpec}$	2576.36	$2580.6 \pm 2.9$
$10^9 A_s e^{-2\tau}$	1.8833	$1.883 \pm 0.014$	$H(0.15)$	73.38	$73.44 \pm 0.64$	$\chi^2_{prior}$	10.20	$11.4 \pm 1.5$
$D_{40}$	1210.5	$1210 \pm 26$	$D_M(0.15)$	636.4	$635.9 \pm 6.2$	$\chi^2_{CMB}$	2981.09	$2987.1 \pm 3.5$

Best-fit  $\chi^2_{eff} = 2991.29$ ;  $\bar{\chi}^2_{eff} = 2998.52$ ;  $R - 1 = 0.00490$

$\chi^2_{eff}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 9.01 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.72 CamSpec like\_10.7HM\_1400\_unified: 2576.36



## 2.64 base\_CamSpecHM\_EE\_lowE\_lensing\_CookeDH

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022495	$0.02251 \pm 0.00043$	$D_{220}$	5810	$5809 \pm 91$	$H(0.38)$	82.69	$82.72 \pm 0.70$
$\Omega_{\text{c}}h^2$	0.11913	$0.1191 \pm 0.0020$	$D_{810}$	2556.5	$2558 \pm 23$	$D_{\text{M}}(0.38)$	1536.6	$1536 \pm 18$
$100\theta_{\text{MC}}$	1.03932	$1.03936 \pm 0.00079$	$D_{1420}$	822.4	$823 \pm 11$	$H(0.51)$	89.43	$89.46 \pm 0.58$
$\tau$	0.0479	$0.0469^{+0.0083}_{-0.0075}$	$D_{2000}$	232.23	$232.5 \pm 4.0$	$D_{\text{M}}(0.51)$	1990.0	$1989 \pm 22$
$\ln(10^{10}A_{\text{s}})$	3.0378	$3.036 \pm 0.016$	$n_{\text{s},0.002}$	0.9637	$0.965 \pm 0.011$	$H(0.61)$	95.06	$95.09 \pm 0.50$
$n_{\text{s}}$	0.9637	$0.965 \pm 0.011$	$Y_{\text{P}}$	0.245443	$0.24545 \pm 0.00018$	$D_{\text{M}}(0.61)$	2315.2	$2314 \pm 23$
$y_{\text{cal}}$	0.99982	$0.9998 \pm 0.0025$	$Y_{\text{P}}^{\text{BBN}}$	0.246769	$0.24677 \pm 0.00018$	$H(2.33)$	235.96	$236.0 \pm 1.1$
$H_0$	67.23	$67.3 \pm 1.0$	$10^5 D/H$	2.563	$2.563^{+0.074}_{-0.084}$	$D_{\text{M}}(2.33)$	5776.8	$5776 \pm 25$
$\Omega_{\Lambda}$	0.6852	$0.685 \pm 0.013$	Age/Gyr	13.829	$13.826 \pm 0.057$	$f\sigma_8(0.15)$	0.4550	$0.454 \pm 0.011$
$\Omega_{\text{m}}$	0.3148	$0.315 \pm 0.013$	$z_*$	1089.69	$1089.68^{+0.63}_{-0.70}$	$\sigma_8(0.15)$	0.7420	$0.7413 \pm 0.0067$
$\Omega_{\text{m}}h^2$	0.14227	$0.1422 \pm 0.0018$	$r_*$	144.562	$144.56 \pm 0.41$	$f\sigma_8(0.38)$	0.4724	$0.4718 \pm 0.0085$
$\Omega_{\text{m}}h^3$	0.09565	$0.09568 \pm 0.00077$	$100\theta_*$	1.03950	$1.03953 \pm 0.00079$	$\sigma_8(0.38)$	0.6573	$0.6568 \pm 0.0057$
$\sigma_8$	0.8033	$0.8025 \pm 0.0078$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9069	$13.907 \pm 0.041$	$f\sigma_8(0.51)$	0.4706	$0.4700 \pm 0.0072$
$S_8$	0.8228	$0.822 \pm 0.022$	$z_{\text{drag}}$	1060.16	$1060.18 \pm 0.91$	$\sigma_8(0.51)$	0.6150	$0.6145 \pm 0.0054$
$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4507	$0.450 \pm 0.012$	$r_{\text{drag}}$	147.184	$147.18 \pm 0.44$	$f\sigma_8(0.61)$	0.4655	$0.4649 \pm 0.0063$
$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6017	$0.601 \pm 0.010$	$k_{\text{D}}$	0.14086	$0.14087 \pm 0.00065$	$\sigma_8(0.61)$	0.5851	$0.5846 \pm 0.0051$
$\sigma_8/h^{0.5}$	0.9797	$0.979 \pm 0.014$	$100\theta_{\text{D}}$	0.16037	$0.16037 \pm 0.00055$	$f\sigma_8(2.33)$	0.29489	$0.2947 \pm 0.0027$
$r_{\text{drag}}h$	98.95	$99.0 \pm 1.6$	$z_{\text{eq}}$	3384.3	$3384 \pm 43$	$\sigma_8(2.33)$	0.30388	$0.3037 \pm 0.0030$
$\langle d^2 \rangle^{1/2}$	2.4349	$2.430 \pm 0.036$	$k_{\text{eq}}$	0.010329	$0.01033 \pm 0.00013$	$\chi_{\text{lensing}}^2$	8.77	$9.6 \pm 1.5$
$z_{\text{re}}$	6.98	$6.84^{+0.91}_{-0.73}$	$100\theta_{\text{eq}}$	0.8156	$0.8159 \pm 0.0084$	$\chi_{\text{small}}^2$	395.72	$396.8 \pm 1.5$
$10^9 A_{\text{s}}$	2.0859	$2.082 \pm 0.033$	$100\theta_{\text{s,eq}}$	0.45045	$0.4506 \pm 0.0042$	$\chi_{\text{CamSpec}}^2$	1888.23	$1891.6 \pm 2.7$
$10^9 A_{\text{s}}e^{-2\tau}$	1.8953	$1.896 \pm 0.015$	$H(0.15)$	72.54	$72.58 \pm 0.90$	$\chi_{\text{prior}}^2$	10.38	$12.2 \pm 2.0$
$D_{40}$	1242.9	$1241 \pm 27$	$D_{\text{M}}(0.15)$	644.6	$644.4 \pm 9.0$	$\chi_{\text{CMB}}^2$	2292.73	$2298.0 \pm 3.3$

Best-fit  $\chi_{\text{eff}}^2 = 2303.11$ ;  $\bar{\chi}_{\text{eff}}^2 = 2310.16$ ;  $R - 1 = 0.00957$

$\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.77 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.72 CamSpec like\_10.7HM\_1400\_unified: 1888.23



## 2.65 base\_plikHM\_TT\_lowl

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022496	$0.02238 \pm 0.00027$	$\sigma_8 \Omega_m^{0.25}$	0.6370	$0.630 \pm 0.016$	$H(0.15)$	73.68	$73.3 \pm 1.0$
$\Omega_c h^2$	0.11728	$0.1181 \pm 0.0025$	$\sigma_8/h^{0.5}$	1.0406	$1.028 \pm 0.026$	$D_M(0.15)$	633.5	$637.0 \pm 9.8$
$100\theta_{MC}$	1.04124	$1.04112 \pm 0.00052$	$r_{drag}h$	101.20	$100.6 \pm 2.0$	$H(0.38)$	83.57	$83.31 \pm 0.74$
$\tau$	0.1259	$0.108^{+0.034}_{-0.031}$	$\langle d^2 \rangle^{1/2}$	2.564	$2.539 \pm 0.061$	$D_M(0.38)$	1513.9	$1521 \pm 20$
$\ln(10^{10} A_s)$	3.180	$3.145^{+0.065}_{-0.058}$	$z_{re}$	13.82	$12.3^{+3.0}_{-2.1}$	$H(0.51)$	90.16	$89.95 \pm 0.59$
$n_s$	0.9756	$0.9713 \pm 0.0077$	$10^9 A_s$	2.405	$2.33 \pm 0.14$	$D_M(0.51)$	1963.1	$1971 \pm 23$
$y_{cal}$	1.00013	$1.0003 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8693	$1.872 \pm 0.015$	$H(0.61)$	95.679	$95.51^{+0.45}_{-0.50}$
$A_{217}^{CIB}$	42.8	$46 \pm 7$	$D_{40}$	1238.9	$1240 \pm 16$	$D_M(0.61)$	2285.9	$2295 \pm 25$
$\xi^{tSZ \times CIB}$	0.986	$> 0.390$	$D_{220}$	5715.5	$5718 \pm 42$	$H(2.33)$	234.92	$235.3 \pm 1.5$
$A_{143}^{tSZ}$	6.86	$5.5^{+2.1}_{-1.9}$	$D_{810}$	2531.7	$2531 \pm 14$	$D_M(2.33)$	5747.6	$5755 \pm 21$
$A_{100}^{PS}$	239.7	$254 \pm 30$	$D_{1420}$	817.1	$815.2 \pm 5.1$	$f\sigma_8(0.15)$	0.4770	$0.473 \pm 0.013$
$A_{143}^{PS}$	50.5	$44 \pm 9$	$D_{2000}$	232.59	$231.4 \pm 2.1$	$\sigma_8(0.15)$	0.7973	$0.785 \pm 0.022$
$A_{143 \times 217}^{PS}$	58.0	$42 \pm 9$	$n_{s,0.002}$	0.9756	$0.9713 \pm 0.0077$	$f\sigma_8(0.38)$	0.4994	$0.494 \pm 0.013$
$A_{217}^{PS}$	123.8	$115 \pm 10$	$Y_P$	0.245443	$0.24540 \pm 0.00011$	$\sigma_8(0.38)$	0.7082	$0.697 \pm 0.020$
$A^{kSZ}$	0.00	$< 3.71$	$Y_P^{BBN}$	0.246770	$0.24672 \pm 0.00011$	$f\sigma_8(0.51)$	0.4995	$0.494 \pm 0.012$
$A_{100}^{dustTT}$	8.74	$8.8 \pm 1.8$	$10^5 D/H$	2.5627	$2.584 \pm 0.050$	$\sigma_8(0.51)$	0.6634	$0.652 \pm 0.019$
$A_{143}^{dustTT}$	10.66	$10.5 \pm 1.8$	Age/Gyr	13.7636	$13.781 \pm 0.046$	$f\sigma_8(0.61)$	0.4953	$0.489 \pm 0.012$
$A_{143 \times 217}^{dustTT}$	19.94	$18.1 \pm 3.3$	$z_*$	1089.53	$1089.74 \pm 0.51$	$\sigma_8(0.61)$	0.6316	$0.621 \pm 0.019$
$A_{217}^{dustTT}$	96.2	$93.7 \pm 7.3$	$r_*$	145.04	$144.92 \pm 0.54$	$f\sigma_8(2.33)$	0.3190	$0.3134 \pm 0.0097$
$c_{100}$	0.99968	$0.99960 \pm 0.00061$	$100\theta_*$	1.04141	$1.04131 \pm 0.00050$	$\sigma_8(2.33)$	0.3295	$0.323 \pm 0.011$
$c_{217}$	0.99816	$0.99820 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	13.9273	$13.918 \pm 0.049$	$f_{2000}^{143}$	26.13	$28 \pm 3$
$H_0$	68.53	$68.1 \pm 1.2$	$z_{drag}$	1060.05	$1059.83 \pm 0.52$	$f_{2000}^{143 \times 217}$	30.11	$31.2 \pm 2.5$
$\Omega_\Lambda$	0.7010	$0.696 \pm 0.015$	$r_{drag}$	147.67	$147.59 \pm 0.52$	$f_{2000}^{217}$	104.67	$106.1 \pm 2.2$
$\Omega_m$	0.2990	$0.304 \pm 0.015$	$k_D$	0.14035	$0.14035 \pm 0.00053$	$\chi_{lowl}^2$	24.89	$25.0 \pm 1.7$
$\Omega_m h^2$	0.14042	$0.1411 \pm 0.0023$	$100\theta_D$	0.160722	$0.16084 \pm 0.00029$	$\chi_{plik}^2$	753.5	$768.0 \pm 5.7$
$\Omega_m h^3$	0.096230	$0.09610 \pm 0.00048$	$z_{eq}$	3340	$3356 \pm 56$	$\chi_{prior}^2$	1.05	$7.2 \pm 3.6$
$\sigma_8$	0.8614	$0.849 \pm 0.023$	$k_{eq}$	0.010195	$0.01024 \pm 0.00017$	$\chi_{CMB}^2$	778.4	$793.0 \pm 5.5$
$S_8$	0.8600	$0.854 \pm 0.025$	$100\theta_{eq}$	0.8251	$0.822 \pm 0.011$			
$\sigma_8 \Omega_m^{0.5}$	0.4710	$0.468 \pm 0.014$	$100\theta_{s,eq}$	0.4555	$0.4539 \pm 0.0056$			

Best-fit  $\chi_{eff}^2 = 779.48$ ;  $\bar{\chi}_{eff}^2 = 800.20$ ;  $R - 1 = 0.00744$

$\chi_{eff}^2$ : CMB - commander\_dx12\_v3\_2\_29: 24.89 plik\_rd12\_HM\_v22\_TT: 753.54



## 2.66 base\_plikHM\_TTTEEE\_lowl

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022555	$0.02251 \pm 0.00016$ (+0.5 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.096458	$0.09641 \pm 0.00030$ (+0.6 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8205	$0.8197 \pm 0.0066$ (−0.2 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11829	$0.1185 \pm 0.0015$ (+0.2 $\sigma$ )	$\sigma_8$	0.8551	$0.848 \pm 0.018$ (−0.0 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.45301	$0.4526 \pm 0.0034$ (−0.2 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.041103	$1.04108 \pm 0.00033$ (−0.1 $\sigma$ )	$S_8$	0.8614	$0.857 \pm 0.019$ (+0.1 $\sigma$ )	$H(0.15)$	73.38	$73.28 \pm 0.60$ (−0.0 $\sigma$ )
$\tau$	0.1141	$0.106 \pm 0.024$ (−0.1 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4718	$0.469 \pm 0.010$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	636.4	$637.5 \pm 5.9$ (+0.0 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.1595	$3.143 \pm 0.047$ (−0.0 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6352	$0.631 \pm 0.013$ (+0.1 $\sigma$ )	$H(0.38)$	83.380	$83.31 \pm 0.44$ (−0.0 $\sigma$ )
$n_{\mathrm{s}}$	0.9730	$0.9707 \pm 0.0052$ (−0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	1.0356	$1.028 \pm 0.021$ (+0.0 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1519.6	$1522 \pm 12$ (+0.0 $\sigma$ )
$y_{\mathrm{cal}}$	1.00020	$1.0003 \pm 0.0025$ (−0.0 $\sigma$ )	$r_{\mathrm{drag}}h$	100.44	$100.3 \pm 1.2$ (−0.1 $\sigma$ )	$H(0.51)$	90.032	$89.97 \pm 0.35$ (+0.0 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	42.5	$45 \pm 7$ (−0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.5543	$2.541_{-0.046}^{+0.051}$ (+0.0 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1969.6	$1972 \pm 14$ (+0.0 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.9996	$> 0.420$ (+0.1 $\sigma$ )	$z_{\mathrm{re}}$	12.90	$12.2_{-1.7}^{+2.1}$ (−0.0 $\sigma$ )	$H(0.61)$	95.602	$95.55 \pm 0.28$ (+0.1 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	6.85	$5.7_{-1.8}^{+2.1}$ (+0.1 $\sigma$ )	$10^9 A_{\mathrm{s}}$	2.356	$2.32 \pm 0.11$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2292.8	$2295 \pm 15$ (+0.0 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	239.0	$251 \pm 28$ (−0.1 $\sigma$ )	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8754	$1.875 \pm 0.012$ (+0.2 $\sigma$ )	$H(2.33)$	235.64	$235.74 \pm 0.91$ (+0.3 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	49.7	$43 \pm 8$ (−0.2 $\sigma$ )	$D_{40}$	1239.7	$1241 \pm 14$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5749.3	$5752 \pm 12$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	57.7	$42 \pm 9$ (−0.0 $\sigma$ )	$D_{220}$	5727.6	$5731 \pm 38$ (+0.3 $\sigma$ )	$f\sigma_8(0.15)$	0.4773	$0.474 \pm 0.010$ (+0.1 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	124.3	$116 \pm 10$ (+0.1 $\sigma$ )	$D_{810}$	2535.6	$2534 \pm 14$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7909	$0.785 \pm 0.017$ (−0.0 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.00	$< 3.24$ (−0.1 $\sigma$ )	$D_{1420}$	818.26	$816.7 \pm 4.7$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4983	$0.495 \pm 0.010$ (+0.1 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.68	$8.8 \pm 1.9$ (−0.0 $\sigma$ )	$D_{2000}$	232.84	$232.0 \pm 1.7$ (+0.3 $\sigma$ )	$\sigma_8(0.38)$	0.7019	$0.696 \pm 0.016$ (−0.0 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	10.72	$10.6 \pm 1.8$ (+0.0 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.9730	$0.9707 \pm 0.0052$ (−0.1 $\sigma$ )	$f\sigma_8(0.51)$	0.4977	$0.494 \pm 0.010$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.79	$18.2 \pm 3.3$ (+0.0 $\sigma$ )	$Y_{\mathrm{P}}$	0.245464	$0.245448 \pm 0.000062$ (+0.5 $\sigma$ )	$\sigma_8(0.51)$	0.6572	$0.652 \pm 0.015$ (−0.0 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	95.5	$93.7 \pm 7.3$ (+0.0 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246791	$0.246775 \pm 0.000062$ (+0.5 $\sigma$ )	$f\sigma_8(0.61)$	0.4930	$0.489 \pm 0.010$ (+0.0 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1131	$0.113 \pm 0.038$	$10^5 \mathrm{D}/\mathrm{H}$	2.5522	$2.560 \pm 0.029$ (−0.5 $\sigma$ )	$\sigma_8(0.61)$	0.6255	$0.620 \pm 0.014$ (−0.0 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1342	$0.134 \pm 0.029$	Age/Gyr	13.7660	$13.772 \pm 0.027$ (−0.2 $\sigma$ )	$f\sigma_8(2.33)$	0.3157	$0.3130 \pm 0.0074$ (−0.0 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.477	$0.483 \pm 0.085$	$z_*$	1089.539	$1089.61 \pm 0.31$ (−0.2 $\sigma$ )	$\sigma_8(2.33)$	0.3258	$0.3230 \pm 0.0078$ (−0.0 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.221	$0.222 \pm 0.054$	$r_*$	144.732	$144.71 \pm 0.33$ (−0.4 $\sigma$ )	$f_{2000}^{143}$	25.70	$27.2 \pm 2.9$ (−0.3 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.662	$0.663 \pm 0.080$	$100\theta_*$	1.041272	$1.04125 \pm 0.00032$ (−0.1 $\sigma$ )	$f_{2000}^{143 \times 217}$	29.78	$30.4 \pm 2.0$ (−0.3 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.057	$2.07 \pm 0.27$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8995	$13.897 \pm 0.031$ (−0.4 $\sigma$ )	$f_{2000}^{217}$	104.53	$105.4 \pm 1.9$ (−0.3 $\sigma$ )
$c_{100}$	0.99975	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$z_{\mathrm{drag}}$	1060.238	$1060.16 \pm 0.31$ (+0.6 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	24.77	$25.0 \pm 1.4$ (−0.0 $\sigma$ )
$c_{217}$	0.99812	$0.99814 \pm 0.00062$ (−0.1 $\sigma$ )	$r_{\mathrm{drag}}$	147.338	$147.33 \pm 0.32$ (−0.5 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2337.6	$2354.2 \pm 5.9$ (+279.7 $\sigma$ )
$H_0$	68.17	$68.06 \pm 0.70$ (−0.1 $\sigma$ )	$k_{\mathrm{D}}$	0.140745	$0.14073 \pm 0.00033$ (+0.7 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.29	$11.3 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_{\Lambda}$	0.6955	$0.6940 \pm 0.0093$ (−0.1 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160589	$0.16064 \pm 0.00018$ (−0.7 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	2362.3	$2379.2 \pm 5.8$ (+288.7 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3045	$0.3060 \pm 0.0093$ (+0.1 $\sigma$ )	$z_{\mathrm{eq}}$	3365.8	$3370 \pm 34$ (+0.2 $\sigma$ )			
$\Omega_{\mathrm{m}}h^2$	0.14149	$0.1417 \pm 0.0014$ (+0.2 $\sigma$ )	$k_{\mathrm{eq}}$	0.010273	$0.01029 \pm 0.00011$ (+0.2 $\sigma$ )			

Best-fit  $\chi_{\mathrm{eff}}^2 = 2363.64$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1584.16$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2390.54$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1590.34$ ;  $R - 1 = 0.00817$   
 $\chi_{\mathrm{eff}}^2$ : CMB - commander\_dx12.v3.2.29: 24.77 ( $\Delta$  -0.12) plik\_rd12\_HM.v22b.TTTEEE: 2337.58



## 2.67 base\_CamSpecHM\_TT\_lowl

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022525	$0.02242 \pm 0.00028$	$\sigma_8 \Omega_m^{0.5}$	0.4693	$0.468 \pm 0.014$	$100\theta_{s,eq}$	0.4563	$0.4547 \pm 0.0058$
$\Omega_c h^2$	0.11691	$0.1177 \pm 0.0026$	$\sigma_8 \Omega_m^{0.25}$	0.6359	$0.631 \pm 0.016$	$H(0.15)$	73.84	$73.5 \pm 1.0$
$100\theta_{MC}$	1.04132	$1.04122 \pm 0.00053$	$\sigma_8/h^{0.5}$	1.0394	$1.030 \pm 0.026$	$D_M(0.15)$	631.9	$635 \pm 10$
$\tau$	0.1282	$0.113^{+0.036}_{-0.032}$	$r_{drag}h$	101.52	$100.9 \pm 2.1$	$H(0.38)$	83.69	$83.44 \pm 0.77$
$\ln(10^{10} A_s)$	3.183	$3.154^{+0.068}_{-0.060}$	$\langle d^2 \rangle^{1/2}$	2.560	$2.542 \pm 0.061$	$D_M(0.38)$	1510.7	$1518 \pm 20$
$n_s$	0.9775	$0.9734 \pm 0.0081$	$z_{re}$	13.98	$12.7^{+3.0}_{-2.1}$	$H(0.51)$	90.26	$90.05 \pm 0.61$
$y_{cal}$	1.00018	$1.0003 \pm 0.0025$	$10^9 A_s$	2.411	$2.35 \pm 0.15$	$D_M(0.51)$	1959.3	$1967 \pm 24$
$A_{100}^{PS}$	219.3	$233 \pm 25$	$10^9 A_s e^{-2\tau}$	1.8656	$1.868 \pm 0.015$	$H(0.61)$	95.758	$95.60 \pm 0.49$
$A_{143}^{PS}$	45.0	$36 \pm 9$	$D_{40}$	1234.6	$1237 \pm 16$	$D_M(0.61)$	2281.8	$2291 \pm 26$
$A_{217}^{PS}$	109.7	$104 \pm 10$	$D_{220}$	5706.2	$5708 \pm 41$	$H(2.33)$	234.71	$235.1 \pm 1.5$
$A_{217}^{CIB}$	37.6	$38^{+7}_{-8}$	$D_{810}$	2529.3	$2528 \pm 14$	$D_M(2.33)$	5744.2	$5752 \pm 22$
$A_{143}^{tSZ}$	6.20	$4.0^{+2.0}_{-2.4}$	$D_{1420}$	817.0	$815.1 \pm 5.2$	$f\sigma_8(0.15)$	0.4754	$0.473 \pm 0.013$
$r_{143 \times 217}^{PS}$	0.807	$0.67 \pm 0.13$	$D_{2000}$	232.68	$231.6 \pm 2.2$	$\sigma_8(0.15)$	0.7978	$0.788 \pm 0.022$
$r_{143 \times 217}^{CIB}$	0.700	$0.52^{+0.35}_{-0.25}$	$n_{s,0.002}$	0.9775	$0.9734 \pm 0.0081$	$f\sigma_8(0.38)$	0.4984	$0.495 \pm 0.013$
$\xi^{tSZ \times CIB}$	0.96	—	$Y_P$	0.245453	$0.24541 \pm 0.00011$	$\sigma_8(0.38)$	0.7089	$0.700 \pm 0.021$
$A^{kSZ}$	0.06	$< 5.56$	$Y_P^{BBN}$	0.246780	$0.24674 \pm 0.00011$	$f\sigma_8(0.51)$	0.4988	$0.495 \pm 0.013$
$A_{100}^{dust}$	1.006	$1.01 \pm 0.20$	$10^5 D/H$	2.557	$2.577 \pm 0.051$	$\sigma_8(0.51)$	0.6642	$0.655 \pm 0.020$
$A_{143}^{dust}$	0.962	$0.96 \pm 0.18$	Age/Gyr	13.7563	$13.773 \pm 0.048$	$f\sigma_8(0.61)$	0.4948	$0.490 \pm 0.013$
$A_{217}^{dust}$	0.978	$0.98 \pm 0.10$	$z_*$	1089.46	$1089.66 \pm 0.52$	$\sigma_8(0.61)$	0.6324	$0.624 \pm 0.019$
$A_{143 \times 217}^{dust}$	1.030	$1.02 \pm 0.16$	$r_*$	145.12	$144.99 \pm 0.55$	$f\sigma_8(2.33)$	0.3195	$0.315 \pm 0.010$
$c_{100}$	0.99783	$0.9975 \pm 0.0011$	$100\theta_*$	1.04150	$1.04140 \pm 0.00051$	$\sigma_8(2.33)$	0.3302	$0.325 \pm 0.011$
$c_{217}$	1.00070	$1.0009 \pm 0.0016$	$D_M(z_*)/\text{Gpc}$	13.9335	$13.922 \pm 0.050$	$f_{2000}^{143}$	25.95	$27 \pm 4$
$H_0$	68.72	$68.3 \pm 1.2$	$z_{drag}$	1060.09	$1059.89 \pm 0.53$	$f_{2000}^{217}$	103.94	$105.3 \pm 2.4$
$\Omega_\Lambda$	0.7034	$0.698^{+0.016}_{-0.015}$	$r_{drag}$	147.74	$147.65 \pm 0.53$	$f_{2000}^{143 \times 217}$	29.32	$30.3 \pm 2.6$
$\Omega_m$	0.2966	$0.302^{+0.015}_{-0.016}$	$k_D$	0.14030	$0.14032 \pm 0.00053$	$\chi_{lowl}^2$	24.50	$24.8 \pm 1.7$
$\Omega_m h^2$	0.14008	$0.1408 \pm 0.0024$	$100\theta_D$	0.160707	$0.16081 \pm 0.00029$	$\chi_{CamSpec}^2$	7046.4	$7060.1 \pm 5.5$
$\Omega_m h^3$	0.096258	$0.09616 \pm 0.00048$	$z_{eq}$	3332	$3349 \pm 57$	$\chi_{prior}^2$	1.41	$7.4 \pm 3.3$
$\sigma_8$	0.8616	$0.851 \pm 0.023$	$k_{eq}$	0.010170	$0.01022 \pm 0.00018$	$\chi_{CMB}^2$	7070.9	$7084.8 \pm 5.4$
$S_8$	0.8568	$0.854 \pm 0.025$	$100\theta_{eq}$	0.8268	$0.824 \pm 0.011$			

Best-fit  $\chi_{eff}^2 = 7072.29$ ;  $\bar{\chi}_{eff}^2 = 7092.24$ ;  $R - 1 = 0.00797$

$\chi_{eff}^2$ : CMB - commander\_dx12.v3.2.29: 24.50 CamSpec like\_10.7HM: 7046.38



## 2.68 base\_CamSpecHM\_TTTEEE\_lowl

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022467	$0.02243 \pm 0.00018$ (+0.0 $\sigma$ )	$S_8$	0.8498	$0.846 \pm 0.020$ (−0.3 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.45334	$0.4530 \pm 0.0034$ (−0.3 $\sigma$ )
$\Omega_{\text{c}}h^2$	0.11820	$0.1184 \pm 0.0016$ (+0.3 $\sigma$ )	$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4655	$0.463 \pm 0.011$ (−0.3 $\sigma$ )	$H(0.15)$	73.32	$73.23 \pm 0.62$ (−0.3 $\sigma$ )
$100\theta_{\text{MC}}$	1.041045	$1.04102 \pm 0.00033$ (−0.4 $\sigma$ )	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6265	$0.623 \pm 0.015$ (−0.5 $\sigma$ )	$D_{\text{M}}(0.15)$	637.0	$637.9 \pm 6.1$ (+0.2 $\sigma$ )
$\tau$	0.1012	$0.094 \pm 0.028$ (−0.6 $\sigma$ )	$\sigma_8/h^{0.5}$	1.0219	$1.015 \pm 0.024$ (−0.6 $\sigma$ )	$H(0.38)$	83.314	$83.25 \pm 0.46$ (−0.2 $\sigma$ )
$\ln(10^{10}A_{\text{s}})$	3.132	$3.117 \pm 0.054$ (−0.6 $\sigma$ )	$r_{\text{drag}}h$	100.44	$100.3 \pm 1.2$ (−0.3 $\sigma$ )	$D_{\text{M}}(0.38)$	1520.8	$1523 \pm 12$ (+0.2 $\sigma$ )
$n_{\text{s}}$	0.9723	$0.9707 \pm 0.0055$ (−0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.521	$2.508 \pm 0.056$ (−0.5 $\sigma$ )	$H(0.51)$	89.963	$89.91 \pm 0.37$ (−0.2 $\sigma$ )
$y_{\text{cal}}$	1.00023	$1.0002 \pm 0.0024$ (−0.0 $\sigma$ )	$z_{\text{re}}$	11.89	$11.2^{+2.6}_{-2.0}$ (−0.6 $\sigma$ )	$D_{\text{M}}(0.51)$	1971.2	$1973 \pm 14$ (+0.2 $\sigma$ )
$A_{100}^{\text{PS}}$	221.6	$234 \pm 25$ (+0.0 $\sigma$ )	$10^9 A_{\text{s}}$	2.293	$2.26 \pm 0.12$ (−0.6 $\sigma$ )	$H(0.61)$	95.530	$95.48^{+0.28}_{-0.31}$ (−0.2 $\sigma$ )
$A_{143}^{\text{PS}}$	48.3	$37 \pm 9$ (+0.1 $\sigma$ )	$10^9 A_{\text{s}}e^{-2\tau}$	1.8726	$1.872 \pm 0.012$ (+0.2 $\sigma$ )	$D_{\text{M}}(0.61)$	2294.6	$2297 \pm 16$ (+0.2 $\sigma$ )
$A_{217}^{\text{PS}}$	108.5	$104 \pm 10$ (+0.1 $\sigma$ )	$D_{40}$	1231.7	$1233 \pm 14$ (−0.3 $\sigma$ )	$H(2.33)$	235.48	$235.56 \pm 0.91$ (+0.3 $\sigma$ )
$A_{217}^{\text{CIB}}$	38.8	$38 \pm 7$ (−0.0 $\sigma$ )	$D_{220}$	5716.2	$5716 \pm 38$ (+0.2 $\sigma$ )	$D_{\text{M}}(2.33)$	5753.6	$5756 \pm 13$ (+0.2 $\sigma$ )
$A_{143}^{\text{tSZ}}$	6.38	$4.0^{+2.0}_{-2.4}$ (−0.0 $\sigma$ )	$D_{810}$	2532.6	$2531 \pm 13$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4708	$0.468 \pm 0.011$ (−0.4 $\sigma$ )
$r_{143 \times 217}^{\text{PS}}$	0.768	$0.67 \pm 0.13$ (+0.0 $\sigma$ )	$D_{1420}$	816.86	$815.5 \pm 4.7$ (+0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7800	$0.774 \pm 0.020$ (−0.6 $\sigma$ )
$r_{143 \times 217}^{\text{CIB}}$	0.842	$0.52^{+0.36}_{-0.24}$ (+0.0 $\sigma$ )	$D_{2000}$	231.94	$231.3 \pm 1.8$ (−0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.4915	$0.489 \pm 0.011$ (−0.5 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.96	—	$n_{\text{s},0.002}$	0.9723	$0.9707 \pm 0.0055$ (−0.3 $\sigma$ )	$\sigma_8(0.38)$	0.6922	$0.687 \pm 0.018$ (−0.6 $\sigma$ )
$A^{\text{kSZ}}$	0.01	$< 5.50$ (−0.0 $\sigma$ )	$Y_{\text{P}}$	0.245433	$0.245416 \pm 0.000071$ (+0.0 $\sigma$ )	$f\sigma_8(0.51)$	0.4909	$0.488 \pm 0.011$ (−0.5 $\sigma$ )
$A_{100}^{\text{dust}}$	1.000	$1.00 \pm 0.20$ (−0.0 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.246759	$0.246743 \pm 0.000072$ (+0.0 $\sigma$ )	$\sigma_8(0.51)$	0.6481	$0.643 \pm 0.017$ (−0.6 $\sigma$ )
$A_{143}^{\text{dust}}$	0.960	$0.95 \pm 0.18$ (−0.1 $\sigma$ )	$10^5 \text{D/H}$	2.5677	$2.575 \pm 0.034$ (−0.0 $\sigma$ )	$f\sigma_8(0.61)$	0.4863	$0.483 \pm 0.011$ (−0.6 $\sigma$ )
$A_{217}^{\text{dust}}$	0.993	$0.98 \pm 0.10$ (−0.0 $\sigma$ )	Age/Gyr	13.7762	$13.781 \pm 0.029$ (+0.2 $\sigma$ )	$\sigma_8(0.61)$	0.6169	$0.612 \pm 0.016$ (−0.6 $\sigma$ )
$A_{143 \times 217}^{\text{dust}}$	1.008	$1.01 \pm 0.16$ (−0.0 $\sigma$ )	$z_*$	1089.641	$1089.70 \pm 0.33$ (+0.1 $\sigma$ )	$f\sigma_8(2.33)$	0.3114	$0.3090 \pm 0.0084$ (−0.6 $\sigma$ )
$c_{100}$	0.99782	$0.9975 \pm 0.0011$ (+0.0 $\sigma$ )	$r_*$	144.824	$144.81 \pm 0.33$ (−0.3 $\sigma$ )	$\sigma_8(2.33)$	0.3213	$0.3188 \pm 0.0089$ (−0.6 $\sigma$ )
$c_{217}$	1.00104	$1.0009 \pm 0.0016$ (−0.0 $\sigma$ )	$100\theta_*$	1.041222	$1.04120 \pm 0.00032$ (−0.4 $\sigma$ )	$f_{2000}^{143}$	27.38	$28 \pm 3$ (+0.1 $\sigma$ )
$c_{TE}$	0.9932	$0.9938 \pm 0.0053$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9091	$13.908 \pm 0.031$ (−0.3 $\sigma$ )	$f_{2000}^{217}$	104.79	$105.5 \pm 2.1$ (+0.1 $\sigma$ )
$c_{EE}$	0.9906	$0.9907 \pm 0.0050$	$z_{\text{drag}}$	1060.047	$1059.96 \pm 0.36$ (+0.1 $\sigma$ )	$f_{2000}^{143 \times 217}$	30.07	$30.6 \pm 2.3$ (+0.1 $\sigma$ )
$H_0$	68.11	$68.01 \pm 0.72$ (−0.3 $\sigma$ )	$r_{\text{drag}}$	147.460	$147.46 \pm 0.33$ (−0.4 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.92	$24.1 \pm 1.4$ (−0.4 $\sigma$ )
$\Omega_{\Lambda}$	0.6954	$0.6940 \pm 0.0095$ (−0.2 $\sigma$ )	$k_{\text{D}}$	0.140550	$0.14053 \pm 0.00034$ (+0.4 $\sigma$ )	$\chi_{\text{CamSpec}}^2$	11496.2	$11512.2 \pm 5.7$ (+812.8 $\sigma$ )
$\Omega_{\text{m}}$	0.3046	$0.3060 \pm 0.0095$ (+0.2 $\sigma$ )	$100\theta_{\text{D}}$	0.160702	$0.16075 \pm 0.00021$ (−0.2 $\sigma$ )	$\chi_{\text{prior}}^2$	1.90	$7.8 \pm 3.4$ (+0.1 $\sigma$ )
$\Omega_{\text{m}}h^2$	0.14131	$0.1415 \pm 0.0015$ (+0.3 $\sigma$ )	$z_{\text{eq}}$	3361.4	$3365 \pm 35$ (+0.3 $\sigma$ )	$\chi_{\text{CMB}}^2$	11520.1	$11536.3 \pm 5.6$ (+827.7 $\sigma$ )
$\Omega_{\text{m}}h^3$	0.096250	$0.09620 \pm 0.00032$ (+0.1 $\sigma$ )	$k_{\text{eq}}$	0.010259	$0.01027 \pm 0.00011$ (+0.3 $\sigma$ )			
$\sigma_8$	0.8434	$0.837 \pm 0.021$ (−0.6 $\sigma$ )	$100\theta_{\text{eq}}$	0.8210	$0.8203 \pm 0.0067$ (−0.3 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 11522.05$ ;  $\Delta\chi_{\text{eff}}^2 = 4449.76$ ;  $\bar{\chi}_{\text{eff}}^2 = 11544.10$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4451.86$ ;  $R - 1 = 0.00836$   
 $\chi_{\text{eff}}^2$ : CMB - commander\_dx12\_v3\_2\_29: 23.92 ( $\Delta$  -0.58) CamSpec like\_10.7HM\_1400\_unified: 11496.23



## 2.69 base\_plikHM\_TT\_lowl\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022403	$0.02232 \pm 0.00027$	$\sigma_8 \Omega_m^{0.25}$	0.6118	$0.6112 \pm 0.0080$	$H(0.15)$	73.60	$73.4 \pm 1.0$
$\Omega_c h^2$	0.11722	$0.1178 \pm 0.0026$	$\sigma_8/h^{0.5}$	0.9997	$0.998 \pm 0.012$	$D_M(0.15)$	634.2	$637 \pm 10$
$100\theta_{MC}$	1.04117	$1.04111 \pm 0.00051$	$r_{drag}h$	101.17	$100.7 \pm 2.1$	$H(0.38)$	83.49	$83.31 \pm 0.75$
$\tau$	0.0862	$0.080 \pm 0.025$	$\langle d^2 \rangle^{1/2}$	2.4689	$2.468 \pm 0.030$	$D_M(0.38)$	1515.4	$1521 \pm 20$
$\ln(10^{10} A_s)$	3.1002	$3.089 \pm 0.044$	$z_{re}$	10.61	$9.98^{+2.4}_{-1.9}$	$H(0.51)$	90.08	$89.94^{+0.56}_{-0.63}$
$n_s$	0.9733	$0.9702 \pm 0.0076$	$10^9 A_s$	2.220	$2.198 \pm 0.097$	$D_M(0.51)$	1965.0	$1971 \pm 24$
$y_{cal}$	1.00008	$1.0002 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8685	$1.870 \pm 0.015$	$H(0.61)$	95.600	$95.49^{+0.45}_{-0.51}$
$A_{217}^{CIB}$	45.6	$47 \pm 7$	$D_{40}$	1221.5	$1227 \pm 13$	$D_M(0.61)$	2288.1	$2295 \pm 25$
$\xi^{tSZ \times CIB}$	0.73	—	$D_{220}$	5716.3	$5718 \pm 42$	$H(2.33)$	234.79	$235.1 \pm 1.5$
$A_{143}^{tSZ}$	6.92	$5.3 \pm 2.0$	$D_{810}$	2532.4	$2531 \pm 14$	$D_M(2.33)$	5752.2	$5758 \pm 21$
$A_{100}^{PS}$	246.5	$260 \pm 28$	$D_{1420}$	816.7	$814.9 \pm 5.2$	$f\sigma_8(0.15)$	0.4582	$0.4588 \pm 0.0084$
$A_{143}^{PS}$	51.3	$47 \pm 8$	$D_{2000}$	231.32	$230.5 \pm 2.0$	$\sigma_8(0.15)$	0.7656	$0.762 \pm 0.013$
$A_{143 \times 217}^{PS}$	54.7	$42 \pm 9$	$n_{s,0.002}$	0.9733	$0.9702 \pm 0.0076$	$f\sigma_8(0.38)$	0.4797	$0.4793 \pm 0.0065$
$A_{217}^{PS}$	122.1	$115 \pm 10$	$Y_P$	0.245408	$0.24537^{+0.00011}_{-0.000096}$	$\sigma_8(0.38)$	0.6800	$0.677 \pm 0.013$
$A^{kSZ}$	0.01	$< 4.40$	$Y_P^{BBN}$	0.246735	$0.24670^{+0.00011}_{-0.000096}$	$f\sigma_8(0.51)$	0.4798	$0.4789 \pm 0.0060$
$A_{100}^{dustTT}$	8.87	$9.0 \pm 1.8$	$10^5 D/H$	2.5794	$2.595 \pm 0.050$	$\sigma_8(0.51)$	0.6369	$0.634 \pm 0.012$
$A_{143}^{dustTT}$	10.79	$10.7 \pm 1.8$	Age/Gyr	13.7744	$13.787 \pm 0.047$	$f\sigma_8(0.61)$	0.4757	$0.4745 \pm 0.0060$
$A_{143 \times 217}^{dustTT}$	19.80	$18.3 \pm 3.3$	$z_*$	1089.63	$1089.79 \pm 0.52$	$\sigma_8(0.61)$	0.6064	$0.603 \pm 0.012$
$A_{217}^{dustTT}$	95.4	$93.6 \pm 7.3$	$r_*$	145.13	$145.04 \pm 0.55$	$f\sigma_8(2.33)$	0.3063	$0.3044 \pm 0.0067$
$c_{100}$	0.99965	$0.99960 \pm 0.00062$	$100\theta_*$	1.04136	$1.04130 \pm 0.00050$	$\sigma_8(2.33)$	0.3163	$0.3143 \pm 0.0075$
$c_{217}$	0.99822	$0.99823 \pm 0.00063$	$D_M(z_*)/\text{Gpc}$	13.9364	$13.929 \pm 0.050$	$f_{2000}^{143}$	28.26	$29.8 \pm 3.2$
$H_0$	68.45	$68.2 \pm 1.2$	$z_{drag}$	1059.818	$1059.67 \pm 0.51$	$f_{2000}^{143 \times 217}$	31.73	$32.4 \pm 2.3$
$\Omega_\Lambda$	0.7006	$0.697^{+0.016}_{-0.015}$	$r_{drag}$	147.79	$147.73 \pm 0.53$	$f_{2000}^{217}$	106.10	$107.1 \pm 2.1$
$\Omega_m$	0.2994	$0.303 \pm 0.016$	$k_D$	0.14015	$0.14016 \pm 0.00053$	$\chi^2_{lensing}$	9.11	$9.8 \pm 1.6$
$\Omega_m h^2$	0.14027	$0.1408 \pm 0.0024$	$100\theta_D$	0.160844	$0.16093 \pm 0.00029$	$\chi^2_{lowl}$	22.92	$23.5 \pm 1.0$
$\Omega_m h^3$	0.096020	$0.09594 \pm 0.00046$	$z_{eq}$	3337	$3349 \pm 57$	$\chi^2_{plik}$	757.8	$770.5 \pm 5.5$
$\sigma_8$	0.8271	$0.824 \pm 0.013$	$k_{eq}$	0.010184	$0.01022 \pm 0.00017$	$\chi^2_{prior}$	1.21	$7.4 \pm 3.7$
$S_8$	0.8262	$0.828 \pm 0.017$	$100\theta_{eq}$	0.8255	$0.823 \pm 0.011$	$\chi^2_{CMB}$	789.8	$803.7 \pm 5.5$
$\sigma_8 \Omega_m^{0.5}$	0.4526	$0.4535 \pm 0.0094$	$100\theta_{s,eq}$	0.4557	$0.4546 \pm 0.0057$			

Best-fit  $\chi^2_{eff} = 791.01$ ;  $\bar{\chi}^2_{eff} = 811.06$ ;  $R - 1 = 0.00623$

$\chi^2_{eff}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 9.11 commander\_dx12\_v3\_2\_29: 22.92 plik\_rd12\_HM\_v22\_TT: 757.77



## 2.70 base\_plikHM\_TT\_lowl\_lensing\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022337	$0.02230 \pm 0.00020$	$\sigma_8/h^{0.5}$	0.9986	$0.998 \pm 0.012$	$H(0.38)$	83.271	$83.23 \pm 0.39$
$\Omega_c h^2$	0.11798	$0.1180 \pm 0.0013$	$r_{\text{drag}} h$	100.56	$100.5 \pm 1.0$	$D_M(0.38)$	1521.3	$1522 \pm 10$
$100\theta_{\text{MC}}$	1.041099	$1.04108 \pm 0.00042$	$\langle d^2 \rangle^{1/2}$	2.4677	$2.468 \pm 0.030$	$H(0.51)$	89.907	$89.87 \pm 0.32$
$\tau$	0.0794	$0.078 \pm 0.016$	$z_{\text{re}}$	10.05	$9.9^{+1.6}_{-1.4}$	$D_M(0.51)$	1971.9	$1973 \pm 12$
$\ln(10^{10} A_s)$	3.0879	$3.085 \pm 0.031$	$10^9 A_s$	2.193	$2.188 \pm 0.067$	$H(0.61)$	95.464	$95.43 \pm 0.27$
$n_s$	0.97050	$0.9694 \pm 0.0047$	$10^9 A_s e^{-2\tau}$	1.8710	$1.872 \pm 0.012$	$D_M(0.61)$	2295.6	$2297 \pm 13$
$y_{\text{cal}}$	0.99994	$1.0002 \pm 0.0026$	$D_{40}$	1224.4	$1227 \pm 12$	$H(2.33)$	235.21	$235.22 \pm 0.80$
$A_{217}^{\text{CIB}}$	47.7	$47 \pm 7$	$D_{220}$	5714.4	$5718 \pm 41$	$D_M(2.33)$	5757.9	$5760 \pm 13$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.39	—	$D_{810}$	2531.6	$2531 \pm 14$	$f\sigma_8(0.15)$	0.4596	$0.4594 \pm 0.0065$
$A_{143}^{\text{tSZ}}$	7.07	$5.3 \pm 2.0$	$D_{1420}$	815.5	$814.8 \pm 5.1$	$\sigma_8(0.15)$	0.7623	$0.761 \pm 0.011$
$A_{100}^{\text{PS}}$	251.0	$260 \pm 28$	$D_{2000}$	230.70	$230.4 \pm 1.8$	$f\sigma_8(0.38)$	0.4800	$0.4796 \pm 0.0061$
$A_{143}^{\text{PS}}$	48.0	$47 \pm 8$	$n_{s,0.002}$	0.97050	$0.9694 \pm 0.0047$	$\sigma_8(0.38)$	0.6766	$0.6756 \pm 0.0097$
$A_{143 \times 217}^{\text{PS}}$	47.2	$43 \pm 9$	$Y_{\text{P}}$	0.245382	$0.245365^{+0.000087}_{-0.000075}$	$f\sigma_8(0.51)$	0.4795	$0.4790 \pm 0.0060$
$A_{217}^{\text{PS}}$	119.1	$115 \pm 10$	$Y_{\text{P}}^{\text{BBN}}$	0.246709	$0.246691^{+0.000087}_{-0.000075}$	$\sigma_8(0.51)$	0.6335	$0.6326 \pm 0.0093$
$A^{\text{kSZ}}$	0.01	$< 4.49$	$10^5 D/H$	2.5916	$2.599 \pm 0.038$	$f\sigma_8(0.61)$	0.4750	$0.4746 \pm 0.0060$
$A_{100}^{\text{dustTT}}$	8.87	$8.9 \pm 1.8$	Age/Gyr	13.7867	$13.791 \pm 0.030$	$\sigma_8(0.61)$	0.6030	$0.6021 \pm 0.0090$
$A_{143}^{\text{dustTT}}$	10.80	$10.7 \pm 1.8$	$z_*$	1089.786	$1089.84 \pm 0.31$	$f\sigma_8(2.33)$	0.30436	$0.3039 \pm 0.0047$
$A_{143 \times 217}^{\text{dustTT}}$	19.42	$18.2 \pm 3.3$	$r_*$	144.980	$144.99 \pm 0.32$	$\sigma_8(2.33)$	0.3141	$0.3136 \pm 0.0051$
$A_{217}^{\text{dustTT}}$	94.7	$93.5 \pm 7.4$	$100\theta_*$	1.041289	$1.04127 \pm 0.00041$	$f_{2000}^{143}$	29.17	$30.0 \pm 2.9$
$c_{100}$	0.99964	$0.99960 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	13.9232	$13.924 \pm 0.031$	$f_{2000}^{143 \times 217}$	32.29	$32.6 \pm 2.0$
$c_{217}$	0.99823	$0.99822 \pm 0.00062$	$z_{\text{drag}}$	1059.704	$1059.64 \pm 0.45$	$f_{2000}^{217}$	106.73	$107.2 \pm 1.9$
$H_0$	68.10	$68.04 \pm 0.59$	$r_{\text{drag}}$	147.665	$147.69 \pm 0.34$	$\chi_{\text{lensing}}^2$	9.05	$9.8 \pm 1.6$
$\Omega_\Lambda$	0.6961	$0.6954 \pm 0.0077$	$k_{\text{D}}$	0.140239	$0.14019 \pm 0.00043$	$\chi_{\text{lowl}}^2$	23.17	$23.42 \pm 0.91$
$\Omega_{\text{m}}$	0.3039	$0.3046 \pm 0.0077$	$100\theta_{\text{D}}$	0.160895	$0.16094 \pm 0.00026$	$\chi_{\text{plik}}^2$	757.5	$769.8 \pm 5.3$
$\Omega_{\text{m}} h^2$	0.14096	$0.1410 \pm 0.0012$	$z_{\text{eq}}$	3353.1	$3354 \pm 29$	$\chi_{6\text{DF}}^2$	0.0003	$0.043 \pm 0.061$
$\Omega_{\text{m}} h^3$	0.095997	$0.09593 \pm 0.00045$	$k_{\text{eq}}$	0.010234	$0.010237 \pm 0.000090$	$\chi_{\text{MGS}}^2$	1.75	$1.78 \pm 0.62$
$\sigma_8$	0.8241	$0.823 \pm 0.011$	$100\theta_{\text{eq}}$	0.8222	$0.8220 \pm 0.0056$	$\chi_{\text{DR12BAO}}^2$	3.432	$4.1 \pm 1.1$
$S_8$	0.8295	$0.829 \pm 0.012$	$100\theta_{s,\text{eq}}$	0.45406	$0.4540 \pm 0.0029$	$\chi_{\text{prior}}^2$	1.35	$7.4 \pm 3.7$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4543	$0.4542 \pm 0.0068$	$H(0.15)$	73.30	$73.25 \pm 0.51$	$\chi_{\text{CMB}}^2$	789.7	$803.0 \pm 5.3$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6119	$0.6114 \pm 0.0078$	$D_M(0.15)$	637.1	$637.7 \pm 5.0$	$\chi_{\text{BAO}}^2$	5.180	$6.0 \pm 1.1$

Best-fit  $\chi_{\text{eff}}^2 = 796.25$ ;  $\bar{\chi}_{\text{eff}}^2 = 816.31$ ;  $R - 1 = 0.00781$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.43 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 9.05 commander\_dx12\_v3.2.29: 23.17 plik\_rd12\_HM.v22.TT: 757.49



## 2.71 base\_plikHM\_TT\_lowl\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02235 \pm 0.00025$	$\sigma_8 \Omega_m^{0.25}$	$0.6115 \pm 0.0079$	$H(0.15)$	$73.47^{+0.86}_{-1.0}$
$\Omega_c h^2$	$0.1175^{+0.0025}_{-0.0022}$	$\sigma_8/h^{0.5}$	$0.999 \pm 0.012$	$D_M(0.15)$	$635.6^{+9.8}_{-8.7}$
$100\theta_{MC}$	$1.04114 \pm 0.00050$	$r_{drag}h$	$100.9^{+1.7}_{-2.1}$	$H(0.38)$	$83.39^{+0.62}_{-0.77}$
$\tau$	$0.084^{+0.018}_{-0.026}$	$\langle d^2 \rangle^{1/2}$	$2.471 \pm 0.029$	$D_M(0.38)$	$1518^{+20}_{-17}$
$\ln(10^{10} A_s)$	$3.095^{+0.034}_{-0.045}$	$z_{re}$	$10.3 \pm 1.8$	$H(0.51)$	$90.00^{+0.49}_{-0.62}$
$n_s$	$0.9710^{+0.0065}_{-0.0078}$	$10^9 A_s$	$2.210^{+0.071}_{-0.10}$	$D_M(0.51)$	$1968^{+24}_{-20}$
$y_{cal}$	$1.0002 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.869 \pm 0.015$	$H(0.61)$	$95.54^{+0.39}_{-0.50}$
$A_{217}^{CIB}$	$47 \pm 7$	$D_{40}$	$1226 \pm 13$	$D_M(0.61)$	$2292^{+25}_{-22}$
$\xi^{tSZ \times CIB}$	—	$D_{220}$	$5718 \pm 42$	$H(2.33)$	$234.9^{+1.5}_{-1.3}$
$A_{143}^{tSZ}$	$5.3 \pm 2.0$	$D_{810}$	$2530 \pm 14$	$D_M(2.33)$	$5755^{+21}_{-18}$
$A_{100}^{PS}$	$259 \pm 28$	$D_{1420}$	$815.0 \pm 5.2$	$f\sigma_8(0.15)$	$0.4585 \pm 0.0084$
$A_{143}^{PS}$	$46 \pm 8$	$D_{2000}$	$230.6 \pm 1.9$	$\sigma_8(0.15)$	$0.764^{+0.010}_{-0.013}$
$A_{143 \times 217}^{PS}$	$42 \pm 9$	$n_{s,0.002}$	$0.9710^{+0.0065}_{-0.0078}$	$f\sigma_8(0.38)$	$0.4795 \pm 0.0065$
$A_{217}^{PS}$	$115 \pm 10$	$Y_P$	$0.24538 \pm 0.00010$	$\sigma_8(0.38)$	$0.678^{+0.010}_{-0.013}$
$A^{kSZ}$	$< 4.36$	$Y_P^{BBN}$	$0.24671 \pm 0.00010$	$f\sigma_8(0.51)$	$0.4793 \pm 0.0059$
$A_{100}^{dustTT}$	$9.0 \pm 1.8$	$10^5 D/H$	$2.591 \pm 0.047$	$\sigma_8(0.51)$	$0.6352^{+0.0097}_{-0.013}$
$A_{143}^{dustTT}$	$10.7 \pm 1.8$	Age/Gyr	$13.782^{+0.047}_{-0.040}$	$f\sigma_8(0.61)$	$0.4751 \pm 0.0057$
$A_{143 \times 217}^{dustTT}$	$18.3 \pm 3.3$	$z_*$	$1089.74 \pm 0.48$	$\sigma_8(0.61)$	$0.6047^{+0.0095}_{-0.013}$
$A_{217}^{dustTT}$	$93.6 \pm 7.3$	$r_*$	$145.10^{+0.49}_{-0.54}$	$f\sigma_8(2.33)$	$0.3053^{+0.0051}_{-0.0069}$
$c_{100}$	$0.99960 \pm 0.00062$	$100\theta_*$	$1.04133 \pm 0.00049$	$\sigma_8(2.33)$	$0.3153^{+0.0057}_{-0.0079}$
$c_{217}$	$0.99823 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	$13.934 \pm 0.047$	$f_{2000}^{143}$	$29.6 \pm 3.1$
$H_0$	$68.3^{+1.0}_{-1.2}$	$z_{drag}$	$1059.70 \pm 0.50$	$f_{2000}^{143 \times 217}$	$32.3 \pm 2.2$
$\Omega_\Lambda$	$0.698 \pm 0.014$	$r_{drag}$	$147.78 \pm 0.50$	$f_{2000}^{217}$	$106.9 \pm 2.1$
$\Omega_m$	$0.302 \pm 0.014$	$k_D$	$0.14012 \pm 0.00051$	$\chi^2_{lensing}$	$9.8 \pm 1.6$
$\Omega_m h^2$	$0.1405^{+0.0023}_{-0.0021}$	$100\theta_D$	$0.16091 \pm 0.00028$	$\chi^2_{lowl}$	$23.40 \pm 0.99$
$\Omega_m h^3$	$0.09595 \pm 0.00046$	$z_{eq}$	$3342^{+56}_{-50}$	$\chi^2_{plik}$	$770.3 \pm 5.5$
$\sigma_8$	$0.825^{+0.011}_{-0.013}$	$k_{eq}$	$0.01020^{+0.00017}_{-0.00015}$	$\chi^2_{prior}$	$7.4 \pm 3.7$
$S_8$	$0.827 \pm 0.017$	$100\theta_{eq}$	$0.8244^{+0.0095}_{-0.011}$	$\chi^2_{CMB}$	$803.5 \pm 5.4$
$\sigma_8 \Omega_m^{0.5}$	$0.4531 \pm 0.0092$	$100\theta_{s,eq}$	$0.4552^{+0.0048}_{-0.0057}$		

$\bar{\chi}^2_{eff} = 810.86; R - 1 = 0.00629$



## 2.72 base\_plikHM\_TT\_lowl\_lensing\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02230 \pm 0.00020$	$\sigma_8/h^{0.5}$	$0.998 \pm 0.012$	$H(0.38)$	$83.24 \pm 0.38$
$\Omega_{\mathrm{c}}h^2$	$0.1180 \pm 0.0013$	$r_{\mathrm{drag}}h$	$100.52 \pm 0.99$	$D_{\mathrm{M}}(0.38)$	$1522 \pm 10$
$100\theta_{\mathrm{MC}}$	$1.04108 \pm 0.00042$	$\langle d^2 \rangle^{1/2}$	$2.469 \pm 0.029$	$H(0.51)$	$89.88 \pm 0.31$
$\tau$	$0.079 \pm 0.016$	$z_{\mathrm{re}}$	$9.9 \pm 1.4$	$D_{\mathrm{M}}(0.51)$	$1973 \pm 12$
$\ln(10^{10}A_{\mathrm{s}})$	$3.087 \pm 0.029$	$10^9 A_{\mathrm{s}}$	$2.191^{+0.061}_{-0.069}$	$H(0.61)$	$95.44 \pm 0.27$
$n_{\mathrm{s}}$	$0.9695 \pm 0.0046$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.871 \pm 0.012$	$D_{\mathrm{M}}(0.61)$	$2297 \pm 13$
$y_{\mathrm{cal}}$	$1.0002 \pm 0.0026$	$D_{40}$	$1227 \pm 12$	$H(2.33)$	$235.20 \pm 0.79$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$D_{220}$	$5718 \pm 41$	$D_{\mathrm{M}}(2.33)$	$5760 \pm 13$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2531 \pm 14$	$f\sigma_8(0.15)$	$0.4595 \pm 0.0065$
$A_{143}^{\mathrm{tSZ}}$	$5.3 \pm 2.0$	$D_{1420}$	$814.8 \pm 5.1$	$\sigma_8(0.15)$	$0.762 \pm 0.010$
$A_{100}^{\mathrm{PS}}$	$260 \pm 28$	$D_{2000}$	$230.4 \pm 1.8$	$f\sigma_8(0.38)$	$0.4798 \pm 0.0060$
$A_{143}^{\mathrm{PS}}$	$47 \pm 8$	$n_{\mathrm{s},0.002}$	$0.9695 \pm 0.0046$	$\sigma_8(0.38)$	$0.6760 \pm 0.0093$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}$	$0.245366^{+0.000086}_{-0.000074}$	$f\sigma_8(0.51)$	$0.4792 \pm 0.0059$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246692^{+0.000087}_{-0.000075}$	$\sigma_8(0.51)$	$0.6329 \pm 0.0089$
$A^{\mathrm{kSZ}}$	$< 4.48$	$10^5 \mathrm{D}/\mathrm{H}$	$2.599 \pm 0.038$	$f\sigma_8(0.61)$	$0.4748 \pm 0.0058$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	Age/Gyr	$13.791 \pm 0.030$	$\sigma_8(0.61)$	$0.6025 \pm 0.0086$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$z_*$	$1089.83 \pm 0.31$	$f\sigma_8(2.33)$	$0.3041 \pm 0.0045$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.2 \pm 3.3$	$r_*$	$145.00 \pm 0.31$	$\sigma_8(2.33)$	$0.3138 \pm 0.0049$
$A_{217}^{\mathrm{dust}TT}$	$93.5 \pm 7.3$	$100\theta_*$	$1.04128 \pm 0.00041$	$f_{2000}^{143}$	$29.9 \pm 2.9$
$c_{100}$	$0.99960 \pm 0.00062$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.925 \pm 0.031$	$f_{2000}^{143 \times 217}$	$32.5 \pm 2.0$
$c_{217}$	$0.99822 \pm 0.00062$	$z_{\mathrm{drag}}$	$1059.64 \pm 0.45$	$f_{2000}^{217}$	$107.2 \pm 1.9$
$H_0$	$68.06 \pm 0.58$	$r_{\mathrm{drag}}$	$147.69 \pm 0.34$	$\chi_{\mathrm{lensing}}^2$	$9.8 \pm 1.6$
$\Omega_{\Lambda}$	$0.6956 \pm 0.0075$	$k_{\mathrm{D}}$	$0.14018 \pm 0.00043$	$\chi_{\mathrm{lowl}}^2$	$23.43 \pm 0.91$
$\Omega_{\mathrm{m}}$	$0.3044 \pm 0.0075$	$100\theta_{\mathrm{D}}$	$0.16094 \pm 0.00026$	$\chi_{\mathrm{plik}}^2$	$769.7 \pm 5.3$
$\Omega_{\mathrm{m}}h^2$	$0.1410 \pm 0.0012$	$z_{\mathrm{eq}}$	$3353 \pm 29$	$\chi_{6\mathrm{DF}}^2$	$0.041 \pm 0.059$
$\Omega_{\mathrm{m}}h^3$	$0.09593 \pm 0.00045$	$k_{\mathrm{eq}}$	$0.010234 \pm 0.000088$	$\chi_{\mathrm{MGS}}^2$	$1.79 \pm 0.61$
$\sigma_8$	$0.823 \pm 0.011$	$100\theta_{\mathrm{eq}}$	$0.8221 \pm 0.0055$	$\chi_{\mathrm{DR12BAO}}^2$	$4.1 \pm 1.0$
$S_8$	$0.829 \pm 0.012$	$100\theta_{\mathrm{s,eq}}$	$0.4541 \pm 0.0028$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.7$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4543 \pm 0.0067$	$H(0.15)$	$73.26 \pm 0.51$	$\chi_{\mathrm{CMB}}^2$	$802.9 \pm 5.2$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6116 \pm 0.0076$	$D_{\mathrm{M}}(0.15)$	$637.5 \pm 4.9$	$\chi_{\mathrm{BAO}}^2$	$5.9 \pm 1.0$
$\bar{\chi}_{\mathrm{eff}}^2 = 816.23; R - 1 = 0.00814$					



### 2.73 base\_plikHM\_TTTEEE\_lowl\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022525	$0.02249 \pm 0.00017$ (+0.6 $\sigma$ )	$\Omega_m h^3$	0.096392	$0.09635 \pm 0.00029$ (+0.9 $\sigma$ )	$100\theta_{\text{eq}}$	0.8208	$0.8200 \pm 0.0067$ (−0.3 $\sigma$ )
$\Omega_c h^2$	0.11824	$0.1184 \pm 0.0016$ (+0.2 $\sigma$ )	$\sigma_8$	0.8270	$0.825 \pm 0.011$ (+0.1 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.45317	$0.4528 \pm 0.0034$ (−0.3 $\sigma$ )
$100\theta_{\text{MC}}$	1.041106	$1.04108 \pm 0.00032$ (−0.1 $\sigma$ )	$S_8$	0.8330	$0.833^{+0.012}_{-0.013}$ (+0.3 $\sigma$ )	$H(0.15)$	73.37	$73.29 \pm 0.61$ (−0.1 $\sigma$ )
$\tau$	0.0816	$0.079 \pm 0.018$ (−0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4562	$0.4561^{+0.0066}_{-0.0073}$ (+0.3 $\sigma$ )	$D_{\text{M}}(0.15)$	636.5	$637.4 \pm 6.0$ (+0.1 $\sigma$ )
$\ln(10^{10} A_s)$	3.0938	$3.089 \pm 0.033$ (−0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6143	$0.6134 \pm 0.0074$ (+0.3 $\sigma$ )	$H(0.38)$	83.366	$83.30 \pm 0.45$ (−0.0 $\sigma$ )
$n_s$	0.9716	$0.9696 \pm 0.0051$ (−0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	1.0017	$0.9999 \pm 0.012$ (+0.2 $\sigma$ )	$D_{\text{M}}(0.38)$	1519.8	$1522 \pm 12$ (+0.1 $\sigma$ )
$y_{\text{cal}}$	1.00002	$1.0002 \pm 0.0025$ (−0.0 $\sigma$ )	$r_{\text{drag}} h$	100.46	$100.3 \pm 1.2$ (−0.2 $\sigma$ )	$H(0.51)$	90.016	$89.96 \pm 0.36$ (+0.0 $\sigma$ )
$A_{217}^{\text{CIB}}$	44.3	$46 \pm 7$ (−0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4741	$2.474 \pm 0.029$ (+0.2 $\sigma$ )	$D_{\text{M}}(0.51)$	1969.9	$1972 \pm 14$ (+0.0 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.85	—	$z_{\text{re}}$	10.19	$9.9^{+1.7}_{-1.4}$ (−0.0 $\sigma$ )	$H(0.61)$	95.583	$95.54 \pm 0.29$ (+0.1 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.04	$5.7^{+2.1}_{-1.8}$ (+0.2 $\sigma$ )	$10^9 A_s$	2.206	$2.196 \pm 0.072$ (−0.0 $\sigma$ )	$D_{\text{M}}(0.61)$	2293.1	$2295 \pm 15$ (+0.0 $\sigma$ )
$A_{100}^{\text{PS}}$	244.0	$255 \pm 28$ (−0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8739	$1.874 \pm 0.012$ (+0.2 $\sigma$ )	$H(2.33)$	235.57	$235.67 \pm 0.92$ (+0.4 $\sigma$ )
$A_{143}^{\text{PS}}$	50.9	$44 \pm 8$ (−0.3 $\sigma$ )	$D_{40}$	1225.0	$1229 \pm 12$ (+0.2 $\sigma$ )	$D_{\text{M}}(2.33)$	5750.5	$5753 \pm 13$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	56.3	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{220}$	5726.8	$5731 \pm 39$ (+0.3 $\sigma$ )	$f\sigma_8(0.15)$	0.4615	$0.4612 \pm 0.0066$ (+0.3 $\sigma$ )
$A_{217}^{\text{PS}}$	122.8	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{810}$	2535.5	$2534 \pm 14$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7649	$0.763 \pm 0.011$ (+0.1 $\sigma$ )
$A^{\text{kSZ}}$	0.01	$< 3.87$ (−0.2 $\sigma$ )	$D_{1420}$	818.16	$816.8 \pm 4.7$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4819	$0.4812 \pm 0.0059$ (+0.3 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.79	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$D_{2000}$	231.99	$231.4 \pm 1.6$ (+0.5 $\sigma$ )	$\sigma_8(0.38)$	0.6788	$0.677 \pm 0.010$ (+0.0 $\sigma$ )
$A_{143}^{\text{dustTT}}$	11.02	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$n_{\text{s},0.002}$	0.9716	$0.9696 \pm 0.0051$ (−0.1 $\sigma$ )	$f\sigma_8(0.51)$	0.4813	$0.4805 \pm 0.0057$ (+0.3 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	20.32	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\text{P}}$	0.245453	$0.245440^{+0.000064}_{-0.000058}$ (+0.6 $\sigma$ )	$\sigma_8(0.51)$	0.6356	$0.6338 \pm 0.0096$ (+0.0 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.8	$93.8 \pm 7.3$ (+0.0 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.246780	$0.246767^{+0.000064}_{-0.000058}$ (+0.6 $\sigma$ )	$f\sigma_8(0.61)$	0.4768	$0.4759 \pm 0.0057$ (+0.2 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1132	$0.114 \pm 0.038$	$10^5 \text{D/H}$	2.5575	$2.564 \pm 0.030$ (−0.6 $\sigma$ )	$\sigma_8(0.61)$	0.6050	$0.6032 \pm 0.0093$ (+0.0 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1345	$0.134 \pm 0.029$	Age/Gyr	13.7689	$13.774 \pm 0.028$ (−0.3 $\sigma$ )	$f\sigma_8(2.33)$	0.3053	$0.3044 \pm 0.0050$ (−0.0 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.479 \pm 0.085$	$z_*$	1089.572	$1089.63 \pm 0.31$ (−0.3 $\sigma$ )	$\sigma_8(2.33)$	0.3151	$0.3141 \pm 0.0054$ (−0.0 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.224	$0.223 \pm 0.054$	$r_*$	144.768	$144.74 \pm 0.33$ (−0.5 $\sigma$ )	$f_{2000}^{143}$	27.31	$28.4 \pm 2.8$ (−0.4 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.665	$0.662 \pm 0.080$	$100\theta_*$	1.041274	$1.04125 \pm 0.00032$ (−0.1 $\sigma$ )	$f_{2000}^{143 \times 217}$	30.95	$31.3 \pm 2.0$ (−0.5 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.070	$2.07 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9030	$13.901 \pm 0.031$ (−0.5 $\sigma$ )	$f_{2000}^{217}$	105.43	$106.2 \pm 1.9$ (−0.4 $\sigma$ )
$c_{100}$	0.99972	$0.99965 \pm 0.00061$ (+0.1 $\sigma$ )	$z_{\text{drag}}$	1060.162	$1060.11 \pm 0.32$ (+0.9 $\sigma$ )	$\chi_{\text{lensing}}^2$	9.66	$10.1 \pm 1.9$ (+0.2 $\sigma$ )
$c_{217}$	0.99816	$0.99817 \pm 0.00061$ (−0.1 $\sigma$ )	$r_{\text{drag}}$	147.385	$147.37 \pm 0.32$ (−0.7 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.14	$23.54 \pm 0.90$ (+0.1 $\sigma$ )
$H_0$	68.16	$68.06 \pm 0.71$ (−0.1 $\sigma$ )	$k_{\text{D}}$	0.140674	$0.14066 \pm 0.00033$ (+1.0 $\sigma$ )	$\chi_{\text{plik}}^2$	2342.0	$2357.3 \pm 6.0$ (+286.1 $\sigma$ )
$\Omega_{\Lambda}$	0.6956	$0.694^{+0.010}_{-0.0089}$ (−0.1 $\sigma$ )	$100\theta_{\text{D}}$	0.160631	$0.16067 \pm 0.00018$ (−0.9 $\sigma$ )	$\chi_{\text{prior}}^2$	1.50	$11.5 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_{\text{m}}$	0.3044	$0.3058^{+0.0089}_{-0.010}$ (+0.1 $\sigma$ )	$z_{\text{eq}}$	3363.9	$3368 \pm 35$ (+0.3 $\sigma$ )	$\chi_{\text{CMB}}^2$	2374.8	$2391.0 \pm 5.8$ (+289.2 $\sigma$ )
$\Omega_{\text{m}} h^2$	0.14141	$0.1416 \pm 0.0015$ (+0.3 $\sigma$ )	$k_{\text{eq}}$	0.010267	$0.01028 \pm 0.00011$ (+0.3 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 2376.35$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.34$ ;  $\bar{\chi}_{\text{eff}}^2 = 2402.48$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.43$ ;  $R - 1 = 0.01194$

$\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 9.66 ( $\Delta$  0.55) commander\_dx12\_v3.2\_29: 23.14 ( $\Delta$  0.23) plik\_rd12\_HM\_v22b\_TTTEEE: 2342.04



## 2.74 base\_plikHM\_TTTEEE\_lowl\_lensing\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022524	$0.02250 \pm 0.00014$ (+1.0 $\sigma$ )	$\sigma_8$	0.8263	$0.825 \pm 0.011$ (+0.2 $\sigma$ )	$H(0.15)$	73.366	$73.33 \pm 0.42$ (+0.2 $\sigma$ )
$\Omega_c h^2$	0.11825	$0.1183 \pm 0.0011$ (+0.2 $\sigma$ )	$S_8$	0.8324	$0.832 \pm 0.011$ (+0.2 $\sigma$ )	$D_M(0.15)$	636.58	$637.0 \pm 4.1$ (-0.1 $\sigma$ )
$100\theta_{MC}$	1.041102	$1.04109 \pm 0.00030$ (+0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4559	$0.4557 \pm 0.0062$ (+0.2 $\sigma$ )	$H(0.38)$	83.361	$83.33 \pm 0.31$ (+0.3 $\sigma$ )
$\tau$	0.0808	$0.080 \pm 0.015$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6138	$0.6132 \pm 0.0074$ (+0.2 $\sigma$ )	$D_M(0.38)$	1519.9	$1520.7 \pm 8.4$ (-0.2 $\sigma$ )
$\ln(10^{10} A_s)$	3.0922	$3.090 \pm 0.029$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	1.0009	$0.9998 \pm 0.012$ (+0.2 $\sigma$ )	$H(0.51)$	90.011	$89.98 \pm 0.25$ (+0.4 $\sigma$ )
$n_s$	0.97153	$0.9699 \pm 0.0041$ (+0.1 $\sigma$ )	$r_{drag} h$	100.45	$100.39 \pm 0.85$ (-0.1 $\sigma$ )	$D_M(0.51)$	1970.0	$1971.0 \pm 9.8$ (-0.2 $\sigma$ )
$y_{cal}$	1.00003	$1.0002 \pm 0.0025$ (-0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4724	$2.474 \pm 0.029$ (+0.2 $\sigma$ )	$H(0.61)$	95.579	$95.56 \pm 0.21$ (+0.5 $\sigma$ )
$A_{217}^{CIB}$	44.7	$46 \pm 7$ (-0.2 $\sigma$ )	$z_{re}$	10.12	$9.98^{+1.5}_{-1.2}$ (+0.1 $\sigma$ )	$D_M(0.61)$	2293.3	$2294 \pm 11$ (-0.2 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.79	—	$10^9 A_s$	2.202	$2.198 \pm 0.063$ (+0.1 $\sigma$ )	$H(2.33)$	235.58	$235.60 \pm 0.65$ (+0.5 $\sigma$ )
$A_{143}^{tSZ}$	7.06	$5.7^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8738	$1.874 \pm 0.011$ (+0.2 $\sigma$ )	$D_M(2.33)$	5750.7	$5751.9 \pm 9.6$ (-0.6 $\sigma$ )
$A_{100}^{PS}$	244.5	$254 \pm 28$ (-0.2 $\sigma$ )	$D_{40}$	1224.8	$1229 \pm 11$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4612	$0.4609 \pm 0.0060$ (+0.2 $\sigma$ )
$A_{143}^{PS}$	49.9	$44 \pm 8$ (-0.4 $\sigma$ )	$D_{220}$	5726.7	$5731 \pm 39$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7643	$0.763 \pm 0.010$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{PS}$	54.8	$42 \pm 9$ (-0.1 $\sigma$ )	$D_{810}$	2535.4	$2534 \pm 14$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.4815	$0.4810 \pm 0.0058$ (+0.2 $\sigma$ )
$A_{217}^{PS}$	122.3	$114.9 \pm 9.9$ (+0.0 $\sigma$ )	$D_{1420}$	818.10	$816.8 \pm 4.7$ (+0.4 $\sigma$ )	$\sigma_8(0.38)$	0.6783	$0.6772 \pm 0.0092$ (+0.2 $\sigma$ )
$A^{kSZ}$	0.00	$< 3.89$ (-0.2 $\sigma$ )	$D_{2000}$	231.95	$231.4 \pm 1.5$ (+0.6 $\sigma$ )	$f\sigma_8(0.51)$	0.4809	$0.4804 \pm 0.0058$ (+0.2 $\sigma$ )
$A_{100}^{dustTT}$	8.85	$8.9 \pm 1.8$ (-0.0 $\sigma$ )	$n_{s,0.002}$	0.97153	$0.9699 \pm 0.0041$ (+0.1 $\sigma$ )	$\sigma_8(0.51)$	0.6351	$0.6341 \pm 0.0087$ (+0.2 $\sigma$ )
$A_{143}^{dustTT}$	11.07	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P$	0.245453	$0.245443 \pm 0.000053$ (+0.9 $\sigma$ )	$f\sigma_8(0.61)$	0.4764	$0.4759 \pm 0.0057$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.17	$18.6 \pm 3.2$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246780	$0.246770 \pm 0.000053$ (+0.9 $\sigma$ )	$\sigma_8(0.61)$	0.6045	$0.6035 \pm 0.0084$ (+0.2 $\sigma$ )
$A_{217}^{dustTT}$	95.6	$93.8 \pm 7.3$ (+0.0 $\sigma$ )	$10^5 D/H$	2.5578	$2.562 \pm 0.025$ (-1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.30509	$0.3046 \pm 0.0044$ (+0.1 $\sigma$ )
$A_{100}^{dustTE}$	0.1143	$0.114 \pm 0.038$	Age/Gyr	13.7693	$13.772 \pm 0.022$ (-0.6 $\sigma$ )	$\sigma_8(2.33)$	0.31485	$0.3143 \pm 0.0047$ (+0.1 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1342	$0.134 \pm 0.029$	$z_*$	1089.575	$1089.61 \pm 0.24$ (-0.7 $\sigma$ )	$f_{2000}^{143}$	27.33	$28.4 \pm 2.7$ (-0.5 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.480	$0.478 \pm 0.085$	$r_*$	144.766	$144.77 \pm 0.25$ (-0.7 $\sigma$ )	$f_{2000}^{143 \times 217}$	30.96	$31.3 \pm 1.9$ (-0.6 $\sigma$ )
$A_{143}^{dustTE}$	0.224	$0.223 \pm 0.054$	$100\theta_*$	1.041267	$1.04126 \pm 0.00029$ (-0.0 $\sigma$ )	$f_{2000}^{217}$	105.48	$106.2 \pm 1.8$ (-0.5 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.663	$0.663 \pm 0.079$	$D_M(z_*)/\text{Gpc}$	13.9029	$13.903 \pm 0.023$ (-0.7 $\sigma$ )	$\chi^2_{lensing}$	9.54	$10.1 \pm 1.9$ (+0.2 $\sigma$ )
$A_{217}^{dustTE}$	2.064	$2.06 \pm 0.27$	$z_{drag}$	1060.162	$1060.11 \pm 0.29$ (+1.1 $\sigma$ )	$\chi^2_{lowl}$	23.12	$23.49 \pm 0.87$ (+0.1 $\sigma$ )
$c_{100}$	0.99971	$0.99965 \pm 0.00061$ (+0.1 $\sigma$ )	$r_{drag}$	147.384	$147.39 \pm 0.25$ (-0.9 $\sigma$ )	$\chi^2_{plik}$	2342.2	$2356.8 \pm 5.9$ (+298.0 $\sigma$ )
$c_{217}$	0.99815	$0.99818 \pm 0.00062$ (-0.1 $\sigma$ )	$k_D$	0.140674	$0.14065 \pm 0.00029$ (+1.1 $\sigma$ )	$\chi^2_{6DF}$	0.0001	$0.030 \pm 0.043$ (-0.2 $\sigma$ )
$H_0$	68.156	$68.11 \pm 0.49$ (+0.1 $\sigma$ )	$100\theta_D$	0.160632	$0.16066 \pm 0.00017$ (-1.1 $\sigma$ )	$\chi^2_{MGS}$	1.68	$1.70 \pm 0.51$ (-0.1 $\sigma$ )
$\Omega_\Lambda$	0.6956	$0.6950 \pm 0.0065$ (-0.1 $\sigma$ )	$z_{eq}$	3364.1	$3365 \pm 24$ (+0.4 $\sigma$ )	$\chi^2_{DR12BAO}$	3.523	$4.03 \pm 0.89$ (-0.1 $\sigma$ )
$\Omega_m$	0.3044	$0.3050 \pm 0.0065$ (+0.1 $\sigma$ )	$k_{eq}$	0.010268	$0.010271 \pm 0.000074$ (+0.4 $\sigma$ )	$\chi^2_{prior}$	1.54	$11.5 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_m h^2$	0.14142	$0.1415 \pm 0.0010$ (+0.4 $\sigma$ )	$100\theta_{eq}$	0.82072	$0.8205 \pm 0.0047$ (-0.3 $\sigma$ )	$\chi^2_{CMB}$	2374.8	$2390.4 \pm 5.7$ (+301.7 $\sigma$ )
$\Omega_m h^3$	0.096388	$0.09635 \pm 0.00029$ (+0.9 $\sigma$ )	$100\theta_{s,eq}$	0.45315	$0.4530 \pm 0.0024$ (-0.3 $\sigma$ )	$\chi^2_{BAO}$	5.201	$5.77 \pm 0.75$ (-0.2 $\sigma$ )

Best-fit  $\chi^2_{eff} = 2381.55$ ;  $\Delta\chi^2_{eff} = 1585.31$ ;  $\bar{\chi}^2_{eff} = 2407.65$ ;  $\Delta\bar{\chi}^2_{eff} = 1591.33$ ;  $R - 1 = 0.01895$   
 $\chi^2_{eff}$ : BAO - 6DF: 0.00 ( $\Delta$  0.00) MGS: 1.68 ( $\Delta$  -0.07) DR12BAO: 3.52 ( $\Delta$  0.09) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p-teb\_consext8: 9.54 ( $\Delta$  0.49) comman-  
der\_dx12.v3.2.29: 23.12 ( $\Delta$  -0.05) plik\_rd12\_HM.v22b\_TTTEEE: 2342.15



## 2.75 base\_plikHM\_TTTEEE\_lowl\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02250 \pm 0.00016 \quad (+0.6\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09635 \pm 0.00029 \quad (+0.9\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8203 \pm 0.0065 \quad (-0.4\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1184 \pm 0.0015 \quad (+0.4\sigma)$	$\sigma_8$	$0.826 \pm 0.010 \quad (+0.0\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4529 \pm 0.0033 \quad (-0.4\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04108 \pm 0.00032 \quad (-0.1\sigma)$	$S_8$	$0.833^{+0.012}_{-0.013} \quad (+0.3\sigma)$	$H(0.15)$	$73.31 \pm 0.60 \quad (-0.2\sigma)$
$\tau$	$0.080 \pm 0.017 \quad (-0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4561^{+0.0066}_{-0.0073} \quad (+0.3\sigma)$	$D_{\mathrm{M}}(0.15)$	$637.2 \pm 5.8 \quad (+0.2\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.090 \pm 0.031 \quad (-0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6136 \pm 0.0073 \quad (+0.3\sigma)$	$H(0.38)$	$83.32 \pm 0.44 \quad (-0.1\sigma)$
$n_{\mathrm{s}}$	$0.9698 \pm 0.0050 \quad (-0.2\sigma)$	$\sigma_8/h^{0.5}$	$1.000 \pm 0.012 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1521 \pm 12 \quad (+0.2\sigma)$
$y_{\mathrm{cal}}$	$1.0001 \pm 0.0025 \quad (-0.0\sigma)$	$r_{\mathrm{drag}}h$	$100.4 \pm 1.2 \quad (-0.3\sigma)$	$H(0.51)$	$89.98 \pm 0.35 \quad (-0.0\sigma)$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7 \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.475 \pm 0.028 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1971 \pm 14 \quad (+0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$z_{\mathrm{re}}$	$9.99^{+1.6}_{-1.4} \quad (-0.2\sigma)$	$H(0.61)$	$95.55 \pm 0.28 \quad (+0.0\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.7^{+2.1}_{-1.8} \quad (+0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.199^{+0.065}_{-0.073} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2295 \pm 15 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$255 \pm 28 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.874 \pm 0.012 \quad (+0.3\sigma)$	$H(2.33)$	$235.63 \pm 0.89 \quad (+0.5\sigma)$
$A_{143}^{\mathrm{PS}}$	$44 \pm 8 \quad (-0.3\sigma)$	$D_{40}$	$1229 \pm 12 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5752 \pm 12 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{220}$	$5731 \pm 39 \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4613^{+0.0062}_{-0.0069} \quad (+0.3\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{810}$	$2534 \pm 14 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.763 \pm 0.010 \quad (-0.0\sigma)$
$A^{\mathrm{kSZ}}$	$< 3.86 \quad (-0.1\sigma)$	$D_{1420}$	$816.7 \pm 4.7 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4813 \pm 0.0058 \quad (+0.3\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$D_{2000}$	$231.4 \pm 1.6 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6774 \pm 0.0095 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9698 \pm 0.0050 \quad (-0.2\sigma)$	$f\sigma_8(0.51)$	$0.4807 \pm 0.0056 \quad (+0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245442 \pm 0.000062 \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.6343 \pm 0.0091 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.8 \pm 7.3 \quad (+0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246769 \pm 0.000062 \quad (+0.6\sigma)$	$f\sigma_8(0.61)$	$0.4761 \pm 0.0055 \quad (+0.2\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.113 \pm 0.038$	$10^5 \mathrm{D}/\mathrm{H}$	$2.563 \pm 0.029 \quad (-0.6\sigma)$	$\sigma_8(0.61)$	$0.6037 \pm 0.0088 \quad (-0.1\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.134 \pm 0.029$	$\mathrm{Age}/\mathrm{Gyr}$	$13.773 \pm 0.027 \quad (-0.2\sigma)$	$f\sigma_8(2.33)$	$0.3047 \pm 0.0047 \quad (-0.1\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.479 \pm 0.085$	$z_*$	$1089.62 \pm 0.31 \quad (-0.2\sigma)$	$\sigma_8(2.33)$	$0.3144 \pm 0.0051 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.223 \pm 0.054$	$r_*$	$144.76 \pm 0.33 \quad (-0.7\sigma)$	$f_{2000}^{143}$	$28.4 \pm 2.8 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.662 \pm 0.080$	$100\theta_*$	$1.04125 \pm 0.00032 \quad (-0.2\sigma)$	$f_{2000}^{143 \times 217}$	$31.3 \pm 1.9 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.07 \pm 0.27$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.902 \pm 0.030 \quad (-0.7\sigma)$	$f_{2000}^{217}$	$106.2 \pm 1.9 \quad (-0.4\sigma)$
$c_{100}$	$0.99965 \pm 0.00061 \quad (+0.1\sigma)$	$z_{\mathrm{drag}}$	$1060.11 \pm 0.31 \quad (+0.8\sigma)$	$\chi_{\mathrm{lensing}}^2$	$10.1 \pm 1.9 \quad (+0.2\sigma)$
$c_{217}$	$0.99817 \pm 0.00061 \quad (-0.1\sigma)$	$r_{\mathrm{drag}}$	$147.38 \pm 0.31 \quad (-0.8\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.54 \pm 0.90 \quad (+0.1\sigma)$
$H_0$	$68.09 \pm 0.69 \quad (-0.2\sigma)$	$k_{\mathrm{D}}$	$0.14066 \pm 0.00032 \quad (+1.0\sigma)$	$\chi_{\mathrm{plik}}^2$	$2357.2 \pm 6.0 \quad (+286.4\sigma)$
$\Omega_{\Lambda}$	$0.6946 \pm 0.0092 \quad (-0.3\sigma)$	$100\theta_{\mathrm{D}}$	$0.16066 \pm 0.00018 \quad (-0.9\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.5 \quad (+1.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3054 \pm 0.0092 \quad (+0.3\sigma)$	$z_{\mathrm{eq}}$	$3366 \pm 34 \quad (+0.5\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2390.8 \pm 5.8 \quad (+292.4\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1415 \pm 0.0014 \quad (+0.5\sigma)$	$k_{\mathrm{eq}}$	$0.01027 \pm 0.00010 \quad (+0.5\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2402.35; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.49; R - 1 = 0.01200$$



## 2.76 base\_plikHM\_TTTEEE\_lowl\_lensing\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02250 \pm 0.00014 \quad (+1.0\sigma)$	$\sigma_8$	$0.825 \pm 0.010 \quad (+0.2\sigma)$	$H(0.15)$	$73.33 \pm 0.42 \quad (+0.1\sigma)$
$\Omega_c h^2$	$0.1183 \pm 0.0011 \quad (+0.2\sigma)$	$S_8$	$0.832 \pm 0.011 \quad (+0.2\sigma)$	$D_M(0.15)$	$636.9 \pm 4.1 \quad (-0.1\sigma)$
$100\theta_{MC}$	$1.04109 \pm 0.00030 \quad (+0.0\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4558 \pm 0.0062 \quad (+0.2\sigma)$	$H(0.38)$	$83.33 \pm 0.31 \quad (+0.3\sigma)$
$\tau$	$0.080 \pm 0.015 \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6133 \pm 0.0073 \quad (+0.2\sigma)$	$D_M(0.38)$	$1520.6 \pm 8.3 \quad (-0.2\sigma)$
$\ln(10^{10} A_s)$	$3.090 \pm 0.028 \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$1.000 \pm 0.012 \quad (+0.2\sigma)$	$H(0.51)$	$89.99 \pm 0.25 \quad (+0.4\sigma)$
$n_s$	$0.9699 \pm 0.0041 \quad (+0.1\sigma)$	$r_{\text{drag}} h$	$100.40 \pm 0.84 \quad (-0.1\sigma)$	$D_M(0.51)$	$1970.9 \pm 9.7 \quad (-0.2\sigma)$
$y_{\text{cal}}$	$1.0001 \pm 0.0025 \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.474 \pm 0.028 \quad (+0.2\sigma)$	$H(0.61)$	$95.56 \pm 0.21 \quad (+0.5\sigma)$
$A_{217}^{\text{CIB}}$	$46 \pm 7 \quad (-0.2\sigma)$	$z_{\text{re}}$	$10.0^{+1.4}_{-1.2} \quad (+0.1\sigma)$	$D_M(0.61)$	$2294 \pm 11 \quad (-0.2\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s$	$2.199 \pm 0.061 \quad (+0.1\sigma)$	$H(2.33)$	$235.59 \pm 0.64 \quad (+0.5\sigma)$
$A_{143}^{\text{tSZ}}$	$5.7^{+2.1}_{-1.8} \quad (+0.2\sigma)$	$10^9 A_s e^{-2\tau}$	$1.874 \pm 0.011 \quad (+0.2\sigma)$	$D_M(2.33)$	$5751.8 \pm 9.6 \quad (-0.6\sigma)$
$A_{100}^{\text{PS}}$	$254 \pm 28 \quad (-0.2\sigma)$	$D_{40}$	$1229 \pm 11 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4610 \pm 0.0060 \quad (+0.2\sigma)$
$A_{143}^{\text{PS}}$	$44 \pm 8 \quad (-0.4\sigma)$	$D_{220}$	$5731 \pm 39 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7634 \pm 0.0097 \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{810}$	$2534 \pm 14 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4811 \pm 0.0057 \quad (+0.2\sigma)$
$A_{217}^{\text{PS}}$	$114.9 \pm 9.9 \quad (+0.0\sigma)$	$D_{1420}$	$816.8 \pm 4.7 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6775 \pm 0.0089 \quad (+0.2\sigma)$
$A^{\text{kSZ}}$	$< 3.88 \quad (-0.2\sigma)$	$D_{2000}$	$231.4 \pm 1.5 \quad (+0.6\sigma)$	$f\sigma_8(0.51)$	$0.4805 \pm 0.0057 \quad (+0.2\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$n_{s,0.002}$	$0.9699 \pm 0.0041 \quad (+0.1\sigma)$	$\sigma_8(0.51)$	$0.6343 \pm 0.0084 \quad (+0.2\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_P$	$0.245444 \pm 0.000052 \quad (+0.9\sigma)$	$f\sigma_8(0.61)$	$0.4760 \pm 0.0056 \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.2 \quad (+0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.246770 \pm 0.000053 \quad (+0.9\sigma)$	$\sigma_8(0.61)$	$0.6037 \pm 0.0081 \quad (+0.1\sigma)$
$A_{217}^{\text{dustTT}}$	$93.8 \pm 7.3 \quad (+0.0\sigma)$	$10^5 D/H$	$2.562 \pm 0.025 \quad (-1.0\sigma)$	$f\sigma_8(2.33)$	$0.3047 \pm 0.0042 \quad (+0.1\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	Age/Gyr	$13.772 \pm 0.021 \quad (-0.6\sigma)$	$\sigma_8(2.33)$	$0.3144 \pm 0.0045 \quad (+0.1\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134 \pm 0.029$	$z_*$	$1089.61 \pm 0.23 \quad (-0.7\sigma)$	$f_{2000}^{143}$	$28.4 \pm 2.7 \quad (-0.5\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.478 \pm 0.085$	$r_*$	$144.77 \pm 0.24 \quad (-0.7\sigma)$	$f_{2000}^{143 \times 217}$	$31.3 \pm 1.9 \quad (-0.6\sigma)$
$A_{143}^{\text{dustTE}}$	$0.223 \pm 0.054$	$100\theta_*$	$1.04127 \pm 0.00029 \quad (-0.0\sigma)$	$f_{2000}^{217}$	$106.2 \pm 1.8 \quad (-0.5\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.663 \pm 0.079$	$D_M(z_*)/\text{Gpc}$	$13.903 \pm 0.023 \quad (-0.7\sigma)$	$\chi_{\text{lensing}}^2$	$10.1 \pm 1.9 \quad (+0.2\sigma)$
$A_{217}^{\text{dustTE}}$	$2.06 \pm 0.27$	$z_{\text{drag}}$	$1060.12 \pm 0.29 \quad (+1.1\sigma)$	$\chi_{\text{lowl}}^2$	$23.49 \pm 0.87 \quad (+0.1\sigma)$
$c_{100}$	$0.99965 \pm 0.00061 \quad (+0.1\sigma)$	$r_{\text{drag}}$	$147.39 \pm 0.25 \quad (-0.9\sigma)$	$\chi_{\text{plik}}^2$	$2356.8 \pm 5.9 \quad (+299.4\sigma)$
$c_{217}$	$0.99818 \pm 0.00062 \quad (-0.1\sigma)$	$k_D$	$0.14064 \pm 0.00029 \quad (+1.1\sigma)$	$\chi_{6\text{DF}}^2$	$0.030 \pm 0.042 \quad (-0.2\sigma)$
$H_0$	$68.12 \pm 0.49 \quad (+0.1\sigma)$	$100\theta_D$	$0.16066 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{\text{MGS}}^2$	$1.71 \pm 0.51 \quad (-0.1\sigma)$
$\Omega_\Lambda$	$0.6951 \pm 0.0064 \quad (-0.1\sigma)$	$z_{\text{eq}}$	$3365 \pm 24 \quad (+0.4\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.02 \pm 0.86 \quad (-0.1\sigma)$
$\Omega_m$	$0.3049 \pm 0.0064 \quad (+0.1\sigma)$	$k_{\text{eq}}$	$0.010270 \pm 0.000074 \quad (+0.4\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.5 \quad (+1.1\sigma)$
$\Omega_m h^2$	$0.1415 \pm 0.0010 \quad (+0.4\sigma)$	$100\theta_{\text{eq}}$	$0.8205 \pm 0.0046 \quad (-0.3\sigma)$	$\chi_{\text{CMB}}^2$	$2390.4 \pm 5.7 \quad (+303.8\sigma)$
$\Omega_m h^3$	$0.09635 \pm 0.00029 \quad (+0.9\sigma)$	$100\theta_{s,\text{eq}}$	$0.4531 \pm 0.0024 \quad (-0.3\sigma)$	$\chi_{\text{BAO}}^2$	$5.76 \pm 0.74 \quad (-0.2\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 2407.58; \Delta\bar{\chi}_{\text{eff}}^2 = 1591.35; R - 1 = 0.01869$$



## 2.77 base\_plikHM\_TT\_lowl\_reion

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022143	$0.02212 \pm 0.00022$	$\sigma_8 \Omega_m^{0.25}$	0.6115	$0.612 \pm 0.012$	$H(0.15)$	72.26	$72.28 \pm 0.78$
$\Omega_c h^2$	0.12065	$0.1206 \pm 0.0021$	$\sigma_8/h^{0.5}$	0.9937	$0.995 \pm 0.016$	$D_M(0.15)$	647.5	$647.4 \pm 7.9$
$100\theta_{MC}$	1.040768	$1.04079 \pm 0.00048$	$r_{drag}h$	98.44	$98.5 \pm 1.6$	$H(0.38)$	82.53	$82.54 \pm 0.56$
$\tau$	0.0526	$0.0549^{+0.0047}_{-0.010}$	$\langle d^2 \rangle^{1/2}$	2.4535	$2.459 \pm 0.038$	$D_M(0.38)$	1542.0	$1542 \pm 16$
$\ln(10^{10} A_s)$	3.0417	$3.046^{+0.013}_{-0.019}$	$z_{re}$	7.57	$7.79^{+0.51}_{-1.1}$	$H(0.51)$	89.331	$89.34 \pm 0.44$
$n_s$	0.9636	$0.9629 \pm 0.0056$	$10^9 A_s$	2.0941	$2.103^{+0.026}_{-0.040}$	$D_M(0.51)$	1996.1	$1996 \pm 18$
$y_{cal}$	1.00035	$1.0003 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8850	$1.884 \pm 0.014$	$H(0.61)$	95.016	$95.02 \pm 0.35$
$A_{217}^{CIB}$	48.3	$48 \pm 7$	$D_{40}$	1231.5	$1234 \pm 15$	$D_M(0.61)$	2321.6	$2321 \pm 20$
$\xi^{tSZ \times CIB}$	0.37	—	$D_{220}$	5711.1	$5712 \pm 42$	$H(2.33)$	236.75	$236.7 \pm 1.3$
$A_{143}^{tSZ}$	7.03	$5.1 \pm 2.0$	$D_{810}$	2538.0	$2536 \pm 14$	$D_M(2.33)$	5776.8	$5777 \pm 16$
$A_{100}^{PS}$	253.3	$263 \pm 28$	$D_{1420}$	815.5	$814.3 \pm 5.1$	$f\sigma_8(0.15)$	0.4640	$0.464 \pm 0.012$
$A_{143}^{PS}$	50.3	$49 \pm 8$	$D_{2000}$	229.99	$229.6 \pm 1.8$	$\sigma_8(0.15)$	0.7501	$0.7511^{+0.0070}_{-0.0080}$
$A_{143 \times 217}^{PS}$	48.4	$44 \pm 9$	$n_{s,0.002}$	0.9636	$0.9629 \pm 0.0056$	$f\sigma_8(0.38)$	0.4803	$0.4808 \pm 0.0096$
$A_{217}^{PS}$	120.1	$115 \pm 10$	$Y_P$	0.245302	$0.24529^{+0.00011}_{-0.000085}$	$\sigma_8(0.38)$	0.6639	$0.6649^{+0.0053}_{-0.0066}$
$A^{kSZ}$	0.00	$< 4.75$	$Y_P^{BBN}$	0.246628	$0.24662^{+0.00011}_{-0.000085}$	$f\sigma_8(0.51)$	0.4779	$0.4784 \pm 0.0082$
$A_{100}^{dustTT}$	8.89	$8.9 \pm 1.8$	$10^5 D/H$	2.6289	$2.633 \pm 0.042$	$\sigma_8(0.51)$	0.6209	$0.6218^{+0.0046}_{-0.0061}$
$A_{143}^{dustTT}$	10.84	$10.7 \pm 1.8$	Age/Gyr	13.8277	$13.828 \pm 0.036$	$f\sigma_8(0.61)$	0.4721	$0.4727 \pm 0.0073$
$A_{143 \times 217}^{dustTT}$	19.55	$18.3 \pm 3.3$	$z_*$	1090.267	$1090.29 \pm 0.40$	$\sigma_8(0.61)$	0.5905	$0.5914^{+0.0042}_{-0.0057}$
$A_{217}^{dustTT}$	94.9	$93.4 \pm 7.4$	$r_*$	144.436	$144.47 \pm 0.47$	$f\sigma_8(2.33)$	0.29739	$0.2979^{+0.0020}_{-0.0029}$
$c_{100}$	0.99965	$0.99961 \pm 0.00061$	$100\theta_*$	1.040971	$1.04100 \pm 0.00047$	$\sigma_8(2.33)$	0.30621	$0.3067^{+0.0020}_{-0.0031}$
$c_{217}$	0.99824	$0.99825 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	13.8752	$13.878 \pm 0.044$	$f_{2000}^{143}$	30.40	$31.1 \pm 2.9$
$H_0$	66.89	$66.91 \pm 0.91$	$z_{drag}$	1059.437	$1059.41 \pm 0.45$	$f_{2000}^{143 \times 217}$	33.29	$33.5 \pm 2.0$
$\Omega_\Lambda$	0.6794	$0.680 \pm 0.013$	$r_{drag}$	147.174	$147.22 \pm 0.47$	$f_{2000}^{217}$	107.68	$108.1 \pm 1.9$
$\Omega_m$	0.3206	$0.320 \pm 0.013$	$k_D$	0.14061	$0.14054 \pm 0.00052$	$\chi_{lowl}^2$	23.60	$23.9 \pm 1.3$
$\Omega_m h^2$	0.14344	$0.1433 \pm 0.0020$	$100\theta_D$	0.161031	$0.16107 \pm 0.00026$	$\chi_{plik}^2$	758.7	$771.1 \pm 5.4$
$\Omega_m h^3$	0.095943	$0.09590 \pm 0.00046$	$z_{eq}$	3412.4	$3410 \pm 47$	$\chi_{prior}^2$	1.66	$8.5 \pm 4.0$
$\sigma_8$	0.8127	$0.8138 \pm 0.0090$	$k_{eq}$	0.010415	$0.01041 \pm 0.00014$	$\chi_{CMB}^2$	782.3	$795.0 \pm 5.4$
$S_8$	0.8401	$0.841 \pm 0.024$	$100\theta_{eq}$	0.8107	$0.8112 \pm 0.0088$			
$\sigma_8 \Omega_m^{0.5}$	0.4602	$0.461 \pm 0.013$	$100\theta_{s,eq}$	0.44821	$0.4485 \pm 0.0045$			

Best-fit  $\chi_{eff}^2 = 784.00$ ;  $\bar{\chi}_{eff}^2 = 803.49$ ;  $R - 1 = 0.00586$

$\chi_{eff}^2$ : CMB - commander\_dx12\_v3\_2\_29: 23.60 plik\_rd12\_HM\_v22\_TT: 758.75



## 2.78 base\_plikHM\_TT\_lowl\_reion\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022226	$0.02222 \pm 0.00019$	$\sigma_8/h^{0.5}$	0.9823	$0.984 \pm 0.012$	$H(0.38)$	82.962	$82.97 \pm 0.35$
$\Omega_c h^2$	0.11895	$0.1190 \pm 0.0012$	$r_{\text{drag}} h$	99.76	$99.78 \pm 0.94$	$D_M(0.38)$	1529.6	$1529.5 \pm 9.4$
$100\theta_{\text{MC}}$	1.040963	$1.04101 \pm 0.00042$	$\langle d^2 \rangle^{1/2}$	2.4271	$2.434^{+0.027}_{-0.030}$	$H(0.51)$	89.660	$89.67 \pm 0.29$
$\tau$	0.0542	$0.0565^{+0.0055}_{-0.010}$	$z_{\text{re}}$	7.69	$7.90^{+0.59}_{-1.1}$	$D_M(0.51)$	1981.7	$1981 \pm 11$
$\ln(10^{10} A_s)$	3.0410	$3.045^{+0.014}_{-0.020}$	$10^9 A_s$	2.0926	$2.102^{+0.028}_{-0.042}$	$H(0.61)$	95.264	$95.27 \pm 0.25$
$n_s$	0.96745	$0.9666 \pm 0.0042$	$10^9 A_s e^{-2\tau}$	1.8776	$1.877 \pm 0.012$	$D_M(0.61)$	2306.1	$2306 \pm 12$
$y_{\text{cal}}$	1.00044	$1.0004 \pm 0.0025$	$D_{40}$	1223.2	$1226 \pm 13$	$H(2.33)$	235.73	$235.73 \pm 0.79$
$A_{217}^{\text{CIB}}$	48.7	$48 \pm 7$	$D_{220}$	5717.0	$5719 \pm 41$	$D_M(2.33)$	5766.8	$5766 \pm 12$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.35	—	$D_{810}$	2536.8	$2535 \pm 14$	$f\sigma_8(0.15)$	0.4545	$0.4554 \pm 0.0078$
$A_{143}^{\text{tSZ}}$	7.08	$5.1 \pm 1.9$	$D_{1420}$	816.28	$815.2 \pm 5.0$	$\sigma_8(0.15)$	0.7465	$0.7479^{+0.0061}_{-0.0079}$
$A_{100}^{\text{PS}}$	253.3	$263 \pm 28$	$D_{2000}$	230.27	$229.9 \pm 1.7$	$f\sigma_8(0.38)$	0.4731	$0.4740 \pm 0.0066$
$A_{143}^{\text{PS}}$	49.2	$48 \pm 8$	$n_{s,0.002}$	0.96745	$0.9666 \pm 0.0042$	$\sigma_8(0.38)$	0.6619	$0.6631^{+0.0051}_{-0.0068}$
$A_{143 \times 217}^{\text{PS}}$	47.4	$43 \pm 9$	$Y_{\text{P}}$	0.245337	$0.245331^{+0.000087}_{-0.000074}$	$f\sigma_8(0.51)$	0.4719	$0.4727 \pm 0.0059$
$A_{217}^{\text{PS}}$	119.1	$115 \pm 10$	$Y_{\text{P}}^{\text{BBN}}$	0.246663	$0.246658^{+0.000087}_{-0.000074}$	$\sigma_8(0.51)$	0.6195	$0.6206^{+0.0046}_{-0.0064}$
$A^{\text{kSZ}}$	0.02	$< 4.80$	$10^5 \text{D}/\text{H}$	2.6130	$2.614 \pm 0.037$	$f\sigma_8(0.61)$	0.4670	$0.4679 \pm 0.0055$
$A_{100}^{\text{dustTT}}$	8.92	$8.9 \pm 1.9$	Age/Gyr	13.8062	$13.805 \pm 0.028$	$\sigma_8(0.61)$	0.5895	$0.5906^{+0.0043}_{-0.0060}$
$A_{143}^{\text{dustTT}}$	10.78	$10.8 \pm 1.8$	$z_*$	1090.011	$1090.02 \pm 0.29$	$f\sigma_8(2.33)$	0.29728	$0.2978^{+0.0021}_{-0.0030}$
$A_{143 \times 217}^{\text{dustTT}}$	19.39	$18.3 \pm 3.3$	$r_*$	144.813	$144.82 \pm 0.32$	$\sigma_8(2.33)$	0.30654	$0.3071^{+0.0022}_{-0.0032}$
$A_{217}^{\text{dustTT}}$	94.5	$93.5 \pm 7.4$	$100\theta_*$	1.041166	$1.04121 \pm 0.00042$	$f_{2000}^{143}$	30.09	$30.8 \pm 2.9$
$c_{100}$	0.99966	$0.99961 \pm 0.00061$	$D_M(z_*)/\text{Gpc}$	13.9088	$13.908 \pm 0.031$	$f_{2000}^{143 \times 217}$	33.08	$33.3 \pm 2.0$
$c_{217}$	0.99823	$0.99825 \pm 0.00062$	$z_{\text{drag}}$	1059.513	$1059.51 \pm 0.44$	$f_{2000}^{217}$	107.48	$107.9 \pm 1.9$
$H_0$	67.62	$67.63 \pm 0.55$	$r_{\text{drag}}$	147.532	$147.54 \pm 0.35$	$\chi_{\text{lowl}}^2$	22.83	$23.15 \pm 0.94$
$\Omega_\Lambda$	0.6898	$0.6898 \pm 0.0073$	$k_{\text{D}}$	0.140294	$0.14028 \pm 0.00044$	$\chi_{\text{plik}}^2$	760.0	$771.7 \pm 5.5$
$\Omega_{\text{m}}$	0.3102	$0.3102 \pm 0.0073$	$100\theta_{\text{D}}$	0.160999	$0.16102 \pm 0.00025$	$\chi_{6\text{DF}}^2$	0.0219	$0.058 \pm 0.075$
$\Omega_{\text{m}} h^2$	0.14182	$0.1418 \pm 0.0012$	$z_{\text{eq}}$	3373.7	$3374 \pm 29$	$\chi_{\text{MGS}}^2$	1.28	$1.36 \pm 0.53$
$\Omega_{\text{m}} h^3$	0.095899	$0.09591 \pm 0.00046$	$k_{\text{eq}}$	0.010297	$0.010297 \pm 0.000087$	$\chi_{\text{DR12BAO}}^2$	4.19	$4.8 \pm 1.6$
$\sigma_8$	0.8078	$0.8093^{+0.0070}_{-0.0087}$	$100\theta_{\text{eq}}$	0.8181	$0.8181 \pm 0.0053$	$\chi_{\text{prior}}^2$	1.84	$8.7 \pm 4.1$
$S_8$	0.8213	$0.823 \pm 0.015$	$100\theta_{s,\text{eq}}$	0.45198	$0.4520 \pm 0.0027$	$\chi_{\text{BAO}}^2$	5.50	$6.2 \pm 1.3$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4499	$0.4507 \pm 0.0082$	$H(0.15)$	72.882	$72.89 \pm 0.47$	$\chi_{\text{CMB}}^2$	782.9	$794.9 \pm 5.3$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6028	$0.6039 \pm 0.0081$	$D_M(0.15)$	641.22	$641.2 \pm 4.7$			

Best-fit  $\chi_{\text{eff}}^2 = 790.20$ ;  $\bar{\chi}_{\text{eff}}^2 = 809.76$ ;  $R - 1 = 0.01181$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.28 DR12BAO: 4.19 CMB - commander\_dx12\_v3.2.29: 22.83 plik\_rd12\_HM\_v22\_TT: 760.03



## 2.79 base\_plikHM\_TTTEEE\_lowl\_reion

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022381	$0.02237 \pm 0.00015$ (+1.1 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.096363	$0.09634 \pm 0.00029$ (+0.9 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8126	$0.8129 \pm 0.0057$ (+0.2 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.12016	$0.1201 \pm 0.0014$ (−0.2 $\sigma$ )	$\sigma_8$	0.8138	$0.8140^{+0.0070}_{-0.0085}$ (+0.0 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.44899	$0.4492 \pm 0.0029$ (+0.2 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.040891	$1.04092 \pm 0.00032$ (+0.3 $\sigma$ )	$S_8$	0.8355	$0.835 \pm 0.016$ (−0.2 $\sigma$ )	$H(0.15)$	72.63	$72.65 \pm 0.52$ (+0.5 $\sigma$ )
$\tau$	0.0561	$0.0573^{+0.0061}_{-0.010}$ (+0.3 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4576	$0.4575 \pm 0.0089$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	643.9	$643.7 \pm 5.2$ (−0.5 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0488	$3.050^{+0.014}_{-0.019}$ (+0.3 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6102	$0.6102 \pm 0.0085$ (−0.2 $\sigma$ )	$H(0.38)$	82.834	$82.85 \pm 0.38$ (+0.5 $\sigma$ )
$n_{\mathrm{s}}$	0.96605	$0.9650 \pm 0.0043$ (+0.4 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9920	$0.992 \pm 0.012$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1534.4	$1534 \pm 10$ (−0.5 $\sigma$ )
$y_{\mathrm{cal}}$	1.00066	$1.0006 \pm 0.0025$ (+0.1 $\sigma$ )	$r_{\mathrm{drag}}h$	98.95	$99.0 \pm 1.0$ (+0.3 $\sigma$ )	$H(0.51)$	89.604	$89.61 \pm 0.30$ (+0.6 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	46.2	$47 \pm 7$ (−0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4504	$2.454 \pm 0.029$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1987.0	$1987 \pm 12$ (−0.5 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.61	—	$z_{\mathrm{re}}$	7.86	$7.97^{+0.67}_{-0.99}$ (+0.2 $\sigma$ )	$H(0.61)$	95.264	$95.27 \pm 0.24$ (+0.7 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	7.10	$5.5^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$10^9 A_{\mathrm{s}}$	2.1089	$2.113^{+0.029}_{-0.041}$ (+0.3 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2311.5	$2311 \pm 13$ (−0.5 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	248.2	$258 \pm 28$ (−0.2 $\sigma$ )	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8852	$1.884 \pm 0.012$ (+0.0 $\sigma$ )	$H(2.33)$	236.68	$236.62 \pm 0.80$ (−0.1 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	49.9	$46 \pm 8$ (−0.4 $\sigma$ )	$D_{40}$	1229.9	$1233 \pm 13$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5763.9	$5764 \pm 11$ (−0.8 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	52.0	$43 \pm 9$ (−0.1 $\sigma$ )	$D_{220}$	5731.2	$5733 \pm 39$ (+0.5 $\sigma$ )	$f\sigma_8(0.15)$	0.4618	$0.4617 \pm 0.0083$ (−0.2 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	121.5	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{810}$	2542.1	$2539 \pm 13$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7515	$0.7517^{+0.0061}_{-0.0076}$ (+0.1 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.00	$< 4.17$ (−0.2 $\sigma$ )	$D_{1420}$	818.68	$817.3 \pm 4.8$ (+0.6 $\sigma$ )	$f\sigma_8(0.38)$	0.4792	$0.4791 \pm 0.0069$ (−0.2 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.81	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$D_{2000}$	231.45	$231.0 \pm 1.6$ (+0.8 $\sigma$ )	$\sigma_8(0.38)$	0.6657	$0.6659^{+0.0050}_{-0.0066}$ (+0.2 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	11.05	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.96605	$0.9650 \pm 0.0043$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.4772	$0.4772 \pm 0.0061$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	20.08	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}$	0.245400	$0.245393 \pm 0.000058$ (+1.1 $\sigma$ )	$\sigma_8(0.51)$	0.6228	$0.6230^{+0.0046}_{-0.0061}$ (+0.2 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	95.4	$93.7 \pm 7.3$ (+0.0 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246726	$0.246719 \pm 0.000058$ (+1.1 $\sigma$ )	$f\sigma_8(0.61)$	0.4719	$0.4719 \pm 0.0056$ (−0.1 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1131	$0.114 \pm 0.038$	$10^5 \mathrm{D}/\mathrm{H}$	2.5835	$2.586 \pm 0.027$ (−1.1 $\sigma$ )	$\sigma_8(0.61)$	0.5924	$0.5926^{+0.0043}_{-0.0058}$ (+0.2 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1343	$0.135 \pm 0.030$	Age/Gyr	13.7978	$13.798 \pm 0.024$ (−0.8 $\sigma$ )	$f\sigma_8(2.33)$	0.29852	$0.2986^{+0.0021}_{-0.0030}$ (+0.3 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.480	$0.482 \pm 0.086$	$z_*$	1089.922	$1089.93 \pm 0.27$ (−0.9 $\sigma$ )	$\sigma_8(2.33)$	0.30756	$0.3077^{+0.0022}_{-0.0031}$ (+0.4 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.224	$0.225 \pm 0.054$	$r_*$	144.381	$144.41 \pm 0.30$ (−0.1 $\sigma$ )	$f_{2000}^{143}$	28.59	$29.4 \pm 2.7$ (−0.6 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.667	$0.666 \pm 0.080$	$100\theta_*$	1.041079	$1.04110 \pm 0.00031$ (+0.2 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.93	$32.1 \pm 1.9$ (−0.7 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.092	$2.09 \pm 0.27$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8684	$13.871 \pm 0.027$ (−0.2 $\sigma$ )	$f_{2000}^{217}$	106.50	$107.0 \pm 1.8$ (−0.6 $\sigma$ )
$c_{100}$	0.99972	$0.99968 \pm 0.00061$ (+0.1 $\sigma$ )	$z_{\mathrm{drag}}$	1059.971	$1059.94 \pm 0.30$ (+1.2 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	23.30	$23.63 \pm 0.99$ (−0.2 $\sigma$ )
$c_{217}$	0.99818	$0.99819 \pm 0.00062$ (−0.1 $\sigma$ )	$r_{\mathrm{drag}}$	147.037	$147.07 \pm 0.29$ (−0.3 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2344.4	$2359.0 \pm 5.7$ (+291.5 $\sigma$ )
$H_0$	67.30	$67.32 \pm 0.61$ (+0.4 $\sigma$ )	$k_{\mathrm{D}}$	0.140934	$0.14089 \pm 0.00031$ (+0.7 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	2.40	$13.2 \pm 4.9$ (+1.2 $\sigma$ )
$\Omega_{\Lambda}$	0.6838	$0.6841 \pm 0.0084$ (+0.4 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160734	$0.16076 \pm 0.00017$ (−1.2 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	2367.7	$2382.7 \pm 5.7$ (+296.0 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3162	$0.3159 \pm 0.0084$ (−0.4 $\sigma$ )	$z_{\mathrm{eq}}$	3406.4	$3404 \pm 30$ (−0.1 $\sigma$ )			
$\Omega_{\mathrm{m}}h^2$	0.14319	$0.1431 \pm 0.0013$ (−0.1 $\sigma$ )	$k_{\mathrm{eq}}$	0.010397	$0.010391 \pm 0.000093$ (−0.1 $\sigma$ )			

Best-fit  $\chi_{\mathrm{eff}}^2 = 2370.13$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1586.13$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2395.81$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.32$ ;  $R - 1 = 0.00802$   
 $\chi_{\mathrm{eff}}^2$ : CMB - commander\_dx12.v3.2.29: 23.30 ( $\Delta$  -0.29) plik\_rd12\_HM.v22b.TTTEEE: 2344.42



## 2.80 base\_plikHM\_TTTEEE\_lowl\_reion\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022447	$0.02243 \pm 0.00014$ (+1.1 $\sigma$ )	$\sigma_8$	0.8123	$0.8118^{+0.0067}_{-0.0083}$ (+0.3 $\sigma$ )	$H(0.15)$	72.979	$72.97 \pm 0.39$ (+0.2 $\sigma$ )
$\Omega_c h^2$	0.11928	$0.1193 \pm 0.0010$ (+0.2 $\sigma$ )	$S_8$	0.8265	$0.826 \pm 0.013$ (+0.2 $\sigma$ )	$D_M(0.15)$	640.41	$640.5 \pm 3.8$ (-0.1 $\sigma$ )
$100\theta_{MC}$	1.041023	$1.04102 \pm 0.00029$ (+0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4527	$0.4525 \pm 0.0070$ (+0.2 $\sigma$ )	$H(0.38)$	83.084	$83.07 \pm 0.29$ (+0.3 $\sigma$ )
$\tau$	0.0584	$0.0584^{+0.0066}_{-0.010}$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6064	$0.6061 \pm 0.0072$ (+0.3 $\sigma$ )	$D_M(0.38)$	1527.5	$1527.8 \pm 7.7$ (-0.2 $\sigma$ )
$\ln(10^{10} A_s)$	3.0512	$3.051^{+0.015}_{-0.020}$ (+0.3 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9872	$0.987^{+0.010}_{-0.011}$ (+0.2 $\sigma$ )	$H(0.51)$	89.798	$89.79 \pm 0.23$ (+0.4 $\sigma$ )
$n_s$	0.96808	$0.9669 \pm 0.0037$ (+0.1 $\sigma$ )	$r_{drag} h$	99.66	$99.66 \pm 0.78$ (-0.1 $\sigma$ )	$D_M(0.51)$	1978.9	$1979.3 \pm 9.1$ (-0.2 $\sigma$ )
$y_{cal}$	1.00049	$1.0007 \pm 0.0025$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4398	$2.442 \pm 0.026$ (+0.3 $\sigma$ )	$H(0.61)$	95.415	$95.40^{+0.18}_{-0.20}$ (+0.5 $\sigma$ )
$A_{217}^{CIB}$	46.1	$47 \pm 7$ (-0.2 $\sigma$ )	$z_{re}$	8.07	$8.05^{+0.70}_{-0.99}$ (+0.2 $\sigma$ )	$D_M(0.61)$	2302.9	$2303.3 \pm 9.8$ (-0.2 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.62	—	$10^9 A_s$	2.1140	$2.113^{+0.030}_{-0.042}$ (+0.3 $\sigma$ )	$H(2.33)$	236.17	$236.14 \pm 0.61$ (+0.5 $\sigma$ )
$A_{143}^{tSZ}$	7.11	$5.5^{+2.2}_{-1.9}$ (+0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8808	$1.880 \pm 0.011$ (+0.3 $\sigma$ )	$D_M(2.33)$	5757.4	$5758.3 \pm 9.0$ (-0.7 $\sigma$ )
$A_{100}^{PS}$	248.1	$258 \pm 28$ (-0.2 $\sigma$ )	$D_{40}$	1225.8	$1229 \pm 12$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4574	$0.4572 \pm 0.0066$ (+0.2 $\sigma$ )
$A_{143}^{PS}$	49.5	$45 \pm 8$ (-0.4 $\sigma$ )	$D_{220}$	5734.1	$5737 \pm 39$ (+0.5 $\sigma$ )	$\sigma_8(0.15)$	0.7507	$0.7503^{+0.0060}_{-0.0076}$ (+0.3 $\sigma$ )
$A_{143 \times 217}^{PS}$	52.0	$42 \pm 9$ (-0.1 $\sigma$ )	$D_{810}$	2540.6	$2539 \pm 13$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4760	$0.4757 \pm 0.0058$ (+0.3 $\sigma$ )
$A_{217}^{PS}$	121.3	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{1420}$	818.88	$817.8 \pm 4.7$ (+0.5 $\sigma$ )	$\sigma_8(0.38)$	0.6655	$0.6651^{+0.0051}_{-0.0067}$ (+0.3 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.26$ (-0.2 $\sigma$ )	$D_{2000}$	231.61	$231.2 \pm 1.5$ (+0.7 $\sigma$ )	$f\sigma_8(0.51)$	0.4747	$0.4744 \pm 0.0053$ (+0.3 $\sigma$ )
$A_{100}^{dustTT}$	8.82	$8.9 \pm 1.8$ (+0.0 $\sigma$ )	$n_{s,0.002}$	0.96808	$0.9669 \pm 0.0037$ (+0.1 $\sigma$ )	$\sigma_8(0.51)$	0.6229	$0.6225^{+0.0047}_{-0.0062}$ (+0.3 $\sigma$ )
$A_{143}^{dustTT}$	11.02	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P$	0.245425	$0.245415 \pm 0.000052$ (+1.0 $\sigma$ )	$f\sigma_8(0.61)$	0.46976	$0.4695^{+0.0047}_{-0.0052}$ (+0.3 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.01	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246752	$0.246742 \pm 0.000052$ (+1.0 $\sigma$ )	$\sigma_8(0.61)$	0.5927	$0.5923^{+0.0044}_{-0.0059}$ (+0.3 $\sigma$ )
$A_{217}^{dustTT}$	95.3	$93.7 \pm 7.4$ (+0.0 $\sigma$ )	$10^5 D/H$	2.5714	$2.576 \pm 0.025$ (-1.1 $\sigma$ )	$f\sigma_8(2.33)$	0.29888	$0.2987^{+0.0022}_{-0.0030}$ (+0.3 $\sigma$ )
$A_{100}^{dustTE}$	0.1133	$0.114 \pm 0.038$	Age/Gyr	13.7837	$13.786 \pm 0.020$ (-0.7 $\sigma$ )	$\sigma_8(2.33)$	0.30817	$0.3080^{+0.0023}_{-0.0031}$ (+0.3 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1349	$0.134 \pm 0.030$	$z_*$	1089.761	$1089.79 \pm 0.22$ (-0.8 $\sigma$ )	$f_{2000}^{143}$	28.33	$29.2 \pm 2.7$ (-0.6 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.479	$0.483 \pm 0.087$	$r_*$	144.558	$144.58 \pm 0.23$ (-0.7 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.72	$32.0 \pm 1.8$ (-0.7 $\sigma$ )
$A_{143}^{dustTE}$	0.226	$0.224 \pm 0.054$	$100\theta_*$	1.041198	$1.04120 \pm 0.00029$ (-0.0 $\sigma$ )	$f_{2000}^{217}$	106.27	$106.8 \pm 1.8$ (-0.5 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.666	$0.663 \pm 0.079$	$D_M(z_*)/\text{Gpc}$	13.8838	$13.886 \pm 0.022$ (-0.7 $\sigma$ )	$\chi_{lowl}^2$	22.97	$23.23 \pm 0.85$ (+0.1 $\sigma$ )
$A_{217}^{dustTE}$	2.079	$2.07 \pm 0.27$	$z_{drag}$	1060.047	$1060.01 \pm 0.29$ (+1.1 $\sigma$ )	$\chi_{plik}^2$	2344.8	$2359.2 \pm 5.7$ (+290.2 $\sigma$ )
$c_{100}$	0.99972	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$r_{drag}$	147.197	$147.22 \pm 0.24$ (-0.9 $\sigma$ )	$\chi_{6DF}^2$	0.0289	$0.054 \pm 0.064$ (-0.1 $\sigma$ )
$c_{217}$	0.99817	$0.99820 \pm 0.00063$ (-0.1 $\sigma$ )	$k_D$	0.140815	$0.14077 \pm 0.00029$ (+1.1 $\sigma$ )	$\chi_{MGS}^2$	1.217	$1.28 \pm 0.43$ (-0.2 $\sigma$ )
$H_0$	67.703	$67.69 \pm 0.45$ (+0.1 $\sigma$ )	$100\theta_D$	0.160692	$0.16072 \pm 0.00017$ (-1.2 $\sigma$ )	$\chi_{DR12BAO}^2$	4.42	$4.8 \pm 1.4$ (+0.0 $\sigma$ )
$\Omega_\Lambda$	0.6894	$0.6893 \pm 0.0061$ (-0.1 $\sigma$ )	$z_{eq}$	3386.9	$3386 \pm 23$ (+0.4 $\sigma$ )	$\chi_{prior}^2$	2.75	$13.5 \pm 5.1$ (+1.2 $\sigma$ )
$\Omega_m$	0.3106	$0.3107 \pm 0.0061$ (+0.1 $\sigma$ )	$k_{eq}$	0.010337	$0.010335 \pm 0.000069$ (+0.4 $\sigma$ )	$\chi_{BAO}^2$	5.66	$6.1 \pm 1.1$ (-0.0 $\sigma$ )
$\Omega_m h^2$	0.14237	$0.14234 \pm 0.00095$ (+0.4 $\sigma$ )	$100\theta_{eq}$	0.81633	$0.8165 \pm 0.0043$ (-0.3 $\sigma$ )	$\chi_{CMB}^2$	2367.8	$2382.4 \pm 5.6$ (+299.9 $\sigma$ )
$\Omega_m h^3$	0.096391	$0.09635 \pm 0.00029$ (+1.0 $\sigma$ )	$100\theta_{s,eq}$	0.45091	$0.4510 \pm 0.0022$ (-0.4 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2376.23$ ;  $\Delta\chi_{eff}^2 = 1586.03$ ;  $\bar{\chi}_{eff}^2 = 2402.05$ ;  $\Delta\bar{\chi}_{eff}^2 = 1592.29$ ;  $R - 1 = 0.01766$

$\chi_{eff}^2$ : BAO - 6DF: 0.03 ( $\Delta$  0.01) MGS: 1.22 ( $\Delta$  -0.06) DR12BAO: 4.42 ( $\Delta$  0.22) CMB - commander\_dx12\_v3.2.29: 22.97 ( $\Delta$  0.14) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.84



## 2.81 base\_plikHM\_TT\_lowl\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022174	$0.02214 \pm 0.00020$	$\sigma_8 \Omega_m^{0.25}$	0.6085	$0.6086 \pm 0.0076$	$H(0.15)$	72.46	$72.41 \pm 0.60$
$\Omega_c h^2$	0.12010	$0.1202 \pm 0.0015$	$\sigma_8/h^{0.5}$	0.9896	$0.990 \pm 0.010$	$D_M(0.15)$	645.5	$646.1 \pm 6.0$
$100\theta_{MC}$	1.040829	$1.04080 \pm 0.00046$	$r_{drag}h$	98.86	$98.8 \pm 1.2$	$H(0.38)$	82.667	$82.62 \pm 0.44$
$\tau$	0.0527	$0.0524 \pm 0.0079$	$\langle d^2 \rangle^{1/2}$	2.4428	$2.447 \pm 0.025$	$D_M(0.38)$	1538.0	$1539 \pm 12$
$\ln(10^{10} A_s)$	3.0404	$3.040 \pm 0.015$	$z_{re}$	7.55	$7.52 \pm 0.80$	$H(0.51)$	89.437	$89.40 \pm 0.35$
$n_s$	0.96529	$0.9634 \pm 0.0048$	$10^9 A_s$	2.0913	$2.091 \pm 0.031$	$D_M(0.51)$	1991.4	$1993 \pm 14$
$y_{cal}$	1.00033	$1.0005 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8823	$1.882 \pm 0.011$	$H(0.61)$	95.097	$95.06 \pm 0.29$
$A_{217}^{CIB}$	47.9	$48 \pm 7$	$D_{40}$	1227.4	$1232 \pm 13$	$D_M(0.61)$	2316.6	$2318 \pm 15$
$\xi^{tSZ \times CIB}$	0.44	—	$D_{220}$	5710.2	$5716 \pm 40$	$H(2.33)$	236.43	$236.45 \pm 0.94$
$A_{143}^{tSZ}$	6.92	$5.0 \pm 2.0$	$D_{810}$	2537.7	$2536 \pm 13$	$D_M(2.33)$	5773.5	$5775 \pm 14$
$A_{100}^{PS}$	253.7	$264 \pm 28$	$D_{1420}$	816.0	$814.5 \pm 5.1$	$f\sigma_8(0.15)$	0.4608	$0.4611 \pm 0.0080$
$A_{143}^{PS}$	51.1	$49 \pm 8$	$D_{2000}$	230.18	$229.6 \pm 1.8$	$\sigma_8(0.15)$	0.7486	$0.7482 \pm 0.0056$
$A_{143 \times 217}^{PS}$	49.9	$43 \pm 9$	$n_{s,0.002}$	0.96529	$0.9634 \pm 0.0048$	$f\sigma_8(0.38)$	0.4778	$0.4779 \pm 0.0062$
$A_{217}^{PS}$	120.7	$115 \pm 10$	$Y_P$	0.245315	$0.245295^{+0.000095}_{-0.000081}$	$\sigma_8(0.38)$	0.66299	$0.6625 \pm 0.0049$
$A^{kSZ}$	0.01	$< 5.00$	$Y_P^{BBN}$	0.246641	$0.246622^{+0.000096}_{-0.000081}$	$f\sigma_8(0.51)$	0.4757	$0.4757 \pm 0.0053$
$A_{100}^{dustTT}$	8.86	$8.9 \pm 1.8$	$10^5 D/H$	2.6229	$2.630 \pm 0.039$	$\sigma_8(0.51)$	0.62019	$0.6197 \pm 0.0046$
$A_{143}^{dustTT}$	10.80	$10.7 \pm 1.8$	Age/Gyr	13.8206	$13.825 \pm 0.032$	$f\sigma_8(0.61)$	0.47032	$0.4702 \pm 0.0047$
$A_{143 \times 217}^{dustTT}$	19.54	$18.3 \pm 3.3$	$z_*$	1090.177	$1090.23 \pm 0.34$	$\sigma_8(0.61)$	0.58997	$0.5895 \pm 0.0044$
$A_{217}^{dustTT}$	94.8	$93.2 \pm 7.4$	$r_*$	144.554	$144.56 \pm 0.36$	$f\sigma_8(2.33)$	0.29724	$0.2970 \pm 0.0023$
$c_{100}$	0.99966	$0.99961 \pm 0.00062$	$100\theta_*$	1.041029	$1.04101 \pm 0.00045$	$\sigma_8(2.33)$	0.30620	$0.3059 \pm 0.0026$
$c_{217}$	0.99826	$0.99826 \pm 0.00063$	$D_M(z_*)/\text{Gpc}$	13.8857	$13.886 \pm 0.034$	$f_{2000}^{143}$	30.17	$31.3 \pm 2.9$
$H_0$	67.12	$67.06 \pm 0.70$	$z_{drag}$	1059.475	$1059.41 \pm 0.44$	$f_{2000}^{143 \times 217}$	33.12	$33.6 \pm 2.0$
$\Omega_\Lambda$	0.6828	$0.6819 \pm 0.0097$	$r_{drag}$	147.284	$147.30 \pm 0.38$	$f_{2000}^{217}$	107.51	$108.2 \pm 1.9$
$\Omega_m$	0.3172	$0.3181 \pm 0.0097$	$k_D$	0.140513	$0.14047 \pm 0.00045$	$\chi_{lensing}^2$	8.902	$9.45 \pm 0.86$
$\Omega_m h^2$	0.14292	$0.1430 \pm 0.0015$	$100\theta_D$	0.161015	$0.16106 \pm 0.00026$	$\chi_{small}^2$	395.86	$396.9 \pm 1.6$
$\Omega_m h^3$	0.095935	$0.09587 \pm 0.00045$	$z_{eq}$	3400.0	$3401 \pm 35$	$\chi_{lowl}^2$	23.23	$23.7 \pm 1.0$
$\sigma_8$	0.8108	$0.8104 \pm 0.0063$	$k_{eq}$	0.010377	$0.01038 \pm 0.00011$	$\chi_{plik}^2$	759.32	$771.1 \pm 5.2$
$S_8$	0.8337	$0.834 \pm 0.016$	$100\theta_{eq}$	0.8131	$0.8128 \pm 0.0066$	$\chi_{prior}^2$	1.25	$7.3 \pm 3.6$
$\sigma_8 \Omega_m^{0.5}$	0.4566	$0.4570 \pm 0.0087$	$100\theta_{s,eq}$	0.44941	$0.4493 \pm 0.0034$	$\chi_{CMB}^2$	1187.3	$1201.1 \pm 5.5$

Best-fit  $\chi_{eff}^2 = 1188.57$ ;  $\bar{\chi}_{eff}^2 = 1208.41$ ;  $R - 1 = 0.00560$

$\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.90 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.86 commander\_dx12\_v3.2\_29: 23.23 plik\_rd12\_HM\_v22\_TT: 759.32



## 2.82 base\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022224	$0.02221 \pm 0.00019$	$r_{\text{drag}} h$	99.65	$99.63 \pm 0.83$	$H(0.51)$	89.633	$89.63 \pm 0.27$
$\Omega_c h^2$	0.11909	$0.1191 \pm 0.0011$	$\langle d^2 \rangle^{1/2}$	2.4309	$2.436 \pm 0.022$	$D_M(0.51)$	1982.8	$1983 \pm 10$
$100\theta_{\text{MC}}$	1.040933	$1.04097 \pm 0.00042$	$z_{\text{re}}$	7.71	$7.77 \pm 0.75$	$H(0.61)$	95.244	$95.24 \pm 0.23$
$\tau$	0.0544	$0.0552 \pm 0.0074$	$10^9 A_s$	2.0948	$2.099^{+0.029}_{-0.032}$	$D_M(0.61)$	2307.4	$2308 \pm 11$
$\ln(10^{10} A_s)$	3.0421	$3.044 \pm 0.015$	$10^9 A_s e^{-2\tau}$	1.8788	$1.879 \pm 0.011$	$H(2.33)$	235.81	$235.83 \pm 0.71$
$n_s$	0.96694	$0.9659 \pm 0.0041$	$D_{40}$	1225.0	$1228 \pm 12$	$D_M(2.33)$	5767.6	$5768 \pm 12$
$y_{\text{cal}}$	1.00051	$1.0007 \pm 0.0025$	$D_{220}$	5719.8	$5724 \pm 39$	$f\sigma_8(0.15)$	0.4555	$0.4560 \pm 0.0060$
$A_{217}^{\text{CIB}}$	48.5	$48 \pm 7$	$D_{810}$	2537.5	$2537 \pm 13$	$\sigma_8(0.15)$	0.7471	$0.7477 \pm 0.0056$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.33	—	$D_{1420}$	816.36	$815.6 \pm 4.9$	$f\sigma_8(0.38)$	0.4739	$0.4744 \pm 0.0050$
$A_{143}^{\text{tSZ}}$	7.04	$5.1^{+2.2}_{-2.0}$	$D_{2000}$	230.29	$230.0 \pm 1.7$	$\sigma_8(0.38)$	0.66232	$0.6628 \pm 0.0049$
$A_{100}^{\text{PS}}$	253.4	$263 \pm 28$	$n_{\text{s},0.002}$	0.96694	$0.9659 \pm 0.0041$	$f\sigma_8(0.51)$	0.47256	$0.4730 \pm 0.0045$
$A_{143}^{\text{PS}}$	49.0	$49 \pm 8$	$Y_{\text{P}}$	0.245336	$0.245326^{+0.000085}_{-0.000075}$	$\sigma_8(0.51)$	0.61984	$0.6203 \pm 0.0046$
$A_{143 \times 217}^{\text{PS}}$	46.8	$43 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	0.246662	$0.246652^{+0.000085}_{-0.000076}$	$f\sigma_8(0.61)$	0.46764	$0.4680 \pm 0.0041$
$A_{217}^{\text{PS}}$	119.3	$115 \pm 10$	$10^5 D/H$	2.6134	$2.617 \pm 0.036$	$\sigma_8(0.61)$	0.58980	$0.5902 \pm 0.0044$
$A^{\text{kSZ}}$	0.03	$< 4.82$	Age/Gyr	13.8079	$13.809 \pm 0.027$	$f\sigma_8(2.33)$	0.29740	$0.2976^{+0.0021}_{-0.0024}$
$A_{100}^{\text{dustTT}}$	8.84	$8.9 \pm 1.8$	$z_*$	1090.027	$1090.05 \pm 0.28$	$\sigma_8(2.33)$	0.30663	$0.3068^{+0.0023}_{-0.0026}$
$A_{143}^{\text{dustTT}}$	10.77	$10.7 \pm 1.8$	$r_*$	144.779	$144.78 \pm 0.29$	$f_{2000}^{143}$	30.08	$30.9 \pm 2.9$
$A_{143 \times 217}^{\text{dustTT}}$	19.36	$18.3 \pm 3.3$	$100\theta_*$	1.041135	$1.04117 \pm 0.00042$	$f_{2000}^{143 \times 217}$	33.01	$33.3 \pm 2.0$
$A_{217}^{\text{dustTT}}$	94.5	$93.4 \pm 7.4$	$D_M(z_*)/\text{Gpc}$	13.9059	$13.906 \pm 0.029$	$f_{2000}^{217}$	107.49	$107.9 \pm 1.9$
$c_{100}$	0.99966	$0.99963 \pm 0.00062$	$z_{\text{drag}}$	1059.513	$1059.49 \pm 0.43$	$\chi_{\text{lensing}}^2$	8.875	$9.26 \pm 0.70$
$c_{217}$	0.99822	$0.99826 \pm 0.00062$	$r_{\text{drag}}$	147.498	$147.50 \pm 0.32$	$\chi_{\text{simall}}^2$	396.09	$397.1 \pm 1.8$
$H_0$	67.559	$67.54 \pm 0.49$	$k_{\text{D}}$	0.140329	$0.14031 \pm 0.00043$	$\chi_{\text{lowl}}^2$	22.96	$23.24 \pm 0.87$
$\Omega_\Lambda$	0.6890	$0.6887 \pm 0.0065$	$100\theta_{\text{D}}$	0.160992	$0.16102 \pm 0.00025$	$\chi_{\text{plik}}^2$	759.80	$771.6 \pm 5.2$
$\Omega_{\text{m}}$	0.3110	$0.3113 \pm 0.0065$	$z_{\text{eq}}$	3376.9	$3378 \pm 26$	$\chi_{6\text{DF}}^2$	0.0292	$0.060 \pm 0.071$
$\Omega_{\text{m}} h^2$	0.14196	$0.1420 \pm 0.0011$	$k_{\text{eq}}$	0.010307	$0.010309 \pm 0.000078$	$\chi_{\text{MGS}}^2$	1.217	$1.27 \pm 0.46$
$\Omega_{\text{m}} h^3$	0.095904	$0.09590 \pm 0.00045$	$100\theta_{\text{eq}}$	0.81745	$0.8173 \pm 0.0047$	$\chi_{\text{DR12BAO}}^2$	4.37	$4.9 \pm 1.5$
$\sigma_8$	0.8085	$0.8091 \pm 0.0062$	$100\theta_{\text{s,eq}}$	0.45166	$0.4516 \pm 0.0024$	$\chi_{\text{prior}}^2$	1.34	$7.3 \pm 3.6$
$S_8$	0.8232	$0.824 \pm 0.012$	$H(0.15)$	72.831	$72.82 \pm 0.42$	$\chi_{\text{CMB}}^2$	1187.7	$1201.2 \pm 5.4$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4509	$0.4514 \pm 0.0064$	$D_M(0.15)$	641.74	$641.9 \pm 4.2$	$\chi_{\text{BAO}}^2$	5.62	$6.2 \pm 1.2$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6038	$0.6043 \pm 0.0062$	$H(0.38)$	82.926	$82.92 \pm 0.32$			
$\sigma_8/h^{0.5}$	0.9836	$0.9845 \pm 0.0089$	$D_M(0.38)$	1530.6	$1530.9 \pm 8.5$			

Best-fit  $\chi_{\text{eff}}^2 = 1194.68$ ;  $\bar{\chi}_{\text{eff}}^2 = 1214.73$ ;  $R - 1 = 0.01723$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.03 MGS: 1.22 DR12BAO: 4.37 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.88 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.09 commander\_dx12\_v3\_2\_29: 22.96 plik\_rd12\_HM\_v22\_TT: 759.80



### 2.83 base\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022349	$0.02232 \pm 0.00020$	$\sigma_8/h^{0.5}$	0.9794	$0.9796 \pm 0.0099$	$H(0.38)$	83.240	$83.24 \pm 0.43$
$\Omega_c h^2$	0.11826	$0.1181 \pm 0.0015$	$r_{\text{drag}} h$	100.39	$100.5 \pm 1.2$	$D_M(0.38)$	1522.4	$1522 \pm 11$
$100\theta_{\text{MC}}$	1.041151	$1.04115 \pm 0.00044$	$\langle d^2 \rangle^{1/2}$	2.4224	$2.425 \pm 0.024$	$H(0.51)$	89.891	$89.89 \pm 0.35$
$\tau$	0.0572	$0.0583 \pm 0.0080$	$z_{\text{re}}$	7.95	$8.04 \pm 0.78$	$D_M(0.51)$	1973.2	$1973 \pm 13$
$\ln(10^{10} A_s)$	3.0466	$3.048 \pm 0.016$	$10^9 A_s$	2.1044	$2.109 \pm 0.033$	$H(0.61)$	95.460	$95.45 \pm 0.29$
$n_s$	0.96915	$0.9685 \pm 0.0048$	$10^9 A_s e^{-2\tau}$	1.8770	$1.876_{-0.011}^{+0.010}$	$D_M(0.61)$	2296.9	$2297 \pm 15$
$y_{\text{cal}}$	1.00071	$1.0010 \pm 0.0024$	$D_{40}$	1222.6	$1225 \pm 12$	$H(2.33)$	235.41	$235.30 \pm 0.92$
$A_{217}^{\text{CIB}}$	47.7	$47 \pm 7$	$D_{220}$	5733.4	$5735 \pm 39$	$D_M(2.33)$	5757.4	$5758 \pm 13$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.47	—	$D_{810}$	2539.5	$2538 \pm 13$	$f\sigma_8(0.15)$	0.4514	$0.4512 \pm 0.0075$
$A_{143}^{\text{tSZ}}$	6.91	$5.2 \pm 1.9$	$D_{1420}$	818.0	$817.1 \pm 5.0$	$\sigma_8(0.15)$	0.7471	$0.7474 \pm 0.0056$
$A_{100}^{\text{PS}}$	252.3	$262 \pm 27$	$D_{2000}$	231.02	$230.7 \pm 1.8$	$f\sigma_8(0.38)$	0.4711	$0.4710 \pm 0.0059$
$A_{143}^{\text{PS}}$	49.9	$48 \pm 8$	$n_{s,0.002}$	0.96915	$0.9685 \pm 0.0048$	$\sigma_8(0.38)$	0.66295	$0.6632 \pm 0.0050$
$A_{143 \times 217}^{\text{PS}}$	49.6	$43 \pm 9$	$Y_{\text{P}}$	0.245387	$0.245371_{-0.000072}^{+0.000088}$	$f\sigma_8(0.51)$	0.4704	$0.4704 \pm 0.0051$
$A_{217}^{\text{PS}}$	120.0	$115_{-9.7}^{+11}$	$Y_{\text{P}}^{\text{BBN}}$	0.246714	$0.246697_{-0.000072}^{+0.000088}$	$\sigma_8(0.51)$	0.62069	$0.6210 \pm 0.0047$
$A^{\text{kSZ}}$	0.00	$< 4.64$	$10^5 D/H$	2.5894	$2.596_{-0.040}^{+0.035}$	$f\sigma_8(0.61)$	0.46596	$0.4660 \pm 0.0046$
$A_{100}^{\text{dustTT}}$	8.88	$9.0 \pm 1.8$	Age/Gyr	13.7853	$13.788 \pm 0.030$	$\sigma_8(0.61)$	0.59078	$0.5911 \pm 0.0045$
$A_{143}^{\text{dustTT}}$	10.90	$10.7 \pm 1.8$	$z_*$	1089.795	$1089.83 \pm 0.32$	$f\sigma_8(2.33)$	0.29813	$0.2983 \pm 0.0024$
$A_{143 \times 217}^{\text{dustTT}}$	19.54	$18.3 \pm 3.4$	$r_*$	144.898	$144.96 \pm 0.36$	$\sigma_8(2.33)$	0.30764	$0.3078 \pm 0.0026$
$A_{217}^{\text{dustTT}}$	94.9	$93.5 \pm 7.7$	$100\theta_*$	1.041339	$1.04134 \pm 0.00043$	$f_{2000}^{143}$	29.37	$30.4 \pm 3.0$
$c_{100}$	0.99969	$0.99966 \pm 0.00064$	$D_M(z_*)/\text{Gpc}$	13.9146	$13.920 \pm 0.034$	$f_{2000}^{143 \times 217}$	32.55	$32.9 \pm 2.0$
$c_{217}$	0.99826	$0.99824 \pm 0.00062$	$z_{\text{drag}}$	1059.780	$1059.68 \pm 0.43$	$f_{2000}^{217}$	107.04	$107.5 \pm 1.9$
$H_0$	68.03	$68.05 \pm 0.67$	$r_{\text{drag}}$	147.575	$147.65 \pm 0.38$	$\chi_{\text{lensing}}^2$	8.98	$9.5 \pm 1.1$
$\Omega_\Lambda$	0.6948	$0.6951 \pm 0.0089$	$k_{\text{D}}$	0.140341	$0.14024 \pm 0.00045$	$\chi_{\text{small}}^2$	396.58	$397.8 \pm 2.3$
$\Omega_{\text{m}}$	0.3052	$0.3049 \pm 0.0089$	$100\theta_{\text{D}}$	0.160878	$0.16093 \pm 0.00025$	$\chi_{\text{lowl}}^2$	22.68	$22.87 \pm 0.91$
$\Omega_{\text{m}} h^2$	0.14126	$0.1411 \pm 0.0014$	$z_{\text{eq}}$	3360.1	$3357 \pm 34$	$\chi_{\text{plik}}^2$	760.9	$772.9 \pm 5.5$
$\Omega_{\text{m}} h^3$	0.096093	$0.09601 \pm 0.00043$	$k_{\text{eq}}$	0.010256	$0.01024 \pm 0.00010$	$\chi_{\text{H073p45}}^2$	10.67	$10.8 \pm 2.6$
$\sigma_8$	0.8078	$0.8081 \pm 0.0062$	$100\theta_{\text{eq}}$	0.8210	$0.8216 \pm 0.0065$	$\chi_{\text{prior}}^2$	1.26	$7.3 \pm 3.6$
$S_8$	0.8149	$0.815 \pm 0.015$	$100\theta_{s,\text{eq}}$	0.45343	$0.4538 \pm 0.0033$	$\chi_{\text{CMB}}^2$	1189.1	$1203.1 \pm 5.9$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4463	$0.4461 \pm 0.0081$	$H(0.15)$	73.24	$73.25 \pm 0.58$			
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6005	$0.6004 \pm 0.0072$	$D_M(0.15)$	637.7	$637.6 \pm 5.7$			

Best-fit  $\chi_{\text{eff}}^2 = 1201.06$ ;  $\bar{\chi}_{\text{eff}}^2 = 1221.17$ ;  $R - 1 = 0.06771$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.98 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.58 commander\_dx12\_v3.2.29: 22.68 plik\_rd12\_HM.v22.TT: 760.89 Hubble - H073p45: 10.67



## 2.84 base\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022352	$0.02231 \pm 0.00019$	$r_{\text{drag}} h$	100.44	$100.43 \pm 0.83$	$H(0.51)$	89.901	$89.87 \pm 0.26$
$\Omega_c h^2$	0.11819	$0.1182 \pm 0.0011$	$\langle d^2 \rangle^{1/2}$	2.4196	$2.425 \pm 0.022$	$D_M(0.51)$	1972.7	$1973^{+10}_{-9.2}$
$100\theta_{\text{MC}}$	1.041135	$1.04114 \pm 0.00041$	$z_{\text{re}}$	7.91	$8.03 \pm 0.74$	$H(0.61)$	95.466	$95.44 \pm 0.23$
$\tau$	0.0569	$0.0580 \pm 0.0075$	$10^9 A_s$	2.1030	$2.108 \pm 0.032$	$D_M(0.61)$	2296.4	$2297^{+11}_{-10}$
$\ln(10^{10} A_s)$	3.0460	$3.048 \pm 0.015$	$10^9 A_s e^{-2\tau}$	1.8769	$1.876 \pm 0.010$	$H(2.33)$	235.37	$235.32 \pm 0.70$
$n_s$	0.96980	$0.9684 \pm 0.0041$	$D_{40}$	1221.0	$1225 \pm 12$	$D_M(2.33)$	5757.3	$5759 \pm 11$
$y_{\text{cal}}$	1.00084	$1.0010 \pm 0.0025$	$D_{220}$	5731.8	$5735 \pm 39$	$f\sigma_8(0.15)$	0.4509	$0.4514 \pm 0.0059$
$A_{217}^{\text{CIB}}$	46.5	$48 \pm 7$	$D_{810}$	2540.2	$2538 \pm 13$	$\sigma_8(0.15)$	0.7468	$0.7473 \pm 0.0057$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.61	—	$D_{1420}$	818.52	$817.0 \pm 4.9$	$f\sigma_8(0.38)$	0.47070	$0.4711 \pm 0.0050$
$A_{143}^{\text{tSZ}}$	6.92	$5.3^{+2.2}_{-1.9}$	$D_{2000}$	231.19	$230.6 \pm 1.7$	$\sigma_8(0.38)$	0.6627	$0.6631 \pm 0.0050$
$A_{100}^{\text{PS}}$	250.4	$261 \pm 28$	$n_{\text{s},0.002}$	0.96980	$0.9684 \pm 0.0041$	$f\sigma_8(0.51)$	0.47009	$0.4705 \pm 0.0045$
$A_{143}^{\text{PS}}$	51.7	$48 \pm 8$	$Y_{\text{P}}$	0.245388	$0.245369^{+0.000082}_{-0.000071}$	$\sigma_8(0.51)$	0.62051	$0.6209 \pm 0.0047$
$A_{143 \times 217}^{\text{PS}}$	52.9	$43 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	0.246715	$0.246695^{+0.000083}_{-0.000071}$	$f\sigma_8(0.61)$	0.46567	$0.4660 \pm 0.0041$
$A_{217}^{\text{PS}}$	121.7	$115 \pm 10$	$10^5 \text{D}/\text{H}$	2.5888	$2.597 \pm 0.035$	$\sigma_8(0.61)$	0.59062	$0.5910 \pm 0.0045$
$A^{\text{kSZ}}$	0.03	$< 4.61$	$\text{Age}/\text{Gyr}$	13.7850	$13.789 \pm 0.026$	$f\sigma_8(2.33)$	0.29806	$0.2982 \pm 0.0023$
$A_{100}^{\text{dustTT}}$	8.87	$8.9^{+2.0}_{-1.8}$	$z_*$	1089.785	$1089.84 \pm 0.27$	$\sigma_8(2.33)$	0.30759	$0.3078 \pm 0.0025$
$A_{143}^{\text{dustTT}}$	10.81	$10.7 \pm 1.8$	$r_*$	144.915	$144.95 \pm 0.29$	$f_{2000}^{143}$	29.28	$30.4 \pm 3.0$
$A_{143 \times 217}^{\text{dustTT}}$	19.92	$18.3 \pm 3.4$	$100\theta_*$	1.041326	$1.04134 \pm 0.00041$	$f_{2000}^{143 \times 217}$	32.46	$32.9 \pm 2.0$
$A_{217}^{\text{dustTT}}$	95.6	$93.4 \pm 7.5$	$D_M(z_*)/\text{Gpc}$	13.9164	$13.919 \pm 0.029$	$f_{2000}^{217}$	106.92	$107.6 \pm 1.9$
$c_{100}$	0.99969	$0.99966 \pm 0.00064$	$z_{\text{drag}}$	1059.780	$1059.67 \pm 0.43$	$\chi_{\text{lensing}}^2$	9.06	$9.43 \pm 0.96$
$c_{217}$	0.99824	$0.99824 \pm 0.00062$	$r_{\text{drag}}$	147.592	$147.64 \pm 0.32$	$\chi_{\text{simall}}^2$	396.46	$397.7 \pm 2.2$
$H_0$	68.054	$68.02^{+0.45}_{-0.51}$	$k_{\text{D}}$	0.140326	$0.14024 \pm 0.00043$	$\chi_{\text{lowl}}^2$	22.53	$22.87 \pm 0.83$
$\Omega_{\Lambda}$	0.6952	$0.6949 \pm 0.0063$	$100\theta_{\text{D}}$	0.160874	$0.16093 \pm 0.00025$	$\chi_{\text{plik}}^2$	761.2	$772.6 \pm 5.3$
$\Omega_{\text{m}}$	0.3048	$0.3051 \pm 0.0063$	$z_{\text{eq}}$	3358.4	$3357 \pm 25$	$\chi_{\text{H073p45}}^2$	10.57	$10.8 \pm 1.9$
$\Omega_{\text{m}} h^2$	0.14118	$0.1411 \pm 0.0011$	$k_{\text{eq}}$	0.010250	$0.010247 \pm 0.000077$	$\chi_{6\text{DF}}^2$	0.0001	$0.029 \pm 0.042$
$\Omega_{\text{m}} h^3$	0.096080	$0.09601 \pm 0.00044$	$100\theta_{\text{eq}}$	0.82133	$0.8214 \pm 0.0047$	$\chi_{\text{MGS}}^2$	1.68	$1.73 \pm 0.51$
$\sigma_8$	0.8075	$0.8080 \pm 0.0062$	$100\theta_{\text{s,eq}}$	0.45359	$0.4537 \pm 0.0024$	$\chi_{\text{DR12BAO}}^2$	3.495	$3.96 \pm 0.80$
$S_8$	0.8140	$0.815 \pm 0.012$	$H(0.15)$	73.262	$73.23^{+0.39}_{-0.44}$	$\chi_{\text{prior}}^2$	1.26	$7.4 \pm 3.6$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4458	$0.4463 \pm 0.0063$	$D_M(0.15)$	637.51	$637.8 \pm 4.1$	$\chi_{\text{CMB}}^2$	1189.2	$1202.6 \pm 5.6$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6000	$0.6005 \pm 0.0061$	$H(0.38)$	83.254	$83.23^{+0.30}_{-0.33}$	$\chi_{\text{BAO}}^2$	5.173	$5.71 \pm 0.74$
$\sigma_8/h^{0.5}$	0.9788	$0.9797 \pm 0.0088$	$D_M(0.38)$	1522.0	$1522.6^{+8.6}_{-7.8}$			

Best-fit  $\chi_{\text{eff}}^2 = 1206.21$ ;  $\bar{\chi}_{\text{eff}}^2 = 1226.45$ ;  $R - 1 = 0.05385$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.50 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 9.06 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.46 commander\_dx12\_v3\_2\_29: 22.54 plik\_rd12\_HM\_v22\_TT: 761.15 Hubble - H073p45: 10.57



## 2.85 base\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022191	$0.02217 \pm 0.00020$	$\sigma_8/h^{0.5}$	0.9871	$0.9874 \pm 0.0099$	$H(0.38)$	82.760	$82.75 \pm 0.41$
$\Omega_c h^2$	0.11977	$0.1197 \pm 0.0014$	$r_{\text{drag}} h$	99.13	$99.2 \pm 1.1$	$D_M(0.38)$	1535.4	$1536 \pm 11$
$100\theta_{\text{MC}}$	1.040888	$1.04087 \pm 0.00045$	$\langle d^2 \rangle^{1/2}$	2.4391	$2.442 \pm 0.024$	$H(0.51)$	89.509	$89.50 \pm 0.33$
$\tau$	0.0527	$0.0536 \pm 0.0078$	$z_{\text{re}}$	7.55	$7.63 \pm 0.78$	$D_M(0.51)$	1988.4	$1989 \pm 13$
$\ln(10^{10} A_s)$	3.0404	$3.042 \pm 0.015$	$10^9 A_s$	2.0913	$2.094 \pm 0.031$	$H(0.61)$	95.152	$95.14 \pm 0.28$
$n_s$	0.96535	$0.9645 \pm 0.0046$	$10^9 A_s e^{-2\tau}$	1.8820	$1.881 \pm 0.011$	$D_M(0.61)$	2313.3	$2314 \pm 14$
$y_{\text{cal}}$	1.00064	$1.0006 \pm 0.0025$	$D_{40}$	1228.3	$1230 \pm 12$	$H(2.33)$	236.23	$236.18 \pm 0.88$
$A_{217}^{\text{CIB}}$	49.8	$48 \pm 7$	$D_{220}$	5718.5	$5720 \pm 40$	$D_M(2.33)$	5771.1	$5772 \pm 13$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.14	—	$D_{810}$	2538.4	$2537 \pm 13$	$f\sigma_8(0.15)$	0.4588	$0.4588 \pm 0.0074$
$A_{143}^{\text{tSZ}}$	7.12	$5.1^{+2.2}_{-2.0}$	$D_{1420}$	816.2	$815.1 \pm 5.0$	$\sigma_8(0.15)$	0.7478	$0.7480 \pm 0.0056$
$A_{100}^{\text{PS}}$	255.7	$263 \pm 28$	$D_{2000}$	230.19	$229.8 \pm 1.8$	$f\sigma_8(0.38)$	0.4763	$0.4764 \pm 0.0058$
$A_{143}^{\text{PS}}$	46.5	$49 \pm 8$	$n_{s,0.002}$	0.96535	$0.9645 \pm 0.0046$	$\sigma_8(0.38)$	0.66251	$0.6626 \pm 0.0049$
$A_{143 \times 217}^{\text{PS}}$	42.0	$43 \pm 9$	$Y_{\text{P}}$	0.245322	$0.245310^{+0.000091}_{-0.000079}$	$f\sigma_8(0.51)$	0.4745	$0.4745 \pm 0.0050$
$A_{217}^{\text{PS}}$	117.3	$115 \pm 10$	$Y_{\text{P}}^{\text{BBN}}$	0.246648	$0.246636^{+0.000091}_{-0.000079}$	$\sigma_8(0.51)$	0.61984	$0.6200 \pm 0.0046$
$A^{\text{kSZ}}$	0.00	$< 4.91$	$10^5 D/H$	2.6197	$2.624 \pm 0.038$	$f\sigma_8(0.61)$	0.46922	$0.4693 \pm 0.0045$
$A_{100}^{\text{dustTT}}$	8.87	$8.9 \pm 1.8$	Age/Gyr	13.8154	$13.818 \pm 0.030$	$\sigma_8(0.61)$	0.58970	$0.5898 \pm 0.0045$
$A_{143}^{\text{dustTT}}$	10.79	$10.7 \pm 1.8$	$z_*$	1090.126	$1090.15 \pm 0.32$	$f\sigma_8(2.33)$	0.29719	$0.2973 \pm 0.0023$
$A_{143 \times 217}^{\text{dustTT}}$	18.97	$18.3 \pm 3.3$	$r_*$	144.627	$144.65 \pm 0.34$	$\sigma_8(2.33)$	0.30623	$0.3063 \pm 0.0026$
$A_{217}^{\text{dustTT}}$	94.0	$93.3 \pm 7.5$	$100\theta_*$	1.041096	$1.04107 \pm 0.00044$	$f_{2000}^{143}$	30.41	$31.1 \pm 2.9$
$c_{100}$	0.99962	$0.99962 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	13.8918	$13.895 \pm 0.033$	$f_{2000}^{143 \times 217}$	33.15	$33.5 \pm 2.0$
$c_{217}$	0.99824	$0.99826 \pm 0.00063$	$z_{\text{drag}}$	1059.513	$1059.45 \pm 0.44$	$f_{2000}^{217}$	107.72	$108.0 \pm 1.9$
$H_0$	67.28	$67.27 \pm 0.64$	$r_{\text{drag}}$	147.351	$147.39 \pm 0.36$	$\chi_{\text{lensing}}^2$	8.843	$9.35 \pm 0.76$
$\Omega_\Lambda$	0.6849	$0.6849 \pm 0.0087$	$k_{\text{D}}$	0.140453	$0.14040 \pm 0.00044$	$\chi_{\text{simall}}^2$	395.87	$397.0 \pm 1.7$
$\Omega_{\text{m}}$	0.3151	$0.3151 \pm 0.0087$	$100\theta_{\text{D}}$	0.161012	$0.16104 \pm 0.00026$	$\chi_{\text{lowl}}^2$	23.23	$23.48 \pm 0.97$
$\Omega_{\text{m}} h^2$	0.14261	$0.1425 \pm 0.0014$	$z_{\text{eq}}$	3392.4	$3391 \pm 32$	$\chi_{\text{plik}}^2$	759.12	$771.3 \pm 5.2$
$\Omega_{\text{m}} h^3$	0.095942	$0.09589 \pm 0.00045$	$k_{\text{eq}}$	0.010354	$0.010350 \pm 0.000099$	$\chi_{\text{JLA}}^2$	1035.264	$1035.42 \pm 0.61$
$\sigma_8$	0.8097	$0.8098 \pm 0.0063$	$100\theta_{\text{eq}}$	0.8145	$0.8148 \pm 0.0061$	$\chi_{\text{prior}}^2$	1.55	$7.3 \pm 3.7$
$S_8$	0.8298	$0.830 \pm 0.015$	$100\theta_{s,\text{eq}}$	0.45016	$0.4503 \pm 0.0031$	$\chi_{\text{CMB}}^2$	1187.1	$1201.1 \pm 5.4$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4545	$0.4546 \pm 0.0080$	$H(0.15)$	72.59	$72.59 \pm 0.55$			
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6066	$0.6067 \pm 0.0071$	$D_M(0.15)$	644.1	$644.2 \pm 5.5$			

Best-fit  $\chi_{\text{eff}}^2 = 2223.87$ ;  $\bar{\chi}_{\text{eff}}^2 = 2243.81$ ;  $R - 1 = 0.01128$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.84 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 commander\_dx12\_v3.2.29: 23.23 plik\_rd12\_HM.v22.TT: 759.12 SN - JLA Pantheon18: 1035.26



## 2.86 base\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_JLA\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022347	$0.02232 \pm 0.00019$	$r_{\text{drag}} h$	100.44	$100.48 \pm 0.82$	$H(0.51)$	89.894	$89.89 \pm 0.26$
$\Omega_c h^2$	0.11818	$0.1181 \pm 0.0011$	$\langle d^2 \rangle^{1/2}$	2.4228	$2.425 \pm 0.021$	$D_M(0.51)$	1972.9	$1973^{+10}_{-9.1}$
$100\theta_{\text{MC}}$	1.041122	$1.04115 \pm 0.00041$	$z_{\text{re}}$	8.05	$8.04 \pm 0.74$	$H(0.61)$	95.459	$95.45 \pm 0.23$
$\tau$	0.0582	$0.0582 \pm 0.0075$	$10^9 A_s$	2.1083	$2.108 \pm 0.032$	$D_M(0.61)$	2296.6	$2297^{+11}_{-9.8}$
$\ln(10^{10} A_s)$	3.0485	$3.048 \pm 0.015$	$10^9 A_s e^{-2\tau}$	1.8765	$1.876 \pm 0.010$	$H(2.33)$	235.35	$235.29 \pm 0.69$
$n_s$	0.96973	$0.9685 \pm 0.0041$	$D_{40}$	1221.3	$1224 \pm 12$	$D_M(2.33)$	5757.7	$5758 \pm 11$
$y_{\text{cal}}$	1.00072	$1.0010 \pm 0.0025$	$D_{220}$	5730.7	$5735 \pm 39$	$f\sigma_8(0.15)$	0.4515	$0.4511 \pm 0.0059$
$A_{217}^{\text{CIB}}$	47.0	$48 \pm 7$	$D_{810}$	2539.5	$2538 \pm 13$	$\sigma_8(0.15)$	0.7477	$0.7473 \pm 0.0057$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.53	—	$D_{1420}$	818.21	$817.1 \pm 4.9$	$f\sigma_8(0.38)$	0.47129	$0.4709 \pm 0.0049$
$A_{143}^{\text{tSZ}}$	6.96	$5.3^{+2.1}_{-1.9}$	$D_{2000}$	231.11	$230.6 \pm 1.7$	$\sigma_8(0.38)$	0.6635	$0.6632 \pm 0.0050$
$A_{100}^{\text{PS}}$	250.6	$261 \pm 28$	$n_{\text{s},0.002}$	0.96973	$0.9685 \pm 0.0041$	$f\sigma_8(0.51)$	0.47068	$0.4703 \pm 0.0044$
$A_{143}^{\text{PS}}$	50.3	$48 \pm 8$	$Y_{\text{P}}$	0.245386	$0.245371^{+0.000082}_{-0.000070}$	$\sigma_8(0.51)$	0.62126	$0.6209 \pm 0.0047$
$A_{143 \times 217}^{\text{PS}}$	50.9	$43 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	0.246713	$0.246697^{+0.000082}_{-0.000071}$	$f\sigma_8(0.61)$	0.46625	$0.4659 \pm 0.0041$
$A_{217}^{\text{PS}}$	121.0	$115 \pm 10$	$10^5 D/H$	2.5899	$2.596 \pm 0.035$	$\sigma_8(0.61)$	0.59133	$0.5910 \pm 0.0045$
$A^{\text{kSZ}}$	0.01	$< 4.61$	Age/Gyr	13.7860	$13.788 \pm 0.026$	$f\sigma_8(2.33)$	0.29842	$0.2983 \pm 0.0023$
$A_{100}^{\text{dustTT}}$	8.81	$8.9^{+2.0}_{-1.8}$	$z_*$	1089.791	$1089.83 \pm 0.27$	$\sigma_8(2.33)$	0.30795	$0.3078 \pm 0.0025$
$A_{143}^{\text{dustTT}}$	10.74	$10.7 \pm 1.8$	$r_*$	144.922	$144.96 \pm 0.29$	$f_{2000}^{143}$	29.18	$30.4 \pm 3.0$
$A_{143 \times 217}^{\text{dustTT}}$	19.59	$18.3 \pm 3.4$	$100\theta_*$	1.041312	$1.04134 \pm 0.00041$	$f_{2000}^{143 \times 217}$	32.38	$32.9 \pm 2.0$
$A_{217}^{\text{dustTT}}$	95.1	$93.4 \pm 7.5$	$D_M(z_*)/\text{Gpc}$	13.9172	$13.921 \pm 0.028$	$f_{2000}^{217}$	106.89	$107.5 \pm 1.9$
$c_{100}$	0.99968	$0.99966 \pm 0.00064$	$z_{\text{drag}}$	1059.742	$1059.67 \pm 0.43$	$\chi_{\text{lensing}}^2$	8.94	$9.44 \pm 0.97$
$c_{217}$	0.99823	$0.99824 \pm 0.00062$	$r_{\text{drag}}$	147.602	$147.65 \pm 0.32$	$\chi_{\text{small}}^2$	396.83	$397.7 \pm 2.2$
$H_0$	68.046	$68.05^{+0.44}_{-0.50}$	$k_{\text{D}}$	0.140312	$0.14023 \pm 0.00043$	$\chi_{\text{lowl}}^2$	22.59	$22.85 \pm 0.83$
$\Omega_\Lambda$	0.6951	$0.6953 \pm 0.0062$	$100\theta_{\text{D}}$	0.160880	$0.16093 \pm 0.00025$	$\chi_{\text{plik}}^2$	760.8	$772.7 \pm 5.3$
$\Omega_{\text{m}}$	0.3049	$0.3047 \pm 0.0062$	$z_{\text{eq}}$	3358.1	$3356 \pm 25$	$\chi_{\text{H073p45}}^2$	10.60	$10.7 \pm 1.9$
$\Omega_{\text{m}} h^2$	0.14117	$0.1411 \pm 0.0010$	$k_{\text{eq}}$	0.010249	$0.010243 \pm 0.000076$	$\chi_{\text{JLA}}^2$	706.592	$706.62 \pm 0.12$
$\Omega_{\text{m}} h^3$	0.096061	$0.09601 \pm 0.00044$	$100\theta_{\text{eq}}$	0.82136	$0.8217 \pm 0.0047$	$\chi_{6\text{DF}}^2$	0.0001	$0.028 \pm 0.040$
$\sigma_8$	0.8085	$0.8080 \pm 0.0062$	$100\theta_{\text{s,eq}}$	0.45361	$0.4538 \pm 0.0024$	$\chi_{\text{MGS}}^2$	1.677	$1.76 \pm 0.51$
$S_8$	0.8150	$0.814 \pm 0.011$	$H(0.15)$	73.255	$73.26^{+0.38}_{-0.44}$	$\chi_{\text{DR12BAO}}^2$	3.496	$3.92 \pm 0.76$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4464	$0.4460 \pm 0.0062$	$D_M(0.15)$	637.58	$637.6 \pm 4.0$	$\chi_{\text{prior}}^2$	1.26	$7.4 \pm 3.6$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6008	$0.6003 \pm 0.0060$	$H(0.38)$	83.246	$83.24^{+0.29}_{-0.33}$	$\chi_{\text{CMB}}^2$	1189.2	$1202.7 \pm 5.6$
$\sigma_8/h^{0.5}$	0.9801	$0.9795 \pm 0.0088$	$D_M(0.38)$	1522.2	$1522.2^{+8.5}_{-7.7}$	$\chi_{\text{BAO}}^2$	5.174	$5.70 \pm 0.72$

Best-fit  $\chi_{\text{eff}}^2 = 1912.81$ ;  $\bar{\chi}_{\text{eff}}^2 = 1933.05$ ;  $R - 1 = 0.05858$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.50 CMB - smicadx12\_Dec5.ftl\_mv2.ndclpp.p.teb\_consext8: 8.94 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.83 commander\_dx12.v3.2.29: 22.59 plik\_rdl2\_HM.v22\_TT: 760.83 Hubble - H073p45: 10.60 SN - JLA December\_2013: 706.59



## 2.87 base\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022241	$0.02222 \pm 0.00019$	$r_{\text{drag}} h$	99.87	$99.75 \pm 0.80$	$H(0.51)$	89.702	$89.66 \pm 0.26$
$\Omega_c h^2$	0.11884	$0.1190 \pm 0.0011$	$\langle d^2 \rangle^{1/2}$	2.4298	$2.434 \pm 0.021$	$D_M(0.51)$	1980.2	$1981.8 \pm 9.6$
$100\theta_{\text{MC}}$	1.041029	$1.04099 \pm 0.00042$	$z_{\text{re}}$	7.86	$7.81 \pm 0.74$	$H(0.61)$	95.300	$95.26 \pm 0.22$
$\tau$	0.0560	$0.0556 \pm 0.0074$	$10^9 A_s$	2.1009	$2.100^{+0.029}_{-0.032}$	$D_M(0.61)$	2304.5	$2306 \pm 10$
$\ln(10^{10} A_s)$	3.0450	$3.044 \pm 0.015$	$10^9 A_s e^{-2\tau}$	1.8783	$1.879 \pm 0.011$	$H(2.33)$	235.68	$235.74 \pm 0.69$
$n_s$	0.96789	$0.9663 \pm 0.0040$	$D_{40}$	1223.6	$1227 \pm 12$	$D_M(2.33)$	5765.0	$5767 \pm 11$
$y_{\text{cal}}$	1.00073	$1.0008 \pm 0.0025$	$D_{220}$	5720.8	$5725 \pm 39$	$f\sigma_8(0.15)$	0.4548	$0.4553 \pm 0.0059$
$A_{217}^{\text{CIB}}$	48.6	$48 \pm 7$	$D_{810}$	2538.4	$2537 \pm 13$	$\sigma_8(0.15)$	0.7479	$0.7476 \pm 0.0056$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.30	—	$D_{1420}$	816.96	$815.8 \pm 4.9$	$f\sigma_8(0.38)$	0.47357	$0.4738 \pm 0.0049$
$A_{143}^{\text{tSZ}}$	7.09	$5.1^{+2.2}_{-2.0}$	$D_{2000}$	230.54	$230.1 \pm 1.7$	$\sigma_8(0.38)$	0.66319	$0.6628 \pm 0.0050$
$A_{100}^{\text{PS}}$	253.3	$263 \pm 28$	$n_{\text{s},0.002}$	0.96789	$0.9663 \pm 0.0040$	$f\sigma_8(0.51)$	0.47243	$0.4726 \pm 0.0044$
$A_{143}^{\text{PS}}$	48.1	$49 \pm 8$	$Y_{\text{P}}$	0.245343	$0.245331^{+0.000084}_{-0.000075}$	$\sigma_8(0.51)$	0.62074	$0.6203 \pm 0.0047$
$A_{143 \times 217}^{\text{PS}}$	45.8	$43 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	0.246669	$0.246657^{+0.000084}_{-0.000075}$	$f\sigma_8(0.61)$	0.46764	$0.4677 \pm 0.0041$
$A_{217}^{\text{PS}}$	119.0	$115 \pm 10$	$10^5 D/H$	2.6100	$2.615 \pm 0.036$	$\sigma_8(0.61)$	0.59070	$0.5903 \pm 0.0045$
$A^{\text{kSZ}}$	0.01	$< 4.80$	Age/Gyr	13.8023	$13.806 \pm 0.026$	$f\sigma_8(2.33)$	0.29793	$0.2977^{+0.0021}_{-0.0024}$
$A_{100}^{\text{dustTT}}$	8.88	$8.9 \pm 1.8$	$z_*$	1089.981	$1090.02 \pm 0.27$	$\sigma_8(2.33)$	0.30724	$0.3069^{+0.0023}_{-0.0026}$
$A_{143}^{\text{dustTT}}$	10.81	$10.7 \pm 1.8$	$r_*$	144.829	$144.81 \pm 0.28$	$f_{2000}^{143}$	29.97	$30.9 \pm 2.9$
$A_{143 \times 217}^{\text{dustTT}}$	19.35	$18.3 \pm 3.3$	$100\theta_*$	1.041228	$1.04119 \pm 0.00041$	$f_{2000}^{143 \times 217}$	32.95	$33.3 \pm 2.0$
$A_{217}^{\text{dustTT}}$	94.7	$93.4 \pm 7.4$	$D_M(z_*)/\text{Gpc}$	13.9094	$13.908 \pm 0.028$	$f_{2000}^{217}$	107.50	$107.9 \pm 1.9$
$c_{100}$	0.99963	$0.99963 \pm 0.00062$	$z_{\text{drag}}$	1059.551	$1059.51 \pm 0.43$	$\chi_{\text{lensing}}^2$	8.881	$9.27 \pm 0.73$
$c_{217}$	0.99826	$0.99826 \pm 0.00063$	$r_{\text{drag}}$	147.542	$147.53 \pm 0.32$	$\chi_{\text{small}}^2$	396.37	$397.2 \pm 1.9$
$H_0$	67.691	$67.61 \pm 0.47$	$k_{\text{D}}$	0.140294	$0.14028 \pm 0.00043$	$\chi_{\text{lowl}}^2$	22.81	$23.17 \pm 0.86$
$\Omega_{\Lambda}$	0.6907	$0.6897 \pm 0.0063$	$100\theta_{\text{D}}$	0.160991	$0.16102 \pm 0.00025$	$\chi_{\text{plik}}^2$	759.79	$771.7 \pm 5.2$
$\Omega_{\text{m}}$	0.3093	$0.3103 \pm 0.0063$	$z_{\text{eq}}$	3371.5	$3374 \pm 25$	$\chi_{\text{JLA}}^2$	1034.955	$1035.08 \pm 0.31$
$\Omega_{\text{m}} h^2$	0.14173	$0.1418 \pm 0.0010$	$k_{\text{eq}}$	0.010290	$0.010298 \pm 0.000075$	$\chi_{6\text{DF}}^2$	0.0156	$0.049 \pm 0.061$
$\Omega_{\text{m}} h^3$	0.095939	$0.09590 \pm 0.00045$	$100\theta_{\text{eq}}$	0.81855	$0.8180 \pm 0.0045$	$\chi_{\text{MGS}}^2$	1.343	$1.33 \pm 0.45$
$\sigma_8$	0.8091	$0.8089 \pm 0.0062$	$100\theta_{\text{s,eq}}$	0.45222	$0.4520 \pm 0.0024$	$\chi_{\text{DR12BAO}}^2$	4.03	$4.6 \pm 1.3$
$S_8$	0.8216	$0.823 \pm 0.011$	$H(0.15)$	72.945	$72.88 \pm 0.41$	$\chi_{\text{prior}}^2$	1.51	$7.3 \pm 3.6$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4500	$0.4506 \pm 0.0063$	$D_M(0.15)$	640.61	$641.3 \pm 4.0$	$\chi_{\text{CMB}}^2$	1187.9	$1201.4 \pm 5.4$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6034	$0.6037 \pm 0.0060$	$H(0.38)$	83.011	$82.96 \pm 0.31$	$\chi_{\text{BAO}}^2$	5.39	$6.0 \pm 1.1$
$\sigma_8/h^{0.5}$	0.9835	$0.9837 \pm 0.0088$	$D_M(0.38)$	1528.3	$1529.7 \pm 8.1$			

Best-fit  $\chi_{\text{eff}}^2 = 2229.71$ ;  $\bar{\chi}_{\text{eff}}^2 = 2249.77$ ;  $R - 1 = 0.01879$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.34 DR12BAO: 4.03 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.88 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.37 commander\_dx12\_v3\_2\_29: 22.81 plik\_rd12\_HM\_v22\_TT: 759.79 SN - JLA Pantheon18: 1034.95



## 2.88 base\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_Pantheon18\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022359	$0.02232 \pm 0.00019$	$r_{\text{drag}} h$	100.56	$100.49 \pm 0.80$	$H(0.51)$	89.927	$89.89 \pm 0.26$
$\Omega_c h^2$	0.11802	$0.1181 \pm 0.0010$	$\langle d^2 \rangle^{1/2}$	2.4217	$2.424 \pm 0.021$	$D_M(0.51)$	1971.5	$1972.8^{+9.9}_{-8.9}$
$100\theta_{\text{MC}}$	1.041130	$1.04115 \pm 0.00041$	$z_{\text{re}}$	8.07	$8.04 \pm 0.74$	$H(0.61)$	95.484	$95.45 \pm 0.22$
$\tau$	0.0585	$0.0583 \pm 0.0075$	$10^9 A_s$	2.1092	$2.108 \pm 0.032$	$D_M(0.61)$	2295.1	$2297^{+11}_{-9.6}$
$\ln(10^{10} A_s)$	3.0489	$3.048 \pm 0.015$	$10^9 A_s e^{-2\tau}$	1.8763	$1.876 \pm 0.010$	$H(2.33)$	235.26	$235.28 \pm 0.68$
$n_s$	0.96968	$0.9685 \pm 0.0041$	$D_{40}$	1222.0	$1224 \pm 12$	$D_M(2.33)$	5756.6	$5758 \pm 11$
$y_{\text{cal}}$	1.00094	$1.0010 \pm 0.0025$	$D_{220}$	5735.2	$5735 \pm 39$	$f\sigma_8(0.15)$	0.4507	$0.4510 \pm 0.0058$
$A_{217}^{\text{CIB}}$	48.1	$48 \pm 7$	$D_{810}$	2539.7	$2538 \pm 13$	$\sigma_8(0.15)$	0.7474	$0.7473 \pm 0.0057$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.38	—	$D_{1420}$	818.21	$817.1 \pm 4.9$	$f\sigma_8(0.38)$	0.47063	$0.4708 \pm 0.0049$
$A_{143}^{\text{tSZ}}$	7.00	$5.3^{+2.2}_{-1.9}$	$D_{2000}$	231.09	$230.6 \pm 1.7$	$\sigma_8(0.38)$	0.6634	$0.6632 \pm 0.0050$
$A_{100}^{\text{PS}}$	252.8	$261 \pm 28$	$n_{s,0.002}$	0.96968	$0.9685 \pm 0.0041$	$f\sigma_8(0.51)$	0.47013	$0.4703 \pm 0.0044$
$A_{143}^{\text{PS}}$	48.6	$48 \pm 8$	$Y_{\text{P}}$	0.245391	$0.245371^{+0.000082}_{-0.000070}$	$\sigma_8(0.51)$	0.62114	$0.6209 \pm 0.0047$
$A_{143 \times 217}^{\text{PS}}$	47.3	$43 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	0.246718	$0.246697^{+0.000082}_{-0.000070}$	$f\sigma_8(0.61)$	0.46578	$0.4659 \pm 0.0041$
$A_{217}^{\text{PS}}$	119.4	$115 \pm 10$	$10^5 D/H$	2.5875	$2.596 \pm 0.035$	$\sigma_8(0.61)$	0.59124	$0.5910 \pm 0.0045$
$A^{\text{kSZ}}$	0.00	$< 4.60$	Age/Gyr	13.7838	$13.788 \pm 0.026$	$f\sigma_8(2.33)$	0.29841	$0.2983 \pm 0.0023$
$A_{100}^{\text{dustTT}}$	8.87	$8.9^{+2.0}_{-1.8}$	$z_*$	1089.763	$1089.82 \pm 0.27$	$\sigma_8(2.33)$	0.30799	$0.3078 \pm 0.0025$
$A_{143}^{\text{dustTT}}$	10.83	$10.7 \pm 1.8$	$r_*$	144.953	$144.96 \pm 0.28$	$f_{2000}^{143}$	29.47	$30.4 \pm 3.0$
$A_{143 \times 217}^{\text{dustTT}}$	19.40	$18.3 \pm 3.4$	$100\theta_*$	1.041318	$1.04134 \pm 0.00041$	$f_{2000}^{143 \times 217}$	32.52	$32.9 \pm 2.0$
$A_{217}^{\text{dustTT}}$	94.6	$93.4 \pm 7.5$	$D_M(z_*)/\text{Gpc}$	13.9202	$13.921 \pm 0.028$	$f_{2000}^{217}$	107.11	$107.5 \pm 1.9$
$c_{100}$	0.99967	$0.99966 \pm 0.00064$	$z_{\text{drag}}$	1059.780	$1059.67 \pm 0.43$	$\chi_{\text{lensing}}^2$	9.00	$9.44 \pm 0.97$
$c_{217}$	0.99823	$0.99824 \pm 0.00062$	$r_{\text{drag}}$	147.628	$147.65 \pm 0.32$	$\chi_{\text{small}}^2$	396.89	$397.7 \pm 2.2$
$H_0$	68.116	$68.06^{+0.43}_{-0.49}$	$k_{\text{D}}$	0.140293	$0.14023 \pm 0.00042$	$\chi_{\text{lowl}}^2$	22.60	$22.85 \pm 0.83$
$\Omega_\Lambda$	0.6961	$0.6954 \pm 0.0061$	$100\theta_{\text{D}}$	0.160868	$0.16093 \pm 0.00025$	$\chi_{\text{plik}}^2$	760.8	$772.7 \pm 5.3$
$\Omega_{\text{m}}$	0.3039	$0.3046 \pm 0.0061$	$z_{\text{eq}}$	3354.6	$3356 \pm 25$	$\chi_{\text{H073p45}}^2$	10.33	$10.6 \pm 1.8$
$\Omega_{\text{m}} h^2$	0.14102	$0.1411 \pm 0.0010$	$k_{\text{eq}}$	0.010239	$0.010242 \pm 0.000075$	$\chi_{\text{JLA}}^2$	1034.786	$1034.88 \pm 0.18$
$\Omega_{\text{m}} h^3$	0.096060	$0.09601 \pm 0.00044$	$100\theta_{\text{eq}}$	0.82203	$0.8218 \pm 0.0046$	$\chi_{6\text{DF}}^2$	0.0002	$0.027 \pm 0.039$
$\sigma_8$	0.8080	$0.8079 \pm 0.0062$	$100\theta_{s,\text{eq}}$	0.45395	$0.4538 \pm 0.0024$	$\chi_{\text{MGS}}^2$	1.748	$1.76 \pm 0.50$
$S_8$	0.8133	$0.814 \pm 0.011$	$H(0.15)$	73.314	$73.26^{+0.38}_{-0.43}$	$\chi_{\text{DR12BAO}}^2$	3.436	$3.89 \pm 0.72$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4455	$0.4459 \pm 0.0061$	$D_M(0.15)$	636.99	$637.5 \pm 4.0$	$\chi_{\text{prior}}^2$	1.39	$7.4 \pm 3.6$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6000	$0.6002 \pm 0.0060$	$H(0.38)$	83.289	$83.25^{+0.29}_{-0.32}$	$\chi_{\text{CMB}}^2$	1189.3	$1202.7 \pm 5.5$
$\sigma_8/h^{0.5}$	0.9790	$0.9794 \pm 0.0087$	$D_M(0.38)$	1521.0	$1522.1^{+8.4}_{-7.5}$	$\chi_{\text{BAO}}^2$	5.184	$5.68 \pm 0.70$

Best-fit  $\chi_{\text{eff}}^2 = 2241.01$ ;  $\bar{\chi}_{\text{eff}}^2 = 2261.26$ ;  $R - 1 = 0.05989$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.44 CMB - smicadx12\_Dec5.ftl\_mv2.ndclpp.p.teb\_consext8: 9.00 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.89 commander\_dx12.v3.2.29: 22.60 plik\_rd12\_HM.v22\_TT: 760.84 Hubble - H073p45: 10.33 SN - JLA Pantheon18: 1034.79



## 2.89 base\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02215 \pm 0.00020$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6088 \pm 0.0075$	$H(0.15)$	$72.45 \pm 0.58$
$\Omega_{\mathrm{c}}h^2$	$0.1201 \pm 0.0015$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.010$	$D_{\mathrm{M}}(0.15)$	$645.6 \pm 5.9$
$100\theta_{\mathrm{MC}}$	$1.04082 \pm 0.00045$	$r_{\mathrm{drag}}h$	$98.9 \pm 1.2$	$H(0.38)$	$82.66 \pm 0.43$
$\tau$	$0.0539^{+0.0047}_{-0.0083}$	$\langle d^2 \rangle^{1/2}$	$2.449 \pm 0.024$	$D_{\mathrm{M}}(0.38)$	$1538 \pm 12$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.011}_{-0.015}$	$z_{\mathrm{re}}$	$7.68^{+0.54}_{-0.80}$	$H(0.51)$	$89.43 \pm 0.35$
$n_{\mathrm{s}}$	$0.9638 \pm 0.0047$	$10^9 A_{\mathrm{s}}$	$2.096^{+0.022}_{-0.031}$	$D_{\mathrm{M}}(0.51)$	$1992 \pm 14$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.882 \pm 0.011$	$H(0.61)$	$95.08 \pm 0.29$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{40}$	$1232 \pm 12$	$D_{\mathrm{M}}(0.61)$	$2317 \pm 15$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{220}$	$5716 \pm 40$	$H(2.33)$	$236.37 \pm 0.92$
$A_{143}^{\mathrm{tSZ}}$	$5.0 \pm 2.0$	$D_{810}$	$2536 \pm 13$	$D_{\mathrm{M}}(2.33)$	$5775 \pm 14$
$A_{100}^{\mathrm{PS}}$	$264 \pm 28$	$D_{1420}$	$814.5 \pm 5.1$	$f\sigma_8(0.15)$	$0.4610 \pm 0.0080$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$D_{2000}$	$229.6 \pm 1.8$	$\sigma_8(0.15)$	$0.7490^{+0.0048}_{-0.0054}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$n_{\mathrm{s},0.002}$	$0.9638 \pm 0.0047$	$f\sigma_8(0.38)$	$0.4780 \pm 0.0062$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}$	$0.245300^{+0.000094}_{-0.000081}$	$\sigma_8(0.38)$	$0.6633^{+0.0040}_{-0.0048}$
$A^{\mathrm{kSZ}}$	$< 5.00$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246626^{+0.000094}_{-0.000081}$	$f\sigma_8(0.51)$	$0.4759 \pm 0.0053$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$10^5 \mathrm{D}/\mathrm{H}$	$2.628 \pm 0.039$	$\sigma_8(0.51)$	$0.6205^{+0.0036}_{-0.0045}$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$\mathrm{Age}/\mathrm{Gyr}$	$13.823 \pm 0.032$	$f\sigma_8(0.61)$	$0.4705 \pm 0.0047$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.2 \pm 3.3$	$z_*$	$1090.21 \pm 0.33$	$\sigma_8(0.61)$	$0.5903^{+0.0034}_{-0.0044}$
$A_{217}^{\mathrm{dust}TT}$	$93.2 \pm 7.4$	$r_*$	$144.59 \pm 0.36$	$f\sigma_8(2.33)$	$0.2974^{+0.0017}_{-0.0023}$
$c_{100}$	$0.99961 \pm 0.00062$	$100\theta_*$	$1.04103 \pm 0.00045$	$\sigma_8(2.33)$	$0.3064^{+0.0019}_{-0.0026}$
$c_{217}$	$0.99826 \pm 0.00062$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.889 \pm 0.034$	$f_{2000}^{143}$	$31.2 \pm 2.9$
$H_0$	$67.12 \pm 0.68$	$z_{\mathrm{drag}}$	$1059.42 \pm 0.44$	$f_{2000}^{143 \times 217}$	$33.5 \pm 2.0$
$\Omega_{\Lambda}$	$0.6827 \pm 0.0094$	$r_{\mathrm{drag}}$	$147.32 \pm 0.37$	$f_{2000}^{217}$	$108.1 \pm 1.9$
$\Omega_{\mathrm{m}}$	$0.3173 \pm 0.0094$	$k_{\mathrm{D}}$	$0.14045 \pm 0.00045$	$\chi_{\mathrm{lensing}}^2$	$9.42 \pm 0.86$
$\Omega_{\mathrm{m}}h^2$	$0.1429 \pm 0.0014$	$100\theta_{\mathrm{D}}$	$0.16106 \pm 0.00026$	$\chi_{\mathrm{simall}}^2$	$396.8 \pm 1.6$
$\Omega_{\mathrm{m}}h^3$	$0.09588 \pm 0.00045$	$z_{\mathrm{eq}}$	$3398 \pm 34$	$\chi_{\mathrm{lowl}}^2$	$23.7 \pm 1.0$
$\sigma_8$	$0.8112 \pm 0.0059$	$k_{\mathrm{eq}}$	$0.01037 \pm 0.00010$	$\chi_{\mathrm{plik}}^2$	$771.0 \pm 5.2$
$S_8$	$0.834 \pm 0.016$	$100\theta_{\mathrm{eq}}$	$0.8133 \pm 0.0064$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.6$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4569 \pm 0.0087$	$100\theta_{\mathrm{s,eq}}$	$0.4496 \pm 0.0033$	$\chi_{\mathrm{CMB}}^2$	$1200.9 \pm 5.4$

$\bar{\chi}_{\mathrm{eff}}^2 = 1208.16$ ;  $R - 1 = 0.00659$



## 2.90 base\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02221 \pm 0.00019$	$r_{\text{drag}} h$	$99.65 \pm 0.83$	$H(0.51)$	$89.63 \pm 0.26$
$\Omega_c h^2$	$0.1191 \pm 0.0011$	$\langle d^2 \rangle^{1/2}$	$2.437 \pm 0.021$	$D_M(0.51)$	$1982.9 \pm 9.9$
$100\theta_{\text{MC}}$	$1.04098 \pm 0.00042$	$z_{\text{re}}$	$7.85^{+0.61}_{-0.76}$	$H(0.61)$	$95.24 \pm 0.23$
$\tau$	$0.0559^{+0.0056}_{-0.0078}$	$10^9 A_s$	$2.101^{+0.024}_{-0.032}$	$D_M(0.61)$	$2307 \pm 11$
$\ln(10^{10} A_s)$	$3.045^{+0.012}_{-0.015}$	$10^9 A_s e^{-2\tau}$	$1.879 \pm 0.011$	$H(2.33)$	$235.81 \pm 0.70$
$n_s$	$0.9660 \pm 0.0041$	$D_{40}$	$1228 \pm 12$	$D_M(2.33)$	$5768 \pm 12$
$y_{\text{cal}}$	$1.0007 \pm 0.0025$	$D_{220}$	$5724 \pm 39$	$f\sigma_8(0.15)$	$0.4561 \pm 0.0060$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{810}$	$2537 \pm 13$	$\sigma_8(0.15)$	$0.7481^{+0.0048}_{-0.0057}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$815.6 \pm 4.9$	$f\sigma_8(0.38)$	$0.4745 \pm 0.0049$
$A_{143}^{\text{tSZ}}$	$5.1^{+2.2}_{-2.0}$	$D_{2000}$	$230.0 \pm 1.7$	$\sigma_8(0.38)$	$0.6632^{+0.0041}_{-0.0051}$
$A_{100}^{\text{PS}}$	$263 \pm 28$	$n_{s,0.002}$	$0.9660 \pm 0.0041$	$f\sigma_8(0.51)$	$0.4732 \pm 0.0044$
$A_{143}^{\text{PS}}$	$49 \pm 8$	$Y_{\text{P}}$	$0.245327^{+0.000084}_{-0.000076}$	$\sigma_8(0.51)$	$0.6206^{+0.0038}_{-0.0048}$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	$0.246653^{+0.000085}_{-0.000076}$	$f\sigma_8(0.61)$	$0.4682 \pm 0.0040$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$10^5 \text{D}/\text{H}$	$2.616 \pm 0.036$	$\sigma_8(0.61)$	$0.5906^{+0.0036}_{-0.0046}$
$A^{\text{kSZ}}$	$< 4.82$	$\text{Age}/\text{Gyr}$	$13.808 \pm 0.027$	$f\sigma_8(2.33)$	$0.2978^{+0.0018}_{-0.0024}$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$z_*$	$1090.05 \pm 0.28$	$\sigma_8(2.33)$	$0.3070^{+0.0020}_{-0.0026}$
$A_{143}^{\text{dustTT}}$	$10.7 \pm 1.8$	$r_*$	$144.79 \pm 0.29$	$f_{2000}^{143}$	$30.9 \pm 2.9$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04118 \pm 0.00042$	$f_{2000}^{143 \times 217}$	$33.3 \pm 2.0$
$A_{217}^{\text{dustTT}}$	$93.3 \pm 7.4$	$D_M(z_*)/\text{Gpc}$	$13.906 \pm 0.028$	$f_{2000}^{217}$	$107.9 \pm 1.9$
$c_{100}$	$0.99963 \pm 0.00062$	$z_{\text{drag}}$	$1059.50 \pm 0.44$	$\chi_{\text{lensing}}^2$	$9.22 \pm 0.66$
$c_{217}$	$0.99826 \pm 0.00062$	$r_{\text{drag}}$	$147.51 \pm 0.32$	$\chi_{\text{simall}}^2$	$397.1 \pm 1.9$
$H_0$	$67.56 \pm 0.48$	$k_{\text{D}}$	$0.14030 \pm 0.00043$	$\chi_{\text{lowl}}^2$	$23.24 \pm 0.88$
$\Omega_{\Lambda}$	$0.6889 \pm 0.0065$	$100\theta_{\text{D}}$	$0.16102 \pm 0.00026$	$\chi_{\text{plik}}^2$	$771.5 \pm 5.2$
$\Omega_{\text{m}}$	$0.3111 \pm 0.0065$	$z_{\text{eq}}$	$3377 \pm 25$	$\chi_{6\text{DF}}^2$	$0.057 \pm 0.069$
$\Omega_{\text{m}} h^2$	$0.1420 \pm 0.0011$	$k_{\text{eq}}$	$0.010307 \pm 0.000077$	$\chi_{\text{MGS}}^2$	$1.28 \pm 0.45$
$\Omega_{\text{m}} h^3$	$0.09590 \pm 0.00045$	$100\theta_{\text{eq}}$	$0.8175 \pm 0.0047$	$\chi_{\text{DR12BAO}}^2$	$4.8 \pm 1.5$
$\sigma_8$	$0.8095^{+0.0054}_{-0.0063}$	$100\theta_{s,\text{eq}}$	$0.4517 \pm 0.0024$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.6$
$S_8$	$0.824 \pm 0.012$	$H(0.15)$	$72.83 \pm 0.42$	$\chi_{\text{CMB}}^2$	$1201.1 \pm 5.4$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4515 \pm 0.0064$	$D_M(0.15)$	$641.8 \pm 4.1$	$\chi_{\text{BAO}}^2$	$6.2 \pm 1.2$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.6046 \pm 0.0061$	$H(0.38)$	$82.93 \pm 0.32$		
$\sigma_8/h^{0.5}$	$0.9849 \pm 0.0087$	$D_M(0.38)$	$1530.7 \pm 8.4$		

$$\bar{\chi}_{\text{eff}}^2 = 1214.57; R - 1 = 0.01797$$



## 2.91 base\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02232 \pm 0.00020$	$\sigma_8/h^{0.5}$	$0.9798 \pm 0.0099$	$H(0.38)$	$83.25 \pm 0.43$
$\Omega_c h^2$	$0.1181 \pm 0.0015$	$r_{\text{drag}} h$	$100.5 \pm 1.2$	$D_M(0.38)$	$1522 \pm 11$
$100\theta_{\text{MC}}$	$1.04116 \pm 0.00044$	$\langle d^2 \rangle^{1/2}$	$2.425 \pm 0.024$	$H(0.51)$	$89.90 \pm 0.34$
$\tau$	$0.0588^{+0.0069}_{-0.0083}$	$z_{\text{re}}$	$8.09^{+0.70}_{-0.79}$	$D_M(0.51)$	$1973 \pm 13$
$\ln(10^{10} A_s)$	$3.049^{+0.014}_{-0.016}$	$10^9 A_s$	$2.110^{+0.028}_{-0.035}$	$H(0.61)$	$95.46 \pm 0.28$
$n_s$	$0.9686 \pm 0.0047$	$10^9 A_s e^{-2\tau}$	$1.876^{+0.010}_{-0.011}$	$D_M(0.61)$	$2296 \pm 14$
$y_{\text{cal}}$	$1.0010 \pm 0.0024$	$D_{40}$	$1224 \pm 12$	$H(2.33)$	$235.28 \pm 0.91$
$A_{217}^{\text{CIB}}$	$47 \pm 7$	$D_{220}$	$5735 \pm 39$	$D_M(2.33)$	$5758 \pm 13$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{810}$	$2538 \pm 13$	$f\sigma_8(0.15)$	$0.4512 \pm 0.0075$
$A_{143}^{\text{tSZ}}$	$5.2 \pm 1.9$	$D_{1420}$	$817.1 \pm 5.0$	$\sigma_8(0.15)$	$0.7476 \pm 0.0054$
$A_{100}^{\text{PS}}$	$262 \pm 27$	$D_{2000}$	$230.7 \pm 1.8$	$f\sigma_8(0.38)$	$0.4710 \pm 0.0059$
$A_{143}^{\text{PS}}$	$48 \pm 8$	$n_{s,0.002}$	$0.9686 \pm 0.0047$	$\sigma_8(0.38)$	$0.6635^{+0.0045}_{-0.0051}$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9$	$Y_{\text{P}}$	$0.245372^{+0.000087}_{-0.000071}$	$f\sigma_8(0.51)$	$0.4704 \pm 0.0051$
$A_{217}^{\text{PS}}$	$115^{+11}_{-9.8}$	$Y_{\text{P}}^{\text{BBN}}$	$0.246698^{+0.000088}_{-0.000072}$	$\sigma_8(0.51)$	$0.6212^{+0.0042}_{-0.0049}$
$A^{\text{kSZ}}$	$< 4.64$	$10^5 \text{D}/\text{H}$	$2.596^{+0.035}_{-0.040}$	$f\sigma_8(0.61)$	$0.4660 \pm 0.0046$
$A_{100}^{\text{dustTT}}$	$9.0 \pm 1.8$	Age/Gyr	$13.787 \pm 0.030$	$\sigma_8(0.61)$	$0.5913^{+0.0040}_{-0.0047}$
$A_{143}^{\text{dustTT}}$	$10.7 \pm 1.8$	$z_*$	$1089.82 \pm 0.32$	$f\sigma_8(2.33)$	$0.2984^{+0.0021}_{-0.0025}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3 \pm 3.4$	$r_*$	$144.96 \pm 0.36$	$\sigma_8(2.33)$	$0.3080^{+0.0023}_{-0.0028}$
$A_{217}^{\text{dustTT}}$	$93.5 \pm 7.7$	$100\theta_*$	$1.04135 \pm 0.00043$	$f_{2000}^{143}$	$30.3 \pm 3.0$
$c_{100}$	$0.99966 \pm 0.00064$	$D_M(z_*)/\text{Gpc}$	$13.921 \pm 0.034$	$f_{2000}^{143 \times 217}$	$32.8 \pm 2.0$
$c_{217}$	$0.99823 \pm 0.00062$	$z_{\text{drag}}$	$1059.68 \pm 0.43$	$f_{2000}^{217}$	$107.5 \pm 1.9$
$H_0$	$68.07 \pm 0.67$	$r_{\text{drag}}$	$147.65 \pm 0.38$	$\chi_{\text{lensing}}^2$	$9.5 \pm 1.0$
$\Omega_\Lambda$	$0.6954 \pm 0.0088$	$k_{\text{D}}$	$0.14023 \pm 0.00045$	$\chi_{\text{simall}}^2$	$397.8 \pm 2.4$
$\Omega_{\text{m}}$	$0.3046 \pm 0.0088$	$100\theta_{\text{D}}$	$0.16093 \pm 0.00025$	$\chi_{\text{lowl}}^2$	$22.86 \pm 0.91$
$\Omega_{\text{m}} h^2$	$0.1411 \pm 0.0014$	$z_{\text{eq}}$	$3356 \pm 34$	$\chi_{\text{plik}}^2$	$772.9 \pm 5.5$
$\Omega_{\text{m}} h^3$	$0.09601 \pm 0.00043$	$k_{\text{eq}}$	$0.01024 \pm 0.00010$	$\chi_{\text{H073p45}}^2$	$10.7 \pm 2.6$
$\sigma_8$	$0.8083 \pm 0.0061$	$100\theta_{\text{eq}}$	$0.8218 \pm 0.0064$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.6$
$S_8$	$0.814 \pm 0.015$	$100\theta_{\text{s,eq}}$	$0.4539 \pm 0.0033$	$\chi_{\text{CMB}}^2$	$1203.0 \pm 5.9$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4461 \pm 0.0081$	$H(0.15)$	$73.27 \pm 0.57$		
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.6005 \pm 0.0072$	$D_M(0.15)$	$637.5 \pm 5.6$		
$\bar{\chi}_{\text{eff}}^2 = 1221.07; R - 1 = 0.06981$					



## 2.92 base\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02231 \pm 0.00019$	$r_{\text{drag}} h$	$100.45 \pm 0.83$	$H(0.51)$	$89.88 \pm 0.26$
$\Omega_c h^2$	$0.1182 \pm 0.0011$	$\langle d^2 \rangle^{1/2}$	$2.426 \pm 0.021$	$D_M(0.51)$	$1973_{-9.2}^{+10}$
$100\theta_{\text{MC}}$	$1.04115 \pm 0.00041$	$z_{\text{re}}$	$8.07 \pm 0.69$	$H(0.61)$	$95.44 \pm 0.23$
$\tau$	$0.0585_{-0.0077}^{+0.0066}$	$10^9 A_s$	$2.109_{-0.033}^{+0.028}$	$D_M(0.61)$	$2297_{-10}^{+11}$
$\ln(10^{10} A_s)$	$3.049_{-0.016}^{+0.013}$	$10^9 A_s e^{-2\tau}$	$1.876 \pm 0.010$	$H(2.33)$	$235.31 \pm 0.70$
$n_s$	$0.9684 \pm 0.0041$	$D_{40}$	$1225 \pm 12$	$D_M(2.33)$	$5759 \pm 11$
$y_{\text{cal}}$	$1.0010 \pm 0.0025$	$D_{220}$	$5734 \pm 39$	$f\sigma_8(0.15)$	$0.4514 \pm 0.0059$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{810}$	$2538 \pm 13$	$\sigma_8(0.15)$	$0.7476_{-0.0058}^{+0.0051}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$817.0 \pm 4.9$	$f\sigma_8(0.38)$	$0.4712 \pm 0.0049$
$A_{143}^{\text{tSZ}}$	$5.3_{-1.9}^{+2.2}$	$D_{2000}$	$230.6 \pm 1.7$	$\sigma_8(0.38)$	$0.6634_{-0.0052}^{+0.0045}$
$A_{100}^{\text{PS}}$	$261 \pm 28$	$n_{s,0.002}$	$0.9684 \pm 0.0041$	$f\sigma_8(0.51)$	$0.4706 \pm 0.0044$
$A_{143}^{\text{PS}}$	$48 \pm 8$	$Y_{\text{P}}$	$0.245369_{-0.000071}^{+0.000082}$	$\sigma_8(0.51)$	$0.6211_{-0.0049}^{+0.0042}$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	$0.246696_{-0.000071}^{+0.000083}$	$f\sigma_8(0.61)$	$0.4661 \pm 0.0041$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$10^5 D/H$	$2.597 \pm 0.035$	$\sigma_8(0.61)$	$0.5912_{-0.0047}^{+0.0040}$
$A^{\text{kSZ}}$	$< 4.61$	Age/Gyr	$13.789 \pm 0.026$	$f\sigma_8(2.33)$	$0.2983_{-0.0024}^{+0.0021}$
$A_{100}^{\text{dustTT}}$	$8.9_{-1.8}^{+2.0}$	$z_*$	$1089.83 \pm 0.27$	$\sigma_8(2.33)$	$0.3079_{-0.0026}^{+0.0022}$
$A_{143}^{\text{dustTT}}$	$10.7 \pm 1.8$	$r_*$	$144.95 \pm 0.29$	$f_{2000}^{143}$	$30.4 \pm 3.0$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3 \pm 3.4$	$100\theta_*$	$1.04134 \pm 0.00041$	$f_{2000}^{143 \times 217}$	$32.9 \pm 2.0$
$A_{217}^{\text{dustTT}}$	$93.4 \pm 7.5$	$D_M(z_*)/\text{Gpc}$	$13.920 \pm 0.028$	$f_{2000}^{217}$	$107.5 \pm 1.9$
$c_{100}$	$0.99966 \pm 0.00064$	$z_{\text{drag}}$	$1059.67 \pm 0.43$	$\chi_{\text{lensing}}^2$	$9.39 \pm 0.93$
$c_{217}$	$0.99824 \pm 0.00062$	$r_{\text{drag}}$	$147.64 \pm 0.32$	$\chi_{\text{simall}}^2$	$397.7 \pm 2.2$
$H_0$	$68.03_{-0.51}^{+0.45}$	$k_{\text{D}}$	$0.14024 \pm 0.00043$	$\chi_{\text{lowl}}^2$	$22.87 \pm 0.84$
$\Omega_{\Lambda}$	$0.6950 \pm 0.0063$	$100\theta_{\text{D}}$	$0.16093 \pm 0.00025$	$\chi_{\text{plik}}^2$	$772.6 \pm 5.3$
$\Omega_{\text{m}}$	$0.3050 \pm 0.0063$	$z_{\text{eq}}$	$3357 \pm 25$	$\chi_{\text{H073p45}}^2$	$10.7 \pm 1.9$
$\Omega_{\text{m}} h^2$	$0.1411 \pm 0.0011$	$k_{\text{eq}}$	$0.010246 \pm 0.000077$	$\chi_{6\text{DF}}^2$	$0.029 \pm 0.041$
$\Omega_{\text{m}} h^3$	$0.09601 \pm 0.00044$	$100\theta_{\text{eq}}$	$0.8215 \pm 0.0047$	$\chi_{\text{MGS}}^2$	$1.74 \pm 0.51$
$\sigma_8$	$0.8083 \pm 0.0060$	$100\theta_{s,\text{eq}}$	$0.4537 \pm 0.0024$	$\chi_{\text{DR12BAO}}^2$	$3.94 \pm 0.79$
$S_8$	$0.815 \pm 0.012$	$H(0.15)$	$73.24_{-0.44}^{+0.39}$	$\chi_{\text{prior}}^2$	$7.4 \pm 3.6$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4464 \pm 0.0063$	$D_M(0.15)$	$637.7 \pm 4.1$	$\chi_{\text{CMB}}^2$	$1202.5 \pm 5.5$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.6006 \pm 0.0060$	$H(0.38)$	$83.23_{-0.33}^{+0.30}$	$\chi_{\text{BAO}}^2$	$5.71 \pm 0.73$
$\sigma_8/h^{0.5}$	$0.9800 \pm 0.0087$	$D_M(0.38)$	$1522.5_{-7.8}^{+8.6}$		

$\bar{\chi}_{\text{eff}}^2 = 1226.35$ ;  $R - 1 = 0.05547$



### 2.93 base\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02218 \pm 0.00020$	$\sigma_8/h^{0.5}$	$0.9879 \pm 0.0098$	$H(0.38)$	$82.77 \pm 0.40$
$\Omega_{\mathrm{c}}h^2$	$0.1196 \pm 0.0014$	$r_{\mathrm{drag}}h$	$99.2 \pm 1.1$	$D_{\mathrm{M}}(0.38)$	$1535 \pm 11$
$100\theta_{\mathrm{MC}}$	$1.04088 \pm 0.00045$	$\langle d^2 \rangle^{1/2}$	$2.443 \pm 0.023$	$H(0.51)$	$89.52 \pm 0.33$
$\tau$	$0.0548^{+0.0052}_{-0.0081}$	$z_{\mathrm{re}}$	$7.75^{+0.57}_{-0.79}$	$D_{\mathrm{M}}(0.51)$	$1988 \pm 13$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044^{+0.011}_{-0.015}$	$10^9 A_{\mathrm{s}}$	$2.099^{+0.023}_{-0.032}$	$H(0.61)$	$95.15 \pm 0.27$
$n_{\mathrm{s}}$	$0.9648 \pm 0.0045$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.881 \pm 0.011$	$D_{\mathrm{M}}(0.61)$	$2313 \pm 14$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{40}$	$1230 \pm 12$	$H(2.33)$	$236.13 \pm 0.86$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{220}$	$5720 \pm 40$	$D_{\mathrm{M}}(2.33)$	$5771 \pm 13$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2536 \pm 13$	$f\sigma_8(0.15)$	$0.4589 \pm 0.0074$
$A_{143}^{\mathrm{tSZ}}$	$5.1^{+2.2}_{-2.0}$	$D_{1420}$	$815.0 \pm 5.0$	$\sigma_8(0.15)$	$0.7486^{+0.0048}_{-0.0056}$
$A_{100}^{\mathrm{PS}}$	$263 \pm 28$	$D_{2000}$	$229.8 \pm 1.8$	$f\sigma_8(0.38)$	$0.4765 \pm 0.0058$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$n_{\mathrm{s},0.002}$	$0.9648 \pm 0.0045$	$\sigma_8(0.38)$	$0.6632^{+0.0040}_{-0.0049}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}$	$0.245313^{+0.000090}_{-0.000079}$	$f\sigma_8(0.51)$	$0.4747 \pm 0.0050$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246639^{+0.000090}_{-0.000079}$	$\sigma_8(0.51)$	$0.6206^{+0.0037}_{-0.0047}$
$A^{\mathrm{kSZ}}$	$< 4.91$	$10^5 \mathrm{D}/\mathrm{H}$	$2.623 \pm 0.038$	$f\sigma_8(0.61)$	$0.4695 \pm 0.0045$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$\mathrm{Age}/\mathrm{Gyr}$	$13.817 \pm 0.030$	$\sigma_8(0.61)$	$0.5904^{+0.0035}_{-0.0045}$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$z_*$	$1090.14 \pm 0.32$	$f\sigma_8(2.33)$	$0.2976^{+0.0018}_{-0.0024}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$r_*$	$144.67 \pm 0.34$	$\sigma_8(2.33)$	$0.3066^{+0.0019}_{-0.0026}$
$A_{217}^{\mathrm{dust}TT}$	$93.2 \pm 7.4$	$100\theta_*$	$1.04108 \pm 0.00044$	$f_{2000}^{143}$	$31.0 \pm 2.9$
$c_{100}$	$0.99962 \pm 0.00062$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.896 \pm 0.032$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.0$
$c_{217}$	$0.99826 \pm 0.00062$	$z_{\mathrm{drag}}$	$1059.46 \pm 0.44$	$f_{2000}^{217}$	$108.0 \pm 1.9$
$H_0$	$67.31 \pm 0.63$	$r_{\mathrm{drag}}$	$147.40 \pm 0.36$	$\chi_{\mathrm{lensing}}^2$	$9.32 \pm 0.75$
$\Omega_{\Lambda}$	$0.6854 \pm 0.0086$	$k_{\mathrm{D}}$	$0.14039 \pm 0.00044$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.7$
$\Omega_{\mathrm{m}}$	$0.3146 \pm 0.0086$	$100\theta_{\mathrm{D}}$	$0.16104 \pm 0.00026$	$\chi_{\mathrm{lowl}}^2$	$23.47 \pm 0.97$
$\Omega_{\mathrm{m}}h^2$	$0.1425 \pm 0.0013$	$z_{\mathrm{eq}}$	$3389 \pm 32$	$\chi_{\mathrm{plik}}^2$	$771.2 \pm 5.2$
$\Omega_{\mathrm{m}}h^3$	$0.09589 \pm 0.00045$	$k_{\mathrm{eq}}$	$0.010344 \pm 0.000097$	$\chi_{\mathrm{JLA}}^2$	$1035.38 \pm 0.57$
$\sigma_8$	$0.8104^{+0.0055}_{-0.0062}$	$100\theta_{\mathrm{eq}}$	$0.8151 \pm 0.0060$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$S_8$	$0.830 \pm 0.015$	$100\theta_{\mathrm{s,eq}}$	$0.4505 \pm 0.0031$	$\chi_{\mathrm{CMB}}^2$	$1200.9 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4545 \pm 0.0080$	$H(0.15)$	$72.62 \pm 0.54$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6069 \pm 0.0071$	$D_{\mathrm{M}}(0.15)$	$643.9 \pm 5.4$		
$\bar{\chi}_{\mathrm{eff}}^2 = 2243.62; R - 1 = 0.01253$					



## 2.94 base\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_JLA\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02232 \pm 0.00019$	$r_{\mathrm{drag}}h$	$100.49 \pm 0.82$	$H(0.51)$	$89.89 \pm 0.26$
$\Omega_{\mathrm{c}}h^2$	$0.1181 \pm 0.0011$	$\langle d^2 \rangle^{1/2}$	$2.425 \pm 0.021$	$D_{\mathrm{M}}(0.51)$	$1973_{-9.1}^{+10}$
$100\theta_{\mathrm{MC}}$	$1.04115 \pm 0.00041$	$z_{\mathrm{re}}$	$8.08 \pm 0.69$	$H(0.61)$	$95.45 \pm 0.23$
$\tau$	$0.0586_{-0.0077}^{+0.0066}$	$10^9 A_{\mathrm{s}}$	$2.110_{-0.033}^{+0.028}$	$D_{\mathrm{M}}(0.61)$	$2296_{-9.9}^{+11}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.049_{-0.016}^{+0.013}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.876 \pm 0.010$	$H(2.33)$	$235.28 \pm 0.69$
$n_{\mathrm{s}}$	$0.9686 \pm 0.0041$	$D_{40}$	$1224 \pm 12$	$D_{\mathrm{M}}(2.33)$	$5758 \pm 11$
$y_{\mathrm{cal}}$	$1.0010 \pm 0.0025$	$D_{220}$	$5735 \pm 39$	$f\sigma_8(0.15)$	$0.4512 \pm 0.0059$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2538 \pm 13$	$\sigma_8(0.15)$	$0.7475_{-0.0058}^{+0.0052}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$817.0 \pm 4.9$	$f\sigma_8(0.38)$	$0.4710 \pm 0.0049$
$A_{143}^{\mathrm{tSZ}}$	$5.3_{-1.9}^{+2.2}$	$D_{2000}$	$230.6 \pm 1.7$	$\sigma_8(0.38)$	$0.6634_{-0.0052}^{+0.0045}$
$A_{100}^{\mathrm{PS}}$	$261 \pm 28$	$n_{\mathrm{s},0.002}$	$0.9686 \pm 0.0041$	$f\sigma_8(0.51)$	$0.4704 \pm 0.0044$
$A_{143}^{\mathrm{PS}}$	$48 \pm 8$	$Y_{\mathrm{P}}$	$0.245371_{-0.000070}^{+0.000082}$	$\sigma_8(0.51)$	$0.6211_{-0.0049}^{+0.0042}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246698_{-0.000071}^{+0.000082}$	$f\sigma_8(0.61)$	$0.4660 \pm 0.0041$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.596 \pm 0.035$	$\sigma_8(0.61)$	$0.5912_{-0.0047}^{+0.0040}$
$A^{\mathrm{kSZ}}$	$< 4.61$	$\mathrm{Age}/\mathrm{Gyr}$	$13.788 \pm 0.026$	$f\sigma_8(2.33)$	$0.2984_{-0.0024}^{+0.0021}$
$A_{100}^{\mathrm{dust}TT}$	$8.9_{-1.8}^{+2.0}$	$z_*$	$1089.82 \pm 0.27$	$\sigma_8(2.33)$	$0.3079_{-0.0026}^{+0.0022}$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$r_*$	$144.96 \pm 0.29$	$f_{2000}^{143}$	$30.4 \pm 3.0$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.4$	$100\theta_*$	$1.04134 \pm 0.00041$	$f_{2000}^{143 \times 217}$	$32.9 \pm 2.0$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.5$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.921 \pm 0.028$	$f_{2000}^{217}$	$107.5 \pm 1.9$
$c_{100}$	$0.99966 \pm 0.00064$	$z_{\mathrm{drag}}$	$1059.67 \pm 0.43$	$\chi_{\mathrm{lensing}}^2$	$9.41 \pm 0.94$
$c_{217}$	$0.99824 \pm 0.00062$	$r_{\mathrm{drag}}$	$147.65 \pm 0.32$	$\chi_{\mathrm{simall}}^2$	$397.7 \pm 2.2$
$H_0$	$68.06_{-0.50}^{+0.44}$	$k_{\mathrm{D}}$	$0.14023 \pm 0.00043$	$\chi_{\mathrm{lowl}}^2$	$22.85 \pm 0.83$
$\Omega_{\Lambda}$	$0.6954 \pm 0.0062$	$100\theta_{\mathrm{D}}$	$0.16093 \pm 0.00025$	$\chi_{\mathrm{plik}}^2$	$772.6 \pm 5.3$
$\Omega_{\mathrm{m}}$	$0.3046 \pm 0.0062$	$z_{\mathrm{eq}}$	$3356 \pm 25$	$\chi_{\mathrm{H073p45}}^2$	$10.6 \pm 1.9$
$\Omega_{\mathrm{m}}h^2$	$0.1411 \pm 0.0010$	$k_{\mathrm{eq}}$	$0.010242 \pm 0.000076$	$\chi_{\mathrm{JLA}}^2$	$706.62 \pm 0.12$
$\Omega_{\mathrm{m}}h^3$	$0.09601 \pm 0.00044$	$100\theta_{\mathrm{eq}}$	$0.8218 \pm 0.0046$	$\chi_{6\mathrm{DF}}^2$	$0.028 \pm 0.040$
$\sigma_8$	$0.8082 \pm 0.0060$	$100\theta_{\mathrm{s,eq}}$	$0.4538 \pm 0.0024$	$\chi_{\mathrm{MGS}}^2$	$1.77 \pm 0.51$
$S_8$	$0.814 \pm 0.011$	$H(0.15)$	$73.26_{-0.44}^{+0.38}$	$\chi_{\mathrm{DR12BAO}}^2$	$3.91 \pm 0.74$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4461 \pm 0.0062$	$D_{\mathrm{M}}(0.15)$	$637.5_{-3.8}^{+4.2}$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.6$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6004 \pm 0.0060$	$H(0.38)$	$83.25_{-0.33}^{+0.29}$	$\chi_{\mathrm{CMB}}^2$	$1202.6 \pm 5.5$
$\sigma_8/h^{0.5}$	$0.9797 \pm 0.0087$	$D_{\mathrm{M}}(0.38)$	$1522.1_{-7.7}^{+8.5}$	$\chi_{\mathrm{BAO}}^2$	$5.70 \pm 0.72$

$\bar{\chi}_{\mathrm{eff}}^2 = 1932.95$ ;  $R - 1 = 0.06025$



## 2.95 base\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02222 \pm 0.00019$	$r_{\text{drag}} h$	$99.77 \pm 0.80$	$H(0.51)$	$89.67 \pm 0.26$
$\Omega_c h^2$	$0.1190 \pm 0.0010$	$\langle d^2 \rangle^{1/2}$	$2.435 \pm 0.021$	$D_M(0.51)$	$1981.6 \pm 9.5$
$100\theta_{\text{MC}}$	$1.04099 \pm 0.00042$	$z_{\text{re}}$	$7.88^{+0.62}_{-0.76}$	$H(0.61)$	$95.27 \pm 0.22$
$\tau$	$0.0563^{+0.0058}_{-0.0077}$	$10^9 A_s$	$2.102^{+0.025}_{-0.033}$	$D_M(0.61)$	$2306 \pm 10$
$\ln(10^{10} A_s)$	$3.046^{+0.012}_{-0.015}$	$10^9 A_s e^{-2\tau}$	$1.878 \pm 0.010$	$H(2.33)$	$235.73 \pm 0.68$
$n_s$	$0.9664 \pm 0.0040$	$D_{40}$	$1227 \pm 12$	$D_M(2.33)$	$5767 \pm 11$
$y_{\text{cal}}$	$1.0008 \pm 0.0025$	$D_{220}$	$5725 \pm 39$	$f\sigma_8(0.15)$	$0.4554 \pm 0.0058$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{810}$	$2537 \pm 13$	$\sigma_8(0.15)$	$0.7480^{+0.0048}_{-0.0057}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$815.7 \pm 4.9$	$f\sigma_8(0.38)$	$0.4740 \pm 0.0049$
$A_{143}^{\text{tSZ}}$	$5.1^{+2.2}_{-2.0}$	$D_{2000}$	$230.1 \pm 1.7$	$\sigma_8(0.38)$	$0.6632^{+0.0041}_{-0.0051}$
$A_{100}^{\text{PS}}$	$263 \pm 28$	$n_{s,0.002}$	$0.9664 \pm 0.0040$	$f\sigma_8(0.51)$	$0.4728 \pm 0.0043$
$A_{143}^{\text{PS}}$	$48 \pm 8$	$Y_{\text{P}}$	$0.245331^{+0.000084}_{-0.000075}$	$\sigma_8(0.51)$	$0.6207^{+0.0039}_{-0.0048}$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	$0.246658^{+0.000084}_{-0.000075}$	$f\sigma_8(0.61)$	$0.4679 \pm 0.0040$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$10^5 D/H$	$2.614 \pm 0.036$	$\sigma_8(0.61)$	$0.5906^{+0.0037}_{-0.0046}$
$A^{\text{kSZ}}$	$< 4.80$	Age/Gyr	$13.806 \pm 0.026$	$f\sigma_8(2.33)$	$0.2979^{+0.0019}_{-0.0024}$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$z_*$	$1090.02 \pm 0.27$	$\sigma_8(2.33)$	$0.3071^{+0.0020}_{-0.0026}$
$A_{143}^{\text{dustTT}}$	$10.7 \pm 1.8$	$r_*$	$144.82 \pm 0.28$	$f_{2000}^{143}$	$30.9 \pm 2.9$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04119 \pm 0.00041$	$f_{2000}^{143 \times 217}$	$33.3 \pm 2.0$
$A_{217}^{\text{dustTT}}$	$93.3 \pm 7.4$	$D_M(z_*)/\text{Gpc}$	$13.909 \pm 0.028$	$f_{2000}^{217}$	$107.9 \pm 1.9$
$c_{100}$	$0.99963 \pm 0.00062$	$z_{\text{drag}}$	$1059.51 \pm 0.43$	$\chi_{\text{lensing}}^2$	$9.23 \pm 0.68$
$c_{217}$	$0.99826 \pm 0.00062$	$r_{\text{drag}}$	$147.54 \pm 0.32$	$\chi_{\text{small}}^2$	$397.2 \pm 1.9$
$H_0$	$67.63 \pm 0.47$	$k_{\text{D}}$	$0.14028 \pm 0.00043$	$\chi_{\text{lowl}}^2$	$23.18 \pm 0.86$
$\Omega_{\Lambda}$	$0.6898 \pm 0.0062$	$100\theta_{\text{D}}$	$0.16101 \pm 0.00025$	$\chi_{\text{plik}}^2$	$771.6 \pm 5.2$
$\Omega_{\text{m}}$	$0.3102 \pm 0.0062$	$z_{\text{eq}}$	$3374 \pm 25$	$\chi_{\text{JLA}}^2$	$1035.07 \pm 0.30$
$\Omega_{\text{m}} h^2$	$0.1418 \pm 0.0010$	$k_{\text{eq}}$	$0.010297 \pm 0.000075$	$\chi_{6\text{DF}}^2$	$0.048 \pm 0.059$
$\Omega_{\text{m}} h^3$	$0.09590 \pm 0.00045$	$100\theta_{\text{eq}}$	$0.8181 \pm 0.0045$	$\chi_{\text{MGS}}^2$	$1.34 \pm 0.45$
$\sigma_8$	$0.8093^{+0.0055}_{-0.0063}$	$100\theta_{s,\text{eq}}$	$0.4520 \pm 0.0023$	$\chi_{\text{DR12BAO}}^2$	$4.6 \pm 1.3$
$S_8$	$0.823 \pm 0.011$	$H(0.15)$	$72.89 \pm 0.40$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.6$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4507 \pm 0.0062$	$D_M(0.15)$	$641.2 \pm 4.0$	$\chi_{\text{CMB}}^2$	$1201.2 \pm 5.4$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.6039 \pm 0.0060$	$H(0.38)$	$82.97 \pm 0.31$	$\chi_{\text{BAO}}^2$	$6.0 \pm 1.0$
$\sigma_8/h^{0.5}$	$0.9841 \pm 0.0086$	$D_M(0.38)$	$1529.5 \pm 8.1$		

$\bar{\chi}_{\text{eff}}^2 = 2249.62$ ;  $R - 1 = 0.01932$



2.96 base\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_Pantheon18\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02232 \pm 0.00019$	$r_{\text{drag}} h$	$100.50 \pm 0.80$	$H(0.51)$	$89.89 \pm 0.26$
$\Omega_c h^2$	$0.1181 \pm 0.0010$	$\langle d^2 \rangle^{1/2}$	$2.425 \pm 0.021$	$D_M(0.51)$	$1972.6^{+9.9}_{-8.9}$
$100\theta_{\text{MC}}$	$1.04115 \pm 0.00041$	$z_{\text{re}}$	$8.08 \pm 0.69$	$H(0.61)$	$95.45 \pm 0.22$
$\tau$	$0.0587^{+0.0066}_{-0.0077}$	$10^9 A_s$	$2.110^{+0.028}_{-0.033}$	$D_M(0.61)$	$2296^{+11}_{-9.7}$
$\ln(10^{10} A_s)$	$3.049^{+0.013}_{-0.016}$	$10^9 A_s e^{-2\tau}$	$1.876 \pm 0.010$	$H(2.33)$	$235.27 \pm 0.68$
$n_s$	$0.9686 \pm 0.0041$	$D_{40}$	$1224 \pm 12$	$D_M(2.33)$	$5758 \pm 11$
$y_{\text{cal}}$	$1.0010 \pm 0.0025$	$D_{220}$	$5735 \pm 39$	$f\sigma_8(0.15)$	$0.4511 \pm 0.0058$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{810}$	$2538 \pm 13$	$\sigma_8(0.15)$	$0.7475^{+0.0052}_{-0.0058}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$817.1 \pm 4.9$	$f\sigma_8(0.38)$	$0.4709 \pm 0.0048$
$A_{143}^{\text{tSZ}}$	$5.3^{+2.2}_{-1.9}$	$D_{2000}$	$230.6 \pm 1.7$	$\sigma_8(0.38)$	$0.6634^{+0.0045}_{-0.0052}$
$A_{100}^{\text{PS}}$	$261 \pm 28$	$n_{s,0.002}$	$0.9686 \pm 0.0041$	$f\sigma_8(0.51)$	$0.4704 \pm 0.0044$
$A_{143}^{\text{PS}}$	$48 \pm 8$	$Y_{\text{P}}$	$0.245372^{+0.000082}_{-0.000070}$	$\sigma_8(0.51)$	$0.6211^{+0.0042}_{-0.0049}$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	$0.246698^{+0.000082}_{-0.000070}$	$f\sigma_8(0.61)$	$0.4660 \pm 0.0040$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$10^5 D/H$	$2.596 \pm 0.035$	$\sigma_8(0.61)$	$0.5912^{+0.0040}_{-0.0047}$
$A^{\text{kSZ}}$	$< 4.60$	Age/Gyr	$13.788 \pm 0.026$	$f\sigma_8(2.33)$	$0.2984^{+0.0021}_{-0.0024}$
$A_{100}^{\text{dustTT}}$	$8.9^{+2.0}_{-1.8}$	$z_*$	$1089.82 \pm 0.27$	$\sigma_8(2.33)$	$0.3079^{+0.0022}_{-0.0026}$
$A_{143}^{\text{dustTT}}$	$10.7 \pm 1.8$	$r_*$	$144.97 \pm 0.28$	$f_{2000}^{143}$	$30.3 \pm 3.0$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3 \pm 3.4$	$100\theta_*$	$1.04135 \pm 0.00041$	$f_{2000}^{143 \times 217}$	$32.9 \pm 2.0$
$A_{217}^{\text{dustTT}}$	$93.4 \pm 7.5$	$D_M(z_*)/\text{Gpc}$	$13.921 \pm 0.028$	$f_{2000}^{217}$	$107.5 \pm 1.9$
$c_{100}$	$0.99966 \pm 0.00064$	$z_{\text{drag}}$	$1059.68 \pm 0.43$	$\chi_{\text{lensing}}^2$	$9.41 \pm 0.94$
$c_{217}$	$0.99824 \pm 0.00062$	$r_{\text{drag}}$	$147.66 \pm 0.32$	$\chi_{\text{simall}}^2$	$397.7 \pm 2.2$
$H_0$	$68.07^{+0.43}_{-0.49}$	$k_{\text{D}}$	$0.14023 \pm 0.00042$	$\chi_{\text{lowl}}^2$	$22.85 \pm 0.83$
$\Omega_{\Lambda}$	$0.6955 \pm 0.0061$	$100\theta_{\text{D}}$	$0.16093 \pm 0.00025$	$\chi_{\text{plik}}^2$	$772.6 \pm 5.3$
$\Omega_{\text{m}}$	$0.3045 \pm 0.0061$	$z_{\text{eq}}$	$3355 \pm 25$	$\chi_{\text{H073p45}}^2$	$10.6 \pm 1.8$
$\Omega_{\text{m}} h^2$	$0.1411 \pm 0.0010$	$k_{\text{eq}}$	$0.010241 \pm 0.000075$	$\chi_{\text{JLA}}^2$	$1034.87 \pm 0.17$
$\Omega_{\text{m}} h^3$	$0.09601 \pm 0.00044$	$100\theta_{\text{eq}}$	$0.8218 \pm 0.0045$	$\chi_{6\text{DF}}^2$	$0.027 \pm 0.039$
$\sigma_8$	$0.8082 \pm 0.0060$	$100\theta_{s,\text{eq}}$	$0.4539 \pm 0.0024$	$\chi_{\text{MGS}}^2$	$1.77 \pm 0.50$
$S_8$	$0.814 \pm 0.011$	$H(0.15)$	$73.27^{+0.38}_{-0.43}$	$\chi_{\text{DR12BAO}}^2$	$3.88 \pm 0.71$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4460 \pm 0.0061$	$D_M(0.15)$	$637.4^{+4.1}_{-3.7}$	$\chi_{\text{prior}}^2$	$7.4 \pm 3.6$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.6003 \pm 0.0059$	$H(0.38)$	$83.25^{+0.29}_{-0.32}$	$\chi_{\text{CMB}}^2$	$1202.6 \pm 5.5$
$\sigma_8/h^{0.5}$	$0.9796 \pm 0.0086$	$D_M(0.38)$	$1521.9^{+8.4}_{-7.5}$	$\chi_{\text{BAO}}^2$	$5.68 \pm 0.69$

$\bar{\chi}_{\text{eff}}^2 = 2261.17$ ;  $R - 1 = 0.06158$



## 2.97 base\_plikHM\_TTTEEE\_lowl\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022383	$0.02237 \pm 0.00015$ (+1.2 $\sigma$ )	$\Omega_m h^3$	0.096360	$0.09633 \pm 0.00030$ (+1.0 $\sigma$ )	$100\theta_{\text{eq}}$	0.81281	$0.8134 \pm 0.0050$ (+0.1 $\sigma$ )
$\Omega_c h^2$	0.12011	$0.1200 \pm 0.0012$ (−0.1 $\sigma$ )	$\sigma_8$	0.8120	$0.8111 \pm 0.0060$ (+0.1 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.44912	$0.4494 \pm 0.0026$ (+0.0 $\sigma$ )
$100\theta_{\text{MC}}$	1.040909	$1.04092 \pm 0.00031$ (+0.2 $\sigma$ )	$S_8$	0.8331	$0.832 \pm 0.013$ (−0.2 $\sigma$ )	$H(0.15)$	72.652	$72.68 \pm 0.46$ (+0.5 $\sigma$ )
$\tau$	0.0543	$0.0544 \pm 0.0073$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4563	$0.4554 \pm 0.0070$ (−0.2 $\sigma$ )	$D_{\text{M}}(0.15)$	643.66	$643.4 \pm 4.6$ (−0.4 $\sigma$ )
$\ln(10^{10} A_s)$	3.0448	$3.044 \pm 0.014$ (+0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6087	$0.6078 \pm 0.0064$ (−0.1 $\sigma$ )	$H(0.38)$	82.848	$82.87 \pm 0.34$ (+0.6 $\sigma$ )
$n_s$	0.96605	$0.9649 \pm 0.0042$ (+0.3 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9897	$0.9883 \pm 0.0091$ (−0.1 $\sigma$ )	$D_{\text{M}}(0.38)$	1534.0	$1533.5 \pm 9.2$ (−0.5 $\sigma$ )
$y_{\text{cal}}$	1.00044	$1.0006 \pm 0.0024$ (+0.1 $\sigma$ )	$r_{\text{drag}} h$	99.00	$99.08 \pm 0.92$ (+0.2 $\sigma$ )	$H(0.51)$	89.614	$89.63 \pm 0.27$ (+0.6 $\sigma$ )
$A_{217}^{\text{CIB}}$	46.1	$47 \pm 7$ (−0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4449	$2.446 \pm 0.022$ (−0.1 $\sigma$ )	$D_{\text{M}}(0.51)$	1986.5	$1986 \pm 11$ (−0.5 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.66	—	$z_{\text{re}}$	7.68	$7.67 \pm 0.73$ (+0.2 $\sigma$ )	$H(0.61)$	95.272	$95.28 \pm 0.22$ (+0.7 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.08	$5.4 \pm 2.0$ (+0.2 $\sigma$ )	$10^9 A_s$	2.1005	$2.100 \pm 0.030$ (+0.3 $\sigma$ )	$D_{\text{M}}(0.61)$	2311.0	$2310 \pm 12$ (−0.5 $\sigma$ )
$A_{100}^{\text{PS}}$	248.2	$260 \pm 28$ (−0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8843	$1.883 \pm 0.011$ (+0.1 $\sigma$ )	$H(2.33)$	236.64	$236.56 \pm 0.70$ (+0.1 $\sigma$ )
$A_{143}^{\text{PS}}$	50.7	$46 \pm 8$ (−0.4 $\sigma$ )	$D_{40}$	1229.0	$1232 \pm 12$ (−0.0 $\sigma$ )	$D_{\text{M}}(2.33)$	5763.6	$5763 \pm 10$ (−0.8 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	53.3	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{220}$	5730.1	$5736 \pm 38$ (+0.5 $\sigma$ )	$f\sigma_8(0.15)$	0.4606	$0.4597 \pm 0.0065$ (−0.2 $\sigma$ )
$A_{217}^{\text{PS}}$	121.9	$115 \pm 10$ (−0.0 $\sigma$ )	$D_{810}$	2541.3	$2539 \pm 13$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7499	$0.7492 \pm 0.0054$ (+0.2 $\sigma$ )
$A^{\text{kSZ}}$	0.00	$< 4.32$ (−0.2 $\sigma$ )	$D_{1420}$	818.44	$817.2 \pm 4.8$ (+0.5 $\sigma$ )	$f\sigma_8(0.38)$	0.4780	$0.4772 \pm 0.0053$ (−0.1 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.80	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$D_{2000}$	231.33	$230.9 \pm 1.6$ (+0.7 $\sigma$ )	$\sigma_8(0.38)$	0.66427	$0.6637 \pm 0.0047$ (+0.2 $\sigma$ )
$A_{143}^{\text{dustTT}}$	11.01	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$n_{\text{s},0.002}$	0.96605	$0.9649 \pm 0.0042$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.47606	$0.4754 \pm 0.0046$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	20.16	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\text{P}}$	0.245401	$0.245395^{+0.000060}_{-0.000053}$ (+1.1 $\sigma$ )	$\sigma_8(0.51)$	0.62145	$0.6209 \pm 0.0044$ (+0.3 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.5	$93.5 \pm 7.2$ (+0.0 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.246727	$0.246721^{+0.000060}_{-0.000054}$ (+1.1 $\sigma$ )	$f\sigma_8(0.61)$	0.47073	$0.4701 \pm 0.0042$ (−0.0 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1138	$0.114 \pm 0.038$	$10^5 \text{D/H}$	2.5831	$2.585 \pm 0.027$ (−1.1 $\sigma$ )	$\sigma_8(0.61)$	0.59120	$0.5907 \pm 0.0042$ (+0.3 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1346	$0.135 \pm 0.029$	Age/Gyr	13.7971	$13.797 \pm 0.023$ (−0.9 $\sigma$ )	$f\sigma_8(2.33)$	0.29792	$0.2977 \pm 0.0022$ (+0.3 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.479	$0.481 \pm 0.085$	$z_*$	1089.914	$1089.92 \pm 0.25$ (−0.9 $\sigma$ )	$\sigma_8(2.33)$	0.30695	$0.3068 \pm 0.0024$ (+0.3 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.225	$0.225 \pm 0.054$	$r_*$	144.394	$144.43 \pm 0.26$ (−0.4 $\sigma$ )	$f_{2000}^{143}$	28.58	$29.6 \pm 2.8$ (−0.5 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.665	$0.668 \pm 0.080$	$100\theta_*$	1.041085	$1.04110 \pm 0.00031$ (+0.2 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.97	$32.3 \pm 1.9$ (−0.7 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.082	$2.09 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8696	$13.873 \pm 0.025$ (−0.4 $\sigma$ )	$f_{2000}^{217}$	106.46	$107.1 \pm 1.8$ (−0.6 $\sigma$ )
$c_{100}$	0.99974	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$z_{\text{drag}}$	1059.971	$1059.94 \pm 0.30$ (+1.2 $\sigma$ )	$\chi_{\text{lensing}}^2$	8.868	$9.23 \pm 0.69$ (−0.3 $\sigma$ )
$c_{217}$	0.99819	$0.99819 \pm 0.00062$ (−0.1 $\sigma$ )	$r_{\text{drag}}$	147.049	$147.09 \pm 0.26$ (−0.6 $\sigma$ )	$\chi_{\text{small}}^2$	396.05	$397.0 \pm 1.7$ (+0.1 $\sigma$ )
$H_0$	67.32	$67.36 \pm 0.54$ (+0.4 $\sigma$ )	$k_{\text{D}}$	0.140922	$0.14087 \pm 0.00030$ (+0.9 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.25	$23.53 \pm 0.90$ (−0.1 $\sigma$ )
$\Omega_{\Lambda}$	0.6842	$0.6847 \pm 0.0073$ (+0.3 $\sigma$ )	$100\theta_{\text{D}}$	0.160734	$0.16076 \pm 0.00017$ (−1.2 $\sigma$ )	$\chi_{\text{plik}}^2$	2344.9	$2359.4 \pm 5.7$ (+304.4 $\sigma$ )
$\Omega_{\text{m}}$	0.3158	$0.3153 \pm 0.0073$ (−0.3 $\sigma$ )	$z_{\text{eq}}$	3405.1	$3402 \pm 26$ (+0.0 $\sigma$ )	$\chi_{\text{prior}}^2$	1.53	$11.5 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_{\text{m}} h^2$	0.14314	$0.1430 \pm 0.0011$ (+0.0 $\sigma$ )	$k_{\text{eq}}$	0.010393	$0.010384 \pm 0.000081$ (+0.0 $\sigma$ )	$\chi_{\text{CMB}}^2$	2773.1	$2789.2 \pm 5.8$ (+290.6 $\sigma$ )

Best-fit  $\chi_{\text{eff}}^2 = 2774.63$ ;  $\Delta\chi_{\text{eff}}^2 = 1586.07$ ;  $\bar{\chi}_{\text{eff}}^2 = 2800.69$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1592.28$ ;  $R - 1 = 0.01032$

$\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.87 ( $\Delta$  -0.03) small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.05 ( $\Delta$  0.19) commander\_dx12\_v3.2.29: 23.25 ( $\Delta$  0.02) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.93



## 2.98 base\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022447	$0.02242 \pm 0.00014$ (+1.1 $\sigma$ )	$S_8$	0.8253	$0.825 \pm 0.011$ (+0.1 $\sigma$ )	$H(0.38)$	83.083	$83.05 \pm 0.27$ (+0.4 $\sigma$ )
$\Omega_c h^2$	0.11928	$0.11933 \pm 0.00091$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4520	$0.4519 \pm 0.0058$ (+0.1 $\sigma$ )	$D_M(0.38)$	1527.5	$1528.3 \pm 7.1$ (-0.3 $\sigma$ )
$100\theta_{MC}$	1.041010	$1.04101 \pm 0.00029$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6055	$0.6051 \pm 0.0058$ (+0.1 $\sigma$ )	$H(0.51)$	89.797	$89.77 \pm 0.22$ (+0.6 $\sigma$ )
$\tau$	0.0568	$0.0561 \pm 0.0071$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9857	$0.9850 \pm 0.0085$ (+0.1 $\sigma$ )	$D_M(0.51)$	1978.9	$1979.8 \pm 8.4$ (-0.3 $\sigma$ )
$\ln(10^{10} A_s)$	3.0480	$3.047 \pm 0.014$ (+0.2 $\sigma$ )	$r_{drag} h$	99.66	$99.61 \pm 0.71$ (-0.0 $\sigma$ )	$H(0.61)$	95.414	$95.39 \pm 0.18$ (+0.7 $\sigma$ )
$n_s$	0.96824	$0.9665 \pm 0.0038$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4356	$2.438 \pm 0.021$ (+0.1 $\sigma$ )	$D_M(0.61)$	2302.9	$2303.8 \pm 9.1$ (-0.4 $\sigma$ )
$y_{cal}$	1.00047	$1.0008 \pm 0.0025$ (+0.0 $\sigma$ )	$z_{re}$	7.90	$7.82 \pm 0.71$ (+0.1 $\sigma$ )	$H(2.33)$	236.17	$236.18 \pm 0.56$ (+0.5 $\sigma$ )
$A_{217}^{CIB}$	45.6	$47 \pm 7$ (-0.1 $\sigma$ )	$10^9 A_s$	2.1073	$2.105 \pm 0.030$ (+0.2 $\sigma$ )	$D_M(2.33)$	5757.5	$5758.7 \pm 8.8$ (-0.8 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.709	$> 0.375$ (+0.1 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8811	$1.881 \pm 0.010$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4567	$0.4565 \pm 0.0055$ (+0.1 $\sigma$ )
$A_{143}^{tSZ}$	7.06	$5.4^{+2.2}_{-1.9}$ (+0.2 $\sigma$ )	$D_{40}$	1225.0	$1229 \pm 12$ (+0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7495	$0.7487 \pm 0.0054$ (+0.2 $\sigma$ )
$A_{100}^{PS}$	246.6	$259 \pm 28$ (-0.1 $\sigma$ )	$D_{220}$	5734.2	$5741 \pm 38$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.47523	$0.4749 \pm 0.0047$ (+0.1 $\sigma$ )
$A_{143}^{PS}$	50.6	$46 \pm 8$ (-0.4 $\sigma$ )	$D_{810}$	2541.2	$2540 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.66450	$0.6637 \pm 0.0048$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{PS}$	54.1	$42 \pm 9$ (-0.1 $\sigma$ )	$D_{1420}$	819.18	$817.9 \pm 4.7$ (+0.5 $\sigma$ )	$f\sigma_8(0.51)$	0.47393	$0.4736 \pm 0.0042$ (+0.1 $\sigma$ )
$A_{217}^{PS}$	122.3	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	231.67	$231.1 \pm 1.5$ (+0.7 $\sigma$ )	$\sigma_8(0.51)$	0.62190	$0.6212 \pm 0.0044$ (+0.2 $\sigma$ )
$A^{kSZ}$	0.01	$< 4.27$ (-0.1 $\sigma$ )	$n_{s,0.002}$	0.96824	$0.9665 \pm 0.0038$ (+0.1 $\sigma$ )	$f\sigma_8(0.61)$	0.46903	$0.4686 \pm 0.0039$ (+0.1 $\sigma$ )
$A_{100}^{dustTT}$	8.78	$8.9 \pm 1.8$ (-0.0 $\sigma$ )	$Y_P$	0.245425	$0.245414^{+0.000055}_{-0.000048}$ (+1.1 $\sigma$ )	$\sigma_8(0.61)$	0.59178	$0.5911 \pm 0.0042$ (+0.2 $\sigma$ )
$A_{143}^{dustTT}$	10.97	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246752	$0.246740^{+0.000055}_{-0.000048}$ (+1.1 $\sigma$ )	$f\sigma_8(2.33)$	0.29841	$0.2980 \pm 0.0022$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.03	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5713	$2.576 \pm 0.025$ (-1.1 $\sigma$ )	$\sigma_8(2.33)$	0.30769	$0.3073 \pm 0.0023$ (+0.2 $\sigma$ )
$A_{217}^{dustTT}$	95.3	$93.5 \pm 7.3$ (+0.0 $\sigma$ )	Age/Gyr	13.7839	$13.787 \pm 0.020$ (-0.8 $\sigma$ )	$f_{2000}^{143}$	28.16	$29.4 \pm 2.7$ (-0.5 $\sigma$ )
$A_{100}^{dustTE}$	0.1136	$0.114 \pm 0.038$	$z_*$	1089.760	$1089.80 \pm 0.21$ (-0.9 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.63	$32.1 \pm 1.9$ (-0.6 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1347	$0.135 \pm 0.030$	$r_*$	144.559	$144.57 \pm 0.22$ (-0.7 $\sigma$ )	$f_{2000}^{217}$	106.20	$106.9 \pm 1.8$ (-0.5 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.483	$0.481 \pm 0.084$	$100\theta_*$	1.041190	$1.04119 \pm 0.00029$ (+0.0 $\sigma$ )	$\chi_{lensing}^2$	8.730	$9.10 \pm 0.59$ (-0.2 $\sigma$ )
$A_{143}^{dustTE}$	0.224	$0.225 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	13.8840	$13.885 \pm 0.021$ (-0.7 $\sigma$ )	$\chi_{small}^2$	396.52	$397.2 \pm 1.8$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.664	$0.668 \pm 0.081$	$z_{drag}$	1060.047	$1060.01 \pm 0.29$ (+1.2 $\sigma$ )	$\chi_{lowl}^2$	22.90	$23.25 \pm 0.82$ (+0.0 $\sigma$ )
$A_{217}^{dustTE}$	2.076	$2.08 \pm 0.27$	$r_{drag}$	147.198	$147.21 \pm 0.23$ (-0.9 $\sigma$ )	$\chi_{plik}^2$	2345.3	$2359.6 \pm 5.8$ (+303.6 $\sigma$ )
$c_{100}$	0.99973	$0.99967 \pm 0.00062$ (+0.1 $\sigma$ )	$k_D$	0.140814	$0.14078 \pm 0.00028$ (+1.1 $\sigma$ )	$\chi_{6DF}^2$	0.0289	$0.053 \pm 0.060$ (-0.1 $\sigma$ )
$c_{217}$	0.99817	$0.99818 \pm 0.00063$ (-0.1 $\sigma$ )	$100\theta_D$	0.160690	$0.16072 \pm 0.00017$ (-1.2 $\sigma$ )	$\chi_{MGS}^2$	1.217	$1.24 \pm 0.38$ (-0.0 $\sigma$ )
$H_0$	67.702	$67.66 \pm 0.42$ (+0.2 $\sigma$ )	$z_{eq}$	3386.8	$3387 \pm 21$ (+0.4 $\sigma$ )	$\chi_{DR12BAO}^2$	4.42	$4.8 \pm 1.3$ (-0.0 $\sigma$ )
$\Omega_\Lambda$	0.6894	$0.6889 \pm 0.0056$ (+0.0 $\sigma$ )	$k_{eq}$	0.010337	$0.010339 \pm 0.000063$ (+0.4 $\sigma$ )	$\chi_{prior}^2$	1.56	$11.5 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_m$	0.3106	$0.3111 \pm 0.0056$ (-0.0 $\sigma$ )	$100\theta_{eq}$	0.81635	$0.8162 \pm 0.0039$ (-0.2 $\sigma$ )	$\chi_{CMB}^2$	2773.5	$2789.2 \pm 5.9$ (+292.9 $\sigma$ )
$\Omega_m h^2$	0.14237	$0.14240 \pm 0.00087$ (+0.4 $\sigma$ )	$100\theta_{s,eq}$	0.45092	$0.4509 \pm 0.0020$ (-0.3 $\sigma$ )	$\chi_{BAO}^2$	5.67	$6.1 \pm 1.0$ (-0.1 $\sigma$ )
$\Omega_m h^3$	0.096387	$0.09635 \pm 0.00030$ (+1.0 $\sigma$ )	$H(0.15)$	72.978	$72.94 \pm 0.36$ (+0.3 $\sigma$ )			
$\sigma_8$	0.8110	$0.8102 \pm 0.0060$ (+0.2 $\sigma$ )	$D_M(0.15)$	640.41	$640.8 \pm 3.5$ (-0.3 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2780.70$ ;  $\Delta\chi_{eff}^2 = 1586.01$ ;  $\bar{\chi}_{eff}^2 = 2806.84$ ;  $\Delta\bar{\chi}_{eff}^2 = 1592.11$ ;  $R - 1 = 0.01508$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.03 ( $\Delta$  0.00) MGS: 1.22 ( $\Delta$  0.00) DR12BAO: 4.42 ( $\Delta$  0.05) CMB - smicadx12\_Dec5\_ft1\_mv2\_ndclpp\_p.teb\_consext8: 8.73 ( $\Delta$  -0.14) small\_100x143\_offlike5\_EE\_Aplanck: 396.52 ( $\Delta$  0.43) commander\_dx12\_v3\_2.29: 22.90 ( $\Delta$  -0.06) plik\_rd12\_HM\_v22b.TTTEEE: 2345.32



## 2.99 base\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022506	$0.02248 \pm 0.00014$ (+0.8 $\sigma$ )	$\sigma_8$	0.8103	$0.8095 \pm 0.0060$ (+0.2 $\sigma$ )	$H(0.15)$	73.237	$73.17 \pm 0.44$ (-0.1 $\sigma$ )
$\Omega_c h^2$	0.11866	$0.1188 \pm 0.0011$ (+0.4 $\sigma$ )	$S_8$	0.8193	$0.820 \pm 0.012$ (+0.3 $\sigma$ )	$D_M(0.15)$	637.86	$638.5 \pm 4.3$ (+0.2 $\sigma$ )
$100\theta_{MC}$	1.041111	$1.04109 \pm 0.00031$ (-0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4487	$0.4490 \pm 0.0067$ (+0.3 $\sigma$ )	$H(0.38)$	83.273	$83.22 \pm 0.33$ (-0.0 $\sigma$ )
$\tau$	0.0587	$0.0575 \pm 0.0074$ (-0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6030	$0.6028 \pm 0.0063$ (+0.3 $\sigma$ )	$D_M(0.38)$	1522.4	$1523.8 \pm 8.7$ (+0.1 $\sigma$ )
$\ln(10^{10} A_s)$	3.0509	$3.049 \pm 0.014$ (+0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9826	$0.9822 \pm 0.0090$ (+0.3 $\sigma$ )	$H(0.51)$	89.947	$89.91 \pm 0.26$ (+0.1 $\sigma$ )
$n_s$	0.96947	$0.9679 \pm 0.0042$ (-0.1 $\sigma$ )	$r_{drag} h$	100.16	$100.05 \pm 0.87$ (-0.4 $\sigma$ )	$D_M(0.51)$	1972.9	$1974 \pm 10$ (+0.1 $\sigma$ )
$y_{cal}$	1.00073	$1.0008 \pm 0.0025$ (-0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4299	$2.432 \pm 0.022$ (+0.3 $\sigma$ )	$H(0.61)$	95.534	$95.50 \pm 0.22$ (+0.2 $\sigma$ )
$A_{217}^{CIB}$	45.8	$47 \pm 7$ (-0.1 $\sigma$ )	$z_{re}$	8.07	$7.94 \pm 0.72$ (-0.1 $\sigma$ )	$D_M(0.61)$	2296.4	$2298 \pm 11$ (+0.1 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.610	$> 0.380$ (+0.1 $\sigma$ )	$10^9 A_s$	2.1134	$2.109 \pm 0.030$ (+0.0 $\sigma$ )	$H(2.33)$	235.83	$235.90 \pm 0.66$ (+0.7 $\sigma$ )
$A_{143}^{tSZ}$	7.08	$5.5 \pm 2.0$ (+0.1 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8793	$1.879 \pm 0.011$ (+0.3 $\sigma$ )	$D_M(2.33)$	5752.2	$5754 \pm 10$ (-0.3 $\sigma$ )
$A_{100}^{PS}$	247.9	$258 \pm 28$ (-0.1 $\sigma$ )	$D_{40}$	1223.8	$1227 \pm 12$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4537	$0.4539 \pm 0.0062$ (+0.3 $\sigma$ )
$A_{143}^{PS}$	48.8	$45 \pm 8$ (-0.3 $\sigma$ )	$D_{220}$	5742.6	$5746 \pm 38$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7493	$0.7484 \pm 0.0055$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{PS}$	51.2	$42 \pm 9$ (-0.1 $\sigma$ )	$D_{810}$	2541.8	$2540 \pm 13$ (+0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.4731	$0.4730 \pm 0.0051$ (+0.3 $\sigma$ )
$A_{217}^{PS}$	121.4	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{1420}$	819.81	$818.6 \pm 4.7$ (+0.3 $\sigma$ )	$\sigma_8(0.38)$	0.66469	$0.6638 \pm 0.0048$ (+0.1 $\sigma$ )
$A^{kSZ}$	0.01	$< 4.19$ (-0.1 $\sigma$ )	$D_{2000}$	231.94	$231.4 \pm 1.6$ (+0.5 $\sigma$ )	$f\sigma_8(0.51)$	0.47230	$0.4721 \pm 0.0045$ (+0.3 $\sigma$ )
$A_{100}^{dustTT}$	8.85	$8.8 \pm 1.8$ (-0.1 $\sigma$ )	$n_{s,0.002}$	0.96947	$0.9679 \pm 0.0042$ (-0.1 $\sigma$ )	$\sigma_8(0.51)$	0.62226	$0.6214 \pm 0.0045$ (+0.1 $\sigma$ )
$A_{143}^{dustTT}$	10.96	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P$	0.245447	$0.245437 \pm 0.000054$ (+0.8 $\sigma$ )	$f\sigma_8(0.61)$	0.46771	$0.4674 \pm 0.0042$ (+0.3 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.94	$18.5 \pm 3.3$ (+0.0 $\sigma$ )	$Y_P^{BBN}$	0.246774	$0.246763 \pm 0.000055$ (+0.8 $\sigma$ )	$\sigma_8(0.61)$	0.59223	$0.5914 \pm 0.0043$ (+0.1 $\sigma$ )
$A_{217}^{dustTT}$	95.4	$93.4 \pm 7.4$ (-0.0 $\sigma$ )	$10^5 D/H$	2.5608	$2.565 \pm 0.026$ (-0.8 $\sigma$ )	$f\sigma_8(2.33)$	0.29880	$0.2983 \pm 0.0022$ (+0.0 $\sigma$ )
$A_{100}^{dustTE}$	0.1130	$0.113 \pm 0.038$	Age/Gyr	13.7724	$13.776 \pm 0.022$ (-0.4 $\sigma$ )	$\sigma_8(2.33)$	0.30826	$0.3077 \pm 0.0024$ (-0.0 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1349	$0.135 \pm 0.029$	$z_*$	1089.632	$1089.68 \pm 0.24$ (-0.5 $\sigma$ )	$f_{2000}^{143}$	28.06	$29.0 \pm 2.8$ (-0.5 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.482	$0.482 \pm 0.083$	$r_*$	144.674	$144.66 \pm 0.25$ (-0.8 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.45	$31.8 \pm 1.9$ (-0.5 $\sigma$ )
$A_{143}^{dustTE}$	0.224	$0.225 \pm 0.054$	$100\theta_*$	1.041279	$1.04127 \pm 0.00030$ (-0.2 $\sigma$ )	$f_{2000}^{217}$	106.15	$106.7 \pm 1.8$ (-0.4 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.662	$0.667 \pm 0.083$	$D_M(z_*)/\text{Gpc}$	13.8939	$13.892 \pm 0.023$ (-0.8 $\sigma$ )	$\chi_{lensing}^2$	8.714	$9.17 \pm 0.72$ (-0.3 $\sigma$ )
$A_{217}^{dustTE}$	2.073	$2.07 \pm 0.27$	$z_{drag}$	1060.162	$1060.11 \pm 0.30$ (+1.0 $\sigma$ )	$\chi_{simall}^2$	396.93	$397.5 \pm 2.1$ (-0.1 $\sigma$ )
$c_{100}$	0.99975	$0.99968 \pm 0.00062$ (+0.0 $\sigma$ )	$r_{drag}$	147.295	$147.28 \pm 0.25$ (-1.0 $\sigma$ )	$\chi_{lowl}^2$	22.73	$23.05 \pm 0.84$ (+0.2 $\sigma$ )
$c_{217}$	0.99817	$0.99818 \pm 0.00064$ (-0.1 $\sigma$ )	$k_D$	0.140755	$0.14075 \pm 0.00029$ (+1.1 $\sigma$ )	$\chi_{plik}^2$	2346.0	$2360.5 \pm 6.1$ (+288.5 $\sigma$ )
$H_0$	68.002	$67.93 \pm 0.51$ (-0.2 $\sigma$ )	$100\theta_D$	0.160643	$0.16067 \pm 0.00017$ (-1.0 $\sigma$ )	$\chi_{H073p45}^2$	10.77	$11.2 \pm 2.0$ (+0.2 $\sigma$ )
$\Omega_\Lambda$	0.6933	$0.6923 \pm 0.0067$ (-0.3 $\sigma$ )	$z_{eq}$	3373.4	$3376 \pm 25$ (+0.6 $\sigma$ )	$\chi_{prior}^2$	1.63	$11.6 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_m$	0.3067	$0.3077 \pm 0.0067$ (+0.3 $\sigma$ )	$k_{eq}$	0.010296	$0.010305 \pm 0.000076$ (+0.6 $\sigma$ )	$\chi_{CMB}^2$	2774.3	$2790.2 \pm 6.1$ (+268.2 $\sigma$ )
$\Omega_m h^2$	0.14181	$0.1419 \pm 0.0010$ (+0.6 $\sigma$ )	$100\theta_{eq}$	0.81901	$0.8184 \pm 0.0048$ (-0.5 $\sigma$ )			
$\Omega_m h^3$	0.096433	$0.09641 \pm 0.00029$ (+0.9 $\sigma$ )	$100\theta_{s,eq}$	0.45226	$0.4520 \pm 0.0024$ (-0.5 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2786.73$ ;  $\Delta\chi_{eff}^2 = 1585.67$ ;  $\bar{\chi}_{eff}^2 = 2812.97$ ;  $\Delta\bar{\chi}_{eff}^2 = 1591.80$ ;  $R - 1 = 0.03088$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.71 ( $\Delta$  -0.27) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.93 ( $\Delta$  0.36) commander\_dx12\_v3.2.29: 22.73 ( $\Delta$  0.05) plik\_rd12\_HM\_v22b\_TTTEEE: 2345.95 Hubble - H073p45: 10.77 ( $\Delta$  0.10)



## 2.100 base\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022515	$0.02249 \pm 0.00013$ (+1.0 $\sigma$ )	$S_8$	0.8172	$0.818 \pm 0.010$ (+0.3 $\sigma$ )	$H(0.38)$	83.292	$83.27 \pm 0.26$ (+0.1 $\sigma$ )
$\Omega_c h^2$	0.11857	$0.11863 \pm 0.00090$ (+0.4 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4476	$0.4480 \pm 0.0057$ (+0.3 $\sigma$ )	$D_M(0.38)$	1521.9	$1522.4 \pm 7.0$ (-0.0 $\sigma$ )
$100\theta_{MC}$	1.041086	$1.04112 \pm 0.00029$ (-0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6017	$0.6021 \pm 0.0057$ (+0.3 $\sigma$ )	$H(0.51)$	89.961	$89.95 \pm 0.21$ (+0.3 $\sigma$ )
$\tau$	0.0573	$0.0579 \pm 0.0072$ (-0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9807	$0.9812 \pm 0.0084$ (+0.2 $\sigma$ )	$D_M(0.51)$	1972.3	$1972.9 \pm 8.2$ (-0.1 $\sigma$ )
$\ln(10^{10} A_s)$	3.0482	$3.049 \pm 0.014$ (+0.1 $\sigma$ )	$r_{drag} h$	100.22	$100.19 \pm 0.70$ (-0.3 $\sigma$ )	$H(0.61)$	95.544	$95.53 \pm 0.18$ (+0.4 $\sigma$ )
$n_s$	0.96965	$0.9682 \pm 0.0038$ (-0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4254	$2.430 \pm 0.021$ (+0.2 $\sigma$ )	$D_M(0.61)$	2295.7	$2296.4 \pm 8.9$ (-0.1 $\sigma$ )
$y_{cal}$	1.00084	$1.0008 \pm 0.0024$ (-0.1 $\sigma$ )	$z_{re}$	7.93	$7.98 \pm 0.71$ (-0.1 $\sigma$ )	$H(2.33)$	235.78	$235.80 \pm 0.55$ (+0.7 $\sigma$ )
$A_{217}^{CIB}$	45.7	$47 \pm 7$ (-0.1 $\sigma$ )	$10^9 A_s$	2.1078	$2.110 \pm 0.030$ (+0.1 $\sigma$ )	$D_M(2.33)$	5751.9	$5752.6 \pm 8.6$ (-0.6 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.681	$> 0.384$ (+0.1 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8794	$1.879 \pm 0.010$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4526	$0.4530 \pm 0.0054$ (+0.3 $\sigma$ )
$A_{143}^{tSZ}$	7.12	$5.5 \pm 2.0$ (+0.1 $\sigma$ )	$D_{40}$	1223.2	$1226 \pm 12$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7480	$0.7482 \pm 0.0055$ (+0.1 $\sigma$ )
$A_{100}^{PS}$	246.4	$258 \pm 28$ (-0.1 $\sigma$ )	$D_{220}$	5744.9	$5747 \pm 38$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.47212	$0.4724 \pm 0.0046$ (+0.3 $\sigma$ )
$A_{143}^{PS}$	49.7	$45 \pm 8$ (-0.3 $\sigma$ )	$D_{810}$	2542.5	$2540 \pm 13$ (+0.1 $\sigma$ )	$\sigma_8(0.38)$	0.66365	$0.6637 \pm 0.0048$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{PS}$	53.0	$42 \pm 9$ (-0.1 $\sigma$ )	$D_{1420}$	820.13	$818.7 \pm 4.6$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.47135	$0.4716 \pm 0.0042$ (+0.2 $\sigma$ )
$A_{217}^{PS}$	121.8	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	232.02	$231.5 \pm 1.5$ (+0.5 $\sigma$ )	$\sigma_8(0.51)$	0.62131	$0.6214 \pm 0.0045$ (+0.1 $\sigma$ )
$A^{kSZ}$	0.01	$< 4.17$ (-0.1 $\sigma$ )	$n_{s,0.002}$	0.96965	$0.9682 \pm 0.0038$ (-0.0 $\sigma$ )	$f\sigma_8(0.61)$	0.46681	$0.4670 \pm 0.0040$ (+0.2 $\sigma$ )
$A_{100}^{dustTT}$	8.81	$8.8 \pm 1.8$ (-0.0 $\sigma$ )	$Y_P$	0.2454498	$0.245441 \pm 0.000050$ (+0.9 $\sigma$ )	$\sigma_8(0.61)$	0.59134	$0.5914 \pm 0.0043$ (+0.1 $\sigma$ )
$A_{143}^{dustTT}$	11.02	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.2467765	$0.246768 \pm 0.000051$ (+0.9 $\sigma$ )	$f\sigma_8(2.33)$	0.29837	$0.2984 \pm 0.0022$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.09	$18.5 \pm 3.3$ (+0.0 $\sigma$ )	$10^5 D/H$	2.5593	$2.563 \pm 0.024$ (-1.0 $\sigma$ )	$\sigma_8(2.33)$	0.30784	$0.3078 \pm 0.0023$ (+0.0 $\sigma$ )
$A_{217}^{dustTT}$	95.4	$93.4 \pm 7.4$ (+0.0 $\sigma$ )	Age/Gyr	13.7717	$13.773 \pm 0.019$ (-0.6 $\sigma$ )	$f_{2000}^{143}$	28.00	$29.0 \pm 2.7$ (-0.5 $\sigma$ )
$A_{100}^{dustTE}$	0.1132	$0.113 \pm 0.038$	$z_*$	1089.614	$1089.65 \pm 0.21$ (-0.7 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.49	$31.8 \pm 1.9$ (-0.6 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1344	$0.135 \pm 0.029$	$r_*$	144.691	$144.69 \pm 0.22$ (-0.9 $\sigma$ )	$f_{2000}^{217}$	106.12	$106.7 \pm 1.8$ (-0.5 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.480	$0.483 \pm 0.083$	$100\theta_*$	1.041261	$1.04129 \pm 0.00028$ (-0.1 $\sigma$ )	$\chi_{lensing}^2$	8.789	$9.15 \pm 0.73$ (-0.3 $\sigma$ )
$A_{143}^{dustTE}$	0.223	$0.225 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	13.8958	$13.895 \pm 0.021$ (-0.8 $\sigma$ )	$\chi_{small}^2$	396.58	$397.6 \pm 2.1$ (-0.1 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.664	$0.667 \pm 0.083$	$z_{drag}$	1060.162	$1060.12 \pm 0.29$ (+1.1 $\sigma$ )	$\chi_{lowl}^2$	22.65	$22.98 \pm 0.79$ (+0.1 $\sigma$ )
$A_{217}^{dustTE}$	2.077	$2.07 \pm 0.27$	$r_{drag}$	147.310	$147.32 \pm 0.23$ (-1.0 $\sigma$ )	$\chi_{plik}^2$	2346.5	$2360.5 \pm 6.0$ (+298.4 $\sigma$ )
$c_{100}$	0.99974	$0.99968 \pm 0.00062$ (+0.0 $\sigma$ )	$k_D$	0.140746	$0.14072 \pm 0.00028$ (+1.1 $\sigma$ )	$\chi_{H073p45}^2$	10.64	$10.8 \pm 1.6$ (+0.0 $\sigma$ )
$c_{217}$	0.99817	$0.99818 \pm 0.00063$ (-0.1 $\sigma$ )	$100\theta_D$	0.160632	$0.16066 \pm 0.00017$ (-1.1 $\sigma$ )	$\chi_{6DF}^2$	0.0029	$0.024 \pm 0.034$ (-0.1 $\sigma$ )
$H_0$	68.035	$68.01 \pm 0.41$ (-0.0 $\sigma$ )	$z_{eq}$	3371.4	$3372 \pm 20$ (+0.6 $\sigma$ )	$\chi_{MGS}^2$	1.540	$1.57 \pm 0.41$ (-0.3 $\sigma$ )
$\Omega_\Lambda$	0.6938	$0.6934 \pm 0.0054$ (-0.2 $\sigma$ )	$k_{eq}$	0.010290	$0.010293 \pm 0.000062$ (+0.6 $\sigma$ )	$\chi_{DR12BAO}^2$	3.696	$4.05 \pm 0.80$ (+0.1 $\sigma$ )
$\Omega_m$	0.3062	$0.3066 \pm 0.0054$ (+0.2 $\sigma$ )	$100\theta_{eq}$	0.81937	$0.8192 \pm 0.0039$ (-0.5 $\sigma$ )	$\chi_{prior}^2$	1.65	$11.6 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_m h^2$	0.14173	$0.14177 \pm 0.00085$ (+0.6 $\sigma$ )	$100\theta_{s,eq}$	0.45245	$0.4524 \pm 0.0020$ (-0.5 $\sigma$ )	$\chi_{CMB}^2$	2774.5	$2790.2 \pm 6.0$ (+285.5 $\sigma$ )
$\Omega_m h^3$	0.096425	$0.09641 \pm 0.00029$ (+0.9 $\sigma$ )	$H(0.15)$	73.264	$73.24 \pm 0.35$ (+0.0 $\sigma$ )	$\chi_{BAO}^2$	5.239	$5.64 \pm 0.58$ (-0.1 $\sigma$ )
$\sigma_8$	0.8089	$0.8091 \pm 0.0060$ (+0.2 $\sigma$ )	$D_M(0.15)$	637.59	$637.9 \pm 3.4$ (+0.0 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2792.01$ ;  $\Delta\chi_{eff}^2 = 1585.80$ ;  $\bar{\chi}_{eff}^2 = 2818.25$ ;  $\Delta\bar{\chi}_{eff}^2 = 1591.79$ ;  $R - 1 = 0.03699$

$\chi_{eff}^2$ : BAO - 6DF: 0.00 ( $\Delta$  0.00) MGS: 1.54 ( $\Delta$  -0.14) DR12BAO: 3.70 ( $\Delta$  0.20) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.79 ( $\Delta$  -0.27) simall\_100x143\_offlike5\_EE\_Aplanck: 396.58 ( $\Delta$  0.11) commander\_dx12\_v3\_2.29: 22.66 ( $\Delta$  0.12) plik\_rd12\_HM\_v22b\_TTTEEE: 2346.46 Hubble - H073p45: 10.64 ( $\Delta$  0.07)



## 2.101 base\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022400	$0.02239 \pm 0.00014$ (+1.1 $\sigma$ )	$\sigma_8$	0.8112	$0.8108 \pm 0.0060$ (+0.2 $\sigma$ )	$H(0.15)$	72.773	$72.78 \pm 0.43$ (+0.4 $\sigma$ )
$\Omega_c h^2$	0.11977	$0.1197 \pm 0.0011$ (+0.0 $\sigma$ )	$S_8$	0.8296	$0.829 \pm 0.012$ (-0.1 $\sigma$ )	$D_M(0.15)$	642.44	$642.4 \pm 4.3$ (-0.3 $\sigma$ )
$100\theta_{MC}$	1.040941	$1.04095 \pm 0.00031$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4544	$0.4541 \pm 0.0067$ (-0.1 $\sigma$ )	$H(0.38)$	82.933	$82.94 \pm 0.32$ (+0.5 $\sigma$ )
$\tau$	0.0549	$0.0550 \pm 0.0073$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6071	$0.6068 \pm 0.0062$ (+0.0 $\sigma$ )	$D_M(0.38)$	1531.6	$1531.5 \pm 8.7$ (-0.4 $\sigma$ )
$\ln(10^{10} A_s)$	3.0453	$3.045 \pm 0.014$ (+0.2 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9876	$0.9871 \pm 0.0089$ (-0.0 $\sigma$ )	$H(0.51)$	89.679	$89.68 \pm 0.26$ (+0.6 $\sigma$ )
$n_s$	0.96641	$0.9655 \pm 0.0041$ (+0.2 $\sigma$ )	$r_{drag} h$	99.25	$99.28 \pm 0.87$ (+0.1 $\sigma$ )	$D_M(0.51)$	1983.7	$1984 \pm 10$ (-0.4 $\sigma$ )
$y_{cal}$	1.00064	$1.0007 \pm 0.0025$ (+0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4413	$2.443 \pm 0.022$ (+0.0 $\sigma$ )	$H(0.61)$	95.320	$95.32 \pm 0.21$ (+0.7 $\sigma$ )
$A_{217}^{CIB}$	47.2	$47 \pm 7$ (-0.1 $\sigma$ )	$z_{re}$	7.73	$7.73 \pm 0.73$ (+0.1 $\sigma$ )	$D_M(0.61)$	2308.0	$2308 \pm 11$ (-0.4 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.446	$> 0.375$ (+0.1 $\sigma$ )	$10^9 A_s$	2.1016	$2.102 \pm 0.030$ (+0.2 $\sigma$ )	$H(2.33)$	236.44	$236.41 \pm 0.66$ (+0.3 $\sigma$ )
$A_{143}^{tSZ}$	7.20	$5.4_{-1.9}^{+2.2}$ (+0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8832	$1.883 \pm 0.011$ (+0.1 $\sigma$ )	$D_M(2.33)$	5761.6	$5761.7 \pm 9.9$ (-0.8 $\sigma$ )
$A_{100}^{PS}$	250.3	$259 \pm 28$ (-0.1 $\sigma$ )	$D_{40}$	1228.7	$1231 \pm 12$ (+0.0 $\sigma$ )	$f\sigma_8(0.15)$	0.4588	$0.4585 \pm 0.0062$ (-0.1 $\sigma$ )
$A_{143}^{PS}$	47.7	$46 \pm 8$ (-0.4 $\sigma$ )	$D_{220}$	5734.6	$5738 \pm 38$ (+0.5 $\sigma$ )	$\sigma_8(0.15)$	0.7493	$0.7490 \pm 0.0054$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{PS}$	47.9	$42 \pm 9$ (-0.1 $\sigma$ )	$D_{810}$	2541.2	$2540 \pm 13$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.4766	$0.4763 \pm 0.0051$ (-0.0 $\sigma$ )
$A_{217}^{PS}$	119.7	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{1420}$	818.47	$817.5 \pm 4.7$ (+0.5 $\sigma$ )	$\sigma_8(0.38)$	0.66399	$0.6637 \pm 0.0047$ (+0.2 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.31$ (-0.2 $\sigma$ )	$D_{2000}$	231.33	$231.0 \pm 1.6$ (+0.7 $\sigma$ )	$f\sigma_8(0.51)$	0.47497	$0.4747 \pm 0.0045$ (+0.0 $\sigma$ )
$A_{100}^{dustTT}$	8.83	$8.9 \pm 1.8$ (-0.0 $\sigma$ )	$n_{s,0.002}$	0.96641	$0.9655 \pm 0.0041$ (+0.2 $\sigma$ )	$\sigma_8(0.51)$	0.62128	$0.6210 \pm 0.0044$ (+0.2 $\sigma$ )
$A_{143}^{dustTT}$	11.02	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P$	0.245407	$0.245402_{-0.000052}^{+0.000058}$ (+1.1 $\sigma$ )	$f\sigma_8(0.61)$	0.46981	$0.4695 \pm 0.0041$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.81	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246734	$0.246729_{-0.000052}^{+0.000059}$ (+1.1 $\sigma$ )	$\sigma_8(0.61)$	0.59110	$0.5909 \pm 0.0042$ (+0.2 $\sigma$ )
$A_{217}^{dustTT}$	95.0	$93.5 \pm 7.3$ (+0.0 $\sigma$ )	$10^5 D/H$	2.5800	$2.582 \pm 0.026$ (-1.1 $\sigma$ )	$f\sigma_8(2.33)$	0.29794	$0.2978 \pm 0.0022$ (+0.2 $\sigma$ )
$A_{100}^{dustTE}$	0.1139	$0.114 \pm 0.038$	Age/Gyr	13.7930	$13.793 \pm 0.022$ (-0.8 $\sigma$ )	$\sigma_8(2.33)$	0.30707	$0.3070 \pm 0.0023$ (+0.3 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1343	$0.135 \pm 0.030$	$z_*$	1089.862	$1089.87 \pm 0.24$ (-0.9 $\sigma$ )	$f_{2000}^{143}$	28.79	$29.5 \pm 2.7$ (-0.5 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.482	$0.480 \pm 0.085$	$r_*$	144.467	$144.48 \pm 0.25$ (-0.5 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.98	$32.2 \pm 1.9$ (-0.6 $\sigma$ )
$A_{143}^{dustTE}$	0.223	$0.225 \pm 0.054$	$100\theta_*$	1.041120	$1.04113 \pm 0.00030$ (+0.1 $\sigma$ )	$f_{2000}^{217}$	106.61	$107.0 \pm 1.8$ (-0.5 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.664	$0.669 \pm 0.081$	$D_M(z_*)/\text{Gpc}$	13.8761	$13.877 \pm 0.024$ (-0.5 $\sigma$ )	$\chi_{lensing}^2$	8.771	$9.17 \pm 0.63$ (-0.2 $\sigma$ )
$A_{217}^{dustTE}$	2.080	$2.08 \pm 0.27$	$z_{drag}$	1059.971	$1059.97 \pm 0.30$ (+1.2 $\sigma$ )	$\chi_{simall}^2$	396.16	$397.1 \pm 1.7$ (+0.0 $\sigma$ )
$c_{100}$	0.99973	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$r_{drag}$	147.120	$147.14 \pm 0.25$ (-0.7 $\sigma$ )	$\chi_{lowl}^2$	23.18	$23.42 \pm 0.87$ (-0.1 $\sigma$ )
$c_{217}$	0.99817	$0.99819 \pm 0.00062$ (-0.1 $\sigma$ )	$k_D$	0.140861	$0.14084 \pm 0.00029$ (+1.0 $\sigma$ )	$\chi_{plik}^2$	2344.9	$2359.5 \pm 5.8$ (+303.8 $\sigma$ )
$H_0$	67.46	$67.48 \pm 0.50$ (+0.3 $\sigma$ )	$100\theta_D$	0.160728	$0.16074 \pm 0.00017$ (-1.2 $\sigma$ )	$\chi_{JLA}^2$	1035.184	$1035.27 \pm 0.43$ (-0.2 $\sigma$ )
$\Omega_\Lambda$	0.6862	$0.6863 \pm 0.0069$ (+0.2 $\sigma$ )	$z_{eq}$	3397.5	$3396 \pm 25$ (+0.2 $\sigma$ )	$\chi_{prior}^2$	1.70	$11.5 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_m$	0.3138	$0.3137 \pm 0.0069$ (-0.2 $\sigma$ )	$k_{eq}$	0.010369	$0.010366 \pm 0.000076$ (+0.2 $\sigma$ )	$\chi_{CMB}^2$	2773.0	$2789.2 \pm 5.9$ (+292.3 $\sigma$ )
$\Omega_m h^2$	0.14282	$0.1428 \pm 0.0010$ (+0.2 $\sigma$ )	$100\theta_{eq}$	0.81424	$0.8144 \pm 0.0047$ (-0.1 $\sigma$ )			
$\Omega_m h^3$	0.096351	$0.09633 \pm 0.00030$ (+1.0 $\sigma$ )	$100\theta_{s,eq}$	0.44985	$0.4500 \pm 0.0024$ (-0.1 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 3809.84$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.97$ ;  $\bar{\chi}_{\text{eff}}^2 = 3835.97$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1592.16$ ;  $R - 1 = 0.01281$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb\_consect8: 8.77 ( $\Delta$  -0.07) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.16 ( $\Delta$  0.29) commander\_dx12\_v3.2.29: 23.18 ( $\Delta$  -0.05) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.85 SN - JLA Pantheon18: 1035.18 ( $\Delta$  -0.08)



## 2.102 base\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_JLA\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022522	$0.02250 \pm 0.00013$ (+1.0 $\sigma$ )	$S_8$	0.8169	$0.817 \pm 0.010$ (+0.3 $\sigma$ )	$H(0.38)$	83.330	$83.29 \pm 0.26$ (+0.1 $\sigma$ )
$\Omega_c h^2$	0.11843	$0.11858 \pm 0.00089$ (+0.4 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4474	$0.4477 \pm 0.0057$ (+0.3 $\sigma$ )	$D_M(0.38)$	1520.8	$1522.0 \pm 6.9$ (−0.0 $\sigma$ )
$100\theta_{MC}$	1.041109	$1.04112 \pm 0.00029$ (−0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6019	$0.6018 \pm 0.0057$ (+0.3 $\sigma$ )	$H(0.51)$	89.991	$89.96 \pm 0.21$ (+0.3 $\sigma$ )
$\tau$	0.0588	$0.0580 \pm 0.0072$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9812	$0.9809 \pm 0.0084$ (+0.2 $\sigma$ )	$D_M(0.51)$	1971.1	$1972.5 \pm 8.1$ (−0.0 $\sigma$ )
$\ln(10^{10} A_s)$	3.0511	$3.049 \pm 0.014$ (+0.1 $\sigma$ )	$r_{drag} h$	100.33	$100.22 \pm 0.69$ (−0.3 $\sigma$ )	$H(0.61)$	95.567	$95.54 \pm 0.18$ (+0.4 $\sigma$ )
$n_s$	0.96996	$0.9684 \pm 0.0038$ (−0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4267	$2.429 \pm 0.021$ (+0.2 $\sigma$ )	$D_M(0.61)$	2294.4	$2295.9 \pm 8.8$ (−0.1 $\sigma$ )
$y_{cal}$	1.00101	$1.0008 \pm 0.0024$ (−0.1 $\sigma$ )	$z_{re}$	8.07	$7.99 \pm 0.71$ (−0.1 $\sigma$ )	$H(2.33)$	235.69	$235.77 \pm 0.55$ (+0.7 $\sigma$ )
$A_{217}^{CIB}$	45.6	$47 \pm 7$ (−0.1 $\sigma$ )	$10^9 A_s$	2.1138	$2.110 \pm 0.030$ (+0.1 $\sigma$ )	$D_M(2.33)$	5751.0	$5752.2 \pm 8.6$ (−0.6 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.672	$> 0.386$ (+0.1 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8793	$1.879 \pm 0.010$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4525	$0.4527 \pm 0.0054$ (+0.3 $\sigma$ )
$A_{143}^{tSZ}$	7.15	$5.5 \pm 2.0$ (+0.1 $\sigma$ )	$D_{40}$	1223.3	$1226 \pm 12$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7488	$0.7481 \pm 0.0055$ (+0.1 $\sigma$ )
$A_{100}^{PS}$	247.3	$258 \pm 28$ (−0.1 $\sigma$ )	$D_{220}$	5746.7	$5747 \pm 38$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.47220	$0.4722 \pm 0.0046$ (+0.3 $\sigma$ )
$A_{143}^{PS}$	49.8	$45 \pm 8$ (−0.3 $\sigma$ )	$D_{810}$	2542.8	$2540 \pm 13$ (+0.1 $\sigma$ )	$\sigma_8(0.38)$	0.66444	$0.6637 \pm 0.0048$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{PS}$	52.8	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{1420}$	820.31	$818.7 \pm 4.6$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.47153	$0.4714 \pm 0.0042$ (+0.3 $\sigma$ )
$A_{217}^{PS}$	121.8	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	232.10	$231.5 \pm 1.5$ (+0.5 $\sigma$ )	$\sigma_8(0.51)$	0.62208	$0.6214 \pm 0.0045$ (+0.1 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.17$ (−0.1 $\sigma$ )	$n_{s,0.002}$	0.96996	$0.9684 \pm 0.0038$ (−0.0 $\sigma$ )	$f\sigma_8(0.61)$	0.46705	$0.4669 \pm 0.0039$ (+0.2 $\sigma$ )
$A_{100}^{dustTT}$	8.81	$8.8 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P$	0.2454524	$0.245442 \pm 0.000050$ (+0.9 $\sigma$ )	$\sigma_8(0.61)$	0.59210	$0.5914 \pm 0.0043$ (+0.1 $\sigma$ )
$A_{143}^{dustTT}$	11.06	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.2467791	$0.246769 \pm 0.000050$ (+0.9 $\sigma$ )	$f\sigma_8(2.33)$	0.29879	$0.2984 \pm 0.0022$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.24	$18.5 \pm 3.3$ (+0.0 $\sigma$ )	$10^5 D/H$	2.5580	$2.563 \pm 0.024$ (−1.0 $\sigma$ )	$\sigma_8(2.33)$	0.30831	$0.3079 \pm 0.0023$ (+0.0 $\sigma$ )
$A_{217}^{dustTT}$	95.8	$93.4 \pm 7.4$ (+0.0 $\sigma$ )	Age/Gyr	13.7698	$13.773 \pm 0.019$ (−0.6 $\sigma$ )	$f_{2000}^{143}$	28.11	$29.0 \pm 2.7$ (−0.5 $\sigma$ )
$A_{100}^{dustTE}$	0.1136	$0.113 \pm 0.038$	$z_*$	1089.592	$1089.64 \pm 0.21$ (−0.7 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.50	$31.7 \pm 1.9$ (−0.6 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1345	$0.135 \pm 0.029$	$r_*$	144.722	$144.70 \pm 0.21$ (−0.9 $\sigma$ )	$f_{2000}^{217}$	106.14	$106.7 \pm 1.8$ (−0.5 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.480	$0.483 \pm 0.083$	$100\theta_*$	1.041281	$1.04129 \pm 0.00028$ (−0.1 $\sigma$ )	$\chi_{lensing}^2$	8.753	$9.16 \pm 0.74$ (−0.3 $\sigma$ )
$A_{143}^{dustTE}$	0.224	$0.225 \pm 0.054$	$D_M(z_*)/Gpc$	13.8984	$13.896 \pm 0.021$ (−0.9 $\sigma$ )	$\chi_{small}^2$	396.93	$397.6 \pm 2.1$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.664	$0.667 \pm 0.083$	$z_{drag}$	1060.162	$1060.13 \pm 0.29$ (+1.1 $\sigma$ )	$\chi_{lowl}^2$	22.63	$22.96 \pm 0.79$ (+0.1 $\sigma$ )
$A_{217}^{dustTE}$	2.071	$2.06 \pm 0.27$	$r_{drag}$	147.339	$147.33 \pm 0.23$ (−1.0 $\sigma$ )	$\chi_{plik}^2$	2346.4	$2360.6 \pm 6.0$ (+298.4 $\sigma$ )
$c_{100}$	0.99974	$0.99968 \pm 0.00062$ (+0.0 $\sigma$ )	$k_D$	0.140721	$0.14071 \pm 0.00028$ (+1.1 $\sigma$ )	$\chi_{H073p45}^2$	10.40	$10.7 \pm 1.6$ (+0.0 $\sigma$ )
$c_{217}$	0.99817	$0.99818 \pm 0.00063$ (−0.1 $\sigma$ )	$100\theta_D$	0.160630	$0.16066 \pm 0.00017$ (−1.1 $\sigma$ )	$\chi_{JLA}^2$	706.600	$706.64 \pm 0.11$ (+0.2 $\sigma$ )
$H_0$	68.098	$68.03 \pm 0.40$ (−0.0 $\sigma$ )	$z_{eq}$	3368.3	$3371 \pm 20$ (+0.6 $\sigma$ )	$\chi_{6DF}^2$	0.00098	$0.023 \pm 0.032$ (−0.1 $\sigma$ )
$\Omega_\Lambda$	0.6947	$0.6937 \pm 0.0053$ (−0.2 $\sigma$ )	$k_{eq}$	0.010280	$0.010290 \pm 0.000062$ (+0.6 $\sigma$ )	$\chi_{MGS}^2$	1.608	$1.59 \pm 0.41$ (−0.3 $\sigma$ )
$\Omega_m$	0.3053	$0.3063 \pm 0.0053$ (+0.2 $\sigma$ )	$100\theta_{eq}$	0.81998	$0.8194 \pm 0.0038$ (−0.5 $\sigma$ )	$\chi_{DR12BAO}^2$	3.602	$4.01 \pm 0.76$ (+0.1 $\sigma$ )
$\Omega_m h^2$	0.14160	$0.14172 \pm 0.00084$ (+0.6 $\sigma$ )	$100\theta_{s,eq}$	0.45276	$0.4525 \pm 0.0020$ (−0.6 $\sigma$ )	$\chi_{prior}^2$	1.71	$11.6 \pm 4.6$ (+1.2 $\sigma$ )
$\Omega_m h^3$	0.096424	$0.09641 \pm 0.00029$ (+0.9 $\sigma$ )	$H(0.15)$	73.317	$73.26 \pm 0.35$ (+0.0 $\sigma$ )	$\chi_{CMB}^2$	2774.7	$2790.3 \pm 6.1$ (+285.5 $\sigma$ )
$\sigma_8$	0.8097	$0.8090 \pm 0.0060$ (+0.2 $\sigma$ )	$D_M(0.15)$	637.07	$637.7 \pm 3.4$ (+0.0 $\sigma$ )	$\chi_{BAO}^2$	5.211	$5.62 \pm 0.56$ (−0.1 $\sigma$ )

Best-fit  $\chi_{eff}^2 = 3498.60$ ;  $\Delta\chi_{eff}^2 = 1585.79$ ;  $\bar{\chi}_{eff}^2 = 3524.87$ ;  $\Delta\bar{\chi}_{eff}^2 = 1591.82$ ;  $R - 1 = 0.03975$

$\chi_{eff}^2$ : BAO - 6DF: 0.00 ( $\Delta$  0.00) MGS: 1.61 ( $\Delta$  -0.07) DR12BAO: 3.60 ( $\Delta$  0.11) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.75 ( $\Delta$  -0.19) simall\_100x143\_offlike5\_EE\_Aplanck: 396.93 ( $\Delta$  0.10) commander\_dx12.v3.2.29: 22.63 ( $\Delta$  0.04) plik\_rd12\_HM.v22b\_TTTEEE: 2346.36 Hubble - H073p45: 10.40 ( $\Delta$  -0.20) SN - JLA December.2013: 706.60 ( $\Delta$  0.01)



## 2.103 base\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022451	$0.02243 \pm 0.00013$ (+1.1 $\sigma$ )	$S_8$	0.8237	$0.824 \pm 0.010$ (+0.1 $\sigma$ )	$H(0.38)$	83.116	$83.09 \pm 0.26$ (+0.4 $\sigma$ )
$\Omega_c h^2$	0.11913	$0.11921 \pm 0.00089$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4511	$0.4513 \pm 0.0057$ (+0.1 $\sigma$ )	$D_M(0.38)$	1526.6	$1527.4 \pm 6.9$ (-0.3 $\sigma$ )
$100\theta_{MC}$	1.041017	$1.04102 \pm 0.00029$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6047	$0.6046 \pm 0.0057$ (+0.1 $\sigma$ )	$H(0.51)$	89.821	$89.80 \pm 0.21$ (+0.5 $\sigma$ )
$\tau$	0.0568	$0.0564 \pm 0.0071$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9847	$0.9844 \pm 0.0084$ (+0.1 $\sigma$ )	$D_M(0.51)$	1977.8	$1978.8 \pm 8.2$ (-0.3 $\sigma$ )
$\ln(10^{10} A_s)$	3.0482	$3.047 \pm 0.014$ (+0.2 $\sigma$ )	$r_{drag} h$	99.77	$99.70 \pm 0.69$ (-0.1 $\sigma$ )	$H(0.61)$	95.431	$95.41 \pm 0.18$ (+0.7 $\sigma$ )
$n_s$	0.96823	$0.9668 \pm 0.0037$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4343	$2.437 \pm 0.021$ (+0.1 $\sigma$ )	$D_M(0.61)$	2301.7	$2302.7 \pm 8.8$ (-0.3 $\sigma$ )
$y_{cal}$	1.00085	$1.0008 \pm 0.0025$ (-0.0 $\sigma$ )	$z_{re}$	7.90	$7.85 \pm 0.70$ (+0.0 $\sigma$ )	$H(2.33)$	236.07	$236.11 \pm 0.55$ (+0.5 $\sigma$ )
$A_{217}^{CIB}$	46.6	$47 \pm 7$ (-0.2 $\sigma$ )	$10^9 A_s$	2.1077	$2.105 \pm 0.030$ (+0.2 $\sigma$ )	$D_M(2.33)$	5756.9	$5757.8 \pm 8.7$ (-0.8 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.558	$> 0.377$ (+0.1 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8813	$1.881 \pm 0.010$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4559	$0.4559 \pm 0.0054$ (+0.1 $\sigma$ )
$A_{143}^{tSZ}$	7.16	$5.4^{+2.2}_{-2.0}$ (+0.2 $\sigma$ )	$D_{40}$	1225.7	$1229 \pm 12$ (+0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7492	$0.7486 \pm 0.0054$ (+0.2 $\sigma$ )
$A_{100}^{PS}$	248.6	$259 \pm 28$ (-0.1 $\sigma$ )	$D_{220}$	5739.0	$5741 \pm 38$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.47461	$0.4745 \pm 0.0046$ (+0.1 $\sigma$ )
$A_{143}^{PS}$	48.8	$46 \pm 8$ (-0.4 $\sigma$ )	$D_{810}$	2542.0	$2540 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.66431	$0.6637 \pm 0.0048$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{PS}$	50.4	$42 \pm 9$ (-0.1 $\sigma$ )	$D_{1420}$	819.38	$818.0 \pm 4.7$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.47342	$0.4732 \pm 0.0042$ (+0.2 $\sigma$ )
$A_{217}^{PS}$	120.6	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	231.70	$231.2 \pm 1.5$ (+0.6 $\sigma$ )	$\sigma_8(0.51)$	0.62176	$0.6212 \pm 0.0045$ (+0.2 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.24$ (-0.1 $\sigma$ )	$n_{s,0.002}$	0.96823	$0.9668 \pm 0.0037$ (+0.1 $\sigma$ )	$f\sigma_8(0.61)$	0.46858	$0.4684 \pm 0.0039$ (+0.2 $\sigma$ )
$A_{100}^{dustTT}$	8.84	$8.9 \pm 1.8$ (-0.0 $\sigma$ )	$Y_P$	0.245427	$0.245417^{+0.000054}_{-0.000047}$ (+1.1 $\sigma$ )	$\sigma_8(0.61)$	0.59167	$0.5911 \pm 0.0043$ (+0.2 $\sigma$ )
$A_{143}^{dustTT}$	11.02	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246753	$0.246744^{+0.000054}_{-0.000048}$ (+1.1 $\sigma$ )	$f\sigma_8(2.33)$	0.29839	$0.2981 \pm 0.0022$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.94	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5706	$2.575 \pm 0.025$ (-1.1 $\sigma$ )	$\sigma_8(2.33)$	0.30771	$0.3074 \pm 0.0023$ (+0.2 $\sigma$ )
$A_{217}^{dustTT}$	95.2	$93.5 \pm 7.3$ (+0.0 $\sigma$ )	Age/Gyr	13.7827	$13.785 \pm 0.020$ (-0.8 $\sigma$ )	$f_{2000}^{143}$	28.47	$29.3 \pm 2.7$ (-0.5 $\sigma$ )
$A_{100}^{dustTE}$	0.1140	$0.114 \pm 0.037$	$z_*$	1089.742	$1089.78 \pm 0.21$ (-0.9 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.78	$32.0 \pm 1.9$ (-0.6 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1342	$0.135 \pm 0.030$	$r_*$	144.595	$144.59 \pm 0.21$ (-0.8 $\sigma$ )	$f_{2000}^{217}$	106.41	$106.9 \pm 1.8$ (-0.5 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.484	$0.482 \pm 0.084$	$100\theta_*$	1.041196	$1.04120 \pm 0.00029$ (+0.0 $\sigma$ )	$\chi_{lensing}^2$	8.719	$9.10 \pm 0.60$ (-0.2 $\sigma$ )
$A_{143}^{dustTE}$	0.224	$0.225 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	13.8874	$13.887 \pm 0.021$ (-0.8 $\sigma$ )	$\chi_{small}^2$	396.52	$397.2 \pm 1.9$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.665	$0.668 \pm 0.081$	$z_{drag}$	1060.047	$1060.02 \pm 0.29$ (+1.2 $\sigma$ )	$\chi_{lowl}^2$	22.88	$23.20 \pm 0.81$ (+0.0 $\sigma$ )
$A_{217}^{dustTE}$	2.079	$2.08 \pm 0.27$	$r_{drag}$	147.233	$147.23 \pm 0.23$ (-0.9 $\sigma$ )	$\chi_{plik}^2$	2345.3	$2359.7 \pm 5.8$ (+303.3 $\sigma$ )
$c_{100}$	0.99971	$0.99967 \pm 0.00062$ (+0.1 $\sigma$ )	$k_D$	0.140780	$0.14076 \pm 0.00028$ (+1.1 $\sigma$ )	$\chi_{JLA}^2$	1034.974	$1035.06 \pm 0.26$ (-0.1 $\sigma$ )
$c_{217}$	0.99819	$0.99818 \pm 0.00063$ (-0.1 $\sigma$ )	$100\theta_D$	0.160690	$0.16072 \pm 0.00017$ (-1.2 $\sigma$ )	$\chi_{6DF}^2$	0.0218	$0.046 \pm 0.053$ (-0.1 $\sigma$ )
$H_0$	67.761	$67.72 \pm 0.40$ (+0.2 $\sigma$ )	$z_{eq}$	3383.3	$3385 \pm 20$ (+0.4 $\sigma$ )	$\chi_{MGS}^2$	1.279	$1.29 \pm 0.38$ (-0.1 $\sigma$ )
$\Omega_\Lambda$	0.6902	$0.6896 \pm 0.0054$ (-0.0 $\sigma$ )	$k_{eq}$	0.010326	$0.010331 \pm 0.000062$ (+0.4 $\sigma$ )	$\chi_{DR12BAO}^2$	4.24	$4.7 \pm 1.2$ (+0.0 $\sigma$ )
$\Omega_m$	0.3098	$0.3104 \pm 0.0054$ (+0.0 $\sigma$ )	$100\theta_{eq}$	0.81699	$0.8167 \pm 0.0038$ (-0.3 $\sigma$ )	$\chi_{prior}^2$	1.77	$11.5 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_m h^2$	0.14222	$0.14229 \pm 0.00084$ (+0.4 $\sigma$ )	$100\theta_{s,eq}$	0.45125	$0.4511 \pm 0.0019$ (-0.4 $\sigma$ )	$\chi_{CMB}^2$	2773.4	$2789.3 \pm 5.9$ (+292.5 $\sigma$ )
$\Omega_m h^3$	0.096371	$0.09635 \pm 0.00029$ (+1.0 $\sigma$ )	$H(0.15)$	73.027	$72.99 \pm 0.35$ (+0.3 $\sigma$ )	$\chi_{BAO}^2$	5.55	$6.00 \pm 0.92$ (-0.0 $\sigma$ )
$\sigma_8$	0.8106	$0.8100 \pm 0.0060$ (+0.2 $\sigma$ )	$D_M(0.15)$	639.92	$640.3 \pm 3.4$ (-0.2 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 3815.67$ ;  $\Delta\chi_{eff}^2 = 1585.96$ ;  $\bar{\chi}_{eff}^2 = 3841.86$ ;  $\Delta\bar{\chi}_{eff}^2 = 1592.08$ ;  $R - 1 = 0.01667$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.02 ( $\Delta$  0.01) MGS: 1.28 ( $\Delta$  -0.06) DR12BAO: 4.24 ( $\Delta$  0.21) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.72 ( $\Delta$  -0.16) simall\_100x143\_offlike5\_EE\_Aplanck 396.52 ( $\Delta$  0.15) commander\_dx12.v3.2.29: 22.88 ( $\Delta$  0.07) plik\_rd12\_HM.v22b\_TTTEEE: 2345.27 SN - JLA Pantheon18: 1034.97 ( $\Delta$  0.02)



2.104 base\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_Pantheon18\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022510	$0.02250 \pm 0.00013$ (+1.0 $\sigma$ )	$S_8$	0.8183	$0.817 \pm 0.010$ (+0.3 $\sigma$ )	$H(0.38)$	83.292	$83.29 \pm 0.26$ (+0.1 $\sigma$ )
$\Omega_c h^2$	0.11858	$0.11856 \pm 0.00087$ (+0.4 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4482	$0.4476 \pm 0.0056$ (+0.3 $\sigma$ )	$D_M(0.38)$	1521.9	$1521.9 \pm 6.8$ (−0.0 $\sigma$ )
$100\theta_{MC}$	1.041117	$1.04113 \pm 0.00028$ (−0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6025	$0.6018 \pm 0.0056$ (+0.3 $\sigma$ )	$H(0.51)$	89.962	$89.96 \pm 0.21$ (+0.3 $\sigma$ )
$\tau$	0.0586	$0.0580 \pm 0.0072$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9819	$0.9808 \pm 0.0084$ (+0.2 $\sigma$ )	$D_M(0.51)$	1972.3	$1972.3 \pm 8.0$ (−0.1 $\sigma$ )
$\ln(10^{10} A_s)$	3.0505	$3.049 \pm 0.014$ (+0.1 $\sigma$ )	$r_{drag} h$	100.22	$100.24 \pm 0.68$ (−0.3 $\sigma$ )	$H(0.61)$	95.544	$95.54 \pm 0.18$ (+0.4 $\sigma$ )
$n_s$	0.96970	$0.9684 \pm 0.0038$ (−0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4281	$2.429 \pm 0.021$ (+0.2 $\sigma$ )	$D_M(0.61)$	2295.7	$2295.7 \pm 8.6$ (−0.1 $\sigma$ )
$y_{cal}$	1.00076	$1.0008 \pm 0.0024$ (−0.1 $\sigma$ )	$z_{re}$	8.06	$7.99 \pm 0.71$ (−0.1 $\sigma$ )	$H(2.33)$	235.78	$235.76 \pm 0.54$ (+0.7 $\sigma$ )
$A_{217}^{CIB}$	46.0	$47 \pm 7$ (−0.1 $\sigma$ )	$10^9 A_s$	2.1126	$2.110 \pm 0.030$ (+0.1 $\sigma$ )	$D_M(2.33)$	5751.9	$5752.1 \pm 8.5$ (−0.6 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.619	$> 0.387$ (+0.1 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8790	$1.878 \pm 0.010$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4532	$0.4526 \pm 0.0053$ (+0.3 $\sigma$ )
$A_{143}^{tSZ}$	7.13	$5.5 \pm 2.0$ (+0.1 $\sigma$ )	$D_{40}$	1223.1	$1226 \pm 12$ (+0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7490	$0.7481 \pm 0.0055$ (+0.1 $\sigma$ )
$A_{100}^{PS}$	248.1	$258 \pm 28$ (−0.1 $\sigma$ )	$D_{220}$	5742.4	$5747 \pm 38$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.47271	$0.4721 \pm 0.0046$ (+0.3 $\sigma$ )
$A_{143}^{PS}$	48.9	$45 \pm 8$ (−0.3 $\sigma$ )	$D_{810}$	2541.7	$2540 \pm 13$ (+0.1 $\sigma$ )	$\sigma_8(0.38)$	0.66448	$0.6637 \pm 0.0048$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{PS}$	51.5	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{1420}$	819.85	$818.7 \pm 4.6$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.47194	$0.4714 \pm 0.0042$ (+0.2 $\sigma$ )
$A_{217}^{PS}$	121.2	$115_{-9.5}^{+11}$ (+0.0 $\sigma$ )	$D_{2000}$	231.96	$231.5 \pm 1.5$ (+0.5 $\sigma$ )	$\sigma_8(0.51)$	0.62208	$0.6214 \pm 0.0045$ (+0.1 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.17$ (−0.1 $\sigma$ )	$n_{s,0.002}$	0.96970	$0.9684 \pm 0.0038$ (−0.0 $\sigma$ )	$f\sigma_8(0.61)$	0.46740	$0.4668 \pm 0.0039$ (+0.2 $\sigma$ )
$A_{100}^{dustTT}$	8.81	$8.8 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P$	0.2454479	$0.245443 \pm 0.000050$ (+0.9 $\sigma$ )	$\sigma_8(0.61)$	0.59207	$0.5914 \pm 0.0043$ (+0.1 $\sigma$ )
$A_{143}^{dustTT}$	11.03	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.2467746	$0.246770 \pm 0.000050$ (+0.9 $\sigma$ )	$f\sigma_8(2.33)$	0.29874	$0.2984 \pm 0.0022$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.01	$18.5 \pm 3.3$ (+0.0 $\sigma$ )	$10^5 D/H$	2.5602	$2.562 \pm 0.024$ (−1.0 $\sigma$ )	$\sigma_8(2.33)$	0.30822	$0.3079 \pm 0.0023$ (+0.0 $\sigma$ )
$A_{217}^{dustTT}$	95.3	$93.4 \pm 7.4$ (+0.0 $\sigma$ )	Age/Gyr	13.7716	$13.772 \pm 0.019$ (−0.6 $\sigma$ )	$f_{2000}^{143}$	28.06	$28.9 \pm 2.7$ (−0.5 $\sigma$ )
$A_{100}^{dustTE}$	0.1151	$0.113 \pm 0.038$	$z_*$	1089.621	$1089.63 \pm 0.21$ (−0.7 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.51	$31.7 \pm 1.9$ (−0.6 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1353	$0.135 \pm 0.029$	$r_*$	144.693	$144.71 \pm 0.21$ (−0.9 $\sigma$ )	$f_{2000}^{217}$	106.16	$106.7 \pm 1.8$ (−0.5 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.478	$0.483 \pm 0.082$	$100\theta_*$	1.041283	$1.04130 \pm 0.00028$ (−0.1 $\sigma$ )	$\chi_{lensing}^2$	8.738	$9.16 \pm 0.74$ (−0.3 $\sigma$ )
$A_{143}^{dustTE}$	0.224	$0.225 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	13.8957	$13.897 \pm 0.020$ (−0.9 $\sigma$ )	$\chi_{small}^2$	396.92	$397.6 \pm 2.1$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.664	$0.667 \pm 0.083$	$z_{drag}$	1060.162	$1060.13 \pm 0.29$ (+1.1 $\sigma$ )	$\chi_{lowl}^2$	22.67	$22.95 \pm 0.79$ (+0.1 $\sigma$ )
$A_{217}^{dustTE}$	2.072	$2.06 \pm 0.27$	$r_{drag}$	147.313	$147.33 \pm 0.22$ (−1.0 $\sigma$ )	$\chi_{plik}^2$	2346.2	$2360.6 \pm 6.0$ (+298.9 $\sigma$ )
$c_{100}$	0.99975	$0.99969 \pm 0.00062$ (+0.0 $\sigma$ )	$k_D$	0.140738	$0.14071 \pm 0.00028$ (+1.1 $\sigma$ )	$\chi_{H073p45}^2$	10.64	$10.7 \pm 1.6$ (+0.0 $\sigma$ )
$c_{217}$	0.99818	$0.99818 \pm 0.00063$ (−0.1 $\sigma$ )	$100\theta_D$	0.160642	$0.16066 \pm 0.00017$ (−1.1 $\sigma$ )	$\chi_{JLA}^2$	1034.843	$1034.90 \pm 0.17$ (+0.1 $\sigma$ )
$H_0$	68.035	$68.04 \pm 0.40$ (−0.0 $\sigma$ )	$z_{eq}$	3371.5	$3371 \pm 20$ (+0.6 $\sigma$ )	$\chi_{6DF}^2$	0.0029	$0.022 \pm 0.031$ (−0.1 $\sigma$ )
$\Omega_\Lambda$	0.6938	$0.6938 \pm 0.0052$ (−0.3 $\sigma$ )	$k_{eq}$	0.010290	$0.010288 \pm 0.000061$ (+0.6 $\sigma$ )	$\chi_{MGS}^2$	1.540	$1.60 \pm 0.41$ (−0.3 $\sigma$ )
$\Omega_m$	0.3062	$0.3062 \pm 0.0052$ (+0.3 $\sigma$ )	$100\theta_{eq}$	0.81936	$0.8195 \pm 0.0038$ (−0.5 $\sigma$ )	$\chi_{DR12BAO}^2$	3.692	$3.98 \pm 0.73$ (+0.1 $\sigma$ )
$\Omega_m h^2$	0.14173	$0.14170 \pm 0.00083$ (+0.6 $\sigma$ )	$100\theta_{s,eq}$	0.45245	$0.4525 \pm 0.0019$ (−0.6 $\sigma$ )	$\chi_{prior}^2$	1.60	$11.6 \pm 4.6$ (+1.2 $\sigma$ )
$\Omega_m h^3$	0.096427	$0.09641 \pm 0.00029$ (+0.9 $\sigma$ )	$H(0.15)$	73.264	$73.27 \pm 0.34$ (+0.0 $\sigma$ )	$\chi_{CMB}^2$	2774.5	$2790.3 \pm 6.1$ (+286.3 $\sigma$ )
$\sigma_8$	0.8099	$0.8090 \pm 0.0060$ (+0.2 $\sigma$ )	$D_M(0.15)$	637.59	$637.6 \pm 3.3$ (+0.0 $\sigma$ )	$\chi_{BAO}^2$	5.235	$5.60 \pm 0.53$ (−0.1 $\sigma$ )

Best-fit  $\chi_{\text{eff}}^2 = 3826.83$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.82$ ;  $\bar{\chi}_{\text{eff}}^2 = 3853.09$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.83$ ;  $R - 1 = 0.04098$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 ( $\Delta$  0.00) MGS: 1.54 ( $\Delta$  -0.21) DR12BAO: 3.69 ( $\Delta$  0.26) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.74 ( $\Delta$  -0.26) small\_100x143\_offlike5\_EE\_Aplanck: 396.92 ( $\Delta$  0.03) commander\_dx12\_v3.2.29: 22.68 ( $\Delta$  0.08) plik\_rd12\_HM\_v22b.TTTEEE: 2346.18 Hubble - H073p45: 10.64 ( $\Delta$  0.31) SN - JLA Pantheon18: 1034.84 ( $\Delta$  0.06)



**2.105 base\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02238 \pm 0.00015 \quad (+1.1\sigma)$	$\Omega_{\text{m}}h^3$	$0.09633 \pm 0.00030 \quad (+1.0\sigma)$	$100\theta_{\text{eq}}$	$0.8136 \pm 0.0049 \quad (+0.0\sigma)$
$\Omega_{\text{c}}h^2$	$0.1199 \pm 0.0012 \quad (-0.1\sigma)$	$\sigma_8$	$0.8116 \pm 0.0057 \quad (+0.1\sigma)$	$100\theta_{\text{s,eq}}$	$0.4495 \pm 0.0025 \quad (-0.0\sigma)$
$100\theta_{\text{MC}}$	$1.04092 \pm 0.00031 \quad (+0.2\sigma)$	$S_8$	$0.832 \pm 0.013 \quad (-0.2\sigma)$	$H(0.15)$	$72.70 \pm 0.45 \quad (+0.4\sigma)$
$\tau$	$0.0552^{+0.0053}_{-0.0077} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4555 \pm 0.0070 \quad (-0.2\sigma)$	$D_{\text{M}}(0.15)$	$643.2 \pm 4.5 \quad (-0.4\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.046^{+0.011}_{-0.015} \quad (+0.3\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6080 \pm 0.0064 \quad (-0.1\sigma)$	$H(0.38)$	$82.88 \pm 0.33 \quad (+0.5\sigma)$
$n_{\text{s}}$	$0.9650 \pm 0.0041 \quad (+0.3\sigma)$	$\sigma_8/h^{0.5}$	$0.9888 \pm 0.0090 \quad (-0.1\sigma)$	$D_{\text{M}}(0.38)$	$1533.1 \pm 9.1 \quad (-0.4\sigma)$
$y_{\text{cal}}$	$1.0006 \pm 0.0024 \quad (+0.1\sigma)$	$r_{\text{drag}}h$	$99.12 \pm 0.91 \quad (+0.2\sigma)$	$H(0.51)$	$89.64 \pm 0.27 \quad (+0.6\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.447 \pm 0.022 \quad (-0.1\sigma)$	$D_{\text{M}}(0.51)$	$1985 \pm 11 \quad (-0.5\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$z_{\text{re}}$	$7.76^{+0.58}_{-0.75} \quad (+0.1\sigma)$	$H(0.61)$	$95.29 \pm 0.22 \quad (+0.7\sigma)$
$A_{143}^{\text{tSZ}}$	$5.4 \pm 2.0 \quad (+0.2\sigma)$	$10^9 A_{\text{s}}$	$2.103^{+0.023}_{-0.031} \quad (+0.2\sigma)$	$D_{\text{M}}(0.61)$	$2310 \pm 11 \quad (-0.5\sigma)$
$A_{100}^{\text{PS}}$	$259 \pm 28 \quad (-0.1\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.883 \pm 0.011 \quad (+0.1\sigma)$	$H(2.33)$	$236.53 \pm 0.69 \quad (+0.2\sigma)$
$A_{143}^{\text{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{40}$	$1232 \pm 12 \quad (+0.0\sigma)$	$D_{\text{M}}(2.33)$	$5763 \pm 10 \quad (-0.8\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{220}$	$5735 \pm 38 \quad (+0.5\sigma)$	$f\sigma_8(0.15)$	$0.4598 \pm 0.0065 \quad (-0.2\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7496^{+0.0047}_{-0.0054} \quad (+0.1\sigma)$
$A^{\text{kSZ}}$	$< 4.30 \quad (-0.2\sigma)$	$D_{1420}$	$817.2 \pm 4.8 \quad (+0.5\sigma)$	$f\sigma_8(0.38)$	$0.4774 \pm 0.0052 \quad (-0.1\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$D_{2000}$	$230.9 \pm 1.6 \quad (+0.7\sigma)$	$\sigma_8(0.38)$	$0.6641^{+0.0039}_{-0.0048} \quad (+0.2\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$n_{\text{s},0.002}$	$0.9650 \pm 0.0041 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4755 \pm 0.0046 \quad (-0.1\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.245396^{+0.000060}_{-0.000053} \quad (+1.1\sigma)$	$\sigma_8(0.51)$	$0.6214^{+0.0037}_{-0.0045} \quad (+0.2\sigma)$
$A_{217}^{\text{dustTT}}$	$93.5 \pm 7.2 \quad (+0.0\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246723^{+0.000060}_{-0.000053} \quad (+1.1\sigma)$	$f\sigma_8(0.61)$	$0.4703 \pm 0.0041 \quad (-0.0\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$10^5 \text{D/H}$	$2.585 \pm 0.027 \quad (-1.1\sigma)$	$\sigma_8(0.61)$	$0.5912^{+0.0035}_{-0.0043} \quad (+0.2\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.029$	$\text{Age/Gyr}$	$13.796 \pm 0.023 \quad (-0.9\sigma)$	$f\sigma_8(2.33)$	$0.2979^{+0.0018}_{-0.0022} \quad (+0.3\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.481 \pm 0.085$	$z_*$	$1089.91 \pm 0.25 \quad (-0.9\sigma)$	$\sigma_8(2.33)$	$0.3070^{+0.0019}_{-0.0024} \quad (+0.3\sigma)$
$A_{143}^{\text{dustTE}}$	$0.225 \pm 0.054$	$r_*$	$144.44 \pm 0.26 \quad (-0.4\sigma)$	$f_{2000}^{143}$	$29.6 \pm 2.7 \quad (-0.5\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.667 \pm 0.080$	$100\theta_*$	$1.04110 \pm 0.00031 \quad (+0.2\sigma)$	$f_{2000}^{143 \times 217}$	$32.2 \pm 1.9 \quad (-0.7\sigma)$
$A_{217}^{\text{dustTE}}$	$2.09 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.874 \pm 0.024 \quad (-0.4\sigma)$	$f_{2000}^{217}$	$107.0 \pm 1.8 \quad (-0.6\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$z_{\text{drag}}$	$1059.95 \pm 0.30 \quad (+1.2\sigma)$	$\chi_{\text{lensing}}^2$	$9.22 \pm 0.68 \quad (-0.2\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$r_{\text{drag}}$	$147.10 \pm 0.26 \quad (-0.6\sigma)$	$\chi_{\text{simall}}^2$	$397.0 \pm 1.7 \quad (+0.1\sigma)$
$H_0$	$67.38 \pm 0.53 \quad (+0.4\sigma)$	$k_{\text{D}}$	$0.14086 \pm 0.00030 \quad (+0.9\sigma)$	$\chi_{\text{lowl}}^2$	$23.53 \pm 0.90 \quad (-0.1\sigma)$
$\Omega_{\Lambda}$	$0.6850 \pm 0.0072 \quad (+0.2\sigma)$	$100\theta_{\text{D}}$	$0.16075 \pm 0.00017 \quad (-1.2\sigma)$	$\chi_{\text{plik}}^2$	$2359.3 \pm 5.7 \quad (+303.5\sigma)$
$\Omega_{\text{m}}$	$0.3150 \pm 0.0072 \quad (-0.2\sigma)$	$z_{\text{eq}}$	$3401 \pm 26 \quad (+0.1\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\text{m}}h^2$	$0.1430 \pm 0.0011 \quad (+0.1\sigma)$	$k_{\text{eq}}$	$0.010380 \pm 0.000080 \quad (+0.1\sigma)$	$\chi_{\text{CMB}}^2$	$2789.0 \pm 5.8 \quad (+293.2\sigma)$

$\bar{\chi}_{\text{eff}}^2 = 2800.50$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1592.34$ ;  $R - 1 = 0.01006$



## 2.106 base\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02242 \pm 0.00013 \quad (+1.1\sigma)$	$S_8$	$0.825 \pm 0.011 \quad (+0.1\sigma)$	$H(0.38)$	$83.06 \pm 0.27 \quad (+0.4\sigma)$
$\Omega_c h^2$	$0.11931 \pm 0.00091 \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4520 \pm 0.0058 \quad (+0.1\sigma)$	$D_M(0.38)$	$1528.1 \pm 7.1 \quad (-0.3\sigma)$
$100\theta_{MC}$	$1.04101 \pm 0.00029 \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6052 \pm 0.0057 \quad (+0.1\sigma)$	$H(0.51)$	$89.78 \pm 0.22 \quad (+0.5\sigma)$
$\tau$	$0.0566^{+0.0058}_{-0.0075} \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9853 \pm 0.0083 \quad (+0.0\sigma)$	$D_M(0.51)$	$1979.6 \pm 8.3 \quad (-0.3\sigma)$
$\ln(10^{10} A_s)$	$3.048^{+0.012}_{-0.014} \quad (+0.2\sigma)$	$r_{\text{drag}} h$	$99.62 \pm 0.70 \quad (-0.0\sigma)$	$H(0.61)$	$95.39 \pm 0.18 \quad (+0.7\sigma)$
$n_s$	$0.9666 \pm 0.0038 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.439 \pm 0.020 \quad (+0.1\sigma)$	$D_M(0.61)$	$2303.7 \pm 9.0 \quad (-0.4\sigma)$
$y_{\text{cal}}$	$1.0007 \pm 0.0025 \quad (+0.0\sigma)$	$z_{\text{re}}$	$7.87^{+0.61}_{-0.74} \quad (+0.0\sigma)$	$H(2.33)$	$236.17 \pm 0.56 \quad (+0.5\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_s$	$2.106^{+0.026}_{-0.031} \quad (+0.2\sigma)$	$D_M(2.33)$	$5758.6 \pm 8.8 \quad (-0.8\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	$> 0.375 \quad (+0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.881 \pm 0.010 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4566 \pm 0.0054 \quad (+0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$5.4^{+2.2}_{-1.9} \quad (+0.2\sigma)$	$D_{40}$	$1229 \pm 12 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7490 \pm 0.0052 \quad (+0.2\sigma)$
$A_{100}^{\text{PS}}$	$259 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5740 \pm 38 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4751 \pm 0.0046 \quad (+0.1\sigma)$
$A_{143}^{\text{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2540 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6640^{+0.0042}_{-0.0048} \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$817.8 \pm 4.7 \quad (+0.5\sigma)$	$f\sigma_8(0.51)$	$0.4737 \pm 0.0042 \quad (+0.1\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$231.1 \pm 1.5 \quad (+0.7\sigma)$	$\sigma_8(0.51)$	$0.6214^{+0.0039}_{-0.0045} \quad (+0.2\sigma)$
$A^{\text{kSZ}}$	$< 4.25 \quad (-0.1\sigma)$	$n_{s,0.002}$	$0.9666 \pm 0.0038 \quad (+0.1\sigma)$	$f\sigma_8(0.61)$	$0.4688 \pm 0.0039 \quad (+0.1\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_P$	$0.245414^{+0.000054}_{-0.000048} \quad (+1.1\sigma)$	$\sigma_8(0.61)$	$0.5913^{+0.0037}_{-0.0043} \quad (+0.2\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.246741^{+0.000055}_{-0.000048} \quad (+1.1\sigma)$	$f\sigma_8(2.33)$	$0.2982^{+0.0019}_{-0.0022} \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5 \pm 3.3 \quad (+0.1\sigma)$	$10^5 D/H$	$2.576 \pm 0.025 \quad (-1.1\sigma)$	$\sigma_8(2.33)$	$0.3074^{+0.0020}_{-0.0024} \quad (+0.2\sigma)$
$A_{217}^{\text{dustTT}}$	$93.5 \pm 7.3 \quad (+0.0\sigma)$	Age/Gyr	$13.786 \pm 0.020 \quad (-0.8\sigma)$	$f_{2000}^{143}$	$29.4 \pm 2.7 \quad (-0.5\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$z_*$	$1089.79 \pm 0.21 \quad (-0.9\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 1.9 \quad (-0.6\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$r_*$	$144.57 \pm 0.22 \quad (-0.8\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.8 \quad (-0.5\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.481 \pm 0.084$	$100\theta_*$	$1.04119 \pm 0.00029 \quad (+0.0\sigma)$	$\chi_{\text{lensing}}^2$	$9.08 \pm 0.55 \quad (-0.2\sigma)$
$A_{143}^{\text{dustTE}}$	$0.225 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	$13.885 \pm 0.021 \quad (-0.7\sigma)$	$\chi_{\text{small}}^2$	$397.2 \pm 1.9 \quad (+0.0\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.668 \pm 0.081$	$z_{\text{drag}}$	$1060.01 \pm 0.29 \quad (+1.2\sigma)$	$\chi_{\text{lowl}}^2$	$23.25 \pm 0.82 \quad (+0.0\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.27$	$r_{\text{drag}}$	$147.22 \pm 0.23 \quad (-0.9\sigma)$	$\chi_{\text{plik}}^2$	$2359.5 \pm 5.8 \quad (+304.1\sigma)$
$c_{100}$	$0.99967 \pm 0.00062 \quad (+0.1\sigma)$	$k_D$	$0.14078 \pm 0.00028 \quad (+1.1\sigma)$	$\chi_{6\text{DF}}^2$	$0.052 \pm 0.058 \quad (-0.1\sigma)$
$c_{217}$	$0.99819 \pm 0.00063 \quad (-0.1\sigma)$	$100\theta_D$	$0.16072 \pm 0.00017 \quad (-1.2\sigma)$	$\chi_{\text{MGS}}^2$	$1.25 \pm 0.38 \quad (-0.1\sigma)$
$H_0$	$67.67 \pm 0.41 \quad (+0.2\sigma)$	$z_{\text{eq}}$	$3387 \pm 21 \quad (+0.4\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.8 \pm 1.3 \quad (-0.0\sigma)$
$\Omega_\Lambda$	$0.6890 \pm 0.0055 \quad (+0.0\sigma)$	$k_{\text{eq}}$	$0.010337 \pm 0.000063 \quad (+0.4\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_m$	$0.3110 \pm 0.0055 \quad (-0.0\sigma)$	$100\theta_{\text{eq}}$	$0.8163 \pm 0.0039 \quad (-0.3\sigma)$	$\chi_{\text{CMB}}^2$	$2789.1 \pm 5.8 \quad (+295.0\sigma)$
$\Omega_m h^2$	$0.14238 \pm 0.00086 \quad (+0.4\sigma)$	$100\theta_{s,\text{eq}}$	$0.4509 \pm 0.0020 \quad (-0.3\sigma)$	$\chi_{\text{BAO}}^2$	$6.1 \pm 1.0 \quad (-0.0\sigma)$
$\Omega_m h^3$	$0.09635 \pm 0.00030 \quad (+1.0\sigma)$	$H(0.15)$	$72.95 \pm 0.36 \quad (+0.3\sigma)$		
$\sigma_8$	$0.8105 \pm 0.0058 \quad (+0.2\sigma)$	$D_M(0.15)$	$640.7 \pm 3.5 \quad (-0.3\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2806.72; \Delta \bar{\chi}_{\text{eff}}^2 = 1592.15; R - 1 = 0.01624$$



## 2.107 base\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02248 \pm 0.00014 \quad (+0.8\sigma)$	$\sigma_8$	$0.8097 \pm 0.0059 \quad (+0.2\sigma)$	$H(0.15)$	$73.18 \pm 0.44 \quad (-0.2\sigma)$
$\Omega_c h^2$	$0.1188 \pm 0.0011 \quad (+0.5\sigma)$	$S_8$	$0.820 \pm 0.012 \quad (+0.4\sigma)$	$D_M(0.15)$	$638.4 \pm 4.3 \quad (+0.2\sigma)$
$100\theta_{MC}$	$1.04110 \pm 0.00031 \quad (-0.1\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4490 \pm 0.0066 \quad (+0.4\sigma)$	$H(0.38)$	$83.23 \pm 0.32 \quad (-0.1\sigma)$
$\tau$	$0.0579^{+0.0063}_{-0.0079} \quad (-0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6030 \pm 0.0062 \quad (+0.3\sigma)$	$D_M(0.38)$	$1523.6 \pm 8.6 \quad (+0.1\sigma)$
$\ln(10^{10} A_s)$	$3.049^{+0.013}_{-0.015} \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.9824 \pm 0.0089 \quad (+0.3\sigma)$	$H(0.51)$	$89.91 \pm 0.26 \quad (+0.0\sigma)$
$n_s$	$0.9679 \pm 0.0041 \quad (-0.1\sigma)$	$r_{drag} h$	$100.06 \pm 0.87 \quad (-0.4\sigma)$	$D_M(0.51)$	$1974^{+10}_{-9.2} \quad (+0.1\sigma)$
$y_{cal}$	$1.0008 \pm 0.0024 \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.433 \pm 0.022 \quad (+0.3\sigma)$	$H(0.61)$	$95.51 \pm 0.21 \quad (+0.2\sigma)$
$A_{217}^{CIB}$	$47 \pm 7 \quad (-0.1\sigma)$	$z_{re}$	$7.98^{+0.65}_{-0.77} \quad (-0.2\sigma)$	$D_M(0.61)$	$2298^{+11}_{-9.9} \quad (+0.1\sigma)$
$\xi^{tSZ \times CIB}$	$> 0.380 \quad (+0.1\sigma)$	$10^9 A_s$	$2.110^{+0.027}_{-0.032} \quad (-0.0\sigma)$	$H(2.33)$	$235.89 \pm 0.66 \quad (+0.7\sigma)$
$A_{143}^{tSZ}$	$5.5^{+2.2}_{-2.0} \quad (+0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.879 \pm 0.011 \quad (+0.3\sigma)$	$D_M(2.33)$	$5754 \pm 10 \quad (-0.3\sigma)$
$A_{100}^{PS}$	$258 \pm 28 \quad (-0.1\sigma)$	$D_{40}$	$1227 \pm 12 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4539 \pm 0.0062 \quad (+0.4\sigma)$
$A_{143}^{PS}$	$45 \pm 8 \quad (-0.3\sigma)$	$D_{220}$	$5746 \pm 38 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7486 \pm 0.0053 \quad (+0.2\sigma)$
$A_{143 \times 217}^{PS}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{810}$	$2540 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4731 \pm 0.0051 \quad (+0.4\sigma)$
$A_{217}^{PS}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{1420}$	$818.6 \pm 4.7 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6640 \pm 0.0046 \quad (+0.1\sigma)$
$A^{kSZ}$	$< 4.19 \quad (-0.1\sigma)$	$D_{2000}$	$231.5 \pm 1.6 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4722 \pm 0.0045 \quad (+0.3\sigma)$
$A_{100}^{dustTT}$	$8.8 \pm 1.8 \quad (-0.1\sigma)$	$n_{s,0.002}$	$0.9679 \pm 0.0041 \quad (-0.1\sigma)$	$\sigma_8(0.51)$	$0.6216 \pm 0.0043 \quad (+0.1\sigma)$
$A_{143}^{dustTT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_P$	$0.245437 \pm 0.000054 \quad (+0.8\sigma)$	$f\sigma_8(0.61)$	$0.4675 \pm 0.0041 \quad (+0.3\sigma)$
$A_{143 \times 217}^{dustTT}$	$18.5 \pm 3.3 \quad (+0.0\sigma)$	$Y_P^{BBN}$	$0.246764 \pm 0.000055 \quad (+0.8\sigma)$	$\sigma_8(0.61)$	$0.5916 \pm 0.0041 \quad (+0.1\sigma)$
$A_{217}^{dustTT}$	$93.5 \pm 7.4 \quad (-0.0\sigma)$	$10^5 D/H$	$2.565 \pm 0.026 \quad (-0.8\sigma)$	$f\sigma_8(2.33)$	$0.2984 \pm 0.0021 \quad (+0.0\sigma)$
$A_{100}^{dustTE}$	$0.114 \pm 0.038$	Age/Gyr	$13.776 \pm 0.022 \quad (-0.4\sigma)$	$\sigma_8(2.33)$	$0.3078^{+0.0021}_{-0.0025} \quad (-0.1\sigma)$
$A_{100 \times 143}^{dustTE}$	$0.135 \pm 0.029$	$z_*$	$1089.67 \pm 0.24 \quad (-0.5\sigma)$	$f_{2000}^{143}$	$29.0 \pm 2.8 \quad (-0.5\sigma)$
$A_{100 \times 217}^{dustTE}$	$0.482 \pm 0.083$	$r_*$	$144.66 \pm 0.25 \quad (-0.9\sigma)$	$f_{2000}^{143 \times 217}$	$31.8 \pm 1.9 \quad (-0.5\sigma)$
$A_{143}^{dustTE}$	$0.225 \pm 0.054$	$100\theta_*$	$1.04127 \pm 0.00030 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$106.7 \pm 1.8 \quad (-0.4\sigma)$
$A_{143 \times 217}^{dustTE}$	$0.667 \pm 0.083$	$D_M(z_*)/\text{Gpc}$	$13.893 \pm 0.023 \quad (-0.8\sigma)$	$\chi_{lensing}^2$	$9.15 \pm 0.68 \quad (-0.4\sigma)$
$A_{217}^{dustTE}$	$2.06 \pm 0.27$	$z_{drag}$	$1060.11 \pm 0.30 \quad (+1.0\sigma)$	$\chi_{small}^2$	$397.5 \pm 2.1 \quad (-0.1\sigma)$
$c_{100}$	$0.99968 \pm 0.00062 \quad (+0.0\sigma)$	$r_{drag}$	$147.29 \pm 0.25 \quad (-1.0\sigma)$	$\chi_{lowl}^2$	$23.05 \pm 0.84 \quad (+0.2\sigma)$
$c_{217}$	$0.99818 \pm 0.00064 \quad (-0.1\sigma)$	$k_D$	$0.14075 \pm 0.00029 \quad (+1.1\sigma)$	$\chi_{plik}^2$	$2360.4 \pm 6.1 \quad (+288.4\sigma)$
$H_0$	$67.94 \pm 0.51 \quad (-0.2\sigma)$	$100\theta_D$	$0.16067 \pm 0.00017 \quad (-1.0\sigma)$	$\chi_{H073p45}^2$	$11.1 \pm 2.0 \quad (+0.2\sigma)$
$\Omega_\Lambda$	$0.6924 \pm 0.0067 \quad (-0.3\sigma)$	$z_{eq}$	$3376 \pm 25 \quad (+0.6\sigma)$	$\chi_{prior}^2$	$11.6 \pm 4.6 \quad (+1.2\sigma)$
$\Omega_m$	$0.3076 \pm 0.0067 \quad (+0.3\sigma)$	$k_{eq}$	$0.010304 \pm 0.000075 \quad (+0.6\sigma)$	$\chi_{CMB}^2$	$2790.1 \pm 6.1 \quad (+268.3\sigma)$
$\Omega_m h^2$	$0.1419 \pm 0.0010 \quad (+0.6\sigma)$	$100\theta_{eq}$	$0.8185 \pm 0.0047 \quad (-0.5\sigma)$		
$\Omega_m h^3$	$0.09641 \pm 0.00029 \quad (+0.9\sigma)$	$100\theta_{s,eq}$	$0.4520 \pm 0.0024 \quad (-0.6\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2812.87; \Delta\bar{\chi}_{\text{eff}}^2 = 1591.80; R - 1 = 0.03339$$



**2.108 base\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_Riess18\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02249 \pm 0.00013 \quad (+1.0\sigma)$	$S_8$	$0.818 \pm 0.010 \quad (+0.3\sigma)$	$H(0.38)$	$83.28 \pm 0.26 \quad (+0.1\sigma)$
$\Omega_c h^2$	$0.11862 \pm 0.00089 \quad (+0.4\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4481 \pm 0.0057 \quad (+0.3\sigma)$	$D_M(0.38)$	$1522.3 \pm 6.9 \quad (-0.0\sigma)$
$100\theta_{MC}$	$1.04112 \pm 0.00029 \quad (-0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6022 \pm 0.0056 \quad (+0.3\sigma)$	$H(0.51)$	$89.95 \pm 0.21 \quad (+0.3\sigma)$
$\tau$	$0.0582^{+0.0064}_{-0.0077} \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.9814 \pm 0.0083 \quad (+0.2\sigma)$	$D_M(0.51)$	$1972.8 \pm 8.2 \quad (-0.0\sigma)$
$\ln(10^{10} A_s)$	$3.050 \pm 0.014 \quad (+0.1\sigma)$	$r_{\text{drag}} h$	$100.19 \pm 0.70 \quad (-0.3\sigma)$	$H(0.61)$	$95.53 \pm 0.18 \quad (+0.4\sigma)$
$n_s$	$0.9683 \pm 0.0038 \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.430 \pm 0.021 \quad (+0.2\sigma)$	$D_M(0.61)$	$2296.3 \pm 8.8 \quad (-0.1\sigma)$
$y_{\text{cal}}$	$1.0008 \pm 0.0024 \quad (-0.1\sigma)$	$z_{\text{re}}$	$8.01^{+0.65}_{-0.75} \quad (-0.1\sigma)$	$H(2.33)$	$235.79 \pm 0.55 \quad (+0.7\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.1\sigma)$	$10^9 A_s$	$2.111 \pm 0.029 \quad (+0.1\sigma)$	$D_M(2.33)$	$5752.5 \pm 8.6 \quad (-0.5\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	$> 0.386 \quad (+0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.879 \pm 0.010 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4531 \pm 0.0054 \quad (+0.3\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.2}_{-2.0} \quad (+0.1\sigma)$	$D_{40}$	$1226 \pm 12 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.7484 \pm 0.0053 \quad (+0.1\sigma)$
$A_{100}^{\text{PS}}$	$258 \pm 28 \quad (-0.1\sigma)$	$D_{220}$	$5747 \pm 38 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4725 \pm 0.0046 \quad (+0.3\sigma)$
$A_{143}^{\text{PS}}$	$45 \pm 8 \quad (-0.3\sigma)$	$D_{810}$	$2540 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6639 \pm 0.0046 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$818.7 \pm 4.6 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4717 \pm 0.0042 \quad (+0.2\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$231.5 \pm 1.5 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.6215 \pm 0.0043 \quad (+0.1\sigma)$
$A^{\text{kSZ}}$	$< 4.17 \quad (-0.1\sigma)$	$n_{s,0.002}$	$0.9683 \pm 0.0038 \quad (-0.0\sigma)$	$f\sigma_8(0.61)$	$0.4671 \pm 0.0039 \quad (+0.2\sigma)$
$A_{100}^{\text{dustTT}}$	$8.8 \pm 1.8 \quad (-0.0\sigma)$	$Y_P$	$0.245441 \pm 0.000050 \quad (+0.9\sigma)$	$\sigma_8(0.61)$	$0.5915 \pm 0.0041 \quad (+0.1\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.246768 \pm 0.000051 \quad (+0.9\sigma)$	$f\sigma_8(2.33)$	$0.2985 \pm 0.0021 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5 \pm 3.4 \quad (+0.1\sigma)$	$10^5 D/H$	$2.563 \pm 0.024 \quad (-0.9\sigma)$	$\sigma_8(2.33)$	$0.3079^{+0.0021}_{-0.0024} \quad (+0.0\sigma)$
$A_{217}^{\text{dustTT}}$	$93.5 \pm 7.4 \quad (+0.0\sigma)$	$\text{Age}/\text{Gyr}$	$13.773 \pm 0.019 \quad (-0.6\sigma)$	$f_{2000}^{143}$	$29.0 \pm 2.7 \quad (-0.5\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$z_*$	$1089.65 \pm 0.21 \quad (-0.7\sigma)$	$f_{2000}^{143 \times 217}$	$31.8 \pm 1.9 \quad (-0.6\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.029$	$r_*$	$144.69 \pm 0.22 \quad (-0.9\sigma)$	$f_{2000}^{217}$	$106.7 \pm 1.8 \quad (-0.5\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.483 \pm 0.082$	$100\theta_*$	$1.04129 \pm 0.00028 \quad (-0.1\sigma)$	$\chi_{\text{lensing}}^2$	$9.13 \pm 0.68 \quad (-0.3\sigma)$
$A_{143}^{\text{dustTE}}$	$0.225 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	$13.896 \pm 0.021 \quad (-0.8\sigma)$	$\chi_{\text{small}}^2$	$397.6 \pm 2.1 \quad (-0.1\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.667 \pm 0.083$	$z_{\text{drag}}$	$1060.12 \pm 0.29 \quad (+1.1\sigma)$	$\chi_{\text{lowl}}^2$	$22.98 \pm 0.79 \quad (+0.1\sigma)$
$A_{217}^{\text{dustTE}}$	$2.06 \pm 0.27$	$r_{\text{drag}}$	$147.32 \pm 0.23 \quad (-1.0\sigma)$	$\chi_{\text{plik}}^2$	$2360.5 \pm 6.0 \quad (+299.2\sigma)$
$c_{100}$	$0.99968 \pm 0.00062 \quad (+0.0\sigma)$	$k_D$	$0.14072 \pm 0.00028 \quad (+1.1\sigma)$	$\chi_{\text{H073p45}}^2$	$10.8 \pm 1.6 \quad (+0.0\sigma)$
$c_{217}$	$0.99818 \pm 0.00063 \quad (-0.1\sigma)$	$100\theta_D$	$0.16066 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{6\text{DF}}^2$	$0.024 \pm 0.033 \quad (-0.1\sigma)$
$H_0$	$68.01 \pm 0.41 \quad (-0.0\sigma)$	$z_{\text{eq}}$	$3372 \pm 20 \quad (+0.6\sigma)$	$\chi_{\text{MGS}}^2$	$1.57 \pm 0.41 \quad (-0.3\sigma)$
$\Omega_\Lambda$	$0.6935 \pm 0.0053 \quad (-0.2\sigma)$	$k_{\text{eq}}$	$0.010292 \pm 0.000062 \quad (+0.6\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.04 \pm 0.79 \quad (+0.1\sigma)$
$\Omega_m$	$0.3065 \pm 0.0053 \quad (+0.2\sigma)$	$100\theta_{\text{eq}}$	$0.8192 \pm 0.0038 \quad (-0.5\sigma)$	$\chi_{\text{prior}}^2$	$11.6 \pm 4.6 \quad (+1.2\sigma)$
$\Omega_m h^2$	$0.14176 \pm 0.00085 \quad (+0.6\sigma)$	$100\theta_{s,\text{eq}}$	$0.4524 \pm 0.0020 \quad (-0.5\sigma)$	$\chi_{\text{CMB}}^2$	$2790.1 \pm 6.0 \quad (+286.9\sigma)$
$\Omega_m h^3$	$0.09641 \pm 0.00029 \quad (+0.9\sigma)$	$H(0.15)$	$73.24 \pm 0.35 \quad (+0.0\sigma)$	$\chi_{\text{BAO}}^2$	$5.64 \pm 0.58 \quad (-0.1\sigma)$
$\sigma_8$	$0.8093 \pm 0.0058 \quad (+0.2\sigma)$	$D_M(0.15)$	$637.8 \pm 3.4 \quad (+0.0\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2818.15; \Delta \bar{\chi}_{\text{eff}}^2 = 1591.80; R - 1 = 0.03902$$



**2.109 base\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_Pantheon18\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02240 \pm 0.00014 \quad (+1.1\sigma)$	$\sigma_8$	$0.8112 \pm 0.0057 \quad (+0.1\sigma)$	$H(0.15)$	$72.80 \pm 0.43 \quad (+0.3\sigma)$
$\Omega_c h^2$	$0.1197 \pm 0.0011 \quad (+0.0\sigma)$	$S_8$	$0.829 \pm 0.012 \quad (-0.1\sigma)$	$D_M(0.15)$	$642.2 \pm 4.2 \quad (-0.3\sigma)$
$100\theta_{MC}$	$1.04095 \pm 0.00031 \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4541 \pm 0.0067 \quad (-0.1\sigma)$	$H(0.38)$	$82.95 \pm 0.31 \quad (+0.4\sigma)$
$\tau$	$0.0558^{+0.0055}_{-0.0076} \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6069 \pm 0.0062 \quad (+0.0\sigma)$	$D_M(0.38)$	$1531.1 \pm 8.5 \quad (-0.3\sigma)$
$\ln(10^{10} A_s)$	$3.047^{+0.012}_{-0.015} \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.9874 \pm 0.0088 \quad (-0.0\sigma)$	$H(0.51)$	$89.69 \pm 0.25 \quad (+0.5\sigma)$
$n_s$	$0.9656 \pm 0.0040 \quad (+0.2\sigma)$	$r_{\text{drag}} h$	$99.32 \pm 0.85 \quad (+0.1\sigma)$	$D_M(0.51)$	$1983 \pm 10 \quad (-0.4\sigma)$
$y_{\text{cal}}$	$1.0007 \pm 0.0025 \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.444 \pm 0.021 \quad (+0.0\sigma)$	$H(0.61)$	$95.33 \pm 0.21 \quad (+0.6\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.1\sigma)$	$z_{\text{re}}$	$7.81^{+0.59}_{-0.75} \quad (+0.1\sigma)$	$D_M(0.61)$	$2307 \pm 11 \quad (-0.4\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	$> 0.375 \quad (+0.1\sigma)$	$10^9 A_s$	$2.105^{+0.024}_{-0.031} \quad (+0.2\sigma)$	$H(2.33)$	$236.39 \pm 0.65 \quad (+0.3\sigma)$
$A_{143}^{\text{tSZ}}$	$5.4^{+2.2}_{-1.9} \quad (+0.2\sigma)$	$10^9 A_s e^{-2\tau}$	$1.882 \pm 0.011 \quad (+0.2\sigma)$	$D_M(2.33)$	$5761.4 \pm 9.8 \quad (-0.8\sigma)$
$A_{100}^{\text{PS}}$	$259 \pm 28 \quad (-0.2\sigma)$	$D_{40}$	$1231 \pm 12 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4585 \pm 0.0062 \quad (-0.0\sigma)$
$A_{143}^{\text{PS}}$	$46 \pm 8 \quad (-0.3\sigma)$	$D_{220}$	$5737 \pm 38 \quad (+0.4\sigma)$	$\sigma_8(0.15)$	$0.7494 \pm 0.0051 \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4765 \pm 0.0050 \quad (-0.0\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{1420}$	$817.4 \pm 4.7 \quad (+0.5\sigma)$	$\sigma_8(0.38)$	$0.6641^{+0.0041}_{-0.0047} \quad (+0.2\sigma)$
$A^{\text{kSZ}}$	$< 4.29 \quad (-0.2\sigma)$	$D_{2000}$	$231.0 \pm 1.6 \quad (+0.7\sigma)$	$f\sigma_8(0.51)$	$0.4748 \pm 0.0044 \quad (+0.0\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$n_{s,0.002}$	$0.9656 \pm 0.0040 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6214^{+0.0038}_{-0.0045} \quad (+0.2\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_P$	$0.245404^{+0.000058}_{-0.000051} \quad (+1.1\sigma)$	$f\sigma_8(0.61)$	$0.4697 \pm 0.0041 \quad (+0.0\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5 \pm 3.3 \quad (+0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.246730^{+0.000058}_{-0.000052} \quad (+1.1\sigma)$	$\sigma_8(0.61)$	$0.5912^{+0.0036}_{-0.0043} \quad (+0.2\sigma)$
$A_{217}^{\text{dustTT}}$	$93.5 \pm 7.3 \quad (+0.0\sigma)$	$10^5 \text{D/H}$	$2.581 \pm 0.026 \quad (-1.1\sigma)$	$f\sigma_8(2.33)$	$0.2980^{+0.0018}_{-0.0022} \quad (+0.2\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	Age/Gyr	$13.793 \pm 0.022 \quad (-0.8\sigma)$	$\sigma_8(2.33)$	$0.3072^{+0.0019}_{-0.0024} \quad (+0.2\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$z_*$	$1089.86 \pm 0.24 \quad (-0.9\sigma)$	$f_{2000}^{143}$	$29.5 \pm 2.7 \quad (-0.5\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.480 \pm 0.085$	$r_*$	$144.49 \pm 0.25 \quad (-0.5\sigma)$	$f_{2000}^{143 \times 217}$	$32.2 \pm 1.9 \quad (-0.6\sigma)$
$A_{143}^{\text{dustTE}}$	$0.225 \pm 0.054$	$100\theta_*$	$1.04113 \pm 0.00030 \quad (+0.1\sigma)$	$f_{2000}^{217}$	$107.0 \pm 1.8 \quad (-0.5\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.668 \pm 0.081$	$D_M(z_*)/\text{Gpc}$	$13.878 \pm 0.023 \quad (-0.6\sigma)$	$\chi_{\text{lensing}}^2$	$9.16 \pm 0.62 \quad (-0.2\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.27$	$z_{\text{drag}}$	$1059.97 \pm 0.30 \quad (+1.2\sigma)$	$\chi_{\text{small}}^2$	$397.1 \pm 1.8 \quad (+0.1\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$r_{\text{drag}}$	$147.14 \pm 0.25 \quad (-0.7\sigma)$	$\chi_{\text{lowl}}^2$	$23.42 \pm 0.87 \quad (-0.1\sigma)$
$c_{217}$	$0.99820 \pm 0.00063 \quad (-0.1\sigma)$	$k_D$	$0.14083 \pm 0.00029 \quad (+1.0\sigma)$	$\chi_{\text{plik}}^2$	$2359.4 \pm 5.8 \quad (+303.1\sigma)$
$H_0$	$67.50 \pm 0.50 \quad (+0.3\sigma)$	$100\theta_D$	$0.16074 \pm 0.00017 \quad (-1.2\sigma)$	$\chi_{\text{JLA}}^2$	$1035.25 \pm 0.42 \quad (-0.2\sigma)$
$\Omega_\Lambda$	$0.6866 \pm 0.0067 \quad (+0.1\sigma)$	$z_{\text{eq}}$	$3396 \pm 25 \quad (+0.2\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_m$	$0.3134 \pm 0.0067 \quad (-0.1\sigma)$	$k_{\text{eq}}$	$0.010364 \pm 0.000075 \quad (+0.2\sigma)$	$\chi_{\text{CMB}}^2$	$2789.0 \pm 5.8 \quad (+293.6\sigma)$
$\Omega_m h^2$	$0.1427 \pm 0.0010 \quad (+0.2\sigma)$	$100\theta_{\text{eq}}$	$0.8146 \pm 0.0046 \quad (-0.1\sigma)$		
$\Omega_m h^3$	$0.09634 \pm 0.00030 \quad (+1.0\sigma)$	$100\theta_{s,\text{eq}}$	$0.4501 \pm 0.0024 \quad (-0.1\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 3835.82; \Delta\bar{\chi}_{\text{eff}}^2 = 1592.20; R - 1 = 0.01272$$



2.110 base\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_JLA\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02250 \pm 0.00013 \quad (+1.0\sigma)$	$S_8$	$0.818 \pm 0.010 \quad (+0.3\sigma)$	$H(0.38)$	$83.29 \pm 0.26 \quad (+0.1\sigma)$
$\Omega_c h^2$	$0.11857 \pm 0.00088 \quad (+0.4\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4478 \pm 0.0056 \quad (+0.3\sigma)$	$D_M(0.38)$	$1522.0 \pm 6.9 \quad (-0.0\sigma)$
$100\theta_{MC}$	$1.04112 \pm 0.00029 \quad (-0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6020 \pm 0.0056 \quad (+0.3\sigma)$	$H(0.51)$	$89.96 \pm 0.21 \quad (+0.3\sigma)$
$\tau$	$0.0583^{+0.0064}_{-0.0077} \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.9811 \pm 0.0082 \quad (+0.2\sigma)$	$D_M(0.51)$	$1972.4 \pm 8.1 \quad (-0.0\sigma)$
$\ln(10^{10} A_s)$	$3.050 \pm 0.014 \quad (+0.0\sigma)$	$r_{\text{drag}} h$	$100.23 \pm 0.69 \quad (-0.3\sigma)$	$H(0.61)$	$95.54 \pm 0.18 \quad (+0.4\sigma)$
$n_s$	$0.9684 \pm 0.0038 \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.430 \pm 0.020 \quad (+0.2\sigma)$	$D_M(0.61)$	$2295.9 \pm 8.7 \quad (-0.1\sigma)$
$y_{\text{cal}}$	$1.0008 \pm 0.0024 \quad (-0.1\sigma)$	$z_{\text{re}}$	$8.02^{+0.66}_{-0.75} \quad (-0.1\sigma)$	$H(2.33)$	$235.77 \pm 0.54 \quad (+0.7\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.1\sigma)$	$10^9 A_s$	$2.111 \pm 0.029 \quad (+0.0\sigma)$	$D_M(2.33)$	$5752.2 \pm 8.5 \quad (-0.5\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	$> 0.387 \quad (+0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.878 \pm 0.010 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4528 \pm 0.0053 \quad (+0.3\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.2}_{-2.0} \quad (+0.1\sigma)$	$D_{40}$	$1226 \pm 12 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.7483 \pm 0.0053 \quad (+0.1\sigma)$
$A_{100}^{\text{PS}}$	$258 \pm 28 \quad (-0.1\sigma)$	$D_{220}$	$5747 \pm 38 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4723 \pm 0.0045 \quad (+0.3\sigma)$
$A_{143}^{\text{PS}}$	$45 \pm 8 \quad (-0.3\sigma)$	$D_{810}$	$2540 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.6639 \pm 0.0046 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$818.7 \pm 4.6 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4715 \pm 0.0041 \quad (+0.3\sigma)$
$A_{217}^{\text{PS}}$	$115^{+10}_{-9.5} \quad (+0.0\sigma)$	$D_{2000}$	$231.5 \pm 1.5 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.6215 \pm 0.0043 \quad (+0.1\sigma)$
$A^{\text{kSZ}}$	$< 4.17 \quad (-0.1\sigma)$	$n_{s,0.002}$	$0.9684 \pm 0.0038 \quad (-0.0\sigma)$	$f\sigma_8(0.61)$	$0.4670 \pm 0.0039 \quad (+0.2\sigma)$
$A_{100}^{\text{dustTT}}$	$8.8 \pm 1.8 \quad (-0.0\sigma)$	$Y_P$	$0.245443 \pm 0.000050 \quad (+0.9\sigma)$	$\sigma_8(0.61)$	$0.5916 \pm 0.0041 \quad (+0.1\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.246769 \pm 0.000050 \quad (+0.9\sigma)$	$f\sigma_8(2.33)$	$0.2985 \pm 0.0021 \quad (+0.0\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5 \pm 3.4 \quad (+0.0\sigma)$	$10^5 D/H$	$2.563 \pm 0.024 \quad (-0.9\sigma)$	$\sigma_8(2.33)$	$0.3080 \pm 0.0022 \quad (+0.0\sigma)$
$A_{217}^{\text{dustTT}}$	$93.4 \pm 7.4 \quad (+0.0\sigma)$	Age/Gyr	$13.772 \pm 0.019 \quad (-0.6\sigma)$	$f_{2000}^{143}$	$28.9 \pm 2.7 \quad (-0.5\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$z_*$	$1089.64 \pm 0.21 \quad (-0.7\sigma)$	$f_{2000}^{143 \times 217}$	$31.7 \pm 1.9 \quad (-0.6\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.029$	$r_*$	$144.70 \pm 0.21 \quad (-0.9\sigma)$	$f_{2000}^{217}$	$106.6 \pm 1.8 \quad (-0.5\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.483 \pm 0.082$	$100\theta_*$	$1.04130 \pm 0.00028 \quad (-0.1\sigma)$	$\chi_{\text{lensing}}^2$	$9.13 \pm 0.69 \quad (-0.3\sigma)$
$A_{143}^{\text{dustTE}}$	$0.225 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	$13.896 \pm 0.021 \quad (-0.9\sigma)$	$\chi_{\text{small}}^2$	$397.6 \pm 2.1 \quad (-0.1\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.667 \pm 0.083$	$z_{\text{drag}}$	$1060.13 \pm 0.29 \quad (+1.1\sigma)$	$\chi_{\text{lowl}}^2$	$22.96 \pm 0.79 \quad (+0.1\sigma)$
$A_{217}^{\text{dustTE}}$	$2.06 \pm 0.27$	$r_{\text{drag}}$	$147.33 \pm 0.23 \quad (-1.0\sigma)$	$\chi_{\text{plik}}^2$	$2360.5 \pm 6.0 \quad (+299.1\sigma)$
$c_{100}$	$0.99969 \pm 0.00062 \quad (+0.0\sigma)$	$k_D$	$0.14071 \pm 0.00028 \quad (+1.1\sigma)$	$\chi_{\text{H073p45}}^2$	$10.7 \pm 1.6 \quad (+0.0\sigma)$
$c_{217}$	$0.99818 \pm 0.00064 \quad (-0.1\sigma)$	$100\theta_D$	$0.16066 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{\text{JLA}}^2$	$706.64 \pm 0.11 \quad (+0.2\sigma)$
$H_0$	$68.03 \pm 0.40 \quad (-0.1\sigma)$	$z_{\text{eq}}$	$3371 \pm 20 \quad (+0.6\sigma)$	$\chi_{\text{6DF}}^2$	$0.023 \pm 0.031 \quad (-0.1\sigma)$
$\Omega_\Lambda$	$0.6938 \pm 0.0053 \quad (-0.3\sigma)$	$k_{\text{eq}}$	$0.010289 \pm 0.000062 \quad (+0.6\sigma)$	$\chi_{\text{MGS}}^2$	$1.60 \pm 0.41 \quad (-0.3\sigma)$
$\Omega_m$	$0.3062 \pm 0.0053 \quad (+0.3\sigma)$	$100\theta_{\text{eq}}$	$0.8194 \pm 0.0038 \quad (-0.5\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.00 \pm 0.75 \quad (+0.1\sigma)$
$\Omega_m h^2$	$0.14172 \pm 0.00084 \quad (+0.6\sigma)$	$100\theta_{s,\text{eq}}$	$0.4525 \pm 0.0020 \quad (-0.6\sigma)$	$\chi_{\text{prior}}^2$	$11.6 \pm 4.6 \quad (+1.2\sigma)$
$\Omega_m h^3$	$0.09641 \pm 0.00029 \quad (+0.9\sigma)$	$H(0.15)$	$73.26 \pm 0.35 \quad (-0.0\sigma)$	$\chi_{\text{CMB}}^2$	$2790.2 \pm 6.0 \quad (+286.9\sigma)$
$\sigma_8$	$0.8092 \pm 0.0058 \quad (+0.2\sigma)$	$D_M(0.15)$	$637.6 \pm 3.4 \quad (+0.0\sigma)$	$\chi_{\text{BAO}}^2$	$5.62 \pm 0.55 \quad (-0.1\sigma)$

$\bar{\chi}_{\text{eff}}^2 = 3524.78$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.83$ ;  $R - 1 = 0.04178$



2.111 base\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02243 \pm 0.00013 \quad (+1.1\sigma)$	$S_8$	$0.824 \pm 0.010 \quad (+0.1\sigma)$	$H(0.38)$	$83.09 \pm 0.26 \quad (+0.4\sigma)$
$\Omega_c h^2$	$0.11920 \pm 0.00088 \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4513 \pm 0.0057 \quad (+0.1\sigma)$	$D_M(0.38)$	$1527.3 \pm 6.9 \quad (-0.3\sigma)$
$100\theta_{MC}$	$1.04103 \pm 0.00029 \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6048 \pm 0.0056 \quad (+0.1\sigma)$	$H(0.51)$	$89.80 \pm 0.21 \quad (+0.5\sigma)$
$\tau$	$0.0568^{+0.0058}_{-0.0075} \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9847 \pm 0.0082 \quad (+0.1\sigma)$	$D_M(0.51)$	$1978.6 \pm 8.1 \quad (-0.3\sigma)$
$\ln(10^{10} A_s)$	$3.048^{+0.012}_{-0.014} \quad (+0.2\sigma)$	$r_{\text{drag}} h$	$99.71 \pm 0.68 \quad (-0.1\sigma)$	$H(0.61)$	$95.41 \pm 0.18 \quad (+0.6\sigma)$
$n_s$	$0.9668 \pm 0.0037 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.438 \pm 0.020 \quad (+0.1\sigma)$	$D_M(0.61)$	$2302.6 \pm 8.8 \quad (-0.3\sigma)$
$y_{\text{cal}}$	$1.0008 \pm 0.0025 \quad (-0.0\sigma)$	$z_{\text{re}}$	$7.89^{+0.61}_{-0.74} \quad (+0.0\sigma)$	$H(2.33)$	$236.10 \pm 0.54 \quad (+0.6\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_s$	$2.107^{+0.026}_{-0.031} \quad (+0.2\sigma)$	$D_M(2.33)$	$5757.7 \pm 8.6 \quad (-0.8\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	$> 0.377 \quad (+0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.881 \pm 0.010 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4560 \pm 0.0054 \quad (+0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$5.4^{+2.2}_{-1.9} \quad (+0.2\sigma)$	$D_{40}$	$1229 \pm 12 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7489 \pm 0.0052 \quad (+0.2\sigma)$
$A_{100}^{\text{PS}}$	$259 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5741 \pm 38 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4746 \pm 0.0046 \quad (+0.1\sigma)$
$A_{143}^{\text{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2540 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6640^{+0.0043}_{-0.0048} \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$817.9 \pm 4.7 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4734 \pm 0.0041 \quad (+0.1\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$231.2 \pm 1.5 \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.6214^{+0.0040}_{-0.0045} \quad (+0.2\sigma)$
$A^{\text{kSZ}}$	$< 4.23 \quad (-0.1\sigma)$	$n_{s,0.002}$	$0.9668 \pm 0.0037 \quad (+0.1\sigma)$	$f\sigma_8(0.61)$	$0.4685 \pm 0.0038 \quad (+0.2\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_P$	$0.245418^{+0.000054}_{-0.000047} \quad (+1.1\sigma)$	$\sigma_8(0.61)$	$0.5913^{+0.0038}_{-0.0043} \quad (+0.2\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.246744^{+0.000054}_{-0.000048} \quad (+1.1\sigma)$	$f\sigma_8(2.33)$	$0.2982^{+0.0019}_{-0.0022} \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5 \pm 3.3 \quad (+0.1\sigma)$	$10^5 D/H$	$2.575 \pm 0.024 \quad (-1.1\sigma)$	$\sigma_8(2.33)$	$0.3075^{+0.0020}_{-0.0024} \quad (+0.2\sigma)$
$A_{217}^{\text{dustTT}}$	$93.5 \pm 7.3 \quad (+0.0\sigma)$	Age/Gyr	$13.785 \pm 0.020 \quad (-0.8\sigma)$	$f_{2000}^{143}$	$29.3 \pm 2.7 \quad (-0.5\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$z_*$	$1089.77 \pm 0.21 \quad (-0.9\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 1.9 \quad (-0.6\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$r_*$	$144.59 \pm 0.21 \quad (-0.8\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.8 \quad (-0.5\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.482 \pm 0.084$	$100\theta_*$	$1.04120 \pm 0.00029 \quad (+0.0\sigma)$	$\chi_{\text{lensing}}^2$	$9.07 \pm 0.56 \quad (-0.2\sigma)$
$A_{143}^{\text{dustTE}}$	$0.225 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	$13.887 \pm 0.020 \quad (-0.8\sigma)$	$\chi_{\text{small}}^2$	$397.2 \pm 1.9 \quad (+0.0\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.667 \pm 0.081$	$z_{\text{drag}}$	$1060.02 \pm 0.29 \quad (+1.2\sigma)$	$\chi_{\text{lowl}}^2$	$23.21 \pm 0.81 \quad (+0.0\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.27$	$r_{\text{drag}}$	$147.23 \pm 0.22 \quad (-1.0\sigma)$	$\chi_{\text{plik}}^2$	$2359.6 \pm 5.8 \quad (+304.1\sigma)$
$c_{100}$	$0.99967 \pm 0.00062 \quad (+0.1\sigma)$	$k_D$	$0.14076 \pm 0.00028 \quad (+1.1\sigma)$	$\chi_{\text{JLA}}^2$	$1035.05 \pm 0.26 \quad (-0.1\sigma)$
$c_{217}$	$0.99818 \pm 0.00063 \quad (-0.1\sigma)$	$100\theta_D$	$0.16072 \pm 0.00017 \quad (-1.2\sigma)$	$\chi_{6\text{DF}}^2$	$0.045 \pm 0.052 \quad (-0.1\sigma)$
$H_0$	$67.72 \pm 0.40 \quad (+0.2\sigma)$	$z_{\text{eq}}$	$3385 \pm 20 \quad (+0.4\sigma)$	$\chi_{\text{MGS}}^2$	$1.30 \pm 0.38 \quad (-0.1\sigma)$
$\Omega_\Lambda$	$0.6897 \pm 0.0053 \quad (-0.0\sigma)$	$k_{\text{eq}}$	$0.010330 \pm 0.000061 \quad (+0.4\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.6 \pm 1.2 \quad (+0.0\sigma)$
$\Omega_m$	$0.3103 \pm 0.0053 \quad (+0.0\sigma)$	$100\theta_{\text{eq}}$	$0.8167 \pm 0.0038 \quad (-0.3\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_m h^2$	$0.14228 \pm 0.00084 \quad (+0.4\sigma)$	$100\theta_{s,\text{eq}}$	$0.4511 \pm 0.0019 \quad (-0.4\sigma)$	$\chi_{\text{CMB}}^2$	$2789.2 \pm 5.8 \quad (+294.7\sigma)$
$\Omega_m h^3$	$0.09635 \pm 0.00030 \quad (+1.0\sigma)$	$H(0.15)$	$72.99 \pm 0.35 \quad (+0.3\sigma)$	$\chi_{\text{BAO}}^2$	$5.98 \pm 0.90 \quad (-0.0\sigma)$
$\sigma_8$	$0.8103 \pm 0.0058 \quad (+0.2\sigma)$	$D_M(0.15)$	$640.3 \pm 3.4 \quad (-0.2\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 3841.74; \Delta\bar{\chi}_{\text{eff}}^2 = 1592.11; R - 1 = 0.01810$$



2.112 base\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_Pantheon18\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02250 \pm 0.00013 \quad (+1.0\sigma)$	$S_8$	$0.817 \pm 0.010 \quad (+0.3\sigma)$	$H(0.38)$	$83.29 \pm 0.26 \quad (+0.1\sigma)$
$\Omega_c h^2$	$0.11855 \pm 0.00087 \quad (+0.4\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4477 \pm 0.0056 \quad (+0.3\sigma)$	$D_M(0.38)$	$1521.8 \pm 6.8 \quad (-0.0\sigma)$
$100\theta_{MC}$	$1.04113 \pm 0.00029 \quad (-0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6019 \pm 0.0056 \quad (+0.3\sigma)$	$H(0.51)$	$89.96 \pm 0.21 \quad (+0.3\sigma)$
$\tau$	$0.0584^{+0.0064}_{-0.0077} \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.9810 \pm 0.0082 \quad (+0.2\sigma)$	$D_M(0.51)$	$1972.2 \pm 7.9 \quad (-0.0\sigma)$
$\ln(10^{10} A_s)$	$3.050 \pm 0.014 \quad (+0.0\sigma)$	$r_{\text{drag}} h$	$100.25 \pm 0.68 \quad (-0.3\sigma)$	$H(0.61)$	$95.54 \pm 0.18 \quad (+0.4\sigma)$
$n_s$	$0.9684 \pm 0.0038 \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.429 \pm 0.020 \quad (+0.2\sigma)$	$D_M(0.61)$	$2295.7 \pm 8.6 \quad (-0.1\sigma)$
$y_{\text{cal}}$	$1.0008 \pm 0.0024 \quad (-0.1\sigma)$	$z_{\text{re}}$	$8.02^{+0.66}_{-0.75} \quad (-0.1\sigma)$	$H(2.33)$	$235.75 \pm 0.54 \quad (+0.7\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.1\sigma)$	$10^9 A_s$	$2.111 \pm 0.029 \quad (+0.0\sigma)$	$D_M(2.33)$	$5752.0 \pm 8.5 \quad (-0.6\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	$> 0.387 \quad (+0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.878 \pm 0.010 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4527 \pm 0.0053 \quad (+0.3\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5 \pm 2.0 \quad (+0.1\sigma)$	$D_{40}$	$1226 \pm 12 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.7483 \pm 0.0053 \quad (+0.1\sigma)$
$A_{100}^{\text{PS}}$	$258 \pm 28 \quad (-0.1\sigma)$	$D_{220}$	$5747 \pm 38 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4722 \pm 0.0045 \quad (+0.3\sigma)$
$A_{143}^{\text{PS}}$	$45 \pm 8 \quad (-0.3\sigma)$	$D_{810}$	$2540 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.6639 \pm 0.0046 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$818.7 \pm 4.6 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4715 \pm 0.0041 \quad (+0.3\sigma)$
$A_{217}^{\text{PS}}$	$115^{+10}_{-9.5} \quad (+0.0\sigma)$	$D_{2000}$	$231.5 \pm 1.5 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.6215 \pm 0.0043 \quad (+0.1\sigma)$
$A^{\text{kSZ}}$	$< 4.17 \quad (-0.1\sigma)$	$n_{s,0.002}$	$0.9684 \pm 0.0038 \quad (-0.0\sigma)$	$f\sigma_8(0.61)$	$0.4669 \pm 0.0038 \quad (+0.2\sigma)$
$A_{100}^{\text{dustTT}}$	$8.8 \pm 1.8 \quad (-0.0\sigma)$	$Y_P$	$0.245443 \pm 0.000050 \quad (+0.9\sigma)$	$\sigma_8(0.61)$	$0.5916 \pm 0.0041 \quad (+0.1\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.246770 \pm 0.000050 \quad (+0.9\sigma)$	$f\sigma_8(2.33)$	$0.2985 \pm 0.0021 \quad (+0.0\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5 \pm 3.4 \quad (+0.0\sigma)$	$10^5 D/H$	$2.562 \pm 0.024 \quad (-1.0\sigma)$	$\sigma_8(2.33)$	$0.3080 \pm 0.0022 \quad (+0.0\sigma)$
$A_{217}^{\text{dustTT}}$	$93.4 \pm 7.4 \quad (+0.0\sigma)$	Age/Gyr	$13.772 \pm 0.019 \quad (-0.6\sigma)$	$f_{2000}^{143}$	$28.9 \pm 2.7 \quad (-0.5\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$z_*$	$1089.63 \pm 0.21 \quad (-0.7\sigma)$	$f_{2000}^{143 \times 217}$	$31.7 \pm 1.9 \quad (-0.6\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.029$	$r_*$	$144.71 \pm 0.21 \quad (-0.9\sigma)$	$f_{2000}^{217}$	$106.6 \pm 1.8 \quad (-0.5\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.483 \pm 0.082$	$100\theta_*$	$1.04130 \pm 0.00028 \quad (-0.1\sigma)$	$\chi_{\text{lensing}}^2$	$9.13 \pm 0.69 \quad (-0.3\sigma)$
$A_{143}^{\text{dustTE}}$	$0.225 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	$13.897 \pm 0.020 \quad (-0.9\sigma)$	$\chi_{\text{small}}^2$	$397.6 \pm 2.1 \quad (-0.1\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.667 \pm 0.083$	$z_{\text{drag}}$	$1060.13 \pm 0.29 \quad (+1.1\sigma)$	$\chi_{\text{lowl}}^2$	$22.95 \pm 0.79 \quad (+0.1\sigma)$
$A_{217}^{\text{dustTE}}$	$2.06 \pm 0.27$	$r_{\text{drag}}$	$147.33 \pm 0.23 \quad (-1.0\sigma)$	$\chi_{\text{plik}}^2$	$2360.6 \pm 6.0 \quad (+299.6\sigma)$
$c_{100}$	$0.99969 \pm 0.00062 \quad (+0.0\sigma)$	$k_D$	$0.14071 \pm 0.00028 \quad (+1.1\sigma)$	$\chi_{\text{H073p45}}^2$	$10.7 \pm 1.5 \quad (+0.0\sigma)$
$c_{217}$	$0.99818 \pm 0.00064 \quad (-0.1\sigma)$	$100\theta_D$	$0.16066 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{\text{JLA}}^2$	$1034.89 \pm 0.17 \quad (+0.1\sigma)$
$H_0$	$68.04 \pm 0.40 \quad (-0.1\sigma)$	$z_{\text{eq}}$	$3371 \pm 20 \quad (+0.6\sigma)$	$\chi_{\text{6DF}}^2$	$0.022 \pm 0.030 \quad (-0.1\sigma)$
$\Omega_\Lambda$	$0.6939 \pm 0.0052 \quad (-0.3\sigma)$	$k_{\text{eq}}$	$0.010288 \pm 0.000061 \quad (+0.6\sigma)$	$\chi_{\text{MGS}}^2$	$1.60 \pm 0.41 \quad (-0.3\sigma)$
$\Omega_m$	$0.3061 \pm 0.0052 \quad (+0.3\sigma)$	$100\theta_{\text{eq}}$	$0.8195 \pm 0.0038 \quad (-0.5\sigma)$	$\chi_{\text{DR12BAO}}^2$	$3.97 \pm 0.72 \quad (+0.1\sigma)$
$\Omega_m h^2$	$0.14170 \pm 0.00083 \quad (+0.6\sigma)$	$100\theta_{s,\text{eq}}$	$0.4525 \pm 0.0019 \quad (-0.6\sigma)$	$\chi_{\text{prior}}^2$	$11.6 \pm 4.6 \quad (+1.2\sigma)$
$\Omega_m h^3$	$0.09641 \pm 0.00029 \quad (+0.9\sigma)$	$H(0.15)$	$73.27 \pm 0.34 \quad (+0.0\sigma)$	$\chi_{\text{CMB}}^2$	$2790.2 \pm 6.0 \quad (+287.7\sigma)$
$\sigma_8$	$0.8092 \pm 0.0058 \quad (+0.2\sigma)$	$D_M(0.15)$	$637.6 \pm 3.3 \quad (+0.0\sigma)$	$\chi_{\text{BAO}}^2$	$5.60 \pm 0.53 \quad (-0.1\sigma)$
$\bar{\chi}_{\text{eff}}^2 = 3853.01; \Delta\bar{\chi}_{\text{eff}}^2 = 1591.84; R - 1 = 0.04302$					



### 2.113 base\_CamSpecHM\_TT\_lowl\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022129	$0.02215 \pm 0.00020$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6087	$0.6088 \pm 0.0078$	$D_{\mathrm{M}}(0.15)$	646.2	$646.1 \pm 6.1$
$\Omega_{\mathrm{c}}h^2$	0.12025	$0.1203 \pm 0.0016$	$\sigma_8/h^{0.5}$	0.9897	$0.990 \pm 0.011$	$H(0.38)$	82.611	$82.63 \pm 0.45$
$100\theta_{\mathrm{MC}}$	1.040846	$1.04085 \pm 0.00045$	$r_{\mathrm{drag}}h$	98.75	$98.8 \pm 1.2$	$D_{\mathrm{M}}(0.38)$	1539.4	$1539 \pm 12$
$\tau$	0.0525	$0.0527 \pm 0.0078$	$\langle d^2 \rangle^{1/2}$	2.4456	$2.446 \pm 0.025$	$H(0.51)$	89.391	$89.41 \pm 0.36$
$\ln(10^{10}A_{\mathrm{s}})$	3.0388	$3.039 \pm 0.015$	$z_{\mathrm{re}}$	7.55	$7.55 \pm 0.79$	$D_{\mathrm{M}}(0.51)$	1993.1	$1993 \pm 14$
$n_{\mathrm{s}}$	0.96381	$0.9639 \pm 0.0049$	$10^9 A_{\mathrm{s}}$	2.0881	$2.090 \pm 0.031$	$H(0.61)$	95.057	$95.08 \pm 0.29$
$y_{\mathrm{cal}}$	1.00036	$1.0004 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8799	$1.880 \pm 0.011$	$D_{\mathrm{M}}(0.61)$	2318.4	$2318 \pm 15$
$A_{100}^{\mathrm{PS}}$	242.2	$243 \pm 25$	$D_{40}$	1228.9	$1229 \pm 13$	$H(2.33)$	236.48	$236.50 \pm 0.95$
$A_{143}^{\mathrm{PS}}$	39.7	$41 \pm 8$	$D_{220}$	5703.6	$5706 \pm 41$	$D_{\mathrm{M}}(2.33)$	5775.5	$5775 \pm 14$
$A_{217}^{\mathrm{PS}}$	99.6	$101 \pm 10$	$D_{810}$	2532.9	$2533 \pm 14$	$f\sigma_8(0.15)$	0.4612	$0.4612 \pm 0.0082$
$A_{217}^{\mathrm{CIB}}$	44.4	$41 \pm 7$	$D_{1420}$	813.7	$814.0 \pm 5.2$	$\sigma_8(0.15)$	0.7482	$0.7483 \pm 0.0057$
$A_{143}^{\mathrm{tSZ}}$	5.12	$3.7_{-2.6}^{+1.7}$	$D_{2000}$	229.35	$229.5 \pm 1.8$	$f\sigma_8(0.38)$	0.4780	$0.4781 \pm 0.0064$
$r_{143 \times 217}^{\mathrm{PS}}$	0.571	$0.65 \pm 0.13$	$n_{\mathrm{s},0.002}$	0.96381	$0.9639 \pm 0.0049$	$\sigma_8(0.38)$	0.66249	$0.6626 \pm 0.0049$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.713	$0.58_{-0.12}^{+0.42}$	$Y_{\mathrm{P}}$	0.245296	$0.245300_{-0.000078}^{+0.000097}$	$f\sigma_8(0.51)$	0.4758	$0.4759 \pm 0.0054$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.06	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246622	$0.246626_{-0.000078}^{+0.000098}$	$\sigma_8(0.51)$	0.61968	$0.6198 \pm 0.0046$
$A^{\mathrm{kSZ}}$	2.5	—	$10^5 \mathrm{D}/\mathrm{H}$	2.6315	$2.628 \pm 0.039$	$f\sigma_8(0.61)$	0.47031	$0.4704 \pm 0.0048$
$A_{100}^{\mathrm{dust}}$	1.011	$1.01 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	13.8250	$13.823 \pm 0.032$	$\sigma_8(0.61)$	0.58945	$0.5896 \pm 0.0045$
$A_{143}^{\mathrm{dust}}$	0.989	$0.98 \pm 0.17$	$z_*$	1090.248	$1090.23 \pm 0.34$	$f\sigma_8(2.33)$	0.29694	$0.2970 \pm 0.0023$
$A_{217}^{\mathrm{dust}}$	0.962	$0.97 \pm 0.10$	$r_*$	144.550	$144.54 \pm 0.36$	$\sigma_8(2.33)$	0.30585	$0.3059 \pm 0.0026$
$A_{143 \times 217}^{\mathrm{dust}}$	1.008	$1.03 \pm 0.16$	$100\theta_*$	1.041058	$1.04105 \pm 0.00045$	$f_{2000}^{143}$	31.37	$30.9 \pm 3.0$
$c_{100}$	0.99746	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8849	$13.884 \pm 0.034$	$f_{2000}^{217}$	107.78	$107.6 \pm 2.0$
$c_{217}$	1.00134	$1.0012 \pm 0.0016$	$z_{\mathrm{drag}}$	1059.399	$1059.44 \pm 0.44$	$f_{2000}^{143 \times 217}$	33.18	$33.0 \pm 2.1$
$H_0$	67.04	$67.06 \pm 0.71$	$r_{\mathrm{drag}}$	147.293	$147.27 \pm 0.37$	$\chi_{\mathrm{lensing}}^2$	8.91	$9.52 \pm 0.88$
$\Omega_{\Lambda}$	0.6818	$0.6817 \pm 0.0098$	$k_{\mathrm{D}}$	0.140467	$0.14050 \pm 0.00044$	$\chi_{\mathrm{small}}^2$	395.87	$396.9 \pm 1.6$
$\Omega_{\mathrm{m}}$	0.3182	$0.3183 \pm 0.0098$	$100\theta_{\mathrm{D}}$	0.161077	$0.16105 \pm 0.00026$	$\chi_{\mathrm{lowl}}^2$	23.42	$23.5 \pm 1.0$
$\Omega_{\mathrm{m}}h^2$	0.14303	$0.1431 \pm 0.0015$	$z_{\mathrm{eq}}$	3402.5	$3403 \pm 35$	$\chi_{\mathrm{CamSpec}}^2$	7050.18	$7062.7 \pm 5.1$
$\Omega_{\mathrm{m}}h^3$	0.095890	$0.09592 \pm 0.00044$	$k_{\mathrm{eq}}$	0.010385	$0.01039 \pm 0.00011$	$\chi_{\mathrm{prior}}^2$	2.28	$7.6 \pm 3.5$
$\sigma_8$	0.8104	$0.8106 \pm 0.0064$	$100\theta_{\mathrm{eq}}$	0.8125	$0.8125 \pm 0.0066$	$\chi_{\mathrm{CMB}}^2$	7478.4	$7492.6 \pm 5.3$
$S_8$	0.8346	$0.835 \pm 0.016$	$100\theta_{\mathrm{s,eq}}$	0.44916	$0.4491 \pm 0.0034$			
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4571	$0.4572 \pm 0.0089$	$H(0.15)$	72.39	$72.41 \pm 0.61$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 7480.67$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 7500.24$ ;  $R - 1 = 0.00500$   
 $\chi_{\mathrm{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.91 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 commander\_dx12\_v3.2\_29: 23.42 CamSpec like\_10.7HM: 7050.18



## 2.114 base\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02222 \pm 0.00019$	$\sigma_8/h^{0.5}$	$0.9842 \pm 0.0090$	$D_{\mathrm{M}}(0.38)$	$1530.4 \pm 8.6$
$\Omega_{\mathrm{c}}h^2$	$0.1191 \pm 0.0011$	$r_{\mathrm{drag}}h$	$99.65 \pm 0.84$	$H(0.51)$	$89.65 \pm 0.27$
$100\theta_{\mathrm{MC}}$	$1.04102 \pm 0.00042$	$\langle d^2 \rangle^{1/2}$	$2.433 \pm 0.021$	$D_{\mathrm{M}}(0.51)$	$1983 \pm 10$
$\tau$	$0.0554 \pm 0.0075$	$z_{\mathrm{re}}$	$7.80 \pm 0.75$	$H(0.61)$	$95.26 \pm 0.23$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043 \pm 0.015$	$10^9 A_{\mathrm{s}}$	$2.097 \pm 0.031$	$D_{\mathrm{M}}(0.61)$	$2307 \pm 11$
$n_{\mathrm{s}}$	$0.9665 \pm 0.0041$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.877 \pm 0.011$	$H(2.33)$	$235.86 \pm 0.70$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{40}$	$1225 \pm 12$	$D_{\mathrm{M}}(2.33)$	$5767 \pm 12$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25$	$D_{220}$	$5714 \pm 40$	$f\sigma_8(0.15)$	$0.4558 \pm 0.0061$
$A_{143}^{\mathrm{PS}}$	$41 \pm 8$	$D_{810}$	$2534 \pm 14$	$\sigma_8(0.15)$	$0.7476 \pm 0.0057$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{1420}$	$815.1 \pm 5.0$	$f\sigma_8(0.38)$	$0.4742 \pm 0.0051$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{2000}$	$229.9 \pm 1.8$	$\sigma_8(0.38)$	$0.6627 \pm 0.0050$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.7}_{-2.6}$	$n_{\mathrm{s},0.002}$	$0.9665 \pm 0.0041$	$f\sigma_8(0.51)$	$0.4729 \pm 0.0046$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	$0.245332^{+0.000086}_{-0.000071}$	$\sigma_8(0.51)$	$0.6202 \pm 0.0047$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.457$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246659^{+0.000086}_{-0.000071}$	$f\sigma_8(0.61)$	$0.4679 \pm 0.0042$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.614 \pm 0.036$	$\sigma_8(0.61)$	$0.5902 \pm 0.0045$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.806 \pm 0.027$	$f\sigma_8(2.33)$	$0.2976 \pm 0.0023$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$z_*$	$1090.03 \pm 0.28$	$\sigma_8(2.33)$	$0.3068 \pm 0.0025$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.18$	$r_*$	$144.77 \pm 0.28$	$f_{2000}^{143}$	$30.5 \pm 3.0$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04122 \pm 0.00041$	$f_{2000}^{217}$	$107.4 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.903 \pm 0.028$	$f_{2000}^{143 \times 217}$	$32.8 \pm 2.1$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.53 \pm 0.43$	$\chi_{\mathrm{lensing}}^2$	$9.39 \pm 0.82$
$c_{217}$	$1.0012 \pm 0.0015$	$r_{\mathrm{drag}}$	$147.48 \pm 0.31$	$\chi_{\mathrm{simall}}^2$	$397.2 \pm 1.9$
$H_0$	$67.57 \pm 0.49$	$k_{\mathrm{D}}$	$0.14034 \pm 0.00041$	$\chi_{\mathrm{lowl}}^2$	$23.04 \pm 0.84$
$\Omega_{\Lambda}$	$0.6888 \pm 0.0066$	$100\theta_{\mathrm{D}}$	$0.16101 \pm 0.00025$	$\chi_{\mathrm{CamSpec}}^2$	$7063.1 \pm 5.2$
$\Omega_{\mathrm{m}}$	$0.3112 \pm 0.0066$	$z_{\mathrm{eq}}$	$3378 \pm 25$	$\chi_{6\mathrm{DF}}^2$	$0.059 \pm 0.072$
$\Omega_{\mathrm{m}}h^2$	$0.1420 \pm 0.0011$	$k_{\mathrm{eq}}$	$0.010311 \pm 0.000077$	$\chi_{\mathrm{MGS}}^2$	$1.28 \pm 0.46$
$\Omega_{\mathrm{m}}h^3$	$0.09595 \pm 0.00044$	$100\theta_{\mathrm{eq}}$	$0.8173 \pm 0.0047$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.5$
$\sigma_8$	$0.8090 \pm 0.0063$	$100\theta_{\mathrm{s,eq}}$	$0.4516 \pm 0.0024$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.5$
$S_8$	$0.824 \pm 0.012$	$H(0.15)$	$72.84 \pm 0.43$	$\chi_{\mathrm{CMB}}^2$	$7492.7 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4512 \pm 0.0065$	$D_{\mathrm{M}}(0.15)$	$641.7 \pm 4.2$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6042 \pm 0.0063$	$H(0.38)$	$82.94 \pm 0.32$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7506.48$ ;  $R - 1 = 0.00781$



# 2.115 base\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_post\_Riess18

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02233^{+0.00021}_{-0.00018}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.6001 \pm 0.0077$	$D_{\mathrm{M}}(0.15)$	$637.4 \pm 5.8$
$\Omega_{\mathrm{c}} h^2$	$0.1182 \pm 0.0015$	$\sigma_8 / h^{0.5}$	$0.979 \pm 0.011$	$H(0.38)$	$83.27 \pm 0.44$
$100\theta_{\mathrm{MC}}$	$1.04121 \pm 0.00045$	$r_{\mathrm{drag}} h$	$100.5 \pm 1.2$	$D_{\mathrm{M}}(0.38)$	$1522 \pm 12$
$\tau$	$0.0584^{+0.0074}_{-0.0087}$	$\langle d^2 \rangle^{1/2}$	$2.422 \pm 0.025$	$H(0.51)$	$89.91 \pm 0.36$
$\ln(10^{10} A_{\mathrm{s}})$	$3.047 \pm 0.016$	$z_{\mathrm{re}}$	$8.05 \pm 0.80$	$D_{\mathrm{M}}(0.51)$	$1972 \pm 14$
$n_{\mathrm{s}}$	$0.9691 \pm 0.0049$	$10^9 A_{\mathrm{s}}$	$2.106^{+0.031}_{-0.035}$	$H(0.61)$	$95.48 \pm 0.29$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0025$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.873^{+0.012}_{-0.011}$	$D_{\mathrm{M}}(0.61)$	$2296 \pm 15$
$A_{100}^{\mathrm{PS}}$	$241 \pm 25$	$D_{40}$	$1221 \pm 13$	$H(2.33)$	$235.34 \pm 0.93$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8$	$D_{220}$	$5724 \pm 40$	$D_{\mathrm{M}}(2.33)$	$5757 \pm 14$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{810}$	$2535 \pm 14$	$f\sigma_8(0.15)$	$0.4510^{+0.0081}_{-0.0074}$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7$	$D_{1420}$	$816.4 \pm 5.0$	$\sigma_8(0.15)$	$0.7471 \pm 0.0059$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.7}_{-2.5}$	$D_{2000}$	$230.5 \pm 1.8$	$f\sigma_8(0.38)$	$0.4707^{+0.0066}_{-0.0059}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.12$	$n_{\mathrm{s},0.002}$	$0.9691 \pm 0.0049$	$\sigma_8(0.38)$	$0.6630 \pm 0.0052$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.57^{+0.41}_{-0.15}$	$Y_{\mathrm{P}}$	$0.245378^{+0.000086}_{-0.000068}$	$f\sigma_8(0.51)$	$0.4701 \pm 0.0055$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246704^{+0.000086}_{-0.000068}$	$\sigma_8(0.51)$	$0.6207 \pm 0.0049$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.593^{+0.033}_{-0.039}$	$f\sigma_8(0.61)$	$0.4657 \pm 0.0050$
$A_{100}^{\mathrm{dust}}$	$1.02 \pm 0.19$	$\mathrm{Age}/\mathrm{Gyr}$	$13.785 \pm 0.031$	$\sigma_8(0.61)$	$0.5908 \pm 0.0047$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	$z_*$	$1089.81 \pm 0.32$	$f\sigma_8(2.33)$	$0.2982^{+0.0023}_{-0.0026}$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$r_*$	$144.94 \pm 0.36$	$\sigma_8(2.33)$	$0.3077^{+0.0025}_{-0.0028}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04140 \pm 0.00045$	$f_{2000}^{143}$	$29.9 \pm 2.9$
$c_{100}$	$0.9976 \pm 0.0010$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.918 \pm 0.034$	$f_{2000}^{217}$	$107.0 \pm 2.0$
$c_{217}$	$1.0012 \pm 0.0015$	$z_{\mathrm{drag}}$	$1059.72 \pm 0.42$	$f_{2000}^{143 \times 217}$	$32.3 \pm 2.1$
$H_0$	$68.07 \pm 0.69$	$r_{\mathrm{drag}}$	$147.62 \pm 0.38$	$\chi_{\mathrm{lensing}}^2$	$9.8 \pm 1.4$
$\Omega_{\Lambda}$	$0.6953 \pm 0.0091$	$k_{\mathrm{D}}$	$0.14028 \pm 0.00045$	$\chi_{\mathrm{simall}}^2$	$397.8 \pm 2.6$
$\Omega_{\mathrm{m}}$	$0.3047 \pm 0.0091$	$100\theta_{\mathrm{D}}$	$0.16092 \pm 0.00024$	$\chi_{\mathrm{lowl}}^2$	$22.68 \pm 0.88$
$\Omega_{\mathrm{m}} h^2$	$0.1411 \pm 0.0014$	$z_{\mathrm{eq}}$	$3357 \pm 35$	$\chi_{\mathrm{CamSpec}}^2$	$7064.4 \pm 5.5$
$\Omega_{\mathrm{m}} h^3$	$0.09607 \pm 0.00042$	$k_{\mathrm{eq}}$	$0.01025 \pm 0.00011$	$\chi_{\mathrm{H073p45}}^2$	$10.7 \pm 2.7$
$\sigma_8$	$0.8077 \pm 0.0067$	$100\theta_{\mathrm{eq}}$	$0.8216 \pm 0.0066$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.4$
$S_8$	$0.814^{+0.016}_{-0.014}$	$100\theta_{\mathrm{s,eq}}$	$0.4537 \pm 0.0034$	$\chi_{\mathrm{CMB}}^2$	$7494.8 \pm 6.3$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4459^{+0.0087}_{-0.0079}$	$H(0.15)$	$73.28 \pm 0.60$		
$\bar{\chi}_{\mathrm{eff}}^2 = 7512.86; R - 1 = 0.03322$					



2.116 base\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_Riess18

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02233 \pm 0.00019$	$\sigma_8/h^{0.5}$	$0.9794 \pm 0.0090$	$D_{\mathrm{M}}(0.38)$	$1522.2 \pm 8.1$
$\Omega_{\mathrm{c}}h^2$	$0.1182 \pm 0.0010$	$r_{\mathrm{drag}}h$	$100.44 \pm 0.80$	$H(0.51)$	$89.90 \pm 0.26$
$100\theta_{\mathrm{MC}}$	$1.04119 \pm 0.00041$	$\langle d^2 \rangle^{1/2}$	$2.423 \pm 0.021$	$D_{\mathrm{M}}(0.51)$	$1972.9 \pm 9.5$
$\tau$	$0.0582 \pm 0.0075$	$z_{\mathrm{re}}$	$8.04 \pm 0.74$	$H(0.61)$	$95.46 \pm 0.23$
$\ln(10^{10}A_{\mathrm{s}})$	$3.047 \pm 0.015$	$10^9 A_{\mathrm{s}}$	$2.106 \pm 0.032$	$D_{\mathrm{M}}(0.61)$	$2297 \pm 10$
$n_{\mathrm{s}}$	$0.9690 \pm 0.0040$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.874 \pm 0.011$	$H(2.33)$	$235.37 \pm 0.67$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0025$	$D_{40}$	$1222 \pm 12$	$D_{\mathrm{M}}(2.33)$	$5758 \pm 11$
$A_{100}^{\mathrm{PS}}$	$241 \pm 25$	$D_{220}$	$5725 \pm 40$	$f\sigma_8(0.15)$	$0.4513 \pm 0.0060$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8$	$D_{810}$	$2535 \pm 13$	$\sigma_8(0.15)$	$0.7472 \pm 0.0058$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{1420}$	$816.5 \pm 5.0$	$f\sigma_8(0.38)$	$0.4710 \pm 0.0051$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7$	$D_{2000}$	$230.5 \pm 1.7$	$\sigma_8(0.38)$	$0.6631 \pm 0.0051$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$n_{\mathrm{s},0.002}$	$0.9690 \pm 0.0040$	$f\sigma_8(0.51)$	$0.4704 \pm 0.0046$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$Y_{\mathrm{P}}$	$0.245377^{+0.000081}_{-0.000068}$	$\sigma_8(0.51)$	$0.6208 \pm 0.0048$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.57^{+0.40}_{-0.16}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246704^{+0.000081}_{-0.000068}$	$f\sigma_8(0.61)$	$0.4659 \pm 0.0043$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.593^{+0.033}_{-0.037}$	$\sigma_8(0.61)$	$0.5909 \pm 0.0046$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.786 \pm 0.026$	$f\sigma_8(2.33)$	$0.2982 \pm 0.0024$
$A_{100}^{\mathrm{dust}}$	$1.02 \pm 0.19$	$z_*$	$1089.81 \pm 0.27$	$\sigma_8(2.33)$	$0.3077 \pm 0.0025$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	$r_*$	$144.92 \pm 0.27$	$f_{2000}^{143}$	$29.9 \pm 2.9$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04138 \pm 0.00040$	$f_{2000}^{217}$	$107.0 \pm 2.1$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.917 \pm 0.027$	$f_{2000}^{143 \times 217}$	$32.3 \pm 2.1$
$c_{100}$	$0.9976 \pm 0.0010$	$z_{\mathrm{drag}}$	$1059.72 \pm 0.42$	$\chi_{\mathrm{lensing}}^2$	$9.6 \pm 1.1$
$c_{217}$	$1.0012 \pm 0.0015$	$r_{\mathrm{drag}}$	$147.61 \pm 0.30$	$\chi_{\mathrm{simall}}^2$	$397.7 \pm 2.3$
$H_0$	$68.04 \pm 0.47$	$k_{\mathrm{D}}$	$0.14029 \pm 0.00041$	$\chi_{\mathrm{lowl}}^2$	$22.69 \pm 0.79$
$\Omega_{\Lambda}$	$0.6950 \pm 0.0061$	$100\theta_{\mathrm{D}}$	$0.16091 \pm 0.00025$	$\chi_{\mathrm{CamSpec}}^2$	$7064.2 \pm 5.4$
$\Omega_{\mathrm{m}}$	$0.3050 \pm 0.0061$	$z_{\mathrm{eq}}$	$3359 \pm 24$	$\chi_{\mathrm{H073p45}}^2$	$10.7 \pm 1.8$
$\Omega_{\mathrm{m}}h^2$	$0.1412 \pm 0.0010$	$k_{\mathrm{eq}}$	$0.010251 \pm 0.000074$	$\chi_{6\mathrm{DF}}^2$	$0.027 \pm 0.038$
$\Omega_{\mathrm{m}}h^3$	$0.09607 \pm 0.00043$	$100\theta_{\mathrm{eq}}$	$0.8213 \pm 0.0045$	$\chi_{\mathrm{MGS}}^2$	$1.73 \pm 0.49$
$\sigma_8$	$0.8079 \pm 0.0064$	$100\theta_{\mathrm{s,eq}}$	$0.4536 \pm 0.0023$	$\chi_{\mathrm{DR12BAO}}^2$	$3.91 \pm 0.78$
$S_8$	$0.815 \pm 0.012$	$H(0.15)$	$73.25 \pm 0.41$	$\chi_{\mathrm{prior}}^2$	$7.5 \pm 3.5$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4462 \pm 0.0063$	$D_{\mathrm{M}}(0.15)$	$637.6 \pm 4.0$	$\chi_{\mathrm{CMB}}^2$	$7494.2 \pm 5.6$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6004 \pm 0.0062$	$H(0.38)$	$83.25 \pm 0.31$	$\chi_{\mathrm{BAO}}^2$	$5.67 \pm 0.68$

$\bar{\chi}_{\mathrm{eff}}^2 = 7518.00$ ;  $R - 1 = 0.02714$



## 2.117 base\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022170	$0.02218 \pm 0.00020$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6073	$0.6068 \pm 0.0074$	$D_{\mathrm{M}}(0.15)$	644.4	$644.2 \pm 5.6$
$\Omega_{\mathrm{c}}h^2$	0.11983	$0.1198 \pm 0.0014$	$\sigma_8/h^{0.5}$	0.9882	$0.987 \pm 0.010$	$H(0.38)$	82.738	$82.76 \pm 0.42$
$100\theta_{\mathrm{MC}}$	1.040912	$1.04092 \pm 0.00044$	$r_{\mathrm{drag}}h$	99.09	$99.1 \pm 1.1$	$D_{\mathrm{M}}(0.38)$	1535.9	$1535 \pm 11$
$\tau$	0.0541	$0.0539 \pm 0.0077$	$\langle d^2 \rangle^{1/2}$	2.4421	$2.441 \pm 0.024$	$H(0.51)$	89.490	$89.51 \pm 0.34$
$\ln(10^{10}A_{\mathrm{s}})$	3.0416	$3.041 \pm 0.015$	$z_{\mathrm{re}}$	7.70	$7.66 \pm 0.78$	$D_{\mathrm{M}}(0.51)$	1989.0	$1988 \pm 13$
$n_{\mathrm{s}}$	0.96498	$0.9651 \pm 0.0047$	$10^9 A_{\mathrm{s}}$	2.0939	$2.093 \pm 0.031$	$H(0.61)$	95.136	$95.16 \pm 0.28$
$y_{\mathrm{cal}}$	1.00058	$1.0005 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8792	$1.879 \pm 0.011$	$D_{\mathrm{M}}(0.61)$	2314.0	$2313 \pm 14$
$A_{100}^{\mathrm{PS}}$	239.9	$243 \pm 25$	$D_{40}$	1227.5	$1228 \pm 12$	$H(2.33)$	236.25	$236.23 \pm 0.88$
$A_{143}^{\mathrm{PS}}$	40.1	$41 \pm 8$	$D_{220}$	5708.8	$5710 \pm 41$	$D_{\mathrm{M}}(2.33)$	5771.9	$5771 \pm 14$
$A_{217}^{\mathrm{PS}}$	100.0	$101 \pm 10$	$D_{810}$	2534.1	$2534 \pm 14$	$f\sigma_8(0.15)$	0.4594	$0.4589 \pm 0.0077$
$A_{217}^{\mathrm{CIB}}$	45.1	$41 \pm 7$	$D_{1420}$	814.6	$814.5 \pm 5.1$	$\sigma_8(0.15)$	0.7484	$0.7480 \pm 0.0057$
$A_{143}^{\mathrm{tSZ}}$	5.90	$3.8_{-2.6}^{+1.7}$	$D_{2000}$	229.69	$229.7 \pm 1.8$	$f\sigma_8(0.38)$	0.4769	$0.4764 \pm 0.0060$
$r_{143 \times 217}^{\mathrm{PS}}$	0.569	$0.65 \pm 0.13$	$n_{\mathrm{s},0.002}$	0.96498	$0.9651 \pm 0.0047$	$\sigma_8(0.38)$	0.66301	$0.6627 \pm 0.0050$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.776	$> 0.463$	$Y_{\mathrm{P}}$	0.245314	$0.245315_{-0.000075}^{+0.000094}$	$f\sigma_8(0.51)$	0.4750	$0.4746 \pm 0.0052$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.07	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246640	$0.246641_{-0.000075}^{+0.000094}$	$\sigma_8(0.51)$	0.62029	$0.6200 \pm 0.0047$
$A^{\mathrm{kSZ}}$	1.3	—	$10^5 \mathrm{D}/\mathrm{H}$	2.6236	$2.621 \pm 0.038$	$f\sigma_8(0.61)$	0.46972	$0.4693 \pm 0.0047$
$A_{100}^{\mathrm{dust}}$	1.012	$1.01 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	13.8172	$13.815 \pm 0.031$	$\sigma_8(0.61)$	0.59011	$0.5898 \pm 0.0045$
$A_{143}^{\mathrm{dust}}$	0.991	$0.98 \pm 0.18$	$z_*$	1090.158	$1090.14 \pm 0.33$	$f\sigma_8(2.33)$	0.29738	$0.2973 \pm 0.0023$
$A_{217}^{\mathrm{dust}}$	0.967	$0.97 \pm 0.10$	$r_*$	144.627	$144.63 \pm 0.34$	$\sigma_8(2.33)$	0.30642	$0.3063 \pm 0.0026$
$A_{143 \times 217}^{\mathrm{dust}}$	1.000	$1.03 \pm 0.16$	$100\theta_*$	1.041115	$1.04112 \pm 0.00044$	$f_{2000}^{143}$	31.15	$30.7 \pm 3.0$
$c_{100}$	0.99756	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8915	$13.892 \pm 0.032$	$f_{2000}^{217}$	107.63	$107.5 \pm 2.0$
$c_{217}$	1.00139	$1.0012 \pm 0.0015$	$z_{\mathrm{drag}}$	1059.475	$1059.48 \pm 0.43$	$f_{2000}^{143 \times 217}$	32.95	$32.9 \pm 2.1$
$H_0$	67.24	$67.28 \pm 0.65$	$r_{\mathrm{drag}}$	147.357	$147.36 \pm 0.36$	$\chi_{\mathrm{lensing}}^2$	8.879	$9.45 \pm 0.83$
$\Omega_{\Lambda}$	0.6845	$0.6848 \pm 0.0089$	$k_{\mathrm{D}}$	0.140431	$0.14044 \pm 0.00044$	$\chi_{\mathrm{small}}^2$	396.05	$397.0 \pm 1.7$
$\Omega_{\mathrm{m}}$	0.3155	$0.3152 \pm 0.0089$	$100\theta_{\mathrm{D}}$	0.161041	$0.16103 \pm 0.00025$	$\chi_{\mathrm{lowl}}^2$	23.24	$23.30 \pm 0.95$
$\Omega_{\mathrm{m}}h^2$	0.14265	$0.1426 \pm 0.0014$	$z_{\mathrm{eq}}$	3393.4	$3392 \pm 33$	$\chi_{\mathrm{CamSpec}}^2$	7050.35	$7062.8 \pm 5.2$
$\Omega_{\mathrm{m}}h^3$	0.095923	$0.09594 \pm 0.00044$	$k_{\mathrm{eq}}$	0.010357	$0.01035 \pm 0.00010$	$\chi_{\mathrm{JLA}}^2$	1035.290	$1035.43 \pm 0.63$
$\sigma_8$	0.8104	$0.8099 \pm 0.0064$	$100\theta_{\mathrm{eq}}$	0.8143	$0.8146 \pm 0.0061$	$\chi_{\mathrm{prior}}^2$	2.22	$7.6 \pm 3.5$
$S_8$	0.8310	$0.830 \pm 0.015$	$100\theta_{\mathrm{s,eq}}$	0.45006	$0.4502 \pm 0.0032$	$\chi_{\mathrm{CMB}}^2$	7478.5	$7492.6 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4552	$0.4546 \pm 0.0083$	$H(0.15)$	72.56	$72.60 \pm 0.56$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 8516.03$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 8535.63$ ;  $R - 1 = 0.00582$   
 $\chi_{\mathrm{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.88 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.05 commander\_dx12\_v3.2\_29: 23.24 CamSpec like\_10.7HM: 7050.35 SN - JLA Pantheon18: 1035.29



2.118 base\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_JLA\_Riess18

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02234 \pm 0.00019$	$r_{\text{drag}} h$	$100.53 \pm 0.79$	$D_{\text{M}}(0.51)$	$1971.9 \pm 9.5$
$\Omega_c h^2$	$0.1181 \pm 0.0010$	$\langle d^2 \rangle^{1/2}$	$2.421 \pm 0.022$	$H(0.61)$	$95.48 \pm 0.23$
$100\theta_{\text{MC}}$	$1.04120 \pm 0.00041$	$z_{\text{re}}$	$8.04 \pm 0.75$	$D_{\text{M}}(0.61)$	$2296 \pm 10$
$\tau$	$0.0583 \pm 0.0076$	$10^9 A_{\text{s}}$	$2.105 \pm 0.032$	$H(2.33)$	$235.30 \pm 0.66$
$\ln(10^{10} A_{\text{s}})$	$3.047 \pm 0.015$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.874 \pm 0.011$	$D_{\text{M}}(2.33)$	$5757 \pm 11$
$n_{\text{s}}$	$0.9692 \pm 0.0039$	$D_{40}$	$1221 \pm 12$	$f\sigma_8(0.15)$	$0.4506 \pm 0.0060$
$y_{\text{cal}}$	$1.0008 \pm 0.0026$	$D_{220}$	$5726 \pm 40$	$\sigma_8(0.15)$	$0.7469 \pm 0.0058$
$A_{100}^{\text{PS}}$	$242 \pm 25$	$D_{810}$	$2535 \pm 14$	$f\sigma_8(0.38)$	$0.4704 \pm 0.0051$
$A_{143}^{\text{PS}}$	$40 \pm 8$	$D_{1420}$	$816.6 \pm 5.1$	$\sigma_8(0.38)$	$0.6628 \pm 0.0051$
$A_{217}^{\text{PS}}$	$102 \pm 10$	$D_{2000}$	$230.6 \pm 1.7$	$f\sigma_8(0.51)$	$0.4699 \pm 0.0046$
$A_{217}^{\text{CIB}}$	$40 \pm 7$	$n_{\text{s},0.002}$	$0.9692 \pm 0.0039$	$\sigma_8(0.51)$	$0.6206 \pm 0.0048$
$A_{143}^{\text{tSZ}}$	$3.7^{+1.7}_{-2.6}$	$Y_{\text{P}}$	$0.245381 \pm 0.000076$	$f\sigma_8(0.61)$	$0.4655 \pm 0.0043$
$r_{143 \times 217}^{\text{PS}}$	$0.66 \pm 0.13$	$Y_{\text{P}}^{\text{BBN}}$	$0.246707 \pm 0.000076$	$\sigma_8(0.61)$	$0.5908 \pm 0.0046$
$r_{143 \times 217}^{\text{CIB}}$	$0.56^{+0.39}_{-0.18}$	$10^5 \text{D/H}$	$2.592 \pm 0.035$	$f\sigma_8(2.33)$	$0.2982 \pm 0.0023$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	Age/Gyr	$13.784 \pm 0.026$	$\sigma_8(2.33)$	$0.3077 \pm 0.0025$
$A^{\text{kSZ}}$	—	$z_*$	$1089.79 \pm 0.27$	$f_{2000}^{143}$	$29.9 \pm 2.9$
$A_{100}^{\text{dust}}$	$1.02 \pm 0.19$	$r_*$	$144.95 \pm 0.27$	$f_{2000}^{217}$	$107.0 \pm 2.1$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.17$	$100\theta_*$	$1.04139 \pm 0.00040$	$f_{2000}^{143 \times 217}$	$32.3 \pm 2.1$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.919 \pm 0.027$	$\chi_{\text{lensing}}^2$	$9.7 \pm 1.2$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.16$	$z_{\text{drag}}$	$1059.73 \pm 0.43$	$\chi_{\text{small}}^2$	$397.7 \pm 2.3$
$c_{100}$	$0.9976 \pm 0.0010$	$r_{\text{drag}}$	$147.63 \pm 0.30$	$\chi_{\text{lowl}}^2$	$22.66 \pm 0.76$
$c_{217}$	$1.0012^{+0.0015}_{-0.0017}$	$k_{\text{D}}$	$0.14027 \pm 0.00041$	$\chi_{\text{CamSpec}}^2$	$7064.4 \pm 5.4$
$H_0$	$68.10 \pm 0.47$	$100\theta_{\text{D}}$	$0.16091 \pm 0.00025$	$\chi_{\text{H073p45}}^2$	$10.5 \pm 1.8$
$\Omega_{\Lambda}$	$0.6957 \pm 0.0060$	$z_{\text{eq}}$	$3356 \pm 24$	$\chi_{\text{JLA}}^2$	$706.61 \pm 0.11$
$\Omega_{\text{m}}$	$0.3043 \pm 0.0060$	$k_{\text{eq}}$	$0.010243 \pm 0.000072$	$\chi_{6\text{DF}}^2$	$0.026 \pm 0.038$
$\Omega_{\text{m}} h^2$	$0.14108 \pm 0.00099$	$100\theta_{\text{eq}}$	$0.8218 \pm 0.0044$	$\chi_{\text{MGS}}^2$	$1.79 \pm 0.49$
$\Omega_{\text{m}} h^3$	$0.09607 \pm 0.00043$	$100\theta_{\text{s,eq}}$	$0.4538 \pm 0.0023$	$\chi_{\text{DR12BAO}}^2$	$3.85 \pm 0.72$
$\sigma_8$	$0.8075 \pm 0.0065$	$H(0.15)$	$73.30 \pm 0.41$	$\chi_{\text{prior}}^2$	$7.5 \pm 3.6$
$S_8$	$0.813 \pm 0.012$	$D_{\text{M}}(0.15)$	$637.2 \pm 4.0$	$\chi_{\text{CMB}}^2$	$7494.5 \pm 5.7$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4454 \pm 0.0063$	$H(0.38)$	$83.28 \pm 0.31$	$\chi_{\text{BAO}}^2$	$5.67 \pm 0.69$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.5997 \pm 0.0063$	$D_{\text{M}}(0.38)$	$1521.4 \pm 8.0$		
$\sigma_8/h^{0.5}$	$0.9786 \pm 0.0092$	$H(0.51)$	$89.92 \pm 0.26$		

$$\bar{\chi}_{\text{eff}}^2 = 8224.73; R - 1 = 0.08459$$



# 2.119 base\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022236	$0.02224 \pm 0.00019$	$\sigma_8/h^{0.5}$	0.9832	$0.9834 \pm 0.0089$	$D_M(0.38)$	1529.2	$1529.2 \pm 8.2$
$\Omega_c h^2$	0.11903	$0.1190 \pm 0.0011$	$r_{\text{drag}} h$	99.76	$99.78 \pm 0.81$	$H(0.51)$	89.684	$89.68 \pm 0.26$
$100\theta_{\text{MC}}$	1.041075	$1.04104 \pm 0.00041$	$\langle d^2 \rangle^{1/2}$	2.4301	$2.432 \pm 0.021$	$D_M(0.51)$	1981.2	$1981.2 \pm 9.7$
$\tau$	0.0552	$0.0559 \pm 0.0075$	$z_{\text{re}}$	7.79	$7.84 \pm 0.75$	$H(0.61)$	95.290	$95.29 \pm 0.23$
$\ln(10^{10} A_s)$	3.0426	$3.044 \pm 0.015$	$10^9 A_s$	2.0960	$2.098 \pm 0.031$	$D_M(0.61)$	2305.5	$2306 \pm 11$
$n_s$	0.96715	$0.9669 \pm 0.0041$	$10^9 A_s e^{-2\tau}$	1.8768	$1.876 \pm 0.011$	$H(2.33)$	235.80	$235.77 \pm 0.67$
$y_{\text{cal}}$	1.00072	$1.0007 \pm 0.0025$	$D_{40}$	1223.7	$1224 \pm 12$	$D_M(2.33)$	5765.2	$5765 \pm 12$
$A_{100}^{\text{PS}}$	237.4	$242 \pm 25$	$D_{220}$	5715.1	$5716 \pm 40$	$f\sigma_8(0.15)$	0.4551	$0.4551 \pm 0.0059$
$A_{143}^{\text{PS}}$	40.1	$41 \pm 8$	$D_{810}$	2535.2	$2534 \pm 13$	$\sigma_8(0.15)$	0.7473	$0.7475 \pm 0.0057$
$A_{217}^{\text{PS}}$	100.8	$101 \pm 10$	$D_{1420}$	815.7	$815.3 \pm 5.0$	$f\sigma_8(0.38)$	0.4736	$0.4737 \pm 0.0050$
$A_{217}^{\text{CIB}}$	45.8	$41 \pm 7$	$D_{2000}$	230.13	$230.0 \pm 1.8$	$\sigma_8(0.38)$	0.6626	$0.6627 \pm 0.0051$
$A_{143}^{\text{tSZ}}$	6.62	$3.8^{+1.7}_{-2.6}$	$n_{s,0.002}$	0.96715	$0.9669 \pm 0.0041$	$f\sigma_8(0.51)$	0.47240	$0.4724 \pm 0.0045$
$r_{143 \times 217}^{\text{PS}}$	0.572	$0.65 \pm 0.13$	$Y_{\text{P}}$	0.245341	$0.245338^{+0.000085}_{-0.000071}$	$\sigma_8(0.51)$	0.62014	$0.6203 \pm 0.0048$
$r_{143 \times 217}^{\text{CIB}}$	0.802	$> 0.456$	$Y_{\text{P}}^{\text{BBN}}$	0.246667	$0.246664^{+0.000085}_{-0.000071}$	$f\sigma_8(0.61)$	0.46754	$0.4676 \pm 0.0042$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.04	—	$10^5 D/H$	2.6109	$2.612 \pm 0.036$	$\sigma_8(0.61)$	0.59011	$0.5903 \pm 0.0045$
$A^{\text{kSZ}}$	0.0	—	Age/Gyr	13.8024	$13.803 \pm 0.026$	$f\sigma_8(2.33)$	0.29759	$0.2977 \pm 0.0023$
$A_{100}^{\text{dust}}$	1.007	$1.01 \pm 0.20$	$z_*$	1090.004	$1090.00 \pm 0.28$	$\sigma_8(2.33)$	0.30686	$0.3069 \pm 0.0025$
$A_{143}^{\text{dust}}$	0.988	$0.97 \pm 0.17$	$r_*$	144.785	$144.80 \pm 0.28$	$f_{2000}^{143}$	30.79	$30.5 \pm 3.0$
$A_{217}^{\text{dust}}$	0.965	$0.97 \pm 0.10$	$100\theta_*$	1.041269	$1.04124 \pm 0.00041$	$f_{2000}^{217}$	107.35	$107.3 \pm 2.0$
$A_{143 \times 217}^{\text{dust}}$	1.000	$1.03 \pm 0.16$	$D_M(z_*)/\text{Gpc}$	13.9047	$13.906 \pm 0.027$	$f_{2000}^{143 \times 217}$	32.66	$32.7 \pm 2.1$
$c_{100}$	0.99763	$0.9975 \pm 0.0011$	$z_{\text{drag}}$	1059.551	$1059.55 \pm 0.43$	$\chi_{\text{lensing}}^2$	9.020	$9.41 \pm 0.85$
$c_{217}$	1.00136	$1.0012 \pm 0.0015$	$r_{\text{drag}}$	147.499	$147.51 \pm 0.31$	$\chi_{\text{small}}^2$	396.23	$397.3 \pm 1.9$
$H_0$	67.636	$67.64 \pm 0.48$	$k_{\text{D}}$	0.140336	$0.14032 \pm 0.00041$	$\chi_{\text{lowl}}^2$	22.86	$22.98 \pm 0.83$
$\Omega_{\Lambda}$	0.6898	$0.6898 \pm 0.0063$	$100\theta_{\text{D}}$	0.160998	$0.16100 \pm 0.00025$	$\chi_{\text{CamSpec}}^2$	7051.17	$7063.2 \pm 5.2$
$\Omega_{\text{m}}$	0.3102	$0.3102 \pm 0.0063$	$z_{\text{eq}}$	3375.7	$3375 \pm 24$	$\chi_{\text{JLA}}^2$	1034.995	$1035.07 \pm 0.31$
$\Omega_{\text{m}} h^2$	0.14191	$0.1419 \pm 0.0010$	$k_{\text{eq}}$	0.010303	$0.010300 \pm 0.000074$	$\chi_{6\text{DF}}^2$	0.0217	$0.048 \pm 0.061$
$\Omega_{\text{m}} h^3$	0.095981	$0.09596 \pm 0.00044$	$100\theta_{\text{eq}}$	0.81780	$0.8180 \pm 0.0045$	$\chi_{\text{MGS}}^2$	1.279	$1.35 \pm 0.45$
$\sigma_8$	0.8086	$0.8088 \pm 0.0063$	$100\theta_{s,\text{eq}}$	0.45183	$0.4519 \pm 0.0023$	$\chi_{\text{DR12BAO}}^2$	4.18	$4.6 \pm 1.3$
$S_8$	0.8223	$0.822 \pm 0.012$	$H(0.15)$	72.900	$72.90 \pm 0.41$	$\chi_{\text{prior}}^2$	2.12	$7.6 \pm 3.5$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4504	$0.4504 \pm 0.0063$	$D_M(0.15)$	641.06	$641.1 \pm 4.1$	$\chi_{\text{CMB}}^2$	7479.3	$7492.9 \pm 5.4$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6035	$0.6035 \pm 0.0061$	$H(0.38)$	82.984	$82.98 \pm 0.31$	$\chi_{\text{BAO}}^2$	5.484	$6.0 \pm 1.1$

Best-fit  $\chi_{\text{eff}}^2 = 8521.87$ ;  $\bar{\chi}_{\text{eff}}^2 = 8541.50$ ;  $R - 1 = 0.00920$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.28 DR12BAO: 4.18 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p.teb\_consext8: 9.02 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.23 commander\_dx12.v3.2.29: 22.86 CamSpec like\_10.7HM: 7051.17 SN - JLA Pantheon18: 1034.99



## 2.120 base\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_Pantheon18\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022336	$0.02234 \pm 0.00018$	$r_{\text{drag}} h$	100.44	$100.50 \pm 0.77$	$D_M(0.51)$	1972.8	$1972.3 \pm 9.2$
$\Omega_c h^2$	0.11821	$0.1181 \pm 0.0010$	$\langle d^2 \rangle^{1/2}$	2.4226	$2.422 \pm 0.021$	$H(0.61)$	95.465	$95.48 \pm 0.22$
$100\theta_{\text{MC}}$	1.041192	$1.04120 \pm 0.00041$	$z_{\text{re}}$	8.05	$8.05 \pm 0.74$	$D_M(0.61)$	2296.4	$2296 \pm 10$
$\tau$	0.0582	$0.0584 \pm 0.0075$	$10^9 A_s$	2.1058	$2.106 \pm 0.032$	$H(2.33)$	235.37	$235.33 \pm 0.65$
$\ln(10^{10} A_s)$	3.0473	$3.047 \pm 0.015$	$10^9 A_s e^{-2\tau}$	1.8744	$1.874 \pm 0.011$	$D_M(2.33)$	5757.3	$5757 \pm 11$
$n_s$	0.96919	$0.9692 \pm 0.0040$	$D_{40}$	1221.3	$1221 \pm 12$	$f\sigma_8(0.15)$	0.4513	$0.4509 \pm 0.0058$
$y_{\text{cal}}$	1.00087	$1.0009 \pm 0.0025$	$D_{220}$	5725.7	$5726 \pm 39$	$\sigma_8(0.15)$	0.7473	$0.7472 \pm 0.0058$
$A_{100}^{\text{PS}}$	235.2	$241 \pm 25$	$D_{810}$	2536.3	$2535 \pm 13$	$f\sigma_8(0.38)$	0.47104	$0.4707 \pm 0.0050$
$A_{143}^{\text{PS}}$	39.5	$40 \pm 8$	$D_{1420}$	816.9	$816.6 \pm 5.0$	$\sigma_8(0.38)$	0.6632	$0.6631 \pm 0.0051$
$A_{217}^{\text{PS}}$	101.5	$102 \pm 10$	$D_{2000}$	230.67	$230.6 \pm 1.7$	$f\sigma_8(0.51)$	0.47043	$0.4702 \pm 0.0045$
$A_{217}^{\text{CIB}}$	44.8	$40 \pm 7$	$n_{s,0.002}$	0.96919	$0.9692 \pm 0.0040$	$\sigma_8(0.51)$	0.62092	$0.6208 \pm 0.0048$
$A_{143}^{\text{tSZ}}$	6.49	$3.8_{-2.6}^{+1.8}$	$Y_{\text{P}}$	0.245382	$0.245379_{-0.000067}^{+0.000080}$	$f\sigma_8(0.61)$	0.46600	$0.4658 \pm 0.0042$
$r_{143 \times 217}^{\text{PS}}$	0.590	$0.66 \pm 0.13$	$Y_{\text{P}}^{\text{BBN}}$	0.246708	$0.246706_{-0.000067}^{+0.000080}$	$\sigma_8(0.61)$	0.59101	$0.5909 \pm 0.0046$
$r_{143 \times 217}^{\text{CIB}}$	0.781	$0.57_{-0.17}^{+0.40}$	$10^5 D/H$	2.5918	$2.592_{-0.037}^{+0.033}$	$f\sigma_8(2.33)$	0.29826	$0.2982 \pm 0.0024$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.09	—	Age/Gyr	13.7851	$13.784 \pm 0.026$	$\sigma_8(2.33)$	0.30778	$0.3078 \pm 0.0025$
$A^{\text{kSZ}}$	0.2	—	$z_*$	1089.806	$1089.80 \pm 0.26$	$f_{2000}^{143}$	30.11	$29.9 \pm 2.9$
$A_{100}^{\text{dust}}$	1.007	$1.02 \pm 0.19$	$r_*$	144.922	$144.94 \pm 0.27$	$f_{2000}^{217}$	107.00	$107.0 \pm 2.1$
$A_{143}^{\text{dust}}$	0.980	$0.97 \pm 0.17$	$100\theta_*$	1.041380	$1.04139 \pm 0.00040$	$f_{2000}^{143 \times 217}$	32.22	$32.2 \pm 2.1$
$A_{217}^{\text{dust}}$	0.968	$0.97 \pm 0.10$	$D_M(z_*)/\text{Gpc}$	13.9163	$13.918 \pm 0.027$	$\chi_{\text{lensing}}^2$	9.17	$9.6 \pm 1.1$
$A_{143 \times 217}^{\text{dust}}$	1.002	$1.02 \pm 0.16$	$z_{\text{drag}}$	1059.742	$1059.73 \pm 0.42$	$\chi_{\text{small}}^2$	396.83	$397.7 \pm 2.3$
$c_{100}$	0.99765	$0.9976 \pm 0.0010$	$r_{\text{drag}}$	147.604	$147.62 \pm 0.30$	$\chi_{\text{lowl}}^2$	22.60	$22.66 \pm 0.78$
$c_{217}$	1.00136	$1.0012 \pm 0.0015$	$k_{\text{D}}$	0.140301	$0.14028 \pm 0.00040$	$\chi_{\text{CamSpec}}^2$	7052.0	$7064.2 \pm 5.4$
$H_0$	68.050	$68.08 \pm 0.45$	$100\theta_{\text{D}}$	0.160903	$0.16091 \pm 0.00024$	$\chi_{\text{H073p45}}^2$	10.58	$10.5 \pm 1.8$
$\Omega_{\Lambda}$	0.6951	$0.6954 \pm 0.0059$	$z_{\text{eq}}$	3358.5	$3357 \pm 23$	$\chi_{\text{JLA}}^2$	1034.807	$1034.87 \pm 0.17$
$\Omega_{\text{m}}$	0.3049	$0.3046 \pm 0.0059$	$k_{\text{eq}}$	0.010251	$0.010246 \pm 0.000071$	$\chi_{6\text{DF}}^2$	0.0001	$0.025 \pm 0.035$
$\Omega_{\text{m}} h^2$	0.14119	$0.14113 \pm 0.00098$	$100\theta_{\text{eq}}$	0.82130	$0.8216 \pm 0.0043$	$\chi_{\text{MGS}}^2$	1.677	$1.77 \pm 0.47$
$\Omega_{\text{m}} h^3$	0.096079	$0.09607 \pm 0.00043$	$100\theta_{\text{s,eq}}$	0.45359	$0.4538 \pm 0.0022$	$\chi_{\text{DR12BAO}}^2$	3.487	$3.85 \pm 0.69$
$\sigma_8$	0.8080	$0.8078 \pm 0.0064$	$H(0.15)$	73.259	$73.28 \pm 0.39$	$\chi_{\text{prior}}^2$	2.13	$7.5 \pm 3.5$
$S_8$	0.8146	$0.814 \pm 0.011$	$D_M(0.15)$	637.54	$637.3 \pm 3.8$	$\chi_{\text{CMB}}^2$	7480.6	$7494.3 \pm 5.6$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4462	$0.4458 \pm 0.0062$	$H(0.38)$	83.251	$83.27 \pm 0.30$	$\chi_{\text{BAO}}^2$	5.164	$5.64 \pm 0.63$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6004	$0.6001 \pm 0.0061$	$D_M(0.38)$	1522.1	$1521.6 \pm 7.8$			
$\sigma_8/h^{0.5}$	0.9795	$0.9791 \pm 0.0090$	$H(0.51)$	89.899	$89.91 \pm 0.25$			

Best-fit  $\chi_{\text{eff}}^2 = 8533.26$ ;  $\bar{\chi}_{\text{eff}}^2 = 8552.81$ ;  $R - 1 = 0.02978$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.49 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p\_teb\_consext8: 9.17 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.83 commander\_dx12\_v3\_2\_29: 22.60 CamSpec like\_10.7HM: 7051.98 Hubble - H073p45: 10.58 SN - JLA Pantheon18: 1034.81



## 2.121 base\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02216 \pm 0.00020$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6089 \pm 0.0078$	$D_{\mathrm{M}}(0.15)$	$645.6 \pm 6.0$
$\Omega_{\mathrm{c}}h^2$	$0.1201 \pm 0.0015$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.011$	$H(0.38)$	$82.66 \pm 0.44$
$100\theta_{\mathrm{MC}}$	$1.04086 \pm 0.00045$	$r_{\mathrm{drag}}h$	$98.9 \pm 1.2$	$D_{\mathrm{M}}(0.38)$	$1538 \pm 12$
$\tau$	$0.0541^{+0.0048}_{-0.0083}$	$\langle d^2 \rangle^{1/2}$	$2.447 \pm 0.025$	$H(0.51)$	$89.43 \pm 0.35$
$\ln(10^{10}A_{\mathrm{s}})$	$3.042^{+0.011}_{-0.015}$	$z_{\mathrm{re}}$	$7.69^{+0.54}_{-0.80}$	$D_{\mathrm{M}}(0.51)$	$1992 \pm 14$
$n_{\mathrm{s}}$	$0.9643 \pm 0.0048$	$10^9 A_{\mathrm{s}}$	$2.095^{+0.022}_{-0.032}$	$H(0.61)$	$95.09 \pm 0.29$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.880 \pm 0.011$	$D_{\mathrm{M}}(0.61)$	$2317 \pm 15$
$A_{100}^{\mathrm{PS}}$	$243 \pm 25$	$D_{40}$	$1229 \pm 13$	$H(2.33)$	$236.44 \pm 0.93$
$A_{143}^{\mathrm{PS}}$	$41 \pm 8$	$D_{220}$	$5706 \pm 41$	$D_{\mathrm{M}}(2.33)$	$5774 \pm 14$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{810}$	$2533 \pm 14$	$f\sigma_8(0.15)$	$0.4612 \pm 0.0082$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{1420}$	$814.0 \pm 5.2$	$\sigma_8(0.15)$	$0.7490^{+0.0049}_{-0.0055}$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.6}$	$D_{2000}$	$229.5 \pm 1.8$	$f\sigma_8(0.38)$	$0.4782 \pm 0.0064$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9643 \pm 0.0048$	$\sigma_8(0.38)$	$0.6633^{+0.0040}_{-0.0049}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.58^{+0.41}_{-0.13}$	$Y_{\mathrm{P}}$	$0.245304^{+0.000096}_{-0.000077}$	$f\sigma_8(0.51)$	$0.4760 \pm 0.0054$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246630^{+0.000096}_{-0.000078}$	$\sigma_8(0.51)$	$0.6205^{+0.0037}_{-0.0046}$
$A^{\mathrm{kSZ}}$	—	$10^5 D/H$	$2.627 \pm 0.038$	$f\sigma_8(0.61)$	$0.4706 \pm 0.0048$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	Age/Gyr	$13.821 \pm 0.032$	$\sigma_8(0.61)$	$0.5902^{+0.0035}_{-0.0045}$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.17$	$z_*$	$1090.21 \pm 0.34$	$f\sigma_8(2.33)$	$0.2974^{+0.0017}_{-0.0024}$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$r_*$	$144.56 \pm 0.36$	$\sigma_8(2.33)$	$0.3063^{+0.0019}_{-0.0026}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04107 \pm 0.00045$	$f_{2000}^{143}$	$30.8 \pm 3.0$
$c_{100}$	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.886 \pm 0.034$	$f_{2000}^{217}$	$107.6 \pm 2.0$
$c_{217}$	$1.0012 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.45 \pm 0.44$	$f_{2000}^{143 \times 217}$	$33.0 \pm 2.1$
$H_0$	$67.11 \pm 0.69$	$r_{\mathrm{drag}}$	$147.29 \pm 0.37$	$\chi_{\mathrm{lensing}}^2$	$9.49 \pm 0.88$
$\Omega_{\Lambda}$	$0.6825 \pm 0.0095$	$k_{\mathrm{D}}$	$0.14049 \pm 0.00044$	$\chi_{\mathrm{simall}}^2$	$396.8 \pm 1.6$
$\Omega_{\mathrm{m}}$	$0.3175 \pm 0.0095$	$100\theta_{\mathrm{D}}$	$0.16105 \pm 0.00025$	$\chi_{\mathrm{lowl}}^2$	$23.5 \pm 1.0$
$\Omega_{\mathrm{m}}h^2$	$0.1429 \pm 0.0014$	$z_{\mathrm{eq}}$	$3401 \pm 35$	$\chi_{\mathrm{CamSpec}}^2$	$7062.6 \pm 5.1$
$\Omega_{\mathrm{m}}h^3$	$0.09593 \pm 0.00044$	$k_{\mathrm{eq}}$	$0.01038 \pm 0.00011$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.5$
$\sigma_8$	$0.8112 \pm 0.0061$	$100\theta_{\mathrm{eq}}$	$0.8130 \pm 0.0065$	$\chi_{\mathrm{CMB}}^2$	$7492.4 \pm 5.3$
$S_8$	$0.835 \pm 0.016$	$100\theta_{\mathrm{s,eq}}$	$0.4494 \pm 0.0033$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4571 \pm 0.0089$	$H(0.15)$	$72.45 \pm 0.59$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7500.01; R - 1 = 0.00502$$



## 2.122 base\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02223 \pm 0.00019$	$\sigma_8/h^{0.5}$	$0.9846 \pm 0.0089$	$D_M(0.38)$	$1530.2 \pm 8.5$
$\Omega_c h^2$	$0.1191 \pm 0.0011$	$r_{\text{drag}} h$	$99.68 \pm 0.84$	$H(0.51)$	$89.66 \pm 0.27$
$100\theta_{\text{MC}}$	$1.04102 \pm 0.00042$	$\langle d^2 \rangle^{1/2}$	$2.434 \pm 0.021$	$D_M(0.51)$	$1982 \pm 10$
$\tau$	$0.0562^{+0.0058}_{-0.0078}$	$z_{\text{re}}$	$7.87^{+0.63}_{-0.76}$	$H(0.61)$	$95.27 \pm 0.23$
$\ln(10^{10} A_s)$	$3.044^{+0.012}_{-0.015}$	$10^9 A_s$	$2.100^{+0.025}_{-0.033}$	$D_M(0.61)$	$2307 \pm 11$
$n_s$	$0.9667 \pm 0.0041$	$10^9 A_s e^{-2\tau}$	$1.877 \pm 0.011$	$H(2.33)$	$235.84 \pm 0.69$
$y_{\text{cal}}$	$1.0006 \pm 0.0025$	$D_{40}$	$1225 \pm 12$	$D_M(2.33)$	$5766 \pm 12$
$A_{100}^{\text{PS}}$	$242 \pm 25$	$D_{220}$	$5714 \pm 40$	$f\sigma_8(0.15)$	$0.4560 \pm 0.0061$
$A_{143}^{\text{PS}}$	$41 \pm 8$	$D_{810}$	$2534 \pm 14$	$\sigma_8(0.15)$	$0.7480 \pm 0.0054$
$A_{217}^{\text{PS}}$	$101 \pm 10$	$D_{1420}$	$815.1 \pm 5.1$	$f\sigma_8(0.38)$	$0.4744 \pm 0.0051$
$A_{217}^{\text{CIB}}$	$41 \pm 7$	$D_{2000}$	$229.9 \pm 1.8$	$\sigma_8(0.38)$	$0.6631^{+0.0044}_{-0.0051}$
$A_{143}^{\text{tSZ}}$	$3.8^{+1.7}_{-2.6}$	$n_{\text{s},0.002}$	$0.9667 \pm 0.0041$	$f\sigma_8(0.51)$	$0.4731 \pm 0.0045$
$r_{143 \times 217}^{\text{PS}}$	$0.65 \pm 0.13$	$Y_{\text{P}}$	$0.245334^{+0.000085}_{-0.000071}$	$\sigma_8(0.51)$	$0.6206^{+0.0040}_{-0.0048}$
$r_{143 \times 217}^{\text{CIB}}$	$0.58^{+0.42}_{-0.13}$	$Y_{\text{P}}^{\text{BBN}}$	$0.246660^{+0.000086}_{-0.000071}$	$f\sigma_8(0.61)$	$0.4681 \pm 0.0041$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^5 \text{D}/\text{H}$	$2.613 \pm 0.036$	$\sigma_8(0.61)$	$0.5905^{+0.0038}_{-0.0046}$
$A^{\text{kSZ}}$	—	$\text{Age}/\text{Gyr}$	$13.805 \pm 0.027$	$f\sigma_8(2.33)$	$0.2978^{+0.0019}_{-0.0024}$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.20$	$z_*$	$1090.03 \pm 0.28$	$\sigma_8(2.33)$	$0.3070^{+0.0020}_{-0.0026}$
$A_{143}^{\text{dust}}$	$0.97 \pm 0.17$	$r_*$	$144.77 \pm 0.28$	$f_{2000}^{143}$	$30.5 \pm 3.0$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04122 \pm 0.00041$	$f_{2000}^{217}$	$107.4 \pm 2.0$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16$	$D_M(z_*)/\text{Gpc}$	$13.904 \pm 0.028$	$f_{2000}^{143 \times 217}$	$32.7 \pm 2.1$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\text{drag}}$	$1059.54 \pm 0.43$	$\chi_{\text{lensing}}^2$	$9.35 \pm 0.77$
$c_{217}$	$1.0012 \pm 0.0015$	$r_{\text{drag}}$	$147.49 \pm 0.31$	$\chi_{\text{simall}}^2$	$397.2 \pm 1.9$
$H_0$	$67.58 \pm 0.49$	$k_{\text{D}}$	$0.14034 \pm 0.00041$	$\chi_{\text{lowl}}^2$	$23.04 \pm 0.84$
$\Omega_{\Lambda}$	$0.6891 \pm 0.0065$	$100\theta_{\text{D}}$	$0.16101 \pm 0.00025$	$\chi_{\text{CamSpec}}^2$	$7063.0 \pm 5.2$
$\Omega_{\text{m}}$	$0.3109 \pm 0.0065$	$z_{\text{eq}}$	$3378 \pm 25$	$\chi_{6\text{DF}}^2$	$0.056 \pm 0.070$
$\Omega_{\text{m}} h^2$	$0.1420 \pm 0.0011$	$k_{\text{eq}}$	$0.010309 \pm 0.000077$	$\chi_{\text{MGS}}^2$	$1.29 \pm 0.46$
$\Omega_{\text{m}} h^3$	$0.09595 \pm 0.00044$	$100\theta_{\text{eq}}$	$0.8174 \pm 0.0047$	$\chi_{\text{DR12BAO}}^2$	$4.8 \pm 1.5$
$\sigma_8$	$0.8094 \pm 0.0060$	$100\theta_{\text{s,eq}}$	$0.4516 \pm 0.0024$	$\chi_{\text{prior}}^2$	$7.6 \pm 3.5$
$S_8$	$0.824 \pm 0.012$	$H(0.15)$	$72.85 \pm 0.43$	$\chi_{\text{CMB}}^2$	$7492.6 \pm 5.3$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4513 \pm 0.0066$	$D_M(0.15)$	$641.5 \pm 4.2$	$\chi_{\text{BAO}}^2$	$6.1 \pm 1.2$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.6044 \pm 0.0062$	$H(0.38)$	$82.95 \pm 0.32$		

$$\bar{\chi}_{\text{eff}}^2 = 7506.32; R - 1 = 0.00854$$



### 2.123 base\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}} h^2$	$0.02234^{+0.00020}_{-0.00018}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.6001 \pm 0.0077$	$D_{\text{M}}(0.15)$	$637.3 \pm 5.8$
$\Omega_{\text{c}} h^2$	$0.1181 \pm 0.0015$	$\sigma_8 / h^{0.5}$	$0.979 \pm 0.011$	$H(0.38)$	$83.28 \pm 0.44$
$100\theta_{\text{MC}}$	$1.04121 \pm 0.00045$	$r_{\text{drag}} h$	$100.5 \pm 1.2$	$D_{\text{M}}(0.38)$	$1521 \pm 12$
$\tau$	$0.0588^{+0.0066}_{-0.0088}$	$\langle d^2 \rangle^{1/2}$	$2.422 \pm 0.025$	$H(0.51)$	$89.92 \pm 0.35$
$\ln(10^{10} A_{\text{s}})$	$3.048^{+0.013}_{-0.016}$	$z_{\text{re}}$	$8.09^{+0.67}_{-0.85}$	$D_{\text{M}}(0.51)$	$1972 \pm 14$
$n_{\text{s}}$	$0.9692 \pm 0.0048$	$10^9 A_{\text{s}}$	$2.107^{+0.028}_{-0.035}$	$H(0.61)$	$95.48 \pm 0.29$
$y_{\text{cal}}$	$1.0008 \pm 0.0025$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.873^{+0.012}_{-0.011}$	$D_{\text{M}}(0.61)$	$2296 \pm 15$
$A_{100}^{\text{PS}}$	$241 \pm 25$	$D_{40}$	$1221 \pm 13$	$H(2.33)$	$235.32 \pm 0.92$
$A_{143}^{\text{PS}}$	$40 \pm 8$	$D_{220}$	$5724 \pm 40$	$D_{\text{M}}(2.33)$	$5757 \pm 14$
$A_{217}^{\text{PS}}$	$102 \pm 10$	$D_{810}$	$2535 \pm 14$	$f\sigma_8(0.15)$	$0.4509^{+0.0082}_{-0.0074}$
$A_{217}^{\text{CIB}}$	$40 \pm 7$	$D_{1420}$	$816.4 \pm 5.0$	$\sigma_8(0.15)$	$0.7473 \pm 0.0058$
$A_{143}^{\text{tSZ}}$	$3.9^{+1.7}_{-2.5}$	$D_{2000}$	$230.5 \pm 1.8$	$f\sigma_8(0.38)$	$0.4708^{+0.0066}_{-0.0059}$
$r_{143 \times 217}^{\text{PS}}$	$0.66 \pm 0.12$	$n_{\text{s},0.002}$	$0.9692 \pm 0.0048$	$\sigma_8(0.38)$	$0.6632 \pm 0.0050$
$r_{143 \times 217}^{\text{CIB}}$	$0.57^{+0.41}_{-0.15}$	$Y_{\text{P}}$	$0.245379^{+0.000086}_{-0.000068}$	$f\sigma_8(0.51)$	$0.4702^{+0.0057}_{-0.0052}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.246705^{+0.000086}_{-0.000068}$	$\sigma_8(0.51)$	$0.6210^{+0.0044}_{-0.0051}$
$A^{\text{kSZ}}$	—	$10^5 \text{D/H}$	$2.593^{+0.033}_{-0.039}$	$f\sigma_8(0.61)$	$0.4658 \pm 0.0050$
$A_{100}^{\text{dust}}$	$1.02 \pm 0.20$	$\text{Age/Gyr}$	$13.784 \pm 0.030$	$\sigma_8(0.61)$	$0.5911^{+0.0041}_{-0.0049}$
$A_{143}^{\text{dust}}$	$0.97 \pm 0.17$	$z_*$	$1089.80 \pm 0.32$	$f\sigma_8(2.33)$	$0.2983^{+0.0021}_{-0.0026}$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$r_*$	$144.95 \pm 0.36$	$\sigma_8(2.33)$	$0.3079^{+0.0023}_{-0.0028}$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04140 \pm 0.00045$	$f_{2000}^{143}$	$29.9 \pm 2.9$
$c_{100}$	$0.9976 \pm 0.0010$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.918 \pm 0.034$	$f_{2000}^{217}$	$107.0 \pm 2.0$
$c_{217}$	$1.0012 \pm 0.0015$	$z_{\text{drag}}$	$1059.72 \pm 0.42$	$f_{2000}^{143 \times 217}$	$32.3 \pm 2.1$
$H_0$	$68.09 \pm 0.69$	$r_{\text{drag}}$	$147.63 \pm 0.38$	$\chi_{\text{lensing}}^2$	$9.8 \pm 1.4$
$\Omega_{\Lambda}$	$0.6955 \pm 0.0090$	$k_{\text{D}}$	$0.14027^{+0.00046}_{-0.00042}$	$\chi_{\text{simall}}^2$	$397.9 \pm 2.6$
$\Omega_{\text{m}}$	$0.3045 \pm 0.0090$	$100\theta_{\text{D}}$	$0.16091 \pm 0.00024$	$\chi_{\text{lowl}}^2$	$22.67 \pm 0.87$
$\Omega_{\text{m}} h^2$	$0.1411 \pm 0.0014$	$z_{\text{eq}}$	$3357 \pm 34$	$\chi_{\text{CamSpec}}^2$	$7064.4 \pm 5.5$
$\Omega_{\text{m}} h^3$	$0.09607 \pm 0.00042$	$k_{\text{eq}}$	$0.01024 \pm 0.00010$	$\chi_{\text{H073p45}}^2$	$10.6 \pm 2.6$
$\sigma_8$	$0.8079 \pm 0.0066$	$100\theta_{\text{eq}}$	$0.8217 \pm 0.0066$	$\chi_{\text{prior}}^2$	$7.4 \pm 3.4$
$S_8$	$0.814^{+0.016}_{-0.014}$	$100\theta_{\text{s,eq}}$	$0.4538 \pm 0.0034$	$\chi_{\text{CMB}}^2$	$7494.7 \pm 6.3$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4458^{+0.0088}_{-0.0079}$	$H(0.15)$	$73.29 \pm 0.59$		

$$\bar{\chi}_{\text{eff}}^2 = 7512.76; R - 1 = 0.03489$$



**2.124 base\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_Riess18\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02233 \pm 0.00019$	$\sigma_8/h^{0.5}$	$0.9796 \pm 0.0090$	$D_{\text{M}}(0.38)$	$1522.1 \pm 8.0$
$\Omega_{\text{c}}h^2$	$0.1182 \pm 0.0010$	$r_{\text{drag}}h$	$100.46 \pm 0.80$	$H(0.51)$	$89.90 \pm 0.26$
$100\theta_{\text{MC}}$	$1.04119 \pm 0.00041$	$\langle d^2 \rangle^{1/2}$	$2.423 \pm 0.021$	$D_{\text{M}}(0.51)$	$1972.8 \pm 9.5$
$\tau$	$0.0586^{+0.0066}_{-0.0078}$	$z_{\text{re}}$	$8.07 \pm 0.70$	$H(0.61)$	$95.47 \pm 0.22$
$\ln(10^{10}A_{\text{s}})$	$3.048^{+0.013}_{-0.016}$	$10^9 A_{\text{s}}$	$2.107^{+0.028}_{-0.033}$	$D_{\text{M}}(0.61)$	$2296 \pm 10$
$n_{\text{s}}$	$0.9690 \pm 0.0040$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.874 \pm 0.011$	$H(2.33)$	$235.36 \pm 0.66$
$y_{\text{cal}}$	$1.0008 \pm 0.0025$	$D_{40}$	$1222 \pm 12$	$D_{\text{M}}(2.33)$	$5757 \pm 11$
$A_{100}^{\text{PS}}$	$241 \pm 25$	$D_{220}$	$5725 \pm 40$	$f\sigma_8(0.15)$	$0.4513 \pm 0.0060$
$A_{143}^{\text{PS}}$	$40 \pm 8$	$D_{810}$	$2535 \pm 13$	$\sigma_8(0.15)$	$0.7474 \pm 0.0057$
$A_{217}^{\text{PS}}$	$102 \pm 10$	$D_{1420}$	$816.5 \pm 5.0$	$f\sigma_8(0.38)$	$0.4711 \pm 0.0050$
$A_{217}^{\text{CIB}}$	$40 \pm 7$	$D_{2000}$	$230.5 \pm 1.7$	$\sigma_8(0.38)$	$0.6632^{+0.0047}_{-0.0053}$
$A_{143}^{\text{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$n_{\text{s},0.002}$	$0.9690 \pm 0.0040$	$f\sigma_8(0.51)$	$0.4705 \pm 0.0046$
$r_{143 \times 217}^{\text{PS}}$	$0.66 \pm 0.12$	$Y_{\text{P}}$	$0.245378^{+0.000080}_{-0.000068}$	$\sigma_8(0.51)$	$0.6210^{+0.0044}_{-0.0050}$
$r_{143 \times 217}^{\text{CIB}}$	$0.57^{+0.40}_{-0.16}$	$Y_{\text{P}}^{\text{BBN}}$	$0.246704^{+0.000081}_{-0.000068}$	$f\sigma_8(0.61)$	$0.4660 \pm 0.0042$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^5 \text{D}/\text{H}$	$2.593^{+0.033}_{-0.037}$	$\sigma_8(0.61)$	$0.5911^{+0.0042}_{-0.0048}$
$A^{\text{kSZ}}$	—	Age/Gyr	$13.785 \pm 0.026$	$f\sigma_8(2.33)$	$0.2983^{+0.0021}_{-0.0024}$
$A_{100}^{\text{dust}}$	$1.02 \pm 0.19$	$z_*$	$1089.81 \pm 0.27$	$\sigma_8(2.33)$	$0.3078^{+0.0023}_{-0.0026}$
$A_{143}^{\text{dust}}$	$0.97 \pm 0.17$	$r_*$	$144.93 \pm 0.27$	$f_{2000}^{143}$	$29.9 \pm 2.9$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04138 \pm 0.00040$	$f_{2000}^{217}$	$107.0 \pm 2.1$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.16$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.917 \pm 0.027$	$f_{2000}^{143 \times 217}$	$32.3 \pm 2.1$
$c_{100}$	$0.9976 \pm 0.0010$	$z_{\text{drag}}$	$1059.72 \pm 0.42$	$\chi_{\text{lensing}}^2$	$9.6 \pm 1.1$
$c_{217}$	$1.0012 \pm 0.0015$	$r_{\text{drag}}$	$147.61 \pm 0.30$	$\chi_{\text{simall}}^2$	$397.7 \pm 2.3$
$H_0$	$68.05 \pm 0.47$	$k_{\text{D}}$	$0.14029 \pm 0.00041$	$\chi_{\text{lowl}}^2$	$22.69 \pm 0.79$
$\Omega_{\Lambda}$	$0.6951 \pm 0.0061$	$100\theta_{\text{D}}$	$0.16091 \pm 0.00024$	$\chi_{\text{CamSpec}}^2$	$7064.1 \pm 5.4$
$\Omega_{\text{m}}$	$0.3049 \pm 0.0061$	$z_{\text{eq}}$	$3358 \pm 24$	$\chi_{\text{H073p45}}^2$	$10.6 \pm 1.8$
$\Omega_{\text{m}}h^2$	$0.1412 \pm 0.0010$	$k_{\text{eq}}$	$0.010250 \pm 0.000073$	$\chi_{6\text{DF}}^2$	$0.027 \pm 0.038$
$\Omega_{\text{m}}h^3$	$0.09607 \pm 0.00043$	$100\theta_{\text{eq}}$	$0.8214 \pm 0.0045$	$\chi_{\text{MGS}}^2$	$1.74 \pm 0.49$
$\sigma_8$	$0.8081 \pm 0.0063$	$100\theta_{\text{s,eq}}$	$0.4536 \pm 0.0023$	$\chi_{\text{DR12BAO}}^2$	$3.90 \pm 0.76$
$S_8$	$0.815 \pm 0.012$	$H(0.15)$	$73.26 \pm 0.41$	$\chi_{\text{prior}}^2$	$7.5 \pm 3.5$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4462 \pm 0.0063$	$D_{\text{M}}(0.15)$	$637.5 \pm 4.0$	$\chi_{\text{CMB}}^2$	$7494.1 \pm 5.6$
$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6005 \pm 0.0062$	$H(0.38)$	$83.25 \pm 0.31$	$\chi_{\text{BAO}}^2$	$5.67 \pm 0.67$

$\bar{\chi}_{\text{eff}}^2 = 7517.92$ ;  $R - 1 = 0.02825$



## 2.125 base\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_post\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00020$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6070 \pm 0.0074$	$D_{\mathrm{M}}(0.15)$	$643.9 \pm 5.5$
$\Omega_{\mathrm{c}}h^2$	$0.1197 \pm 0.0014$	$\sigma_8/h^{0.5}$	$0.988 \pm 0.010$	$H(0.38)$	$82.79 \pm 0.41$
$100\theta_{\mathrm{MC}}$	$1.04093 \pm 0.00044$	$r_{\mathrm{drag}}h$	$99.2 \pm 1.1$	$D_{\mathrm{M}}(0.38)$	$1535 \pm 11$
$\tau$	$0.0550^{+0.0053}_{-0.0082}$	$\langle d^2 \rangle^{1/2}$	$2.442 \pm 0.024$	$H(0.51)$	$89.53 \pm 0.33$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.011}_{-0.015}$	$z_{\mathrm{re}}$	$7.77^{+0.58}_{-0.79}$	$D_{\mathrm{M}}(0.51)$	$1988 \pm 13$
$n_{\mathrm{s}}$	$0.9653 \pm 0.0046$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.023}_{-0.032}$	$H(0.61)$	$95.17 \pm 0.28$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878 \pm 0.011$	$D_{\mathrm{M}}(0.61)$	$2312 \pm 14$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25$	$D_{40}$	$1227 \pm 12$	$H(2.33)$	$236.18 \pm 0.87$
$A_{143}^{\mathrm{PS}}$	$41 \pm 8$	$D_{220}$	$5710 \pm 41$	$D_{\mathrm{M}}(2.33)$	$5771 \pm 13$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{810}$	$2534 \pm 14$	$f\sigma_8(0.15)$	$0.4589 \pm 0.0077$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{1420}$	$814.5 \pm 5.1$	$\sigma_8(0.15)$	$0.7486 \pm 0.0054$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.7}_{-2.6}$	$D_{2000}$	$229.7 \pm 1.8$	$f\sigma_8(0.38)$	$0.4765 \pm 0.0060$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9653 \pm 0.0046$	$\sigma_8(0.38)$	$0.6632^{+0.0042}_{-0.0050}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.461$	$Y_{\mathrm{P}}$	$0.245318^{+0.000093}_{-0.000074}$	$f\sigma_8(0.51)$	$0.4748 \pm 0.0052$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246644^{+0.000093}_{-0.000074}$	$\sigma_8(0.51)$	$0.6205^{+0.0038}_{-0.0047}$
$A^{\mathrm{kSZ}}$	—	$10^5 D/H$	$2.620 \pm 0.038$	$f\sigma_8(0.61)$	$0.4695 \pm 0.0046$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.814 \pm 0.030$	$\sigma_8(0.61)$	$0.5904^{+0.0036}_{-0.0045}$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.18$	$z_*$	$1090.12 \pm 0.32$	$f\sigma_8(2.33)$	$0.2975^{+0.0018}_{-0.0024}$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$r_*$	$144.65 \pm 0.34$	$\sigma_8(2.33)$	$0.3066^{+0.0019}_{-0.0026}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04113 \pm 0.00044$	$f_{2000}^{143}$	$30.7 \pm 3.0$
$c_{100}$	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.893 \pm 0.032$	$f_{2000}^{217}$	$107.5 \pm 2.0$
$c_{217}$	$1.0012 \pm 0.0015$	$z_{\mathrm{drag}}$	$1059.49 \pm 0.43$	$f_{2000}^{143 \times 217}$	$32.9 \pm 2.1$
$H_0$	$67.32 \pm 0.64$	$r_{\mathrm{drag}}$	$147.37 \pm 0.36$	$\chi_{\mathrm{lensing}}^2$	$9.41 \pm 0.81$
$\Omega_{\Lambda}$	$0.6853 \pm 0.0088$	$k_{\mathrm{D}}$	$0.14043 \pm 0.00043$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.8$
$\Omega_{\mathrm{m}}$	$0.3147 \pm 0.0088$	$100\theta_{\mathrm{D}}$	$0.16102 \pm 0.00025$	$\chi_{\mathrm{lowl}}^2$	$23.29 \pm 0.95$
$\Omega_{\mathrm{m}}h^2$	$0.1425 \pm 0.0014$	$z_{\mathrm{eq}}$	$3391 \pm 32$	$\chi_{\mathrm{CamSpec}}^2$	$7062.8 \pm 5.2$
$\Omega_{\mathrm{m}}h^3$	$0.09594 \pm 0.00044$	$k_{\mathrm{eq}}$	$0.010349 \pm 0.000099$	$\chi_{\mathrm{JLA}}^2$	$1035.39 \pm 0.60$
$\sigma_8$	$0.8104 \pm 0.0061$	$100\theta_{\mathrm{eq}}$	$0.8149 \pm 0.0061$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.5$
$S_8$	$0.830 \pm 0.015$	$100\theta_{\mathrm{s,eq}}$	$0.4504 \pm 0.0031$	$\chi_{\mathrm{CMB}}^2$	$7492.5 \pm 5.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4546 \pm 0.0083$	$H(0.15)$	$72.63 \pm 0.55$		
$\bar{\chi}_{\mathrm{eff}}^2 = 8535.44$ ; $R - 1 = 0.00636$					



**2.126 base\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_JLA\_Riess18\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02234 \pm 0.00019$	$r_{\text{drag}} h$	$100.55 \pm 0.79$	$D_{\text{M}}(0.51)$	$1971.8 \pm 9.5$
$\Omega_c h^2$	$0.1181 \pm 0.0010$	$\langle d^2 \rangle^{1/2}$	$2.422 \pm 0.021$	$H(0.61)$	$95.48 \pm 0.23$
$100\theta_{\text{MC}}$	$1.04120 \pm 0.00041$	$z_{\text{re}}$	$8.08 \pm 0.70$	$D_{\text{M}}(0.61)$	$2295 \pm 10$
$\tau$	$0.0587^{+0.0067}_{-0.0078}$	$10^9 A_{\text{s}}$	$2.107 \pm 0.030$	$H(2.33)$	$235.29 \pm 0.65$
$\ln(10^{10} A_{\text{s}})$	$3.048 \pm 0.014$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.874 \pm 0.011$	$D_{\text{M}}(2.33)$	$5757 \pm 11$
$n_{\text{s}}$	$0.9692 \pm 0.0039$	$D_{40}$	$1221 \pm 12$	$f\sigma_8(0.15)$	$0.4507 \pm 0.0060$
$y_{\text{cal}}$	$1.0008 \pm 0.0026$	$D_{220}$	$5726 \pm 40$	$\sigma_8(0.15)$	$0.7471 \pm 0.0056$
$A_{100}^{\text{PS}}$	$242 \pm 25$	$D_{810}$	$2535 \pm 14$	$f\sigma_8(0.38)$	$0.4706 \pm 0.0051$
$A_{143}^{\text{PS}}$	$40 \pm 8$	$D_{1420}$	$816.6 \pm 5.1$	$\sigma_8(0.38)$	$0.6631 \pm 0.0049$
$A_{217}^{\text{PS}}$	$102 \pm 10$	$D_{2000}$	$230.6 \pm 1.7$	$f\sigma_8(0.51)$	$0.4700 \pm 0.0046$
$A_{217}^{\text{CIB}}$	$40 \pm 7$	$n_{\text{s},0.002}$	$0.9692 \pm 0.0039$	$\sigma_8(0.51)$	$0.6209 \pm 0.0046$
$A_{143}^{\text{tSZ}}$	$3.8^{+1.7}_{-2.6}$	$Y_{\text{P}}$	$0.245381 \pm 0.000075$	$f\sigma_8(0.61)$	$0.4657 \pm 0.0042$
$r_{143 \times 217}^{\text{PS}}$	$0.66 \pm 0.13$	$Y_{\text{P}}^{\text{BBN}}$	$0.246707 \pm 0.000075$	$\sigma_8(0.61)$	$0.5910 \pm 0.0044$
$r_{143 \times 217}^{\text{CIB}}$	$0.57^{+0.39}_{-0.18}$	$10^5 \text{D/H}$	$2.592 \pm 0.035$	$f\sigma_8(2.33)$	$0.2983 \pm 0.0022$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	Age/Gyr	$13.784 \pm 0.026$	$\sigma_8(2.33)$	$0.3078 \pm 0.0023$
$A^{\text{kSZ}}$	—	$z_*$	$1089.79 \pm 0.27$	$f_{2000}^{143}$	$29.9 \pm 2.9$
$A_{100}^{\text{dust}}$	$1.02 \pm 0.19$	$r_*$	$144.95 \pm 0.27$	$f_{2000}^{217}$	$107.0 \pm 2.1$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.17$	$100\theta_*$	$1.04139 \pm 0.00040$	$f_{2000}^{143 \times 217}$	$32.3 \pm 2.1$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.919 \pm 0.027$	$\chi_{\text{lensing}}^2$	$9.6 \pm 1.1$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.16$	$z_{\text{drag}}$	$1059.73 \pm 0.42$	$\chi_{\text{simall}}^2$	$397.7 \pm 2.3$
$c_{100}$	$0.9976 \pm 0.0010$	$r_{\text{drag}}$	$147.64 \pm 0.30$	$\chi_{\text{lowl}}^2$	$22.66 \pm 0.77$
$c_{217}$	$1.0012^{+0.0015}_{-0.0016}$	$k_{\text{D}}$	$0.14027 \pm 0.00040$	$\chi_{\text{CamSpec}}^2$	$7064.4 \pm 5.4$
$H_0$	$68.10 \pm 0.46$	$100\theta_{\text{D}}$	$0.16091 \pm 0.00025$	$\chi_{\text{H073p45}}^2$	$10.4 \pm 1.8$
$\Omega_{\Lambda}$	$0.6958 \pm 0.0060$	$z_{\text{eq}}$	$3356 \pm 24$	$\chi_{\text{JLA}}^2$	$706.61 \pm 0.11$
$\Omega_{\text{m}}$	$0.3042 \pm 0.0060$	$k_{\text{eq}}$	$0.010242 \pm 0.000072$	$\chi_{6\text{DF}}^2$	$0.026 \pm 0.038$
$\Omega_{\text{m}} h^2$	$0.14107 \pm 0.00099$	$100\theta_{\text{eq}}$	$0.8219 \pm 0.0044$	$\chi_{\text{MGS}}^2$	$1.80 \pm 0.49$
$\Omega_{\text{m}} h^3$	$0.09607 \pm 0.00043$	$100\theta_{\text{s,eq}}$	$0.4539 \pm 0.0023$	$\chi_{\text{DR12BAO}}^2$	$3.84 \pm 0.70$
$\sigma_8$	$0.8077 \pm 0.0063$	$H(0.15)$	$73.31 \pm 0.40$	$\chi_{\text{prior}}^2$	$7.5 \pm 3.6$
$S_8$	$0.813 \pm 0.012$	$D_{\text{M}}(0.15)$	$637.1 \pm 3.9$	$\chi_{\text{CMB}}^2$	$7494.4 \pm 5.7$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4455 \pm 0.0063$	$H(0.38)$	$83.28 \pm 0.31$	$\chi_{\text{BAO}}^2$	$5.67 \pm 0.68$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.5999 \pm 0.0062$	$D_{\text{M}}(0.38)$	$1521.2 \pm 8.0$		
$\sigma_8/h^{0.5}$	$0.9788 \pm 0.0090$	$H(0.51)$	$89.92 \pm 0.26$		

$$\bar{\chi}_{\text{eff}}^2 = 8224.63; R - 1 = 0.08788$$



**2.127 base\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_Pantheon18\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02224 \pm 0.00019$	$\sigma_8/h^{0.5}$	$0.9838 \pm 0.0088$	$D_{\mathrm{M}}(0.38)$	$1529.0 \pm 8.2$
$\Omega_{\mathrm{c}}h^2$	$0.1190 \pm 0.0010$	$r_{\mathrm{drag}}h$	$99.80 \pm 0.80$	$H(0.51)$	$89.69 \pm 0.26$
$100\theta_{\mathrm{MC}}$	$1.04104 \pm 0.00041$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.021$	$D_{\mathrm{M}}(0.51)$	$1980.9 \pm 9.7$
$\tau$	$0.0565^{+0.0059}_{-0.0078}$	$z_{\mathrm{re}}$	$7.90^{+0.63}_{-0.76}$	$H(0.61)$	$95.29 \pm 0.23$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.012}_{-0.015}$	$10^9 A_{\mathrm{s}}$	$2.101^{+0.025}_{-0.033}$	$D_{\mathrm{M}}(0.61)$	$2305 \pm 10$
$n_{\mathrm{s}}$	$0.9670 \pm 0.0041$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.876 \pm 0.011$	$H(2.33)$	$235.75 \pm 0.67$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025$	$D_{40}$	$1224 \pm 12$	$D_{\mathrm{M}}(2.33)$	$5765 \pm 11$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25$	$D_{220}$	$5715 \pm 40$	$f\sigma_8(0.15)$	$0.4552 \pm 0.0059$
$A_{143}^{\mathrm{PS}}$	$41 \pm 8$	$D_{810}$	$2534 \pm 13$	$\sigma_8(0.15)$	$0.7479 \pm 0.0055$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{1420}$	$815.3 \pm 5.0$	$f\sigma_8(0.38)$	$0.4738 \pm 0.0050$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{2000}$	$230.0 \pm 1.8$	$\sigma_8(0.38)$	$0.6631^{+0.0044}_{-0.0052}$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.7}_{-2.6}$	$n_{\mathrm{s},0.002}$	$0.9670 \pm 0.0041$	$f\sigma_8(0.51)$	$0.4726 \pm 0.0044$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	$0.245339^{+0.000084}_{-0.000070}$	$\sigma_8(0.51)$	$0.6206^{+0.0041}_{-0.0049}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.58^{+0.42}_{-0.13}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246665^{+0.000084}_{-0.000071}$	$f\sigma_8(0.61)$	$0.4678 \pm 0.0041$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.611 \pm 0.035$	$\sigma_8(0.61)$	$0.5906^{+0.0039}_{-0.0047}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.803 \pm 0.026$	$f\sigma_8(2.33)$	$0.2978^{+0.0020}_{-0.0024}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$z_*$	$1090.00 \pm 0.27$	$\sigma_8(2.33)$	$0.3071^{+0.0021}_{-0.0026}$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	$r_*$	$144.80 \pm 0.28$	$f_{2000}^{143}$	$30.4 \pm 3.0$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04124 \pm 0.00041$	$f_{2000}^{217}$	$107.3 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.907 \pm 0.027$	$f_{2000}^{143 \times 217}$	$32.7 \pm 2.1$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.55 \pm 0.42$	$\chi_{\mathrm{lensing}}^2$	$9.36 \pm 0.80$
$c_{217}$	$1.0012 \pm 0.0015$	$r_{\mathrm{drag}}$	$147.52 \pm 0.31$	$\chi_{\mathrm{simall}}^2$	$397.2 \pm 2.0$
$H_0$	$67.65 \pm 0.47$	$k_{\mathrm{D}}$	$0.14032 \pm 0.00041$	$\chi_{\mathrm{lowl}}^2$	$22.98 \pm 0.83$
$\Omega_{\Lambda}$	$0.6900 \pm 0.0062$	$100\theta_{\mathrm{D}}$	$0.16100 \pm 0.00025$	$\chi_{\mathrm{CamSpec}}^2$	$7063.2 \pm 5.2$
$\Omega_{\mathrm{m}}$	$0.3100 \pm 0.0062$	$z_{\mathrm{eq}}$	$3374 \pm 24$	$\chi_{\mathrm{JLA}}^2$	$1035.06 \pm 0.30$
$\Omega_{\mathrm{m}}h^2$	$0.1418 \pm 0.0010$	$k_{\mathrm{eq}}$	$0.010298 \pm 0.000074$	$\chi_{6\mathrm{DF}}^2$	$0.046 \pm 0.059$
$\Omega_{\mathrm{m}}h^3$	$0.09596 \pm 0.00044$	$100\theta_{\mathrm{eq}}$	$0.8181 \pm 0.0045$	$\chi_{\mathrm{MGS}}^2$	$1.36 \pm 0.45$
$\sigma_8$	$0.8092 \pm 0.0061$	$100\theta_{\mathrm{s,eq}}$	$0.4520 \pm 0.0023$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.3$
$S_8$	$0.822 \pm 0.012$	$H(0.15)$	$72.91 \pm 0.41$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.5$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4505 \pm 0.0063$	$D_{\mathrm{M}}(0.15)$	$640.9 \pm 4.0$	$\chi_{\mathrm{CMB}}^2$	$7492.8 \pm 5.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6038 \pm 0.0061$	$H(0.38)$	$82.99 \pm 0.31$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.0$

$\bar{\chi}_{\mathrm{eff}}^2 = 8541.35$ ;  $R - 1 = 0.00983$



2.128 base\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_Pantheon18\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02234 \pm 0.00018$	$r_{\text{drag}} h$	$100.51 \pm 0.77$	$D_{\text{M}}(0.51)$	$1972.1 \pm 9.2$
$\Omega_c h^2$	$0.11813 \pm 0.00099$	$\langle d^2 \rangle^{1/2}$	$2.423 \pm 0.021$	$H(0.61)$	$95.48 \pm 0.22$
$100\theta_{\text{MC}}$	$1.04120 \pm 0.00041$	$z_{\text{re}}$	$8.09 \pm 0.70$	$D_{\text{M}}(0.61)$	$2296 \pm 10$
$\tau$	$0.0587^{+0.0066}_{-0.0078}$	$10^9 A_{\text{s}}$	$2.107^{+0.028}_{-0.033}$	$H(2.33)$	$235.32 \pm 0.65$
$\ln(10^{10} A_{\text{s}})$	$3.048^{+0.014}_{-0.016}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.874 \pm 0.011$	$D_{\text{M}}(2.33)$	$5757 \pm 11$
$n_{\text{s}}$	$0.9692 \pm 0.0040$	$D_{40}$	$1221 \pm 12$	$f\sigma_8(0.15)$	$0.4510 \pm 0.0058$
$y_{\text{cal}}$	$1.0009 \pm 0.0025$	$D_{220}$	$5726 \pm 40$	$\sigma_8(0.15)$	$0.7473 \pm 0.0057$
$A_{100}^{\text{PS}}$	$241 \pm 25$	$D_{810}$	$2535 \pm 13$	$f\sigma_8(0.38)$	$0.4708 \pm 0.0050$
$A_{143}^{\text{PS}}$	$40 \pm 8$	$D_{1420}$	$816.6 \pm 5.0$	$\sigma_8(0.38)$	$0.6632^{+0.0048}_{-0.0053}$
$A_{217}^{\text{PS}}$	$102 \pm 10$	$D_{2000}$	$230.6 \pm 1.7$	$f\sigma_8(0.51)$	$0.4703 \pm 0.0045$
$A_{217}^{\text{CIB}}$	$40 \pm 7$	$n_{\text{s},0.002}$	$0.9692 \pm 0.0040$	$\sigma_8(0.51)$	$0.6210^{+0.0044}_{-0.0050}$
$A_{143}^{\text{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$Y_{\text{P}}$	$0.245380^{+0.000080}_{-0.000067}$	$f\sigma_8(0.61)$	$0.4659 \pm 0.0042$
$r_{143 \times 217}^{\text{PS}}$	$0.66 \pm 0.12$	$Y_{\text{P}}^{\text{BBN}}$	$0.246706^{+0.000080}_{-0.000067}$	$\sigma_8(0.61)$	$0.5911^{+0.0042}_{-0.0048}$
$r_{143 \times 217}^{\text{CIB}}$	$0.57^{+0.40}_{-0.17}$	$10^5 \text{D}/\text{H}$	$2.592^{+0.033}_{-0.037}$	$f\sigma_8(2.33)$	$0.2983^{+0.0021}_{-0.0024}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	Age/Gyr	$13.784 \pm 0.025$	$\sigma_8(2.33)$	$0.3079^{+0.0023}_{-0.0026}$
$A^{\text{kSZ}}$	—	$z_*$	$1089.80 \pm 0.26$	$f_{2000}^{143}$	$29.9 \pm 2.9$
$A_{100}^{\text{dust}}$	$1.02 \pm 0.19$	$r_*$	$144.94 \pm 0.27$	$f_{2000}^{217}$	$107.0 \pm 2.1$
$A_{143}^{\text{dust}}$	$0.97 \pm 0.17$	$100\theta_*$	$1.04139 \pm 0.00040$	$f_{2000}^{143 \times 217}$	$32.2 \pm 2.1$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.918 \pm 0.027$	$\chi_{\text{lensing}}^2$	$9.6 \pm 1.1$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.16$	$z_{\text{drag}}$	$1059.73 \pm 0.42$	$\chi_{\text{simall}}^2$	$397.7 \pm 2.3$
$c_{100}$	$0.9976 \pm 0.0010$	$r_{\text{drag}}$	$147.63 \pm 0.30$	$\chi_{\text{lowl}}^2$	$22.66 \pm 0.78$
$c_{217}$	$1.0012 \pm 0.0015$	$k_{\text{D}}$	$0.14028 \pm 0.00040$	$\chi_{\text{CamSpec}}^2$	$7064.2 \pm 5.4$
$H_0$	$68.09 \pm 0.45$	$100\theta_{\text{D}}$	$0.16091 \pm 0.00024$	$\chi_{\text{H073p45}}^2$	$10.5 \pm 1.8$
$\Omega_{\Lambda}$	$0.6955 \pm 0.0058$	$z_{\text{eq}}$	$3357 \pm 23$	$\chi_{\text{JLA}}^2$	$1034.87 \pm 0.17$
$\Omega_{\text{m}}$	$0.3045 \pm 0.0058$	$k_{\text{eq}}$	$0.010245 \pm 0.000071$	$\chi_{6\text{DF}}^2$	$0.025 \pm 0.035$
$\Omega_{\text{m}} h^2$	$0.14111 \pm 0.00097$	$100\theta_{\text{eq}}$	$0.8217 \pm 0.0043$	$\chi_{\text{MGS}}^2$	$1.77 \pm 0.47$
$\Omega_{\text{m}} h^3$	$0.09607 \pm 0.00043$	$100\theta_{\text{s,eq}}$	$0.4538 \pm 0.0022$	$\chi_{\text{DR12BAO}}^2$	$3.84 \pm 0.68$
$\sigma_8$	$0.8080 \pm 0.0063$	$H(0.15)$	$73.29 \pm 0.39$	$\chi_{\text{prior}}^2$	$7.5 \pm 3.5$
$S_8$	$0.814 \pm 0.011$	$D_{\text{M}}(0.15)$	$637.3 \pm 3.8$	$\chi_{\text{CMB}}^2$	$7494.2 \pm 5.6$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4458 \pm 0.0062$	$H(0.38)$	$83.27 \pm 0.30$	$\chi_{\text{BAO}}^2$	$5.64 \pm 0.62$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.6002 \pm 0.0061$	$D_{\text{M}}(0.38)$	$1521.5 \pm 7.8$		
$\sigma_8/h^{0.5}$	$0.9793 \pm 0.0089$	$H(0.51)$	$89.92 \pm 0.25$		

$$\bar{\chi}_{\text{eff}}^2 = 8552.73; R - 1 = 0.03088$$



## 2.129 base\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022277	$0.02229 \pm 0.00015$ (+0.7 $\sigma$ )	$S_8$	0.8292	$0.828 \pm 0.013$ (−0.4 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.44992	$0.4502 \pm 0.0026$ (+0.3 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11981	$0.1197 \pm 0.0012$ (−0.4 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4542	$0.4535 \pm 0.0070$ (−0.4 $\sigma$ )	$H(0.15)$	72.638	$72.70 \pm 0.47$ (+0.5 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.040847	$1.04087 \pm 0.00031$ (+0.0 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6063	$0.6058 \pm 0.0064$ (−0.4 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	643.73	$643.2 \pm 4.7$ (−0.5 $\sigma$ )
$\tau$	0.0529	$0.0536^{+0.0069}_{-0.0077}$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9864	$0.9857 \pm 0.0091$ (−0.4 $\sigma$ )	$H(0.38)$	82.808	$82.85 \pm 0.34$ (+0.5 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0402	$3.041 \pm 0.015$ (+0.1 $\sigma$ )	$r_{\mathrm{drag}}h$	99.13	$99.24 \pm 0.94$ (+0.4 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1534.4	$1533.3 \pm 9.3$ (−0.5 $\sigma$ )
$n_{\mathrm{s}}$	0.96531	$0.9656 \pm 0.0042$ (+0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4388	$2.438 \pm 0.022$ (−0.3 $\sigma$ )	$H(0.51)$	89.559	$89.60 \pm 0.27$ (+0.5 $\sigma$ )
$y_{\mathrm{cal}}$	1.00062	$1.0005 \pm 0.0025$ (+0.1 $\sigma$ )	$z_{\mathrm{re}}$	7.56	$7.61 \pm 0.75$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1987.1	$1986 \pm 11$ (−0.5 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	234.9	$239 \pm 25$ (−0.1 $\sigma$ )	$10^9 A_{\mathrm{s}}$	2.0910	$2.092^{+0.028}_{-0.031}$ (+0.1 $\sigma$ )	$H(0.61)$	95.204	$95.23 \pm 0.22$ (+0.5 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	46.5	$39 \pm 8$ (−0.2 $\sigma$ )	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8810	$1.879 \pm 0.011$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2311.9	$2310 \pm 12$ (−0.5 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	103.1	$102 \pm 10$ (+0.1 $\sigma$ )	$D_{40}$	1228.3	$1227 \pm 12$ (−0.2 $\sigma$ )	$H(2.33)$	236.34	$236.27 \pm 0.73$ (−0.2 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	43.3	$40 \pm 7$ (−0.2 $\sigma$ )	$D_{220}$	5722.0	$5720 \pm 39$ (+0.3 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5768.1	$5767 \pm 10$ (−0.6 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	6.16	$3.9^{+1.9}_{-2.5}$ (+0.1 $\sigma$ )	$D_{810}$	2537.0	$2535 \pm 13$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4585	$0.4579 \pm 0.0065$ (−0.4 $\sigma$ )
$r_{143 \times 217}^{\mathrm{PS}}$	0.667	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$D_{1420}$	816.14	$815.7 \pm 4.9$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7475	$0.7474 \pm 0.0054$ (−0.2 $\sigma$ )
$r_{143 \times 217}^{\mathrm{CIB}}$	0.849	$0.55^{+0.39}_{-0.18}$ (−0.1 $\sigma$ )	$D_{2000}$	230.34	$230.3 \pm 1.6$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4760	$0.4756 \pm 0.0053$ (−0.4 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.52	—	$n_{\mathrm{s},0.002}$	0.96531	$0.9656 \pm 0.0042$ (+0.3 $\sigma$ )	$\sigma_8(0.38)$	0.66226	$0.6622 \pm 0.0048$ (−0.1 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.78	$4.7^{+2.4}_{-3.8}$ (−0.1 $\sigma$ )	$Y_{\mathrm{P}}$	0.245358	$0.245363^{+0.000066}_{-0.000057}$ (+0.7 $\sigma$ )	$f\sigma_8(0.51)$	0.47423	$0.4738 \pm 0.0046$ (−0.4 $\sigma$ )
$A_{100}^{\mathrm{dust}}$	1.003	$1.01 \pm 0.20$ (−0.0 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246684	$0.246690^{+0.000066}_{-0.000058}$ (+0.7 $\sigma$ )	$\sigma_8(0.51)$	0.61961	$0.6196 \pm 0.0045$ (−0.0 $\sigma$ )
$A_{143}^{\mathrm{dust}}$	0.978	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	$10^5 \mathrm{D}/\mathrm{H}$	2.6031	$2.600 \pm 0.029$ (−0.7 $\sigma$ )	$f\sigma_8(0.61)$	0.46899	$0.4687 \pm 0.0042$ (−0.3 $\sigma$ )
$A_{217}^{\mathrm{dust}}$	0.975	$0.97 \pm 0.11$ (+0.1 $\sigma$ )	Age/Gyr	13.8081	$13.805 \pm 0.023$ (−0.6 $\sigma$ )	$\sigma_8(0.61)$	0.58948	$0.5895 \pm 0.0043$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dust}}$	0.996	$1.03 \pm 0.16$ (−0.0 $\sigma$ )	$z_*$	1090.021	$1089.99 \pm 0.26$ (−0.7 $\sigma$ )	$f\sigma_8(2.33)$	0.29708	$0.2971^{+0.0021}_{-0.0023}$ (+0.1 $\sigma$ )
$c_{100}$	0.99777	$0.9975 \pm 0.0011$ (+0.0 $\sigma$ )	$r_*$	144.551	$144.57 \pm 0.28$ (+0.1 $\sigma$ )	$\sigma_8(2.33)$	0.30613	$0.3062^{+0.0022}_{-0.0025}$ (+0.1 $\sigma$ )
$c_{217}$	1.00133	$1.0011 \pm 0.0016$ (−0.0 $\sigma$ )	$100\theta_*$	1.041044	$1.04106 \pm 0.00031$ (+0.0 $\sigma$ )	$f_{2000}^{143}$	30.38	$29.7 \pm 2.8$ (−0.4 $\sigma$ )
$c_{TE}$	0.99671	$0.9966 \pm 0.0049$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8852	$13.887 \pm 0.026$ (+0.1 $\sigma$ )	$f_{2000}^{217}$	106.92	$106.9 \pm 1.9$ (−0.4 $\sigma$ )
$c_{EE}$	0.99246	$0.9921 \pm 0.0049$	$z_{\mathrm{drag}}$	1059.704	$1059.74 \pm 0.32$ (+0.7 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.31	$32.2 \pm 2.0$ (−0.4 $\sigma$ )
$H_0$	67.32	$67.39 \pm 0.54$ (+0.5 $\sigma$ )	$r_{\mathrm{drag}}$	147.246	$147.26 \pm 0.28$ (−0.0 $\sigma$ )	$\chi_{\mathrm{lensing}}^2$	8.831	$9.30 \pm 0.69$ (−0.2 $\sigma$ )
$\Omega_{\Lambda}$	0.6851	$0.6858 \pm 0.0074$ (+0.4 $\sigma$ )	$k_{\mathrm{D}}$	0.140634	$0.14063 \pm 0.00033$ (+0.3 $\sigma$ )	$\chi_{\mathrm{simall}}^2$	395.87	$396.9 \pm 1.6$ (−0.0 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3149	$0.3142 \pm 0.0074$ (−0.4 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160882	$0.16087 \pm 0.00019$ (−0.7 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	23.22	$23.22 \pm 0.86$ (−0.3 $\sigma$ )
$\Omega_{\mathrm{m}}h^2$	0.14273	$0.1426 \pm 0.0011$ (−0.3 $\sigma$ )	$z_{\mathrm{eq}}$	3395.4	$3393 \pm 27$ (−0.3 $\sigma$ )	$\chi_{\mathrm{CamSpec}}^2$	11499.6	$11514.1 \pm 5.5$ (+871.7 $\sigma$ )
$\Omega_{\mathrm{m}}h^3$	0.096088	$0.09610 \pm 0.00031$ (+0.4 $\sigma$ )	$k_{\mathrm{eq}}$	0.010363	$0.010355 \pm 0.000083$ (−0.3 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	2.08	$7.9 \pm 3.5$ (+0.1 $\sigma$ )
$\sigma_8$	0.8093	$0.8091 \pm 0.0060$ (−0.2 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8142	$0.8148 \pm 0.0051$ (+0.3 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	11927.6	$11943.6 \pm 5.7$ (+833.2 $\sigma$ )

Best-fit  $\chi_{\mathrm{eff}}^2 = 11929.66$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 4448.98$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 11951.44$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 4451.20$ ;  $R - 1 = 0.00801$   
 $\chi_{\mathrm{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.83 ( $\Delta$  -0.08) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 ( $\Delta$  -0.00) commander\_dx12\_v3\_2\_29: 23.22 ( $\Delta$  -0.20) CamSpec like\_10.7HM\_1400\_unified: 11499.65



### 2.130 base\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02234 \pm 0.00014 \quad (+0.6\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6033 \pm 0.0057 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1528.6 \pm 7.3 \quad (-0.2\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.11907 \pm 0.00094 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9827 \pm 0.0083 \quad (-0.2\sigma)$	$H(0.51)$	$89.73 \pm 0.22 \quad (+0.3\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04095 \pm 0.00030 \quad (-0.2\sigma)$	$r_{\mathrm{drag}}h$	$99.72 \pm 0.73 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1980.3 \pm 8.6 \quad (-0.2\sigma)$
$\tau$	$0.0552^{+0.0067}_{-0.0076} \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.431 \pm 0.020 \quad (-0.1\sigma)$	$H(0.61)$	$95.33 \pm 0.19 \quad (+0.3\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.013}_{-0.015} \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.75 \pm 0.73 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2304.5 \pm 9.3 \quad (-0.2\sigma)$
$n_{\mathrm{s}}$	$0.9671 \pm 0.0038 \quad (+0.1\sigma)$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.028}_{-0.032} \quad (-0.0\sigma)$	$H(2.33)$	$235.92 \pm 0.59 \quad (+0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.011 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5762.5 \pm 9.0 \quad (-0.4\sigma)$
$A_{100}^{\mathrm{PS}}$	$239 \pm 25 \quad (-0.1\sigma)$	$D_{40}$	$1225 \pm 11 \quad (+0.0\sigma)$	$f\sigma_8(0.15)$	$0.4549 \pm 0.0054 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$D_{220}$	$5725 \pm 39 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7470^{+0.0051}_{-0.0057} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2536 \pm 14 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4735 \pm 0.0046 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7 \quad (-0.2\sigma)$	$D_{1420}$	$816.3 \pm 4.8 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6623^{+0.0044}_{-0.0050} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+2.0}_{-2.5} \quad (+0.1\sigma)$	$D_{2000}$	$230.5 \pm 1.6 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4722 \pm 0.0042 \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9671 \pm 0.0038 \quad (+0.1\sigma)$	$\sigma_8(0.51)$	$0.6199^{+0.0042}_{-0.0047} \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.39}_{-0.18} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245380^{+0.000061}_{-0.000052} \quad (+0.6\sigma)$	$f\sigma_8(0.61)$	$0.4674 \pm 0.0039 \quad (-0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246706^{+0.000061}_{-0.000052} \quad (+0.6\sigma)$	$\sigma_8(0.61)$	$0.5899^{+0.0040}_{-0.0045} \quad (-0.1\sigma)$
$A^{\mathrm{kSZ}}$	$4.6^{+1.8}_{-4.4} \quad (-0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.592^{+0.025}_{-0.028} \quad (-0.6\sigma)$	$f\sigma_8(2.33)$	$0.2975^{+0.0020}_{-0.0023} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19 \quad (-0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.796 \pm 0.020 \quad (-0.4\sigma)$	$\sigma_8(2.33)$	$0.3067^{+0.0022}_{-0.0025} \quad (-0.0\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.17 \quad (-0.1\sigma)$	$z_*$	$1089.88 \pm 0.22 \quad (-0.5\sigma)$	$f_{2000}^{143}$	$29.5 \pm 2.8 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.11 \quad (+0.1\sigma)$	$r_*$	$144.70 \pm 0.23 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.9 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (+0.0\sigma)$	$100\theta_*$	$1.04114 \pm 0.00030 \quad (-0.2\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.0 \quad (-0.3\sigma)$
$c_{100}$	$0.9976 \pm 0.0010 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.898 \pm 0.022 \quad (-0.2\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.31 \pm 0.76 \quad (-0.1\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$z_{\mathrm{drag}}$	$1059.79 \pm 0.32 \quad (+0.6\sigma)$	$\chi_{\mathrm{small}}^2$	$397.1 \pm 1.8 \quad (-0.1\sigma)$
$c_{TE}$	$0.9966 \pm 0.0050$	$r_{\mathrm{drag}}$	$147.38 \pm 0.25 \quad (-0.3\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.98 \pm 0.78 \quad (-0.1\sigma)$
$c_{EE}$	$0.9923 \pm 0.0049$	$k_{\mathrm{D}}$	$0.14054 \pm 0.00031 \quad (+0.5\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11514.2 \pm 5.6 \quad (+861.3\sigma)$
$H_0$	$67.66 \pm 0.42 \quad (+0.2\sigma)$	$100\theta_{\mathrm{D}}$	$0.16084 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.047 \pm 0.057 \quad (-0.2\sigma)$
$\Omega_{\Lambda}$	$0.6897 \pm 0.0057 \quad (+0.1\sigma)$	$z_{\mathrm{eq}}$	$3379 \pm 22 \quad (+0.0\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.31 \pm 0.40 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3103 \pm 0.0057 \quad (-0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010314 \pm 0.000066 \quad (+0.0\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.3 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14205 \pm 0.00090 \quad (+0.0\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8174 \pm 0.0040 \quad (+0.0\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.5 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09611 \pm 0.00031 \quad (+0.4\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4515 \pm 0.0021 \quad (-0.0\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11943.6 \pm 5.8 \quad (+831.3\sigma)$
$\sigma_8$	$0.8083 \pm 0.0060 \quad (-0.1\sigma)$	$H(0.15)$	$72.93 \pm 0.37 \quad (+0.2\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.00 \pm 0.99 \quad (-0.1\sigma)$
$S_8$	$0.822 \pm 0.011 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$640.8 \pm 3.6 \quad (-0.2\sigma)$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4503 \pm 0.0058 \quad (-0.2\sigma)$	$H(0.38)$	$83.02 \pm 0.27 \quad (+0.3\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11957.40; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.92; R - 1 = 0.01372$$



### 2.131 base\_CamSpecHM\_TTTEE\_lowl\_lowE\_lensing\_post\_Riess18

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02240 \pm 0.00014 \quad (+0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4471 \pm 0.0066 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$638.3 \pm 4.3 \quad (+0.2\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1185 \pm 0.0011 \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6009 \pm 0.0061 \quad (+0.1\sigma)$	$H(0.38)$	$83.21 \pm 0.32 \quad (-0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04105 \pm 0.00032 \quad (-0.4\sigma)$	$\sigma_8/h^{0.5}$	$0.9798 \pm 0.0088 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1523.5 \pm 8.7 \quad (+0.1\sigma)$
$\tau$	$0.0571^{+0.0070}_{-0.0081} \quad (-0.2\sigma)$	$r_{\mathrm{drag}}h$	$100.22 \pm 0.89 \quad (-0.2\sigma)$	$H(0.51)$	$89.88 \pm 0.26 \quad (-0.1\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046 \pm 0.015 \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.425 \pm 0.021 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1974 \pm 10 \quad (+0.1\sigma)$
$n_{\mathrm{s}}$	$0.9685 \pm 0.0040 \quad (-0.1\sigma)$	$z_{\mathrm{re}}$	$7.92 \pm 0.75 \quad (-0.2\sigma)$	$H(0.61)$	$95.46 \pm 0.21 \quad (-0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0009 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.103^{+0.029}_{-0.033} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2298 \pm 11 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$238 \pm 24 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.876 \pm 0.010 \quad (+0.2\sigma)$	$H(2.33)$	$235.59 \pm 0.69 \quad (+0.3\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.1\sigma)$	$D_{40}$	$1223 \pm 11 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5757.1 \pm 9.9 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$D_{220}$	$5732 \pm 39 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4521 \pm 0.0061 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7 \quad (-0.1\sigma)$	$D_{810}$	$2537 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7469^{+0.0051}_{-0.0057} \quad (-0.0\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+2.0}_{-2.5} \quad (+0.1\sigma)$	$D_{1420}$	$817.2 \pm 4.7 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4715 \pm 0.0050 \quad (+0.1\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.67 \pm 0.13 \quad (+0.1\sigma)$	$D_{2000}$	$230.9 \pm 1.6 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6626^{+0.0045}_{-0.0050} \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.40}_{-0.19} \quad (-0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9685 \pm 0.0040 \quad (-0.1\sigma)$	$f\sigma_8(0.51)$	$0.4707 \pm 0.0045 \quad (+0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.245405^{+0.000060}_{-0.000051} \quad (+0.3\sigma)$	$\sigma_8(0.51)$	$0.6203^{+0.0043}_{-0.0048} \quad (-0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 6.13 \quad (-0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246731^{+0.000060}_{-0.000051} \quad (+0.3\sigma)$	$f\sigma_8(0.61)$	$0.4661 \pm 0.0041 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19 \quad (-0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.581^{+0.025}_{-0.028} \quad (-0.3\sigma)$	$\sigma_8(0.61)$	$0.5904 \pm 0.0044 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.17 \quad (-0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.784 \pm 0.022 \quad (-0.0\sigma)$	$f\sigma_8(2.33)$	$0.2979 \pm 0.0023 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.11 \quad (+0.0\sigma)$	$z_*$	$1089.75 \pm 0.24 \quad (-0.2\sigma)$	$\sigma_8(2.33)$	$0.3073^{+0.0023}_{-0.0026} \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.17 \quad (-0.0\sigma)$	$r_*$	$144.81 \pm 0.27 \quad (-0.4\sigma)$	$f_{2000}^{143}$	$29.2 \pm 2.8 \quad (-0.2\sigma)$
$c_{100}$	$0.9976 \pm 0.0010 \quad (+0.0\sigma)$	$100\theta_*$	$1.04123 \pm 0.00032 \quad (-0.4\sigma)$	$f_{2000}^{217}$	$106.6 \pm 1.9 \quad (-0.2\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.907 \pm 0.025 \quad (-0.3\sigma)$	$f_{2000}^{143 \times 217}$	$31.8 \pm 2.0 \quad (-0.2\sigma)$
$c_{TE}$	$0.9965 \pm 0.0050$	$z_{\mathrm{drag}}$	$1059.89 \pm 0.31 \quad (+0.4\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.46 \pm 0.93 \quad (-0.3\sigma)$
$c_{EE}$	$0.9922 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.47 \pm 0.28 \quad (-0.4\sigma)$	$\chi_{\mathrm{small}}^2$	$397.4 \pm 2.1 \quad (-0.2\sigma)$
$H_0$	$67.96 \pm 0.51 \quad (-0.2\sigma)$	$k_{\mathrm{D}}$	$0.14049 \pm 0.00033 \quad (+0.5\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.78 \pm 0.78 \quad (+0.1\sigma)$
$\Omega_{\Lambda}$	$0.6935^{+0.0069}_{-0.0062} \quad (-0.2\sigma)$	$100\theta_{\mathrm{D}}$	$0.16079 \pm 0.00018 \quad (-0.5\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11515.1 \pm 5.8 \quad (+808.5\sigma)$
$\Omega_{\mathrm{m}}$	$0.3065 \pm 0.0068 \quad (+0.2\sigma)$	$z_{\mathrm{eq}}$	$3366 \pm 26 \quad (+0.3\sigma)$	$\chi_{\mathrm{H073p45}}^2$	$11.0 \pm 2.0 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1415 \pm 0.0011 \quad (+0.3\sigma)$	$k_{\mathrm{eq}}$	$0.010274 \pm 0.000079 \quad (+0.3\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09617 \pm 0.00031 \quad (+0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8200 \pm 0.0049 \quad (-0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11944.8 \pm 6.3 \quad (+708.3\sigma)$
$\sigma_8$	$0.8077 \pm 0.0061 \quad (-0.0\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4529 \pm 0.0025 \quad (-0.3\sigma)$		
$S_8$	$0.816 \pm 0.012 \quad (+0.1\sigma)$	$H(0.15)$	$73.19 \pm 0.44 \quad (-0.2\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11963.63; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.76; R - 1 = 0.02452$$



## 2.132 base\_CamSpecHM\_TTTEE\_lowl\_lowE\_lensing\_post\_BAO\_Riess18

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02240 \pm 0.00014 \quad (+0.4\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6005 \pm 0.0056 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1522.7 \pm 6.8 \quad (+0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.11836 \pm 0.00089 \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9792 \pm 0.0082 \quad (-0.0\sigma)$	$H(0.51)$	$89.90 \pm 0.21 \quad (+0.0\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04106 \pm 0.00030 \quad (-0.3\sigma)$	$r_{\mathrm{drag}}h$	$100.30 \pm 0.69 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1973.4 \pm 8.0 \quad (+0.1\sigma)$
$\tau$	$0.0573 \pm 0.0074 \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.423 \pm 0.020 \quad (+0.0\sigma)$	$H(0.61)$	$95.47 \pm 0.18 \quad (+0.0\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046 \pm 0.015 \quad (-0.1\sigma)$	$z_{\mathrm{re}}$	$7.93 \pm 0.73 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2297.1 \pm 8.6 \quad (+0.0\sigma)$
$n_{\mathrm{s}}$	$0.9688 \pm 0.0037 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.103^{+0.029}_{-0.032} \quad (-0.1\sigma)$	$H(2.33)$	$235.53 \pm 0.56 \quad (+0.2\sigma)$
$y_{\mathrm{cal}}$	$1.0009 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.875 \pm 0.010 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5756.4 \pm 8.6 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$238 \pm 24 \quad (-0.2\sigma)$	$D_{40}$	$1223 \pm 11 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4516 \pm 0.0052 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.1\sigma)$	$D_{220}$	$5733 \pm 39 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.7468^{+0.0052}_{-0.0057} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2537 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4711 \pm 0.0045 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7 \quad (-0.1\sigma)$	$D_{1420}$	$817.3 \pm 4.7 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6626^{+0.0046}_{-0.0051} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+2.0}_{-2.5} \quad (+0.1\sigma)$	$D_{2000}$	$230.9 \pm 1.6 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4704 \pm 0.0041 \quad (+0.0\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.67 \pm 0.13 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9688 \pm 0.0037 \quad (-0.0\sigma)$	$\sigma_8(0.51)$	$0.6203^{+0.0043}_{-0.0048} \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.40}_{-0.18} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245407^{+0.000056}_{-0.000048} \quad (+0.4\sigma)$	$f\sigma_8(0.61)$	$0.4659 \pm 0.0039 \quad (-0.0\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246734^{+0.000056}_{-0.000049} \quad (+0.4\sigma)$	$\sigma_8(0.61)$	$0.5904^{+0.0041}_{-0.0046} \quad (-0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 6.07 \quad (-0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.580 \pm 0.025 \quad (-0.4\sigma)$	$f\sigma_8(2.33)$	$0.2979^{+0.0021}_{-0.0023} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19 \quad (-0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.783 \pm 0.019 \quad (-0.1\sigma)$	$\sigma_8(2.33)$	$0.3074^{+0.0022}_{-0.0025} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.17 \quad (-0.1\sigma)$	$z_*$	$1089.73 \pm 0.21 \quad (-0.3\sigma)$	$f_{2000}^{143}$	$29.1 \pm 2.8 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.11 \quad (+0.0\sigma)$	$r_*$	$144.83 \pm 0.22 \quad (-0.3\sigma)$	$f_{2000}^{217}$	$106.5 \pm 1.9 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.17 \quad (-0.0\sigma)$	$100\theta_*$	$1.04124 \pm 0.00030 \quad (-0.3\sigma)$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.0 \quad (-0.3\sigma)$
$c_{100}$	$0.9976 \pm 0.0010 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.909 \pm 0.021 \quad (-0.3\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.45 \pm 0.92 \quad (-0.2\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$z_{\mathrm{drag}}$	$1059.90 \pm 0.30 \quad (+0.4\sigma)$	$\chi_{\mathrm{small}}^2$	$397.4 \pm 2.1 \quad (-0.1\sigma)$
$c_{TE}$	$0.9965 \pm 0.0050$	$r_{\mathrm{drag}}$	$147.49 \pm 0.24 \quad (-0.4\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.72 \pm 0.74 \quad (+0.0\sigma)$
$c_{EE}$	$0.9923 \pm 0.0049$	$k_{\mathrm{D}}$	$0.14048 \pm 0.00030 \quad (+0.5\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11515.0 \pm 5.7 \quad (+830.0\sigma)$
$H_0$	$68.01 \pm 0.40 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16079 \pm 0.00018 \quad (-0.5\sigma)$	$\chi_{\mathrm{H073p45}}^2$	$10.8 \pm 1.6 \quad (+0.1\sigma)$
$\Omega_{\Lambda}$	$0.6942 \pm 0.0053 \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3364 \pm 20 \quad (+0.2\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.021 \pm 0.031 \quad (-0.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.3058 \pm 0.0053 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010267 \pm 0.000062 \quad (+0.2\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.64 \pm 0.41 \quad (-0.2\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14141 \pm 0.00085 \quad (+0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8204 \pm 0.0038 \quad (-0.2\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$3.92 \pm 0.73 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09617 \pm 0.00030 \quad (+0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4531 \pm 0.0020 \quad (-0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$\sigma_8$	$0.8075 \pm 0.0060 \quad (-0.1\sigma)$	$H(0.15)$	$73.23 \pm 0.34 \quad (-0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11944.6 \pm 6.0 \quad (+791.6\sigma)$
$S_8$	$0.815 \pm 0.010 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$637.9 \pm 3.4 \quad (+0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$5.58 \pm 0.54 \quad (-0.1\sigma)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4465 \pm 0.0055 \quad (+0.1\sigma)$	$H(0.38)$	$83.24 \pm 0.26 \quad (-0.0\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11968.81; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.81; R - 1 = 0.02105$$



### 2.133 base\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022311	$0.02231 \pm 0.00015$ (+0.6 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4521	$0.4522 \pm 0.0067$ (−0.3 $\sigma$ )	$D_M(0.15)$	642.16	$642.3 \pm 4.4$ (−0.3 $\sigma$ )
$\Omega_c h^2$	0.11940	$0.1194 \pm 0.0011$ (−0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6047	$0.6048 \pm 0.0062$ (−0.3 $\sigma$ )	$H(0.38)$	82.920	$82.92 \pm 0.32$ (+0.4 $\sigma$ )
$100\theta_{MC}$	1.040884	$1.04090 \pm 0.00031$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9844	$0.9845 \pm 0.0089$ (−0.3 $\sigma$ )	$D_M(0.38)$	1531.3	$1531.4 \pm 8.8$ (−0.3 $\sigma$ )
$\tau$	0.0544	$0.0543^{+0.0068}_{-0.0077}$ (+0.0 $\sigma$ )	$r_{drag}h$	99.45	$99.43 \pm 0.89$ (+0.3 $\sigma$ )	$H(0.51)$	89.646	$89.65 \pm 0.26$ (+0.4 $\sigma$ )
$\ln(10^{10} A_s)$	3.0418	$3.042^{+0.013}_{-0.015}$ (+0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4343	$2.435 \pm 0.021$ (−0.2 $\sigma$ )	$D_M(0.51)$	1983.5	$1984 \pm 10$ (−0.4 $\sigma$ )
$n_s$	0.96639	$0.9662 \pm 0.0041$ (+0.2 $\sigma$ )	$z_{re}$	7.69	$7.66 \pm 0.74$ (+0.0 $\sigma$ )	$H(0.61)$	95.271	$95.27 \pm 0.21$ (+0.4 $\sigma$ )
$y_{cal}$	1.00056	$1.0006 \pm 0.0025$ (+0.0 $\sigma$ )	$10^9 A_s$	2.0944	$2.094^{+0.028}_{-0.032}$ (+0.0 $\sigma$ )	$D_M(0.61)$	2308.0	$2308 \pm 11$ (−0.4 $\sigma$ )
$A_{100}^{PS}$	234.0	$239 \pm 24$ (−0.1 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8785	$1.878 \pm 0.011$ (−0.0 $\sigma$ )	$H(2.33)$	236.10	$236.13 \pm 0.69$ (−0.1 $\sigma$ )
$A_{143}^{PS}$	41.2	$39 \pm 8$ (−0.2 $\sigma$ )	$D_{40}$	1225.9	$1226 \pm 12$ (−0.1 $\sigma$ )	$D_M(2.33)$	5765.3	$5765 \pm 10$ (−0.4 $\sigma$ )
$A_{217}^{PS}$	102.2	$103 \pm 10$ (+0.1 $\sigma$ )	$D_{220}$	5721.9	$5722 \pm 40$ (+0.3 $\sigma$ )	$f\sigma_8(0.15)$	0.4566	$0.4567 \pm 0.0062$ (−0.3 $\sigma$ )
$A_{217}^{CIB}$	44.3	$40 \pm 7$ (−0.2 $\sigma$ )	$D_{810}$	2535.9	$2535 \pm 14$ (+0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7473	$0.7472 \pm 0.0054$ (−0.1 $\sigma$ )
$A_{143}^{tSZ}$	6.54	$3.9^{+2.0}_{-2.5}$ (+0.1 $\sigma$ )	$D_{1420}$	816.17	$816.0 \pm 4.9$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4747	$0.4747 \pm 0.0051$ (−0.3 $\sigma$ )
$r_{143 \times 217}^{PS}$	0.612	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$D_{2000}$	230.41	$230.3 \pm 1.6$ (+0.4 $\sigma$ )	$\sigma_8(0.38)$	0.66234	$0.6623^{+0.0044}_{-0.0050}$ (−0.1 $\sigma$ )
$r_{143 \times 217}^{CIB}$	0.792	$0.55^{+0.40}_{-0.18}$ (−0.1 $\sigma$ )	$n_{s,0.002}$	0.96639	$0.9662 \pm 0.0041$ (+0.2 $\sigma$ )	$f\sigma_8(0.51)$	0.47318	$0.4732 \pm 0.0045$ (−0.3 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.18	—	$Y_P$	0.245372	$0.245370^{+0.000065}_{-0.000055}$ (+0.6 $\sigma$ )	$\sigma_8(0.51)$	0.61980	$0.6197^{+0.0041}_{-0.0047}$ (−0.1 $\sigma$ )
$A^{kSZ}$	0.05	$4.7^{+2.1}_{-4.1}$ (−0.1 $\sigma$ )	$Y_P^{BBN}$	0.246698	$0.246697^{+0.000065}_{-0.000055}$ (+0.6 $\sigma$ )	$f\sigma_8(0.61)$	0.46814	$0.4681 \pm 0.0041$ (−0.2 $\sigma$ )
$A_{100}^{dust}$	1.004	$1.01 \pm 0.20$ (−0.0 $\sigma$ )	$10^5 D/H$	2.5966	$2.597^{+0.027}_{-0.030}$ (−0.6 $\sigma$ )	$\sigma_8(0.61)$	0.58973	$0.5896^{+0.0040}_{-0.0045}$ (−0.0 $\sigma$ )
$A_{143}^{dust}$	0.969	$0.96 \pm 0.17$ (−0.1 $\sigma$ )	Age/Gyr	13.8020	$13.802 \pm 0.023$ (−0.5 $\sigma$ )	$f\sigma_8(2.33)$	0.29731	$0.2973^{+0.0020}_{-0.0023}$ (+0.0 $\sigma$ )
$A_{217}^{dust}$	0.972	$0.97 \pm 0.11$ (+0.1 $\sigma$ )	$z_*$	1089.941	$1089.95 \pm 0.25$ (−0.6 $\sigma$ )	$\sigma_8(2.33)$	0.30647	$0.3064^{+0.0022}_{-0.0025}$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{dust}$	1.006	$1.03 \pm 0.16$ (+0.0 $\sigma$ )	$r_*$	144.632	$144.62 \pm 0.27$ (−0.0 $\sigma$ )	$f_{2000}^{143}$	30.04	$29.6 \pm 2.8$ (−0.4 $\sigma$ )
$c_{100}$	0.99767	$0.9976 \pm 0.0010$ (+0.1 $\sigma$ )	$100\theta_*$	1.041072	$1.04109 \pm 0.00031$ (−0.1 $\sigma$ )	$f_{2000}^{217}$	106.79	$106.8 \pm 1.9$ (−0.3 $\sigma$ )
$c_{217}$	1.00131	$1.0011 \pm 0.0016$ (−0.0 $\sigma$ )	$D_M(z_*)/\text{Gpc}$	13.8926	$13.891 \pm 0.025$ (−0.0 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.12	$32.1 \pm 2.0$ (−0.4 $\sigma$ )
$c_{TE}$	0.99666	$0.9966 \pm 0.0049$	$z_{drag}$	1059.742	$1059.76 \pm 0.32$ (+0.6 $\sigma$ )	$\chi_{lensing}^2$	8.858	$9.30 \pm 0.71$ (−0.2 $\sigma$ )
$c_{EE}$	0.99231	$0.9921 \pm 0.0049$	$r_{drag}$	147.318	$147.31 \pm 0.27$ (−0.2 $\sigma$ )	$\chi_{simall}^2$	396.07	$397.0 \pm 1.7$ (−0.0 $\sigma$ )
$H_0$	67.50	$67.50 \pm 0.51$ (+0.3 $\sigma$ )	$k_D$	0.140585	$0.14060 \pm 0.00032$ (+0.4 $\sigma$ )	$\chi_{lowl}^2$	23.03	$23.13 \pm 0.83$ (−0.2 $\sigma$ )
$\Omega_\Lambda$	0.6876	$0.6873 \pm 0.0070$ (+0.3 $\sigma$ )	$100\theta_D$	0.160852	$0.16086 \pm 0.00019$ (−0.7 $\sigma$ )	$\chi_{CamSpec}^2$	11499.5	$11514.2 \pm 5.6$ (+864.2 $\sigma$ )
$\Omega_m$	0.3124	$0.3127 \pm 0.0070$ (−0.3 $\sigma$ )	$z_{eq}$	3386.4	$3387 \pm 26$ (−0.2 $\sigma$ )	$\chi_{JLA}^2$	1035.104	$1035.21 \pm 0.42$ (−0.3 $\sigma$ )
$\Omega_m h^2$	0.14235	$0.1424 \pm 0.0011$ (−0.2 $\sigma$ )	$k_{eq}$	0.010336	$0.010339 \pm 0.000079$ (−0.2 $\sigma$ )	$\chi_{prior}^2$	2.17	$7.8 \pm 3.5$ (+0.1 $\sigma$ )
$\Omega_m h^3$	0.096094	$0.09611 \pm 0.00031$ (+0.4 $\sigma$ )	$100\theta_{eq}$	0.81594	$0.8158 \pm 0.0049$ (+0.2 $\sigma$ )	$\chi_{CMB}^2$	11927.5	$11943.6 \pm 5.8$ (+831.7 $\sigma$ )
$\sigma_8$	0.8088	$0.8088 \pm 0.0060$ (−0.2 $\sigma$ )	$100\theta_{s,eq}$	0.45080	$0.4507 \pm 0.0025$ (+0.2 $\sigma$ )			
$S_8$	0.8254	$0.826 \pm 0.012$ (−0.3 $\sigma$ )	$H(0.15)$	72.794	$72.79 \pm 0.44$ (+0.3 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 12964.78$ ;  $\Delta\chi_{eff}^2 = 4448.76$ ;  $\bar{\chi}_{eff}^2 = 12986.66$ ;  $\Delta\bar{\chi}_{eff}^2 = 4451.03$ ;  $R - 1 = 0.01285$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.86 ( $\Delta$  -0.02) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.07 ( $\Delta$  0.02) commander\_dx12.v3.2.29: 23.03 ( $\Delta$  -0.20) CamSpec like\_10.7HM\_1400\_unified: 11499.55 SN - JLA Pantheon18: 1035.10 ( $\Delta$  -0.19)



2.134 base\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_JLA\_Riess18

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02241 \pm 0.00014 \quad (+0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6005 \pm 0.0056 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1522.4 \pm 6.7 \quad (+0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.11833 \pm 0.00089 \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.9792 \pm 0.0083 \quad (+0.1\sigma)$	$H(0.51)$	$89.91 \pm 0.21 \quad (-0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04107^{+0.00031}_{-0.00028} \quad (-0.3\sigma)$	$r_{\mathrm{drag}}h$	$100.34 \pm 0.68 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1973.1 \pm 7.9 \quad (+0.1\sigma)$
$\tau$	$0.0576^{+0.0069}_{-0.0078} \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.423 \pm 0.020 \quad (+0.1\sigma)$	$H(0.61)$	$95.48 \pm 0.18 \quad (-0.0\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046 \pm 0.015 \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.96 \pm 0.73 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2296.7 \pm 8.6 \quad (+0.1\sigma)$
$n_{\mathrm{s}}$	$0.9690 \pm 0.0037 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.104 \pm 0.031 \quad (-0.0\sigma)$	$H(2.33)$	$235.51 \pm 0.56 \quad (+0.3\sigma)$
$y_{\mathrm{cal}}$	$1.0009 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.875 \pm 0.010 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5756.2 \pm 8.6 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$237 \pm 25 \quad (-0.2\sigma)$	$D_{40}$	$1222 \pm 11 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4515 \pm 0.0053 \quad (+0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$D_{220}$	$5732 \pm 38 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7469^{+0.0052}_{-0.0058} \quad (+0.0\sigma)$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2537 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4711 \pm 0.0045 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7 \quad (-0.1\sigma)$	$D_{1420}$	$817.5 \pm 4.7 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6627 \pm 0.0049 \quad (-0.0\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+2.1}_{-2.6} \quad (+0.1\sigma)$	$D_{2000}$	$231.0 \pm 1.6 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4704 \pm 0.0042 \quad (+0.1\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.67 \pm 0.13 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9690 \pm 0.0037 \quad (-0.0\sigma)$	$\sigma_8(0.51)$	$0.6205 \pm 0.0046 \quad (-0.0\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.41}_{-0.18} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245407 \pm 0.000054 \quad (+0.4\sigma)$	$f\sigma_8(0.61)$	$0.4659 \pm 0.0039 \quad (+0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246734 \pm 0.000054 \quad (+0.4\sigma)$	$\sigma_8(0.61)$	$0.5906 \pm 0.0044 \quad (-0.0\sigma)$
$A^{\mathrm{kSZ}}$	$< 5.91 \quad (-0.2\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.579 \pm 0.026 \quad (-0.4\sigma)$	$f\sigma_8(2.33)$	$0.2980 \pm 0.0023 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19 \quad (-0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.782 \pm 0.020 \quad (-0.1\sigma)$	$\sigma_8(2.33)$	$0.3075 \pm 0.0024 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.17 \quad (-0.1\sigma)$	$z_*$	$1089.73 \pm 0.21 \quad (-0.2\sigma)$	$f_{2000}^{143}$	$29.1 \pm 2.8 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.0\sigma)$	$r_*$	$144.84 \pm 0.23 \quad (-0.4\sigma)$	$f_{2000}^{217}$	$106.5 \pm 1.9 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_*$	$1.04125^{+0.00031}_{-0.00027} \quad (-0.3\sigma)$	$f_{2000}^{143 \times 217}$	$31.7 \pm 1.9 \quad (-0.3\sigma)$
$c_{100}$	$0.9976 \pm 0.0010 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.910 \pm 0.022 \quad (-0.3\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.46 \pm 0.91 \quad (-0.2\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$z_{\mathrm{drag}}$	$1059.90 \pm 0.31 \quad (+0.4\sigma)$	$\chi_{\mathrm{simall}}^2$	$397.5 \pm 2.1 \quad (-0.1\sigma)$
$c_{TE}$	$0.9964 \pm 0.0051$	$r_{\mathrm{drag}}$	$147.50 \pm 0.25 \quad (-0.4\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.68 \pm 0.74 \quad (+0.0\sigma)$
$c_{EE}$	$0.9923 \pm 0.0050$	$k_{\mathrm{D}}$	$0.14047 \pm 0.00031 \quad (+0.5\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11515.3 \pm 6.0 \quad (+820.9\sigma)$
$H_0$	$68.03 \pm 0.39 \quad (-0.2\sigma)$	$100\theta_{\mathrm{D}}$	$0.16079 \pm 0.00018 \quad (-0.5\sigma)$	$\chi_{\mathrm{H073p45}}^2$	$10.7 \pm 1.6 \quad (+0.1\sigma)$
$\Omega_{\Lambda}$	$0.6944 \pm 0.0052 \quad (-0.2\sigma)$	$z_{\mathrm{eq}}$	$3363 \pm 21 \quad (+0.3\sigma)$	$\chi_{\mathrm{JLA}}^2$	$706.63 \pm 0.11 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3056 \pm 0.0052 \quad (+0.2\sigma)$	$k_{\mathrm{eq}}$	$0.010264 \pm 0.000063 \quad (+0.3\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.021 \pm 0.030 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14138 \pm 0.00086 \quad (+0.3\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8206 \pm 0.0038 \quad (-0.3\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.66 \pm 0.42 \quad (-0.3\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09617 \pm 0.00032 \quad (+0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4532 \pm 0.0020 \quad (-0.3\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$3.89 \pm 0.69 \quad (+0.1\sigma)$
$\sigma_8$	$0.8076 \pm 0.0061 \quad (+0.0\sigma)$	$H(0.15)$	$73.24 \pm 0.34 \quad (-0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.4 \quad (+0.0\sigma)$
$S_8$	$0.815 \pm 0.010 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$637.7 \pm 3.3 \quad (+0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11944.9 \pm 6.3 \quad (+777.2\sigma)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4464 \pm 0.0055 \quad (+0.2\sigma)$	$H(0.38)$	$83.25 \pm 0.26 \quad (-0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$5.57 \pm 0.52 \quad (-0.1\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 12675.57; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.84; R - 1 = 0.05190$$



## 2.135 base\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022352	$0.02234 \pm 0.00014$ (+0.6 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6027	$0.6028 \pm 0.0056$ (−0.1 $\sigma$ )	$D_M(0.38)$	1528.0	$1527.7 \pm 7.0$ (−0.2 $\sigma$ )
$\Omega_c h^2$	0.11901	$0.11895 \pm 0.00091$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9818	$0.9821 \pm 0.0083$ (−0.1 $\sigma$ )	$H(0.51)$	89.742	$89.75 \pm 0.22$ (+0.3 $\sigma$ )
$100\theta_{MC}$	1.040940	$1.04096 \pm 0.00030$ (−0.2 $\sigma$ )	$r_{drag}h$	99.76	$99.81 \pm 0.70$ (+0.0 $\sigma$ )	$D_M(0.51)$	1979.7	$1979.3 \pm 8.3$ (−0.2 $\sigma$ )
$\tau$	0.0546	$0.0555^{+0.0067}_{-0.0076}$ (−0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4271	$2.429 \pm 0.020$ (−0.1 $\sigma$ )	$H(0.61)$	95.348	$95.35 \pm 0.18$ (+0.3 $\sigma$ )
$\ln(10^{10} A_s)$	3.0417	$3.043^{+0.013}_{-0.015}$ (−0.0 $\sigma$ )	$z_{re}$	7.70	$7.78 \pm 0.72$ (−0.1 $\sigma$ )	$D_M(0.61)$	2303.8	$2303.4 \pm 9.0$ (−0.2 $\sigma$ )
$n_s$	0.96781	$0.9673 \pm 0.0038$ (+0.1 $\sigma$ )	$10^9 A_s$	2.0942	$2.098^{+0.028}_{-0.032}$ (−0.0 $\sigma$ )	$H(2.33)$	235.89	$235.85 \pm 0.57$ (+0.1 $\sigma$ )
$y_{cal}$	1.00063	$1.0007 \pm 0.0025$ (+0.0 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8776	$1.877 \pm 0.011$ (+0.1 $\sigma$ )	$D_M(2.33)$	5761.8	$5761.7 \pm 8.8$ (−0.3 $\sigma$ )
$A_{100}^{PS}$	231.5	$239 \pm 25$ (−0.1 $\sigma$ )	$D_{40}$	1223.2	$1225 \pm 11$ (+0.0 $\sigma$ )	$f\sigma_8(0.15)$	0.4544	$0.4544 \pm 0.0053$ (−0.1 $\sigma$ )
$A_{143}^{PS}$	47.8	$39 \pm 8$ (−0.2 $\sigma$ )	$D_{220}$	5724.2	$5726 \pm 39$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7466	$0.7470^{+0.0051}_{-0.0057}$ (−0.1 $\sigma$ )
$A_{217}^{PS}$	104.1	$103 \pm 10$ (+0.1 $\sigma$ )	$D_{810}$	2537.0	$2536 \pm 14$ (+0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.47304	$0.4731 \pm 0.0046$ (−0.1 $\sigma$ )
$A_{217}^{CIB}$	42.7	$40 \pm 7$ (−0.2 $\sigma$ )	$D_{1420}$	817.13	$816.5 \pm 4.8$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.66200	$0.6623^{+0.0045}_{-0.0050}$ (−0.1 $\sigma$ )
$A_{143}^{tSZ}$	6.37	$3.9^{+2.0}_{-2.5}$ (+0.1 $\sigma$ )	$D_{2000}$	230.78	$230.5 \pm 1.6$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.47183	$0.4719 \pm 0.0041$ (−0.1 $\sigma$ )
$r_{143 \times 217}^{PS}$	0.695	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$n_{s,0.002}$	0.96781	$0.9673 \pm 0.0038$ (+0.1 $\sigma$ )	$\sigma_8(0.51)$	0.61959	$0.6199^{+0.0042}_{-0.0047}$ (−0.1 $\sigma$ )
$r_{143 \times 217}^{CIB}$	0.875	$0.55^{+0.39}_{-0.18}$ (−0.1 $\sigma$ )	$Y_P$	0.245389	$0.245383^{+0.000060}_{-0.000051}$ (+0.6 $\sigma$ )	$f\sigma_8(0.61)$	0.46700	$0.4671 \pm 0.0039$ (−0.1 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.64	—	$Y_P^{BBN}$	0.246715	$0.246710^{+0.000060}_{-0.000051}$ (+0.6 $\sigma$ )	$\sigma_8(0.61)$	0.58960	$0.5899^{+0.0040}_{-0.0045}$ (−0.1 $\sigma$ )
$A^{kSZ}$	0.27	$4.6^{+1.6}_{-4.6}$ (−0.1 $\sigma$ )	$10^5 D/H$	2.5888	$2.591^{+0.025}_{-0.028}$ (−0.6 $\sigma$ )	$f\sigma_8(2.33)$	0.29735	$0.2975^{+0.0020}_{-0.0023}$ (−0.1 $\sigma$ )
$A_{100}^{dust}$	1.013	$1.01 \pm 0.19$ (−0.0 $\sigma$ )	Age/Gyr	13.7944	$13.794 \pm 0.020$ (−0.3 $\sigma$ )	$\sigma_8(2.33)$	0.30662	$0.3068^{+0.0022}_{-0.0025}$ (−0.0 $\sigma$ )
$A_{143}^{dust}$	0.980	$0.95 \pm 0.17$ (−0.1 $\sigma$ )	$z_*$	1089.855	$1089.86 \pm 0.22$ (−0.5 $\sigma$ )	$f_{2000}^{143}$	29.79	$29.4 \pm 2.8$ (−0.3 $\sigma$ )
$A_{217}^{dust}$	0.979	$0.97 \pm 0.11$ (+0.1 $\sigma$ )	$r_*$	144.701	$144.72 \pm 0.23$ (−0.3 $\sigma$ )	$f_{2000}^{217}$	106.48	$106.7 \pm 1.9$ (−0.3 $\sigma$ )
$A_{143 \times 217}^{dust}$	0.995	$1.03 \pm 0.16$ (−0.0 $\sigma$ )	$100\theta_*$	1.041131	$1.04115 \pm 0.00029$ (−0.2 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.90	$32.0 \pm 2.0$ (−0.3 $\sigma$ )
$c_{100}$	0.99779	$0.9976 \pm 0.0010$ (+0.1 $\sigma$ )	$D_M(z_*)/\text{Gpc}$	13.8984	$13.900 \pm 0.022$ (−0.2 $\sigma$ )	$\chi_{lensing}^2$	8.966	$9.32 \pm 0.78$ (−0.1 $\sigma$ )
$c_{217}$	1.00131	$1.0011 \pm 0.0016$ (−0.0 $\sigma$ )	$z_{drag}$	1059.818	$1059.80 \pm 0.31$ (+0.6 $\sigma$ )	$\chi_{simall}^2$	396.05	$397.1 \pm 1.8$ (−0.1 $\sigma$ )
$c_{TE}$	0.99664	$0.9966 \pm 0.0050$	$r_{drag}$	147.374	$147.40 \pm 0.24$ (−0.4 $\sigma$ )	$\chi_{lowl}^2$	22.77	$22.94 \pm 0.77$ (−0.1 $\sigma$ )
$c_{EE}$	0.99239	$0.9923 \pm 0.0049$	$k_D$	0.140556	$0.14052 \pm 0.00031$ (+0.5 $\sigma$ )	$\chi_{CamSpec}^2$	11500.2	$11514.3 \pm 5.6$ (+857.9 $\sigma$ )
$H_0$	67.695	$67.72 \pm 0.41$ (+0.2 $\sigma$ )	$100\theta_D$	0.160819	$0.16084 \pm 0.00019$ (−0.7 $\sigma$ )	$\chi_{JLA}^2$	1034.980	$1035.03 \pm 0.26$ (−0.1 $\sigma$ )
$\Omega_\Lambda$	0.6901	$0.6904 \pm 0.0055$ (+0.1 $\sigma$ )	$z_{eq}$	3378.1	$3377 \pm 21$ (+0.1 $\sigma$ )	$\chi_{6DF}^2$	0.0218	$0.040 \pm 0.050$ (−0.1 $\sigma$ )
$\Omega_m$	0.3099	$0.3096 \pm 0.0055$ (−0.1 $\sigma$ )	$k_{eq}$	0.010310	$0.010306 \pm 0.000064$ (+0.1 $\sigma$ )	$\chi_{MGS}^2$	1.279	$1.36 \pm 0.40$ (+0.0 $\sigma$ )
$\Omega_m h^2$	0.14201	$0.14194 \pm 0.00088$ (+0.1 $\sigma$ )	$100\theta_{eq}$	0.81759	$0.8179 \pm 0.0039$ (−0.0 $\sigma$ )	$\chi_{DR12BAO}^2$	4.23	$4.5 \pm 1.1$ (−0.1 $\sigma$ )
$\Omega_m h^3$	0.096132	$0.09612 \pm 0.00031$ (+0.4 $\sigma$ )	$100\theta_{s,eq}$	0.45163	$0.4518 \pm 0.0020$ (−0.1 $\sigma$ )	$\chi_{prior}^2$	2.02	$7.8 \pm 3.4$ (+0.1 $\sigma$ )
$\sigma_8$	0.8078	$0.8082 \pm 0.0060$ (−0.1 $\sigma$ )	$H(0.15)$	72.958	$72.98 \pm 0.35$ (+0.2 $\sigma$ )	$\chi_{CMB}^2$	11928.0	$11943.7 \pm 5.8$ (+827.3 $\sigma$ )
$S_8$	0.8210	$0.821 \pm 0.010$ (−0.1 $\sigma$ )	$D_M(0.15)$	640.53	$640.4 \pm 3.5$ (−0.2 $\sigma$ )	$\chi_{BAO}^2$	5.530	$5.88 \pm 0.87$ (−0.1 $\sigma$ )
$\sigma_8 \Omega_m^{0.5}$	0.4497	$0.4497 \pm 0.0057$ (−0.1 $\sigma$ )	$H(0.38)$	83.041	$83.05 \pm 0.26$ (+0.2 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 12970.49$ ;  $\Delta\chi_{\text{eff}}^2 = 4448.61$ ;  $\bar{\chi}_{\text{eff}}^2 = 12992.39$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4450.90$ ;  $R - 1 = 0.01438$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 ( $\Delta$  0.00) MGS: 1.28 ( $\Delta$  0.00) DR12BAO: 4.23 ( $\Delta$  0.05) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8: 8.97 ( $\Delta$  -0.05) simall\_100x143.offlike5\_EE\_Aplanck: 396.05 ( $\Delta$  -0.19) commander\_dx12\_v3.2\_29: 22.77 ( $\Delta$  -0.08) CamSpec like\_10.7HM\_1400\_unified: 11500.17 SN - JLA Pantheon18: 1034.98 ( $\Delta$  -0.01)



2.136 base\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_Pantheon18\_Riess18

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02241 \pm 0.00014 \quad (+0.4\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6002 \pm 0.0055 \quad (+0.0\sigma)$	$D_{\text{M}}(0.38)$	$1522.2 \pm 6.6 \quad (+0.1\sigma)$
$\Omega_{\text{c}}h^2$	$0.11830 \pm 0.00086 \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.9789 \pm 0.0082 \quad (-0.0\sigma)$	$H(0.51)$	$89.91 \pm 0.20 \quad (-0.0\sigma)$
$100\theta_{\text{MC}}$	$1.04107 \pm 0.00030 \quad (-0.3\sigma)$	$r_{\text{drag}}h$	$100.35 \pm 0.67 \quad (-0.2\sigma)$	$D_{\text{M}}(0.51)$	$1972.9 \pm 7.8 \quad (+0.1\sigma)$
$\tau$	$0.0575 \pm 0.0074 \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.423 \pm 0.020 \quad (+0.0\sigma)$	$H(0.61)$	$95.48 \pm 0.17 \quad (+0.0\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.046 \pm 0.015 \quad (-0.1\sigma)$	$z_{\text{re}}$	$7.95 \pm 0.72 \quad (-0.1\sigma)$	$D_{\text{M}}(0.61)$	$2296.5 \pm 8.4 \quad (+0.1\sigma)$
$n_{\text{s}}$	$0.9689 \pm 0.0037 \quad (-0.1\sigma)$	$10^9 A_{\text{s}}$	$2.104^{+0.029}_{-0.032} \quad (-0.1\sigma)$	$H(2.33)$	$235.49 \pm 0.54 \quad (+0.3\sigma)$
$y_{\text{cal}}$	$1.0009 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.875 \pm 0.010 \quad (+0.1\sigma)$	$D_{\text{M}}(2.33)$	$5756.0 \pm 8.4 \quad (-0.1\sigma)$
$A_{100}^{\text{PS}}$	$237 \pm 24 \quad (-0.2\sigma)$	$D_{40}$	$1223 \pm 11 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4513 \pm 0.0051 \quad (+0.1\sigma)$
$A_{143}^{\text{PS}}$	$39 \pm 8 \quad (-0.1\sigma)$	$D_{220}$	$5733 \pm 38 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.7467 \pm 0.0055 \quad (-0.1\sigma)$
$A_{217}^{\text{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2537 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4709 \pm 0.0044 \quad (+0.0\sigma)$
$A_{217}^{\text{CIB}}$	$39 \pm 7 \quad (-0.1\sigma)$	$D_{1420}$	$817.4 \pm 4.7 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6626^{+0.0046}_{-0.0051} \quad (-0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$4.0^{+2.0}_{-2.5} \quad (+0.1\sigma)$	$D_{2000}$	$230.9 \pm 1.6 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4702 \pm 0.0041 \quad (+0.0\sigma)$
$r_{143 \times 217}^{\text{PS}}$	$0.67 \pm 0.13 \quad (+0.1\sigma)$	$n_{\text{s},0.002}$	$0.9689 \pm 0.0037 \quad (-0.1\sigma)$	$\sigma_8(0.51)$	$0.6203^{+0.0043}_{-0.0048} \quad (-0.1\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	$0.55^{+0.40}_{-0.18} \quad (-0.1\sigma)$	$Y_{\text{P}}$	$0.245409^{+0.000055}_{-0.000048} \quad (+0.4\sigma)$	$f\sigma_8(0.61)$	$0.4658 \pm 0.0039 \quad (-0.0\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.246736^{+0.000056}_{-0.000048} \quad (+0.4\sigma)$	$\sigma_8(0.61)$	$0.5904^{+0.0041}_{-0.0046} \quad (-0.1\sigma)$
$A^{\text{kSZ}}$	$< 6.06 \quad (-0.1\sigma)$	$10^5 \text{D}/\text{H}$	$2.579 \pm 0.025 \quad (-0.4\sigma)$	$f\sigma_8(2.33)$	$0.2980^{+0.0021}_{-0.0023} \quad (-0.1\sigma)$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.19 \quad (-0.1\sigma)$	$\text{Age}/\text{Gyr}$	$13.782 \pm 0.019 \quad (-0.1\sigma)$	$\sigma_8(2.33)$	$0.3074^{+0.0022}_{-0.0025} \quad (-0.1\sigma)$
$A_{143}^{\text{dust}}$	$0.95 \pm 0.17 \quad (-0.1\sigma)$	$z_*$	$1089.72 \pm 0.20 \quad (-0.3\sigma)$	$f_{2000}^{143}$	$29.1 \pm 2.8 \quad (-0.3\sigma)$
$A_{217}^{\text{dust}}$	$0.98 \pm 0.11 \quad (+0.0\sigma)$	$r_*$	$144.84 \pm 0.22 \quad (-0.4\sigma)$	$f_{2000}^{217}$	$106.5 \pm 1.9 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.17 \quad (-0.0\sigma)$	$100\theta_*$	$1.04125 \pm 0.00030 \quad (-0.3\sigma)$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.0 \quad (-0.3\sigma)$
$c_{100}$	$0.9976 \pm 0.0010 \quad (+0.0\sigma)$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.910 \pm 0.021 \quad (-0.3\sigma)$	$\chi_{\text{lensing}}^2$	$9.47 \pm 0.93 \quad (-0.2\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$z_{\text{drag}}$	$1059.90 \pm 0.30 \quad (+0.4\sigma)$	$\chi_{\text{simall}}^2$	$397.5 \pm 2.1 \quad (-0.1\sigma)$
$c_{TE}$	$0.9965 \pm 0.0050$	$r_{\text{drag}}$	$147.50 \pm 0.24 \quad (-0.4\sigma)$	$\chi_{\text{lowl}}^2$	$22.70 \pm 0.73 \quad (+0.0\sigma)$
$c_{EE}$	$0.9923 \pm 0.0049$	$k_{\text{D}}$	$0.14047 \pm 0.00030 \quad (+0.5\sigma)$	$\chi_{\text{CamSpec}}^2$	$11515.1 \pm 5.7 \quad (+829.3\sigma)$
$H_0$	$68.04 \pm 0.39 \quad (-0.1\sigma)$	$100\theta_{\text{D}}$	$0.16078 \pm 0.00018 \quad (-0.5\sigma)$	$\chi_{\text{H073p45}}^2$	$10.7 \pm 1.5 \quad (+0.1\sigma)$
$\Omega_{\Lambda}$	$0.6946 \pm 0.0051 \quad (-0.1\sigma)$	$z_{\text{eq}}$	$3363 \pm 20 \quad (+0.2\sigma)$	$\chi_{\text{JLA}}^2$	$1034.87 \pm 0.16 \quad (+0.0\sigma)$
$\Omega_{\text{m}}$	$0.3054 \pm 0.0051 \quad (+0.1\sigma)$	$k_{\text{eq}}$	$0.010263 \pm 0.000061 \quad (+0.2\sigma)$	$\chi_{6\text{DF}}^2$	$0.019 \pm 0.028 \quad (-0.2\sigma)$
$\Omega_{\text{m}}h^2$	$0.14136 \pm 0.00083 \quad (+0.2\sigma)$	$100\theta_{\text{eq}}$	$0.8207 \pm 0.0037 \quad (-0.2\sigma)$	$\chi_{\text{MGS}}^2$	$1.67 \pm 0.40 \quad (-0.2\sigma)$
$\Omega_{\text{m}}h^3$	$0.09617 \pm 0.00030 \quad (+0.2\sigma)$	$100\theta_{\text{s,eq}}$	$0.4532 \pm 0.0019 \quad (-0.2\sigma)$	$\chi_{\text{DR12BAO}}^2$	$3.87 \pm 0.66 \quad (+0.0\sigma)$
$\sigma_8$	$0.8074 \pm 0.0061 \quad (-0.1\sigma)$	$H(0.15)$	$73.25 \pm 0.33 \quad (-0.1\sigma)$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$S_8$	$0.8147 \pm 0.0099 \quad (+0.1\sigma)$	$D_{\text{M}}(0.15)$	$637.7 \pm 3.3 \quad (+0.1\sigma)$	$\chi_{\text{CMB}}^2$	$11944.7 \pm 6.0 \quad (+791.7\sigma)$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4462 \pm 0.0054 \quad (+0.1\sigma)$	$H(0.38)$	$83.26 \pm 0.25 \quad (-0.0\sigma)$	$\chi_{\text{BAO}}^2$	$5.56 \pm 0.49 \quad (-0.1\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 13003.64; \Delta\bar{\chi}_{\text{eff}}^2 = 4450.83; R - 1 = 0.02217$$



## 2.137 base\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02230 \pm 0.00015 \quad (+0.7\sigma)$	$S_8$	$0.828 \pm 0.013 \quad (-0.4\sigma)$	$100\theta_{s,eq}$	$0.4503 \pm 0.0026 \quad (+0.3\sigma)$
$\Omega_c h^2$	$0.1196 \pm 0.0012 \quad (-0.3\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4535 \pm 0.0070 \quad (-0.4\sigma)$	$H(0.15)$	$72.72 \pm 0.46 \quad (+0.5\sigma)$
$100\theta_{MC}$	$1.04087 \pm 0.00031 \quad (+0.0\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6060 \pm 0.0064 \quad (-0.4\sigma)$	$D_M(0.15)$	$642.9 \pm 4.6 \quad (-0.4\sigma)$
$\tau$	$0.0547^{+0.0050}_{-0.0080} \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9862 \pm 0.0090 \quad (-0.4\sigma)$	$H(0.38)$	$82.87 \pm 0.34 \quad (+0.5\sigma)$
$\ln(10^{10} A_s)$	$3.043^{+0.011}_{-0.015} \quad (+0.1\sigma)$	$r_{drag} h$	$99.29 \pm 0.92 \quad (+0.4\sigma)$	$D_M(0.38)$	$1532.8 \pm 9.2 \quad (-0.5\sigma)$
$n_s$	$0.9658 \pm 0.0042 \quad (+0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.439 \pm 0.021 \quad (-0.3\sigma)$	$H(0.51)$	$89.61 \pm 0.27 \quad (+0.5\sigma)$
$y_{cal}$	$1.0005 \pm 0.0025 \quad (+0.1\sigma)$	$z_{re}$	$7.71^{+0.55}_{-0.78} \quad (+0.0\sigma)$	$D_M(0.51)$	$1985 \pm 11 \quad (-0.5\sigma)$
$A_{100}^{PS}$	$239 \pm 24 \quad (-0.1\sigma)$	$10^9 A_s$	$2.096^{+0.023}_{-0.031} \quad (+0.1\sigma)$	$H(0.61)$	$95.24 \pm 0.22 \quad (+0.5\sigma)$
$A_{143}^{PS}$	$39 \pm 8 \quad (-0.2\sigma)$	$10^9 A_s e^{-2\tau}$	$1.879 \pm 0.011 \quad (-0.1\sigma)$	$D_M(0.61)$	$2310 \pm 12 \quad (-0.5\sigma)$
$A_{217}^{PS}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{40}$	$1227 \pm 12 \quad (-0.1\sigma)$	$H(2.33)$	$236.23 \pm 0.72 \quad (-0.2\sigma)$
$A_{217}^{CIB}$	$40 \pm 7 \quad (-0.2\sigma)$	$D_{220}$	$5720 \pm 40 \quad (+0.3\sigma)$	$D_M(2.33)$	$5766 \pm 10 \quad (-0.5\sigma)$
$A_{143}^{tSZ}$	$3.9^{+1.9}_{-2.5} \quad (+0.1\sigma)$	$D_{810}$	$2535 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4579 \pm 0.0065 \quad (-0.4\sigma)$
$r_{143 \times 217}^{PS}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$D_{1420}$	$815.7 \pm 4.9 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7480^{+0.0047}_{-0.0055} \quad (-0.2\sigma)$
$r_{143 \times 217}^{CIB}$	$0.55^{+0.39}_{-0.18} \quad (-0.1\sigma)$	$D_{2000}$	$230.3 \pm 1.6 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4757 \pm 0.0052 \quad (-0.4\sigma)$
$\xi^{tSZ \times CIB}$	—	$n_{s,0.002}$	$0.9658 \pm 0.0042 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6628^{+0.0039}_{-0.0049} \quad (-0.1\sigma)$
$A^{kSZ}$	$4.7^{+2.3}_{-3.9} \quad (-0.1\sigma)$	$Y_P$	$0.245365^{+0.000066}_{-0.000057} \quad (+0.7\sigma)$	$f\sigma_8(0.51)$	$0.4741 \pm 0.0046 \quad (-0.4\sigma)$
$A_{100}^{dust}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$Y_P^{BBN}$	$0.246691^{+0.000066}_{-0.000057} \quad (+0.7\sigma)$	$\sigma_8(0.51)$	$0.6202^{+0.0036}_{-0.0046} \quad (-0.1\sigma)$
$A_{143}^{dust}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$10^5 D/H$	$2.599 \pm 0.029 \quad (-0.7\sigma)$	$f\sigma_8(0.61)$	$0.4689 \pm 0.0041 \quad (-0.4\sigma)$
$A_{217}^{dust}$	$0.97 \pm 0.11 \quad (+0.1\sigma)$	$Age/Gyr$	$13.804 \pm 0.023 \quad (-0.5\sigma)$	$\sigma_8(0.61)$	$0.5900^{+0.0034}_{-0.0044} \quad (-0.1\sigma)$
$A_{143 \times 217}^{dust}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$z_*$	$1089.98 \pm 0.26 \quad (-0.7\sigma)$	$f\sigma_8(2.33)$	$0.2974^{+0.0017}_{-0.0023} \quad (+0.0\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$r_*$	$144.58 \pm 0.27 \quad (+0.1\sigma)$	$\sigma_8(2.33)$	$0.3065^{+0.0018}_{-0.0025} \quad (+0.1\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$100\theta_*$	$1.04107 \pm 0.00031 \quad (-0.0\sigma)$	$f_{2000}^{143}$	$29.7 \pm 2.8 \quad (-0.4\sigma)$
$c_{TE}$	$0.9965 \pm 0.0049$	$D_M(z_*)/Gpc$	$13.888 \pm 0.026 \quad (+0.1\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.9 \quad (-0.3\sigma)$
$c_{EE}$	$0.9921 \pm 0.0049$	$z_{drag}$	$1059.74 \pm 0.32 \quad (+0.7\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 2.0 \quad (-0.4\sigma)$
$H_0$	$67.42 \pm 0.53 \quad (+0.4\sigma)$	$r_{drag}$	$147.27 \pm 0.28 \quad (-0.1\sigma)$	$\chi^2_{lensing}$	$9.26 \pm 0.65 \quad (-0.3\sigma)$
$\Omega_\Lambda$	$0.6862 \pm 0.0073 \quad (+0.4\sigma)$	$k_D$	$0.14062 \pm 0.00033 \quad (+0.3\sigma)$	$\chi^2_{small}$	$396.9 \pm 1.7 \quad (+0.0\sigma)$
$\Omega_m$	$0.3138 \pm 0.0073 \quad (-0.4\sigma)$	$100\theta_D$	$0.16086 \pm 0.00019 \quad (-0.7\sigma)$	$\chi^2_{lowl}$	$23.21 \pm 0.86 \quad (-0.3\sigma)$
$\Omega_m h^2$	$0.1426 \pm 0.0011 \quad (-0.3\sigma)$	$z_{eq}$	$3391 \pm 27 \quad (-0.3\sigma)$	$\chi^2_{CamSpec}$	$11514.0 \pm 5.5 \quad (+873.1\sigma)$
$\Omega_m h^3$	$0.09611 \pm 0.00031 \quad (+0.4\sigma)$	$k_{eq}$	$0.010351 \pm 0.000082 \quad (-0.3\sigma)$	$\chi^2_{prior}$	$7.9 \pm 3.5 \quad (+0.1\sigma)$
$\sigma_8$	$0.8097^{+0.0054}_{-0.0060} \quad (-0.3\sigma)$	$100\theta_{eq}$	$0.8150 \pm 0.0051 \quad (+0.3\sigma)$	$\chi^2_{CMB}$	$11943.4 \pm 5.7 \quad (+844.3\sigma)$

$$\bar{\chi}^2_{eff} = 11951.25; \Delta\bar{\chi}^2_{eff} = 4451.24; R - 1 = 0.00847$$



# 2.138 base\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02234 \pm 0.00014 \quad (+0.6\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6035 \pm 0.0056 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1528.4 \pm 7.2 \quad (-0.2\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.11904 \pm 0.00093 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9831 \pm 0.0081 \quad (-0.2\sigma)$	$H(0.51)$	$89.73 \pm 0.22 \quad (+0.3\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04095 \pm 0.00030 \quad (-0.2\sigma)$	$r_{\mathrm{drag}}h$	$99.74 \pm 0.72 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1980.1 \pm 8.5 \quad (-0.2\sigma)$
$\tau$	$0.0559^{+0.0055}_{-0.0077} \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.020 \quad (-0.1\sigma)$	$H(0.61)$	$95.34 \pm 0.18 \quad (+0.3\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044^{+0.012}_{-0.015} \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.82^{+0.58}_{-0.76} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2304.3 \pm 9.2 \quad (-0.2\sigma)$
$n_{\mathrm{s}}$	$0.9671 \pm 0.0038 \quad (+0.1\sigma)$	$10^9 A_{\mathrm{s}}$	$2.099^{+0.024}_{-0.032} \quad (-0.0\sigma)$	$H(2.33)$	$235.90 \pm 0.58 \quad (+0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.011 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5762.4 \pm 9.0 \quad (-0.3\sigma)$
$A_{100}^{\mathrm{PS}}$	$239 \pm 24 \quad (-0.1\sigma)$	$D_{40}$	$1225 \pm 11 \quad (+0.0\sigma)$	$f\sigma_8(0.15)$	$0.4551 \pm 0.0054 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$D_{220}$	$5725 \pm 40 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7474^{+0.0046}_{-0.0056} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2536 \pm 14 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4737 \pm 0.0045 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7 \quad (-0.2\sigma)$	$D_{1420}$	$816.3 \pm 4.9 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6627^{+0.0039}_{-0.0050} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+2.0}_{-2.5} \quad (+0.1\sigma)$	$D_{2000}$	$230.5 \pm 1.6 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4724 \pm 0.0041 \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9671 \pm 0.0038 \quad (+0.1\sigma)$	$\sigma_8(0.51)$	$0.6202^{+0.0037}_{-0.0047} \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.39}_{-0.19} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245381^{+0.000061}_{-0.000052} \quad (+0.6\sigma)$	$f\sigma_8(0.61)$	$0.4676 \pm 0.0038 \quad (-0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246707^{+0.000061}_{-0.000052} \quad (+0.6\sigma)$	$\sigma_8(0.61)$	$0.5902^{+0.0035}_{-0.0045} \quad (-0.1\sigma)$
$A^{\mathrm{kSZ}}$	$4.6^{+1.7}_{-4.5} \quad (-0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.592^{+0.025}_{-0.028} \quad (-0.6\sigma)$	$f\sigma_8(2.33)$	$0.2976^{+0.0018}_{-0.0023} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19 \quad (-0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.796 \pm 0.020 \quad (-0.4\sigma)$	$\sigma_8(2.33)$	$0.3069^{+0.0019}_{-0.0025} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.17 \quad (-0.1\sigma)$	$z_*$	$1089.88 \pm 0.22 \quad (-0.5\sigma)$	$f_{2000}^{143}$	$29.5 \pm 2.8 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.11 \quad (+0.1\sigma)$	$r_*$	$144.70 \pm 0.23 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$106.7 \pm 1.9 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_*$	$1.04114 \pm 0.00030 \quad (-0.2\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.0 \quad (-0.3\sigma)$
$c_{100}$	$0.9976 \pm 0.0010 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.899 \pm 0.022 \quad (-0.2\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.26 \pm 0.68 \quad (-0.1\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$z_{\mathrm{drag}}$	$1059.79 \pm 0.32 \quad (+0.6\sigma)$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.8 \quad (-0.1\sigma)$
$c_{TE}$	$0.9966 \pm 0.0050$	$r_{\mathrm{drag}}$	$147.38 \pm 0.24 \quad (-0.3\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.98 \pm 0.78 \quad (-0.1\sigma)$
$c_{EE}$	$0.9923 \pm 0.0049$	$k_{\mathrm{D}}$	$0.14054 \pm 0.00031 \quad (+0.5\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11514.2 \pm 5.5 \quad (+861.2\sigma)$
$H_0$	$67.68 \pm 0.42 \quad (+0.2\sigma)$	$100\theta_{\mathrm{D}}$	$0.16084 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.045 \pm 0.055 \quad (-0.2\sigma)$
$\Omega_{\Lambda}$	$0.6898 \pm 0.0056 \quad (+0.1\sigma)$	$z_{\mathrm{eq}}$	$3379 \pm 21 \quad (+0.0\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.32 \pm 0.40 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3102 \pm 0.0056 \quad (-0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010312 \pm 0.000065 \quad (+0.0\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.2 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14203 \pm 0.00089 \quad (+0.0\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8175 \pm 0.0040 \quad (+0.0\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.5 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09611 \pm 0.00031 \quad (+0.4\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4516 \pm 0.0021 \quad (-0.0\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11943.5 \pm 5.7 \quad (+836.7\sigma)$
$\sigma_8$	$0.8087^{+0.0052}_{-0.0062} \quad (-0.1\sigma)$	$H(0.15)$	$72.94 \pm 0.36 \quad (+0.2\sigma)$	$\chi_{\mathrm{BAO}}^2$	$5.97 \pm 0.95 \quad (-0.1\sigma)$
$S_8$	$0.822 \pm 0.010 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$640.7 \pm 3.6 \quad (-0.2\sigma)$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4504 \pm 0.0057 \quad (-0.1\sigma)$	$H(0.38)$	$83.03 \pm 0.27 \quad (+0.2\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11957.26; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.93; R - 1 = 0.01434$$



### 2.139 base\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02240 \pm 0.00014 \quad (+0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4472 \pm 0.0065 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$638.2 \pm 4.3 \quad (+0.2\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1184 \pm 0.0011 \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6011 \pm 0.0061 \quad (+0.1\sigma)$	$H(0.38)$	$83.22 \pm 0.32 \quad (-0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04105 \pm 0.00032 \quad (-0.4\sigma)$	$\sigma_8/h^{0.5}$	$0.9801 \pm 0.0086 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1523.3 \pm 8.6 \quad (+0.2\sigma)$
$\tau$	$0.0576^{+0.0061}_{-0.0082} \quad (-0.2\sigma)$	$r_{\mathrm{drag}}h$	$100.24 \pm 0.88 \quad (-0.2\sigma)$	$H(0.51)$	$89.88 \pm 0.26 \quad (-0.1\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.047^{+0.013}_{-0.016} \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.425^{+0.019}_{-0.022} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1974 \pm 10 \quad (+0.2\sigma)$
$n_{\mathrm{s}}$	$0.9686 \pm 0.0040 \quad (-0.1\sigma)$	$z_{\mathrm{re}}$	$7.97^{+0.63}_{-0.79} \quad (-0.2\sigma)$	$H(0.61)$	$95.46 \pm 0.21 \quad (-0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0009 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.105^{+0.026}_{-0.033} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2298 \pm 11 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$238 \pm 24 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.876 \pm 0.010 \quad (+0.2\sigma)$	$H(2.33)$	$235.58 \pm 0.69 \quad (+0.3\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.1\sigma)$	$D_{40}$	$1223 \pm 11 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5756.9 \pm 9.9 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$D_{220}$	$5732 \pm 39 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4522 \pm 0.0061 \quad (+0.2\sigma)$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7 \quad (-0.1\sigma)$	$D_{810}$	$2537 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7472^{+0.0047}_{-0.0057} \quad (-0.0\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+2.0}_{-2.5} \quad (+0.1\sigma)$	$D_{1420}$	$817.2 \pm 4.8 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4716 \pm 0.0050 \quad (+0.1\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$D_{2000}$	$230.9 \pm 1.6 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6629^{+0.0041}_{-0.0051} \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.40}_{-0.19} \quad (-0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9686 \pm 0.0040 \quad (-0.1\sigma)$	$f\sigma_8(0.51)$	$0.4708 \pm 0.0044 \quad (+0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.245405^{+0.000059}_{-0.000050} \quad (+0.3\sigma)$	$\sigma_8(0.51)$	$0.6206^{+0.0038}_{-0.0048} \quad (-0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 6.14 \quad (-0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246732^{+0.000060}_{-0.000051} \quad (+0.3\sigma)$	$f\sigma_8(0.61)$	$0.4663 \pm 0.0040 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19 \quad (-0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.580^{+0.025}_{-0.028} \quad (-0.3\sigma)$	$\sigma_8(0.61)$	$0.5906^{+0.0037}_{-0.0046} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.17 \quad (-0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.784 \pm 0.022 \quad (-0.0\sigma)$	$f\sigma_8(2.33)$	$0.2980^{+0.0019}_{-0.0024} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.11 \quad (+0.0\sigma)$	$z_*$	$1089.75 \pm 0.24 \quad (-0.2\sigma)$	$\sigma_8(2.33)$	$0.3075^{+0.0020}_{-0.0026} \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.17 \quad (-0.0\sigma)$	$r_*$	$144.81 \pm 0.27 \quad (-0.4\sigma)$	$f_{2000}^{143}$	$29.2 \pm 2.8 \quad (-0.2\sigma)$
$c_{100}$	$0.9976 \pm 0.0010 \quad (+0.0\sigma)$	$100\theta_*$	$1.04123 \pm 0.00032 \quad (-0.4\sigma)$	$f_{2000}^{217}$	$106.5 \pm 1.9 \quad (-0.2\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.908 \pm 0.025 \quad (-0.3\sigma)$	$f_{2000}^{143 \times 217}$	$31.8 \pm 2.0 \quad (-0.2\sigma)$
$c_{TE}$	$0.9965 \pm 0.0051$	$z_{\mathrm{drag}}$	$1059.89 \pm 0.31 \quad (+0.4\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.41 \pm 0.85 \quad (-0.3\sigma)$
$c_{EE}$	$0.9922 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.47 \pm 0.28 \quad (-0.4\sigma)$	$\chi_{\mathrm{small}}^2$	$397.5 \pm 2.2 \quad (-0.2\sigma)$
$H_0$	$67.97 \pm 0.51 \quad (-0.2\sigma)$	$k_{\mathrm{D}}$	$0.14049 \pm 0.00032 \quad (+0.5\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.78 \pm 0.78 \quad (+0.1\sigma)$
$\Omega_{\Lambda}$	$0.6937 \pm 0.0067 \quad (-0.2\sigma)$	$100\theta_{\mathrm{D}}$	$0.16079 \pm 0.00018 \quad (-0.5\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11515.1 \pm 5.8 \quad (+807.3\sigma)$
$\Omega_{\mathrm{m}}$	$0.3063 \pm 0.0067 \quad (+0.2\sigma)$	$z_{\mathrm{eq}}$	$3366 \pm 26 \quad (+0.3\sigma)$	$\chi_{\mathrm{H073p45}}^2$	$11.0 \pm 2.0 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1415 \pm 0.0011 \quad (+0.3\sigma)$	$k_{\mathrm{eq}}$	$0.010273 \pm 0.000078 \quad (+0.3\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09617 \pm 0.00031 \quad (+0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8201 \pm 0.0049 \quad (-0.3\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11944.7 \pm 6.2 \quad (+706.8\sigma)$
$\sigma_8$	$0.8080^{+0.0053}_{-0.0063} \quad (+0.0\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4529 \pm 0.0025 \quad (-0.3\sigma)$		
$S_8$	$0.816 \pm 0.012 \quad (+0.2\sigma)$	$H(0.15)$	$73.20 \pm 0.44 \quad (-0.2\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11963.51; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.75; R - 1 = 0.02593$$



2.140 base\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02241 \pm 0.00014 \quad (+0.4\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6007^{+0.0051}_{-0.0058} \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1522.6 \pm 6.8 \quad (+0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.11835 \pm 0.00088 \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9795^{+0.0075}_{-0.0085} \quad (-0.0\sigma)$	$H(0.51)$	$89.90 \pm 0.21 \quad (+0.0\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04106 \pm 0.00030 \quad (-0.3\sigma)$	$r_{\mathrm{drag}}h$	$100.31 \pm 0.68 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1973.3 \pm 8.0 \quad (+0.1\sigma)$
$\tau$	$0.0577^{+0.0060}_{-0.0078} \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.424 \pm 0.019 \quad (+0.0\sigma)$	$H(0.61)$	$95.48 \pm 0.18 \quad (+0.0\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.047^{+0.012}_{-0.015} \quad (-0.1\sigma)$	$z_{\mathrm{re}}$	$7.98^{+0.63}_{-0.75} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2297.0 \pm 8.6 \quad (+0.1\sigma)$
$n_{\mathrm{s}}$	$0.9688 \pm 0.0037 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.105^{+0.026}_{-0.032} \quad (-0.1\sigma)$	$H(2.33)$	$235.52 \pm 0.55 \quad (+0.2\sigma)$
$y_{\mathrm{cal}}$	$1.0009 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.875 \pm 0.010 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5756.3 \pm 8.6 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$237 \pm 24 \quad (-0.2\sigma)$	$D_{40}$	$1223 \pm 11 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4517 \pm 0.0051 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.1\sigma)$	$D_{220}$	$5733 \pm 39 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.7470^{+0.0047}_{-0.0058} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2537 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4712^{+0.0042}_{-0.0047} \quad (+0.0\sigma)$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7 \quad (-0.1\sigma)$	$D_{1420}$	$817.3 \pm 4.7 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6628^{+0.0042}_{-0.0051} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+2.0}_{-2.5} \quad (+0.1\sigma)$	$D_{2000}$	$230.9 \pm 1.6 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4705^{+0.0038}_{-0.0043} \quad (+0.0\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.67 \pm 0.13 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9688 \pm 0.0037 \quad (-0.0\sigma)$	$\sigma_8(0.51)$	$0.6206^{+0.0039}_{-0.0048} \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.40}_{-0.18} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245408^{+0.000056}_{-0.000048} \quad (+0.4\sigma)$	$f\sigma_8(0.61)$	$0.4660^{+0.0035}_{-0.0040} \quad (+0.0\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246734^{+0.000056}_{-0.000048} \quad (+0.4\sigma)$	$\sigma_8(0.61)$	$0.5906^{+0.0037}_{-0.0046} \quad (-0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 6.07 \quad (-0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.579 \pm 0.025 \quad (-0.4\sigma)$	$f\sigma_8(2.33)$	$0.2980^{+0.0019}_{-0.0024} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19 \quad (-0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.783 \pm 0.019 \quad (-0.1\sigma)$	$\sigma_8(2.33)$	$0.3075^{+0.0020}_{-0.0025} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.17 \quad (-0.1\sigma)$	$z_*$	$1089.73^{+0.19}_{-0.22} \quad (-0.3\sigma)$	$f_{2000}^{143}$	$29.1 \pm 2.8 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.11 \quad (+0.0\sigma)$	$r_*$	$144.83 \pm 0.22 \quad (-0.4\sigma)$	$f_{2000}^{217}$	$106.5 \pm 1.9 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.17 \quad (-0.0\sigma)$	$100\theta_*$	$1.04124 \pm 0.00030 \quad (-0.3\sigma)$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.0 \quad (-0.3\sigma)$
$c_{100}$	$0.9976 \pm 0.0010 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.909 \pm 0.021 \quad (-0.3\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.40 \pm 0.83 \quad (-0.2\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$z_{\mathrm{drag}}$	$1059.90 \pm 0.30 \quad (+0.4\sigma)$	$\chi_{\mathrm{simall}}^2$	$397.4 \pm 2.1 \quad (-0.1\sigma)$
$c_{TE}$	$0.9965 \pm 0.0050$	$r_{\mathrm{drag}}$	$147.49 \pm 0.24 \quad (-0.4\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.73 \pm 0.74 \quad (+0.0\sigma)$
$c_{EE}$	$0.9922 \pm 0.0049$	$k_{\mathrm{D}}$	$0.14048 \pm 0.00030 \quad (+0.5\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11515.0 \pm 5.7 \quad (+830.3\sigma)$
$H_0$	$68.01 \pm 0.40 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16078 \pm 0.00018 \quad (-0.5\sigma)$	$\chi_{\mathrm{H073p45}}^2$	$10.8 \pm 1.6 \quad (+0.1\sigma)$
$\Omega_{\Lambda}$	$0.6943 \pm 0.0052 \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3364 \pm 20 \quad (+0.2\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.021 \pm 0.030 \quad (-0.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.3057 \pm 0.0052 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010266 \pm 0.000062 \quad (+0.2\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.65 \pm 0.41 \quad (-0.2\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14140 \pm 0.00085 \quad (+0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8205 \pm 0.0038 \quad (-0.2\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$3.91 \pm 0.71 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09617 \pm 0.00030 \quad (+0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4531 \pm 0.0020 \quad (-0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$\sigma_8$	$0.8078^{+0.0053}_{-0.0063} \quad (-0.0\sigma)$	$H(0.15)$	$73.23 \pm 0.34 \quad (-0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11944.5 \pm 5.9 \quad (+793.5\sigma)$
$S_8$	$0.815 \pm 0.010 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$637.8 \pm 3.3 \quad (+0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$5.58 \pm 0.53 \quad (-0.1\sigma)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4466 \pm 0.0055 \quad (+0.1\sigma)$	$H(0.38)$	$83.24 \pm 0.26 \quad (-0.0\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11968.71; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.79; R - 1 = 0.02252$$



2.141 base\_CamSpecHM\_TTTEEElowlowE\_lensing\_post\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02232 \pm 0.00015 \quad (+0.6\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4523 \pm 0.0067 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.15)$	$642.1 \pm 4.3 \quad (-0.3\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1194 \pm 0.0011 \quad (-0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6050 \pm 0.0062 \quad (-0.3\sigma)$	$H(0.38)$	$82.93 \pm 0.32 \quad (+0.4\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04090 \pm 0.00031 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9849 \pm 0.0087 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.38)$	$1531.1 \pm 8.7 \quad (-0.3\sigma)$
$\tau$	$0.0551^{+0.0052}_{-0.0079} \quad (+0.0\sigma)$	$r_{\mathrm{drag}}h$	$99.46 \pm 0.88 \quad (+0.2\sigma)$	$H(0.51)$	$89.66 \pm 0.26 \quad (+0.4\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.011}_{-0.015} \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.436 \pm 0.021 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1983 \pm 10 \quad (-0.3\sigma)$
$n_{\mathrm{s}}$	$0.9663 \pm 0.0041 \quad (+0.2\sigma)$	$z_{\mathrm{re}}$	$7.75^{+0.56}_{-0.78} \quad (-0.0\sigma)$	$H(0.61)$	$95.28 \pm 0.21 \quad (+0.4\sigma)$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.023}_{-0.032} \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2308 \pm 11 \quad (-0.3\sigma)$
$A_{100}^{\mathrm{PS}}$	$239 \pm 24 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878 \pm 0.011 \quad (-0.0\sigma)$	$H(2.33)$	$236.10 \pm 0.68 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$D_{40}$	$1226 \pm 12 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5765 \pm 10 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{220}$	$5722 \pm 40 \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4568 \pm 0.0062 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7 \quad (-0.2\sigma)$	$D_{810}$	$2535 \pm 14 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7478^{+0.0046}_{-0.0055} \quad (-0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+2.0}_{-2.5} \quad (+0.1\sigma)$	$D_{1420}$	$816.0 \pm 4.9 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4749 \pm 0.0050 \quad (-0.3\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$D_{2000}$	$230.4 \pm 1.6 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6627^{+0.0038}_{-0.0049} \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.39}_{-0.18} \quad (-0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9663 \pm 0.0041 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4734 \pm 0.0044 \quad (-0.3\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.245372^{+0.000065}_{-0.000055} \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.6202^{+0.0036}_{-0.0046} \quad (-0.1\sigma)$
$A^{\mathrm{kSZ}}$	$4.7^{+1.9}_{-4.3} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246698^{+0.000065}_{-0.000055} \quad (+0.6\sigma)$	$f\sigma_8(0.61)$	$0.4684 \pm 0.0040 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.596^{+0.027}_{-0.030} \quad (-0.6\sigma)$	$\sigma_8(0.61)$	$0.5901^{+0.0034}_{-0.0044} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.17 \quad (-0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.801 \pm 0.023 \quad (-0.4\sigma)$	$f\sigma_8(2.33)$	$0.2975^{+0.0017}_{-0.0023} \quad (-0.0\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.11 \quad (+0.1\sigma)$	$z_*$	$1089.94 \pm 0.25 \quad (-0.6\sigma)$	$\sigma_8(2.33)$	$0.3067^{+0.0018}_{-0.0025} \quad (+0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (+0.0\sigma)$	$r_*$	$144.63 \pm 0.26 \quad (-0.1\sigma)$	$f_{2000}^{143}$	$29.6 \pm 2.8 \quad (-0.4\sigma)$
$c_{100}$	$0.9975 \pm 0.0010 \quad (+0.1\sigma)$	$100\theta_*$	$1.04109 \pm 0.00031 \quad (-0.1\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.9 \quad (-0.3\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.892 \pm 0.025 \quad (-0.0\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 2.0 \quad (-0.4\sigma)$
$c_{TE}$	$0.9966 \pm 0.0050$	$z_{\mathrm{drag}}$	$1059.76 \pm 0.32 \quad (+0.6\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.25 \pm 0.65 \quad (-0.2\sigma)$
$c_{EE}$	$0.9921 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.31 \pm 0.27 \quad (-0.2\sigma)$	$\chi_{\mathrm{small}}^2$	$396.9 \pm 1.7 \quad (-0.0\sigma)$
$H_0$	$67.52 \pm 0.51 \quad (+0.3\sigma)$	$k_{\mathrm{D}}$	$0.14059 \pm 0.00032 \quad (+0.4\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.12 \pm 0.84 \quad (-0.2\sigma)$
$\Omega_{\Lambda}$	$0.6876 \pm 0.0069 \quad (+0.3\sigma)$	$100\theta_{\mathrm{D}}$	$0.16085 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11514.1 \pm 5.5 \quad (+863.0\sigma)$
$\Omega_{\mathrm{m}}$	$0.3124 \pm 0.0069 \quad (-0.3\sigma)$	$z_{\mathrm{eq}}$	$3386 \pm 26 \quad (-0.1\sigma)$	$\chi_{\mathrm{JLA}}^2$	$1035.20 \pm 0.40 \quad (-0.3\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1424 \pm 0.0011 \quad (-0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010336 \pm 0.000078 \quad (-0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.5 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09611 \pm 0.00031 \quad (+0.4\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8160 \pm 0.0048 \quad (+0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11943.5 \pm 5.7 \quad (+836.7\sigma)$
$\sigma_8$	$0.8093^{+0.0052}_{-0.0061} \quad (-0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4508 \pm 0.0025 \quad (+0.2\sigma)$		
$S_8$	$0.826 \pm 0.012 \quad (-0.3\sigma)$	$H(0.15)$	$72.81 \pm 0.44 \quad (+0.3\sigma)$		

$\bar{\chi}_{\mathrm{eff}}^2 = 12986.49$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 4451.05$ ;  $R - 1 = 0.01335$



2.142 base\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_JLA\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02241 \pm 0.00014 \quad (+0.4\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6007 \pm 0.0055 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1522.3 \pm 6.7 \quad (+0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.11832 \pm 0.00088 \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.9796 \pm 0.0081 \quad (+0.1\sigma)$	$H(0.51)$	$89.91 \pm 0.21 \quad (-0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04107^{+0.00031}_{-0.00028} \quad (-0.3\sigma)$	$r_{\mathrm{drag}}h$	$100.34 \pm 0.68 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.51)$	$1973.0 \pm 7.9 \quad (+0.1\sigma)$
$\tau$	$0.0580^{+0.0062}_{-0.0079} \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.424 \pm 0.019 \quad (+0.1\sigma)$	$H(0.61)$	$95.48 \pm 0.18 \quad (-0.0\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.047^{+0.013}_{-0.015} \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$8.00^{+0.63}_{-0.77} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2296.6 \pm 8.6 \quad (+0.1\sigma)$
$n_{\mathrm{s}}$	$0.9691 \pm 0.0037 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.106^{+0.026}_{-0.032} \quad (-0.0\sigma)$	$H(2.33)$	$235.50 \pm 0.56 \quad (+0.3\sigma)$
$y_{\mathrm{cal}}$	$1.0009 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.875 \pm 0.010 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5756.1 \pm 8.6 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$237 \pm 25 \quad (-0.2\sigma)$	$D_{40}$	$1222 \pm 11 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4516 \pm 0.0052 \quad (+0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$D_{220}$	$5732 \pm 38 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7472^{+0.0048}_{-0.0059} \quad (+0.0\sigma)$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2537 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4712 \pm 0.0044 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7 \quad (-0.1\sigma)$	$D_{1420}$	$817.5 \pm 4.7 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6630^{+0.0042}_{-0.0052} \quad (-0.0\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+2.1}_{-2.6} \quad (+0.1\sigma)$	$D_{2000}$	$231.0 \pm 1.6 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4705 \pm 0.0041 \quad (+0.1\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.67 \pm 0.13 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9691 \pm 0.0037 \quad (-0.0\sigma)$	$\sigma_8(0.51)$	$0.6207^{+0.0040}_{-0.0049} \quad (-0.0\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.42}_{-0.17} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245408 \pm 0.000054 \quad (+0.4\sigma)$	$f\sigma_8(0.61)$	$0.4661 \pm 0.0038 \quad (+0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246734 \pm 0.000054 \quad (+0.4\sigma)$	$\sigma_8(0.61)$	$0.5908^{+0.0038}_{-0.0046} \quad (-0.0\sigma)$
$A^{\mathrm{kSZ}}$	$< 5.91 \quad (-0.2\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.579 \pm 0.026 \quad (-0.4\sigma)$	$f\sigma_8(2.33)$	$0.2981^{+0.0020}_{-0.0024} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19 \quad (-0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.782 \pm 0.020 \quad (-0.1\sigma)$	$\sigma_8(2.33)$	$0.3076^{+0.0021}_{-0.0025} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.17 \quad (-0.1\sigma)$	$z_*$	$1089.73 \pm 0.21 \quad (-0.2\sigma)$	$f_{2000}^{143}$	$29.1 \pm 2.8 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10 \quad (+0.0\sigma)$	$r_*$	$144.84 \pm 0.23 \quad (-0.4\sigma)$	$f_{2000}^{217}$	$106.5 \pm 1.9 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_*$	$1.04125^{+0.00031}_{-0.00028} \quad (-0.3\sigma)$	$f_{2000}^{143 \times 217}$	$31.7 \pm 1.9 \quad (-0.3\sigma)$
$c_{100}$	$0.9976 \pm 0.0010 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.910 \pm 0.022 \quad (-0.3\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.41 \pm 0.83 \quad (-0.2\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$z_{\mathrm{drag}}$	$1059.90 \pm 0.31 \quad (+0.4\sigma)$	$\chi_{\mathrm{simall}}^2$	$397.5 \pm 2.1 \quad (-0.1\sigma)$
$c_{TE}$	$0.9964 \pm 0.0051$	$r_{\mathrm{drag}}$	$147.50 \pm 0.25 \quad (-0.5\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.69 \pm 0.74 \quad (+0.0\sigma)$
$c_{EE}$	$0.9922 \pm 0.0050$	$k_{\mathrm{D}}$	$0.14047 \pm 0.00031 \quad (+0.5\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11515.3 \pm 6.0 \quad (+820.3\sigma)$
$H_0$	$68.03 \pm 0.39 \quad (-0.2\sigma)$	$100\theta_{\mathrm{D}}$	$0.16079 \pm 0.00018 \quad (-0.5\sigma)$	$\chi_{\mathrm{H073p45}}^2$	$10.7 \pm 1.6 \quad (+0.1\sigma)$
$\Omega_{\Lambda}$	$0.6945 \pm 0.0052 \quad (-0.2\sigma)$	$z_{\mathrm{eq}}$	$3363 \pm 20 \quad (+0.3\sigma)$	$\chi_{\mathrm{JLA}}^2$	$706.63 \pm 0.11 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3055 \pm 0.0052 \quad (+0.2\sigma)$	$k_{\mathrm{eq}}$	$0.010264 \pm 0.000062 \quad (+0.3\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.020 \pm 0.029 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14137 \pm 0.00086 \quad (+0.3\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8206 \pm 0.0038 \quad (-0.3\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.66 \pm 0.41 \quad (-0.3\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09617 \pm 0.00032 \quad (+0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4532 \pm 0.0020 \quad (-0.3\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$3.89 \pm 0.67 \quad (+0.1\sigma)$
$\sigma_8$	$0.8079^{+0.0053}_{-0.0065} \quad (+0.0\sigma)$	$H(0.15)$	$73.25 \pm 0.34 \quad (-0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.4 \quad (+0.0\sigma)$
$S_8$	$0.815 \pm 0.010 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$637.7 \pm 3.3 \quad (+0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11944.9 \pm 6.3 \quad (+779.3\sigma)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4466 \pm 0.0055 \quad (+0.2\sigma)$	$H(0.38)$	$83.25 \pm 0.25 \quad (-0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$5.57 \pm 0.51 \quad (-0.1\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 12675.50; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.87; R - 1 = 0.05354$$



2.143 base\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02235 \pm 0.00014 \quad (+0.6\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6030 \pm 0.0055 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1527.5 \pm 7.0 \quad (-0.2\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.11893 \pm 0.00090 \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.9825 \pm 0.0080 \quad (-0.1\sigma)$	$H(0.51)$	$89.75 \pm 0.21 \quad (+0.3\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04096 \pm 0.00030 \quad (-0.2\sigma)$	$r_{\mathrm{drag}}h$	$99.83 \pm 0.70 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1979.1 \pm 8.2 \quad (-0.2\sigma)$
$\tau$	$0.0561^{+0.0056}_{-0.0077} \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.430 \pm 0.019 \quad (-0.1\sigma)$	$H(0.61)$	$95.36 \pm 0.18 \quad (+0.3\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044^{+0.012}_{-0.015} \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.84^{+0.59}_{-0.76} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2303.2 \pm 8.9 \quad (-0.2\sigma)$
$n_{\mathrm{s}}$	$0.9674 \pm 0.0038 \quad (+0.1\sigma)$	$10^9 A_{\mathrm{s}}$	$2.100^{+0.024}_{-0.032} \quad (-0.0\sigma)$	$H(2.33)$	$235.84 \pm 0.56 \quad (+0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.011 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5761.6 \pm 8.8 \quad (-0.3\sigma)$
$A_{100}^{\mathrm{PS}}$	$239 \pm 24 \quad (-0.1\sigma)$	$D_{40}$	$1225 \pm 11 \quad (+0.0\sigma)$	$f\sigma_8(0.15)$	$0.4545 \pm 0.0053 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$D_{220}$	$5726 \pm 39 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7473^{+0.0046}_{-0.0057} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2536 \pm 14 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4733 \pm 0.0045 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7 \quad (-0.2\sigma)$	$D_{1420}$	$816.4 \pm 4.8 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6627^{+0.0040}_{-0.0050} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+2.0}_{-2.5} \quad (+0.1\sigma)$	$D_{2000}$	$230.6 \pm 1.6 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4721 \pm 0.0040 \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9674 \pm 0.0038 \quad (+0.1\sigma)$	$\sigma_8(0.51)$	$0.6203^{+0.0037}_{-0.0047} \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.39}_{-0.19} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245384^{+0.000060}_{-0.000051} \quad (+0.6\sigma)$	$f\sigma_8(0.61)$	$0.4673^{+0.0036}_{-0.0040} \quad (-0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246711^{+0.000060}_{-0.000051} \quad (+0.6\sigma)$	$\sigma_8(0.61)$	$0.5902^{+0.0035}_{-0.0045} \quad (-0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 6.21 \quad (-0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.590^{+0.025}_{-0.028} \quad (-0.6\sigma)$	$f\sigma_8(2.33)$	$0.2977^{+0.0018}_{-0.0023} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19 \quad (-0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.794 \pm 0.020 \quad (-0.3\sigma)$	$\sigma_8(2.33)$	$0.3070^{+0.0019}_{-0.0025} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.17 \quad (-0.1\sigma)$	$z_*$	$1089.86 \pm 0.22 \quad (-0.5\sigma)$	$f_{2000}^{143}$	$29.4 \pm 2.8 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.11 \quad (+0.1\sigma)$	$r_*$	$144.73 \pm 0.22 \quad (-0.3\sigma)$	$f_{2000}^{217}$	$106.7 \pm 1.9 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_*$	$1.04115 \pm 0.00029 \quad (-0.2\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.0 \quad (-0.3\sigma)$
$c_{100}$	$0.9976 \pm 0.0010 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.901 \pm 0.022 \quad (-0.2\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.27 \pm 0.70 \quad (-0.1\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$z_{\mathrm{drag}}$	$1059.80 \pm 0.31 \quad (+0.6\sigma)$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.9 \quad (-0.1\sigma)$
$c_{TE}$	$0.9966 \pm 0.0050$	$r_{\mathrm{drag}}$	$147.40 \pm 0.24 \quad (-0.4\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.94 \pm 0.77 \quad (-0.1\sigma)$
$c_{EE}$	$0.9923 \pm 0.0049$	$k_{\mathrm{D}}$	$0.14052 \pm 0.00031 \quad (+0.5\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11514.3 \pm 5.5 \quad (+858.1\sigma)$
$H_0$	$67.73 \pm 0.41 \quad (+0.2\sigma)$	$100\theta_{\mathrm{D}}$	$0.16083 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{\mathrm{JLA}}^2$	$1035.02 \pm 0.25 \quad (-0.1\sigma)$
$\Omega_{\Lambda}$	$0.6905 \pm 0.0054 \quad (+0.1\sigma)$	$z_{\mathrm{eq}}$	$3376 \pm 21 \quad (+0.1\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.038 \pm 0.049 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3095 \pm 0.0054 \quad (-0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010304 \pm 0.000063 \quad (+0.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.37 \pm 0.39 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14192 \pm 0.00087 \quad (+0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8180 \pm 0.0039 \quad (-0.0\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.5 \pm 1.1 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09612 \pm 0.00031 \quad (+0.4\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4518 \pm 0.0020 \quad (-0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$\sigma_8$	$0.8085^{+0.0052}_{-0.0062} \quad (-0.1\sigma)$	$H(0.15)$	$72.98 \pm 0.35 \quad (+0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11943.6 \pm 5.7 \quad (+832.4\sigma)$
$S_8$	$0.821 \pm 0.010 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$640.3 \pm 3.5 \quad (-0.2\sigma)$	$\chi_{\mathrm{BAO}}^2$	$5.86 \pm 0.84 \quad (-0.1\sigma)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4498 \pm 0.0056 \quad (-0.1\sigma)$	$H(0.38)$	$83.06 \pm 0.26 \quad (+0.2\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 12992.25; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.90; R - 1 = 0.01504$$



2.144 base\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_Pantheon18\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}} h^2$	$0.02241 \pm 0.00014 \quad (+0.4\sigma)$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.6004^{+0.0050}_{-0.0057} \quad (+0.0\sigma)$	$D_{\text{M}}(0.38)$	$1522.1 \pm 6.6 \quad (+0.1\sigma)$
$\Omega_{\text{c}} h^2$	$0.11829 \pm 0.00085 \quad (+0.2\sigma)$	$\sigma_8 / h^{0.5}$	$0.9792^{+0.0074}_{-0.0084} \quad (-0.0\sigma)$	$H(0.51)$	$89.91 \pm 0.20 \quad (-0.0\sigma)$
$100\theta_{\text{MC}}$	$1.04107 \pm 0.00030 \quad (-0.3\sigma)$	$r_{\text{drag}} h$	$100.36 \pm 0.66 \quad (-0.2\sigma)$	$D_{\text{M}}(0.51)$	$1972.8 \pm 7.7 \quad (+0.1\sigma)$
$\tau$	$0.0579^{+0.0060}_{-0.0077} \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.423^{+0.018}_{-0.020} \quad (+0.0\sigma)$	$H(0.61)$	$95.49 \pm 0.17 \quad (+0.0\sigma)$
$\ln(10^{10} A_{\text{s}})$	$3.047^{+0.013}_{-0.015} \quad (-0.1\sigma)$	$z_{\text{re}}$	$7.99^{+0.63}_{-0.75} \quad (-0.1\sigma)$	$D_{\text{M}}(0.61)$	$2296.4 \pm 8.4 \quad (+0.1\sigma)$
$n_{\text{s}}$	$0.9690 \pm 0.0037 \quad (-0.1\sigma)$	$10^9 A_{\text{s}}$	$2.106^{+0.026}_{-0.032} \quad (-0.1\sigma)$	$H(2.33)$	$235.49 \pm 0.54 \quad (+0.3\sigma)$
$y_{\text{cal}}$	$1.0009 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.875 \pm 0.010 \quad (+0.1\sigma)$	$D_{\text{M}}(2.33)$	$5755.9 \pm 8.4 \quad (-0.1\sigma)$
$A_{100}^{\text{PS}}$	$237 \pm 24 \quad (-0.2\sigma)$	$D_{40}$	$1223 \pm 11 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4514 \pm 0.0050 \quad (+0.1\sigma)$
$A_{143}^{\text{PS}}$	$38 \pm 8 \quad (-0.1\sigma)$	$D_{220}$	$5733 \pm 38 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.7470^{+0.0048}_{-0.0058} \quad (-0.1\sigma)$
$A_{217}^{\text{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2537 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4710^{+0.0041}_{-0.0046} \quad (+0.0\sigma)$
$A_{217}^{\text{CIB}}$	$39 \pm 7 \quad (-0.1\sigma)$	$D_{1420}$	$817.4 \pm 4.7 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6628^{+0.0042}_{-0.0051} \quad (-0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$4.0^{+2.0}_{-2.5} \quad (+0.1\sigma)$	$D_{2000}$	$230.9 \pm 1.6 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4704^{+0.0037}_{-0.0042} \quad (+0.0\sigma)$
$r_{143 \times 217}^{\text{PS}}$	$0.67 \pm 0.13 \quad (+0.1\sigma)$	$n_{\text{s},0.002}$	$0.9690 \pm 0.0037 \quad (-0.1\sigma)$	$\sigma_8(0.51)$	$0.6206^{+0.0039}_{-0.0048} \quad (-0.1\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	$0.55^{+0.41}_{-0.18} \quad (-0.1\sigma)$	$Y_{\text{P}}$	$0.245409^{+0.000055}_{-0.000048} \quad (+0.4\sigma)$	$f\sigma_8(0.61)$	$0.4659^{+0.0035}_{-0.0040} \quad (+0.0\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.246736^{+0.000055}_{-0.000048} \quad (+0.4\sigma)$	$\sigma_8(0.61)$	$0.5907^{+0.0037}_{-0.0046} \quad (-0.1\sigma)$
$A^{\text{kSZ}}$	$< 6.06 \quad (-0.1\sigma)$	$10^5 \text{D}/\text{H}$	$2.578 \pm 0.025 \quad (-0.4\sigma)$	$f\sigma_8(2.33)$	$0.2981^{+0.0019}_{-0.0024} \quad (-0.1\sigma)$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.19 \quad (-0.1\sigma)$	$\text{Age}/\text{Gyr}$	$13.782 \pm 0.019 \quad (-0.1\sigma)$	$\sigma_8(2.33)$	$0.3076^{+0.0020}_{-0.0025} \quad (-0.1\sigma)$
$A_{143}^{\text{dust}}$	$0.95 \pm 0.17 \quad (-0.1\sigma)$	$z_*$	$1089.72 \pm 0.20 \quad (-0.3\sigma)$	$f_{2000}^{143}$	$29.1 \pm 2.8 \quad (-0.3\sigma)$
$A_{217}^{\text{dust}}$	$0.98 \pm 0.11 \quad (+0.0\sigma)$	$r_*$	$144.84 \pm 0.22 \quad (-0.4\sigma)$	$f_{2000}^{217}$	$106.5 \pm 1.9 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.17 \quad (-0.0\sigma)$	$100\theta_*$	$1.04125 \pm 0.00030 \quad (-0.4\sigma)$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.0 \quad (-0.3\sigma)$
$c_{100}$	$0.9976 \pm 0.0010 \quad (+0.0\sigma)$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.911 \pm 0.021 \quad (-0.3\sigma)$	$\chi_{\text{lensing}}^2$	$9.42 \pm 0.85 \quad (-0.2\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$z_{\text{drag}}$	$1059.91 \pm 0.30 \quad (+0.4\sigma)$	$\chi_{\text{simall}}^2$	$397.5 \pm 2.2 \quad (-0.1\sigma)$
$c_{TE}$	$0.9965 \pm 0.0050$	$r_{\text{drag}}$	$147.50 \pm 0.24 \quad (-0.4\sigma)$	$\chi_{\text{lowl}}^2$	$22.71 \pm 0.74 \quad (+0.1\sigma)$
$c_{EE}$	$0.9923 \pm 0.0049$	$k_{\text{D}}$	$0.14047 \pm 0.00030 \quad (+0.5\sigma)$	$\chi_{\text{CamSpec}}^2$	$11515.0 \pm 5.7 \quad (+829.7\sigma)$
$H_0$	$68.04 \pm 0.38 \quad (-0.1\sigma)$	$100\theta_{\text{D}}$	$0.16078 \pm 0.00018 \quad (-0.5\sigma)$	$\chi_{\text{H073p45}}^2$	$10.7 \pm 1.5 \quad (+0.1\sigma)$
$\Omega_{\Lambda}$	$0.6946 \pm 0.0051 \quad (-0.2\sigma)$	$z_{\text{eq}}$	$3362 \pm 20 \quad (+0.2\sigma)$	$\chi_{\text{JLA}}^2$	$1034.87 \pm 0.16 \quad (+0.0\sigma)$
$\Omega_{\text{m}}$	$0.3054 \pm 0.0051 \quad (+0.2\sigma)$	$k_{\text{eq}}$	$0.010262 \pm 0.000060 \quad (+0.2\sigma)$	$\chi_{6\text{DF}}^2$	$0.019 \pm 0.028 \quad (-0.2\sigma)$
$\Omega_{\text{m}} h^2$	$0.14135 \pm 0.00083 \quad (+0.2\sigma)$	$100\theta_{\text{eq}}$	$0.8207 \pm 0.0037 \quad (-0.2\sigma)$	$\chi_{\text{MGS}}^2$	$1.67 \pm 0.40 \quad (-0.2\sigma)$
$\Omega_{\text{m}} h^3$	$0.09617 \pm 0.00030 \quad (+0.2\sigma)$	$100\theta_{\text{s,eq}}$	$0.4532 \pm 0.0019 \quad (-0.2\sigma)$	$\chi_{\text{DR12BAO}}^2$	$3.86 \pm 0.65 \quad (+0.0\sigma)$
$\sigma_8$	$0.8077^{+0.0053}_{-0.0063} \quad (-0.0\sigma)$	$H(0.15)$	$73.26 \pm 0.33 \quad (-0.1\sigma)$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$S_8$	$0.8149 \pm 0.0097 \quad (+0.1\sigma)$	$D_{\text{M}}(0.15)$	$637.6 \pm 3.2 \quad (+0.1\sigma)$	$\chi_{\text{CMB}}^2$	$11944.6 \pm 5.9 \quad (+793.6\sigma)$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4463 \pm 0.0053 \quad (+0.1\sigma)$	$H(0.38)$	$83.26 \pm 0.25 \quad (-0.0\sigma)$	$\chi_{\text{BAO}}^2$	$5.55 \pm 0.48 \quad (-0.1\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 13003.54; \Delta\bar{\chi}_{\text{eff}}^2 = 4450.81; R - 1 = 0.02380$$



## 2.145 base\_CleanedCamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022083	$0.02210 \pm 0.00022$	$\sigma_8/h^{0.5}$	0.9900	$0.990 \pm 0.016$	$H(0.15)$	72.29	$72.31 \pm 0.78$
$\Omega_c h^2$	0.12045	$0.1204 \pm 0.0021$	$r_{\text{drag}} h$	98.58	$98.6 \pm 1.6$	$D_M(0.15)$	647.2	$647.1 \pm 7.9$
$100\theta_{\text{MC}}$	1.040815	$1.04079 \pm 0.00047$	$\langle d^2 \rangle^{1/2}$	2.4483	$2.449 \pm 0.038$	$H(0.38)$	82.53	$82.55 \pm 0.56$
$\tau$	0.0511	$0.0518 \pm 0.0080$	$z_{\text{re}}$	7.41	$7.47 \pm 0.82$	$D_M(0.38)$	1541.5	$1541 \pm 16$
$\ln(10^{10} A_s)$	3.0368	$3.038 \pm 0.016$	$10^9 A_s$	2.0839	$2.086 \pm 0.034$	$H(0.51)$	89.324	$89.34 \pm 0.44$
$n_s$	0.9623	$0.9624 \pm 0.0058$	$10^9 A_s e^{-2\tau}$	1.8816	$1.880 \pm 0.014$	$D_M(0.51)$	1995.6	$1995 \pm 18$
$y_{\text{cal}}$	1.00048	$1.0004 \pm 0.0025$	$D_{40}$	1232.5	$1232 \pm 15$	$H(0.61)$	95.000	$95.02 \pm 0.35$
$A_{100}^{\text{PS}}$	252.2	$255 \pm 27$	$D_{220}$	5707.8	$5705 \pm 40$	$D_M(0.61)$	2321.1	$2321 \pm 20$
$A_{143}^{\text{tSZ}}$	6.20	$3.7_{-2.7}^{+1.7}$	$D_{810}$	2533.2	$2531 \pm 14$	$H(2.33)$	236.56	$236.6 \pm 1.3$
$A^{\text{kSZ}}$	0.33	$5.3_{-1.9}^{+4.2}$	$D_{1420}$	813.1	$812.5 \pm 5.2$	$D_M(2.33)$	5778.3	$5778 \pm 16$
$A_{100}^{\text{dust}}$	0.988	$1.00 \pm 0.19$	$D_{2000}$	229.01	$228.9 \pm 1.8$	$f\sigma_8(0.15)$	0.4618	$0.462 \pm 0.012$
$A_{143}^{\text{power}}$	12.31	$10.4_{-2.5}^{+2.1}$	$n_{s,0.002}$	0.9623	$0.9624 \pm 0.0058$	$\sigma_8(0.15)$	0.7476	$0.7477 \pm 0.0075$
$A_{217}^{\text{power}}$	11.80	$8.2_{-2.9}^{+1.7}$	$Y_{\text{P}}$	0.245277	$0.24528_{-0.000087}^{+0.00011}$	$f\sigma_8(0.38)$	0.4783	$0.4783 \pm 0.0095$
$A_{143 \times 217}^{\text{power}}$	8.03	$4.3_{-2.9}^{+1.7}$	$Y_{\text{P}}^{\text{BBN}}$	0.246603	$0.24660_{-0.000087}^{+0.00011}$	$\sigma_8(0.38)$	0.6618	$0.6619 \pm 0.0061$
$\gamma_{143}^{\text{power}}$	1.325	$1.34_{-0.55}^{+0.40}$	$10^5 D/H$	2.6404	$2.637 \pm 0.042$	$f\sigma_8(0.51)$	0.4760	$0.4759 \pm 0.0082$
$\gamma_{217}^{\text{power}}$	1.23	$1.37_{-0.61}^{+0.73}$	Age/Gyr	13.8314	$13.830 \pm 0.036$	$\sigma_8(0.51)$	0.6190	$0.6190 \pm 0.0055$
$\gamma_{143 \times 217}^{\text{power}}$	1.17	$1.33 \pm 0.59$	$z_*$	1090.327	$1090.30 \pm 0.40$	$f\sigma_8(0.61)$	0.4703	$0.4703 \pm 0.0073$
$c_{100}$	0.99810	$0.9978 \pm 0.0011$	$r_*$	144.534	$144.53 \pm 0.47$	$\sigma_8(0.61)$	0.5888	$0.5888 \pm 0.0051$
$c_{217}$	0.99914	$0.9994_{-0.0017}^{+0.0013}$	$100\theta_*$	1.041028	$1.04100 \pm 0.00046$	$f\sigma_8(2.33)$	0.29654	$0.2966 \pm 0.0025$
$H_0$	66.93	$66.95 \pm 0.91$	$D_M(z_*)/\text{Gpc}$	13.8838	$13.884 \pm 0.044$	$\sigma_8(2.33)$	0.30537	$0.3054 \pm 0.0027$
$\Omega_\Lambda$	0.6803	$0.680_{-0.012}^{+0.013}$	$z_{\text{drag}}$	1059.284	$1059.34 \pm 0.45$	$f_{2000}^{143}$	23.77	$24 \pm 3$
$\Omega_m$	0.3197	$0.320_{-0.013}^{+0.012}$	$r_{\text{drag}}$	147.295	$147.28 \pm 0.47$	$f_{2000}^{217}$	17.10	$16.9 \pm 2.0$
$\Omega_m h^2$	0.14318	$0.1432 \pm 0.0020$	$k_D$	0.14043	$0.14046 \pm 0.00052$	$f_{2000}^{143 \times 217}$	11.55	$11.2 \pm 2.2$
$\Omega_m h^3$	0.095823	$0.09584 \pm 0.00045$	$100\theta_D$	0.161130	$0.16111 \pm 0.00026$	$\chi_{\text{small}}^2$	395.79	$396.9 \pm 1.7$
$\sigma_8$	0.8099	$0.8100 \pm 0.0090$	$z_{\text{eq}}$	3406.1	$3406 \pm 47$	$\chi_{\text{lowl}}^2$	23.70	$23.8 \pm 1.3$
$S_8$	0.8360	$0.836 \pm 0.024$	$k_{\text{eq}}$	0.010396	$0.01040 \pm 0.00014$	$\chi_{\text{CamSpec}}^2$	6704.43	$6716.2 \pm 5.2$
$\sigma_8 \Omega_m^{0.5}$	0.4579	$0.458 \pm 0.013$	$100\theta_{\text{eq}}$	0.8117	$0.8119 \pm 0.0088$	$\chi_{\text{prior}}^2$	1.19	$5.3 \pm 2.9$
$\sigma_8 \Omega_m^{0.25}$	0.6090	$0.609 \pm 0.012$	$100\theta_{s,\text{eq}}$	0.44878	$0.4488 \pm 0.0045$	$\chi_{\text{CMB}}^2$	7123.92	$7137.0 \pm 5.2$

Best-fit  $\chi_{\text{eff}}^2 = 7125.11$ ;  $\bar{\chi}_{\text{eff}}^2 = 7142.20$ ;  $R - 1 = 0.00552$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.79 commander\_dx12\_v3.2\_29: 23.70 CamSpec like\_10.7cleaned: 6704.43



## 2.146 base\_lensing\_lenspriors

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022210	$0.02220 \pm 0.00049$	$D_{810}$	2788	$2628^{+400}_{-500}$	$H(0.38)$	107.7	$84^{+10}_{-20}$
$\Omega_c h^2$	0.1163	$0.111^{+0.010}_{-0.013}$	$D_{1420}$	756	$819^{+100}_{-200}$	$D_M(0.38)$	1121	$1585^{+200}_{-500}$
$100\theta_{MC}$	1.118	$1.032^{+0.077}_{-0.055}$	$D_{2000}$	215	$264^{+40}_{-60}$	$H(0.51)$	112.9	$90.0^{+9.9}_{-20}$
$\ln(10^{10} A_s)$	3.262	$3.13 \pm 0.13$	$n_{s,0.002}$	0.9607	$0.960 \pm 0.020$	$D_M(0.51)$	1475	$2047^{+200}_{-600}$
$n_s$	0.9607	$0.960 \pm 0.020$	$Y_P$	0.245330	$0.24531^{+0.00022}_{-0.00019}$	$H(0.61)$	117.3	$95.4^{+9.8}_{-19}$
$H_0$	96.6	—	$Y_P^{BBN}$	0.246656	$0.24664^{+0.00022}_{-0.00020}$	$D_M(0.61)$	1736	$2378^{+300}_{-700}$
$\Omega_\Lambda$	0.851	$0.657^{+0.21}_{-0.063}$	$10^5 D/H$	2.616	$2.621 \pm 0.093$	$H(2.33)$	243.6	$230^{+11}_{-13}$
$\Omega_m$	0.149	$0.343^{+0.063}_{-0.21}$	Age/Gyr	11.74	$14.2^{+1.2}_{-2.5}$	$D_M(2.33)$	4847	$5909^{+530}_{-1100}$
$\Omega_m h^2$	0.1391	$0.134^{+0.010}_{-0.013}$	$z_*$	1089.79	$1089.4^{+1.1}_{-1.3}$	$f\sigma_8(0.15)$	0.3739	$0.439^{+0.054}_{-0.041}$
$\Omega_m h^3$	0.1344	$0.093^{+0.020}_{-0.039}$	$r_*$	145.53	$147.0 \pm 3.2$	$\sigma_8(0.15)$	0.890	$0.741^{+0.15}_{-0.080}$
$\sigma_8$	0.939	$0.800^{+0.14}_{-0.077}$	$100\theta_*$	1.118	$1.032^{+0.077}_{-0.055}$	$f\sigma_8(0.38)$	0.4315	$0.453^{+0.020}_{-0.017}$
$S_8$	0.662	$0.804^{+0.088}_{-0.14}$	$D_M(z_*)/\text{Gpc}$	13.01	$14.29^{+0.93}_{-1.2}$	$\sigma_8(0.38)$	0.817	$0.659^{+0.16}_{-0.082}$
$\sigma_8 \Omega_m^{0.5}$	0.362	$0.440^{+0.048}_{-0.075}$	$z_{\text{drag}}$	1059.28	$1058.9 \pm 1.5$	$f\sigma_8(0.51)$	0.4535	$0.453^{+0.025}_{-0.017}$
$\sigma_8 \Omega_m^{0.25}$	0.5834	$0.589 \pm 0.020$	$r_{\text{drag}}$	148.27	$149.8 \pm 3.3$	$\sigma_8(0.51)$	0.777	$0.619^{+0.16}_{-0.082}$
$\sigma_8/h^{0.5}$	0.9553	$0.974^{+0.023}_{-0.020}$	$k_D$	0.13951	$0.1380^{+0.0033}_{-0.0037}$	$f\sigma_8(0.61)$	0.4655	$0.449^{+0.035}_{-0.018}$
$r_{\text{drag}} h$	143.3	$103^{+20}_{-40}$	$100\theta_D$	0.1731	$0.160^{+0.012}_{-0.0081}$	$\sigma_8(0.61)$	0.748	$0.590^{+0.16}_{-0.082}$
$\langle d^2 \rangle^{1/2}$	2.492	$2.504 \pm 0.054$	$z_{\text{eq}}$	3309	$3189^{+240}_{-310}$	$f\sigma_8(2.33)$	0.388	$0.299^{+0.087}_{-0.046}$
$z_{\text{re}}$	7.890	$7.63 \pm 0.29$	$k_{\text{eq}}$	0.01010	$0.00973^{+0.00074}_{-0.00093}$	$\sigma_8(2.33)$	0.419	$0.312 \pm 0.069$
$10^9 A_s$	2.610	$2.32^{+0.27}_{-0.34}$	$100\theta_{\text{eq}}$	0.8916	$0.849 \pm 0.048$	$\chi^2_{\text{lensing}}$	7.49	$9.6 \pm 2.0$
$10^9 A_s e^{-2\tau}$	2.338	$2.07^{+0.25}_{-0.31}$	$100\theta_{s,\text{eq}}$	0.4922	$0.468 \pm 0.026$	$\chi^2_{\text{prior}}$	0.00	$2.0 \pm 2.0$
$D_{40}$	1641	$1400^{+200}_{-200}$	$H(0.15)$	100.3	$74 \pm 20$			
$D_{220}$	7133	$6564^{+900}_{-1000}$	$D_M(0.15)$	457	$670^{+90}_{-200}$			

Best-fit  $\chi^2_{\text{eff}} = 7.49$ ;  $\bar{\chi}^2_{\text{eff}} = 11.58$ ;  $R - 1 = 0.00149$

$\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 7.49



## 2.147 base\_lensing\_lenspriors\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022201	$0.02221 \pm 0.00049$	$D_{810}$	2815	$2748^{+300}_{-240}$	$H(0.38)$	81.05	$81.9^{+3.7}_{-4.4}$
$\Omega_c h^2$	0.1091	$0.1115^{+0.0096}_{-0.013}$	$D_{1420}$	892	$866^{+95}_{-67}$	$D_M(0.38)$	1561	$1547 \pm 84$
$100\theta_{MC}$	1.0266	$1.031 \pm 0.023$	$D_{2000}$	253.0	$253^{+25}_{-37}$	$H(0.51)$	87.43	$88.4^{+3.9}_{-4.6}$
$\ln(10^{10} A_s)$	3.147	$3.130 \pm 0.098$	$n_{s,0.002}$	0.9609	$0.959 \pm 0.021$	$D_M(0.51)$	2024	$2007 \pm 110$
$n_s$	0.9609	$0.959 \pm 0.021$	$Y_P$	0.245326	$0.24532^{+0.00022}_{-0.00019}$	$H(0.61)$	92.78	$93.7^{+4.0}_{-4.8}$
$H_0$	66.48	$67.3^{+3.5}_{-4.2}$	$Y_P^{BBN}$	0.246652	$0.24664^{+0.00022}_{-0.00019}$	$D_M(0.61)$	2357	$2337 \pm 120$
$\Omega_\Lambda$	0.7016	$0.702 \pm 0.022$	$10^5 D/H$	2.618	$2.619 \pm 0.092$	$H(2.33)$	227.7	$229.7^{+8.7}_{-11}$
$\Omega_m$	0.2984	$0.298 \pm 0.022$	Age/Gyr	14.19	$14.09 \pm 0.65$	$D_M(2.33)$	5928	$5881 \pm 270$
$\Omega_m h^2$	0.1319	$0.1344^{+0.0096}_{-0.013}$	$z_*$	1089.15	$1089.4^{+1.0}_{-1.3}$	$f\sigma_8(0.15)$	0.4428	$0.443 \pm 0.015$
$\Omega_m h^3$	0.0877	$0.0908^{+0.0098}_{-0.014}$	$r_*$	147.49	$146.9^{+3.3}_{-2.9}$	$\sigma_8(0.15)$	0.7408	$0.744 \pm 0.028$
$\sigma_8$	0.8003	$0.804 \pm 0.029$	$100\theta_*$	1.0268	$1.031 \pm 0.023$	$f\sigma_8(0.38)$	0.4638	$0.465 \pm 0.015$
$S_8$	0.7982	$0.799 \pm 0.029$	$D_M(z_*)/\text{Gpc}$	14.36	$14.26 \pm 0.61$	$\sigma_8(0.38)$	0.6581	$0.661 \pm 0.027$
$\sigma_8 \Omega_m^{0.5}$	0.4372	$0.438 \pm 0.016$	$z_{\text{drag}}$	1058.75	$1058.9 \pm 1.5$	$f\sigma_8(0.51)$	0.4640	$0.465 \pm 0.015$
$\sigma_8 \Omega_m^{0.25}$	0.5915	$0.593 \pm 0.019$	$r_{\text{drag}}$	150.28	$149.7^{+3.4}_{-3.1}$	$\sigma_8(0.51)$	0.6165	$0.619 \pm 0.026$
$\sigma_8/h^{0.5}$	0.9815	$0.980 \pm 0.019$	$k_D$	0.13743	$0.1381^{+0.0031}_{-0.0036}$	$f\sigma_8(0.61)$	0.4601	$0.461 \pm 0.015$
$r_{\text{drag}} h$	99.91	$100.6^{+4.1}_{-4.6}$	$100\theta_D$	0.15915	$0.1598 \pm 0.0033$	$\sigma_8(0.61)$	0.5870	$0.590 \pm 0.025$
$\langle d^2 \rangle^{1/2}$	2.508	$2.502 \pm 0.054$	$z_{\text{eq}}$	3136	$3196^{+230}_{-300}$	$f\sigma_8(2.33)$	0.2966	$0.298 \pm 0.013$
$z_{\text{re}}$	7.582	$7.63^{+0.23}_{-0.27}$	$k_{\text{eq}}$	0.00957	$0.00975^{+0.00070}_{-0.00092}$	$\sigma_8(2.33)$	0.3063	$0.308 \pm 0.014$
$10^9 A_s$	2.326	$2.30^{+0.21}_{-0.24}$	$100\theta_{\text{eq}}$	0.8521	$0.847 \pm 0.037$	$\chi^2_{\text{lensing}}$	7.59	$9.6 \pm 2.0$
$10^9 A_s e^{-2\tau}$	2.084	$2.06^{+0.19}_{-0.21}$	$100\theta_{s,\text{eq}}$	0.4693	$0.467 \pm 0.019$	$\chi^2_{\text{JLA}}$	1034.73	$1035.7 \pm 1.4$
$D_{40}$	1400	$1387^{+130}_{-140}$	$H(0.15)$	71.47	$72.3^{+3.6}_{-4.2}$	$\chi^2_{\text{prior}}$	0.00	$2.0 \pm 2.0$
$D_{220}$	6666	$6566^{+800}_{-1000}$	$D_M(0.15)$	653.0	$647 \pm 37$			

Best-fit  $\chi^2_{\text{eff}} = 1042.33$ ;  $\bar{\chi}^2_{\text{eff}} = 1047.30$ ;  $R - 1 = 0.00566$

$\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 7.59 SN - JLA Pantheon18: 1034.73



## 2.148 base\_lensing\_lenspriors\_post\_agr2

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00049$	$D_{810}$	$2732^{+400}_{-500}$	$H(0.38)$	$84 \pm 10$
$\Omega_{\mathrm{c}}h^2$	$0.1070^{+0.0090}_{-0.011}$	$D_{1420}$	$854^{+100}_{-100}$	$D_{\mathrm{M}}(0.38)$	$1572^{+200}_{-500}$
$100\theta_{\mathrm{MC}}$	$1.030^{+0.080}_{-0.050}$	$D_{2000}$	$276^{+40}_{-60}$	$H(0.51)$	$90 \pm 10$
$\ln(10^{10}A_{\mathrm{s}})$	$3.17 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$2033^{+230}_{-590}$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00020}$	$H(0.61)$	$95 \pm 10$
$H_0$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2364^{+260}_{-670}$
$\Omega_{\Lambda}$	$0.678^{+0.19}_{-0.054}$	$10^5\mathrm{D}/\mathrm{H}$	$2.623^{+0.088}_{-0.097}$	$H(2.33)$	$227^{+11}_{-12}$
$\Omega_{\mathrm{m}}$	$0.322^{+0.054}_{-0.19}$	Age/Gyr	$14.2^{+1.2}_{-2.5}$	$D_{\mathrm{M}}(2.33)$	$5925^{+520}_{-1100}$
$\Omega_{\mathrm{m}}h^2$	$0.1298^{+0.0090}_{-0.011}$	$z_{*}$	$1089.0^{+1.0}_{-1.1}$	$f\sigma_8(0.15)$	$0.426^{+0.051}_{-0.043}$
$\Omega_{\mathrm{m}}h^3$	$0.091^{+0.021}_{-0.037}$	$r_{*}$	$148.2 \pm 2.9$	$\sigma_8(0.15)$	$0.739^{+0.14}_{-0.073}$
$\sigma_8$	$0.796^{+0.13}_{-0.070}$	$100\theta_{*}$	$1.030^{+0.080}_{-0.050}$	$f\sigma_8(0.38)$	$0.444^{+0.019}_{-0.014}$
$S_8$	$0.777^{+0.076}_{-0.13}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$14.44^{+0.88}_{-1.3}$	$\sigma_8(0.38)$	$0.659^{+0.15}_{-0.076}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.425^{+0.042}_{-0.072}$	$z_{\mathrm{drag}}$	$1058.5 \pm 1.4$	$f\sigma_8(0.51)$	$0.445^{+0.022}_{-0.013}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.578 \pm 0.016$	$r_{\mathrm{drag}}$	$151.0 \pm 3.0$	$\sigma_8(0.51)$	$0.619^{+0.15}_{-0.076}$
$\sigma_8/h^{0.5}$	$0.963^{+0.021}_{-0.018}$	$k_{\mathrm{D}}$	$0.1367^{+0.0029}_{-0.0033}$	$f\sigma_8(0.61)$	$0.443^{+0.031}_{-0.013}$
$r_{\mathrm{drag}}h$	$105 \pm 30$	$100\theta_{\mathrm{D}}$	$0.160^{+0.012}_{-0.0074}$	$\sigma_8(0.61)$	$0.591^{+0.15}_{-0.076}$
$\langle d^2 \rangle^{1/2}$	$2.510 \pm 0.053$	$z_{\mathrm{eq}}$	$3086^{+220}_{-260}$	$f\sigma_8(2.33)$	$0.300^{+0.085}_{-0.043}$
$z_{\mathrm{re}}$	$7.56 \pm 0.28$	$k_{\mathrm{eq}}$	$0.00942^{+0.00066}_{-0.00080}$	$\sigma_8(2.33)$	$0.314^{+0.10}_{-0.055}$
$10^9A_{\mathrm{s}}$	$2.40^{+0.27}_{-0.33}$	$100\theta_{\mathrm{eq}}$	$0.867 \pm 0.044$	$\chi^2_{\mathrm{lensing}}$	$11.9 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.15^{+0.24}_{-0.30}$	$100\theta_{\mathrm{s,eq}}$	$0.477 \pm 0.024$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 2.0$
$D_{40}$	$1464^{+200}_{-200}$	$H(0.15)$	$75 \pm 20$		
$D_{220}$	$6917^{+900}_{-1000}$	$D_{\mathrm{M}}(0.15)$	$663^{+80}_{-200}$		

$\bar{\chi}^2_{\mathrm{eff}} = 13.89$ ;  $R - 1 = 0.00196$



## 2.149 base\_lensing\_lenspriors\_post\_conslmin40

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00049$	$D_{810}$	$2642^{+400}_{-600}$	$H(0.38)$	$84 \pm 10$
$\Omega_{\mathrm{c}}h^2$	$0.111^{+0.011}_{-0.015}$	$D_{1420}$	$825^{+100}_{-200}$	$D_{\mathrm{M}}(0.38)$	$1584^{+200}_{-500}$
$100\theta_{\mathrm{MC}}$	$1.032^{+0.075}_{-0.057}$	$D_{2000}$	$267^{+40}_{-70}$	$H(0.51)$	$90 \pm 10$
$\ln(10^{10}A_{\mathrm{s}})$	$3.14 \pm 0.15$	$n_{\mathrm{s},0.002}$	$0.960 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$2046^{+200}_{-600}$
$n_{\mathrm{s}}$	$0.960 \pm 0.020$	$Y_{\mathrm{P}}$	$0.24531^{+0.00022}_{-0.00019}$	$H(0.61)$	$95 \pm 10$
$H_0$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00022}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2377^{+300}_{-700}$
$\Omega_{\Lambda}$	$0.659^{+0.21}_{-0.063}$	$10^5\mathrm{D}/\mathrm{H}$	$2.622 \pm 0.094$	$H(2.33)$	$230^{+13}_{-14}$
$\Omega_{\mathrm{m}}$	$0.341^{+0.063}_{-0.21}$	Age/Gyr	$14.2^{+1.3}_{-2.6}$	$D_{\mathrm{M}}(2.33)$	$5912^{+540}_{-1100}$
$\Omega_{\mathrm{m}}h^2$	$0.134^{+0.011}_{-0.015}$	$z_{*}$	$1089.3^{+1.2}_{-1.4}$	$f\sigma_8(0.15)$	$0.438^{+0.053}_{-0.042}$
$\Omega_{\mathrm{m}}h^3$	$0.093^{+0.020}_{-0.039}$	$r_{*}$	$147.1 \pm 3.6$	$\sigma_8(0.15)$	$0.741^{+0.15}_{-0.081}$
$\sigma_8$	$0.800^{+0.14}_{-0.078}$	$100\theta_{*}$	$1.032^{+0.075}_{-0.057}$	$f\sigma_8(0.38)$	$0.453^{+0.021}_{-0.019}$
$S_8$	$0.802^{+0.089}_{-0.14}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$14.31^{+0.97}_{-1.3}$	$\sigma_8(0.38)$	$0.659^{+0.16}_{-0.083}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.439^{+0.049}_{-0.074}$	$z_{\mathrm{drag}}$	$1058.8 \pm 1.6$	$f\sigma_8(0.51)$	$0.452^{+0.025}_{-0.019}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.588 \pm 0.021$	$r_{\mathrm{drag}}$	$149.9 \pm 3.8$	$\sigma_8(0.51)$	$0.619^{+0.16}_{-0.083}$
$\sigma_8/h^{0.5}$	$0.973^{+0.023}_{-0.019}$	$k_{\mathrm{D}}$	$0.1379^{+0.0037}_{-0.0042}$	$f\sigma_8(0.61)$	$0.449^{+0.035}_{-0.020}$
$r_{\mathrm{drag}}h$	$103^{+20}_{-40}$	$100\theta_{\mathrm{D}}$	$0.160^{+0.012}_{-0.0083}$	$\sigma_8(0.61)$	$0.590^{+0.16}_{-0.084}$
$\langle d^2 \rangle^{1/2}$	$2.508 \pm 0.066$	$z_{\mathrm{eq}}$	$3183^{+270}_{-350}$	$f\sigma_8(2.33)$	$0.299^{+0.087}_{-0.049}$
$z_{\mathrm{re}}$	$7.62 \pm 0.32$	$k_{\mathrm{eq}}$	$0.00971^{+0.00083}_{-0.0011}$	$\sigma_8(2.33)$	$0.312 \pm 0.069$
$10^9A_{\mathrm{s}}$	$2.33^{+0.30}_{-0.39}$	$100\theta_{\mathrm{eq}}$	$0.851 \pm 0.053$	$\chi^2_{\mathrm{lensing}}$	$9.6 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.09^{+0.26}_{-0.35}$	$100\theta_{\mathrm{s,eq}}$	$0.469 \pm 0.028$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 2.0$
$D_{40}$	$1413^{+200}_{-300}$	$H(0.15)$	$74 \pm 20$		
$D_{220}$	$6635^{+1000}_{-1000}$	$D_{\mathrm{M}}(0.15)$	$670^{+80}_{-200}$		

$$\bar{\chi}^2_{\mathrm{eff}} = 11.55; R - 1 = 0.00268$$



## 2.150 base\_lensing\_lenspriors\_post\_agrlmax425

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00049$	$D_{810}$	$2593^{+400}_{-500}$	$H(0.38)$	$84 \pm 10$
$\Omega_{\mathrm{c}}h^2$	$0.113^{+0.010}_{-0.013}$	$D_{1420}$	$806^{+100}_{-200}$	$D_{\mathrm{M}}(0.38)$	$1585^{+200}_{-500}$
$100\theta_{\mathrm{MC}}$	$1.034^{+0.077}_{-0.063}$	$D_{2000}$	$259^{+40}_{-60}$	$H(0.51)$	$90 \pm 10$
$\ln(10^{10}A_{\mathrm{s}})$	$3.12 \pm 0.14$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$2047^{+200}_{-600}$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$Y_{\mathrm{P}}$	$0.24531^{+0.00022}_{-0.00019}$	$H(0.61)$	$96 \pm 10$
$H_0$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00022}_{-0.00019}$	$D_{\mathrm{M}}(0.61)$	$2377^{+300}_{-700}$
$\Omega_{\Lambda}$	$0.653^{+0.21}_{-0.063}$	$10^5\mathrm{D}/\mathrm{H}$	$2.622 \pm 0.094$	$H(2.33)$	$231^{+12}_{-13}$
$\Omega_{\mathrm{m}}$	$0.347^{+0.063}_{-0.21}$	Age/Gyr	$14.1^{+1.2}_{-2.6}$	$D_{\mathrm{M}}(2.33)$	$5896^{+520}_{-1100}$
$\Omega_{\mathrm{m}}h^2$	$0.135^{+0.010}_{-0.013}$	$z_*$	$1089.5^{+1.1}_{-1.3}$	$f\sigma_8(0.15)$	$0.441^{+0.054}_{-0.040}$
$\Omega_{\mathrm{m}}h^3$	$0.094^{+0.020}_{-0.039}$	$r_*$	$146.7 \pm 3.2$	$\sigma_8(0.15)$	$0.741^{+0.15}_{-0.079}$
$\sigma_8$	$0.801^{+0.14}_{-0.077}$	$100\theta_*$	$1.034^{+0.077}_{-0.063}$	$f\sigma_8(0.38)$	$0.455^{+0.020}_{-0.018}$
$S_8$	$0.810^{+0.088}_{-0.14}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.24^{+0.93}_{-1.2}$	$\sigma_8(0.38)$	$0.659^{+0.16}_{-0.081}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.443^{+0.048}_{-0.075}$	$z_{\mathrm{drag}}$	$1059.0 \pm 1.5$	$f\sigma_8(0.51)$	$0.454^{+0.026}_{-0.017}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.591 \pm 0.019$	$r_{\mathrm{drag}}$	$149.4 \pm 3.3$	$\sigma_8(0.51)$	$0.619^{+0.16}_{-0.082}$
$\sigma_8/h^{0.5}$	$0.976^{+0.022}_{-0.019}$	$k_{\mathrm{D}}$	$0.1383^{+0.0033}_{-0.0038}$	$f\sigma_8(0.61)$	$0.451^{+0.036}_{-0.018}$
$r_{\mathrm{drag}}h$	$102 \pm 30$	$100\theta_{\mathrm{D}}$	$0.160^{+0.012}_{-0.0081}$	$\sigma_8(0.61)$	$0.590^{+0.16}_{-0.081}$
$\langle d^2 \rangle^{1/2}$	$2.500 \pm 0.055$	$z_{\mathrm{eq}}$	$3220^{+250}_{-310}$	$f\sigma_8(2.33)$	$0.299^{+0.089}_{-0.046}$
$z_{\mathrm{re}}$	$7.66 \pm 0.30$	$k_{\mathrm{eq}}$	$0.00983^{+0.00075}_{-0.00095}$	$\sigma_8(2.33)$	$0.311 \pm 0.069$
$10^9A_{\mathrm{s}}$	$2.29^{+0.28}_{-0.34}$	$100\theta_{\mathrm{eq}}$	$0.844 \pm 0.048$	$\chi^2_{\mathrm{lensing}}$	$7.5 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.05^{+0.25}_{-0.31}$	$100\theta_{\mathrm{s,eq}}$	$0.465 \pm 0.026$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 2.0$
$D_{40}$	$1381^{+200}_{-200}$	$H(0.15)$	$74 \pm 20$		
$D_{220}$	$6452^{+900}_{-1000}$	$D_{\mathrm{M}}(0.15)$	$671^{+80}_{-200}$		

$\bar{\chi}^2_{\mathrm{eff}} = 9.48$ ;  $R - 1 = 0.00229$



## 2.151 base\_lensing\_lenspriors\_post\_ptt

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02218 \pm 0.00051$	$D_{\mathrm{s10}}$	$3025 \pm 500$	$H(0.38)$	$82^{+10}_{-20}$
$\Omega_{\mathrm{c}}h^2$	$0.099^{+0.010}_{-0.012}$	$D_{1420}$	$964 \pm 200$	$D_{\mathrm{M}}(0.38)$	$1600^{+300}_{-500}$
$100\theta_{\mathrm{MC}}$	$1.017 \pm 0.058$	$D_{2000}$	$324^{+40}_{-90}$	$H(0.51)$	$88^{+10}_{-20}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.27^{+0.16}_{-0.12}$	$n_{\mathrm{s},0.002}$	$0.960 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$2071^{+400}_{-600}$
$n_{\mathrm{s}}$	$0.960 \pm 0.020$	$Y_{\mathrm{P}}$	$0.24530^{+0.00023}_{-0.00020}$	$H(0.61)$	$93^{+10}_{-20}$
$H_0$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00023}_{-0.00021}$	$D_{\mathrm{M}}(0.61)$	$2410^{+500}_{-600}$
$\Omega_{\Lambda}$	$0.689^{+0.18}_{-0.069}$	$10^5D/H$	$2.625 \pm 0.098$	$H(2.33)$	$221 \pm 12$
$\Omega_{\mathrm{m}}$	$0.311^{+0.069}_{-0.18}$	Age/Gyr	$14.6^{+2.0}_{-2.3}$	$D_{\mathrm{M}}(2.33)$	$6070^{+900}_{-1000}$
$\Omega_{\mathrm{m}}h^2$	$0.122^{+0.010}_{-0.012}$	$z_*$	$1088.3 \pm 1.2$	$f\sigma_8(0.15)$	$0.419 \pm 0.044$
$\Omega_{\mathrm{m}}h^3$	$0.084^{+0.020}_{-0.033}$	$r_*$	$150.4 \pm 3.4$	$\sigma_8(0.15)$	$0.737^{+0.11}_{-0.098}$
$\sigma_8$	$0.794^{+0.11}_{-0.093}$	$100\theta_*$	$1.017 \pm 0.058$	$f\sigma_8(0.38)$	$0.440^{+0.023}_{-0.018}$
$S_8$	$0.763^{+0.086}_{-0.12}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.8^{+1.1}_{-1.3}$	$\sigma_8(0.38)$	$0.66^{+0.12}_{-0.10}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.418^{+0.047}_{-0.067}$	$z_{\mathrm{drag}}$	$1057.9 \pm 1.6$	$f\sigma_8(0.51)$	$0.442 \pm 0.020$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.572 \pm 0.022$	$r_{\mathrm{drag}}$	$153.3 \pm 3.5$	$\sigma_8(0.51)$	$0.62^{+0.12}_{-0.10}$
$\sigma_8/h^{0.5}$	$0.968^{+0.028}_{-0.022}$	$k_{\mathrm{D}}$	$0.1344 \pm 0.0036$	$f\sigma_8(0.61)$	$0.440^{+0.028}_{-0.021}$
$r_{\mathrm{drag}}h$	$105^{+20}_{-30}$	$100\theta_{\mathrm{D}}$	$0.1581 \pm 0.0088$	$\sigma_8(0.61)$	$0.59 \pm 0.10$
$\langle d^2 \rangle^{1/2}$	$2.584 \pm 0.066$	$z_{\mathrm{eq}}$	$2904^{+250}_{-290}$	$f\sigma_8(2.33)$	$0.301 \pm 0.057$
$z_{\mathrm{re}}$	$7.40 \pm 0.30$	$k_{\mathrm{eq}}$	$0.00886^{+0.00076}_{-0.00088}$	$\sigma_8(2.33)$	$0.315 \pm 0.067$
$10^9A_{\mathrm{s}}$	$2.65 \pm 0.36$	$100\theta_{\mathrm{eq}}$	$0.898 \pm 0.051$	$\chi^2_{\mathrm{lensing}}$	$11.0 \pm 1.9$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.38 \pm 0.32$	$100\theta_{\mathrm{s,eq}}$	$0.493 \pm 0.027$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 2.1$
$D_{40}$	$1645 \pm 300$	$H(0.15)$	$73^{+10}_{-20}$		
$D_{220}$	$7958 \pm 1000$	$D_{\mathrm{M}}(0.15)$	$673^{+200}_{-200}$		

$$\bar{\chi}^2_{\mathrm{eff}} = 13.04; R - 1 = 0.02912$$



## 2.152 base\_lensing\_lenspriors\_post\_bfcl

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00049$	$D_{810}$	$2552^{+400}_{-500}$	$H(0.38)$	$84 \pm 10$
$\Omega_{\mathrm{c}}h^2$	$0.113^{+0.010}_{-0.013}$	$D_{1420}$	$793^{+100}_{-100}$	$D_{\mathrm{M}}(0.38)$	$1582^{+200}_{-500}$
$100\theta_{\mathrm{MC}}$	$1.034^{+0.076}_{-0.062}$	$D_{2000}$	$254^{+40}_{-60}$	$H(0.51)$	$90 \pm 10$
$\ln(10^{10}A_{\mathrm{s}})$	$3.11 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$2043^{+200}_{-600}$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$Y_{\mathrm{P}}$	$0.24531^{+0.00022}_{-0.00019}$	$H(0.61)$	$96 \pm 10$
$H_0$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00023}_{-0.00019}$	$D_{\mathrm{M}}(0.61)$	$2372^{+300}_{-700}$
$\Omega_{\Lambda}$	$0.655^{+0.21}_{-0.062}$	$10^5\mathrm{D}/\mathrm{H}$	$2.623^{+0.086}_{-0.097}$	$H(2.33)$	$231^{+12}_{-13}$
$\Omega_{\mathrm{m}}$	$0.345^{+0.062}_{-0.21}$	Age/Gyr	$14.1^{+1.2}_{-2.5}$	$D_{\mathrm{M}}(2.33)$	$5890^{+530}_{-1100}$
$\Omega_{\mathrm{m}}h^2$	$0.135^{+0.010}_{-0.013}$	$z_{*}$	$1089.5^{+1.1}_{-1.3}$	$f\sigma_8(0.15)$	$0.437^{+0.053}_{-0.041}$
$\Omega_{\mathrm{m}}h^3$	$0.094^{+0.021}_{-0.039}$	$r_{*}$	$146.7 \pm 3.3$	$\sigma_8(0.15)$	$0.736^{+0.15}_{-0.079}$
$\sigma_8$	$0.795^{+0.14}_{-0.077}$	$100\theta_{*}$	$1.034^{+0.076}_{-0.062}$	$f\sigma_8(0.38)$	$0.451^{+0.020}_{-0.018}$
$S_8$	$0.801^{+0.086}_{-0.14}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$14.24^{+0.93}_{-1.2}$	$\sigma_8(0.38)$	$0.655^{+0.16}_{-0.081}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.439^{+0.047}_{-0.075}$	$z_{\mathrm{drag}}$	$1058.9 \pm 1.5$	$f\sigma_8(0.51)$	$0.450^{+0.025}_{-0.017}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.586 \pm 0.020$	$r_{\mathrm{drag}}$	$149.5 \pm 3.4$	$\sigma_8(0.51)$	$0.614^{+0.16}_{-0.081}$
$\sigma_8/h^{0.5}$	$0.967^{+0.022}_{-0.019}$	$k_{\mathrm{D}}$	$0.1383^{+0.0033}_{-0.0038}$	$f\sigma_8(0.61)$	$0.447^{+0.035}_{-0.018}$
$r_{\mathrm{drag}}h$	$103 \pm 30$	$100\theta_{\mathrm{D}}$	$0.160^{+0.012}_{-0.0089}$	$\sigma_8(0.61)$	$0.586^{+0.16}_{-0.081}$
$\langle d^2 \rangle^{1/2}$	$2.478 \pm 0.052$	$z_{\mathrm{eq}}$	$3219^{+250}_{-310}$	$f\sigma_8(2.33)$	$0.297^{+0.087}_{-0.046}$
$z_{\mathrm{re}}$	$7.66 \pm 0.30$	$k_{\mathrm{eq}}$	$0.00982^{+0.00076}_{-0.00096}$	$\sigma_8(2.33)$	$0.309 \pm 0.068$
$10^9A_{\mathrm{s}}$	$2.25^{+0.27}_{-0.33}$	$100\theta_{\mathrm{eq}}$	$0.844 \pm 0.049$	$\chi^2_{\mathrm{lensing}}$	$9.8 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.02^{+0.24}_{-0.30}$	$100\theta_{\mathrm{s,eq}}$	$0.465 \pm 0.026$	$\chi^2_{\mathrm{prior}}$	$1.9 \pm 1.9$
$D_{40}$	$1359^{+200}_{-200}$	$H(0.15)$	$74 \pm 20$		
$D_{220}$	$6347^{+900}_{-1000}$	$D_{\mathrm{M}}(0.15)$	$669^{+80}_{-200}$		

$$\bar{\chi}^2_{\mathrm{eff}} = 11.76; R - 1 = 0.00271$$



### 2.153 base\_lensing\_lenspriors\_post\_agr2bfcl

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02218 \pm 0.00049$	$D_{810}$	$2653^{+400}_{-500}$	$H(0.38)$	$84 \pm 10$
$\Omega_{\mathrm{c}}h^2$	$0.1082^{+0.0091}_{-0.011}$	$D_{1420}$	$828^{+100}_{-100}$	$D_{\mathrm{M}}(0.38)$	$1570^{+200}_{-500}$
$100\theta_{\mathrm{MC}}$	$1.032^{+0.078}_{-0.050}$	$D_{2000}$	$266^{+40}_{-60}$	$H(0.51)$	$90 \pm 10$
$\ln(10^{10}A_{\mathrm{s}})$	$3.14 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$2030^{+230}_{-590}$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$Y_{\mathrm{P}}$	$0.24530^{+0.00023}_{-0.00019}$	$H(0.61)$	$96 \pm 10$
$H_0$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00023}_{-0.00019}$	$D_{\mathrm{M}}(0.61)$	$2360^{+260}_{-660}$
$\Omega_{\Lambda}$	$0.675^{+0.19}_{-0.078}$	$10^5\mathrm{D}/\mathrm{H}$	$2.625^{+0.086}_{-0.099}$	$H(2.33)$	$228 \pm 11$
$\Omega_{\mathrm{m}}$	$0.325^{+0.055}_{-0.19}$	$\mathrm{Age}/\mathrm{Gyr}$	$14.2^{+1.2}_{-2.5}$	$D_{\mathrm{M}}(2.33)$	$5907^{+520}_{-1100}$
$\Omega_{\mathrm{m}}h^2$	$0.1311^{+0.0091}_{-0.011}$	$z_{*}$	$1089.1^{+1.0}_{-1.2}$	$f\sigma_8(0.15)$	$0.425^{+0.049}_{-0.042}$
$\Omega_{\mathrm{m}}h^3$	$0.092^{+0.022}_{-0.037}$	$r_{*}$	$147.8 \pm 2.9$	$\sigma_8(0.15)$	$0.734^{+0.14}_{-0.074}$
$\sigma_8$	$0.791^{+0.13}_{-0.071}$	$100\theta_{*}$	$1.032^{+0.078}_{-0.050}$	$f\sigma_8(0.38)$	$0.442^{+0.019}_{-0.014}$
$S_8$	$0.775^{+0.077}_{-0.13}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$14.38^{+0.87}_{-1.2}$	$\sigma_8(0.38)$	$0.655^{+0.15}_{-0.076}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.424^{+0.042}_{-0.071}$	$z_{\mathrm{drag}}$	$1058.6 \pm 1.4$	$f\sigma_8(0.51)$	$0.443^{+0.022}_{-0.014}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.575 \pm 0.016$	$r_{\mathrm{drag}}$	$150.6 \pm 3.0$	$\sigma_8(0.51)$	$0.615^{+0.15}_{-0.077}$
$\sigma_8/h^{0.5}$	$0.957^{+0.021}_{-0.017}$	$k_{\mathrm{D}}$	$0.1371^{+0.0029}_{-0.0033}$	$f\sigma_8(0.61)$	$0.441^{+0.031}_{-0.013}$
$r_{\mathrm{drag}}h$	$105 \pm 30$	$100\theta_{\mathrm{D}}$	$0.160^{+0.012}_{-0.0075}$	$\sigma_8(0.61)$	$0.587^{+0.15}_{-0.077}$
$\langle d^2 \rangle^{1/2}$	$2.484 \pm 0.050$	$z_{\mathrm{eq}}$	$3117^{+220}_{-270}$	$f\sigma_8(2.33)$	$0.298^{+0.083}_{-0.043}$
$z_{\mathrm{re}}$	$7.58 \pm 0.28$	$k_{\mathrm{eq}}$	$0.00951^{+0.00067}_{-0.00082}$	$\sigma_8(2.33)$	$0.311^{+0.096}_{-0.055}$
$10^9A_{\mathrm{s}}$	$2.33^{+0.26}_{-0.32}$	$100\theta_{\mathrm{eq}}$	$0.862 \pm 0.044$	$\chi^2_{\mathrm{lensing}}$	$12.1 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.08^{+0.23}_{-0.29}$	$100\theta_{\mathrm{s,eq}}$	$0.475 \pm 0.024$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 1.9$
$D_{40}$	$1420^{+200}_{-200}$	$H(0.15)$	$75 \pm 20$		
$D_{220}$	$6682^{+800}_{-1000}$	$D_{\mathrm{M}}(0.15)$	$662^{+80}_{-200}$		

$\bar{\chi}^2_{\mathrm{eff}} = 14.06$ ;  $R - 1 = 0.00285$



## 2.154 base\_lensing\_lenspriors\_post\_linear

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00049$	$D_{810}$	$2557^{+400}_{-500}$	$H(0.38)$	$84 \pm 10$
$\Omega_{\mathrm{c}}h^2$	$0.115^{+0.011}_{-0.013}$	$D_{1420}$	$793^{+100}_{-200}$	$D_{\mathrm{M}}(0.38)$	$1582^{+200}_{-500}$
$100\theta_{\mathrm{MC}}$	$1.036^{+0.076}_{-0.054}$	$D_{2000}$	$252^{+40}_{-60}$	$H(0.51)$	$91 \pm 10$
$\ln(10^{10}A_{\mathrm{s}})$	$3.11 \pm 0.14$	$n_{\mathrm{s},0.002}$	$0.960 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$2041^{+200}_{-600}$
$n_{\mathrm{s}}$	$0.960 \pm 0.020$	$Y_{\mathrm{P}}$	$0.24531^{+0.00022}_{-0.00019}$	$H(0.61)$	$96 \pm 10$
$H_0$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00022}_{-0.00019}$	$D_{\mathrm{M}}(0.61)$	$2370^{+300}_{-700}$
$\Omega_{\Lambda}$	$0.647^{+0.22}_{-0.065}$	$10^5\mathrm{D}/\mathrm{H}$	$2.621 \pm 0.094$	$H(2.33)$	$233^{+12}_{-13}$
$\Omega_{\mathrm{m}}$	$0.353^{+0.065}_{-0.22}$	Age/Gyr	$14.1^{+1.2}_{-2.5}$	$D_{\mathrm{M}}(2.33)$	$5866^{+520}_{-1100}$
$\Omega_{\mathrm{m}}h^2$	$0.138^{+0.011}_{-0.013}$	$z_*$	$1089.7^{+1.1}_{-1.3}$	$f\sigma_8(0.15)$	$0.447^{+0.057}_{-0.041}$
$\Omega_{\mathrm{m}}h^3$	$0.095^{+0.021}_{-0.039}$	$r_*$	$146.0 \pm 3.3$	$\sigma_8(0.15)$	$0.745^{+0.15}_{-0.080}$
$\sigma_8$	$0.806^{+0.14}_{-0.077}$	$100\theta_*$	$1.036^{+0.076}_{-0.056}$	$f\sigma_8(0.38)$	$0.460^{+0.021}_{-0.018}$
$S_8$	$0.821^{+0.093}_{-0.14}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.15^{+0.92}_{-1.2}$	$\sigma_8(0.38)$	$0.662^{+0.16}_{-0.082}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.450^{+0.051}_{-0.077}$	$z_{\mathrm{drag}}$	$1059.1 \pm 1.5$	$f\sigma_8(0.51)$	$0.458^{+0.026}_{-0.018}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.597 \pm 0.020$	$r_{\mathrm{drag}}$	$148.8 \pm 3.4$	$\sigma_8(0.51)$	$0.621^{+0.16}_{-0.082}$
$\sigma_8/h^{0.5}$	$0.981^{+0.024}_{-0.020}$	$k_{\mathrm{D}}$	$0.1390 \pm 0.0036$	$f\sigma_8(0.61)$	$0.454^{+0.036}_{-0.018}$
$r_{\mathrm{drag}}h$	$102 \pm 30$	$100\theta_{\mathrm{D}}$	$0.160^{+0.012}_{-0.0080}$	$\sigma_8(0.61)$	$0.592^{+0.16}_{-0.081}$
$\langle d^2 \rangle^{1/2}$	$2.495 \pm 0.055$	$z_{\mathrm{eq}}$	$3274^{+260}_{-320}$	$f\sigma_8(2.33)$	$0.300^{+0.088}_{-0.046}$
$z_{\mathrm{re}}$	$7.70 \pm 0.29$	$k_{\mathrm{eq}}$	$0.00999^{+0.00078}_{-0.00097}$	$\sigma_8(2.33)$	$0.312 \pm 0.069$
$10^9A_{\mathrm{s}}$	$2.26^{+0.27}_{-0.34}$	$100\theta_{\mathrm{eq}}$	$0.836 \pm 0.050$	$\chi^2_{\mathrm{lensing}}$	$10.1 \pm 1.9$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.02^{+0.24}_{-0.31}$	$100\theta_{\mathrm{s,eq}}$	$0.461 \pm 0.027$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 2.0$
$D_{40}$	$1357^{+200}_{-200}$	$H(0.15)$	$74 \pm 20$		
$D_{220}$	$6306^{+900}_{-1000}$	$D_{\mathrm{M}}(0.15)$	$670^{+80}_{-200}$		

$$\bar{\chi}^2_{\mathrm{eff}} = 12.03; R - 1 = 0.00429$$



## 2.155 base\_lensing\_lenspriors\_post\_acc

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00050$	$D_{810}$	$2618^{+400}_{-500}$	$H(0.38)$	$83 \pm 10$
$\Omega_{\mathrm{c}}h^2$	$0.1111^{+0.010}_{-0.013}$	$D_{1420}$	$816^{+100}_{-200}$	$D_{\mathrm{M}}(0.38)$	$1592^{+200}_{-500}$
$100\theta_{\mathrm{MC}}$	$1.031 \pm 0.059$	$D_{2000}$	$264^{+40}_{-60}$	$H(0.51)$	$90 \pm 10$
$\ln(10^{10}A_{\mathrm{s}})$	$3.13 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$2055^{+200}_{-600}$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00020}$	$H(0.61)$	$95 \pm 10$
$H_0$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2387^{+300}_{-700}$
$\Omega_{\Lambda}$	$0.654^{+0.21}_{-0.063}$	$10^5\mathrm{D}/\mathrm{H}$	$2.622 \pm 0.094$	$H(2.33)$	$230^{+12}_{-13}$
$\Omega_{\mathrm{m}}$	$0.346^{+0.063}_{-0.21}$	Age/Gyr	$14.2^{+1.3}_{-2.6}$	$D_{\mathrm{M}}(2.33)$	$5923^{+600}_{-1100}$
$\Omega_{\mathrm{m}}h^2$	$0.134^{+0.010}_{-0.013}$	$z_*$	$1089.4^{+1.1}_{-1.3}$	$f\sigma_8(0.15)$	$0.439^{+0.053}_{-0.041}$
$\Omega_{\mathrm{m}}h^3$	$0.092^{+0.020}_{-0.039}$	$r_*$	$147.0 \pm 3.2$	$\sigma_8(0.15)$	$0.738^{+0.15}_{-0.081}$
$\sigma_8$	$0.798^{+0.14}_{-0.079}$	$100\theta_*$	$1.031 \pm 0.059$	$f\sigma_8(0.38)$	$0.453^{+0.020}_{-0.017}$
$S_8$	$0.805^{+0.088}_{-0.14}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.31^{+0.95}_{-1.2}$	$\sigma_8(0.38)$	$0.657^{+0.16}_{-0.083}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.441^{+0.048}_{-0.074}$	$z_{\mathrm{drag}}$	$1058.8 \pm 1.5$	$f\sigma_8(0.51)$	$0.452^{+0.025}_{-0.017}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.589 \pm 0.019$	$r_{\mathrm{drag}}$	$149.8 \pm 3.3$	$\sigma_8(0.51)$	$0.616^{+0.16}_{-0.083}$
$\sigma_8/h^{0.5}$	$0.973^{+0.022}_{-0.020}$	$k_{\mathrm{D}}$	$0.1379^{+0.0033}_{-0.0037}$	$f\sigma_8(0.61)$	$0.448^{+0.036}_{-0.018}$
$r_{\mathrm{drag}}h$	$102 \pm 30$	$100\theta_{\mathrm{D}}$	$0.1599 \pm 0.0089$	$\sigma_8(0.61)$	$0.587^{+0.16}_{-0.083}$
$\langle d^2 \rangle^{1/2}$	$2.504 \pm 0.055$	$z_{\mathrm{eq}}$	$3187^{+250}_{-310}$	$f\sigma_8(2.33)$	$0.298^{+0.088}_{-0.046}$
$z_{\mathrm{re}}$	$7.63 \pm 0.30$	$k_{\mathrm{eq}}$	$0.00973^{+0.00075}_{-0.00094}$	$\sigma_8(2.33)$	$0.310 \pm 0.069$
$10^9A_{\mathrm{s}}$	$2.31^{+0.28}_{-0.34}$	$100\theta_{\mathrm{eq}}$	$0.848 \pm 0.048$	$\chi^2_{\mathrm{lensing}}$	$9.6 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.07^{+0.25}_{-0.31}$	$100\theta_{\mathrm{s,eq}}$	$0.467 \pm 0.026$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 2.0$
$D_{40}$	$1396^{+200}_{-200}$	$H(0.15)$	$74 \pm 20$		
$D_{220}$	$6548^{+900}_{-1000}$	$D_{\mathrm{M}}(0.15)$	$673^{+80}_{-200}$		

$$\bar{\chi}^2_{\mathrm{eff}} = 11.57; R - 1 = 0.00392$$



## 2.156 base\_lensing\_lenspriors\_post\_agr2acc

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02218 \pm 0.00050$	$D_{810}$	$2731^{+400}_{-500}$	$H(0.38)$	$84 \pm 10$
$\Omega_c h^2$	$0.1066^{+0.0090}_{-0.011}$	$D_{1420}$	$855^{+100}_{-100}$	$D_M(0.38)$	$1579^{+200}_{-500}$
$100\theta_{MC}$	$1.029^{+0.078}_{-0.052}$	$D_{2000}$	$277^{+40}_{-60}$	$H(0.51)$	$90 \pm 10$
$\ln(10^{10} A_s)$	$3.17 \pm 0.13$	$n_{s,0.002}$	$0.959 \pm 0.020$	$D_M(0.51)$	$2041^{+200}_{-600}$
$n_s$	$0.959 \pm 0.020$	$Y_P$	$0.24531^{+0.00023}_{-0.00020}$	$H(0.61)$	$95 \pm 10$
$H_0$	—	$Y_P^{BBN}$	$0.24663^{+0.00023}_{-0.00020}$	$D_M(0.61)$	$2373^{+260}_{-670}$
$\Omega_\Lambda$	$0.676^{+0.19}_{-0.070}$	$10^5 D/H$	$2.624 \pm 0.095$	$H(2.33)$	$227 \pm 11$
$\Omega_m$	$0.324^{+0.069}_{-0.19}$	Age/Gyr	$14.3^{+1.2}_{-2.5}$	$D_M(2.33)$	$5943^{+530}_{-1100}$
$\Omega_m h^2$	$0.1294^{+0.0091}_{-0.011}$	$z_*$	$1088.9^{+1.0}_{-1.1}$	$f\sigma_8(0.15)$	$0.425^{+0.050}_{-0.041}$
$\Omega_m h^3$	$0.090^{+0.021}_{-0.037}$	$r_*$	$148.3 \pm 2.9$	$\sigma_8(0.15)$	$0.736^{+0.14}_{-0.075}$
$\sigma_8$	$0.793^{+0.13}_{-0.072}$	$100\theta_*$	$1.029^{+0.078}_{-0.051}$	$f\sigma_8(0.38)$	$0.443^{+0.018}_{-0.014}$
$S_8$	$0.776^{+0.076}_{-0.13}$	$D_M(z_*)/\text{Gpc}$	$14.47^{+0.89}_{-1.3}$	$\sigma_8(0.38)$	$0.657^{+0.15}_{-0.077}$
$\sigma_8 \Omega_m^{0.5}$	$0.425^{+0.042}_{-0.072}$	$z_{\text{drag}}$	$1058.5 \pm 1.4$	$f\sigma_8(0.51)$	$0.445^{+0.022}_{-0.013}$
$\sigma_8 \Omega_m^{0.25}$	$0.577 \pm 0.016$	$r_{\text{drag}}$	$151.1 \pm 3.0$	$\sigma_8(0.51)$	$0.617^{+0.15}_{-0.078}$
$\sigma_8/h^{0.5}$	$0.962^{+0.021}_{-0.018}$	$k_D$	$0.1366^{+0.0029}_{-0.0033}$	$f\sigma_8(0.61)$	$0.442^{+0.031}_{-0.014}$
$r_{\text{drag}} h$	$104 \pm 30$	$100\theta_D$	$0.160^{+0.012}_{-0.0079}$	$\sigma_8(0.61)$	$0.589^{+0.15}_{-0.078}$
$\langle d^2 \rangle^{1/2}$	$2.511 \pm 0.053$	$z_{\text{eq}}$	$3077^{+220}_{-260}$	$f\sigma_8(2.33)$	$0.299^{+0.085}_{-0.044}$
$z_{\text{re}}$	$7.55 \pm 0.28$	$k_{\text{eq}}$	$0.00939^{+0.00066}_{-0.00080}$	$\sigma_8(2.33)$	$0.313^{+0.099}_{-0.057}$
$10^9 A_s$	$2.40^{+0.27}_{-0.33}$	$100\theta_{\text{eq}}$	$0.868 \pm 0.044$	$\chi^2_{\text{lensing}}$	$12.0 \pm 2.1$
$10^9 A_s e^{-2\tau}$	$2.15^{+0.24}_{-0.30}$	$100\theta_{s,\text{eq}}$	$0.478 \pm 0.023$	$\chi^2_{\text{prior}}$	$2.0 \pm 2.0$
$D_{40}$	$1466^{+200}_{-200}$	$H(0.15)$	$74 \pm 20$		
$D_{220}$	$6931^{+800}_{-1000}$	$D_M(0.15)$	$665^{+80}_{-200}$		
$\bar{\chi}^2_{\text{eff}} = 13.97; R - 1 = 0.00539$					



## 2.157 base\_lensing\_lenspriors\_post\_takahashi

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00049$	$D_{810}$	$2645^{+400}_{-500}$	$H(0.38)$	$83 \pm 10$
$\Omega_{\mathrm{c}}h^2$	$0.1104^{+0.0099}_{-0.013}$	$D_{1420}$	$825^{+100}_{-200}$	$D_{\mathrm{M}}(0.38)$	$1588^{+200}_{-500}$
$100\theta_{\mathrm{MC}}$	$1.031^{+0.075}_{-0.056}$	$D_{2000}$	$266^{+40}_{-60}$	$H(0.51)$	$90 \pm 10$
$\ln(10^{10}A_{\mathrm{s}})$	$3.14 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.960 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$2051^{+200}_{-600}$
$n_{\mathrm{s}}$	$0.960 \pm 0.020$	$Y_{\mathrm{P}}$	$0.24531^{+0.00022}_{-0.00019}$	$H(0.61)$	$95 \pm 10$
$H_0$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00022}_{-0.00019}$	$D_{\mathrm{M}}(0.61)$	$2382^{+300}_{-700}$
$\Omega_{\Lambda}$	$0.658^{+0.21}_{-0.063}$	$10^5\mathrm{D}/\mathrm{H}$	$2.622 \pm 0.094$	$H(2.33)$	$230^{+11}_{-13}$
$\Omega_{\mathrm{m}}$	$0.342^{+0.062}_{-0.21}$	Age/Gyr	$14.2^{+1.2}_{-2.6}$	$D_{\mathrm{M}}(2.33)$	$5923^{+530}_{-1100}$
$\Omega_{\mathrm{m}}h^2$	$0.133^{+0.010}_{-0.013}$	$z_{*}$	$1089.3^{+1.1}_{-1.3}$	$f\sigma_8(0.15)$	$0.437^{+0.055}_{-0.042}$
$\Omega_{\mathrm{m}}h^3$	$0.092^{+0.020}_{-0.038}$	$r_{*}$	$147.3 \pm 3.2$	$\sigma_8(0.15)$	$0.738^{+0.15}_{-0.079}$
$\sigma_8$	$0.797^{+0.14}_{-0.076}$	$100\theta_{*}$	$1.031^{+0.075}_{-0.057}$	$f\sigma_8(0.38)$	$0.452^{+0.021}_{-0.018}$
$S_8$	$0.800^{+0.089}_{-0.14}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$14.34^{+0.94}_{-1.2}$	$\sigma_8(0.38)$	$0.657^{+0.16}_{-0.081}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.438^{+0.049}_{-0.076}$	$z_{\mathrm{drag}}$	$1058.8 \pm 1.5$	$f\sigma_8(0.51)$	$0.451^{+0.024}_{-0.018}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.587 \pm 0.020$	$r_{\mathrm{drag}}$	$150.0 \pm 3.3$	$\sigma_8(0.51)$	$0.617^{+0.16}_{-0.081}$
$\sigma_8/h^{0.5}$	$0.972^{+0.024}_{-0.020}$	$k_{\mathrm{D}}$	$0.1377^{+0.0032}_{-0.0037}$	$f\sigma_8(0.61)$	$0.448^{+0.034}_{-0.018}$
$r_{\mathrm{drag}}h$	$103 \pm 30$	$100\theta_{\mathrm{D}}$	$0.160^{+0.012}_{-0.0082}$	$\sigma_8(0.61)$	$0.588^{+0.16}_{-0.081}$
$\langle d^2 \rangle^{1/2}$	$2.506 \pm 0.054$	$z_{\mathrm{eq}}$	$3168^{+240}_{-300}$	$f\sigma_8(2.33)$	$0.298^{+0.087}_{-0.046}$
$z_{\mathrm{re}}$	$7.61 \pm 0.29$	$k_{\mathrm{eq}}$	$0.00967^{+0.00073}_{-0.00093}$	$\sigma_8(2.33)$	$0.311 \pm 0.069$
$10^9A_{\mathrm{s}}$	$2.33^{+0.28}_{-0.35}$	$100\theta_{\mathrm{eq}}$	$0.852 \pm 0.049$	$\chi^2_{\mathrm{lensing}}$	$9.6 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.09^{+0.25}_{-0.31}$	$100\theta_{\mathrm{s,eq}}$	$0.469 \pm 0.026$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 2.0$
$D_{40}$	$1410^{+200}_{-300}$	$H(0.15)$	$74 \pm 20$		
$D_{220}$	$6626^{+900}_{-1000}$	$D_{\mathrm{M}}(0.15)$	$671^{+80}_{-200}$		

$$\bar{\chi}^2_{\mathrm{eff}} = 11.52; R - 1 = 0.00192$$



## 2.158 base\_lensing\_lenspriors\_post\_agr2takahashi

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00050$	$D_{810}$	$2761 \pm 500$	$H(0.38)$	$84 \pm 10$
$\Omega_{\mathrm{c}}h^2$	$0.1057^{+0.0088}_{-0.011}$	$D_{1420}$	$865^{+100}_{-100}$	$D_{\mathrm{M}}(0.38)$	$1572^{+200}_{-500}$
$100\theta_{\mathrm{MC}}$	$1.029^{+0.079}_{-0.049}$	$D_{2000}$	$280^{+40}_{-60}$	$H(0.51)$	$90 \pm 10$
$\ln(10^{10}A_{\mathrm{s}})$	$3.18 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$2034^{+200}_{-600}$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00020}$	$H(0.61)$	$95 \pm 10$
$H_0$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2365^{+260}_{-660}$
$\Omega_{\Lambda}$	$0.681^{+0.19}_{-0.054}$	$10^5\mathrm{D}/\mathrm{H}$	$2.623^{+0.088}_{-0.098}$	$H(2.33)$	$226 \pm 11$
$\Omega_{\mathrm{m}}$	$0.319^{+0.054}_{-0.19}$	$\mathrm{Age}/\mathrm{Gyr}$	$14.3^{+1.2}_{-2.5}$	$D_{\mathrm{M}}(2.33)$	$5937^{+510}_{-1100}$
$\Omega_{\mathrm{m}}h^2$	$0.1286^{+0.0088}_{-0.011}$	$z_*$	$1088.9^{+1.0}_{-1.1}$	$f\sigma_8(0.15)$	$0.422^{+0.050}_{-0.044}$
$\Omega_{\mathrm{m}}h^3$	$0.090^{+0.024}_{-0.037}$	$r_*$	$148.5 \pm 2.8$	$\sigma_8(0.15)$	$0.737^{+0.14}_{-0.072}$
$\sigma_8$	$0.794^{+0.13}_{-0.070}$	$100\theta_*$	$1.029^{+0.079}_{-0.049}$	$f\sigma_8(0.38)$	$0.441^{+0.020}_{-0.014}$
$S_8$	$0.770^{+0.078}_{-0.13}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.49^{+0.87}_{-1.3}$	$\sigma_8(0.38)$	$0.658^{+0.15}_{-0.075}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.422^{+0.043}_{-0.073}$	$z_{\mathrm{drag}}$	$1058.4 \pm 1.4$	$f\sigma_8(0.51)$	$0.443^{+0.021}_{-0.014}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.574 \pm 0.017$	$r_{\mathrm{drag}}$	$151.3 \pm 3.0$	$\sigma_8(0.51)$	$0.618^{+0.15}_{-0.076}$
$\sigma_8/h^{0.5}$	$0.960^{+0.023}_{-0.019}$	$k_{\mathrm{D}}$	$0.1364 \pm 0.0031$	$f\sigma_8(0.61)$	$0.441^{+0.030}_{-0.014}$
$r_{\mathrm{drag}}h$	$105 \pm 30$	$100\theta_{\mathrm{D}}$	$0.160^{+0.012}_{-0.0074}$	$\sigma_8(0.61)$	$0.590^{+0.15}_{-0.075}$
$\langle d^2 \rangle^{1/2}$	$2.512 \pm 0.053$	$z_{\mathrm{eq}}$	$3057^{+210}_{-260}$	$f\sigma_8(2.33)$	$0.300^{+0.084}_{-0.043}$
$z_{\mathrm{re}}$	$7.53 \pm 0.28$	$k_{\mathrm{eq}}$	$0.00933^{+0.00064}_{-0.00078}$	$\sigma_8(2.33)$	$0.314^{+0.098}_{-0.057}$
$10^9A_{\mathrm{s}}$	$2.42^{+0.27}_{-0.34}$	$100\theta_{\mathrm{eq}}$	$0.873 \pm 0.045$	$\chi^2_{\mathrm{lensing}}$	$11.9 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.16^{+0.24}_{-0.30}$	$100\theta_{\mathrm{s,eq}}$	$0.480 \pm 0.024$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 2.0$
$D_{40}$	$1481^{+200}_{-200}$	$H(0.15)$	$75 \pm 20$		
$D_{220}$	$7017^{+900}_{-1000}$	$D_{\mathrm{M}}(0.15)$	$662^{+80}_{-200}$		

$$\bar{\chi}^2_{\mathrm{eff}} = 13.92; R - 1 = 0.00257$$



## 2.159 base\_lensing\_lenspriors\_post\_Apr6

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00049$	$D_{810}$	$2562^{+400}_{-500}$	$H(0.38)$	$84 \pm 10$
$\Omega_{\mathrm{c}}h^2$	$0.113^{+0.010}_{-0.013}$	$D_{1420}$	$796^{+100}_{-100}$	$D_{\mathrm{M}}(0.38)$	$1586^{+200}_{-500}$
$100\theta_{\mathrm{MC}}$	$1.034^{+0.076}_{-0.065}$	$D_{2000}$	$255^{+40}_{-60}$	$H(0.51)$	$90 \pm 10$
$\ln(10^{10}A_{\mathrm{s}})$	$3.11 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$2047^{+200}_{-600}$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$Y_{\mathrm{P}}$	$0.24531^{+0.00022}_{-0.00019}$	$H(0.61)$	$96 \pm 10$
$H_0$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00022}_{-0.00019}$	$D_{\mathrm{M}}(0.61)$	$2377^{+300}_{-700}$
$\Omega_{\Lambda}$	$0.650^{+0.21}_{-0.063}$	$10^5\mathrm{D}/\mathrm{H}$	$2.622^{+0.086}_{-0.096}$	$H(2.33)$	$232^{+12}_{-13}$
$\Omega_{\mathrm{m}}$	$0.350^{+0.064}_{-0.21}$	Age/Gyr	$14.1^{+1.2}_{-2.6}$	$D_{\mathrm{M}}(2.33)$	$5891^{+530}_{-1100}$
$\Omega_{\mathrm{m}}h^2$	$0.136^{+0.010}_{-0.013}$	$z_{*}$	$1089.5^{+1.1}_{-1.3}$	$f\sigma_8(0.15)$	$0.442^{+0.054}_{-0.040}$
$\Omega_{\mathrm{m}}h^3$	$0.094^{+0.020}_{-0.039}$	$r_{*}$	$146.5 \pm 3.2$	$\sigma_8(0.15)$	$0.739^{+0.15}_{-0.080}$
$\sigma_8$	$0.799^{+0.14}_{-0.077}$	$100\theta_{*}$	$1.034^{+0.076}_{-0.065}$	$f\sigma_8(0.38)$	$0.455^{+0.020}_{-0.018}$
$S_8$	$0.811^{+0.088}_{-0.14}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$14.22^{+0.93}_{-1.2}$	$\sigma_8(0.38)$	$0.658^{+0.16}_{-0.082}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.444^{+0.048}_{-0.075}$	$z_{\mathrm{drag}}$	$1059.0 \pm 1.5$	$f\sigma_8(0.51)$	$0.454^{+0.026}_{-0.017}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.591 \pm 0.020$	$r_{\mathrm{drag}}$	$149.3 \pm 3.3$	$\sigma_8(0.51)$	$0.617^{+0.16}_{-0.082}$
$\sigma_8/h^{0.5}$	$0.974^{+0.022}_{-0.019}$	$k_{\mathrm{D}}$	$0.1385^{+0.0033}_{-0.0038}$	$f\sigma_8(0.61)$	$0.450^{+0.036}_{-0.018}$
$r_{\mathrm{drag}}h$	$102 \pm 30$	$100\theta_{\mathrm{D}}$	$0.160^{+0.012}_{-0.0086}$	$\sigma_8(0.61)$	$0.588^{+0.16}_{-0.082}$
$\langle d^2 \rangle^{1/2}$	$2.492 \pm 0.054$	$z_{\mathrm{eq}}$	$3236^{+250}_{-310}$	$f\sigma_8(2.33)$	$0.298 \pm 0.060$
$z_{\mathrm{re}}$	$7.67 \pm 0.30$	$k_{\mathrm{eq}}$	$0.00988^{+0.00076}_{-0.00096}$	$\sigma_8(2.33)$	$0.310 \pm 0.069$
$10^9A_{\mathrm{s}}$	$2.26^{+0.27}_{-0.34}$	$100\theta_{\mathrm{eq}}$	$0.841 \pm 0.048$	$\chi^2_{\mathrm{lensing}}$	$8.4 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.03^{+0.24}_{-0.30}$	$100\theta_{\mathrm{s,eq}}$	$0.464 \pm 0.026$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 2.0$
$D_{40}$	$1364^{+200}_{-200}$	$H(0.15)$	$74 \pm 20$		
$D_{220}$	$6361^{+900}_{-1000}$	$D_{\mathrm{M}}(0.15)$	$671^{+80}_{-200}$		

$$\bar{\chi}^2_{\mathrm{eff}} = 10.40; R - 1 = 0.00244$$



## 2.160 base\_lensing\_lenspriors\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022202	$0.02221 \pm 0.00050$	$D_{810}$	2895	$2857^{+400}_{-400}$	$H(0.38)$	84.80	$84.6^{+2.0}_{-2.3}$
$\Omega_c h^2$	0.1100	$0.1120^{+0.0085}_{-0.011}$	$D_{1420}$	921	$909^{+100}_{-100}$	$D_M(0.38)$	1477	$1487^{+55}_{-63}$
$100\theta_{MC}$	1.04090	$1.04090 \pm 0.00060$	$D_{2000}$	258.3	$255^{+30}_{-40}$	$H(0.51)$	90.97	$90.9^{+1.4}_{-1.8}$
$\ln(10^{10} A_s)$	3.168	$3.15 \pm 0.13$	$n_{s,0.002}$	0.9606	$0.960 \pm 0.020$	$D_M(0.51)$	1921	$1932 \pm 69$
$n_s$	0.9606	$0.960 \pm 0.020$	$Y_P$	0.245327	$0.24532^{+0.00022}_{-0.00020}$	$H(0.61)$	96.15	$96.14^{+0.86}_{-1.4}$
$H_0$	70.90	$70.3 \pm 3.7$	$Y_P^{BBN}$	0.246653	$0.24664^{+0.00022}_{-0.00020}$	$D_M(0.61)$	2242	$2253 \pm 73$
$\Omega_\Lambda$	0.7357	$0.723^{+0.059}_{-0.036}$	$10^5 D/H$	2.618	$2.619 \pm 0.094$	$H(2.33)$	229.8	$231.1^{+5.6}_{-7.3}$
$\Omega_m$	0.2643	$0.277^{+0.036}_{-0.059}$	Age/Gyr	13.765	$13.767^{+0.077}_{-0.068}$	$D_M(2.33)$	5742.2	$5742^{+42}_{-32}$
$\Omega_m h^2$	0.1329	$0.1349^{+0.0085}_{-0.011}$	$z_*$	1089.24	$1089.41^{+0.96}_{-1.1}$	$f\sigma_8(0.15)$	0.4315	$0.435 \pm 0.029$
$\Omega_m h^3$	0.09420	$0.0945 \pm 0.0021$	$r_*$	147.22	$146.8^{+2.9}_{-2.5}$	$\sigma_8(0.15)$	0.7662	$0.761^{+0.024}_{-0.021}$
$\sigma_8$	0.8237	$0.819^{+0.021}_{-0.019}$	$100\theta_*$	1.04112	$1.04112 \pm 0.00061$	$f\sigma_8(0.38)$	0.4607	$0.462^{+0.021}_{-0.017}$
$S_8$	0.773	$0.783^{+0.055}_{-0.063}$	$D_M(z_*)/\text{Gpc}$	14.141	$14.10^{+0.28}_{-0.24}$	$\sigma_8(0.38)$	0.6848	$0.679^{+0.028}_{-0.022}$
$\sigma_8 \Omega_m^{0.5}$	0.4235	$0.429^{+0.030}_{-0.035}$	$z_{\text{drag}}$	1058.83	$1058.9 \pm 1.4$	$f\sigma_8(0.51)$	0.4652	$0.465^{+0.015}_{-0.012}$
$\sigma_8 \Omega_m^{0.25}$	0.5906	$0.592 \pm 0.020$	$r_{\text{drag}}$	150.00	$149.5^{+3.0}_{-2.7}$	$\sigma_8(0.51)$	0.6433	$0.638^{+0.028}_{-0.023}$
$\sigma_8/h^{0.5}$	0.9783	$0.978 \pm 0.021$	$k_D$	0.13771	$0.1382^{+0.0028}_{-0.0033}$	$f\sigma_8(0.61)$	0.4642	$0.463^{+0.012}_{-0.0096}$
$r_{\text{drag}} h$	106.4	$105.3 \pm 7.5$	$100\theta_D$	0.16133	$0.16129 \pm 0.00081$	$\sigma_8(0.61)$	0.6136	$0.608^{+0.029}_{-0.023}$
$\langle d^2 \rangle^{1/2}$	2.506	$2.500 \pm 0.051$	$z_{\text{eq}}$	3160	$3207^{+200}_{-260}$	$f\sigma_8(2.33)$	0.3115	$0.308^{+0.017}_{-0.014}$
$z_{\text{re}}$	7.625	$7.66^{+0.17}_{-0.20}$	$k_{\text{eq}}$	0.00964	$0.00979^{+0.00062}_{-0.00081}$	$\sigma_8(2.33)$	0.3237	$0.320^{+0.020}_{-0.018}$
$10^9 A_s$	2.375	$2.35^{+0.27}_{-0.32}$	$100\theta_{\text{eq}}$	0.8592	$0.853 \pm 0.047$	$\chi^2_{\text{lensing}}$	7.57	$9.6 \pm 2.0$
$10^9 A_s e^{-2\tau}$	2.128	$2.10^{+0.24}_{-0.28}$	$100\theta_{s,\text{eq}}$	0.4734	$0.470 \pm 0.024$	$\chi^2_{\text{prior}}$	0.00	$3.0 \pm 2.5$
$D_{40}$	1441	$1422^{+200}_{-200}$	$H(0.15)$	75.63	$75.2 \pm 3.2$			
$D_{220}$	6780	$6683^{+900}_{-1000}$	$D_M(0.15)$	614.7	$620^{+27}_{-32}$			

Best-fit  $\chi^2_{\text{eff}} = 7.57$ ;  $\bar{\chi}^2_{\text{eff}} = 12.61$ ;  $R - 1 = 0.00164$

$\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 7.57



## 2.161 base\_lensing\_lenspriors\_theta\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022210	$0.02221 \pm 0.00050$	$D_{810}$	2676	$2678^{+150}_{-180}$	$H(0.38)$	83.55	$83.58^{+0.80}_{-0.91}$
$\Omega_c h^2$	0.11581	$0.1158 \pm 0.0040$	$D_{1420}$	853	$854^{+50}_{-58}$	$D_M(0.38)$	1512.0	$1512 \pm 24$
$100\theta_{MC}$	1.04089	$1.04090 \pm 0.00061$	$D_{2000}$	239.7	$240^{+15}_{-17}$	$H(0.51)$	90.06	$90.10^{+0.61}_{-0.70}$
$\ln(10^{10} A_s)$	3.096	$3.095 \pm 0.056$	$n_{s,0.002}$	0.9562	$0.956 \pm 0.018$	$D_M(0.51)$	1961.5	$1961 \pm 28$
$n_s$	0.9562	$0.956 \pm 0.018$	$Y_P$	0.245330	$0.24532 \pm 0.00022$	$H(0.61)$	95.52	$95.56^{+0.48}_{-0.56}$
$H_0$	68.71	$68.7 \pm 1.5$	$Y_P^{BBN}$	0.246656	$0.24665 \pm 0.00022$	$D_M(0.61)$	2284.8	$2284 \pm 30$
$\Omega_\Lambda$	0.7063	$0.706 \pm 0.021$	$10^5 D/H$	2.616	$2.618 \pm 0.095$	$H(2.33)$	233.63	$233.6 \pm 2.8$
$\Omega_m$	0.2937	$0.294 \pm 0.021$	Age/Gyr	13.796	$13.794 \pm 0.054$	$D_M(2.33)$	5760.3	$5759 \pm 24$
$\Omega_m h^2$	0.13866	$0.1387 \pm 0.0041$	$z_*$	1089.75	$1089.76 \pm 0.68$	$f\sigma_8(0.15)$	0.4481	$0.448 \pm 0.014$
$\Omega_m h^3$	0.09528	$0.0953 \pm 0.0013$	$r_*$	145.65	$145.7 \pm 1.2$	$\sigma_8(0.15)$	0.7556	$0.755 \pm 0.016$
$\sigma_8$	0.8157	$0.815 \pm 0.016$	$100\theta_*$	1.04110	$1.04110 \pm 0.00061$	$f\sigma_8(0.38)$	0.4705	$0.470 \pm 0.011$
$S_8$	0.8071	$0.806 \pm 0.027$	$D_M(z_*)/\text{Gpc}$	13.990	$13.99 \pm 0.11$	$\sigma_8(0.38)$	0.6718	$0.671 \pm 0.015$
$\sigma_8 \Omega_m^{0.5}$	0.4420	$0.442 \pm 0.015$	$z_{\text{drag}}$	1059.25	$1059.3 \pm 1.2$	$f\sigma_8(0.51)$	0.4713	$0.4706 \pm 0.0094$
$\sigma_8 \Omega_m^{0.25}$	0.6005	$0.600 \pm 0.013$	$r_{\text{drag}}$	148.40	$148.4 \pm 1.3$	$\sigma_8(0.51)$	0.6295	$0.629 \pm 0.015$
$\sigma_8/h^{0.5}$	0.9840	$0.983 \pm 0.019$	$k_D$	0.13938	$0.1394 \pm 0.0016$	$f\sigma_8(0.61)$	0.4677	$0.4671 \pm 0.0088$
$r_{\text{drag}} h$	101.97	$102.0 \pm 2.9$	$100\theta_D$	0.16111	$0.16113 \pm 0.00073$	$\sigma_8(0.61)$	0.5995	$0.599 \pm 0.015$
$\langle d^2 \rangle^{1/2}$	2.4867	$2.486 \pm 0.041$	$z_{\text{eq}}$	3298	$3299 \pm 98$	$f\sigma_8(2.33)$	0.3030	$0.3028 \pm 0.0081$
$z_{\text{re}}$	7.719	$7.72 \pm 0.12$	$k_{\text{eq}}$	0.010066	$0.01007 \pm 0.00030$	$\sigma_8(2.33)$	0.3132	$0.3131 \pm 0.0091$
$10^9 A_s$	2.212	$2.21^{+0.11}_{-0.13}$	$100\theta_{\text{eq}}$	0.8319	$0.832 \pm 0.018$	$\chi^2_{\text{lensing}}$	7.88	$9.2 \pm 1.6$
$10^9 A_s e^{-2\tau}$	1.981	$1.98^{+0.10}_{-0.12}$	$100\theta_{s,\text{eq}}$	0.4592	$0.4594 \pm 0.0095$	$\chi^2_{\text{JLA}}$	1034.79	$1035.7 \pm 1.3$
$D_{40}$	1333	$1335^{+80}_{-90}$	$H(0.15)$	73.79	$73.8 \pm 1.2$	$\chi^2_{\text{prior}}$	0.04	$2.9 \pm 2.4$
$D_{220}$	6178	$6189^{+380}_{-450}$	$D_M(0.15)$	632.2	$632 \pm 12$			

Best-fit  $\chi^2_{\text{eff}} = 1042.71$ ;  $\bar{\chi}^2_{\text{eff}} = 1047.77$ ;  $R - 1 = 0.00295$

$\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmargd: 7.88 SN - JLA Pantheon18: 1034.79



## 2.162 base\_lensing\_lenspriors\_theta\_post\_agr2

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00050$	$D_{810}$	$2982^{+300}_{-400}$	$H(0.38)$	$85.5 \pm 2.0$
$\Omega_{\mathrm{c}}h^2$	$0.1077^{+0.0070}_{-0.0091}$	$D_{1420}$	$945^{+100}_{-100}$	$D_{\mathrm{M}}(0.38)$	$1462^{+47}_{-54}$
$100\theta_{\mathrm{MC}}$	$1.04090 \pm 0.00060$	$D_{2000}$	$265^{+30}_{-30}$	$H(0.51)$	$91.5^{+1.4}_{-1.7}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.19^{+0.12}_{-0.11}$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$1902^{+56}_{-63}$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$Y_{\mathrm{P}}$	$0.24531^{+0.00022}_{-0.00020}$	$H(0.61)$	$96.62^{+0.94}_{-1.3}$
$H_0$	$72.0 \pm 3.3$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00022}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2221 \pm 64$
$\Omega_{\Lambda}$	$0.745^{+0.046}_{-0.030}$	$10^5\mathrm{D}/\mathrm{H}$	$2.621 \pm 0.094$	$H(2.33)$	$228.3^{+4.7}_{-6.1}$
$\Omega_{\mathrm{m}}$	$0.255^{+0.030}_{-0.046}$	Age/Gyr	$13.744 \pm 0.071$	$D_{\mathrm{M}}(2.33)$	$5729^{+40}_{-34}$
$\Omega_{\mathrm{m}}h^2$	$0.1305^{+0.0071}_{-0.0091}$	$z_*$	$1089.03^{+0.87}_{-0.99}$	$f\sigma_8(0.15)$	$0.420 \pm 0.024$
$\Omega_{\mathrm{m}}h^3$	$0.0937^{+0.0018}_{-0.0020}$	$r_*$	$147.9^{+2.5}_{-2.2}$	$\sigma_8(0.15)$	$0.763^{+0.022}_{-0.020}$
$\sigma_8$	$0.819 \pm 0.020$	$100\theta_*$	$1.04113 \pm 0.00061$	$f\sigma_8(0.38)$	$0.451^{+0.018}_{-0.015}$
$S_8$	$0.752^{+0.045}_{-0.050}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.21^{+0.24}_{-0.21}$	$\sigma_8(0.38)$	$0.683^{+0.025}_{-0.021}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.412^{+0.025}_{-0.028}$	$z_{\mathrm{drag}}$	$1058.6 \pm 1.4$	$f\sigma_8(0.51)$	$0.456^{+0.013}_{-0.011}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.580 \pm 0.017$	$r_{\mathrm{drag}}$	$150.7^{+2.6}_{-2.3}$	$\sigma_8(0.51)$	$0.643^{+0.025}_{-0.021}$
$\sigma_8/h^{0.5}$	$0.965 \pm 0.019$	$k_{\mathrm{D}}$	$0.1370^{+0.0024}_{-0.0028}$	$f\sigma_8(0.61)$	$0.456^{+0.011}_{-0.0088}$
$r_{\mathrm{drag}}h$	$108.6 \pm 6.6$	$100\theta_{\mathrm{D}}$	$0.16146 \pm 0.00079$	$\sigma_8(0.61)$	$0.614^{+0.025}_{-0.022}$
$\langle d^2 \rangle^{1/2}$	$2.506 \pm 0.050$	$z_{\mathrm{eq}}$	$3104^{+170}_{-220}$	$f\sigma_8(2.33)$	$0.312^{+0.015}_{-0.013}$
$z_{\mathrm{re}}$	$7.59^{+0.15}_{-0.18}$	$k_{\mathrm{eq}}$	$0.00947^{+0.00052}_{-0.00067}$	$\sigma_8(2.33)$	$0.326^{+0.018}_{-0.016}$
$10^9A_{\mathrm{s}}$	$2.44 \pm 0.28$	$100\theta_{\mathrm{eq}}$	$0.873 \pm 0.041$	$\chi^2_{\mathrm{lensing}}$	$11.9 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.18 \pm 0.25$	$100\theta_{\mathrm{s,eq}}$	$0.481 \pm 0.022$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.5$
$D_{40}$	$1497^{+200}_{-200}$	$H(0.15)$	$76.6 \pm 2.8$		
$D_{220}$	$7076^{+900}_{-1000}$	$D_{\mathrm{M}}(0.15)$	$607^{+22}_{-27}$		

$\bar{\chi}^2_{\mathrm{eff}} = 14.87$ ;  $R - 1 = 0.00258$



## 2.163 base\_lensing\_lenspriors\_theta\_post\_conslmin40

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00050$	$D_{810}$	$2872^{+400}_{-500}$	$H(0.38)$	$84.7^{+2.2}_{-2.8}$
$\Omega_{\mathrm{c}}h^2$	$0.1120^{+0.0096}_{-0.013}$	$D_{1420}$	$913^{+100}_{-200}$	$D_{\mathrm{M}}(0.38)$	$1487^{+64}_{-72}$
$100\theta_{\mathrm{MC}}$	$1.04090 \pm 0.00061$	$D_{2000}$	$256^{+30}_{-40}$	$H(0.51)$	$90.9^{+1.5}_{-2.1}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.15 \pm 0.14$	$n_{\mathrm{s},0.002}$	$0.960 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$1931 \pm 78$
$n_{\mathrm{s}}$	$0.960 \pm 0.020$	$Y_{\mathrm{P}}$	$0.24531^{+0.00022}_{-0.00020}$	$H(0.61)$	$96.21^{+0.90}_{-1.6}$
$H_0$	$70.4 \pm 4.3$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00022}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2252 \pm 83$
$\Omega_{\Lambda}$	$0.722^{+0.069}_{-0.040}$	$10^5\mathrm{D}/\mathrm{H}$	$2.620 \pm 0.094$	$H(2.33)$	$231.1^{+6.4}_{-8.5}$
$\Omega_{\mathrm{m}}$	$0.278^{+0.040}_{-0.069}$	Age/Gyr	$13.764^{+0.086}_{-0.071}$	$D_{\mathrm{M}}(2.33)$	$5741^{+48}_{-34}$
$\Omega_{\mathrm{m}}h^2$	$0.1348^{+0.0096}_{-0.013}$	$z_{*}$	$1089.4^{+1.1}_{-1.2}$	$f\sigma_8(0.15)$	$0.435 \pm 0.033$
$\Omega_{\mathrm{m}}h^3$	$0.0945 \pm 0.0023$	$r_{*}$	$146.8^{+3.3}_{-2.9}$	$\sigma_8(0.15)$	$0.761^{+0.027}_{-0.022}$
$\sigma_8$	$0.819^{+0.023}_{-0.020}$	$100\theta_{*}$	$1.04112 \pm 0.00061$	$f\sigma_8(0.38)$	$0.461^{+0.024}_{-0.017}$
$S_8$	$0.782^{+0.062}_{-0.072}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$14.10^{+0.32}_{-0.28}$	$\sigma_8(0.38)$	$0.679^{+0.031}_{-0.025}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.428^{+0.034}_{-0.039}$	$z_{\mathrm{drag}}$	$1058.9 \pm 1.5$	$f\sigma_8(0.51)$	$0.464^{+0.017}_{-0.012}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.592^{+0.024}_{-0.021}$	$r_{\mathrm{drag}}$	$149.6^{+3.4}_{-3.0}$	$\sigma_8(0.51)$	$0.638^{+0.032}_{-0.026}$
$\sigma_8/h^{0.5}$	$0.977^{+0.023}_{-0.020}$	$k_{\mathrm{D}}$	$0.1382^{+0.0031}_{-0.0037}$	$f\sigma_8(0.61)$	$0.462^{+0.013}_{-0.0096}$
$r_{\mathrm{drag}}h$	$105.5 \pm 8.6$	$100\theta_{\mathrm{D}}$	$0.16131 \pm 0.00083$	$\sigma_8(0.61)$	$0.608^{+0.032}_{-0.026}$
$\langle d^2 \rangle^{1/2}$	$2.502 \pm 0.062$	$z_{\mathrm{eq}}$	$3206^{+230}_{-300}$	$f\sigma_8(2.33)$	$0.309^{+0.019}_{-0.016}$
$z_{\mathrm{re}}$	$7.66^{+0.19}_{-0.23}$	$k_{\mathrm{eq}}$	$0.00979^{+0.00070}_{-0.00093}$	$\sigma_8(2.33)$	$0.321^{+0.023}_{-0.020}$
$10^9A_{\mathrm{s}}$	$2.36^{+0.30}_{-0.37}$	$100\theta_{\mathrm{eq}}$	$0.854 \pm 0.053$	$\chi^2_{\mathrm{lensing}}$	$9.5 \pm 1.9$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.11^{+0.27}_{-0.33}$	$100\theta_{\mathrm{s,eq}}$	$0.471 \pm 0.028$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.5$
$D_{40}$	$1432^{+200}_{-300}$	$H(0.15)$	$75.3 \pm 3.6$		
$D_{220}$	$6733^{+1000}_{-1000}$	$D_{\mathrm{M}}(0.15)$	$620^{+30}_{-37}$		

$$\bar{\chi}^2_{\mathrm{eff}} = 12.57; R - 1 = 0.00195$$



## 2.164 base\_lensing\_lenspriors\_theta\_post\_agrlmax425

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00050$	$D_{810}$	$2814^{+400}_{-400}$	$H(0.38)$	$84.3^{+2.0}_{-2.4}$
$\Omega_{\mathrm{c}}h^2$	$0.1132^{+0.0089}_{-0.011}$	$D_{1420}$	$896^{+100}_{-100}$	$D_{\mathrm{M}}(0.38)$	$1495 \pm 60$
$100\theta_{\mathrm{MC}}$	$1.04090 \pm 0.00061$	$D_{2000}$	$252^{+30}_{-40}$	$H(0.51)$	$90.7^{+1.3}_{-1.8}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.13 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$1941 \pm 69$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$Y_{\mathrm{P}}$	$0.24531^{+0.00022}_{-0.00020}$	$H(0.61)$	$96.01^{+0.82}_{-1.4}$
$H_0$	$69.9 \pm 3.8$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00022}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2262 \pm 74$
$\Omega_{\Lambda}$	$0.717^{+0.061}_{-0.038}$	$10^5\mathrm{D}/\mathrm{H}$	$2.620 \pm 0.094$	$H(2.33)$	$231.9^{+5.9}_{-7.4}$
$\Omega_{\mathrm{m}}$	$0.283^{+0.038}_{-0.061}$	Age/Gyr	$13.774^{+0.077}_{-0.067}$	$D_{\mathrm{M}}(2.33)$	$5746^{+42}_{-32}$
$\Omega_{\mathrm{m}}h^2$	$0.1361^{+0.0089}_{-0.011}$	$z_{*}$	$1089.53^{+0.99}_{-1.1}$	$f\sigma_8(0.15)$	$0.439 \pm 0.029$
$\Omega_{\mathrm{m}}h^3$	$0.0947 \pm 0.0021$	$r_{*}$	$146.4^{+2.9}_{-2.6}$	$\sigma_8(0.15)$	$0.760^{+0.025}_{-0.021}$
$\sigma_8$	$0.818^{+0.022}_{-0.020}$	$100\theta_{*}$	$1.04112 \pm 0.00061$	$f\sigma_8(0.38)$	$0.464^{+0.021}_{-0.016}$
$S_8$	$0.791^{+0.056}_{-0.063}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$14.07^{+0.28}_{-0.25}$	$\sigma_8(0.38)$	$0.677^{+0.028}_{-0.023}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.433^{+0.031}_{-0.035}$	$z_{\mathrm{drag}}$	$1059.0 \pm 1.4$	$f\sigma_8(0.51)$	$0.466^{+0.015}_{-0.011}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.595^{+0.021}_{-0.019}$	$r_{\mathrm{drag}}$	$149.2 \pm 2.9$	$\sigma_8(0.51)$	$0.635^{+0.029}_{-0.024}$
$\sigma_8/h^{0.5}$	$0.980 \pm 0.021$	$k_{\mathrm{D}}$	$0.1386^{+0.0029}_{-0.0033}$	$f\sigma_8(0.61)$	$0.464^{+0.012}_{-0.0094}$
$r_{\mathrm{drag}}h$	$104.4 \pm 7.6$	$100\theta_{\mathrm{D}}$	$0.16126 \pm 0.00081$	$\sigma_8(0.61)$	$0.606^{+0.029}_{-0.024}$
$\langle d^2 \rangle^{1/2}$	$2.496 \pm 0.052$	$z_{\mathrm{eq}}$	$3236^{+210}_{-270}$	$f\sigma_8(2.33)$	$0.307^{+0.017}_{-0.014}$
$z_{\mathrm{re}}$	$7.68^{+0.18}_{-0.20}$	$k_{\mathrm{eq}}$	$0.00988^{+0.00065}_{-0.00082}$	$\sigma_8(2.33)$	$0.319^{+0.020}_{-0.018}$
$10^9A_{\mathrm{s}}$	$2.31^{+0.26}_{-0.32}$	$100\theta_{\mathrm{eq}}$	$0.847 \pm 0.047$	$\chi^2_{\mathrm{lensing}}$	$7.5 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.07^{+0.24}_{-0.29}$	$100\theta_{\mathrm{s,eq}}$	$0.467 \pm 0.025$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.5$
$D_{40}$	$1400^{+200}_{-200}$	$H(0.15)$	$74.8 \pm 3.2$		
$D_{220}$	$6561^{+900}_{-1000}$	$D_{\mathrm{M}}(0.15)$	$624^{+28}_{-33}$		

$\bar{\chi}^2_{\mathrm{eff}} = 10.53$ ;  $R - 1 = 0.00161$



## 2.165 base\_lensing\_lenspriors\_theta\_post\_ptt

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00051$	$D_{810}$	$3350^{+400}_{-500}$	$H(0.38)$	$87.2 \pm 2.5$
$\Omega_{\mathrm{c}}h^2$	$0.1017^{+0.0077}_{-0.010}$	$D_{1420}$	$1056^{+100}_{-200}$	$D_{\mathrm{M}}(0.38)$	$1423^{+52}_{-64}$
$100\theta_{\mathrm{MC}}$	$1.04090 \pm 0.00060$	$D_{2000}$	$295^{+30}_{-50}$	$H(0.51)$	$92.8 \pm 1.9$
$\ln(10^{10}A_{\mathrm{s}})$	$3.29 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.961 \pm 0.021$	$D_{\mathrm{M}}(0.51)$	$1857^{+63}_{-76}$
$n_{\mathrm{s}}$	$0.961 \pm 0.021$	$Y_{\mathrm{P}}$	$0.24531 \pm 0.00022$	$H(0.61)$	$97.6^{+1.4}_{-1.7}$
$H_0$	$74.6 \pm 3.9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664 \pm 0.00022$	$D_{\mathrm{M}}(0.61)$	$2172^{+69}_{-81}$
$\Omega_{\Lambda}$	$0.772^{+0.048}_{-0.030}$	$10^5\mathrm{D}/\mathrm{H}$	$2.622 \pm 0.097$	$H(2.33)$	$224.3^{+5.2}_{-6.7}$
$\Omega_{\mathrm{m}}$	$0.228^{+0.030}_{-0.048}$	Age/Gyr	$13.699 \pm 0.082$	$D_{\mathrm{M}}(2.33)$	$5701 \pm 46$
$\Omega_{\mathrm{m}}h^2$	$0.1245^{+0.0078}_{-0.010}$	$z_*$	$1088.48^{+0.88}_{-1.1}$	$f\sigma_8(0.15)$	$0.405^{+0.026}_{-0.033}$
$\Omega_{\mathrm{m}}h^3$	$0.0925 \pm 0.0022$	$r_*$	$149.7^{+2.8}_{-2.5}$	$\sigma_8(0.15)$	$0.781 \pm 0.023$
$\sigma_8$	$0.834^{+0.020}_{-0.022}$	$100\theta_*$	$1.04114 \pm 0.00061$	$f\sigma_8(0.38)$	$0.442 \pm 0.022$
$S_8$	$0.723^{+0.048}_{-0.065}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.38^{+0.27}_{-0.24}$	$\sigma_8(0.38)$	$0.703 \pm 0.025$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.396^{+0.026}_{-0.035}$	$z_{\mathrm{drag}}$	$1058.1 \pm 1.5$	$f\sigma_8(0.51)$	$0.452 \pm 0.017$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.574^{+0.021}_{-0.023}$	$r_{\mathrm{drag}}$	$152.5 \pm 2.8$	$\sigma_8(0.51)$	$0.663 \pm 0.026$
$\sigma_8/h^{0.5}$	$0.967 \pm 0.025$	$k_{\mathrm{D}}$	$0.1352 \pm 0.0030$	$f\sigma_8(0.61)$	$0.455 \pm 0.014$
$r_{\mathrm{drag}}h$	$113.8 \pm 7.9$	$100\theta_{\mathrm{D}}$	$0.16171 \pm 0.00085$	$\sigma_8(0.61)$	$0.634 \pm 0.026$
$\langle d^2 \rangle^{1/2}$	$2.570^{+0.063}_{-0.055}$	$z_{\mathrm{eq}}$	$2960^{+190}_{-240}$	$f\sigma_8(2.33)$	$0.324 \pm 0.016$
$z_{\mathrm{re}}$	$7.49^{+0.16}_{-0.20}$	$k_{\mathrm{eq}}$	$0.00903^{+0.00057}_{-0.00074}$	$\sigma_8(2.33)$	$0.341 \pm 0.019$
$10^9A_{\mathrm{s}}$	$2.72^{+0.31}_{-0.39}$	$100\theta_{\mathrm{eq}}$	$0.906 \pm 0.050$	$\chi^2_{\mathrm{lensing}}$	$10.7 \pm 1.9$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.44^{+0.28}_{-0.35}$	$100\theta_{\mathrm{s,eq}}$	$0.498 \pm 0.026$	$\chi^2_{\mathrm{prior}}$	$3.1 \pm 2.5$
$D_{40}$	$1698 \pm 200$	$H(0.15)$	$78.8 \pm 3.4$		
$D_{220}$	$8124^{+1000}_{-1000}$	$D_{\mathrm{M}}(0.15)$	$588^{+25}_{-32}$		

$$\bar{\chi}^2_{\mathrm{eff}} = 13.85; R - 1 = 0.02914$$



## 2.166 base\_lensing\_lenspriors\_theta\_post\_bfcl

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02220 \pm 0.00049$	$D_{810}$	$2768^{+300}_{-400}$	$H(0.38)$	$84.3^{+2.0}_{-2.4}$
$\Omega_{\mathrm{c}} h^2$	$0.1132^{+0.0090}_{-0.011}$	$D_{1420}$	$882^{+100}_{-100}$	$D_{\mathrm{M}}(0.38)$	$1494 \pm 60$
$100\theta_{\mathrm{MC}}$	$1.04090 \pm 0.00060$	$D_{2000}$	$247^{+30}_{-40}$	$H(0.51)$	$90.7^{+1.3}_{-1.9}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.12 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.960 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$1940 \pm 70$
$n_{\mathrm{s}}$	$0.960 \pm 0.020$	$Y_{\mathrm{P}}$	$0.24531^{+0.00022}_{-0.00020}$	$H(0.61)$	$96.02^{+0.81}_{-1.4}$
$H_0$	$69.9 \pm 3.8$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00022}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2262 \pm 75$
$\Omega_{\Lambda}$	$0.717^{+0.061}_{-0.039}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.620 \pm 0.094$	$H(2.33)$	$231.9^{+6.0}_{-7.4}$
$\Omega_{\mathrm{m}}$	$0.283^{+0.039}_{-0.061}$	Age/Gyr	$13.773^{+0.078}_{-0.067}$	$D_{\mathrm{M}}(2.33)$	$5746^{+42}_{-31}$
$\Omega_{\mathrm{m}} h^2$	$0.1360^{+0.0091}_{-0.011}$	$z_{*}$	$1089.5^{+1.0}_{-1.1}$	$f\sigma_8(0.15)$	$0.435 \pm 0.029$
$\Omega_{\mathrm{m}} h^3$	$0.0947 \pm 0.0021$	$r_{*}$	$146.5 \pm 2.8$	$\sigma_8(0.15)$	$0.753^{+0.024}_{-0.021}$
$\sigma_8$	$0.811^{+0.021}_{-0.019}$	$100\theta_{*}$	$1.04112 \pm 0.00061$	$f\sigma_8(0.38)$	$0.460^{+0.021}_{-0.016}$
$S_8$	$0.783 \pm 0.060$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$14.07 \pm 0.27$	$\sigma_8(0.38)$	$0.671^{+0.028}_{-0.023}$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.429 \pm 0.033$	$z_{\mathrm{drag}}$	$1059.0 \pm 1.4$	$f\sigma_8(0.51)$	$0.462^{+0.015}_{-0.011}$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.589^{+0.021}_{-0.019}$	$r_{\mathrm{drag}}$	$149.2 \pm 2.9$	$\sigma_8(0.51)$	$0.630^{+0.028}_{-0.024}$
$\sigma_8/h^{0.5}$	$0.971^{+0.022}_{-0.019}$	$k_{\mathrm{D}}$	$0.1385^{+0.0029}_{-0.0033}$	$f\sigma_8(0.61)$	$0.460^{+0.012}_{-0.0092}$
$r_{\mathrm{drag}} h$	$104.4 \pm 7.6$	$100\theta_{\mathrm{D}}$	$0.16126 \pm 0.00080$	$\sigma_8(0.61)$	$0.601^{+0.029}_{-0.024}$
$\langle d^2 \rangle^{1/2}$	$2.474 \pm 0.049$	$z_{\mathrm{eq}}$	$3235^{+220}_{-270}$	$f\sigma_8(2.33)$	$0.304^{+0.017}_{-0.014}$
$z_{\mathrm{re}}$	$7.68^{+0.18}_{-0.20}$	$k_{\mathrm{eq}}$	$0.00987^{+0.00066}_{-0.00081}$	$\sigma_8(2.33)$	$0.316 \pm 0.019$
$10^9 A_{\mathrm{s}}$	$2.27^{+0.25}_{-0.32}$	$100\theta_{\mathrm{eq}}$	$0.847 \pm 0.047$	$\chi^2_{\mathrm{lensing}}$	$9.8 \pm 2.0$
$10^9 A_{\mathrm{s}} e^{-2\tau}$	$2.04^{+0.23}_{-0.28}$	$100\theta_{\mathrm{s,eq}}$	$0.467 \pm 0.025$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.5$
$D_{40}$	$1375^{+200}_{-200}$	$H(0.15)$	$74.8 \pm 3.2$		
$D_{220}$	$6450^{+900}_{-1000}$	$D_{\mathrm{M}}(0.15)$	$624^{+28}_{-33}$		
$\bar{\chi}^2_{\mathrm{eff}} = 12.85; R - 1 = 0.00230$					



## 2.167 base\_lensing\_lenspriors\_theta\_post\_agr2bfcl

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00050$	$D_{810}$	$2887^{+300}_{-400}$	$H(0.38)$	$85.2^{+1.9}_{-2.2}$
$\Omega_{\mathrm{c}}h^2$	$0.1089^{+0.0075}_{-0.0092}$	$D_{1420}$	$916^{+100}_{-100}$	$D_{\mathrm{M}}(0.38)$	$1469 \pm 52$
$100\theta_{\mathrm{MC}}$	$1.04090 \pm 0.00060$	$D_{2000}$	$256^{+30}_{-30}$	$H(0.51)$	$91.3^{+1.3}_{-1.7}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.16 \pm 0.11$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$1911 \pm 61$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$Y_{\mathrm{P}}$	$0.24531 \pm 0.00021$	$H(0.61)$	$96.47^{+0.91}_{-1.3}$
$H_0$	$71.5 \pm 3.3$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664 \pm 0.00021$	$D_{\mathrm{M}}(0.61)$	$2230 \pm 65$
$\Omega_{\Lambda}$	$0.739^{+0.048}_{-0.032}$	$10^5\mathrm{D}/\mathrm{H}$	$2.621 \pm 0.094$	$H(2.33)$	$229.0^{+5.0}_{-6.2}$
$\Omega_{\mathrm{m}}$	$0.261^{+0.032}_{-0.048}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.751^{+0.075}_{-0.068}$	$D_{\mathrm{M}}(2.33)$	$5733^{+41}_{-33}$
$\Omega_{\mathrm{m}}h^2$	$0.1317^{+0.0075}_{-0.0093}$	$z_*$	$1089.14 \pm 0.94$	$f\sigma_8(0.15)$	$0.420 \pm 0.024$
$\Omega_{\mathrm{m}}h^3$	$0.0939^{+0.0018}_{-0.0020}$	$r_*$	$147.6^{+2.5}_{-2.2}$	$\sigma_8(0.15)$	$0.755^{+0.022}_{-0.019}$
$\sigma_8$	$0.811^{+0.020}_{-0.018}$	$100\theta_*$	$1.04112 \pm 0.00060$	$f\sigma_8(0.38)$	$0.449^{+0.018}_{-0.014}$
$S_8$	$0.753 \pm 0.049$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.18^{+0.24}_{-0.22}$	$\sigma_8(0.38)$	$0.676^{+0.025}_{-0.021}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.412 \pm 0.027$	$z_{\mathrm{drag}}$	$1058.7 \pm 1.4$	$f\sigma_8(0.51)$	$0.454^{+0.013}_{-0.010}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.578^{+0.018}_{-0.016}$	$r_{\mathrm{drag}}$	$150.4^{+2.7}_{-2.3}$	$\sigma_8(0.51)$	$0.635^{+0.025}_{-0.022}$
$\sigma_8/h^{0.5}$	$0.959 \pm 0.018$	$k_{\mathrm{D}}$	$0.1373^{+0.0024}_{-0.0029}$	$f\sigma_8(0.61)$	$0.454^{+0.011}_{-0.0084}$
$r_{\mathrm{drag}}h$	$107.6 \pm 6.7$	$100\theta_{\mathrm{D}}$	$0.16141 \pm 0.00078$	$\sigma_8(0.61)$	$0.606^{+0.026}_{-0.022}$
$\langle d^2 \rangle^{1/2}$	$2.479 \pm 0.047$	$z_{\mathrm{eq}}$	$3132^{+180}_{-220}$	$f\sigma_8(2.33)$	$0.308^{+0.015}_{-0.013}$
$z_{\mathrm{re}}$	$7.61^{+0.16}_{-0.18}$	$k_{\mathrm{eq}}$	$0.00956^{+0.00055}_{-0.00068}$	$\sigma_8(2.33)$	$0.321 \pm 0.017$
$10^9 A_{\mathrm{s}}$	$2.36^{+0.25}_{-0.29}$	$100\theta_{\mathrm{eq}}$	$0.867 \pm 0.042$	$\chi^2_{\mathrm{lensing}}$	$12.1 \pm 2.0$
$10^9 A_{\mathrm{s}}e^{-2\tau}$	$2.12^{+0.22}_{-0.26}$	$100\theta_{\mathrm{s,eq}}$	$0.478 \pm 0.022$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.5$
$D_{40}$	$1445^{+160}_{-190}$	$H(0.15)$	$76.2 \pm 2.8$		
$D_{220}$	$6820^{+900}_{-1000}$	$D_{\mathrm{M}}(0.15)$	$611^{+24}_{-28}$		

$\bar{\chi}^2_{\mathrm{eff}} = 15.12$ ;  $R - 1 = 0.00542$



## 2.168 base\_lensing\_lenspriors\_theta\_post\_linear

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02221 \pm 0.00049$	$D_{810}$	$2761^{+300}_{-400}$	$H(0.38)$	$83.9^{+1.9}_{-2.4}$
$\Omega_{\mathrm{c}}h^2$	$0.1154^{+0.0096}_{-0.012}$	$D_{1420}$	$881^{+100}_{-100}$	$D_{\mathrm{M}}(0.38)$	$1507 \pm 62$
$100\theta_{\mathrm{MC}}$	$1.04090 \pm 0.00061$	$D_{2000}$	$247^{+30}_{-40}$	$H(0.51)$	$90.4^{+1.2}_{-1.8}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.12 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.960 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$1955 \pm 72$
$n_{\mathrm{s}}$	$0.960 \pm 0.020$	$Y_{\mathrm{P}}$	$0.24532^{+0.00022}_{-0.00020}$	$H(0.61)$	$95.80^{+0.75}_{-1.3}$
$H_0$	$69.1 \pm 3.9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00022}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2277 \pm 76$
$\Omega_{\Lambda}$	$0.705^{+0.065}_{-0.043}$	$10^5\mathrm{D}/\mathrm{H}$	$2.619 \pm 0.093$	$H(2.33)$	$233.3^{+6.4}_{-7.7}$
$\Omega_{\mathrm{m}}$	$0.295^{+0.043}_{-0.065}$	Age/Gyr	$13.783^{+0.078}_{-0.065}$	$D_{\mathrm{M}}(2.33)$	$5752^{+41}_{-30}$
$\Omega_{\mathrm{m}}h^2$	$0.1382^{+0.0097}_{-0.012}$	$z_*$	$1089.7 \pm 1.1$	$f\sigma_8(0.15)$	$0.447 \pm 0.031$
$\Omega_{\mathrm{m}}h^3$	$0.0951 \pm 0.0022$	$r_*$	$145.9 \pm 2.9$	$\sigma_8(0.15)$	$0.759^{+0.025}_{-0.022}$
$\sigma_8$	$0.819^{+0.022}_{-0.020}$	$100\theta_*$	$1.04111 \pm 0.00061$	$f\sigma_8(0.38)$	$0.470^{+0.022}_{-0.017}$
$S_8$	$0.807 \pm 0.064$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.01 \pm 0.28$	$\sigma_8(0.38)$	$0.675^{+0.029}_{-0.024}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.442 \pm 0.035$	$z_{\mathrm{drag}}$	$1059.2 \pm 1.4$	$f\sigma_8(0.51)$	$0.470^{+0.015}_{-0.011}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.601^{+0.022}_{-0.020}$	$r_{\mathrm{drag}}$	$148.6 \pm 3.0$	$\sigma_8(0.51)$	$0.633^{+0.029}_{-0.025}$
$\sigma_8/h^{0.5}$	$0.986 \pm 0.022$	$k_{\mathrm{D}}$	$0.1392 \pm 0.0032$	$f\sigma_8(0.61)$	$0.467^{+0.012}_{-0.0096}$
$r_{\mathrm{drag}}h$	$102.8 \pm 7.8$	$100\theta_{\mathrm{D}}$	$0.16118 \pm 0.00081$	$\sigma_8(0.61)$	$0.603^{+0.030}_{-0.025}$
$\langle d^2 \rangle^{1/2}$	$2.492 \pm 0.051$	$z_{\mathrm{eq}}$	$3287^{+230}_{-280}$	$f\sigma_8(2.33)$	$0.305^{+0.017}_{-0.015}$
$z_{\mathrm{re}}$	$7.71 \pm 0.20$	$k_{\mathrm{eq}}$	$0.01003^{+0.00071}_{-0.00085}$	$\sigma_8(2.33)$	$0.316 \pm 0.019$
$10^9A_{\mathrm{s}}$	$2.27^{+0.26}_{-0.32}$	$100\theta_{\mathrm{eq}}$	$0.837 \pm 0.048$	$\chi^2_{\mathrm{lensing}}$	$10.1 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.04^{+0.23}_{-0.29}$	$100\theta_{\mathrm{s,eq}}$	$0.462 \pm 0.025$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.5$
$D_{40}$	$1367^{+200}_{-200}$	$H(0.15)$	$74.2 \pm 3.2$		
$D_{220}$	$6389^{+900}_{-1000}$	$D_{\mathrm{M}}(0.15)$	$630^{+30}_{-34}$		

$\bar{\chi}^2_{\mathrm{eff}} = 13.09$ ;  $R - 1 = 0.00194$



## 2.169 base\_lensing\_lenspriors\_theta\_post\_acc

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02220 \pm 0.00050$	$D_{810}$	$2862^{+400}_{-400}$	$H(0.38)$	$84.6^{+2.0}_{-2.4}$
$\Omega_c h^2$	$0.1118^{+0.0085}_{-0.011}$	$D_{1420}$	$910^{+100}_{-100}$	$D_M(0.38)$	$1486^{+56}_{-63}$
$100\theta_{MC}$	$1.04091 \pm 0.00061$	$D_{2000}$	$256^{+30}_{-40}$	$H(0.51)$	$90.9^{+1.4}_{-1.8}$
$\ln(10^{10} A_s)$	$3.15 \pm 0.13$	$n_{s,0.002}$	$0.960 \pm 0.020$	$D_M(0.51)$	$1931 \pm 69$
$n_s$	$0.960 \pm 0.020$	$Y_P$	$0.24532^{+0.00022}_{-0.00020}$	$H(0.61)$	$96.16^{+0.87}_{-1.4}$
$H_0$	$70.4 \pm 3.7$	$Y_P^{BBN}$	$0.24664^{+0.00022}_{-0.00020}$	$D_M(0.61)$	$2252 \pm 73$
$\Omega_\Lambda$	$0.724^{+0.059}_{-0.036}$	$10^5 D/H$	$2.620 \pm 0.094$	$H(2.33)$	$231.0^{+5.7}_{-7.3}$
$\Omega_m$	$0.276^{+0.036}_{-0.059}$	Age/Gyr	$13.766^{+0.078}_{-0.068}$	$D_M(2.33)$	$5742^{+43}_{-32}$
$\Omega_m h^2$	$0.1347^{+0.0086}_{-0.011}$	$z_*$	$1089.40^{+0.97}_{-1.1}$	$f\sigma_8(0.15)$	$0.435 \pm 0.029$
$\Omega_m h^3$	$0.0945 \pm 0.0021$	$r_*$	$146.8^{+2.9}_{-2.6}$	$\sigma_8(0.15)$	$0.761^{+0.024}_{-0.021}$
$\sigma_8$	$0.819 \pm 0.021$	$100\theta_*$	$1.04113 \pm 0.00061$	$f\sigma_8(0.38)$	$0.461^{+0.021}_{-0.017}$
$S_8$	$0.782^{+0.055}_{-0.063}$	$D_M(z_*)/\text{Gpc}$	$14.10^{+0.28}_{-0.25}$	$\sigma_8(0.38)$	$0.679^{+0.028}_{-0.023}$
$\sigma_8 \Omega_m^{0.5}$	$0.428^{+0.030}_{-0.035}$	$z_{\text{drag}}$	$1058.9 \pm 1.4$	$f\sigma_8(0.51)$	$0.464^{+0.016}_{-0.011}$
$\sigma_8 \Omega_m^{0.25}$	$0.592 \pm 0.020$	$r_{\text{drag}}$	$149.6^{+3.0}_{-2.7}$	$\sigma_8(0.51)$	$0.638^{+0.028}_{-0.024}$
$\sigma_8/h^{0.5}$	$0.977 \pm 0.021$	$k_D$	$0.1382^{+0.0028}_{-0.0033}$	$f\sigma_8(0.61)$	$0.463^{+0.012}_{-0.0096}$
$r_{\text{drag}} h$	$105.4 \pm 7.5$	$100\theta_D$	$0.16130 \pm 0.00081$	$\sigma_8(0.61)$	$0.608^{+0.029}_{-0.024}$
$\langle d^2 \rangle^{1/2}$	$2.501 \pm 0.051$	$z_{\text{eq}}$	$3203^{+210}_{-260}$	$f\sigma_8(2.33)$	$0.309^{+0.017}_{-0.014}$
$z_{\text{re}}$	$7.66^{+0.17}_{-0.20}$	$k_{\text{eq}}$	$0.00978^{+0.00063}_{-0.00080}$	$\sigma_8(2.33)$	$0.321^{+0.020}_{-0.018}$
$10^9 A_s$	$2.35^{+0.27}_{-0.32}$	$100\theta_{\text{eq}}$	$0.854 \pm 0.047$	$\chi^2_{\text{lensing}}$	$9.6 \pm 2.0$
$10^9 A_s e^{-2\tau}$	$2.10^{+0.24}_{-0.28}$	$100\theta_{s,\text{eq}}$	$0.470 \pm 0.024$	$\chi^2_{\text{prior}}$	$3.0 \pm 2.6$
$D_{40}$	$1425^{+200}_{-200}$	$H(0.15)$	$75.3 \pm 3.2$		
$D_{220}$	$6697^{+900}_{-1000}$	$D_M(0.15)$	$620^{+27}_{-32}$		

$$\bar{\chi}^2_{\text{eff}} = 12.59; R - 1 = 0.00106$$



## 2.170 base\_lensing\_lenspriors\_theta\_post\_agr2acc

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02220 \pm 0.00050$	$D_{810}$	$2998^{+300}_{-400}$	$H(0.38)$	$85.6 \pm 2.0$
$\Omega_c h^2$	$0.1072^{+0.0070}_{-0.0090}$	$D_{1420}$	$950^{+100}_{-100}$	$D_M(0.38)$	$1459^{+46}_{-54}$
$100\theta_{MC}$	$1.04091 \pm 0.00060$	$D_{2000}$	$266^{+30}_{-30}$	$H(0.51)$	$91.6^{+1.4}_{-1.7}$
$\ln(10^{10} A_s)$	$3.19^{+0.12}_{-0.11}$	$n_{s,0.002}$	$0.959 \pm 0.020$	$D_M(0.51)$	$1899^{+55}_{-62}$
$n_s$	$0.959 \pm 0.020$	$Y_P$	$0.24531^{+0.00022}_{-0.00020}$	$H(0.61)$	$96.68^{+0.97}_{-1.3}$
$H_0$	$72.2 \pm 3.3$	$Y_P^{BBN}$	$0.24664^{+0.00022}_{-0.00020}$	$D_M(0.61)$	$2218 \pm 63$
$\Omega_\Lambda$	$0.747^{+0.045}_{-0.029}$	$10^5 D/H$	$2.621 \pm 0.094$	$H(2.33)$	$228.0^{+4.6}_{-6.0}$
$\Omega_m$	$0.253^{+0.029}_{-0.045}$	Age/Gyr	$13.741 \pm 0.071$	$D_M(2.33)$	$5727^{+41}_{-34}$
$\Omega_m h^2$	$0.1301^{+0.0070}_{-0.0090}$	$z_*$	$1088.99^{+0.86}_{-0.99}$	$f\sigma_8(0.15)$	$0.418 \pm 0.024$
$\Omega_m h^3$	$0.0936 \pm 0.0019$	$r_*$	$148.1^{+2.5}_{-2.1}$	$\sigma_8(0.15)$	$0.763^{+0.022}_{-0.020}$
$\sigma_8$	$0.819 \pm 0.020$	$100\theta_*$	$1.04113 \pm 0.00061$	$f\sigma_8(0.38)$	$0.449^{+0.017}_{-0.015}$
$S_8$	$0.748^{+0.044}_{-0.050}$	$D_M(z_*)/\text{Gpc}$	$14.22^{+0.24}_{-0.20}$	$\sigma_8(0.38)$	$0.684^{+0.024}_{-0.021}$
$\sigma_8 \Omega_m^{0.5}$	$0.410^{+0.024}_{-0.027}$	$z_{\text{drag}}$	$1058.6 \pm 1.4$	$f\sigma_8(0.51)$	$0.455^{+0.013}_{-0.011}$
$\sigma_8 \Omega_m^{0.25}$	$0.579 \pm 0.016$	$r_{\text{drag}}$	$150.9^{+2.6}_{-2.2}$	$\sigma_8(0.51)$	$0.643^{+0.025}_{-0.022}$
$\sigma_8/h^{0.5}$	$0.964 \pm 0.018$	$k_D$	$0.1369^{+0.0024}_{-0.0028}$	$f\sigma_8(0.61)$	$0.456^{+0.011}_{-0.0089}$
$r_{\text{drag}} h$	$108.9 \pm 6.6$	$100\theta_D$	$0.16147 \pm 0.00079$	$\sigma_8(0.61)$	$0.614^{+0.025}_{-0.022}$
$\langle d^2 \rangle^{1/2}$	$2.508 \pm 0.049$	$z_{\text{eq}}$	$3093^{+170}_{-220}$	$f\sigma_8(2.33)$	$0.313^{+0.015}_{-0.013}$
$z_{\text{re}}$	$7.58^{+0.15}_{-0.18}$	$k_{\text{eq}}$	$0.00944^{+0.00051}_{-0.00066}$	$\sigma_8(2.33)$	$0.326^{+0.018}_{-0.016}$
$10^9 A_s$	$2.45 \pm 0.28$	$100\theta_{\text{eq}}$	$0.875 \pm 0.041$	$\chi^2_{\text{lensing}}$	$11.9 \pm 2.0$
$10^9 A_s e^{-2\tau}$	$2.19 \pm 0.25$	$100\theta_{s,\text{eq}}$	$0.482 \pm 0.021$	$\chi^2_{\text{prior}}$	$3.0 \pm 2.6$
$D_{40}$	$1506^{+170}_{-190}$	$H(0.15)$	$76.7 \pm 2.8$		
$D_{220}$	$7122^{+900}_{-1000}$	$D_M(0.15)$	$606^{+22}_{-27}$		

$\bar{\chi}^2_{\text{eff}} = 14.92; R - 1 = 0.00317$



## 2.171 base\_lensing\_lenspriors\_theta\_post\_takahashi

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00050$	$D_{810}$	$2878^{+400}_{-400}$	$H(0.38)$	$84.8^{+2.0}_{-2.4}$
$\Omega_{\mathrm{c}}h^2$	$0.1112^{+0.0085}_{-0.011}$	$D_{1420}$	$915^{+100}_{-100}$	$D_{\mathrm{M}}(0.38)$	$1483^{+56}_{-64}$
$100\theta_{\mathrm{MC}}$	$1.04090 \pm 0.00061$	$D_{2000}$	$257^{+30}_{-40}$	$H(0.51)$	$91.0^{+1.4}_{-1.9}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.15^{+0.13}_{-0.12}$	$n_{\mathrm{s},0.002}$	$0.960 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$1927 \pm 69$
$n_{\mathrm{s}}$	$0.960 \pm 0.020$	$Y_{\mathrm{P}}$	$0.24531^{+0.00022}_{-0.00020}$	$H(0.61)$	$96.24^{+0.89}_{-1.4}$
$H_0$	$70.7 \pm 3.8$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00022}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2247 \pm 74$
$\Omega_{\Lambda}$	$0.727^{+0.059}_{-0.036}$	$10^5\mathrm{D}/\mathrm{H}$	$2.620 \pm 0.094$	$H(2.33)$	$230.6^{+5.6}_{-7.4}$
$\Omega_{\mathrm{m}}$	$0.273^{+0.036}_{-0.059}$	Age/Gyr	$13.762^{+0.079}_{-0.069}$	$D_{\mathrm{M}}(2.33)$	$5740^{+44}_{-33}$
$\Omega_{\mathrm{m}}h^2$	$0.1341^{+0.0085}_{-0.011}$	$z_{*}$	$1089.34^{+0.97}_{-1.1}$	$f\sigma_8(0.15)$	$0.432 \pm 0.030$
$\Omega_{\mathrm{m}}h^3$	$0.0943 \pm 0.0021$	$r_{*}$	$147.0^{+2.9}_{-2.6}$	$\sigma_8(0.15)$	$0.761^{+0.024}_{-0.021}$
$\sigma_8$	$0.819 \pm 0.021$	$100\theta_{*}$	$1.04112 \pm 0.00061$	$f\sigma_8(0.38)$	$0.459^{+0.022}_{-0.017}$
$S_8$	$0.777^{+0.056}_{-0.065}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$14.12^{+0.28}_{-0.25}$	$\sigma_8(0.38)$	$0.680^{+0.027}_{-0.022}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.426^{+0.031}_{-0.035}$	$z_{\mathrm{drag}}$	$1058.9 \pm 1.4$	$f\sigma_8(0.51)$	$0.463^{+0.017}_{-0.012}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.590^{+0.022}_{-0.020}$	$r_{\mathrm{drag}}$	$149.8^{+3.1}_{-2.7}$	$\sigma_8(0.51)$	$0.638^{+0.028}_{-0.023}$
$\sigma_8/h^{0.5}$	$0.975^{+0.023}_{-0.021}$	$k_{\mathrm{D}}$	$0.1380^{+0.0028}_{-0.0033}$	$f\sigma_8(0.61)$	$0.461^{+0.013}_{-0.010}$
$r_{\mathrm{drag}}h$	$105.9 \pm 7.6$	$100\theta_{\mathrm{D}}$	$0.16133 \pm 0.00081$	$\sigma_8(0.61)$	$0.609^{+0.028}_{-0.023}$
$\langle d^2 \rangle^{1/2}$	$2.501 \pm 0.051$	$z_{\mathrm{eq}}$	$3188^{+200}_{-270}$	$f\sigma_8(2.33)$	$0.309^{+0.017}_{-0.014}$
$z_{\mathrm{re}}$	$7.65^{+0.17}_{-0.20}$	$k_{\mathrm{eq}}$	$0.00973^{+0.00062}_{-0.00082}$	$\sigma_8(2.33)$	$0.321^{+0.020}_{-0.017}$
$10^9A_{\mathrm{s}}$	$2.36^{+0.27}_{-0.32}$	$100\theta_{\mathrm{eq}}$	$0.857 \pm 0.047$	$\chi^2_{\mathrm{lensing}}$	$9.5 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.12^{+0.24}_{-0.28}$	$100\theta_{\mathrm{s,eq}}$	$0.472 \pm 0.025$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.5$
$D_{40}$	$1436^{+200}_{-200}$	$H(0.15)$	$75.5 \pm 3.2$		
$D_{220}$	$6754^{+1000}_{-1000}$	$D_{\mathrm{M}}(0.15)$	$618^{+27}_{-33}$		

$$\bar{\chi}^2_{\mathrm{eff}} = 12.55; R - 1 = 0.00157$$



## 2.172 base\_lensing\_lenspriors\_theta\_post\_agr2takahashi

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00050$	$D_{810}$	$3015 \pm 400$	$H(0.38)$	$85.8 \pm 2.0$
$\Omega_{\mathrm{c}}h^2$	$0.1066^{+0.0070}_{-0.0090}$	$D_{1420}$	$955^{+100}_{-100}$	$D_{\mathrm{M}}(0.38)$	$1455^{+47}_{-54}$
$100\theta_{\mathrm{MC}}$	$1.04090 \pm 0.00060$	$D_{2000}$	$267^{+30}_{-30}$	$H(0.51)$	$91.8^{+1.4}_{-1.7}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.20^{+0.12}_{-0.11}$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$1894^{+56}_{-63}$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$Y_{\mathrm{P}}$	$0.24531^{+0.00022}_{-0.00020}$	$H(0.61)$	$96.8^{+1.0}_{-1.3}$
$H_0$	$72.4 \pm 3.3$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00022}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2212 \pm 64$
$\Omega_{\Lambda}$	$0.750^{+0.045}_{-0.029}$	$10^5\mathrm{D}/\mathrm{H}$	$2.621 \pm 0.094$	$H(2.33)$	$227.5^{+4.6}_{-6.0}$
$\Omega_{\mathrm{m}}$	$0.250^{+0.029}_{-0.045}$	Age/Gyr	$13.737 \pm 0.072$	$D_{\mathrm{M}}(2.33)$	$5724^{+41}_{-35}$
$\Omega_{\mathrm{m}}h^2$	$0.1294^{+0.0070}_{-0.0090}$	$z_*$	$1088.93^{+0.86}_{-0.99}$	$f\sigma_8(0.15)$	$0.415 \pm 0.024$
$\Omega_{\mathrm{m}}h^3$	$0.0935 \pm 0.0019$	$r_*$	$148.2^{+2.5}_{-2.2}$	$\sigma_8(0.15)$	$0.763^{+0.022}_{-0.019}$
$\sigma_8$	$0.818 \pm 0.019$	$100\theta_*$	$1.04113 \pm 0.00061$	$f\sigma_8(0.38)$	$0.447^{+0.018}_{-0.016}$
$S_8$	$0.743^{+0.045}_{-0.051}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.24^{+0.24}_{-0.21}$	$\sigma_8(0.38)$	$0.684^{+0.024}_{-0.021}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.407^{+0.025}_{-0.028}$	$z_{\mathrm{drag}}$	$1058.5 \pm 1.4$	$f\sigma_8(0.51)$	$0.454^{+0.014}_{-0.011}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.576 \pm 0.017$	$r_{\mathrm{drag}}$	$151.1^{+2.6}_{-2.3}$	$\sigma_8(0.51)$	$0.644^{+0.025}_{-0.021}$
$\sigma_8/h^{0.5}$	$0.961 \pm 0.020$	$k_{\mathrm{D}}$	$0.1367^{+0.0024}_{-0.0028}$	$f\sigma_8(0.61)$	$0.454^{+0.011}_{-0.0094}$
$r_{\mathrm{drag}}h$	$109.5 \pm 6.7$	$100\theta_{\mathrm{D}}$	$0.16150 \pm 0.00079$	$\sigma_8(0.61)$	$0.615^{+0.025}_{-0.021}$
$\langle d^2 \rangle^{1/2}$	$2.508 \pm 0.050$	$z_{\mathrm{eq}}$	$3077^{+170}_{-220}$	$f\sigma_8(2.33)$	$0.313^{+0.015}_{-0.012}$
$z_{\mathrm{re}}$	$7.57^{+0.15}_{-0.18}$	$k_{\mathrm{eq}}$	$0.00939^{+0.00051}_{-0.00066}$	$\sigma_8(2.33)$	$0.327^{+0.018}_{-0.016}$
$10^9A_{\mathrm{s}}$	$2.46 \pm 0.28$	$100\theta_{\mathrm{eq}}$	$0.879 \pm 0.042$	$\chi^2_{\mathrm{lensing}}$	$11.9 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.21 \pm 0.25$	$100\theta_{\mathrm{s,eq}}$	$0.484 \pm 0.022$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.5$
$D_{40}$	$1517^{+200}_{-200}$	$H(0.15)$	$77.0 \pm 2.8$		
$D_{220}$	$7184^{+900}_{-1000}$	$D_{\mathrm{M}}(0.15)$	$604^{+22}_{-27}$		
$\bar{\chi}^2_{\mathrm{eff}} = 14.89; R - 1 = 0.00293$					



## 2.173 base\_lensing\_lenspriors\_theta\_post\_Apr6

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00050$	$D_{810}$	$2779^{+300}_{-400}$	$H(0.38)$	$84.2^{+1.9}_{-2.4}$
$\Omega_{\mathrm{c}}h^2$	$0.1139^{+0.0090}_{-0.011}$	$D_{1420}$	$886^{+100}_{-100}$	$D_{\mathrm{M}}(0.38)$	$1498 \pm 60$
$100\theta_{\mathrm{MC}}$	$1.04090 \pm 0.00061$	$D_{2000}$	$249^{+30}_{-40}$	$H(0.51)$	$90.6^{+1.3}_{-1.8}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.12 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$1945 \pm 69$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$Y_{\mathrm{P}}$	$0.24531^{+0.00022}_{-0.00020}$	$H(0.61)$	$95.94^{+0.80}_{-1.4}$
$H_0$	$69.6 \pm 3.8$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00022}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2267 \pm 74$
$\Omega_{\Lambda}$	$0.713^{+0.062}_{-0.039}$	$10^5\mathrm{D}/\mathrm{H}$	$2.620 \pm 0.094$	$H(2.33)$	$232.3^{+6.0}_{-7.4}$
$\Omega_{\mathrm{m}}$	$0.287^{+0.039}_{-0.062}$	Age/Gyr	$13.777^{+0.077}_{-0.066}$	$D_{\mathrm{M}}(2.33)$	$5748^{+41}_{-31}$
$\Omega_{\mathrm{m}}h^2$	$0.1367^{+0.0090}_{-0.011}$	$z_{*}$	$1089.6^{+1.0}_{-1.1}$	$f\sigma_8(0.15)$	$0.440 \pm 0.029$
$\Omega_{\mathrm{m}}h^3$	$0.0948 \pm 0.0021$	$r_{*}$	$146.3 \pm 2.8$	$\sigma_8(0.15)$	$0.757^{+0.025}_{-0.021}$
$\sigma_8$	$0.816^{+0.022}_{-0.020}$	$100\theta_{*}$	$1.04111 \pm 0.00061$	$f\sigma_8(0.38)$	$0.464^{+0.021}_{-0.016}$
$S_8$	$0.793^{+0.057}_{-0.064}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$14.05 \pm 0.27$	$\sigma_8(0.38)$	$0.675^{+0.028}_{-0.023}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.434^{+0.031}_{-0.035}$	$z_{\mathrm{drag}}$	$1059.1 \pm 1.4$	$f\sigma_8(0.51)$	$0.466^{+0.015}_{-0.011}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.595^{+0.021}_{-0.019}$	$r_{\mathrm{drag}}$	$149.0 \pm 2.9$	$\sigma_8(0.51)$	$0.633^{+0.029}_{-0.024}$
$\sigma_8/h^{0.5}$	$0.979 \pm 0.021$	$k_{\mathrm{D}}$	$0.1388^{+0.0029}_{-0.0033}$	$f\sigma_8(0.61)$	$0.464^{+0.011}_{-0.0093}$
$r_{\mathrm{drag}}h$	$103.9 \pm 7.5$	$100\theta_{\mathrm{D}}$	$0.16123 \pm 0.00081$	$\sigma_8(0.61)$	$0.603^{+0.029}_{-0.024}$
$\langle d^2 \rangle^{1/2}$	$2.488 \pm 0.051$	$z_{\mathrm{eq}}$	$3252^{+220}_{-270}$	$f\sigma_8(2.33)$	$0.305^{+0.017}_{-0.014}$
$z_{\mathrm{re}}$	$7.69^{+0.18}_{-0.21}$	$k_{\mathrm{eq}}$	$0.00992^{+0.00066}_{-0.00082}$	$\sigma_8(2.33)$	$0.317 \pm 0.019$
$10^9A_{\mathrm{s}}$	$2.29^{+0.26}_{-0.32}$	$100\theta_{\mathrm{eq}}$	$0.844 \pm 0.047$	$\chi^2_{\mathrm{lensing}}$	$8.4 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.05^{+0.23}_{-0.28}$	$100\theta_{\mathrm{s,eq}}$	$0.465 \pm 0.024$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.5$
$D_{40}$	$1380^{+200}_{-200}$	$H(0.15)$	$74.6 \pm 3.2$		
$D_{220}$	$6464^{+900}_{-1000}$	$D_{\mathrm{M}}(0.15)$	$626^{+28}_{-33}$		

$\bar{\chi}^2_{\mathrm{eff}} = 11.47$ ;  $R - 1 = 0.00170$



## 2.174 base\_lensing\_lenspriors\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02218	$0.02219 \pm 0.00050$	$D_{1420}$	847	$835^{+100}_{-90}$	$H(0.51)$	89.30	$89.6^{+2.2}_{-2.5}$
$\Omega_c h^2$	0.1156	$0.117^{+0.010}_{-0.012}$	$D_{2000}$	237.8	$237^{+25}_{-30}$	$D_M(0.51)$	1983.8	$1978 \pm 43$
$100\theta_{MC}$	1.0379	$1.040 \pm 0.015$	$n_{s,0.002}$	0.9554	$0.956 \pm 0.020$	$H(0.61)$	94.80	$95.2^{+2.4}_{-2.8}$
$\ln(10^{10} A_s)$	3.090	$3.08 \pm 0.10$	$Y_P$	0.245319	$0.24531^{+0.00023}_{-0.00020}$	$D_M(0.61)$	2310	$2303 \pm 52$
$n_s$	0.9554	$0.956 \pm 0.020$	$Y_P^{BBN}$	0.246645	$0.24663^{+0.00023}_{-0.00020}$	$H(2.33)$	233.2	$234.4^{+8.4}_{-9.4}$
$H_0$	67.75	$67.9^{+1.2}_{-1.3}$	$10^5 D/H$	2.621	$2.623^{+0.088}_{-0.10}$	$D_M(2.33)$	5800	$5781 \pm 170$
$\Omega_\Lambda$	0.6983	$0.697^{+0.018}_{-0.016}$	Age/Gyr	13.887	$13.84 \pm 0.41$	$f\sigma_8(0.15)$	0.4501	$0.452 \pm 0.018$
$\Omega_m$	0.3017	$0.303^{+0.016}_{-0.018}$	$z_*$	1089.77	$1089.9^{+1.1}_{-1.2}$	$\sigma_8(0.15)$	0.7493	$0.750 \pm 0.017$
$\Omega_m h^2$	0.1385	$0.140^{+0.010}_{-0.012}$	$r_*$	145.72	$145.4 \pm 3.0$	$f\sigma_8(0.38)$	0.4707	$0.472 \pm 0.016$
$\Omega_m h^3$	0.0938	$0.0953^{+0.0079}_{-0.010}$	$100\theta_*$	1.0381	$1.040 \pm 0.015$	$\sigma_8(0.38)$	0.6653	$0.666 \pm 0.014$
$\sigma_8$	0.8098	$0.811 \pm 0.019$	$D_M(z_*)/\text{Gpc}$	14.037	$13.99 \pm 0.49$	$f\sigma_8(0.51)$	0.4704	$0.471 \pm 0.014$
$S_8$	0.8120	$0.815 \pm 0.036$	$z_{\text{drag}}$	1059.17	$1059.3 \pm 1.5$	$\sigma_8(0.51)$	0.6230	$0.624 \pm 0.013$
$\sigma_8 \Omega_m^{0.5}$	0.4448	$0.447 \pm 0.019$	$r_{\text{drag}}$	148.47	$148.1 \pm 3.1$	$f\sigma_8(0.61)$	0.4663	$0.467 \pm 0.013$
$\sigma_8 \Omega_m^{0.25}$	0.6001	$0.602 \pm 0.019$	$k_D$	0.13928	$0.1397^{+0.0031}_{-0.0036}$	$\sigma_8(0.61)$	0.5931	$0.594 \pm 0.013$
$\sigma_8/h^{0.5}$	0.9838	$0.984 \pm 0.019$	$100\theta_D$	0.16069	$0.1609 \pm 0.0021$	$f\sigma_8(2.33)$	0.2995	$0.2997 \pm 0.0063$
$r_{\text{drag}} h$	100.59	$100.6 \pm 1.3$	$z_{\text{eq}}$	3293	$3333^{+240}_{-290}$	$\sigma_8(2.33)$	0.3092	$0.3094 \pm 0.0065$
$\langle d^2 \rangle^{1/2}$	2.487	$2.483 \pm 0.052$	$k_{\text{eq}}$	0.01005	$0.01017^{+0.00074}_{-0.00089}$	$\chi^2_{\text{lensing}}$	7.88	$9.9 \pm 2.3$
$z_{\text{re}}$	7.716	$7.74^{+0.22}_{-0.25}$	$100\theta_{\text{eq}}$	0.8303	$0.827 \pm 0.038$	$\chi^2_{6\text{DF}}$	0.0003	$0.062 \pm 0.084$
$10^9 A_s$	2.198	$2.19^{+0.20}_{-0.24}$	$100\theta_{s,\text{eq}}$	0.4583	$0.457 \pm 0.020$	$\chi^2_{\text{MGS}}$	1.75	$1.85 \pm 0.73$
$10^9 A_s e^{-2\tau}$	1.969	$1.96^{+0.18}_{-0.22}$	$H(0.15)$	72.88	$73.1^{+1.4}_{-1.6}$	$\chi^2_{\text{DR12BAO}}$	3.62	$4.5 \pm 1.6$
$D_{40}$	1325	$1317^{+130}_{-150}$	$D_M(0.15)$	640.6	$639 \pm 12$	$\chi^2_{\text{prior}}$	0.05	$2.0 \pm 2.0$
$D_{220}$	6146	$6116^{+800}_{-1000}$	$H(0.38)$	82.74	$83.0^{+1.9}_{-2.1}$	$\chi^2_{\text{BAO}}$	5.37	$6.4 \pm 1.7$
$D_{810}$	2656	$2630 \pm 300$	$D_M(0.38)$	1530.2	$1526 \pm 32$			

Best-fit  $\chi^2_{\text{eff}} = 13.31$ ;  $\bar{\chi}^2_{\text{eff}} = 18.39$ ;  $R - 1 = 0.00184$

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.62 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 7.88



## 2.175 base\_lensing\_lenspriors\_BAO\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02218	$0.02219 \pm 0.00050$	$D_{1420}$	859	$844 \pm 77$	$H(0.51)$	89.05	$89.4 \pm 2.1$
$\Omega_c h^2$	0.1143	$0.1161^{+0.0086}_{-0.0097}$	$D_{2000}$	241.3	$239^{+20}_{-26}$	$D_M(0.51)$	1987.7	$1981 \pm 39$
$100\theta_{MC}$	1.0362	$1.038 \pm 0.013$	$n_{s,0.002}$	0.9567	$0.956 \pm 0.019$	$H(0.61)$	94.51	$94.9 \pm 2.3$
$\ln(10^{10} A_s)$	3.104	$3.090 \pm 0.086$	$Y_P$	0.245317	$0.24531^{+0.00023}_{-0.00020}$	$D_M(0.61)$	2314.6	$2307 \pm 47$
$n_s$	0.9567	$0.956 \pm 0.019$	$Y_P^{BBN}$	0.246643	$0.24663^{+0.00023}_{-0.00020}$	$H(2.33)$	232.1	$233.4 \pm 7.4$
$H_0$	67.67	$67.9 \pm 1.2$	$10^5 D/H$	2.622	$2.623^{+0.088}_{-0.10}$	$D_M(2.33)$	5819	$5796 \pm 140$
$\Omega_\Lambda$	0.7006	$0.699 \pm 0.013$	Age/Gyr	13.933	$13.88 \pm 0.35$	$f\sigma_8(0.15)$	0.4485	$0.450 \pm 0.016$
$\Omega_m$	0.2994	$0.301 \pm 0.013$	$z_*$	1089.65	$1089.80 \pm 0.98$	$\sigma_8(0.15)$	0.7492	$0.750 \pm 0.016$
$\Omega_m h^2$	0.1371	$0.1389^{+0.0086}_{-0.0098}$	$r_*$	146.08	$145.7 \pm 2.5$	$f\sigma_8(0.38)$	0.4695	$0.471 \pm 0.014$
$\Omega_m h^3$	0.0928	$0.0943^{+0.0069}_{-0.0082}$	$100\theta_*$	1.0364	$1.038 \pm 0.013$	$\sigma_8(0.38)$	0.6655	$0.666 \pm 0.014$
$\sigma_8$	0.8095	$0.810 \pm 0.018$	$D_M(z_*)/\text{Gpc}$	14.096	$14.03 \pm 0.41$	$f\sigma_8(0.51)$	0.4695	$0.471 \pm 0.013$
$S_8$	0.8086	$0.812 \pm 0.030$	$z_{\text{drag}}$	1059.06	$1059.2 \pm 1.4$	$\sigma_8(0.51)$	0.6233	$0.624 \pm 0.013$
$\sigma_8 \Omega_m^{0.5}$	0.4429	$0.445 \pm 0.016$	$r_{\text{drag}}$	148.85	$148.4 \pm 2.6$	$f\sigma_8(0.61)$	0.4656	$0.466 \pm 0.012$
$\sigma_8 \Omega_m^{0.25}$	0.5988	$0.600 \pm 0.017$	$k_D$	0.13888	$0.1394 \pm 0.0029$	$\sigma_8(0.61)$	0.5935	$0.594 \pm 0.013$
$\sigma_8/h^{0.5}$	0.9840	$0.984 \pm 0.019$	$100\theta_D$	0.16048	$0.1608 \pm 0.0018$	$f\sigma_8(2.33)$	0.2997	$0.2998 \pm 0.0063$
$r_{\text{drag}} h$	100.73	$100.7 \pm 1.1$	$z_{\text{eq}}$	3261	$3304^{+210}_{-230}$	$\sigma_8(2.33)$	0.3096	$0.3096 \pm 0.0065$
$\langle d^2 \rangle^{1/2}$	2.4927	$2.486 \pm 0.049$	$k_{\text{eq}}$	0.00995	$0.01008^{+0.00063}_{-0.00071}$	$\chi^2_{\text{lensing}}$	7.78	$9.6 \pm 1.9$
$z_{\text{re}}$	7.692	$7.72 \pm 0.20$	$100\theta_{\text{eq}}$	0.8352	$0.831 \pm 0.031$	$\chi^2_{\text{JLA}}$	1034.734	$1035.12 \pm 0.55$
$10^9 A_s$	2.228	$2.21^{+0.17}_{-0.21}$	$100\theta_{s,\text{eq}}$	0.4608	$0.459 \pm 0.016$	$\chi^2_{6\text{DF}}$	0.0017	$0.050 \pm 0.069$
$10^9 A_s e^{-2\tau}$	1.996	$1.98^{+0.15}_{-0.19}$	$H(0.15)$	72.76	$73.0 \pm 1.4$	$\chi^2_{\text{MGS}}$	1.82	$1.90 \pm 0.67$
$D_{40}$	1343	$1328^{+110}_{-130}$	$D_M(0.15)$	641.5	$640 \pm 12$	$\chi^2_{\text{DR12BAO}}$	3.68	$4.5 \pm 1.5$
$D_{220}$	6262	$6181^{+620}_{-810}$	$H(0.38)$	82.54	$82.9 \pm 1.8$	$\chi^2_{\text{prior}}$	0.03	$2.0 \pm 2.0$
$D_{810}$	2696	$2656 \pm 250$	$D_M(0.38)$	1532.9	$1528 \pm 29$	$\chi^2_{\text{BAO}}$	5.50	$6.4 \pm 1.6$

Best-fit  $\chi^2_{\text{eff}} = 1048.05$ ;  $\bar{\chi}^2_{\text{eff}} = 1053.10$ ;  $R - 1 = 0.00233$

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.00 MGS: 1.82 DR12BAO: 3.68 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmargd: 7.78 SN - JLA Pantheon18: 1034.73



## 2.176 base\_lensing\_lenspriors\_BAO\_post\_agr2

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02219 \pm 0.00050$	$D_{1420}$	$863 \pm 83$	$H(0.51)$	$88.5^{+1.9}_{-2.1}$
$\Omega_{\mathrm{c}} h^2$	$0.1113^{+0.0082}_{-0.010}$	$D_{2000}$	$246^{+23}_{-31}$	$D_{\mathrm{M}}(0.51)$	$1998 \pm 39$
$100\theta_{\mathrm{MC}}$	$1.032 \pm 0.013$	$n_{\mathrm{s},0.002}$	$0.954 \pm 0.020$	$H(0.61)$	$93.8^{+2.1}_{-2.4}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.117 \pm 0.095$	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00019}$	$D_{\mathrm{M}}(0.61)$	$2328 \pm 46$
$n_{\mathrm{s}}$	$0.954 \pm 0.020$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00023}_{-0.00019}$	$H(2.33)$	$229.6^{+7.0}_{-8.2}$
$H_0$	$67.4 \pm 1.1$	$10^5 D/H$	$2.623^{+0.087}_{-0.099}$	$D_{\mathrm{M}}(2.33)$	$5868 \pm 150$
$\Omega_{\Lambda}$	$0.705^{+0.016}_{-0.014}$	Age/Gyr	$14.05 \pm 0.36$	$f\sigma_8(0.15)$	$0.439 \pm 0.015$
$\Omega_{\mathrm{m}}$	$0.295^{+0.014}_{-0.016}$	$z_*$	$1089.38^{+0.94}_{-1.1}$	$\sigma_8(0.15)$	$0.739 \pm 0.014$
$\Omega_{\mathrm{m}} h^2$	$0.1341^{+0.0083}_{-0.010}$	$r_*$	$147.0 \pm 2.6$	$f\sigma_8(0.38)$	$0.460 \pm 0.013$
$\Omega_{\mathrm{m}} h^3$	$0.0906^{+0.0066}_{-0.0084}$	$100\theta_*$	$1.032 \pm 0.013$	$\sigma_8(0.38)$	$0.657 \pm 0.013$
$\sigma_8$	$0.797 \pm 0.016$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.25 \pm 0.43$	$f\sigma_8(0.51)$	$0.461 \pm 0.011$
$S_8$	$0.790 \pm 0.028$	$z_{\mathrm{drag}}$	$1058.9 \pm 1.4$	$\sigma_8(0.51)$	$0.615 \pm 0.012$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.433 \pm 0.016$	$r_{\mathrm{drag}}$	$149.7 \pm 2.7$	$f\sigma_8(0.61)$	$0.457 \pm 0.011$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.587 \pm 0.015$	$k_{\mathrm{D}}$	$0.1380^{+0.0027}_{-0.0031}$	$\sigma_8(0.61)$	$0.586 \pm 0.011$
$\sigma_8/h^{0.5}$	$0.971 \pm 0.017$	$100\theta_{\mathrm{D}}$	$0.1599 \pm 0.0018$	$f\sigma_8(2.33)$	$0.2962 \pm 0.0057$
$r_{\mathrm{drag}} h$	$101.0 \pm 1.2$	$z_{\mathrm{eq}}$	$3190^{+200}_{-250}$	$\sigma_8(2.33)$	$0.3061 \pm 0.0060$
$\langle d^2 \rangle^{1/2}$	$2.492 \pm 0.050$	$k_{\mathrm{eq}}$	$0.00974^{+0.00060}_{-0.00076}$	$\chi^2_{\mathrm{lensing}}$	$12.1 \pm 2.2$
$z_{\mathrm{re}}$	$7.63^{+0.19}_{-0.22}$	$100\theta_{\mathrm{eq}}$	$0.848 \pm 0.034$	$\chi^2_{6\mathrm{DF}}$	$0.063 \pm 0.086$
$10^9 A_{\mathrm{s}}$	$2.27^{+0.20}_{-0.23}$	$100\theta_{\mathrm{s,eq}}$	$0.467 \pm 0.017$	$\chi^2_{\mathrm{MGS}}$	$2.02 \pm 0.73$
$10^9 A_{\mathrm{s}} e^{-2\tau}$	$2.03^{+0.18}_{-0.21}$	$H(0.15)$	$72.4 \pm 1.3$	$\chi^2_{\mathrm{DR12BAO}}$	$4.9 \pm 1.6$
$D_{40}$	$1382 \pm 130$	$D_{\mathrm{M}}(0.15)$	$644 \pm 11$	$\chi^2_{\mathrm{prior}}$	$2.1 \pm 2.1$
$D_{220}$	$6502^{+800}_{-900}$	$H(0.38)$	$82.1 \pm 1.7$	$\chi^2_{\mathrm{BAO}}$	$6.9 \pm 1.7$
$D_{810}$	$2733 \pm 270$	$D_{\mathrm{M}}(0.38)$	$1541 \pm 29$		

$\bar{\chi}^2_{\mathrm{eff}} = 21.15$ ;  $R - 1 = 0.00403$



## 2.177 base\_lensing\_lenspriors\_BAO\_post\_conslmin40

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00050$	$D_{1420}$	$819^{+100}_{-100}$	$H(0.51)$	$90.0^{+2.4}_{-3.0}$
$\Omega_{\mathrm{c}}h^2$	$0.119^{+0.011}_{-0.015}$	$D_{2000}$	$233^{+30}_{-30}$	$D_{\mathrm{M}}(0.51)$	$1972 \pm 49$
$100\theta_{\mathrm{MC}}$	$1.042 \pm 0.018$	$n_{\mathrm{s},0.002}$	$0.956 \pm 0.020$	$H(0.61)$	$95.6^{+2.7}_{-3.3}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.06 \pm 0.12$	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2295 \pm 60$
$n_{\mathrm{s}}$	$0.956 \pm 0.020$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00023}_{-0.00020}$	$H(2.33)$	$235.9^{+9.3}_{-11}$
$H_0$	$68.1^{+1.3}_{-1.5}$	$10^5\mathrm{D}/\mathrm{H}$	$2.623^{+0.089}_{-0.10}$	$D_{\mathrm{M}}(2.33)$	$5754 \pm 190$
$\Omega_{\Lambda}$	$0.694^{+0.021}_{-0.017}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.78 \pm 0.47$	$f\sigma_8(0.15)$	$0.454 \pm 0.021$
$\Omega_{\mathrm{m}}$	$0.306^{+0.017}_{-0.021}$	$z_{*}$	$1090.1^{+1.2}_{-1.4}$	$\sigma_8(0.15)$	$0.751 \pm 0.017$
$\Omega_{\mathrm{m}}h^2$	$0.142^{+0.011}_{-0.015}$	$r_{*}$	$144.9^{+3.7}_{-3.2}$	$f\sigma_8(0.38)$	$0.474 \pm 0.017$
$\Omega_{\mathrm{m}}h^3$	$0.0970^{+0.0087}_{-0.012}$	$100\theta_{*}$	$1.042 \pm 0.018$	$\sigma_8(0.38)$	$0.667 \pm 0.015$
$\sigma_8$	$0.813 \pm 0.020$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.91 \pm 0.57$	$f\sigma_8(0.51)$	$0.473 \pm 0.015$
$S_8$	$0.821 \pm 0.040$	$z_{\mathrm{drag}}$	$1059.4 \pm 1.6$	$\sigma_8(0.51)$	$0.624 \pm 0.013$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.449 \pm 0.022$	$r_{\mathrm{drag}}$	$147.6^{+3.8}_{-3.3}$	$f\sigma_8(0.61)$	$0.469 \pm 0.014$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.604 \pm 0.021$	$k_{\mathrm{D}}$	$0.1402^{+0.0034}_{-0.0042}$	$\sigma_8(0.61)$	$0.594 \pm 0.013$
$\sigma_8/h^{0.5}$	$0.985 \pm 0.020$	$100\theta_{\mathrm{D}}$	$0.1613 \pm 0.0024$	$f\sigma_8(2.33)$	$0.2998 \pm 0.0063$
$r_{\mathrm{drag}}h$	$100.5 \pm 1.3$	$z_{\mathrm{eq}}$	$3383^{+270}_{-350}$	$\sigma_8(2.33)$	$0.3094 \pm 0.0065$
$\langle d^2 \rangle^{1/2}$	$2.473 \pm 0.063$	$k_{\mathrm{eq}}$	$0.01033^{+0.00081}_{-0.0011}$	$\chi_{\mathrm{lensing}}^2$	$10.1 \pm 2.4$
$z_{\mathrm{re}}$	$7.78^{+0.24}_{-0.29}$	$100\theta_{\mathrm{eq}}$	$0.821 \pm 0.044$	$\chi_{6\mathrm{DF}}^2$	$0.064 \pm 0.087$
$10^9A_{\mathrm{s}}$	$2.16^{+0.23}_{-0.28}$	$100\theta_{\mathrm{s,eq}}$	$0.454 \pm 0.023$	$\chi_{\mathrm{MGS}}^2$	$1.81 \pm 0.73$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.93^{+0.21}_{-0.25}$	$H(0.15)$	$73.3^{+1.5}_{-1.8}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.4 \pm 1.6$
$D_{40}$	$1294^{+200}_{-200}$	$D_{\mathrm{M}}(0.15)$	$637 \pm 14$	$\chi_{\mathrm{prior}}^2$	$2.0 \pm 2.0$
$D_{220}$	$5984^{+900}_{-1000}$	$H(0.38)$	$83.4^{+2.1}_{-2.5}$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.8$
$D_{810}$	$2581 \pm 300$	$D_{\mathrm{M}}(0.38)$	$1521 \pm 36$		

$\bar{\chi}_{\mathrm{eff}}^2 = 18.35; R - 1 = 0.00540$



## 2.178 base\_lensing\_lenspriors\_BAO\_post\_agrlmax425

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02219 \pm 0.00050$	$D_{1420}$	$825^{+100}_{-90}$	$H(0.51)$	$89.9^{+2.2}_{-2.5}$
$\Omega_c h^2$	$0.119^{+0.010}_{-0.012}$	$D_{2000}$	$234^{+25}_{-30}$	$D_M(0.51)$	$1973 \pm 44$
$100\theta_{MC}$	$1.041 \pm 0.015$	$n_{s,0.002}$	$0.955 \pm 0.020$	$H(0.61)$	$95.5^{+2.5}_{-2.8}$
$\ln(10^{10} A_s)$	$3.07 \pm 0.10$	$Y_P$	$0.24531^{+0.00023}_{-0.00020}$	$D_M(0.61)$	$2297 \pm 53$
$n_s$	$0.955 \pm 0.020$	$Y_P^{BBN}$	$0.24663^{+0.00023}_{-0.00020}$	$H(2.33)$	$235.5^{+8.4}_{-9.5}$
$H_0$	$68.1^{+1.2}_{-1.3}$	$10^5 D/H$	$2.623^{+0.088}_{-0.10}$	$D_M(2.33)$	$5761 \pm 170$
$\Omega_\Lambda$	$0.695^{+0.018}_{-0.016}$	Age/Gyr	$13.79 \pm 0.41$	$f\sigma_8(0.15)$	$0.454 \pm 0.018$
$\Omega_m$	$0.305^{+0.016}_{-0.018}$	$z_*$	$1090.0^{+1.1}_{-1.2}$	$\sigma_8(0.15)$	$0.752 \pm 0.017$
$\Omega_m h^2$	$0.142^{+0.010}_{-0.012}$	$r_*$	$145.0 \pm 3.1$	$f\sigma_8(0.38)$	$0.474 \pm 0.016$
$\Omega_m h^3$	$0.0964^{+0.0081}_{-0.010}$	$100\theta_*$	$1.042 \pm 0.015$	$\sigma_8(0.38)$	$0.667 \pm 0.014$
$\sigma_8$	$0.813 \pm 0.019$	$D_M(z_*)/\text{Gpc}$	$13.93 \pm 0.49$	$f\sigma_8(0.51)$	$0.473 \pm 0.014$
$S_8$	$0.820 \pm 0.036$	$z_{\text{drag}}$	$1059.4 \pm 1.5$	$\sigma_8(0.51)$	$0.625 \pm 0.013$
$\sigma_8 \Omega_m^{0.5}$	$0.449 \pm 0.020$	$r_{\text{drag}}$	$147.8 \pm 3.2$	$f\sigma_8(0.61)$	$0.469 \pm 0.013$
$\sigma_8 \Omega_m^{0.25}$	$0.604 \pm 0.019$	$k_D$	$0.1401^{+0.0032}_{-0.0036}$	$\sigma_8(0.61)$	$0.595 \pm 0.012$
$\sigma_8/h^{0.5}$	$0.986 \pm 0.019$	$100\theta_D$	$0.1612 \pm 0.0021$	$f\sigma_8(2.33)$	$0.3001 \pm 0.0062$
$r_{\text{drag}} h$	$100.5 \pm 1.2$	$z_{\text{eq}}$	$3367^{+240}_{-300}$	$\sigma_8(2.33)$	$0.3098 \pm 0.0065$
$\langle d^2 \rangle^{1/2}$	$2.479 \pm 0.053$	$k_{\text{eq}}$	$0.01028^{+0.00074}_{-0.00091}$	$\chi^2_{\text{lensing}}$	$7.8 \pm 2.3$
$z_{\text{re}}$	$7.77^{+0.22}_{-0.25}$	$100\theta_{\text{eq}}$	$0.823 \pm 0.038$	$\chi^2_{6\text{DF}}$	$0.061 \pm 0.083$
$10^9 A_s$	$2.17^{+0.20}_{-0.24}$	$100\theta_{s,\text{eq}}$	$0.454 \pm 0.020$	$\chi^2_{\text{MGS}}$	$1.82 \pm 0.72$
$10^9 A_s e^{-2\tau}$	$1.94^{+0.18}_{-0.22}$	$H(0.15)$	$73.3^{+1.4}_{-1.6}$	$\chi^2_{\text{DR12BAO}}$	$4.4 \pm 1.6$
$D_{40}$	$1301^{+130}_{-150}$	$D_M(0.15)$	$638 \pm 12$	$\chi^2_{\text{prior}}$	$2.0 \pm 2.0$
$D_{220}$	$6015^{+700}_{-1000}$	$H(0.38)$	$83.3^{+1.9}_{-2.2}$	$\chi^2_{\text{BAO}}$	$6.3 \pm 1.7$
$D_{810}$	$2598 \pm 300$	$D_M(0.38)$	$1523 \pm 32$		

$\bar{\chi}^2_{\text{eff}} = 16.15; R - 1 = 0.00217$



## 2.179 base\_lensing\_lenspriors\_BAO\_post\_ptt

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00051$	$D_{1420}$	$918^{+97}_{-85}$	$H(0.51)$	$87.6^{+2.0}_{-2.6}$
$\Omega_{\mathrm{c}}h^2$	$0.1070^{+0.0089}_{-0.012}$	$D_{2000}$	$266^{+28}_{-39}$	$D_{\mathrm{M}}(0.51)$	$2015^{+47}_{-41}$
$100\theta_{\mathrm{MC}}$	$1.025^{+0.015}_{-0.017}$	$n_{\mathrm{s},0.002}$	$0.955 \pm 0.020$	$H(0.61)$	$92.8^{+2.3}_{-2.9}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.19^{+0.12}_{-0.10}$	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00021}$	$D_{\mathrm{M}}(0.61)$	$2348^{+57}_{-49}$
$n_{\mathrm{s}}$	$0.955 \pm 0.020$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00023}_{-0.00021}$	$H(2.33)$	$226.1^{+7.7}_{-9.7}$
$H_0$	$67.0^{+1.1}_{-1.3}$	$10^5\mathrm{D}/\mathrm{H}$	$2.621^{+0.091}_{-0.10}$	$D_{\mathrm{M}}(2.33)$	$5937^{+180}_{-160}$
$\Omega_{\Lambda}$	$0.712^{+0.018}_{-0.015}$	Age/Gyr	$14.22^{+0.45}_{-0.40}$	$f\sigma_8(0.15)$	$0.437 \pm 0.019$
$\Omega_{\mathrm{m}}$	$0.288^{+0.015}_{-0.018}$	$z_*$	$1089.0^{+1.0}_{-1.2}$	$\sigma_8(0.15)$	$0.744 \pm 0.019$
$\Omega_{\mathrm{m}}h^2$	$0.1299^{+0.0089}_{-0.012}$	$r_*$	$148.2^{+3.3}_{-2.8}$	$f\sigma_8(0.38)$	$0.460 \pm 0.017$
$\Omega_{\mathrm{m}}h^3$	$0.0872^{+0.0069}_{-0.0097}$	$100\theta_*$	$1.025^{+0.015}_{-0.017}$	$\sigma_8(0.38)$	$0.662 \pm 0.016$
$\sigma_8$	$0.803 \pm 0.021$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.46^{+0.54}_{-0.49}$	$f\sigma_8(0.51)$	$0.462 \pm 0.015$
$S_8$	$0.787 \pm 0.037$	$z_{\mathrm{drag}}$	$1058.5 \pm 1.5$	$\sigma_8(0.51)$	$0.621 \pm 0.015$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.431 \pm 0.020$	$r_{\mathrm{drag}}$	$151.0^{+3.4}_{-2.9}$	$f\sigma_8(0.61)$	$0.459 \pm 0.014$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.588 \pm 0.020$	$k_{\mathrm{D}}$	$0.1368^{+0.0029}_{-0.0036}$	$\sigma_8(0.61)$	$0.591 \pm 0.014$
$\sigma_8/h^{0.5}$	$0.980 \pm 0.022$	$100\theta_{\mathrm{D}}$	$0.1591 \pm 0.0021$	$f\sigma_8(2.33)$	$0.2992^{+0.0072}_{-0.0066}$
$r_{\mathrm{drag}}h$	$101.2^{+1.3}_{-1.1}$	$z_{\mathrm{eq}}$	$3088^{+210}_{-290}$	$\sigma_8(2.33)$	$0.3096 \pm 0.0072$
$\langle d^2 \rangle^{1/2}$	$2.547^{+0.066}_{-0.058}$	$k_{\mathrm{eq}}$	$0.00942^{+0.00065}_{-0.00088}$	$\chi_{\mathrm{lensing}}^2$	$11.5 \pm 2.4$
$z_{\mathrm{re}}$	$7.54^{+0.21}_{-0.24}$	$100\theta_{\mathrm{eq}}$	$0.864 \pm 0.040$	$\chi_{6\mathrm{DF}}^2$	$0.071 \pm 0.089$
$10^9A_{\mathrm{s}}$	$2.43 \pm 0.26$	$100\theta_{\mathrm{s,eq}}$	$0.476 \pm 0.021$	$\chi_{\mathrm{MGS}}^2$	$2.12 \pm 0.73$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.18 \pm 0.24$	$H(0.15)$	$71.9^{+1.3}_{-1.6}$	$\chi_{\mathrm{DR12BAO}}^2$	$5.2 \pm 1.7$
$D_{40}$	$1493 \pm 200$	$D_{\mathrm{M}}(0.15)$	$648^{+13}_{-12}$	$\chi_{\mathrm{prior}}^2$	$2.1 \pm 2.2$
$D_{220}$	$7122 \pm 1000$	$H(0.38)$	$81.3^{+1.7}_{-2.2}$	$\chi_{\mathrm{BAO}}^2$	$7.4 \pm 1.8$
$D_{810}$	$2923^{+300}_{-300}$	$D_{\mathrm{M}}(0.38)$	$1552^{+35}_{-30}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 21.02; R - 1 = 0.01428$$



## 2.180 base\_lensing\_lenspriors\_BAO\_post\_bfcl

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00050$	$D_{1420}$	$812^{+100}_{-80}$	$H(0.51)$	$89.9^{+2.2}_{-2.5}$
$\Omega_{\mathrm{c}}h^2$	$0.119^{+0.010}_{-0.012}$	$D_{2000}$	$231^{+24}_{-29}$	$D_{\mathrm{M}}(0.51)$	$1974 \pm 44$
$100\theta_{\mathrm{MC}}$	$1.041 \pm 0.015$	$n_{\mathrm{s},0.002}$	$0.956 \pm 0.020$	$H(0.61)$	$95.5^{+2.5}_{-2.8}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.05 \pm 0.10$	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00019}$	$D_{\mathrm{M}}(0.61)$	$2298 \pm 52$
$n_{\mathrm{s}}$	$0.956 \pm 0.020$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00023}_{-0.00020}$	$H(2.33)$	$235.3^{+8.4}_{-9.5}$
$H_0$	$68.0^{+1.2}_{-1.3}$	$10^5\mathrm{D}/\mathrm{H}$	$2.623^{+0.088}_{-0.098}$	$D_{\mathrm{M}}(2.33)$	$5763 \pm 170$
$\Omega_{\Lambda}$	$0.695^{+0.018}_{-0.016}$	Age/Gyr	$13.80 \pm 0.41$	$f\sigma_8(0.15)$	$0.450 \pm 0.019$
$\Omega_{\mathrm{m}}$	$0.305^{+0.016}_{-0.018}$	$z_*$	$1090.0^{+1.1}_{-1.2}$	$\sigma_8(0.15)$	$0.745 \pm 0.017$
$\Omega_{\mathrm{m}}h^2$	$0.141^{+0.010}_{-0.012}$	$r_*$	$145.1 \pm 3.1$	$f\sigma_8(0.38)$	$0.470 \pm 0.016$
$\Omega_{\mathrm{m}}h^3$	$0.0963^{+0.0081}_{-0.010}$	$100\theta_*$	$1.041 \pm 0.015$	$\sigma_8(0.38)$	$0.661 \pm 0.014$
$\sigma_8$	$0.806 \pm 0.019$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.94 \pm 0.49$	$f\sigma_8(0.51)$	$0.469 \pm 0.014$
$S_8$	$0.812 \pm 0.036$	$z_{\mathrm{drag}}$	$1059.4 \pm 1.5$	$\sigma_8(0.51)$	$0.619 \pm 0.013$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.445 \pm 0.020$	$r_{\mathrm{drag}}$	$147.8 \pm 3.2$	$f\sigma_8(0.61)$	$0.465 \pm 0.013$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.599 \pm 0.019$	$k_{\mathrm{D}}$	$0.1400^{+0.0031}_{-0.0036}$	$\sigma_8(0.61)$	$0.589 \pm 0.012$
$\sigma_8/h^{0.5}$	$0.977 \pm 0.019$	$100\theta_{\mathrm{D}}$	$0.1611 \pm 0.0021$	$f\sigma_8(2.33)$	$0.2975 \pm 0.0061$
$r_{\mathrm{drag}}h$	$100.5 \pm 1.2$	$z_{\mathrm{eq}}$	$3363^{+240}_{-300}$	$\sigma_8(2.33)$	$0.3071 \pm 0.0063$
$\langle d^2 \rangle^{1/2}$	$2.457 \pm 0.049$	$k_{\mathrm{eq}}$	$0.01026^{+0.00074}_{-0.00091}$	$\chi_{\mathrm{lensing}}^2$	$10.1 \pm 2.3$
$z_{\mathrm{re}}$	$7.77^{+0.22}_{-0.25}$	$100\theta_{\mathrm{eq}}$	$0.823 \pm 0.038$	$\chi_{6\mathrm{DF}}^2$	$0.060 \pm 0.083$
$10^9A_{\mathrm{s}}$	$2.13^{+0.19}_{-0.23}$	$100\theta_{\mathrm{s,eq}}$	$0.455 \pm 0.020$	$\chi_{\mathrm{MGS}}^2$	$1.83 \pm 0.72$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.91^{+0.17}_{-0.21}$	$H(0.15)$	$73.3^{+1.4}_{-1.6}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.4 \pm 1.6$
$D_{40}$	$1280^{+120}_{-150}$	$D_{\mathrm{M}}(0.15)$	$638 \pm 12$	$\chi_{\mathrm{prior}}^2$	$2.0 \pm 2.0$
$D_{220}$	$5922^{+700}_{-900}$	$H(0.38)$	$83.3^{+1.9}_{-2.1}$	$\chi_{\mathrm{BAO}}^2$	$6.3 \pm 1.7$
$D_{810}$	$2558 \pm 300$	$D_{\mathrm{M}}(0.38)$	$1523 \pm 32$		

$\bar{\chi}_{\mathrm{eff}}^2 = 18.42$ ;  $R - 1 = 0.00341$



## 2.181 base\_lensing\_lenspriors\_BAO\_post\_agr2bfcl

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00049$	$D_{1420}$	$842 \pm 81$	$H(0.51)$	$88.7 \pm 2.0$
$\Omega_{\mathrm{c}}h^2$	$0.1125^{+0.0085}_{-0.010}$	$D_{2000}$	$239^{+22}_{-29}$	$D_{\mathrm{M}}(0.51)$	$1994 \pm 39$
$100\theta_{\mathrm{MC}}$	$1.033 \pm 0.013$	$n_{\mathrm{s},0.002}$	$0.954 \pm 0.020$	$H(0.61)$	$94.1 \pm 2.3$
$\ln(10^{10}A_{\mathrm{s}})$	$3.091 \pm 0.094$	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00019}$	$D_{\mathrm{M}}(0.61)$	$2322 \pm 46$
$n_{\mathrm{s}}$	$0.954 \pm 0.020$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00023}_{-0.00019}$	$H(2.33)$	$230.6^{+7.2}_{-8.2}$
$H_0$	$67.6 \pm 1.1$	$10^5\mathrm{D}/\mathrm{H}$	$2.622^{+0.087}_{-0.097}$	$D_{\mathrm{M}}(2.33)$	$5849 \pm 150$
$\Omega_{\Lambda}$	$0.704^{+0.016}_{-0.014}$	Age/Gyr	$14.01 \pm 0.36$	$f\sigma_8(0.15)$	$0.437 \pm 0.015$
$\Omega_{\mathrm{m}}$	$0.296^{+0.014}_{-0.016}$	$z_*$	$1089.48^{+0.96}_{-1.1}$	$\sigma_8(0.15)$	$0.734 \pm 0.014$
$\Omega_{\mathrm{m}}h^2$	$0.1353^{+0.0085}_{-0.010}$	$r_*$	$146.6 \pm 2.6$	$f\sigma_8(0.38)$	$0.458 \pm 0.013$
$\Omega_{\mathrm{m}}h^3$	$0.0915^{+0.0068}_{-0.0084}$	$100\theta_*$	$1.033 \pm 0.013$	$\sigma_8(0.38)$	$0.652 \pm 0.012$
$\sigma_8$	$0.793 \pm 0.016$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.19 \pm 0.43$	$f\sigma_8(0.51)$	$0.459 \pm 0.011$
$S_8$	$0.788 \pm 0.029$	$z_{\mathrm{drag}}$	$1059.0 \pm 1.4$	$\sigma_8(0.51)$	$0.611 \pm 0.012$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.431 \pm 0.016$	$r_{\mathrm{drag}}$	$149.4 \pm 2.7$	$f\sigma_8(0.61)$	$0.455 \pm 0.011$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.585 \pm 0.016$	$k_{\mathrm{D}}$	$0.1383^{+0.0027}_{-0.0031}$	$\sigma_8(0.61)$	$0.582 \pm 0.011$
$\sigma_8/h^{0.5}$	$0.964 \pm 0.017$	$100\theta_{\mathrm{D}}$	$0.1601 \pm 0.0018$	$f\sigma_8(2.33)$	$0.2941 \pm 0.0056$
$r_{\mathrm{drag}}h$	$100.9 \pm 1.2$	$z_{\mathrm{eq}}$	$3219^{+200}_{-250}$	$\sigma_8(2.33)$	$0.3039 \pm 0.0059$
$\langle d^2 \rangle^{1/2}$	$2.466 \pm 0.047$	$k_{\mathrm{eq}}$	$0.00982^{+0.00062}_{-0.00076}$	$\chi_{\mathrm{lensing}}^2$	$12.3 \pm 2.2$
$z_{\mathrm{re}}$	$7.65 \pm 0.21$	$100\theta_{\mathrm{eq}}$	$0.843 \pm 0.034$	$\chi_{6\mathrm{DF}}^2$	$0.062 \pm 0.084$
$10^9A_{\mathrm{s}}$	$2.21^{+0.19}_{-0.22}$	$100\theta_{\mathrm{s,eq}}$	$0.465 \pm 0.017$	$\chi_{\mathrm{MGS}}^2$	$1.99 \pm 0.72$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.98^{+0.17}_{-0.20}$	$H(0.15)$	$72.6 \pm 1.3$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.6$
$D_{40}$	$1342^{+120}_{-130}$	$D_{\mathrm{M}}(0.15)$	$643 \pm 11$	$\chi_{\mathrm{prior}}^2$	$2.1 \pm 2.1$
$D_{220}$	$6298^{+700}_{-900}$	$H(0.38)$	$82.3 \pm 1.8$	$\chi_{\mathrm{BAO}}^2$	$6.8 \pm 1.7$
$D_{810}$	$2662 \pm 260$	$D_{\mathrm{M}}(0.38)$	$1537 \pm 29$		

$\bar{\chi}_{\mathrm{eff}}^2 = 21.20$ ;  $R - 1 = 0.00647$



## 2.182 base\_lensing\_lenspriors\_BAO\_post\_linear

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02219 \pm 0.00050$	$D_{1420}$	$812^{+100}_{-90}$	$H(0.51)$	$90.5^{+2.3}_{-2.7}$
$\Omega_{\mathrm{c}} h^2$	$0.122^{+0.010}_{-0.013}$	$D_{2000}$	$230 \pm 30$	$D_{\mathrm{M}}(0.51)$	$1964 \pm 46$
$100\theta_{\mathrm{MC}}$	$1.045 \pm 0.016$	$n_{\mathrm{s},0.002}$	$0.956 \pm 0.020$	$H(0.61)$	$96.1^{+2.5}_{-3.0}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.06 \pm 0.11$	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2286 \pm 55$
$n_{\mathrm{s}}$	$0.956 \pm 0.020$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00023}_{-0.00020}$	$H(2.33)$	$237.7^{+8.6}_{-10}$
$H_0$	$68.3^{+1.2}_{-1.4}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.622^{+0.089}_{-0.10}$	$D_{\mathrm{M}}(2.33)$	$5720 \pm 180$
$\Omega_{\Lambda}$	$0.691^{+0.020}_{-0.016}$	Age/Gyr	$13.70 \pm 0.43$	$f\sigma_8(0.15)$	$0.461 \pm 0.020$
$\Omega_{\mathrm{m}}$	$0.309^{+0.016}_{-0.020}$	$z_*$	$1090.3^{+1.1}_{-1.3}$	$\sigma_8(0.15)$	$0.758 \pm 0.017$
$\Omega_{\mathrm{m}} h^2$	$0.144^{+0.010}_{-0.013}$	$r_*$	$144.3^{+3.3}_{-3.0}$	$f\sigma_8(0.38)$	$0.480 \pm 0.017$
$\Omega_{\mathrm{m}} h^3$	$0.0988^{+0.0083}_{-0.011}$	$100\theta_*$	$1.045 \pm 0.016$	$\sigma_8(0.38)$	$0.672 \pm 0.015$
$\sigma_8$	$0.820 \pm 0.020$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.81 \pm 0.51$	$f\sigma_8(0.51)$	$0.479 \pm 0.015$
$S_8$	$0.833 \pm 0.038$	$z_{\mathrm{drag}}$	$1059.6 \pm 1.5$	$\sigma_8(0.51)$	$0.629 \pm 0.014$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.456 \pm 0.021$	$r_{\mathrm{drag}}$	$147.0^{+3.4}_{-3.1}$	$f\sigma_8(0.61)$	$0.474 \pm 0.014$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.612 \pm 0.021$	$k_{\mathrm{D}}$	$0.1409^{+0.0033}_{-0.0038}$	$\sigma_8(0.61)$	$0.599 \pm 0.013$
$\sigma_8/h^{0.5}$	$0.993 \pm 0.020$	$100\theta_{\mathrm{D}}$	$0.1616 \pm 0.0022$	$f\sigma_8(2.33)$	$0.3021 \pm 0.0064$
$r_{\mathrm{drag}} h$	$100.3 \pm 1.3$	$z_{\mathrm{eq}}$	$3437^{+250}_{-320}$	$\sigma_8(2.33)$	$0.3116 \pm 0.0066$
$\langle d^2 \rangle^{1/2}$	$2.473 \pm 0.053$	$k_{\mathrm{eq}}$	$0.01049^{+0.00076}_{-0.00098}$	$\chi_{\mathrm{lensing}}^2$	$10.4 \pm 2.3$
$z_{\mathrm{re}}$	$7.82^{+0.23}_{-0.26}$	$100\theta_{\mathrm{eq}}$	$0.813 \pm 0.040$	$\chi_{6\mathrm{DF}}^2$	$0.063 \pm 0.086$
$10^9 A_{\mathrm{s}}$	$2.13^{+0.20}_{-0.24}$	$100\theta_{\mathrm{s,eq}}$	$0.450 \pm 0.020$	$\chi_{\mathrm{MGS}}^2$	$1.74 \pm 0.72$
$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.91^{+0.18}_{-0.21}$	$H(0.15)$	$73.6^{+1.4}_{-1.7}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.2 \pm 1.6$
$D_{40}$	$1274^{+130}_{-150}$	$D_{\mathrm{M}}(0.15)$	$635 \pm 13$	$\chi_{\mathrm{prior}}^2$	$2.1 \pm 2.0$
$D_{220}$	$5855^{+800}_{-900}$	$H(0.38)$	$83.8^{+1.9}_{-2.3}$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.7$
$D_{810}$	$2554 \pm 300$	$D_{\mathrm{M}}(0.38)$	$1516 \pm 34$		

$\bar{\chi}_{\mathrm{eff}}^2 = 18.54$ ;  $R - 1 = 0.00374$



## 2.183 base\_lensing\_lenspriors\_BAO\_post\_acc

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02219 \pm 0.00050$	$D_{1420}$	$835^{+100}_{-90}$	$H(0.51)$	$89.6^{+2.2}_{-2.5}$
$\Omega_c h^2$	$0.117^{+0.010}_{-0.012}$	$D_{2000}$	$238^{+25}_{-30}$	$D_M(0.51)$	$1979 \pm 43$
$100\theta_{MC}$	$1.039 \pm 0.015$	$n_{s,0.002}$	$0.956 \pm 0.020$	$H(0.61)$	$95.1^{+2.4}_{-2.8}$
$\ln(10^{10} A_s)$	$3.08 \pm 0.10$	$Y_P$	$0.24531^{+0.00023}_{-0.00020}$	$D_M(0.61)$	$2304 \pm 52$
$n_s$	$0.956 \pm 0.020$	$Y_P^{BBN}$	$0.24663^{+0.00023}_{-0.00020}$	$H(2.33)$	$234.2^{+8.3}_{-9.4}$
$H_0$	$67.9^{+1.2}_{-1.3}$	$10^5 D/H$	$2.623^{+0.088}_{-0.10}$	$D_M(2.33)$	$5784 \pm 170$
$\Omega_\Lambda$	$0.697^{+0.018}_{-0.016}$	Age/Gyr	$13.85 \pm 0.41$	$f\sigma_8(0.15)$	$0.451 \pm 0.018$
$\Omega_m$	$0.303^{+0.016}_{-0.018}$	$z_*$	$1089.9^{+1.1}_{-1.2}$	$\sigma_8(0.15)$	$0.750 \pm 0.017$
$\Omega_m h^2$	$0.140^{+0.010}_{-0.012}$	$r_*$	$145.4 \pm 3.0$	$f\sigma_8(0.38)$	$0.471 \pm 0.016$
$\Omega_m h^3$	$0.0952^{+0.0079}_{-0.010}$	$100\theta_*$	$1.040 \pm 0.015$	$\sigma_8(0.38)$	$0.666 \pm 0.014$
$\sigma_8$	$0.811 \pm 0.019$	$D_M(z_*)/\text{Gpc}$	$14.00 \pm 0.49$	$f\sigma_8(0.51)$	$0.471 \pm 0.014$
$S_8$	$0.814 \pm 0.035$	$z_{\text{drag}}$	$1059.3 \pm 1.5$	$\sigma_8(0.51)$	$0.623 \pm 0.013$
$\sigma_8 \Omega_m^{0.5}$	$0.446 \pm 0.019$	$r_{\text{drag}}$	$148.2 \pm 3.1$	$f\sigma_8(0.61)$	$0.467 \pm 0.013$
$\sigma_8 \Omega_m^{0.25}$	$0.601 \pm 0.019$	$k_D$	$0.1396^{+0.0031}_{-0.0036}$	$\sigma_8(0.61)$	$0.593 \pm 0.012$
$\sigma_8/h^{0.5}$	$0.984 \pm 0.019$	$100\theta_D$	$0.1609 \pm 0.0021$	$f\sigma_8(2.33)$	$0.2996 \pm 0.0062$
$r_{\text{drag}} h$	$100.6 \pm 1.2$	$z_{\text{eq}}$	$3329^{+240}_{-290}$	$\sigma_8(2.33)$	$0.3093 \pm 0.0065$
$\langle d^2 \rangle^{1/2}$	$2.483 \pm 0.052$	$k_{\text{eq}}$	$0.01016^{+0.00073}_{-0.00089}$	$\chi^2_{\text{lensing}}$	$9.9 \pm 2.3$
$z_{\text{re}}$	$7.74^{+0.22}_{-0.25}$	$100\theta_{\text{eq}}$	$0.828 \pm 0.038$	$\chi^2_{6\text{DF}}$	$0.061 \pm 0.083$
$10^9 A_s$	$2.19^{+0.20}_{-0.25}$	$100\theta_{s,\text{eq}}$	$0.457 \pm 0.020$	$\chi^2_{\text{MGS}}$	$1.86 \pm 0.73$
$10^9 A_s e^{-2\tau}$	$1.96^{+0.18}_{-0.22}$	$H(0.15)$	$73.1^{+1.4}_{-1.6}$	$\chi^2_{\text{DR12BAO}}$	$4.5 \pm 1.6$
$D_{40}$	$1319^{+130}_{-150}$	$D_M(0.15)$	$639 \pm 12$	$\chi^2_{\text{prior}}$	$2.0 \pm 2.0$
$D_{220}$	$6124^{+800}_{-1000}$	$H(0.38)$	$83.0^{+1.9}_{-2.1}$	$\chi^2_{\text{BAO}}$	$6.4 \pm 1.7$
$D_{810}$	$2633 \pm 300$	$D_M(0.38)$	$1526 \pm 32$		

$\bar{\chi}^2_{\text{eff}} = 18.36; R - 1 = 0.00214$



## 2.184 base\_lensing\_lenspriors\_BAO\_post\_agr2acc

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02219 \pm 0.00050$	$D_{1420}$	$866 \pm 82$	$H(0.51)$	$88.4^{+1.9}_{-2.1}$
$\Omega_c h^2$	$0.1108^{+0.0081}_{-0.010}$	$D_{2000}$	$247^{+23}_{-31}$	$D_M(0.51)$	$2000 \pm 39$
$100\theta_{MC}$	$1.031 \pm 0.013$	$n_{s,0.002}$	$0.954 \pm 0.020$	$H(0.61)$	$93.7^{+2.1}_{-2.4}$
$\ln(10^{10} A_s)$	$3.121 \pm 0.095$	$Y_P$	$0.24531^{+0.00023}_{-0.00019}$	$D_M(0.61)$	$2330 \pm 46$
$n_s$	$0.954 \pm 0.020$	$Y_P^{BBN}$	$0.24663^{+0.00023}_{-0.00019}$	$H(2.33)$	$229.2^{+6.9}_{-8.1}$
$H_0$	$67.4 \pm 1.1$	$10^5 D/H$	$2.623^{+0.087}_{-0.099}$	$D_M(2.33)$	$5876 \pm 150$
$\Omega_\Lambda$	$0.706^{+0.016}_{-0.013}$	Age/Gyr	$14.07 \pm 0.36$	$f\sigma_8(0.15)$	$0.437 \pm 0.015$
$\Omega_m$	$0.294^{+0.013}_{-0.016}$	$z_*$	$1089.33^{+0.93}_{-1.1}$	$\sigma_8(0.15)$	$0.738 \pm 0.014$
$\Omega_m h^2$	$0.1336^{+0.0082}_{-0.010}$	$r_*$	$147.1 \pm 2.6$	$f\sigma_8(0.38)$	$0.459 \pm 0.012$
$\Omega_m h^3$	$0.0901^{+0.0065}_{-0.0083}$	$100\theta_*$	$1.031 \pm 0.013$	$\sigma_8(0.38)$	$0.656 \pm 0.012$
$\sigma_8$	$0.796 \pm 0.016$	$D_M(z_*)/\text{Gpc}$	$14.27 \pm 0.43$	$f\sigma_8(0.51)$	$0.460 \pm 0.011$
$S_8$	$0.788 \pm 0.028$	$z_{\text{drag}}$	$1058.8 \pm 1.4$	$\sigma_8(0.51)$	$0.614 \pm 0.012$
$\sigma_8 \Omega_m^{0.5}$	$0.432 \pm 0.015$	$r_{\text{drag}}$	$149.9 \pm 2.7$	$f\sigma_8(0.61)$	$0.456 \pm 0.011$
$\sigma_8 \Omega_m^{0.25}$	$0.586 \pm 0.015$	$k_D$	$0.1379^{+0.0027}_{-0.0030}$	$\sigma_8(0.61)$	$0.585 \pm 0.011$
$\sigma_8/h^{0.5}$	$0.970 \pm 0.017$	$100\theta_D$	$0.1598 \pm 0.0018$	$f\sigma_8(2.33)$	$0.2959 \pm 0.0057$
$r_{\text{drag}} h$	$101.0 \pm 1.2$	$z_{\text{eq}}$	$3178^{+200}_{-250}$	$\sigma_8(2.33)$	$0.3058 \pm 0.0060$
$\langle d^2 \rangle^{1/2}$	$2.493 \pm 0.050$	$k_{\text{eq}}$	$0.00970^{+0.00060}_{-0.00075}$	$\chi^2_{\text{lensing}}$	$12.2 \pm 2.2$
$z_{\text{re}}$	$7.62^{+0.19}_{-0.22}$	$100\theta_{\text{eq}}$	$0.850 \pm 0.034$	$\chi^2_{6\text{DF}}$	$0.064 \pm 0.087$
$10^9 A_s$	$2.28^{+0.20}_{-0.23}$	$100\theta_{s,\text{eq}}$	$0.468 \pm 0.017$	$\chi^2_{\text{MGS}}$	$2.03 \pm 0.73$
$10^9 A_s e^{-2\tau}$	$2.04^{+0.18}_{-0.21}$	$H(0.15)$	$72.4 \pm 1.3$	$\chi^2_{\text{DR12BAO}}$	$4.9 \pm 1.6$
$D_{40}$	$1388 \pm 130$	$D_M(0.15)$	$645 \pm 11$	$\chi^2_{\text{prior}}$	$2.1 \pm 2.1$
$D_{220}$	$6540^{+800}_{-900}$	$H(0.38)$	$82.0 \pm 1.7$	$\chi^2_{\text{BAO}}$	$7.0 \pm 1.7$
$D_{810}$	$2744 \pm 270$	$D_M(0.38)$	$1542 \pm 29$		

$\bar{\chi}^2_{\text{eff}} = 21.26$ ;  $R - 1 = 0.00444$



## 2.185 base\_lensing\_lenspriors\_BAO\_post\_takahashi

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02219 \pm 0.00050$	$D_{1420}$	$838^{+100}_{-90}$	$H(0.51)$	$89.5^{+2.2}_{-2.5}$
$\Omega_c h^2$	$0.117^{+0.010}_{-0.012}$	$D_{2000}$	$238^{+24}_{-30}$	$D_M(0.51)$	$1981 \pm 43$
$100\theta_{MC}$	$1.039 \pm 0.015$	$n_{s,0.002}$	$0.956 \pm 0.020$	$H(0.61)$	$95.0^{+2.4}_{-2.8}$
$\ln(10^{10} A_s)$	$3.09 \pm 0.10$	$Y_P$	$0.24531^{+0.00023}_{-0.00020}$	$D_M(0.61)$	$2306 \pm 52$
$n_s$	$0.956 \pm 0.020$	$Y_P^{BBN}$	$0.24663^{+0.00023}_{-0.00020}$	$H(2.33)$	$233.8^{+8.3}_{-9.5}$
$H_0$	$67.9^{+1.2}_{-1.3}$	$10^5 D/H$	$2.623^{+0.088}_{-0.10}$	$D_M(2.33)$	$5792 \pm 170$
$\Omega_\Lambda$	$0.698^{+0.018}_{-0.016}$	Age/Gyr	$13.87 \pm 0.41$	$f\sigma_8(0.15)$	$0.450 \pm 0.019$
$\Omega_m$	$0.302^{+0.016}_{-0.018}$	$z_*$	$1089.8^{+1.1}_{-1.2}$	$\sigma_8(0.15)$	$0.749 \pm 0.017$
$\Omega_m h^2$	$0.139^{+0.010}_{-0.012}$	$r_*$	$145.6 \pm 3.0$	$f\sigma_8(0.38)$	$0.470 \pm 0.016$
$\Omega_m h^3$	$0.0947^{+0.0079}_{-0.010}$	$100\theta_*$	$1.039 \pm 0.015$	$\sigma_8(0.38)$	$0.665 \pm 0.015$
$\sigma_8$	$0.809 \pm 0.020$	$D_M(z_*)/\text{Gpc}$	$14.02 \pm 0.49$	$f\sigma_8(0.51)$	$0.470 \pm 0.015$
$S_8$	$0.812 \pm 0.036$	$z_{\text{drag}}$	$1059.2 \pm 1.5$	$\sigma_8(0.51)$	$0.623 \pm 0.014$
$\sigma_8 \Omega_m^{0.5}$	$0.445 \pm 0.020$	$r_{\text{drag}}$	$148.3 \pm 3.1$	$f\sigma_8(0.61)$	$0.466 \pm 0.014$
$\sigma_8 \Omega_m^{0.25}$	$0.600 \pm 0.020$	$k_D$	$0.1395^{+0.0031}_{-0.0036}$	$\sigma_8(0.61)$	$0.593 \pm 0.013$
$\sigma_8/h^{0.5}$	$0.982 \pm 0.020$	$100\theta_D$	$0.1608 \pm 0.0021$	$f\sigma_8(2.33)$	$0.2993 \pm 0.0065$
$r_{\text{drag}} h$	$100.6 \pm 1.2$	$z_{\text{eq}}$	$3316^{+240}_{-290}$	$\sigma_8(2.33)$	$0.3090 \pm 0.0067$
$\langle d^2 \rangle^{1/2}$	$2.483 \pm 0.052$	$k_{\text{eq}}$	$0.01012^{+0.00073}_{-0.00090}$	$\chi^2_{\text{lensing}}$	$9.9 \pm 2.3$
$z_{\text{re}}$	$7.73^{+0.22}_{-0.25}$	$100\theta_{\text{eq}}$	$0.830 \pm 0.038$	$\chi^2_{6\text{DF}}$	$0.061 \pm 0.084$
$10^9 A_s$	$2.20^{+0.20}_{-0.24}$	$100\theta_{s,\text{eq}}$	$0.458 \pm 0.020$	$\chi^2_{\text{MGS}}$	$1.87 \pm 0.73$
$10^9 A_s e^{-2\tau}$	$1.97^{+0.18}_{-0.22}$	$H(0.15)$	$73.0^{+1.4}_{-1.6}$	$\chi^2_{\text{DR12BAO}}$	$4.5 \pm 1.6$
$D_{40}$	$1324^{+130}_{-150}$	$D_M(0.15)$	$640 \pm 12$	$\chi^2_{\text{prior}}$	$2.0 \pm 2.0$
$D_{220}$	$6160^{+800}_{-1000}$	$H(0.38)$	$82.9^{+1.9}_{-2.1}$	$\chi^2_{\text{BAO}}$	$6.5 \pm 1.7$
$D_{810}$	$2642 \pm 300$	$D_M(0.38)$	$1528 \pm 32$		

$\bar{\chi}^2_{\text{eff}} = 18.40$ ;  $R - 1 = 0.00240$



**2.186 base\_lensing\_lenspriors\_BAO\_post\_agr2takahashi**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00050$	$D_{1420}$	$868 \pm 81$	$H(0.51)$	$88.2^{+1.9}_{-2.1}$
$\Omega_{\mathrm{c}}h^2$	$0.1101^{+0.0080}_{-0.010}$	$D_{2000}$	$248^{+23}_{-31}$	$D_{\mathrm{M}}(0.51)$	$2003 \pm 39$
$100\theta_{\mathrm{MC}}$	$1.030 \pm 0.013$	$n_{\mathrm{s},0.002}$	$0.955 \pm 0.020$	$H(0.61)$	$93.6^{+2.1}_{-2.4}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.124 \pm 0.094$	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2333 \pm 46$
$n_{\mathrm{s}}$	$0.955 \pm 0.020$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00023}_{-0.00020}$	$H(2.33)$	$228.7^{+6.9}_{-8.1}$
$H_0$	$67.3 \pm 1.1$	$10^5 D/H$	$2.622^{+0.088}_{-0.098}$	$D_{\mathrm{M}}(2.33)$	$5885 \pm 150$
$\Omega_{\Lambda}$	$0.707^{+0.016}_{-0.013}$	Age/Gyr	$14.10 \pm 0.36$	$f\sigma_8(0.15)$	$0.436 \pm 0.015$
$\Omega_{\mathrm{m}}$	$0.293^{+0.013}_{-0.016}$	$z_*$	$1089.27^{+0.92}_{-1.1}$	$\sigma_8(0.15)$	$0.736 \pm 0.015$
$\Omega_{\mathrm{m}}h^2$	$0.1330^{+0.0081}_{-0.010}$	$r_*$	$147.3 \pm 2.6$	$f\sigma_8(0.38)$	$0.458 \pm 0.013$
$\Omega_{\mathrm{m}}h^3$	$0.0896^{+0.0064}_{-0.0082}$	$100\theta_*$	$1.030 \pm 0.013$	$\sigma_8(0.38)$	$0.655 \pm 0.013$
$\sigma_8$	$0.795 \pm 0.017$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.30 \pm 0.43$	$f\sigma_8(0.51)$	$0.459 \pm 0.012$
$S_8$	$0.785 \pm 0.029$	$z_{\mathrm{drag}}$	$1058.8 \pm 1.4$	$\sigma_8(0.51)$	$0.613 \pm 0.012$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.430 \pm 0.016$	$r_{\mathrm{drag}}$	$150.1 \pm 2.7$	$f\sigma_8(0.61)$	$0.455 \pm 0.011$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.584 \pm 0.016$	$k_{\mathrm{D}}$	$0.1377^{+0.0027}_{-0.0030}$	$\sigma_8(0.61)$	$0.584 \pm 0.012$
$\sigma_8/h^{0.5}$	$0.968 \pm 0.018$	$100\theta_{\mathrm{D}}$	$0.1597 \pm 0.0018$	$f\sigma_8(2.33)$	$0.2954 \pm 0.0059$
$r_{\mathrm{drag}}h$	$101.0 \pm 1.2$	$z_{\mathrm{eq}}$	$3162^{+190}_{-240}$	$\sigma_8(2.33)$	$0.3054 \pm 0.0062$
$\langle d^2 \rangle^{1/2}$	$2.493 \pm 0.050$	$k_{\mathrm{eq}}$	$0.00965^{+0.00059}_{-0.00075}$	$\chi^2_{\mathrm{lensing}}$	$12.2 \pm 2.3$
$z_{\mathrm{re}}$	$7.61^{+0.19}_{-0.22}$	$100\theta_{\mathrm{eq}}$	$0.852 \pm 0.034$	$\chi^2_{6\mathrm{DF}}$	$0.065 \pm 0.088$
$10^9 A_{\mathrm{s}}$	$2.28^{+0.20}_{-0.23}$	$100\theta_{\mathrm{s,eq}}$	$0.469 \pm 0.017$	$\chi^2_{\mathrm{MGS}}$	$2.05 \pm 0.73$
$10^9 A_{\mathrm{s}}e^{-2\tau}$	$2.05^{+0.18}_{-0.20}$	$H(0.15)$	$72.3 \pm 1.3$	$\chi^2_{\mathrm{DR12BAO}}$	$5.0 \pm 1.6$
$D_{40}$	$1394 \pm 130$	$D_{\mathrm{M}}(0.15)$	$645 \pm 11$	$\chi^2_{\mathrm{prior}}$	$2.1 \pm 2.1$
$D_{220}$	$6581^{+800}_{-900}$	$H(0.38)$	$81.9^{+1.6}_{-1.8}$	$\chi^2_{\mathrm{BAO}}$	$7.1 \pm 1.7$
$D_{810}$	$2752 \pm 270$	$D_{\mathrm{M}}(0.38)$	$1544 \pm 29$		

 $\bar{\chi}^2_{\mathrm{eff}} = 21.32; R - 1 = 0.00478$



## 2.187 base\_lensing\_lenspriors\_BAO\_post\_Apr6

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02219 \pm 0.00050$	$D_{1420}$	$817^{+100}_{-90}$	$H(0.51)$	$90.1^{+2.2}_{-2.5}$
$\Omega_c h^2$	$0.119^{+0.010}_{-0.012}$	$D_{2000}$	$232^{+25}_{-29}$	$D_M(0.51)$	$1971 \pm 44$
$100\theta_{MC}$	$1.042 \pm 0.015$	$n_{s,0.002}$	$0.956 \pm 0.020$	$H(0.61)$	$95.6^{+2.5}_{-2.8}$
$\ln(10^{10} A_s)$	$3.06 \pm 0.10$	$Y_P$	$0.24531^{+0.00023}_{-0.00020}$	$D_M(0.61)$	$2294 \pm 53$
$n_s$	$0.956 \pm 0.020$	$Y_P^{BBN}$	$0.24663^{+0.00023}_{-0.00020}$	$H(2.33)$	$236.0^{+8.4}_{-9.6}$
$H_0$	$68.1^{+1.2}_{-1.3}$	$10^5 D/H$	$2.623^{+0.088}_{-0.10}$	$D_M(2.33)$	$5751 \pm 170$
$\Omega_\Lambda$	$0.694^{+0.019}_{-0.016}$	Age/Gyr	$13.77 \pm 0.41$	$f\sigma_8(0.15)$	$0.454 \pm 0.019$
$\Omega_m$	$0.306^{+0.016}_{-0.019}$	$z_*$	$1090.1^{+1.1}_{-1.2}$	$\sigma_8(0.15)$	$0.751 \pm 0.017$
$\Omega_m h^2$	$0.142^{+0.010}_{-0.013}$	$r_*$	$144.8 \pm 3.1$	$f\sigma_8(0.38)$	$0.474 \pm 0.016$
$\Omega_m h^3$	$0.0970^{+0.0081}_{-0.010}$	$100\theta_*$	$1.042 \pm 0.015$	$\sigma_8(0.38)$	$0.666 \pm 0.014$
$\sigma_8$	$0.812 \pm 0.019$	$D_M(z_*)/\text{Gpc}$	$13.90 \pm 0.49$	$f\sigma_8(0.51)$	$0.473 \pm 0.014$
$S_8$	$0.820 \pm 0.036$	$z_{\text{drag}}$	$1059.4 \pm 1.5$	$\sigma_8(0.51)$	$0.624 \pm 0.013$
$\sigma_8 \Omega_m^{0.5}$	$0.449 \pm 0.020$	$r_{\text{drag}}$	$147.6 \pm 3.2$	$f\sigma_8(0.61)$	$0.469 \pm 0.013$
$\sigma_8 \Omega_m^{0.25}$	$0.604 \pm 0.019$	$k_D$	$0.1403^{+0.0031}_{-0.0036}$	$\sigma_8(0.61)$	$0.594 \pm 0.013$
$\sigma_8/h^{0.5}$	$0.984 \pm 0.019$	$100\theta_D$	$0.1613 \pm 0.0021$	$f\sigma_8(2.33)$	$0.2997 \pm 0.0062$
$r_{\text{drag}} h$	$100.5 \pm 1.2$	$z_{\text{eq}}$	$3383^{+240}_{-300}$	$\sigma_8(2.33)$	$0.3093 \pm 0.0065$
$\langle d^2 \rangle^{1/2}$	$2.471 \pm 0.052$	$k_{\text{eq}}$	$0.01032^{+0.00075}_{-0.00091}$	$\chi^2_{\text{lensing}}$	$8.8 \pm 2.3$
$z_{\text{re}}$	$7.78^{+0.22}_{-0.25}$	$100\theta_{\text{eq}}$	$0.820 \pm 0.038$	$\chi^2_{6\text{DF}}$	$0.060 \pm 0.083$
$10^9 A_s$	$2.15^{+0.20}_{-0.24}$	$100\theta_{s,\text{eq}}$	$0.453 \pm 0.020$	$\chi^2_{\text{MGS}}$	$1.80 \pm 0.72$
$10^9 A_s e^{-2\tau}$	$1.92^{+0.18}_{-0.21}$	$H(0.15)$	$73.3^{+1.4}_{-1.6}$	$\chi^2_{\text{DR12BAO}}$	$4.3 \pm 1.6$
$D_{40}$	$1287^{+130}_{-150}$	$D_M(0.15)$	$637 \pm 12$	$\chi^2_{\text{prior}}$	$2.0 \pm 2.0$
$D_{220}$	$5941^{+700}_{-900}$	$H(0.38)$	$83.4^{+1.9}_{-2.2}$	$\chi^2_{\text{BAO}}$	$6.2 \pm 1.7$
$D_{810}$	$2573 \pm 300$	$D_M(0.38)$	$1521 \pm 32$		

$\bar{\chi}^2_{\text{eff}} = 17.02; R - 1 = 0.00221$



## 2.188 base\_lensing\_lenspriors\_BAO\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022208	$0.02221 \pm 0.00049$	$D_{1420}$	831.4	$831 \pm 36$	$H(0.51)$	89.787	$89.80 \pm 0.42$
$\Omega_c h^2$	0.11776	$0.1178 \pm 0.0017$	$D_{2000}$	233.6	$234^{+11}_{-12}$	$D_M(0.51)$	1974.6	$1974 \pm 14$
$100\theta_{MC}$	1.04090	$1.04090 \pm 0.00060$	$n_{s,0.002}$	0.9545	$0.955 \pm 0.019$	$H(0.61)$	95.338	$95.35 \pm 0.39$
$\ln(10^{10} A_s)$	3.0723	$3.071 \pm 0.035$	$Y_P$	0.245329	$0.24532^{+0.00022}_{-0.00020}$	$D_M(0.61)$	2298.7	$2299 \pm 15$
$n_s$	0.9545	$0.955 \pm 0.019$	$Y_P^{BBN}$	0.246655	$0.24665^{+0.00023}_{-0.00020}$	$H(2.33)$	234.92	$234.9 \pm 1.3$
$H_0$	68.01	$68.01 \pm 0.66$	$10^5 D/H$	2.616	$2.618 \pm 0.094$	$D_M(2.33)$	5765.5	$5765 \pm 22$
$\Omega_\Lambda$	0.6960	$0.6959 \pm 0.0087$	Age/Gyr	13.805	$13.804 \pm 0.052$	$f\sigma_8(0.15)$	0.4531	$0.4530 \pm 0.0095$
$\Omega_m$	0.3040	$0.3041 \pm 0.0087$	$z_*$	1089.93	$1089.93 \pm 0.62$	$\sigma_8(0.15)$	0.7514	$0.751 \pm 0.014$
$\Omega_m h^2$	0.14061	$0.1406 \pm 0.0018$	$r_*$	145.14	$145.13 \pm 0.62$	$f\sigma_8(0.38)$	0.4732	$0.4731 \pm 0.0091$
$\Omega_m h^3$	0.09563	$0.0956 \pm 0.0011$	$100\theta_*$	1.04110	$1.04111 \pm 0.00060$	$\sigma_8(0.38)$	0.6669	$0.667 \pm 0.013$
$\sigma_8$	0.8124	$0.812 \pm 0.015$	$D_M(z_*)/\text{Gpc}$	13.941	$13.940 \pm 0.061$	$f\sigma_8(0.51)$	0.4727	$0.4725 \pm 0.0089$
$S_8$	0.8178	$0.818 \pm 0.018$	$z_{\text{drag}}$	1059.40	$1059.4 \pm 1.2$	$\sigma_8(0.51)$	0.6245	$0.624 \pm 0.012$
$\sigma_8 \Omega_m^{0.5}$	0.4479	$0.4478 \pm 0.0098$	$r_{\text{drag}}$	147.87	$147.87 \pm 0.76$	$f\sigma_8(0.61)$	0.4683	$0.4682 \pm 0.0087$
$\sigma_8 \Omega_m^{0.25}$	0.6032	$0.603 \pm 0.011$	$k_D$	0.13993	$0.1399 \pm 0.0011$	$\sigma_8(0.61)$	0.5944	$0.594 \pm 0.012$
$\sigma_8/h^{0.5}$	0.9851	$0.985 \pm 0.018$	$100\theta_D$	0.16105	$0.16106 \pm 0.00071$	$f\sigma_8(2.33)$	0.3000	$0.2999 \pm 0.0060$
$r_{\text{drag}} h$	100.56	$100.6 \pm 1.1$	$z_{\text{eq}}$	3344.8	$3345 \pm 43$	$\sigma_8(2.33)$	0.3096	$0.3096 \pm 0.0064$
$\langle d^2 \rangle^{1/2}$	2.4802	$2.479 \pm 0.040$	$k_{\text{eq}}$	0.010209	$0.01021 \pm 0.00013$	$\chi^2_{\text{lensing}}$	8.10	$9.3 \pm 1.5$
$z_{\text{re}}$	7.753	$7.75 \pm 0.11$	$100\theta_{\text{eq}}$	0.8232	$0.8233 \pm 0.0074$	$\chi^2_{6\text{DF}}$	0.0002	$0.055 \pm 0.080$
$10^9 A_s$	2.159	$2.158 \pm 0.075$	$100\theta_{s,\text{eq}}$	0.45469	$0.4547 \pm 0.0040$	$\chi^2_{\text{MGS}}$	1.75	$1.84 \pm 0.70$
$10^9 A_s e^{-2\tau}$	1.934	$1.933 \pm 0.067$	$H(0.15)$	73.20	$73.21 \pm 0.58$	$\chi^2_{\text{DR12BAO}}$	3.43	$4.3 \pm 1.3$
$D_{40}$	1300	$1299 \pm 56$	$D_M(0.15)$	638.0	$638.0 \pm 5.6$	$\chi^2_{\text{prior}}$	0.08	$2.9 \pm 2.3$
$D_{220}$	5991	$5987 \pm 220$	$H(0.38)$	83.159	$83.17 \pm 0.46$	$\chi^2_{\text{BAO}}$	5.17	$6.2 \pm 1.4$
$D_{810}$	2605	$2605 \pm 98$	$D_M(0.38)$	1523.4	$1523 \pm 12$			

Best-fit  $\chi^2_{\text{eff}} = 13.35$ ;  $\bar{\chi}^2_{\text{eff}} = 18.35$ ;  $R - 1 = 0.00243$

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.43 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 8.10



## 2.189 base\_lensing\_lenspriors\_BAO\_theta\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022215	$0.02222 \pm 0.00049$	$D_{1420}$	834.1	$833 \pm 35$	$H(0.51)$	89.815	$89.82 \pm 0.40$
$\Omega_{\text{c}}h^2$	0.11761	$0.1176 \pm 0.0016$	$D_{2000}$	234.4	$234 \pm 11$	$D_{\text{M}}(0.51)$	1973.4	$1974 \pm 13$
$100\theta_{\text{MC}}$	1.04090	$1.04090 \pm 0.00060$	$n_{\text{s},0.002}$	0.9547	$0.955 \pm 0.019$	$H(0.61)$	95.358	$95.36 \pm 0.39$
$\ln(10^{10}A_{\text{s}})$	3.0753	$3.073 \pm 0.034$	$Y_{\text{P}}$	0.245332	$0.24532^{+0.00022}_{-0.00020}$	$D_{\text{M}}(0.61)$	2297.4	$2298 \pm 14$
$n_{\text{s}}$	0.9547	$0.955 \pm 0.019$	$Y_{\text{P}}^{\text{BBN}}$	0.246659	$0.24665^{+0.00022}_{-0.00020}$	$H(2.33)$	234.82	$234.8 \pm 1.2$
$H_0$	68.07	$68.07 \pm 0.62$	$10^5 D/H$	2.615	$2.617 \pm 0.093$	$D_{\text{M}}(2.33)$	5764.7	$5765 \pm 22$
$\Omega_{\Lambda}$	0.6968	$0.6966 \pm 0.0081$	Age/Gyr	13.803	$13.803 \pm 0.051$	$f\sigma_8(0.15)$	0.4530	$0.4527 \pm 0.0094$
$\Omega_{\text{m}}$	0.3032	$0.3034 \pm 0.0081$	$z_*$	1089.90	$1089.91 \pm 0.62$	$\sigma_8(0.15)$	0.7522	$0.752 \pm 0.014$
$\Omega_{\text{m}}h^2$	0.14047	$0.1405 \pm 0.0017$	$r_*$	145.17	$145.16 \pm 0.61$	$f\sigma_8(0.38)$	0.4733	$0.4729 \pm 0.0091$
$\Omega_{\text{m}}h^3$	0.09561	$0.0956 \pm 0.0010$	$100\theta_*$	1.04111	$1.04110 \pm 0.00060$	$\sigma_8(0.38)$	0.6677	$0.667 \pm 0.013$
$\sigma_8$	0.8131	$0.812 \pm 0.015$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.944	$13.943 \pm 0.060$	$f\sigma_8(0.51)$	0.4728	$0.4725 \pm 0.0089$
$S_8$	0.8174	$0.817 \pm 0.018$	$z_{\text{drag}}$	1059.40	$1059.4 \pm 1.2$	$\sigma_8(0.51)$	0.6252	$0.625 \pm 0.012$
$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4477	$0.4475 \pm 0.0096$	$r_{\text{drag}}$	147.90	$147.89 \pm 0.75$	$f\sigma_8(0.61)$	0.4685	$0.4682 \pm 0.0087$
$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6034	$0.603 \pm 0.011$	$k_{\text{D}}$	0.13990	$0.1399 \pm 0.0011$	$\sigma_8(0.61)$	0.5952	$0.595 \pm 0.012$
$\sigma_8/h^{0.5}$	0.9856	$0.985 \pm 0.018$	$100\theta_{\text{D}}$	0.16105	$0.16106 \pm 0.00071$	$f\sigma_8(2.33)$	0.3004	$0.3002 \pm 0.0060$
$r_{\text{drag}}h$	100.67	$100.7 \pm 1.1$	$z_{\text{eq}}$	3341.3	$3342 \pm 41$	$\sigma_8(2.33)$	0.3101	$0.3099 \pm 0.0063$
$\langle d^2 \rangle^{1/2}$	2.4819	$2.479 \pm 0.039$	$k_{\text{eq}}$	0.010198	$0.01020 \pm 0.00013$	$\chi_{\text{lensing}}^2$	8.08	$9.3 \pm 1.5$
$z_{\text{re}}$	7.747	$7.75 \pm 0.11$	$100\theta_{\text{eq}}$	0.8239	$0.8238 \pm 0.0070$	$\chi_{\text{JLA}}^2$	1034.771	$1034.91 \pm 0.24$
$10^9 A_{\text{s}}$	2.166	$2.162 \pm 0.073$	$100\theta_{\text{s,eq}}$	0.45503	$0.4550 \pm 0.0038$	$\chi_{6\text{DF}}^2$	0.0015	$0.049 \pm 0.070$
$10^9 A_{\text{s}}e^{-2\tau}$	1.940	$1.937 \pm 0.065$	$H(0.15)$	73.25	$73.25 \pm 0.55$	$\chi_{\text{MGS}}^2$	1.82	$1.89 \pm 0.66$
$D_{40}$	1304	$1301 \pm 55$	$D_{\text{M}}(0.15)$	637.5	$637.6 \pm 5.3$	$\chi_{\text{DR12BAO}}^2$	3.386	$4.1 \pm 1.1$
$D_{220}$	6012	$5999 \pm 220$	$H(0.38)$	83.196	$83.20 \pm 0.44$	$\chi_{\text{prior}}^2$	0.07	$2.9 \pm 2.3$
$D_{810}$	2614	$2610 \pm 96$	$D_{\text{M}}(0.38)$	1522.4	$1522 \pm 11$	$\chi_{\text{BAO}}^2$	5.21	$6.1 \pm 1.3$

Best-fit  $\chi_{\text{eff}}^2 = 1048.13$ ;  $\bar{\chi}_{\text{eff}}^2 = 1053.13$ ;  $R - 1 = 0.00215$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.82 DR12BAO: 3.39 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 8.08 SN - JLA Pantheon18: 1034.77



## 2.190 base\_lensing\_lensprior\_BAO\_theta\_post\_agr2

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02223 \pm 0.00049$	$D_{1420}$	$814 \pm 33$	$H(0.51)$	$89.83 \pm 0.41$
$\Omega_{\mathrm{c}}h^2$	$0.1176 \pm 0.0017$	$D_{2000}$	$228 \pm 11$	$D_{\mathrm{M}}(0.51)$	$1973 \pm 14$
$100\theta_{\mathrm{MC}}$	$1.04089 \pm 0.00060$	$n_{\mathrm{s},0.002}$	$0.949 \pm 0.018$	$H(0.61)$	$95.37 \pm 0.39$
$\ln(10^{10}A_{\mathrm{s}})$	$3.054 \pm 0.033$	$Y_{\mathrm{P}}$	$0.24533^{+0.00022}_{-0.00019}$	$D_{\mathrm{M}}(0.61)$	$2297 \pm 15$
$n_{\mathrm{s}}$	$0.949 \pm 0.018$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665^{+0.00022}_{-0.00019}$	$H(2.33)$	$234.8 \pm 1.3$
$H_0$	$68.10 \pm 0.65$	$10^5\mathrm{D}/\mathrm{H}$	$2.615 \pm 0.092$	$D_{\mathrm{M}}(2.33)$	$5764 \pm 22$
$\Omega_{\Lambda}$	$0.6970 \pm 0.0086$	Age/Gyr	$13.802 \pm 0.051$	$f\sigma_8(0.15)$	$0.4469 \pm 0.0087$
$\Omega_{\mathrm{m}}$	$0.3030 \pm 0.0086$	$z_*$	$1089.90 \pm 0.61$	$\sigma_8(0.15)$	$0.743 \pm 0.013$
$\Omega_{\mathrm{m}}h^2$	$0.1404 \pm 0.0018$	$r_*$	$145.18 \pm 0.61$	$f\sigma_8(0.38)$	$0.4670 \pm 0.0082$
$\Omega_{\mathrm{m}}h^3$	$0.0956 \pm 0.0010$	$100\theta_*$	$1.04109 \pm 0.00060$	$\sigma_8(0.38)$	$0.659 \pm 0.012$
$\sigma_8$	$0.803 \pm 0.014$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.945 \pm 0.061$	$f\sigma_8(0.51)$	$0.4666 \pm 0.0080$
$S_8$	$0.807 \pm 0.016$	$z_{\mathrm{drag}}$	$1059.4 \pm 1.2$	$\sigma_8(0.51)$	$0.617 \pm 0.011$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4417 \pm 0.0089$	$r_{\mathrm{drag}}$	$147.91 \pm 0.75$	$f\sigma_8(0.61)$	$0.4624 \pm 0.0079$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.595 \pm 0.010$	$k_{\mathrm{D}}$	$0.1399 \pm 0.0011$	$\sigma_8(0.61)$	$0.588 \pm 0.011$
$\sigma_8/h^{0.5}$	$0.973 \pm 0.017$	$100\theta_{\mathrm{D}}$	$0.16105 \pm 0.00069$	$f\sigma_8(2.33)$	$0.2966 \pm 0.0056$
$r_{\mathrm{drag}}h$	$100.7 \pm 1.1$	$z_{\mathrm{eq}}$	$3341 \pm 43$	$\sigma_8(2.33)$	$0.3062 \pm 0.0060$
$\langle d^2 \rangle^{1/2}$	$2.468 \pm 0.039$	$k_{\mathrm{eq}}$	$0.01020 \pm 0.00013$	$\chi^2_{\mathrm{lensing}}$	$12.5 \pm 1.8$
$z_{\mathrm{re}}$	$7.75 \pm 0.11$	$100\theta_{\mathrm{eq}}$	$0.8241 \pm 0.0074$	$\chi^2_{6\mathrm{DF}}$	$0.057 \pm 0.081$
$10^9A_{\mathrm{s}}$	$2.122 \pm 0.070$	$100\theta_{\mathrm{s,eq}}$	$0.4552 \pm 0.0040$	$\chi^2_{\mathrm{MGS}}$	$1.93 \pm 0.71$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.901 \pm 0.063$	$H(0.15)$	$73.28 \pm 0.57$	$\chi^2_{\mathrm{DR12BAO}}$	$4.2 \pm 1.2$
$D_{40}$	$1294 \pm 55$	$D_{\mathrm{M}}(0.15)$	$637.3 \pm 5.6$	$\chi^2_{\mathrm{prior}}$	$3.1 \pm 2.4$
$D_{220}$	$5927 \pm 220$	$H(0.38)$	$83.22 \pm 0.46$	$\chi^2_{\mathrm{BAO}}$	$6.2 \pm 1.4$
$D_{810}$	$2557 \pm 92$	$D_{\mathrm{M}}(0.38)$	$1522 \pm 11$		

$\bar{\chi}^2_{\mathrm{eff}} = 21.73$ ;  $R - 1 = 0.00232$



## 2.191 base\_lensing\_lenspriors\_BAO\_theta\_post\_conslmin40

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02221 \pm 0.00049$	$D_{1420}$	$831 \pm 36$	$H(0.51)$	$89.79 \pm 0.42$
$\Omega_{\mathrm{c}}h^2$	$0.1178 \pm 0.0017$	$D_{2000}$	$234 \pm 11$	$D_{\mathrm{M}}(0.51)$	$1975 \pm 14$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00060$	$n_{\mathrm{s},0.002}$	$0.956 \pm 0.019$	$H(0.61)$	$95.34 \pm 0.39$
$\ln(10^{10}A_{\mathrm{s}})$	$3.070 \pm 0.035$	$Y_{\mathrm{P}}$	$0.24532^{+0.00022}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2299 \pm 15$
$n_{\mathrm{s}}$	$0.956 \pm 0.019$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00022}_{-0.00020}$	$H(2.33)$	$234.9 \pm 1.3$
$H_0$	$68.00 \pm 0.66$	$10^5 D/H$	$2.619 \pm 0.094$	$D_{\mathrm{M}}(2.33)$	$5765 \pm 22$
$\Omega_{\Lambda}$	$0.6957 \pm 0.0087$	Age/Gyr	$13.804 \pm 0.052$	$f\sigma_8(0.15)$	$0.4531 \pm 0.0095$
$\Omega_{\mathrm{m}}$	$0.3043 \pm 0.0087$	$z_*$	$1089.94 \pm 0.62$	$\sigma_8(0.15)$	$0.751 \pm 0.014$
$\Omega_{\mathrm{m}}h^2$	$0.1407 \pm 0.0018$	$r_*$	$145.13 \pm 0.62$	$f\sigma_8(0.38)$	$0.4731 \pm 0.0091$
$\Omega_{\mathrm{m}}h^3$	$0.0956 \pm 0.0011$	$100\theta_*$	$1.04111 \pm 0.00060$	$\sigma_8(0.38)$	$0.667 \pm 0.013$
$\sigma_8$	$0.812 \pm 0.015$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.940 \pm 0.061$	$f\sigma_8(0.51)$	$0.4726 \pm 0.0089$
$S_8$	$0.818 \pm 0.018$	$z_{\mathrm{drag}}$	$1059.4 \pm 1.2$	$\sigma_8(0.51)$	$0.624 \pm 0.012$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4479 \pm 0.0098$	$r_{\mathrm{drag}}$	$147.86 \pm 0.76$	$f\sigma_8(0.61)$	$0.4682 \pm 0.0087$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.603 \pm 0.011$	$k_{\mathrm{D}}$	$0.1399 \pm 0.0011$	$\sigma_8(0.61)$	$0.594 \pm 0.012$
$\sigma_8/h^{0.5}$	$0.985 \pm 0.018$	$100\theta_{\mathrm{D}}$	$0.16107 \pm 0.00071$	$f\sigma_8(2.33)$	$0.2999 \pm 0.0060$
$r_{\mathrm{drag}}h$	$100.6 \pm 1.1$	$z_{\mathrm{eq}}$	$3346 \pm 43$	$\sigma_8(2.33)$	$0.3095 \pm 0.0064$
$\langle d^2 \rangle^{1/2}$	$2.474 \pm 0.042$	$k_{\mathrm{eq}}$	$0.01021 \pm 0.00013$	$\chi_{\mathrm{lensing}}^2$	$9.2 \pm 1.5$
$z_{\mathrm{re}}$	$7.75 \pm 0.11$	$100\theta_{\mathrm{eq}}$	$0.8232 \pm 0.0074$	$\chi_{6\mathrm{DF}}^2$	$0.055 \pm 0.079$
$10^9 A_{\mathrm{s}}$	$2.155 \pm 0.075$	$100\theta_{\mathrm{s,eq}}$	$0.4546 \pm 0.0040$	$\chi_{\mathrm{MGS}}^2$	$1.83 \pm 0.70$
$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.931 \pm 0.068$	$H(0.15)$	$73.20 \pm 0.58$	$\chi_{\mathrm{DR12BAO}}^2$	$4.3 \pm 1.3$
$D_{40}$	$1293 \pm 59$	$D_{\mathrm{M}}(0.15)$	$638.1 \pm 5.6$	$\chi_{\mathrm{prior}}^2$	$2.9 \pm 2.3$
$D_{220}$	$5970 \pm 230$	$H(0.38)$	$83.16 \pm 0.46$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.4$
$D_{810}$	$2602 \pm 99$	$D_{\mathrm{M}}(0.38)$	$1524 \pm 12$		

$\bar{\chi}_{\mathrm{eff}}^2 = 18.27$ ;  $R - 1 = 0.00270$



## 2.192 base\_lensing\_lenspriors\_BAO\_theta\_post\_agrlmax425

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02221 \pm 0.00049$	$D_{1420}$	$833 \pm 36$	$H(0.51)$	$89.79 \pm 0.42$
$\Omega_{\mathrm{c}}h^2$	$0.1178 \pm 0.0017$	$D_{2000}$	$234 \pm 11$	$D_{\mathrm{M}}(0.51)$	$1975 \pm 14$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00060$	$n_{\mathrm{s},0.002}$	$0.956 \pm 0.019$	$H(0.61)$	$95.34 \pm 0.39$
$\ln(10^{10}A_{\mathrm{s}})$	$3.072 \pm 0.035$	$Y_{\mathrm{P}}$	$0.24532^{+0.00022}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2299 \pm 15$
$n_{\mathrm{s}}$	$0.956 \pm 0.019$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00022}_{-0.00020}$	$H(2.33)$	$234.9 \pm 1.3$
$H_0$	$68.00 \pm 0.66$	$10^5\mathrm{D}/\mathrm{H}$	$2.619 \pm 0.094$	$D_{\mathrm{M}}(2.33)$	$5765 \pm 22$
$\Omega_{\Lambda}$	$0.6957 \pm 0.0087$	Age/Gyr	$13.805 \pm 0.052$	$f\sigma_8(0.15)$	$0.4536 \pm 0.0095$
$\Omega_{\mathrm{m}}$	$0.3043 \pm 0.0087$	$z_*$	$1089.94 \pm 0.62$	$\sigma_8(0.15)$	$0.752 \pm 0.014$
$\Omega_{\mathrm{m}}h^2$	$0.1407 \pm 0.0018$	$r_*$	$145.13 \pm 0.62$	$f\sigma_8(0.38)$	$0.4736 \pm 0.0091$
$\Omega_{\mathrm{m}}h^3$	$0.0956 \pm 0.0011$	$100\theta_*$	$1.04111 \pm 0.00060$	$\sigma_8(0.38)$	$0.667 \pm 0.013$
$\sigma_8$	$0.813 \pm 0.015$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.940 \pm 0.061$	$f\sigma_8(0.51)$	$0.4731 \pm 0.0089$
$S_8$	$0.819 \pm 0.018$	$z_{\mathrm{drag}}$	$1059.4 \pm 1.2$	$\sigma_8(0.51)$	$0.625 \pm 0.012$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4484 \pm 0.0098$	$r_{\mathrm{drag}}$	$147.86 \pm 0.76$	$f\sigma_8(0.61)$	$0.4687 \pm 0.0087$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.604 \pm 0.011$	$k_{\mathrm{D}}$	$0.1399 \pm 0.0011$	$\sigma_8(0.61)$	$0.595 \pm 0.012$
$\sigma_8/h^{0.5}$	$0.986 \pm 0.018$	$100\theta_{\mathrm{D}}$	$0.16107 \pm 0.00071$	$f\sigma_8(2.33)$	$0.3002 \pm 0.0060$
$r_{\mathrm{drag}}h$	$100.6 \pm 1.1$	$z_{\mathrm{eq}}$	$3346 \pm 43$	$\sigma_8(2.33)$	$0.3098 \pm 0.0064$
$\langle d^2 \rangle^{1/2}$	$2.479 \pm 0.040$	$k_{\mathrm{eq}}$	$0.01021 \pm 0.00013$	$\chi_{\mathrm{lensing}}^2$	$7.0 \pm 1.5$
$z_{\mathrm{re}}$	$7.75 \pm 0.11$	$100\theta_{\mathrm{eq}}$	$0.8232 \pm 0.0074$	$\chi_{6\mathrm{DF}}^2$	$0.055 \pm 0.079$
$10^9A_{\mathrm{s}}$	$2.161 \pm 0.075$	$100\theta_{\mathrm{s,eq}}$	$0.4546 \pm 0.0040$	$\chi_{\mathrm{MGS}}^2$	$1.82 \pm 0.70$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.936 \pm 0.067$	$H(0.15)$	$73.20 \pm 0.58$	$\chi_{\mathrm{DR12BAO}}^2$	$4.3 \pm 1.3$
$D_{40}$	$1298 \pm 56$	$D_{\mathrm{M}}(0.15)$	$638.1 \pm 5.6$	$\chi_{\mathrm{prior}}^2$	$2.9 \pm 2.3$
$D_{220}$	$5988 \pm 220$	$H(0.38)$	$83.16 \pm 0.46$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.4$
$D_{810}$	$2608 \pm 98$	$D_{\mathrm{M}}(0.38)$	$1524 \pm 11$		

$\bar{\chi}_{\mathrm{eff}}^2 = 16.09$ ;  $R - 1 = 0.00233$



## 2.193 base\_lensing\_lenspriors\_BAO\_theta\_post\_ptt

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02223 \pm 0.00050$	$D_{1420}$	$837^{+35}_{-40}$	$H(0.51)$	$89.84 \pm 0.42$
$\Omega_{\mathrm{c}}h^2$	$0.1176 \pm 0.0017$	$D_{2000}$	$235^{+11}_{-13}$	$D_{\mathrm{M}}(0.51)$	$1973 \pm 14$
$100\theta_{\mathrm{MC}}$	$1.04087 \pm 0.00060$	$n_{\mathrm{s},0.002}$	$0.948 \pm 0.019$	$H(0.61)$	$95.38 \pm 0.39$
$\ln(10^{10}A_{\mathrm{s}})$	$3.083 \pm 0.039$	$Y_{\mathrm{P}}$	$0.24533 \pm 0.00022$	$D_{\mathrm{M}}(0.61)$	$2297 \pm 15$
$n_{\mathrm{s}}$	$0.948 \pm 0.019$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665 \pm 0.00022$	$H(2.33)$	$234.8 \pm 1.3$
$H_0$	$68.10 \pm 0.66$	$10^5\mathrm{D}/\mathrm{H}$	$2.614 \pm 0.094$	$D_{\mathrm{M}}(2.33)$	$5764 \pm 22$
$\Omega_{\Lambda}$	$0.6970 \pm 0.0087$	$\mathrm{Age}/\mathrm{Gyr}$	$13.802 \pm 0.052$	$f\sigma_8(0.15)$	$0.453 \pm 0.010$
$\Omega_{\mathrm{m}}$	$0.3030 \pm 0.0087$	$z_*$	$1089.89 \pm 0.63$	$\sigma_8(0.15)$	$0.753 \pm 0.016$
$\Omega_{\mathrm{m}}h^2$	$0.1404 \pm 0.0018$	$r_*$	$145.17 \pm 0.63$	$f\sigma_8(0.38)$	$0.4736 \pm 0.0099$
$\Omega_{\mathrm{m}}h^3$	$0.0956 \pm 0.0011$	$100\theta_*$	$1.04107 \pm 0.00060$	$\sigma_8(0.38)$	$0.669 \pm 0.014$
$\sigma_8$	$0.814 \pm 0.017$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.945 \pm 0.062$	$f\sigma_8(0.51)$	$0.4733 \pm 0.0097$
$S_8$	$0.818 \pm 0.019$	$z_{\mathrm{drag}}$	$1059.4 \pm 1.2$	$\sigma_8(0.51)$	$0.626 \pm 0.013$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.448 \pm 0.010$	$r_{\mathrm{drag}}$	$147.90 \pm 0.77$	$f\sigma_8(0.61)$	$0.4690 \pm 0.0096$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.604 \pm 0.013$	$k_{\mathrm{D}}$	$0.1399 \pm 0.0011$	$\sigma_8(0.61)$	$0.596 \pm 0.013$
$\sigma_8/h^{0.5}$	$0.987 \pm 0.020$	$100\theta_{\mathrm{D}}$	$0.16104 \pm 0.00071$	$f\sigma_8(2.33)$	$0.3008 \pm 0.0066$
$r_{\mathrm{drag}}h$	$100.7 \pm 1.1$	$z_{\mathrm{eq}}$	$3341 \pm 44$	$\sigma_8(2.33)$	$0.3106 \pm 0.0069$
$\langle d^2 \rangle^{1/2}$	$2.505 \pm 0.048$	$k_{\mathrm{eq}}$	$0.01020 \pm 0.00013$	$\chi_{\mathrm{lensing}}^2$	$12.9 \pm 1.9$
$z_{\mathrm{re}}$	$7.74 \pm 0.11$	$100\theta_{\mathrm{eq}}$	$0.8242 \pm 0.0075$	$\chi_{6\mathrm{DF}}^2$	$0.057 \pm 0.084$
$10^9A_{\mathrm{s}}$	$2.184 \pm 0.086$	$100\theta_{\mathrm{s,eq}}$	$0.4551 \pm 0.0040$	$\chi_{\mathrm{MGS}}^2$	$1.93 \pm 0.72$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.956 \pm 0.077$	$H(0.15)$	$73.28 \pm 0.58$	$\chi_{\mathrm{DR12BAO}}^2$	$4.2 \pm 1.3$
$D_{40}$	$1334^{+61}_{-69}$	$D_{\mathrm{M}}(0.15)$	$637.3 \pm 5.6$	$\chi_{\mathrm{prior}}^2$	$3.2 \pm 2.5$
$D_{220}$	$6104 \pm 260$	$H(0.38)$	$83.22 \pm 0.47$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.5$
$D_{810}$	$2631 \pm 110$	$D_{\mathrm{M}}(0.38)$	$1522 \pm 11$		

$\bar{\chi}_{\mathrm{eff}}^2 = 22.40$ ;  $R - 1 = 0.00650$



## 2.194 base\_lensing\_lenspriors\_BAO\_theta\_post\_bfcl

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02221 \pm 0.00049$	$D_{1420}$	$819 \pm 35$	$H(0.51)$	$89.80 \pm 0.41$
$\Omega_{\mathrm{c}}h^2$	$0.1178 \pm 0.0017$	$D_{2000}$	$230 \pm 11$	$D_{\mathrm{M}}(0.51)$	$1975 \pm 14$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00060$	$n_{\mathrm{s},0.002}$	$0.956 \pm 0.019$	$H(0.61)$	$95.35 \pm 0.39$
$\ln(10^{10}A_{\mathrm{s}})$	$3.055 \pm 0.033$	$Y_{\mathrm{P}}$	$0.24532^{+0.00022}_{-0.00019}$	$D_{\mathrm{M}}(0.61)$	$2299 \pm 15$
$n_{\mathrm{s}}$	$0.956 \pm 0.019$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00022}_{-0.00019}$	$H(2.33)$	$234.9 \pm 1.3$
$H_0$	$68.01 \pm 0.65$	$10^5\mathrm{D}/\mathrm{H}$	$2.619 \pm 0.092$	$D_{\mathrm{M}}(2.33)$	$5765 \pm 22$
$\Omega_{\Lambda}$	$0.6958 \pm 0.0087$	Age/Gyr	$13.804 \pm 0.051$	$f\sigma_8(0.15)$	$0.4496 \pm 0.0093$
$\Omega_{\mathrm{m}}$	$0.3042 \pm 0.0087$	$z_*$	$1089.94 \pm 0.62$	$\sigma_8(0.15)$	$0.746 \pm 0.014$
$\Omega_{\mathrm{m}}h^2$	$0.1406 \pm 0.0018$	$r_*$	$145.14 \pm 0.62$	$f\sigma_8(0.38)$	$0.4695 \pm 0.0089$
$\Omega_{\mathrm{m}}h^3$	$0.0956 \pm 0.0010$	$100\theta_*$	$1.04111 \pm 0.00060$	$\sigma_8(0.38)$	$0.662 \pm 0.013$
$\sigma_8$	$0.806 \pm 0.015$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.940 \pm 0.061$	$f\sigma_8(0.51)$	$0.4690 \pm 0.0087$
$S_8$	$0.811 \pm 0.018$	$z_{\mathrm{drag}}$	$1059.4 \pm 1.2$	$\sigma_8(0.51)$	$0.620 \pm 0.012$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4445 \pm 0.0096$	$r_{\mathrm{drag}}$	$147.87 \pm 0.76$	$f\sigma_8(0.61)$	$0.4646 \pm 0.0085$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.599 \pm 0.011$	$k_{\mathrm{D}}$	$0.1399 \pm 0.0011$	$\sigma_8(0.61)$	$0.590 \pm 0.011$
$\sigma_8/h^{0.5}$	$0.977 \pm 0.018$	$100\theta_{\mathrm{D}}$	$0.16107 \pm 0.00070$	$f\sigma_8(2.33)$	$0.2977 \pm 0.0059$
$r_{\mathrm{drag}}h$	$100.6 \pm 1.1$	$z_{\mathrm{eq}}$	$3345 \pm 43$	$\sigma_8(2.33)$	$0.3072 \pm 0.0062$
$\langle d^2 \rangle^{1/2}$	$2.457 \pm 0.037$	$k_{\mathrm{eq}}$	$0.01021 \pm 0.00013$	$\chi^2_{\mathrm{lensing}}$	$9.3 \pm 1.5$
$z_{\mathrm{re}}$	$7.75 \pm 0.11$	$100\theta_{\mathrm{eq}}$	$0.8232 \pm 0.0074$	$\chi^2_{6\mathrm{DF}}$	$0.055 \pm 0.078$
$10^9A_{\mathrm{s}}$	$2.124 \pm 0.071$	$100\theta_{\mathrm{s,eq}}$	$0.4547 \pm 0.0040$	$\chi^2_{\mathrm{MGS}}$	$1.84 \pm 0.70$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.903 \pm 0.063$	$H(0.15)$	$73.20 \pm 0.57$	$\chi^2_{\mathrm{DR12BAO}}$	$4.3 \pm 1.3$
$D_{40}$	$1275 \pm 53$	$D_{\mathrm{M}}(0.15)$	$638.0 \pm 5.6$	$\chi^2_{\mathrm{prior}}$	$2.8 \pm 2.3$
$D_{220}$	$5886 \pm 210$	$H(0.38)$	$83.17 \pm 0.46$	$\chi^2_{\mathrm{BAO}}$	$6.2 \pm 1.4$
$D_{810}$	$2565 \pm 94$	$D_{\mathrm{M}}(0.38)$	$1523 \pm 11$		

$\bar{\chi}^2_{\mathrm{eff}} = 18.37$ ;  $R - 1 = 0.00253$



## 2.195 base\_lensing\_lenspriors\_BAO\_theta\_post\_agr2bfcl

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02222 \pm 0.00048$	$D_{1420}$	$803 \pm 32$	$H(0.51)$	$89.83 \pm 0.40$
$\Omega_{\text{c}}h^2$	$0.1176 \pm 0.0017$	$D_{2000}$	$225 \pm 10$	$D_{\text{M}}(0.51)$	$1973 \pm 13$
$100\theta_{\text{MC}}$	$1.04089 \pm 0.00060$	$n_{\text{s},0.002}$	$0.950 \pm 0.018$	$H(0.61)$	$95.37 \pm 0.38$
$\ln(10^{10}A_{\text{s}})$	$3.040 \pm 0.032$	$Y_{\text{P}}$	$0.24532^{+0.00022}_{-0.00019}$	$D_{\text{M}}(0.61)$	$2297 \pm 15$
$n_{\text{s}}$	$0.950 \pm 0.018$	$Y_{\text{P}}^{\text{BBN}}$	$0.24665^{+0.00022}_{-0.00019}$	$H(2.33)$	$234.8 \pm 1.3$
$H_0$	$68.08 \pm 0.65$	$10^5 D/\text{H}$	$2.617 \pm 0.091$	$D_{\text{M}}(2.33)$	$5764 \pm 21$
$\Omega_{\Lambda}$	$0.6969 \pm 0.0086$	Age/Gyr	$13.803 \pm 0.050$	$f\sigma_8(0.15)$	$0.4441 \pm 0.0084$
$\Omega_{\text{m}}$	$0.3031 \pm 0.0086$	$z_*$	$1089.91 \pm 0.61$	$\sigma_8(0.15)$	$0.738 \pm 0.013$
$\Omega_{\text{m}}h^2$	$0.1404 \pm 0.0018$	$r_*$	$145.18 \pm 0.61$	$f\sigma_8(0.38)$	$0.4639 \pm 0.0080$
$\Omega_{\text{m}}h^3$	$0.0956 \pm 0.0010$	$100\theta_*$	$1.04110 \pm 0.00060$	$\sigma_8(0.38)$	$0.655 \pm 0.012$
$\sigma_8$	$0.797 \pm 0.013$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.945 \pm 0.060$	$f\sigma_8(0.51)$	$0.4636 \pm 0.0078$
$S_8$	$0.801 \pm 0.016$	$z_{\text{drag}}$	$1059.4 \pm 1.1$	$\sigma_8(0.51)$	$0.613 \pm 0.011$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4389 \pm 0.0087$	$r_{\text{drag}}$	$147.91 \pm 0.75$	$f\sigma_8(0.61)$	$0.4593 \pm 0.0076$
$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.592 \pm 0.010$	$k_{\text{D}}$	$0.1399 \pm 0.0011$	$\sigma_8(0.61)$	$0.584 \pm 0.010$
$\sigma_8/h^{0.5}$	$0.966 \pm 0.016$	$100\theta_{\text{D}}$	$0.16106 \pm 0.00069$	$f\sigma_8(2.33)$	$0.2946 \pm 0.0054$
$r_{\text{drag}}h$	$100.7 \pm 1.1$	$z_{\text{eq}}$	$3341 \pm 43$	$\sigma_8(2.33)$	$0.3041 \pm 0.0058$
$\langle d^2 \rangle^{1/2}$	$2.448 \pm 0.036$	$k_{\text{eq}}$	$0.01020 \pm 0.00013$	$\chi_{\text{lensing}}^2$	$12.3 \pm 1.7$
$z_{\text{re}}$	$7.75 \pm 0.11$	$100\theta_{\text{eq}}$	$0.8241 \pm 0.0074$	$\chi_{6\text{DF}}^2$	$0.056 \pm 0.079$
$10^9 A_{\text{s}}$	$2.091 \pm 0.067$	$100\theta_{\text{s,eq}}$	$0.4551 \pm 0.0040$	$\chi_{\text{MGS}}^2$	$1.92 \pm 0.71$
$10^9 A_{\text{s}}e^{-2\tau}$	$1.873 \pm 0.060$	$H(0.15)$	$73.26 \pm 0.57$	$\chi_{\text{DR12BAO}}^2$	$4.2 \pm 1.2$
$D_{40}$	$1273 \pm 52$	$D_{\text{M}}(0.15)$	$637.4 \pm 5.5$	$\chi_{\text{prior}}^2$	$3.0 \pm 2.4$
$D_{220}$	$5834 \pm 210$	$H(0.38)$	$83.21 \pm 0.45$	$\chi_{\text{BAO}}^2$	$6.2 \pm 1.4$
$D_{810}$	$2522 \pm 88$	$D_{\text{M}}(0.38)$	$1522 \pm 11$		

$\bar{\chi}_{\text{eff}}^2 = 21.52; R - 1 = 0.00519$



## 2.196 base\_lensing\_lenspriors\_BAO\_theta\_post\_linear

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02220 \pm 0.00050$	$D_{1420}$	$841 \pm 36$	$H(0.51)$	$89.78 \pm 0.42$
$\Omega_c h^2$	$0.1179 \pm 0.0017$	$D_{2000}$	$236^{+11}_{-12}$	$D_M(0.51)$	$1975 \pm 14$
$100\theta_{MC}$	$1.04091 \pm 0.00060$	$n_{s,0.002}$	$0.958 \pm 0.019$	$H(0.61)$	$95.33 \pm 0.39$
$\ln(10^{10} A_s)$	$3.080 \pm 0.035$	$Y_P$	$0.24531^{+0.00022}_{-0.00020}$	$D_M(0.61)$	$2299 \pm 15$
$n_s$	$0.958 \pm 0.019$	$Y_P^{BBN}$	$0.24664^{+0.00023}_{-0.00020}$	$H(2.33)$	$235.0 \pm 1.3$
$H_0$	$67.98 \pm 0.66$	$10^5 D/H$	$2.620 \pm 0.094$	$D_M(2.33)$	$5766 \pm 22$
$\Omega_\Lambda$	$0.6954 \pm 0.0087$	Age/Gyr	$13.805 \pm 0.052$	$f\sigma_8(0.15)$	$0.4561 \pm 0.0097$
$\Omega_m$	$0.3046 \pm 0.0087$	$z_*$	$1089.95 \pm 0.63$	$\sigma_8(0.15)$	$0.756 \pm 0.014$
$\Omega_m h^2$	$0.1407 \pm 0.0018$	$r_*$	$145.12 \pm 0.62$	$f\sigma_8(0.38)$	$0.4762 \pm 0.0093$
$\Omega_m h^3$	$0.0956 \pm 0.0011$	$100\theta_*$	$1.04111 \pm 0.00060$	$\sigma_8(0.38)$	$0.671 \pm 0.013$
$\sigma_8$	$0.817 \pm 0.015$	$D_M(z_*)/\text{Gpc}$	$13.939 \pm 0.061$	$f\sigma_8(0.51)$	$0.4756 \pm 0.0091$
$S_8$	$0.823 \pm 0.018$	$z_{\text{drag}}$	$1059.4 \pm 1.2$	$\sigma_8(0.51)$	$0.628 \pm 0.012$
$\sigma_8 \Omega_m^{0.5}$	$0.451 \pm 0.010$	$r_{\text{drag}}$	$147.85 \pm 0.77$	$f\sigma_8(0.61)$	$0.4711 \pm 0.0089$
$\sigma_8 \Omega_m^{0.25}$	$0.607 \pm 0.012$	$k_D$	$0.1399 \pm 0.0011$	$\sigma_8(0.61)$	$0.598 \pm 0.012$
$\sigma_8/h^{0.5}$	$0.991 \pm 0.019$	$100\theta_D$	$0.16107 \pm 0.00071$	$f\sigma_8(2.33)$	$0.3017 \pm 0.0061$
$r_{\text{drag}} h$	$100.5 \pm 1.1$	$z_{\text{eq}}$	$3347 \pm 43$	$\sigma_8(2.33)$	$0.3114 \pm 0.0065$
$\langle d^2 \rangle^{1/2}$	$2.482 \pm 0.040$	$k_{\text{eq}}$	$0.01022 \pm 0.00013$	$\chi^2_{\text{lensing}}$	$9.4 \pm 1.5$
$z_{\text{re}}$	$7.76 \pm 0.11$	$100\theta_{\text{eq}}$	$0.8229 \pm 0.0074$	$\chi^2_{6\text{DF}}$	$0.055 \pm 0.078$
$10^9 A_s$	$2.178 \pm 0.075$	$100\theta_{s,\text{eq}}$	$0.4545 \pm 0.0040$	$\chi^2_{\text{MGS}}$	$1.80 \pm 0.70$
$10^9 A_s e^{-2\tau}$	$1.951 \pm 0.068$	$H(0.15)$	$73.17 \pm 0.58$	$\chi^2_{\text{DR12BAO}}$	$4.3 \pm 1.4$
$D_{40}$	$1303 \pm 56$	$D_M(0.15)$	$638.3 \pm 5.6$	$\chi^2_{\text{prior}}$	$2.9 \pm 2.3$
$D_{220}$	$6024 \pm 220$	$H(0.38)$	$83.15 \pm 0.46$	$\chi^2_{\text{BAO}}$	$6.2 \pm 1.4$
$D_{810}$	$2631 \pm 100$	$D_M(0.38)$	$1524 \pm 12$		

$\bar{\chi}^2_{\text{eff}} = 18.45; R - 1 = 0.00265$



## 2.197 base\_lensing\_lenspriors\_BAO\_theta\_post\_acc

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02222 \pm 0.00050$	$D_{1420}$	$831 \pm 36$	$H(0.51)$	$89.80 \pm 0.41$
$\Omega_{\mathrm{c}}h^2$	$0.1178 \pm 0.0017$	$D_{2000}$	$234 \pm 11$	$D_{\mathrm{M}}(0.51)$	$1974 \pm 14$
$100\theta_{\mathrm{MC}}$	$1.04090 \pm 0.00060$	$n_{\mathrm{s},0.002}$	$0.955 \pm 0.019$	$H(0.61)$	$95.35 \pm 0.39$
$\ln(10^{10}A_{\mathrm{s}})$	$3.071 \pm 0.034$	$Y_{\mathrm{P}}$	$0.24532^{+0.00022}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2298 \pm 15$
$n_{\mathrm{s}}$	$0.955 \pm 0.019$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665^{+0.00022}_{-0.00020}$	$H(2.33)$	$234.9 \pm 1.3$
$H_0$	$68.02 \pm 0.66$	$10^5\mathrm{D}/\mathrm{H}$	$2.617 \pm 0.094$	$D_{\mathrm{M}}(2.33)$	$5765 \pm 22$
$\Omega_{\Lambda}$	$0.6959 \pm 0.0087$	Age/Gyr	$13.804 \pm 0.052$	$f\sigma_8(0.15)$	$0.4528 \pm 0.0095$
$\Omega_{\mathrm{m}}$	$0.3041 \pm 0.0087$	$z_*$	$1089.93 \pm 0.62$	$\sigma_8(0.15)$	$0.751 \pm 0.014$
$\Omega_{\mathrm{m}}h^2$	$0.1406 \pm 0.0018$	$r_*$	$145.13 \pm 0.62$	$f\sigma_8(0.38)$	$0.4729 \pm 0.0091$
$\Omega_{\mathrm{m}}h^3$	$0.0956 \pm 0.0011$	$100\theta_*$	$1.04110 \pm 0.00060$	$\sigma_8(0.38)$	$0.667 \pm 0.013$
$\sigma_8$	$0.812 \pm 0.015$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.940 \pm 0.061$	$f\sigma_8(0.51)$	$0.4724 \pm 0.0088$
$S_8$	$0.817 \pm 0.018$	$z_{\mathrm{drag}}$	$1059.4 \pm 1.2$	$\sigma_8(0.51)$	$0.624 \pm 0.012$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4477 \pm 0.0097$	$r_{\mathrm{drag}}$	$147.86 \pm 0.76$	$f\sigma_8(0.61)$	$0.4680 \pm 0.0087$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.603 \pm 0.011$	$k_{\mathrm{D}}$	$0.1399 \pm 0.0011$	$\sigma_8(0.61)$	$0.594 \pm 0.012$
$\sigma_8/h^{0.5}$	$0.984 \pm 0.018$	$100\theta_{\mathrm{D}}$	$0.16105 \pm 0.00071$	$f\sigma_8(2.33)$	$0.2998 \pm 0.0060$
$r_{\mathrm{drag}}h$	$100.6 \pm 1.1$	$z_{\mathrm{eq}}$	$3345 \pm 43$	$\sigma_8(2.33)$	$0.3095 \pm 0.0063$
$\langle d^2 \rangle^{1/2}$	$2.479 \pm 0.040$	$k_{\mathrm{eq}}$	$0.01021 \pm 0.00013$	$\chi_{\mathrm{lensing}}^2$	$9.3 \pm 1.5$
$z_{\mathrm{re}}$	$7.75 \pm 0.11$	$100\theta_{\mathrm{eq}}$	$0.8233 \pm 0.0074$	$\chi_{6\mathrm{DF}}^2$	$0.055 \pm 0.079$
$10^9A_{\mathrm{s}}$	$2.157 \pm 0.074$	$100\theta_{\mathrm{s,eq}}$	$0.4547 \pm 0.0040$	$\chi_{\mathrm{MGS}}^2$	$1.84 \pm 0.70$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.932 \pm 0.066$	$H(0.15)$	$73.21 \pm 0.58$	$\chi_{\mathrm{DR12BAO}}^2$	$4.3 \pm 1.3$
$D_{40}$	$1298 \pm 56$	$D_{\mathrm{M}}(0.15)$	$637.9 \pm 5.6$	$\chi_{\mathrm{prior}}^2$	$2.9 \pm 2.3$
$D_{220}$	$5984 \pm 220$	$H(0.38)$	$83.17 \pm 0.46$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.4$
$D_{810}$	$2604 \pm 98$	$D_{\mathrm{M}}(0.38)$	$1523 \pm 12$		

$\bar{\chi}_{\mathrm{eff}}^2 = 18.35; R - 1 = 0.00361$



## 2.198 base\_lensing\_lenspriors\_BAO\_theta\_post\_agr2acc

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02223 \pm 0.00049$	$D_{1420}$	$813 \pm 33$	$H(0.51)$	$89.84 \pm 0.41$
$\Omega_{\mathrm{c}}h^2$	$0.1175 \pm 0.0017$	$D_{2000}$	$228 \pm 10$	$D_{\mathrm{M}}(0.51)$	$1973 \pm 14$
$100\theta_{\mathrm{MC}}$	$1.04088 \pm 0.00060$	$n_{\mathrm{s},0.002}$	$0.948 \pm 0.018$	$H(0.61)$	$95.38 \pm 0.39$
$\ln(10^{10}A_{\mathrm{s}})$	$3.053 \pm 0.033$	$Y_{\mathrm{P}}$	$0.24533^{+0.00022}_{-0.00019}$	$D_{\mathrm{M}}(0.61)$	$2297 \pm 15$
$n_{\mathrm{s}}$	$0.948 \pm 0.018$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665^{+0.00022}_{-0.00019}$	$H(2.33)$	$234.8 \pm 1.3$
$H_0$	$68.10 \pm 0.66$	$10^5\mathrm{D}/\mathrm{H}$	$2.614 \pm 0.092$	$D_{\mathrm{M}}(2.33)$	$5764 \pm 22$
$\Omega_{\Lambda}$	$0.6971 \pm 0.0087$	Age/Gyr	$13.802 \pm 0.051$	$f\sigma_8(0.15)$	$0.4465 \pm 0.0086$
$\Omega_{\mathrm{m}}$	$0.3029 \pm 0.0087$	$z_{*}$	$1089.89 \pm 0.61$	$\sigma_8(0.15)$	$0.742 \pm 0.013$
$\Omega_{\mathrm{m}}h^2$	$0.1404 \pm 0.0018$	$r_{*}$	$145.18 \pm 0.61$	$f\sigma_8(0.38)$	$0.4665 \pm 0.0082$
$\Omega_{\mathrm{m}}h^3$	$0.0956 \pm 0.0010$	$100\theta_{*}$	$1.04108 \pm 0.00060$	$\sigma_8(0.38)$	$0.659 \pm 0.012$
$\sigma_8$	$0.802 \pm 0.014$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.945 \pm 0.060$	$f\sigma_8(0.51)$	$0.4661 \pm 0.0080$
$S_8$	$0.806 \pm 0.016$	$z_{\mathrm{drag}}$	$1059.4 \pm 1.2$	$\sigma_8(0.51)$	$0.617 \pm 0.011$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4412 \pm 0.0089$	$r_{\mathrm{drag}}$	$147.90 \pm 0.75$	$f\sigma_8(0.61)$	$0.4619 \pm 0.0078$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.595 \pm 0.010$	$k_{\mathrm{D}}$	$0.1399 \pm 0.0011$	$\sigma_8(0.61)$	$0.587 \pm 0.011$
$\sigma_8/h^{0.5}$	$0.972 \pm 0.017$	$100\theta_{\mathrm{D}}$	$0.16104 \pm 0.00069$	$f\sigma_8(2.33)$	$0.2963 \pm 0.0056$
$r_{\mathrm{drag}}h$	$100.7 \pm 1.1$	$z_{\mathrm{eq}}$	$3340 \pm 43$	$\sigma_8(2.33)$	$0.3059 \pm 0.0059$
$\langle d^2 \rangle^{1/2}$	$2.468 \pm 0.039$	$k_{\mathrm{eq}}$	$0.01020 \pm 0.00013$	$\chi^2_{\mathrm{lensing}}$	$12.6 \pm 1.8$
$z_{\mathrm{re}}$	$7.74 \pm 0.11$	$100\theta_{\mathrm{eq}}$	$0.8242 \pm 0.0074$	$\chi^2_{6\mathrm{DF}}$	$0.057 \pm 0.081$
$10^9A_{\mathrm{s}}$	$2.119 \pm 0.070$	$100\theta_{\mathrm{s,eq}}$	$0.4552 \pm 0.0040$	$\chi^2_{\mathrm{MGS}}$	$1.93 \pm 0.71$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.898 \pm 0.063$	$H(0.15)$	$73.28 \pm 0.58$	$\chi^2_{\mathrm{DR12BAO}}$	$4.2 \pm 1.2$
$D_{40}$	$1295 \pm 56$	$D_{\mathrm{M}}(0.15)$	$637.2 \pm 5.6$	$\chi^2_{\mathrm{prior}}$	$3.1 \pm 2.5$
$D_{220}$	$5923 \pm 220$	$H(0.38)$	$83.22 \pm 0.46$	$\chi^2_{\mathrm{BAO}}$	$6.2 \pm 1.4$
$D_{810}$	$2555 \pm 92$	$D_{\mathrm{M}}(0.38)$	$1522 \pm 11$		

$\bar{\chi}^2_{\mathrm{eff}} = 21.94$ ;  $R - 1 = 0.00291$



## 2.199 base\_lensing\_lenspriors\_BAO\_theta\_post\_takahashi

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02221 \pm 0.00049$	$D_{1420}$	$830 \pm 37$	$H(0.51)$	$89.80 \pm 0.41$
$\Omega_{\mathrm{c}}h^2$	$0.1177 \pm 0.0017$	$D_{2000}$	$233 \pm 12$	$D_{\mathrm{M}}(0.51)$	$1974 \pm 14$
$100\theta_{\mathrm{MC}}$	$1.04090 \pm 0.00060$	$n_{\mathrm{s},0.002}$	$0.955 \pm 0.019$	$H(0.61)$	$95.35 \pm 0.39$
$\ln(10^{10}A_{\mathrm{s}})$	$3.070 \pm 0.035$	$Y_{\mathrm{P}}$	$0.24532^{+0.00022}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2298 \pm 15$
$n_{\mathrm{s}}$	$0.955 \pm 0.019$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665^{+0.00022}_{-0.00020}$	$H(2.33)$	$234.9 \pm 1.3$
$H_0$	$68.02 \pm 0.66$	$10^5\mathrm{D}/\mathrm{H}$	$2.618 \pm 0.093$	$D_{\mathrm{M}}(2.33)$	$5765 \pm 22$
$\Omega_{\Lambda}$	$0.6960 \pm 0.0087$	Age/Gyr	$13.804 \pm 0.052$	$f\sigma_8(0.15)$	$0.4525 \pm 0.0098$
$\Omega_{\mathrm{m}}$	$0.3040 \pm 0.0087$	$z_*$	$1089.93 \pm 0.62$	$\sigma_8(0.15)$	$0.751 \pm 0.015$
$\Omega_{\mathrm{m}}h^2$	$0.1406 \pm 0.0018$	$r_*$	$145.14 \pm 0.62$	$f\sigma_8(0.38)$	$0.4725 \pm 0.0094$
$\Omega_{\mathrm{m}}h^3$	$0.0956 \pm 0.0011$	$100\theta_*$	$1.04110 \pm 0.00060$	$\sigma_8(0.38)$	$0.666 \pm 0.013$
$\sigma_8$	$0.811 \pm 0.016$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.941 \pm 0.061$	$f\sigma_8(0.51)$	$0.4720 \pm 0.0092$
$S_8$	$0.817 \pm 0.018$	$z_{\mathrm{drag}}$	$1059.4 \pm 1.2$	$\sigma_8(0.51)$	$0.624 \pm 0.013$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.447 \pm 0.010$	$r_{\mathrm{drag}}$	$147.87 \pm 0.76$	$f\sigma_8(0.61)$	$0.4677 \pm 0.0090$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.602 \pm 0.012$	$k_{\mathrm{D}}$	$0.1399 \pm 0.0011$	$\sigma_8(0.61)$	$0.594 \pm 0.012$
$\sigma_8/h^{0.5}$	$0.984 \pm 0.019$	$100\theta_{\mathrm{D}}$	$0.16106 \pm 0.00071$	$f\sigma_8(2.33)$	$0.2997 \pm 0.0062$
$r_{\mathrm{drag}}h$	$100.6 \pm 1.1$	$z_{\mathrm{eq}}$	$3345 \pm 43$	$\sigma_8(2.33)$	$0.3093 \pm 0.0065$
$\langle d^2 \rangle^{1/2}$	$2.477 \pm 0.039$	$k_{\mathrm{eq}}$	$0.01021 \pm 0.00013$	$\chi_{\mathrm{lensing}}^2$	$9.3 \pm 1.5$
$z_{\mathrm{re}}$	$7.75 \pm 0.11$	$100\theta_{\mathrm{eq}}$	$0.8234 \pm 0.0074$	$\chi_{6\mathrm{DF}}^2$	$0.055 \pm 0.079$
$10^9A_{\mathrm{s}}$	$2.154 \pm 0.076$	$100\theta_{\mathrm{s,eq}}$	$0.4548 \pm 0.0040$	$\chi_{\mathrm{MGS}}^2$	$1.85 \pm 0.71$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.930 \pm 0.068$	$H(0.15)$	$73.21 \pm 0.58$	$\chi_{\mathrm{DR12BAO}}^2$	$4.3 \pm 1.3$
$D_{40}$	$1297 \pm 55$	$D_{\mathrm{M}}(0.15)$	$637.9 \pm 5.6$	$\chi_{\mathrm{prior}}^2$	$2.9 \pm 2.3$
$D_{220}$	$5978 \pm 220$	$H(0.38)$	$83.17 \pm 0.46$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.4$
$D_{810}$	$2600 \pm 100$	$D_{\mathrm{M}}(0.38)$	$1523 \pm 11$		

$\bar{\chi}_{\mathrm{eff}}^2 = 18.40$ ;  $R - 1 = 0.00218$



## 2.200 base\_lensing\_lenspriors\_BAO\_theta\_post\_agr2takahashi

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02223 \pm 0.00048$	$D_{1420}$	$811 \pm 34$	$H(0.51)$	$89.84 \pm 0.41$
$\Omega_{\mathrm{c}}h^2$	$0.1175 \pm 0.0017$	$D_{2000}$	$227 \pm 11$	$D_{\mathrm{M}}(0.51)$	$1973 \pm 14$
$100\theta_{\mathrm{MC}}$	$1.04088 \pm 0.00060$	$n_{\mathrm{s},0.002}$	$0.948 \pm 0.018$	$H(0.61)$	$95.38 \pm 0.39$
$\ln(10^{10}A_{\mathrm{s}})$	$3.051 \pm 0.034$	$Y_{\mathrm{P}}$	$0.24533^{+0.00022}_{-0.00019}$	$D_{\mathrm{M}}(0.61)$	$2297 \pm 15$
$n_{\mathrm{s}}$	$0.948 \pm 0.018$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665^{+0.00022}_{-0.00019}$	$H(2.33)$	$234.8 \pm 1.3$
$H_0$	$68.11 \pm 0.65$	$10^5\mathrm{D}/\mathrm{H}$	$2.615 \pm 0.091$	$D_{\mathrm{M}}(2.33)$	$5764 \pm 21$
$\Omega_{\Lambda}$	$0.6972 \pm 0.0086$	Age/Gyr	$13.802 \pm 0.051$	$f\sigma_8(0.15)$	$0.4459 \pm 0.0090$
$\Omega_{\mathrm{m}}$	$0.3028 \pm 0.0086$	$z_*$	$1089.89 \pm 0.61$	$\sigma_8(0.15)$	$0.741 \pm 0.014$
$\Omega_{\mathrm{m}}h^2$	$0.1404 \pm 0.0018$	$r_*$	$145.19 \pm 0.61$	$f\sigma_8(0.38)$	$0.4659 \pm 0.0086$
$\Omega_{\mathrm{m}}h^3$	$0.0956 \pm 0.0010$	$100\theta_*$	$1.04109 \pm 0.00060$	$\sigma_8(0.38)$	$0.658 \pm 0.012$
$\sigma_8$	$0.801 \pm 0.014$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.946 \pm 0.060$	$f\sigma_8(0.51)$	$0.4656 \pm 0.0083$
$S_8$	$0.805 \pm 0.017$	$z_{\mathrm{drag}}$	$1059.4 \pm 1.2$	$\sigma_8(0.51)$	$0.616 \pm 0.012$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4407 \pm 0.0092$	$r_{\mathrm{drag}}$	$147.91 \pm 0.75$	$f\sigma_8(0.61)$	$0.4614 \pm 0.0082$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.594 \pm 0.011$	$k_{\mathrm{D}}$	$0.1399 \pm 0.0011$	$\sigma_8(0.61)$	$0.586 \pm 0.011$
$\sigma_8/h^{0.5}$	$0.971 \pm 0.017$	$100\theta_{\mathrm{D}}$	$0.16104 \pm 0.00069$	$f\sigma_8(2.33)$	$0.2960 \pm 0.0058$
$r_{\mathrm{drag}}h$	$100.7 \pm 1.1$	$z_{\mathrm{eq}}$	$3340 \pm 43$	$\sigma_8(2.33)$	$0.3056 \pm 0.0061$
$\langle d^2 \rangle^{1/2}$	$2.465 \pm 0.038$	$k_{\mathrm{eq}}$	$0.01019 \pm 0.00013$	$\chi_{\mathrm{lensing}}^2$	$12.8 \pm 1.8$
$z_{\mathrm{re}}$	$7.74 \pm 0.11$	$100\theta_{\mathrm{eq}}$	$0.8243 \pm 0.0074$	$\chi_{6\mathrm{DF}}^2$	$0.057 \pm 0.082$
$10^9A_{\mathrm{s}}$	$2.114 \pm 0.071$	$100\theta_{\mathrm{s,eq}}$	$0.4552 \pm 0.0040$	$\chi_{\mathrm{MGS}}^2$	$1.95 \pm 0.71$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.894 \pm 0.064$	$H(0.15)$	$73.29 \pm 0.57$	$\chi_{\mathrm{DR12BAO}}^2$	$4.2 \pm 1.2$
$D_{40}$	$1291 \pm 54$	$D_{\mathrm{M}}(0.15)$	$637.2 \pm 5.5$	$\chi_{\mathrm{prior}}^2$	$3.1 \pm 2.5$
$D_{220}$	$5911 \pm 220$	$H(0.38)$	$83.23 \pm 0.46$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.5$
$D_{810}$	$2548 \pm 94$	$D_{\mathrm{M}}(0.38)$	$1522 \pm 11$		

$\bar{\chi}_{\mathrm{eff}}^2 = 22.09; R - 1 = 0.00237$



## 2.201 base\_lensing\_lenspriors\_BAO\_theta\_post\_Apr6

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02221 \pm 0.00049$	$D_{1420}$	$830 \pm 36$	$H(0.51)$	$89.79 \pm 0.41$
$\Omega_{\mathrm{c}}h^2$	$0.1178 \pm 0.0017$	$D_{2000}$	$233 \pm 11$	$D_{\mathrm{M}}(0.51)$	$1975 \pm 14$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00060$	$n_{\mathrm{s},0.002}$	$0.956 \pm 0.019$	$H(0.61)$	$95.34 \pm 0.39$
$\ln(10^{10}A_{\mathrm{s}})$	$3.068 \pm 0.034$	$Y_{\mathrm{P}}$	$0.24532^{+0.00022}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2299 \pm 15$
$n_{\mathrm{s}}$	$0.956 \pm 0.019$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00022}_{-0.00020}$	$H(2.33)$	$234.9 \pm 1.3$
$H_0$	$68.00 \pm 0.66$	$10^5\mathrm{D}/\mathrm{H}$	$2.619 \pm 0.093$	$D_{\mathrm{M}}(2.33)$	$5765 \pm 22$
$\Omega_{\Lambda}$	$0.6957 \pm 0.0087$	Age/Gyr	$13.805 \pm 0.052$	$f\sigma_8(0.15)$	$0.4529 \pm 0.0095$
$\Omega_{\mathrm{m}}$	$0.3043 \pm 0.0087$	$z_*$	$1089.95 \pm 0.62$	$\sigma_8(0.15)$	$0.751 \pm 0.014$
$\Omega_{\mathrm{m}}h^2$	$0.1407 \pm 0.0018$	$r_*$	$145.13 \pm 0.62$	$f\sigma_8(0.38)$	$0.4728 \pm 0.0091$
$\Omega_{\mathrm{m}}h^3$	$0.0956 \pm 0.0011$	$100\theta_*$	$1.04111 \pm 0.00060$	$\sigma_8(0.38)$	$0.666 \pm 0.013$
$\sigma_8$	$0.812 \pm 0.015$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.940 \pm 0.061$	$f\sigma_8(0.51)$	$0.4723 \pm 0.0089$
$S_8$	$0.817 \pm 0.018$	$z_{\mathrm{drag}}$	$1059.4 \pm 1.2$	$\sigma_8(0.51)$	$0.624 \pm 0.012$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4477 \pm 0.0098$	$r_{\mathrm{drag}}$	$147.86 \pm 0.76$	$f\sigma_8(0.61)$	$0.4679 \pm 0.0087$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.603 \pm 0.012$	$k_{\mathrm{D}}$	$0.1399 \pm 0.0011$	$\sigma_8(0.61)$	$0.594 \pm 0.012$
$\sigma_8/h^{0.5}$	$0.984 \pm 0.018$	$100\theta_{\mathrm{D}}$	$0.16107 \pm 0.00071$	$f\sigma_8(2.33)$	$0.2997 \pm 0.0060$
$r_{\mathrm{drag}}h$	$100.5 \pm 1.1$	$z_{\mathrm{eq}}$	$3346 \pm 43$	$\sigma_8(2.33)$	$0.3093 \pm 0.0064$
$\langle d^2 \rangle^{1/2}$	$2.473 \pm 0.039$	$k_{\mathrm{eq}}$	$0.01021 \pm 0.00013$	$\chi_{\mathrm{lensing}}^2$	$7.9 \pm 1.5$
$z_{\mathrm{re}}$	$7.75 \pm 0.11$	$100\theta_{\mathrm{eq}}$	$0.8231 \pm 0.0074$	$\chi_{6\mathrm{DF}}^2$	$0.055 \pm 0.078$
$10^9A_{\mathrm{s}}$	$2.152 \pm 0.074$	$100\theta_{\mathrm{s,eq}}$	$0.4546 \pm 0.0040$	$\chi_{\mathrm{MGS}}^2$	$1.82 \pm 0.70$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.928 \pm 0.066$	$H(0.15)$	$73.19 \pm 0.58$	$\chi_{\mathrm{DR12BAO}}^2$	$4.3 \pm 1.3$
$D_{40}$	$1291 \pm 55$	$D_{\mathrm{M}}(0.15)$	$638.1 \pm 5.6$	$\chi_{\mathrm{prior}}^2$	$2.9 \pm 2.3$
$D_{220}$	$5961 \pm 220$	$H(0.38)$	$83.16 \pm 0.46$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.4$
$D_{810}$	$2598 \pm 98$	$D_{\mathrm{M}}(0.38)$	$1524 \pm 11$		

$\bar{\chi}_{\mathrm{eff}}^2 = 16.94$ ;  $R - 1 = 0.00237$



## 2.202 base\_lensing\_lenspriors\_pttagr2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02218	$0.02220 \pm 0.00050$	$D_{810}$	3632	$3282 \pm 600$	$H(0.38)$	109.4	$84 \pm 10$
$\Omega_c h^2$	0.0991	$0.0941^{+0.0084}_{-0.0097}$	$D_{1420}$	1013	$1046^{+100}_{-200}$	$D_M(0.38)$	1094	$1556^{+160}_{-460}$
$100\theta_{MC}$	1.107	$1.018^{+0.078}_{-0.046}$	$D_{2000}$	287	$344^{+40}_{-90}$	$H(0.51)$	113.8	$89 \pm 10$
$\ln(10^{10} A_s)$	3.465	$3.34 \pm 0.14$	$n_{s,0.002}$	0.9594	$0.959 \pm 0.020$	$D_M(0.51)$	1444	$2019^{+210}_{-570}$
$n_s$	0.9594	$0.959 \pm 0.020$	$Y_P$	0.245319	$0.24531^{+0.00023}_{-0.00020}$	$H(0.61)$	117.7	$94 \pm 10$
$H_0$	99.9	—	$Y_P^{BBN}$	0.246645	$0.24664^{+0.00023}_{-0.00020}$	$D_M(0.61)$	1703	$2353^{+240}_{-650}$
$\Omega_\Lambda$	0.878	$0.723^{+0.16}_{-0.041}$	$10^5 D/H$	2.621	$2.621^{+0.088}_{-0.10}$	$H(2.33)$	232.0	$217 \pm 11$
$\Omega_m$	0.122	$0.277^{+0.041}_{-0.16}$	Age/Gyr	11.92	$14.5^{+1.1}_{-2.5}$	$D_M(2.33)$	4894	$6028^{+490}_{-1100}$
$\Omega_m h^2$	0.1219	$0.1169^{+0.0084}_{-0.0097}$	$z_*$	1088.25	$1087.7 \pm 1.0$	$f\sigma_8(0.15)$	0.3327	$0.399^{+0.044}_{-0.053}$
$\Omega_m h^3$	0.1218	$0.084^{+0.023}_{-0.029}$	$r_*$	150.36	$151.9 \pm 2.8$	$\sigma_8(0.15)$	0.881	$0.743^{+0.13}_{-0.066}$
$\sigma_8$	0.924	$0.796^{+0.12}_{-0.064}$	$100\theta_*$	1.107	$1.018^{+0.078}_{-0.046}$	$f\sigma_8(0.38)$	0.3926	$0.426^{+0.025}_{-0.016}$
$S_8$	0.589	$0.723^{+0.071}_{-0.13}$	$D_M(z_*)/\text{Gpc}$	13.58	$14.98^{+0.83}_{-1.3}$	$\sigma_8(0.38)$	0.815	$0.668^{+0.14}_{-0.069}$
$\sigma_8 \Omega_m^{0.5}$	0.323	$0.396^{+0.039}_{-0.070}$	$z_{\text{drag}}$	1057.95	$1057.6 \pm 1.4$	$f\sigma_8(0.51)$	0.4177	$0.431^{+0.018}_{-0.015}$
$\sigma_8 \Omega_m^{0.25}$	0.5460	$0.557^{+0.019}_{-0.016}$	$r_{\text{drag}}$	153.23	$154.9 \pm 3.0$	$\sigma_8(0.51)$	0.778	$0.629^{+0.14}_{-0.070}$
$\sigma_8/h^{0.5}$	0.9241	$0.954^{+0.028}_{-0.022}$	$k_D$	0.13445	$0.1329 \pm 0.0030$	$f\sigma_8(0.61)$	0.4326	$0.432^{+0.023}_{-0.014}$
$r_{\text{drag}} h$	153.0	$110^{+40}_{-20}$	$100\theta_D$	0.1720	$0.158^{+0.012}_{-0.0070}$	$\sigma_8(0.61)$	0.751	$0.602^{+0.14}_{-0.070}$
$\langle d^2 \rangle^{1/2}$	2.597	$2.606 \pm 0.064$	$z_{\text{eq}}$	2898	$2778^{+200}_{-230}$	$f\sigma_8(2.33)$	0.392	$0.307^{+0.079}_{-0.040}$
$z_{\text{re}}$	7.600	$7.31 \pm 0.27$	$k_{\text{eq}}$	0.00884	$0.00848^{+0.00062}_{-0.00071}$	$\sigma_8(2.33)$	0.432	$0.324^{+0.095}_{-0.052}$
$10^9 A_s$	3.199	$2.84^{+0.35}_{-0.42}$	$100\theta_{\text{eq}}$	0.975	$0.929 \pm 0.050$	$\chi^2_{\text{lensing}}$	15.57	$18.0 \pm 2.0$
$10^9 A_s e^{-2\tau}$	2.865	$2.55^{+0.31}_{-0.38}$	$100\theta_{s,\text{eq}}$	0.5353	$0.509 \pm 0.026$	$\chi^2_{\text{prior}}$	0.00	$2.0 \pm 2.0$
$D_{40}$	2108	$1794^{+300}_{-300}$	$H(0.15)$	103.0	$75^{+30}_{-20}$			
$D_{220}$	9493	$8741^{+1000}_{-2000}$	$D_M(0.15)$	444	$651^{+68}_{-210}$			

Best-fit  $\chi^2_{\text{eff}} = 15.57$ ;  $\bar{\chi}^2_{\text{eff}} = 20.05$ ;  $R - 1 = 0.00735$

$\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpttptt\_p\_teb\_agr2\_CMBmarged: 15.57



## 2.203 base\_lensing\_lenspriors\_pttagr2\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02220	$0.02222 \pm 0.00050$	$D_{810}$	3672	$3627^{+400}_{-500}$	$H(0.38)$	89.11	$88.9 \pm 2.4$
$\Omega_c h^2$	0.0943	$0.0957^{+0.0068}_{-0.0085}$	$D_{1420}$	1150	$1137^{+100}_{-200}$	$D_M(0.38)$	1376	$1384^{+48}_{-55}$
$100\theta_{MC}$	1.04090	$1.04089 \pm 0.00061$	$D_{2000}$	320.2	$317^{+40}_{-50}$	$H(0.51)$	94.32	$94.2^{+1.8}_{-2.1}$
$\ln(10^{10} A_s)$	3.389	$3.37 \pm 0.13$	$n_{s,0.002}$	0.9600	$0.959 \pm 0.020$	$D_M(0.51)$	1801	$1811^{+59}_{-65}$
$n_s$	0.9600	$0.959 \pm 0.020$	$Y_P$	0.245325	$0.24532^{+0.00023}_{-0.00020}$	$H(0.61)$	98.76	$98.7^{+1.4}_{-1.8}$
$H_0$	77.67	$77.2 \pm 3.6$	$Y_P^{BBN}$	0.246651	$0.24665^{+0.00023}_{-0.00020}$	$D_M(0.61)$	2112	$2122 \pm 68$
$\Omega_\Lambda$	0.8058	$0.798^{+0.037}_{-0.024}$	$10^5 D/H$	2.618	$2.617^{+0.088}_{-0.099}$	$H(2.33)$	219.5	$220.5^{+4.4}_{-5.6}$
$\Omega_m$	0.1942	$0.202^{+0.024}_{-0.037}$	Age/Gyr	13.645	$13.648 \pm 0.085$	$D_M(2.33)$	5667.8	$5670^{+53}_{-45}$
$\Omega_m h^2$	0.1171	$0.1186^{+0.0069}_{-0.0085}$	$z_*$	1087.78	$1087.89^{+0.84}_{-0.97}$	$f\sigma_8(0.15)$	0.3798	$0.383 \pm 0.026$
$\Omega_m h^3$	0.09099	$0.0913 \pm 0.0019$	$r_*$	151.79	$151.4 \pm 2.4$	$\sigma_8(0.15)$	0.7876	$0.784 \pm 0.021$
$\sigma_8$	0.8374	$0.834 \pm 0.020$	$100\theta_*$	1.04114	$1.04114 \pm 0.00061$	$f\sigma_8(0.38)$	0.4240	$0.425^{+0.021}_{-0.019}$
$S_8$	0.6737	$0.681^{+0.045}_{-0.051}$	$D_M(z_*)/\text{Gpc}$	14.579	$14.54^{+0.24}_{-0.22}$	$\sigma_8(0.38)$	0.7144	$0.710 \pm 0.023$
$\sigma_8 \Omega_m^{0.5}$	0.3690	$0.373^{+0.025}_{-0.028}$	$z_{\text{drag}}$	1057.61	$1057.7 \pm 1.4$	$f\sigma_8(0.51)$	0.4377	$0.438^{+0.018}_{-0.015}$
$\sigma_8 \Omega_m^{0.25}$	0.5559	$0.557 \pm 0.019$	$r_{\text{drag}}$	154.68	$154.3 \pm 2.5$	$\sigma_8(0.51)$	0.6757	$0.671^{+0.024}_{-0.022}$
$\sigma_8/h^{0.5}$	0.9502	$0.950^{+0.023}_{-0.021}$	$k_D$	0.13303	$0.1335 \pm 0.0026$	$f\sigma_8(0.61)$	0.4436	$0.443^{+0.015}_{-0.012}$
$r_{\text{drag}} h$	120.1	$119.2 \pm 7.4$	$100\theta_D$	0.16199	$0.16193 \pm 0.00080$	$\sigma_8(0.61)$	0.6476	$0.643^{+0.024}_{-0.022}$
$\langle d^2 \rangle^{1/2}$	2.607	$2.599 \pm 0.063$	$z_{\text{eq}}$	2784	$2819^{+160}_{-200}$	$f\sigma_8(2.33)$	0.3330	$0.330^{+0.015}_{-0.013}$
$z_{\text{re}}$	7.362	$7.38^{+0.15}_{-0.17}$	$k_{\text{eq}}$	0.00850	$0.00860^{+0.00050}_{-0.00062}$	$\sigma_8(2.33)$	0.3524	$0.350 \pm 0.018$
$10^9 A_s$	2.963	$2.93^{+0.33}_{-0.39}$	$100\theta_{\text{eq}}$	0.9457	$0.940 \pm 0.047$	$\chi^2_{\text{lensing}}$	15.83	$17.9 \pm 2.1$
$10^9 A_s e^{-2\tau}$	2.655	$2.62^{+0.30}_{-0.35}$	$100\theta_{s,\text{eq}}$	0.5181	$0.515 \pm 0.024$	$\chi^2_{\text{prior}}$	0.00	$3.0 \pm 2.5$
$D_{40}$	1891	$1868^{+200}_{-300}$	$H(0.15)$	81.51	$81.1 \pm 3.2$			
$D_{220}$	9125	$9009^{+1000}_{-1000}$	$D_M(0.15)$	565.6	$570^{+22}_{-27}$			

Best-fit  $\chi^2_{\text{eff}} = 15.83$ ;  $\bar{\chi}^2_{\text{eff}} = 20.91$ ;  $R - 1 = 0.00715$

$\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpttptt\_p\_teb\_agr2\_CMBmargd: 15.83



## 2.204 base\_lensing\_lenspriors\_pttagr2\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02219	$0.02221 \pm 0.00051$	$D_{1420}$	973	$967 \pm 85$	$H(0.51)$	85.63	$85.9 \pm 1.9$
$\Omega_c h^2$	0.0976	$0.0987^{+0.0079}_{-0.0091}$	$D_{2000}$	287.2	$290^{+27}_{-50}$	$D_M(0.51)$	2048.4	$2044 \pm 39$
$100\theta_{MC}$	1.0117	$1.013 \pm 0.014$	$n_{s,0.002}$	0.9542	$0.954 \pm 0.020$	$H(0.61)$	90.62	$90.9 \pm 2.2$
$\ln(10^{10} A_s)$	3.266	$3.26 \pm 0.10$	$Y_P$	0.245322	$0.24532^{+0.00023}_{-0.00020}$	$D_M(0.61)$	2388.8	$2383 \pm 47$
$n_s$	0.9542	$0.954 \pm 0.020$	$Y_P^{BBN}$	0.246648	$0.24664^{+0.00023}_{-0.00020}$	$H(2.33)$	218.4	$219.2 \pm 7.3$
$H_0$	66.26	$66.4 \pm 1.1$	$10^5 D/H$	2.620	$2.618 \pm 0.096$	$D_M(2.33)$	6085	$6069 \pm 150$
$\Omega_\Lambda$	0.7257	$0.725 \pm 0.014$	Age/Gyr	14.580	$14.54 \pm 0.37$	$f\sigma_8(0.15)$	0.4189	$0.419 \pm 0.016$
$\Omega_m$	0.2743	$0.275 \pm 0.014$	$z_*$	1088.10	$1088.18^{+0.90}_{-1.0}$	$\sigma_8(0.15)$	0.7302	$0.730 \pm 0.016$
$\Omega_m h^2$	0.1204	$0.1215^{+0.0080}_{-0.0092}$	$r_*$	150.81	$150.5 \pm 2.6$	$f\sigma_8(0.38)$	0.4447	$0.445 \pm 0.014$
$\Omega_m h^3$	0.0798	$0.0808^{+0.0062}_{-0.0073}$	$100\theta_*$	1.0120	$1.013 \pm 0.014$	$\sigma_8(0.38)$	0.6514	$0.651 \pm 0.014$
$\sigma_8$	0.7861	$0.786 \pm 0.017$	$D_M(z_*)/\text{Gpc}$	14.902	$14.86 \pm 0.45$	$f\sigma_8(0.51)$	0.4477	$0.448 \pm 0.013$
$S_8$	0.7516	$0.753 \pm 0.030$	$z_{\text{drag}}$	1057.84	$1057.9 \pm 1.4$	$\sigma_8(0.51)$	0.6114	$0.611 \pm 0.013$
$\sigma_8 \Omega_m^{0.5}$	0.4117	$0.412 \pm 0.016$	$r_{\text{drag}}$	153.68	$153.4 \pm 2.7$	$f\sigma_8(0.61)$	0.4459	$0.446 \pm 0.012$
$\sigma_8 \Omega_m^{0.25}$	0.5689	$0.569 \pm 0.017$	$k_D$	0.13401	$0.1343 \pm 0.0028$	$\sigma_8(0.61)$	0.5829	$0.583 \pm 0.012$
$\sigma_8/h^{0.5}$	0.9658	$0.965 \pm 0.019$	$100\theta_D$	0.15731	$0.1575 \pm 0.0018$	$f\sigma_8(2.33)$	0.2956	$0.2954 \pm 0.0061$
$r_{\text{drag}} h$	101.82	$101.8 \pm 1.2$	$z_{\text{eq}}$	2862	$2889^{+190}_{-220}$	$\sigma_8(2.33)$	0.3065	$0.3063 \pm 0.0064$
$\langle d^2 \rangle^{1/2}$	2.585	$2.579 \pm 0.062$	$k_{\text{eq}}$	0.00873	$0.00882^{+0.00058}_{-0.00067}$	$\chi^2_{\text{lensing}}$	16.40	$18.4 \pm 2.3$
$z_{\text{re}}$	7.356	$7.37^{+0.19}_{-0.21}$	$100\theta_{\text{eq}}$	0.9001	$0.897 \pm 0.037$	$\chi^2_{6\text{DF}}$	0.051	$0.11 \pm 0.14$
$10^9 A_s$	2.622	$2.61^{+0.23}_{-0.29}$	$100\theta_{s,\text{eq}}$	0.4937	$0.492 \pm 0.019$	$\chi^2_{\text{MGS}}$	2.35	$2.43 \pm 0.78$
$10^9 A_s e^{-2\tau}$	2.348	$2.34^{+0.21}_{-0.26}$	$H(0.15)$	70.83	$71.0 \pm 1.3$	$\chi^2_{\text{DR12BAO}}$	5.16	$6.0 \pm 1.7$
$D_{40}$	1640	$1633^{+150}_{-190}$	$D_M(0.15)$	657.1	$656 \pm 11$	$\chi^2_{\text{prior}}$	0.09	$2.1 \pm 2.1$
$D_{220}$	7982	$7943^{+900}_{-1000}$	$H(0.38)$	79.69	$79.9 \pm 1.7$	$\chi^2_{\text{BAO}}$	7.56	$8.6 \pm 1.8$
$D_{810}$	3143	$3114 \pm 290$	$D_M(0.38)$	1576.5	$1573 \pm 29$			

Best-fit  $\chi^2_{\text{eff}} = 24.05$ ;  $\bar{\chi}^2_{\text{eff}} = 29.10$ ;  $R - 1 = 0.00706$

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.05 MGS: 2.35 DR12BAO: 5.16 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpttptt\_p\_teb\_agr2\_CMBmarged: 16.40



## 2.205 base\_lensing\_lenspriors\_pttagr2\_BAO\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02225	$0.02228 \pm 0.00051$	$D_{1420}$	811.9	$812 \pm 36$	$H(0.51)$	89.870	$89.91 \pm 0.43$
$\Omega_c h^2$	0.11724	$0.1173 \pm 0.0017$	$D_{2000}$	226.8	$227 \pm 11$	$D_M(0.51)$	1970.9	$1970 \pm 14$
$100\theta_{MC}$	1.04081	$1.04086 \pm 0.00059$	$n_{s,0.002}$	0.9377	$0.938 \pm 0.018$	$H(0.61)$	95.397	$95.43 \pm 0.40$
$\ln(10^{10} A_s)$	3.0617	$3.061 \pm 0.038$	$Y_P$	0.245348	$0.24535^{+0.00023}_{-0.00020}$	$D_M(0.61)$	2294.8	$2294 \pm 15$
$n_s$	0.9377	$0.938 \pm 0.018$	$Y_P^{BBN}$	0.246674	$0.24667^{+0.00023}_{-0.00021}$	$H(2.33)$	234.61	$234.6 \pm 1.3$
$H_0$	68.20	$68.24 \pm 0.67$	$10^5 D/H$	2.608	$2.606 \pm 0.097$	$D_M(2.33)$	5763.3	$5761 \pm 22$
$\Omega_\Lambda$	0.6987	$0.6989 \pm 0.0088$	Age/Gyr	13.801	$13.796 \pm 0.053$	$f\sigma_8(0.15)$	0.4450	$0.4447 \pm 0.0094$
$\Omega_m$	0.3013	$0.3011 \pm 0.0088$	$z_*$	1089.83	$1089.81 \pm 0.64$	$\sigma_8(0.15)$	0.7411	$0.741 \pm 0.014$
$\Omega_m h^2$	0.14014	$0.1402 \pm 0.0019$	$r_*$	145.24	$145.22 \pm 0.64$	$f\sigma_8(0.38)$	0.4654	$0.4652 \pm 0.0091$
$\Omega_m h^3$	0.09557	$0.0957 \pm 0.0011$	$100\theta_*$	1.04101	$1.04106 \pm 0.00060$	$\sigma_8(0.38)$	0.6581	$0.658 \pm 0.013$
$\sigma_8$	0.8010	$0.801 \pm 0.015$	$D_M(z_*)/\text{Gpc}$	13.952	$13.949 \pm 0.063$	$f\sigma_8(0.51)$	0.4652	$0.4650 \pm 0.0089$
$S_8$	0.8027	$0.802 \pm 0.018$	$z_{\text{drag}}$	1059.47	$1059.5 \pm 1.2$	$\sigma_8(0.51)$	0.6163	$0.616 \pm 0.012$
$\sigma_8 \Omega_m^{0.5}$	0.4396	$0.4394 \pm 0.0097$	$r_{\text{drag}}$	147.96	$147.93 \pm 0.79$	$f\sigma_8(0.61)$	0.4611	$0.4609 \pm 0.0087$
$\sigma_8 \Omega_m^{0.25}$	0.5934	$0.593 \pm 0.011$	$k_D$	0.13987	$0.1399 \pm 0.0012$	$\sigma_8(0.61)$	0.5867	$0.587 \pm 0.012$
$\sigma_8/h^{0.5}$	0.9699	$0.969 \pm 0.018$	$100\theta_D$	0.16099	$0.16098 \pm 0.00073$	$f\sigma_8(2.33)$	0.2962	$0.2963 \pm 0.0061$
$r_{\text{drag}} h$	100.91	$101.0^{+1.1}_{-1.2}$	$z_{\text{eq}}$	3333.4	$3334 \pm 44$	$\sigma_8(2.33)$	0.3059	$0.3059 \pm 0.0065$
$\langle d^2 \rangle^{1/2}$	2.4964	$2.495 \pm 0.047$	$k_{\text{eq}}$	0.010174	$0.01018 \pm 0.00014$	$\chi^2_{\text{lensing}}$	21.72	$23 \pm 3$
$z_{\text{re}}$	7.732	$7.73 \pm 0.12$	$100\theta_{\text{eq}}$	0.8254	$0.8254 \pm 0.0076$	$\chi^2_{6\text{DF}}$	0.0075	$0.066 \pm 0.096$
$10^9 A_s$	2.136	$2.136 \pm 0.080$	$100\theta_{s,\text{eq}}$	0.45578	$0.4558 \pm 0.0041$	$\chi^2_{\text{MGS}}$	1.97	$2.07 \pm 0.75$
$10^9 A_s e^{-2\tau}$	1.914	$1.914 \pm 0.072$	$H(0.15)$	73.36	$73.40 \pm 0.59$	$\chi^2_{\text{DR12BAO}}$	3.37	$4.3 \pm 1.3$
$D_{40}$	1335	$1335 \pm 65$	$D_M(0.15)$	636.4	$636.1 \pm 5.7$	$\chi^2_{\text{prior}}$	1.27	$4.1 \pm 3.1$
$D_{220}$	6040	$6041^{+230}_{-260}$	$H(0.38)$	83.271	$83.31 \pm 0.47$	$\chi^2_{\text{BAO}}$	5.34	$6.4 \pm 1.7$
$D_{810}$	2567	$2567 \pm 100$	$D_M(0.38)$	1520.2	$1519 \pm 12$			

Best-fit  $\chi^2_{\text{eff}} = 28.33$ ;  $\bar{\chi}^2_{\text{eff}} = 33.48$ ;  $R - 1 = 0.01261$

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.01 MGS: 1.97 DR12BAO: 3.37 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpttptt\_p\_teb\_agr2\_CMBmarged: 21.72

## 2.206 base\_lensing\_DESpriors

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_m$	0.259	$0.276^{+0.050}_{-0.061}$	$\Omega_b h^2$	0.0276	$0.0257^{+0.0060}_{-0.011}$	$S_8$	0.779	$0.780 \pm 0.051$
$\Omega_b$	0.0541	—	$\Omega_c h^2$	0.1041	$0.112^{+0.016}_{-0.025}$	$\sigma_8 \Omega_m^{0.5}$	0.4268	$0.427 \pm 0.028$
$H_0$	71.5	$< 77.4$	$\Omega_\Lambda$	0.741	$0.724^{+0.061}_{-0.050}$	$\sigma_8 \Omega_m^{0.25}$	0.5983	$0.591 \pm 0.020$
$10^9 A_s$	2.733	$2.47^{+0.38}_{-0.54}$	$\ln(10^{10} A_s)$	3.308	$3.19 \pm 0.18$	$\chi^2_{\text{lensing}}$	7.38	$9.6 \pm 2.0$
$n_s$	1.037	$> 0.945$	$\sigma_8$	0.8388	$0.820^{+0.041}_{-0.048}$			

Best-fit  $\chi^2_{\text{eff}} = 7.38$ ;  $\bar{\chi}^2_{\text{eff}} = 9.64$ ;  $R - 1 = 0.01504$

$\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 7.38

## 2.207 base\_lensing\_DESpriors\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_m$	0.3365	$0.302^{+0.021}_{-0.026}$	$\Omega_c h^2$	0.1204	$0.122^{+0.019}_{-0.029}$	$\sigma_8 \Omega_m^{0.25}$	0.5911	$0.598 \pm 0.020$
$\Omega_b$	0.0373	$0.048^{+0.010}_{-0.013}$	$\Omega_\Lambda$	0.6635	$0.698^{+0.026}_{-0.021}$	$\chi^2_{\text{lensing}}$	8.16	$9.9 \pm 2.1$
$H_0$	63.6	$69.5^{+4.9}_{-11}$	$\ln(10^{10} A_s)$	2.925	$3.07^{+0.13}_{-0.19}$	$\chi^2_{6\text{DF}}$	0.0470	$0.08 \pm 0.11$
$10^9 A_s$	1.863	$2.18^{+0.23}_{-0.45}$	$\sigma_8$	0.7762	$0.808^{+0.024}_{-0.028}$	$\chi^2_{\text{MGS}}$	1.16	$1.87 \pm 0.79$
$n_s$	0.870	$< 0.970$	$S_8$	0.8220	$0.810 \pm 0.036$	$\chi^2_{\text{DR12BAO}}$	2.43	$4.7 \pm 1.7$
$\Omega_b h^2$	0.0151	$0.0247^{+0.0049}_{-0.014}$	$\sigma_8 \Omega_m^{0.5}$	0.4502	$0.443 \pm 0.020$	$\chi^2_{\text{BAO}}$	3.64	$6.6 \pm 2.0$

Best-fit  $\chi^2_{\text{eff}} = 11.80$ ;  $\bar{\chi}^2_{\text{eff}} = 16.52$ ;  $R - 1 = 0.00617$



$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.05 MGS: 1.16 DR12BAO: 2.43 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 8.16

## 2.208 base\_lensing\_DESpriors\_CookeDH

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.239	$0.300^{+0.066}_{-0.083}$	$\Omega_{\text{b}}h^2$	0.022239	$0.02218 \pm 0.00050$	$S_8$	0.762	$0.797 \pm 0.060$
$\Omega_{\text{b}}$	0.0445	—	$\Omega_{\text{c}}h^2$	0.0966	$0.108^{+0.012}_{-0.018}$	$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4175	$0.437 \pm 0.033$
$H_0$	70.7	$67.2^{+4.0}_{-11}$	$\Omega_{\Lambda}$	0.761	$0.700^{+0.083}_{-0.066}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.5972	$0.593 \pm 0.020$
$10^9 A_{\text{s}}$	2.890	$2.46^{+0.41}_{-0.52}$	$\ln(10^{10} A_{\text{s}})$	3.364	$3.18^{+0.20}_{-0.18}$	$\chi^2_{\text{lensing}}$	7.36	$9.6 \pm 2.0$
$n_{\text{s}}$	1.036	—	$\sigma_8$	0.854	$0.808^{+0.043}_{-0.063}$	$\chi^2_{\text{prior}}$	0.006	$1.0 \pm 1.5$

Best-fit  $\chi^2_{\text{eff}} = 7.37$ ;  $\bar{\chi}^2_{\text{eff}} = 10.57$ ;  $R - 1 = 0.00800$

$\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 7.36

## 2.209 base\_lensing\_DESpriors\_CookeDH\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.3280	$0.306 \pm 0.022$	$\Omega_{\Lambda}$	0.6720	$0.694 \pm 0.022$	$\chi^2_{6\text{DF}}$	0.0281	$0.070 \pm 0.097$
$\Omega_{\text{b}}$	0.04619	$0.0480^{+0.0020}_{-0.0022}$	$\ln(10^{10} A_{\text{s}})$	2.890	$3.06^{+0.12}_{-0.18}$	$\chi^2_{\text{MGS}}$	1.28	$1.79 \pm 0.76$
$H_0$	69.24	$68.0 \pm 1.5$	$\sigma_8$	0.7835	$0.807^{+0.022}_{-0.026}$	$\chi^2_{\text{DR12BAO}}$	2.67	$4.5 \pm 1.8$
$10^9 A_{\text{s}}$	1.799	$2.17^{+0.22}_{-0.41}$	$S_8$	0.8192	$0.813 \pm 0.035$	$\chi^2_{\text{prior}}$	0.011	$0.99 \pm 1.4$
$n_{\text{s}}$	0.8703	$< 0.968$	$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4487	$0.446 \pm 0.019$	$\chi^2_{\text{BAO}}$	3.98	$6.4 \pm 2.0$
$\Omega_{\text{b}}h^2$	0.022147	$0.02219 \pm 0.00050$	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.5929	$0.599 \pm 0.019$			
$\Omega_{\text{c}}h^2$	0.1345	$0.119 \pm 0.015$	$\chi^2_{\text{lensing}}$	8.00	$9.8 \pm 2.1$			

Best-fit  $\chi^2_{\text{eff}} = 11.99$ ;  $\bar{\chi}^2_{\text{eff}} = 17.15$ ;  $R - 1 = 0.00446$

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.03 MGS: 1.28 DR12BAO: 2.67 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 8.00



## 2.210 base\_plikHM\_TT

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022557	$0.02242 \pm 0.00028$	$\sigma_8 \Omega_m^{0.5}$	0.4799	$0.478 \pm 0.014$	$100\theta_{\text{eq}}$	0.8255	$0.821 \pm 0.012$
$\Omega_c h^2$	0.11718	$0.1182 \pm 0.0027$	$\sigma_8 \Omega_m^{0.25}$	0.6495	$0.643 \pm 0.017$	$100\theta_{\text{s,eq}}$	0.4556	$0.4536 \pm 0.0060$
$100\theta_{\text{MC}}$	1.04130	$1.04114 \pm 0.00054$	$\sigma_8/h^{0.5}$	1.0612	$1.049 \pm 0.028$	$H(0.15)$	73.77	$73.3 \pm 1.1$
$\tau$	0.1470	$0.127^{+0.039}_{-0.034}$	$r_{\text{drag}} h$	101.33	$100.5 \pm 2.2$	$D_{\text{M}}(0.15)$	632.6	$637 \pm 11$
$\ln(10^{10} A_{\text{s}})$	3.222	$3.185^{+0.073}_{-0.064}$	$\langle d^2 \rangle^{1/2}$	2.618	$2.592^{+0.068}_{-0.062}$	$H(0.38)$	83.65	$83.32 \pm 0.80$
$n_{\text{s}}$	0.9756	$0.9708 \pm 0.0086$	$z_{\text{re}}$	15.38	$13.8^{+3.2}_{-2.2}$	$D_{\text{M}}(0.38)$	1511.9	$1521 \pm 21$
$A_{217}^{\text{CIB}}$	42.9	$46 \pm 7$	$10^9 A_{\text{s}}$	2.508	$2.42 \pm 0.17$	$H(0.51)$	90.23	$89.97 \pm 0.63$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.999	$> 0.400$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8692	$1.873 \pm 0.016$	$D_{\text{M}}(0.51)$	1960.7	$1971 \pm 25$
$A_{143}^{\text{tSZ}}$	6.81	$5.5^{+2.1}_{-1.9}$	$D_{40}$	1254.8	$1255 \pm 18$	$H(0.61)$	95.75	$95.53 \pm 0.51$
$A_{100}^{\text{PS}}$	239.6	$254 \pm 30$	$D_{220}$	5725.4	$5725 \pm 41$	$D_{\text{M}}(0.61)$	2283.3	$2295 \pm 27$
$A_{143}^{\text{PS}}$	49.8	$44 \pm 9$	$D_{810}$	2530.1	$2529 \pm 14$	$H(2.33)$	234.93	$235.4 \pm 1.6$
$A_{143 \times 217}^{\text{PS}}$	57.4	$42 \pm 9$	$D_{1420}$	816.4	$814.2 \pm 5.1$	$D_{\text{M}}(2.33)$	5743.9	$5754 \pm 22$
$A_{217}^{\text{PS}}$	123.1	$115 \pm 10$	$D_{2000}$	232.90	$231.5 \pm 2.1$	$f\sigma_8(0.15)$	0.4860	$0.483 \pm 0.014$
$A^{\text{kSZ}}$	0.01	$< 3.67$	$n_{\text{s},0.002}$	0.9756	$0.9708 \pm 0.0086$	$\sigma_8(0.15)$	0.8138	$0.801 \pm 0.024$
$A_{100}^{\text{dustTT}}$	8.63	$8.7 \pm 1.8$	$Y_{\text{P}}$	0.245465	$0.24541 \pm 0.00012$	$f\sigma_8(0.38)$	0.5092	$0.504 \pm 0.013$
$A_{143}^{\text{dustTT}}$	10.54	$10.5 \pm 1.8$	$Y_{\text{P}}^{\text{BBN}}$	0.246791	$0.24674 \pm 0.00012$	$\sigma_8(0.38)$	0.7230	$0.711 \pm 0.023$
$A_{143 \times 217}^{\text{dustTT}}$	19.77	$18.0 \pm 3.3$	$10^5 D/\text{H}$	2.552	$2.579 \pm 0.052$	$f\sigma_8(0.51)$	0.5094	$0.504 \pm 0.013$
$A_{217}^{\text{dustTT}}$	95.9	$93.7 \pm 7.3$	Age/Gyr	13.7551	$13.778 \pm 0.049$	$\sigma_8(0.51)$	0.6773	$0.665 \pm 0.022$
$c_{100}$	0.99971	$0.99961 \pm 0.00062$	$z_*$	1089.44	$1089.71 \pm 0.55$	$f\sigma_8(0.61)$	0.5052	$0.499 \pm 0.013$
$c_{217}$	0.99817	$0.99820 \pm 0.00062$	$r_*$	145.02	$144.87 \pm 0.58$	$\sigma_8(0.61)$	0.6449	$0.633 \pm 0.021$
$y_{\text{cal}}$	1.00006	$1.0002 \pm 0.0025$	$100\theta_*$	1.04147	$1.04132 \pm 0.00052$	$f\sigma_8(2.33)$	0.3258	$0.320 \pm 0.011$
$H_0$	68.64	$68.1 \pm 1.3$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.925	$13.912 \pm 0.052$	$\sigma_8(2.33)$	0.3365	$0.330 \pm 0.012$
$\Omega_{\Lambda}$	0.7020	$0.695^{+0.018}_{-0.015}$	$z_{\text{drag}}$	1060.16	$1059.91 \pm 0.54$	$f_{2000}^{143}$	25.65	$28 \pm 4$
$\Omega_{\text{m}}$	0.2980	$0.305^{+0.015}_{-0.018}$	$r_{\text{drag}}$	147.63	$147.53 \pm 0.55$	$f_{2000}^{143 \times 217}$	29.71	$30.9 \pm 2.5$
$\Omega_{\text{m}} h^2$	0.14039	$0.1412 \pm 0.0025$	$k_{\text{D}}$	0.14044	$0.14044 \pm 0.00055$	$f_{2000}^{217}$	104.31	$105.8 \pm 2.3$
$\Omega_{\text{m}} h^3$	0.096355	$0.09619 \pm 0.00048$	$100\theta_{\text{D}}$	0.160651	$0.16080 \pm 0.00030$	$\chi_{\text{plik}}^2$	752.7	$767.4 \pm 5.5$
$\sigma_8$	0.8791	$0.866 \pm 0.026$	$z_{\text{eq}}$	3339	$3360 \pm 60$	$\chi_{\text{prior}}^2$	0.98	$7.1 \pm 3.6$
$S_8$	0.8762	$0.872 \pm 0.026$	$k_{\text{eq}}$	0.010192	$0.01025 \pm 0.00018$			

Best-fit  $\chi_{\text{eff}}^2 = 753.73$ ;  $\bar{\chi}_{\text{eff}}^2 = 774.46$ ;  $R - 1 = 0.00674$   
 $\chi_{\text{eff}}^2$ : CMB - plik\_rd12\_HM\_v22\_TT: 752.75



## 2.211 base\_plikHM\_TT\_lowl

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022496	$0.02238 \pm 0.00027$	$\sigma_8 \Omega_m^{0.25}$	0.6370	$0.630 \pm 0.016$	$H(0.15)$	73.68	$73.3 \pm 1.0$
$\Omega_c h^2$	0.11728	$0.1181 \pm 0.0025$	$\sigma_8/h^{0.5}$	1.0406	$1.028 \pm 0.026$	$D_M(0.15)$	633.5	$637.0 \pm 9.8$
$100\theta_{MC}$	1.04124	$1.04112 \pm 0.00052$	$r_{drag}h$	101.20	$100.6 \pm 2.0$	$H(0.38)$	83.57	$83.31 \pm 0.74$
$\tau$	0.1259	$0.108^{+0.034}_{-0.031}$	$\langle d^2 \rangle^{1/2}$	2.564	$2.539 \pm 0.061$	$D_M(0.38)$	1513.9	$1521 \pm 20$
$\ln(10^{10} A_s)$	3.180	$3.145^{+0.065}_{-0.058}$	$z_{re}$	13.82	$12.3^{+3.0}_{-2.1}$	$H(0.51)$	90.16	$89.95 \pm 0.59$
$n_s$	0.9756	$0.9713 \pm 0.0077$	$10^9 A_s$	2.405	$2.33 \pm 0.14$	$D_M(0.51)$	1963.1	$1971 \pm 23$
$y_{cal}$	1.00013	$1.0003 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8693	$1.872 \pm 0.015$	$H(0.61)$	95.679	$95.51^{+0.45}_{-0.50}$
$A_{217}^{CIB}$	42.8	$46 \pm 7$	$D_{40}$	1238.9	$1240 \pm 16$	$D_M(0.61)$	2285.9	$2295 \pm 25$
$\xi^{tSZ \times CIB}$	0.986	$> 0.390$	$D_{220}$	5715.5	$5718 \pm 42$	$H(2.33)$	234.92	$235.3 \pm 1.5$
$A_{143}^{tSZ}$	6.86	$5.5^{+2.1}_{-1.9}$	$D_{810}$	2531.7	$2531 \pm 14$	$D_M(2.33)$	5747.6	$5755 \pm 21$
$A_{100}^{PS}$	239.7	$254 \pm 30$	$D_{1420}$	817.1	$815.2 \pm 5.1$	$f\sigma_8(0.15)$	0.4770	$0.473 \pm 0.013$
$A_{143}^{PS}$	50.5	$44 \pm 9$	$D_{2000}$	232.59	$231.4 \pm 2.1$	$\sigma_8(0.15)$	0.7973	$0.785 \pm 0.022$
$A_{143 \times 217}^{PS}$	58.0	$42 \pm 9$	$n_{s,0.002}$	0.9756	$0.9713 \pm 0.0077$	$f\sigma_8(0.38)$	0.4994	$0.494 \pm 0.013$
$A_{217}^{PS}$	123.8	$115 \pm 10$	$Y_P$	0.245443	$0.24540 \pm 0.00011$	$\sigma_8(0.38)$	0.7082	$0.697 \pm 0.020$
$A^{kSZ}$	0.00	$< 3.71$	$Y_P^{BBN}$	0.246770	$0.24672 \pm 0.00011$	$f\sigma_8(0.51)$	0.4995	$0.494 \pm 0.012$
$A_{100}^{dustTT}$	8.74	$8.8 \pm 1.8$	$10^5 D/H$	2.5627	$2.584 \pm 0.050$	$\sigma_8(0.51)$	0.6634	$0.652 \pm 0.019$
$A_{143}^{dustTT}$	10.66	$10.5 \pm 1.8$	Age/Gyr	13.7636	$13.781 \pm 0.046$	$f\sigma_8(0.61)$	0.4953	$0.489 \pm 0.012$
$A_{143 \times 217}^{dustTT}$	19.94	$18.1 \pm 3.3$	$z_*$	1089.53	$1089.74 \pm 0.51$	$\sigma_8(0.61)$	0.6316	$0.621 \pm 0.019$
$A_{217}^{dustTT}$	96.2	$93.7 \pm 7.3$	$r_*$	145.04	$144.92 \pm 0.54$	$f\sigma_8(2.33)$	0.3190	$0.3134 \pm 0.0097$
$c_{100}$	0.99968	$0.99960 \pm 0.00061$	$100\theta_*$	1.04141	$1.04131 \pm 0.00050$	$\sigma_8(2.33)$	0.3295	$0.323 \pm 0.011$
$c_{217}$	0.99816	$0.99820 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	13.9273	$13.918 \pm 0.049$	$f_{2000}^{143}$	26.13	$28 \pm 3$
$H_0$	68.53	$68.1 \pm 1.2$	$z_{drag}$	1060.05	$1059.83 \pm 0.52$	$f_{2000}^{143 \times 217}$	30.11	$31.2 \pm 2.5$
$\Omega_\Lambda$	0.7010	$0.696 \pm 0.015$	$r_{drag}$	147.67	$147.59 \pm 0.52$	$f_{2000}^{217}$	104.67	$106.1 \pm 2.2$
$\Omega_m$	0.2990	$0.304 \pm 0.015$	$k_D$	0.14035	$0.14035 \pm 0.00053$	$\chi_{lowl}^2$	24.89	$25.0 \pm 1.7$
$\Omega_m h^2$	0.14042	$0.1411 \pm 0.0023$	$100\theta_D$	0.160722	$0.16084 \pm 0.00029$	$\chi_{plik}^2$	753.5	$768.0 \pm 5.7$
$\Omega_m h^3$	0.096230	$0.09610 \pm 0.00048$	$z_{eq}$	3340	$3356 \pm 56$	$\chi_{prior}^2$	1.05	$7.2 \pm 3.6$
$\sigma_8$	0.8614	$0.849 \pm 0.023$	$k_{eq}$	0.010195	$0.01024 \pm 0.00017$	$\chi_{CMB}^2$	778.4	$793.0 \pm 5.5$
$S_8$	0.8600	$0.854 \pm 0.025$	$100\theta_{eq}$	0.8251	$0.822 \pm 0.011$			
$\sigma_8 \Omega_m^{0.5}$	0.4710	$0.468 \pm 0.014$	$100\theta_{s,eq}$	0.4555	$0.4539 \pm 0.0056$			

Best-fit  $\chi_{eff}^2 = 779.48$ ;  $\bar{\chi}_{eff}^2 = 800.20$ ;  $R - 1 = 0.00744$

$\chi_{eff}^2$ : CMB - commander\_dx12\_v3\_2\_29: 24.89 plik\_rd12\_HM\_v22\_TT: 753.54



## 2.212 base\_plikHM\_TT\_lowl\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022429	$0.02237 \pm 0.00021$	$\sigma_8/h^{0.5}$	1.0363	$1.028 \pm 0.026$	$H(0.38)$	83.372	$83.27 \pm 0.39$
$\Omega_c h^2$	0.11792	$0.1182 \pm 0.0013$	$r_{\text{drag}} h$	100.68	$100.5 \pm 1.0$	$D_M(0.38)$	1519.1	$1522 \pm 10$
$100\theta_{\text{MC}}$	1.041173	$1.04111 \pm 0.00043$	$\langle d^2 \rangle^{1/2}$	2.554	$2.539^{+0.064}_{-0.057}$	$H(0.51)$	90.002	$89.91 \pm 0.32$
$\tau$	0.1163	$0.107^{+0.029}_{-0.025}$	$z_{\text{re}}$	13.12	$12.3^{+2.5}_{-1.8}$	$D_M(0.51)$	1969.2	$1972 \pm 12$
$\ln(10^{10} A_s)$	3.163	$3.143^{+0.056}_{-0.049}$	$10^9 A_s$	2.363	$2.32 \pm 0.12$	$H(0.61)$	95.555	$95.48 \pm 0.28$
$n_s$	0.97354	$0.9709 \pm 0.0049$	$10^9 A_s e^{-2\tau}$	1.8728	$1.873 \pm 0.012$	$D_M(0.61)$	2292.5	$2296 \pm 13$
$y_{\text{cal}}$	1.00027	$1.0003 \pm 0.0025$	$D_{40}$	1238.1	$1240 \pm 16$	$H(2.33)$	235.27	$235.37 \pm 0.79$
$A_{217}^{\text{CIB}}$	43.1	$46 \pm 7$	$D_{220}$	5715.2	$5718 \pm 41$	$D_M(2.33)$	5752.9	$5757 \pm 13$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.999	$> 0.387$	$D_{810}$	2533.5	$2531 \pm 14$	$f\sigma_8(0.15)$	0.4767	$0.474 \pm 0.012$
$A_{143}^{\text{tSZ}}$	6.73	$5.5^{+2.1}_{-1.9}$	$D_{1420}$	817.00	$815.1 \pm 4.9$	$\sigma_8(0.15)$	0.7918	$0.784 \pm 0.020$
$A_{100}^{\text{PS}}$	242.2	$254 \pm 28$	$D_{2000}$	232.25	$231.3 \pm 1.9$	$f\sigma_8(0.38)$	0.4981	$0.494 \pm 0.013$
$A_{143}^{\text{PS}}$	52.4	$45 \pm 8$	$n_{s,0.002}$	0.97354	$0.9709 \pm 0.0049$	$\sigma_8(0.38)$	0.7029	$0.696 \pm 0.018$
$A_{143 \times 217}^{\text{PS}}$	59.3	$42 \pm 9$	$Y_{\text{P}}$	0.245419	$0.245392 \pm 0.000084$	$f\sigma_8(0.51)$	0.4977	$0.494 \pm 0.013$
$A_{217}^{\text{PS}}$	124.6	$115 \pm 10$	$Y_{\text{P}}^{\text{BBN}}$	0.246745	$0.246719 \pm 0.000084$	$\sigma_8(0.51)$	0.6582	$0.652 \pm 0.017$
$A^{\text{kSZ}}$	0.00	$< 3.71$	$10^5 D/H$	2.5745	$2.586 \pm 0.039$	$f\sigma_8(0.61)$	0.4931	$0.489 \pm 0.012$
$A_{100}^{\text{dustTT}}$	8.74	$8.8 \pm 1.8$	Age/Gyr	13.7752	$13.784 \pm 0.031$	$\sigma_8(0.61)$	0.6265	$0.620 \pm 0.017$
$A_{143}^{\text{dustTT}}$	10.65	$10.5 \pm 1.8$	$z_*$	1089.664	$1089.76 \pm 0.32$	$f\sigma_8(2.33)$	0.3163	$0.3131 \pm 0.0085$
$A_{143 \times 217}^{\text{dustTT}}$	19.82	$18.1 \pm 3.3$	$r_*$	144.924	$144.91 \pm 0.32$	$\sigma_8(2.33)$	0.3265	$0.3231 \pm 0.0089$
$A_{217}^{\text{dustTT}}$	95.8	$93.8 \pm 7.3$	$100\theta_*$	1.041349	$1.04130 \pm 0.00043$	$f_{2000}^{143}$	26.84	$28.4 \pm 3.1$
$c_{100}$	0.99967	$0.99959 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	13.9170	$13.916 \pm 0.031$	$f_{2000}^{143 \times 217}$	30.66	$31.3 \pm 2.2$
$c_{217}$	0.99818	$0.99821 \pm 0.00062$	$z_{\text{drag}}$	1059.933	$1059.81 \pm 0.46$	$f_{2000}^{217}$	105.17	$106.2 \pm 2.1$
$H_0$	68.22	$68.07 \pm 0.60$	$r_{\text{drag}}$	147.576	$147.58 \pm 0.34$	$\chi_{\text{lowl}}^2$	24.68	$24.9 \pm 1.7$
$\Omega_\Lambda$	0.6970	$0.6952 \pm 0.0077$	$k_{\text{D}}$	0.140400	$0.14036 \pm 0.00044$	$\chi_{\text{plik}}^2$	753.8	$767.3 \pm 5.5$
$\Omega_{\text{m}}$	0.3030	$0.3048 \pm 0.0077$	$100\theta_{\text{D}}$	0.160782	$0.16085 \pm 0.00027$	$\chi_{6\text{DF}}^2$	0.0015	$0.043 \pm 0.061$
$\Omega_{\text{m}} h^2$	0.14100	$0.1412 \pm 0.0012$	$z_{\text{eq}}$	3354.0	$3359 \pm 29$	$\chi_{\text{MGS}}^2$	1.82	$1.75 \pm 0.62$
$\Omega_{\text{m}} h^3$	0.096190	$0.09610 \pm 0.00047$	$k_{\text{eq}}$	0.010237	$0.010251 \pm 0.000089$	$\chi_{\text{DR12BAO}}^2$	3.40	$4.2 \pm 1.1$
$\sigma_8$	0.8559	$0.848 \pm 0.022$	$100\theta_{\text{eq}}$	0.8224	$0.8214 \pm 0.0056$	$\chi_{\text{prior}}^2$	1.03	$7.2 \pm 3.6$
$S_8$	0.8601	$0.855 \pm 0.023$	$100\theta_{s,\text{eq}}$	0.45408	$0.4536 \pm 0.0029$	$\chi_{\text{BAO}}^2$	5.222	$6.0 \pm 1.1$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4711	$0.468 \pm 0.012$	$H(0.15)$	73.41	$73.28 \pm 0.52$	$\chi_{\text{CMB}}^2$	778.53	$792.3 \pm 5.3$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6350	$0.630 \pm 0.016$	$D_M(0.15)$	636.1	$637.4 \pm 5.0$			

Best-fit  $\chi_{\text{eff}}^2 = 784.78$ ;  $\bar{\chi}_{\text{eff}}^2 = 805.42$ ;  $R - 1 = 0.01210$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.82 DR12BAO: 3.40 CMB - commander\_dx12\_v3.2.29: 24.68 plik\_rd12\_HM\_v22\_TT: 753.84



## 2.213 base\_plikHM\_TT\_lowl\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02239 \pm 0.00026$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.631 \pm 0.015$	$H(0.15)$	$73.36 \pm 0.99$
$\Omega_{\mathrm{c}}h^2$	$0.1180 \pm 0.0025$	$\sigma_8/h^{0.5}$	$1.029 \pm 0.025$	$D_{\mathrm{M}}(0.15)$	$636.7 \pm 9.6$
$100\theta_{\mathrm{MC}}$	$1.04113 \pm 0.00051$	$r_{\mathrm{drag}}h$	$100.6 \pm 2.0$	$H(0.38)$	$83.34 \pm 0.73$
$\tau$	$0.110 \pm 0.030$	$\langle d^2 \rangle^{1/2}$	$2.542 \pm 0.058$	$D_{\mathrm{M}}(0.38)$	$1520 \pm 19$
$\ln(10^{10}A_{\mathrm{s}})$	$3.149 \pm 0.058$	$z_{\mathrm{re}}$	$12.5^{+2.7}_{-2.2}$	$H(0.51)$	$89.97^{+0.55}_{-0.61}$
$n_{\mathrm{s}}$	$0.9716 \pm 0.0075$	$10^9 A_{\mathrm{s}}$	$2.34^{+0.13}_{-0.15}$	$D_{\mathrm{M}}(0.51)$	$1971 \pm 23$
$y_{\mathrm{cal}}$	$1.0003 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.872 \pm 0.015$	$H(0.61)$	$95.53^{+0.44}_{-0.50}$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7$	$D_{40}$	$1240 \pm 16$	$D_{\mathrm{M}}(0.61)$	$2294 \pm 25$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	$> 0.391$	$D_{220}$	$5718 \pm 42$	$H(2.33)$	$235.3 \pm 1.4$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.1}_{-1.9}$	$D_{810}$	$2531 \pm 14$	$D_{\mathrm{M}}(2.33)$	$5755 \pm 21$
$A_{100}^{\mathrm{PS}}$	$254 \pm 30$	$D_{1420}$	$815.2 \pm 5.1$	$f\sigma_8(0.15)$	$0.474 \pm 0.013$
$A_{143}^{\mathrm{PS}}$	$44 \pm 8$	$D_{2000}$	$231.4 \pm 2.1$	$\sigma_8(0.15)$	$0.786 \pm 0.021$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9$	$n_{\mathrm{s},0.002}$	$0.9716 \pm 0.0075$	$f\sigma_8(0.38)$	$0.495 \pm 0.012$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}$	$0.24540 \pm 0.00011$	$\sigma_8(0.38)$	$0.698 \pm 0.019$
$A^{\mathrm{kSZ}}$	$< 3.67$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24673 \pm 0.00011$	$f\sigma_8(0.51)$	$0.494 \pm 0.012$
$A_{100}^{\mathrm{dust}TT}$	$8.8 \pm 1.8$	$10^5 \mathrm{D}/\mathrm{H}$	$2.582 \pm 0.049$	$\sigma_8(0.51)$	$0.653 \pm 0.018$
$A_{143}^{\mathrm{dust}TT}$	$10.5 \pm 1.8$	$\mathrm{Age}/\mathrm{Gyr}$	$13.780 \pm 0.046$	$f\sigma_8(0.61)$	$0.490 \pm 0.012$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.0 \pm 3.3$	$z_*$	$1089.72 \pm 0.50$	$\sigma_8(0.61)$	$0.622 \pm 0.017$
$A_{217}^{\mathrm{dust}TT}$	$93.7 \pm 7.3$	$r_*$	$144.94 \pm 0.54$	$f\sigma_8(2.33)$	$0.3140 \pm 0.0092$
$c_{100}$	$0.99960 \pm 0.00061$	$100\theta_*$	$1.04132 \pm 0.00050$	$\sigma_8(2.33)$	$0.3241 \pm 0.0099$
$c_{217}$	$0.99820 \pm 0.00062$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.919 \pm 0.049$	$f_{2000}^{143}$	$28 \pm 3$
$H_0$	$68.2 \pm 1.1$	$z_{\mathrm{drag}}$	$1059.84 \pm 0.51$	$f_{2000}^{143 \times 217}$	$31.1 \pm 2.4$
$\Omega_{\Lambda}$	$0.696 \pm 0.015$	$r_{\mathrm{drag}}$	$147.60 \pm 0.52$	$f_{2000}^{217}$	$106.0 \pm 2.2$
$\Omega_{\mathrm{m}}$	$0.304 \pm 0.015$	$k_{\mathrm{D}}$	$0.14034 \pm 0.00053$	$\chi_{\mathrm{lowl}}^2$	$25.0 \pm 1.7$
$\Omega_{\mathrm{m}}h^2$	$0.1410 \pm 0.0023$	$100\theta_{\mathrm{D}}$	$0.16083 \pm 0.00029$	$\chi_{\mathrm{plik}}^2$	$767.9 \pm 5.6$
$\Omega_{\mathrm{m}}h^3$	$0.09611 \pm 0.00047$	$z_{\mathrm{eq}}$	$3355 \pm 55$	$\chi_{\mathrm{prior}}^2$	$7.2 \pm 3.6$
$\sigma_8$	$0.850 \pm 0.022$	$k_{\mathrm{eq}}$	$0.01024 \pm 0.00017$	$\chi_{\mathrm{CMB}}^2$	$792.9 \pm 5.4$
$S_8$	$0.855 \pm 0.025$	$100\theta_{\mathrm{eq}}$	$0.822 \pm 0.011$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.468 \pm 0.014$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4540 \pm 0.0055$		

$\bar{\chi}_{\mathrm{eff}}^2 = 800.08$ ;  $R - 1 = 0.00767$



## 2.214 base\_plikHM\_TT\_lowl\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02237 \pm 0.00021$	$\sigma_8/h^{0.5}$	$1.029 \pm 0.025$	$H(0.38)$	$83.27 \pm 0.39$
$\Omega_{\mathrm{c}}h^2$	$0.1182 \pm 0.0013$	$r_{\mathrm{drag}}h$	$100.5 \pm 1.0$	$D_{\mathrm{M}}(0.38)$	$1522 \pm 10$
$100\theta_{\mathrm{MC}}$	$1.04112 \pm 0.00043$	$\langle d^2 \rangle^{1/2}$	$2.541 \pm 0.058$	$H(0.51)$	$89.92 \pm 0.32$
$\tau$	$0.108 \pm 0.026$	$z_{\mathrm{re}}$	$12.4^{+2.3}_{-1.9}$	$D_{\mathrm{M}}(0.51)$	$1972 \pm 12$
$\ln(10^{10}A_{\mathrm{s}})$	$3.146 \pm 0.050$	$10^9 A_{\mathrm{s}}$	$2.33 \pm 0.12$	$H(0.61)$	$95.48 \pm 0.27$
$n_{\mathrm{s}}$	$0.9710 \pm 0.0048$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.873 \pm 0.012$	$D_{\mathrm{M}}(0.61)$	$2296 \pm 13$
$y_{\mathrm{cal}}$	$1.0003 \pm 0.0025$	$D_{40}$	$1240 \pm 16$	$H(2.33)$	$235.37 \pm 0.79$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7$	$D_{220}$	$5718 \pm 41$	$D_{\mathrm{M}}(2.33)$	$5756 \pm 13$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	$> 0.388$	$D_{810}$	$2531 \pm 14$	$f\sigma_8(0.15)$	$0.474 \pm 0.012$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.1}_{-1.9}$	$D_{1420}$	$815.1 \pm 4.9$	$\sigma_8(0.15)$	$0.785 \pm 0.019$
$A_{100}^{\mathrm{PS}}$	$254 \pm 28$	$D_{2000}$	$231.3 \pm 1.8$	$f\sigma_8(0.38)$	$0.495 \pm 0.012$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8$	$n_{\mathrm{s},0.002}$	$0.9710 \pm 0.0048$	$\sigma_8(0.38)$	$0.697 \pm 0.018$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9$	$Y_{\mathrm{P}}$	$0.245394 \pm 0.000083$	$f\sigma_8(0.51)$	$0.494 \pm 0.012$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246720 \pm 0.000083$	$\sigma_8(0.51)$	$0.652 \pm 0.016$
$A^{\mathrm{kSZ}}$	$< 3.69$	$10^5 \mathrm{D}/\mathrm{H}$	$2.586 \pm 0.039$	$f\sigma_8(0.61)$	$0.490 \pm 0.012$
$A_{100}^{\mathrm{dust}TT}$	$8.8 \pm 1.8$	$\mathrm{Age}/\mathrm{Gyr}$	$13.783 \pm 0.030$	$\sigma_8(0.61)$	$0.621 \pm 0.016$
$A_{143}^{\mathrm{dust}TT}$	$10.5 \pm 1.8$	$z_*$	$1089.76 \pm 0.32$	$f\sigma_8(2.33)$	$0.3134 \pm 0.0081$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.1 \pm 3.3$	$r_*$	$144.91 \pm 0.32$	$\sigma_8(2.33)$	$0.3235 \pm 0.0085$
$A_{217}^{\mathrm{dust}TT}$	$93.8 \pm 7.3$	$100\theta_*$	$1.04130 \pm 0.00043$	$f_{2000}^{143}$	$28.3 \pm 3.1$
$c_{100}$	$0.99959 \pm 0.00062$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.916 \pm 0.031$	$f_{2000}^{143 \times 217}$	$31.3 \pm 2.2$
$c_{217}$	$0.99821 \pm 0.00062$	$z_{\mathrm{drag}}$	$1059.81 \pm 0.46$	$f_{2000}^{217}$	$106.2 \pm 2.1$
$H_0$	$68.08 \pm 0.59$	$r_{\mathrm{drag}}$	$147.58 \pm 0.34$	$\chi_{\mathrm{lowl}}^2$	$25.0 \pm 1.7$
$\Omega_{\Lambda}$	$0.6953 \pm 0.0077$	$k_{\mathrm{D}}$	$0.14036 \pm 0.00044$	$\chi_{\mathrm{plik}}^2$	$767.2 \pm 5.4$
$\Omega_{\mathrm{m}}$	$0.3047 \pm 0.0077$	$100\theta_{\mathrm{D}}$	$0.16084 \pm 0.00026$	$\chi_{6\mathrm{DF}}^2$	$0.043 \pm 0.060$
$\Omega_{\mathrm{m}}h^2$	$0.1412 \pm 0.0012$	$z_{\mathrm{eq}}$	$3358 \pm 29$	$\chi_{\mathrm{MGS}}^2$	$1.76 \pm 0.62$
$\Omega_{\mathrm{m}}h^3$	$0.09610 \pm 0.00046$	$k_{\mathrm{eq}}$	$0.010250 \pm 0.000089$	$\chi_{\mathrm{DR12BAO}}^2$	$4.2 \pm 1.1$
$\sigma_8$	$0.849 \pm 0.021$	$100\theta_{\mathrm{eq}}$	$0.8214 \pm 0.0056$	$\chi_{\mathrm{prior}}^2$	$7.2 \pm 3.6$
$S_8$	$0.856 \pm 0.022$	$100\theta_{\mathrm{s,eq}}$	$0.4536 \pm 0.0029$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.1$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.469 \pm 0.012$	$H(0.15)$	$73.28 \pm 0.51$	$\chi_{\mathrm{CMB}}^2$	$792.2 \pm 5.2$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.631 \pm 0.015$	$D_{\mathrm{M}}(0.15)$	$637.3 \pm 5.0$		
$\bar{\chi}_{\mathrm{eff}}^2 = 805.33; R - 1 = 0.01264$					



## 2.215 base\_plikHM\_TT\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022073	$0.02205 \pm 0.00022$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6170	$0.617 \pm 0.012$	$H(0.15)$	71.88	$71.83 \pm 0.79$
$\Omega_{\mathrm{c}}h^2$	0.12172	$0.1218 \pm 0.0022$	$\sigma_8/h^{0.5}$	1.0009	$1.001 \pm 0.016$	$D_{\mathrm{M}}(0.15)$	651.4	$652.1 \pm 8.2$
$100\theta_{\mathrm{MC}}$	1.040676	$1.04065 \pm 0.00048$	$r_{\mathrm{drag}}h$	97.64	$97.6 \pm 1.6$	$H(0.38)$	82.26	$82.22 \pm 0.56$
$\tau$	0.0520	$0.0515 \pm 0.0080$	$\langle d^2 \rangle^{1/2}$	2.4736	$2.477 \pm 0.039$	$D_{\mathrm{M}}(0.38)$	1549.8	$1551 \pm 16$
$\ln(10^{10}A_{\mathrm{s}})$	3.0431	$3.042 \pm 0.016$	$z_{\mathrm{re}}$	7.54	$7.47 \pm 0.83$	$H(0.51)$	89.127	$89.10 \pm 0.44$
$n_{\mathrm{s}}$	0.9600	$0.9587 \pm 0.0059$	$10^9 A_{\mathrm{s}}$	2.0971	$2.096 \pm 0.034$	$D_{\mathrm{M}}(0.51)$	2005.2	$2007 \pm 19$
$y_{\mathrm{cal}}$	1.00023	$1.0004 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8898	$1.891 \pm 0.014$	$H(0.61)$	94.863	$94.84 \pm 0.35$
$A_{217}^{\mathrm{CIB}}$	49.7	$48 \pm 7$	$D_{40}$	1239.9	$1243 \pm 16$	$D_{\mathrm{M}}(0.61)$	2331.3	$2333 \pm 20$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.22	—	$D_{220}$	5713.3	$5718 \pm 42$	$H(2.33)$	237.38	$237.4 \pm 1.3$
$A_{143}^{\mathrm{tSZ}}$	7.03	$4.9 \pm 2.0$	$D_{810}$	2538.0	$2537 \pm 14$	$D_{\mathrm{M}}(2.33)$	5783.3	$5785 \pm 16$
$A_{100}^{\mathrm{PS}}$	257.4	$266 \pm 28$	$D_{1420}$	814.2	$813.4 \pm 5.3$	$f\sigma_8(0.15)$	0.4700	$0.470 \pm 0.012$
$A_{143}^{\mathrm{PS}}$	49.6	$50 \pm 8$	$D_{2000}$	229.46	$229.1 \pm 1.8$	$\sigma_8(0.15)$	0.7523	$0.7518 \pm 0.0075$
$A_{143 \times 217}^{\mathrm{PS}}$	45.1	$44_{-10}^{+9}$	$n_{\mathrm{s},0.002}$	0.9600	$0.9587 \pm 0.0059$	$f\sigma_8(0.38)$	0.4848	$0.4849 \pm 0.0097$
$A_{217}^{\mathrm{PS}}$	118.5	$115 \pm 10$	$Y_{\mathrm{P}}$	0.245272	$0.24525_{-0.000090}^{+0.00011}$	$\sigma_8(0.38)$	0.6651	$0.6646 \pm 0.0060$
$A^{\mathrm{kSZ}}$	0.01	$< 5.20$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246598	$0.24658_{-0.000090}^{+0.00011}$	$f\sigma_8(0.51)$	0.4816	$0.4815 \pm 0.0082$
$A_{100}^{\mathrm{dustTT}}$	8.79	$8.8 \pm 1.8$	$10^5 \mathrm{D}/\mathrm{H}$	2.6423	$2.647 \pm 0.042$	$\sigma_8(0.51)$	0.6218	$0.6212 \pm 0.0054$
$A_{143}^{\mathrm{dustTT}}$	10.79	$10.7 \pm 1.8$	$\mathrm{Age}/\mathrm{Gyr}$	13.8417	$13.845 \pm 0.036$	$f\sigma_8(0.61)$	0.4753	$0.4752 \pm 0.0073$
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.44	$18.3 \pm 3.3$	$z_{*}$	1090.449	$1090.49 \pm 0.41$	$\sigma_8(0.61)$	0.5912	$0.5907 \pm 0.0051$
$A_{217}^{\mathrm{dustTT}}$	94.5	$93.2 \pm 7.3$	$r_{*}$	144.217	$144.21 \pm 0.49$	$f\sigma_8(2.33)$	0.29748	$0.2972 \pm 0.0025$
$c_{100}$	0.99964	$0.99962 \pm 0.00062$	$100\theta_{*}$	1.040890	$1.04086 \pm 0.00047$	$\sigma_8(2.33)$	0.30603	$0.3057 \pm 0.0027$
$c_{217}$	0.99828	$0.99827 \pm 0.00063$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	13.8551	$13.855 \pm 0.045$	$f_{2000}^{143}$	31.16	$31.9 \pm 3.0$
$H_0$	66.43	$66.37 \pm 0.93$	$z_{\mathrm{drag}}$	1059.361	$1059.32 \pm 0.45$	$f_{2000}^{143 \times 217}$	33.79	$34.1 \pm 2.0$
$\Omega_{\Lambda}$	0.6727	$0.672_{-0.013}^{+0.014}$	$r_{\mathrm{drag}}$	146.972	$146.97 \pm 0.49$	$f_{2000}^{217}$	108.16	$108.6 \pm 1.9$
$\Omega_{\mathrm{m}}$	0.3273	$0.328 \pm 0.014$	$k_{\mathrm{D}}$	0.14076	$0.14074 \pm 0.00053$	$\chi_{\mathrm{small}}^2$	395.90	$397.0 \pm 1.7$
$\Omega_{\mathrm{m}}h^2$	0.14443	$0.1445 \pm 0.0021$	$100\theta_{\mathrm{D}}$	0.161086	$0.16112 \pm 0.00026$	$\chi_{\mathrm{plik}}^2$	758.3	$771.1 \pm 5.3$
$\Omega_{\mathrm{m}}h^3$	0.095952	$0.09590 \pm 0.00045$	$z_{\mathrm{eq}}$	3436.1	$3438 \pm 49$	$\chi_{\mathrm{prior}}^2$	1.38	$7.3 \pm 3.7$
$\sigma_8$	0.8158	$0.8153 \pm 0.0089$	$k_{\mathrm{eq}}$	0.010487	$0.01049 \pm 0.00015$	$\chi_{\mathrm{CMB}}^2$	1154.2	$1168.0 \pm 5.5$
$S_8$	0.8520	$0.853 \pm 0.025$	$100\theta_{\mathrm{eq}}$	0.8063	$0.8060 \pm 0.0090$			
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4667	$0.467 \pm 0.014$	$100\theta_{\mathrm{s,eq}}$	0.44594	$0.4458 \pm 0.0047$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 1155.55$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1175.37$ ;  $R - 1 = 0.00555$

$\chi_{\mathrm{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.90 plik\_rd12\_HM\_v22\_TT: 758.28



## 2.216 base\_plikHM\_TTTEEE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022555	$0.02253 \pm 0.00017$ (+0.4 $\sigma$ )	$\Omega_{\mathrm{m}}h^2$	0.14173	$0.1418 \pm 0.0015$ (+0.2 $\sigma$ )	$z_{\mathrm{eq}}$	3371.5	$3373 \pm 36$ (+0.2 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11853	$0.1186 \pm 0.0016$ (+0.2 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.096489	$0.09646 \pm 0.00029$ (+0.6 $\sigma$ )	$k_{\mathrm{eq}}$	0.010290	$0.01030 \pm 0.00011$ (+0.2 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.041086	$1.04108 \pm 0.00033$ (−0.1 $\sigma$ )	$\sigma_8$	0.8637	$0.860 \pm 0.019$ (−0.2 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8195	$0.8191 \pm 0.0069$ (−0.2 $\sigma$ )
$\tau$	0.1235	$0.120 \pm 0.026$ (−0.2 $\sigma$ )	$S_8$	0.8720	$0.870 \pm 0.020$ (−0.1 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.45246	$0.4523 \pm 0.0035$ (−0.2 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.1788	$3.171 \pm 0.049$ (−0.2 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4776	$0.476 \pm 0.011$ (−0.1 $\sigma$ )	$H(0.15)$	73.30	$73.26 \pm 0.63$ (−0.1 $\sigma$ )
$n_{\mathrm{s}}$	0.9715	$0.9699 \pm 0.0055$ (−0.1 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6423	$0.640 \pm 0.013$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	637.2	$637.7 \pm 6.2$ (+0.1 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	42.8	$45 \pm 7$ (−0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	1.0468	$1.043 \pm 0.022$ (−0.2 $\sigma$ )	$H(0.38)$	83.328	$83.30 \pm 0.46$ (−0.0 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.9995	$> 0.426$ (+0.1 $\sigma$ )	$r_{\mathrm{drag}}h$	100.26	$100.2 \pm 1.3$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1521.1	$1522 \pm 12$ (+0.0 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	6.83	$5.7 \pm 1.9$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.585	$2.580 \pm 0.053$ (−0.2 $\sigma$ )	$H(0.51)$	89.994	$89.97 \pm 0.36$ (+0.0 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	240.7	$251 \pm 28$ (−0.1 $\sigma$ )	$z_{\mathrm{re}}$	13.65	$13.3^{+2.2}_{-1.8}$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1971.3	$1972 \pm 15$ (+0.0 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	50.2	$43 \pm 8$ (−0.2 $\sigma$ )	$10^9 A_{\mathrm{s}}$	2.402	$2.39 \pm 0.12$ (−0.2 $\sigma$ )	$H(0.61)$	95.575	$95.55 \pm 0.29$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	57.9	$42 \pm 9$ (−0.0 $\sigma$ )	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8762	$1.876 \pm 0.012$ (+0.2 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2294.6	$2296 \pm 16$ (+0.0 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	124.0	$115.7 \pm 9.9$ (+0.1 $\sigma$ )	$D_{40}$	1249.1	$1252 \pm 15$ (−0.2 $\sigma$ )	$H(2.33)$	235.79	$235.83 \pm 0.94$ (+0.3 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.00	$< 3.25$ (−0.1 $\sigma$ )	$D_{220}$	5733.2	$5737 \pm 38$ (+0.3 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5750.2	$5751 \pm 13$ (−0.1 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.56	$8.7 \pm 1.8$ (−0.0 $\sigma$ )	$D_{810}$	2533.8	$2532 \pm 14$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4830	$0.482 \pm 0.011$ (−0.1 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	10.70	$10.5 \pm 1.8$ (+0.0 $\sigma$ )	$D_{1420}$	816.97	$815.7 \pm 4.8$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7987	$0.796 \pm 0.018$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.76	$18.1 \pm 3.3$ (+0.0 $\sigma$ )	$D_{2000}$	232.62	$232.0 \pm 1.7$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.5039	$0.502 \pm 0.011$ (−0.1 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	95.3	$93.5 \pm 7.3$ (−0.0 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.9715	$0.9699 \pm 0.0055$ (−0.1 $\sigma$ )	$\sigma_8(0.38)$	0.7087	$0.706 \pm 0.017$ (−0.2 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1122	$0.113 \pm 0.038$	$Y_{\mathrm{P}}$	0.245464	$0.245455 \pm 0.000065$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.5031	$0.501 \pm 0.011$ (−0.2 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1349	$0.134 \pm 0.029$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246791	$0.246782 \pm 0.000065$ (+0.4 $\sigma$ )	$\sigma_8(0.51)$	0.6635	$0.661 \pm 0.016$ (−0.2 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.480	$0.481 \pm 0.085$	$10^5 \mathrm{D}/\mathrm{H}$	2.5522	$2.557 \pm 0.031$ (−0.4 $\sigma$ )	$f\sigma_8(0.61)$	0.4983	$0.497 \pm 0.011$ (−0.2 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.223	$0.221 \pm 0.054$	Age/Gyr	13.7678	$13.771 \pm 0.028$ (−0.2 $\sigma$ )	$\sigma_8(0.61)$	0.6315	$0.629 \pm 0.015$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.662	$0.661 \pm 0.080$	$z_*$	1089.559	$1089.60 \pm 0.32$ (−0.2 $\sigma$ )	$f\sigma_8(2.33)$	0.3187	$0.3173 \pm 0.0079$ (−0.2 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.065	$2.06 \pm 0.27$	$r_*$	144.670	$144.66 \pm 0.34$ (−0.4 $\sigma$ )	$\sigma_8(2.33)$	0.3288	$0.3274 \pm 0.0084$ (−0.2 $\sigma$ )
$c_{100}$	0.99976	$0.99970 \pm 0.00061$ (+0.1 $\sigma$ )	$100\theta_*$	1.041247	$1.04124 \pm 0.00032$ (−0.1 $\sigma$ )	$f_{2000}^{143}$	25.91	$27.1 \pm 3.0$ (−0.2 $\sigma$ )
$c_{217}$	0.99812	$0.99814 \pm 0.00062$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8939	$13.893 \pm 0.032$ (−0.4 $\sigma$ )	$f_{2000}^{143 \times 217}$	29.92	$30.2 \pm 2.1$ (−0.3 $\sigma$ )
$y_{\mathrm{cal}}$	0.99995	$1.0001 \pm 0.0025$ (−0.0 $\sigma$ )	$z_{\mathrm{drag}}$	1060.276	$1060.21 \pm 0.32$ (+0.6 $\sigma$ )	$f_{2000}^{217}$	104.56	$105.3 \pm 1.9$ (−0.2 $\sigma$ )
$H_0$	68.08	$68.03 \pm 0.73$ (−0.1 $\sigma$ )	$r_{\mathrm{drag}}$	147.273	$147.28 \pm 0.33$ (−0.5 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2337.1	$2353.9 \pm 5.7$ (+287.4 $\sigma$ )
$\Omega_{\Lambda}$	0.6942	$0.6934 \pm 0.0097$ (−0.1 $\sigma$ )	$k_{\mathrm{D}}$	0.140813	$0.14079 \pm 0.00033$ (+0.6 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.31	$11.2 \pm 4.4$ (+1.2 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3058	$0.3066 \pm 0.0097$ (+0.1 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160577	$0.16061 \pm 0.00018$ (−0.6 $\sigma$ )			

Best-fit  $\chi_{\mathrm{eff}}^2 = 2338.36$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1584.63$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2365.14$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1590.67$ ;  $R - 1 = 0.00675$   
 $\chi_{\mathrm{eff}}^2$ : CMB - plik\_rd12\_HM\_v22b\_TTTEEE: 2337.05



## 2.217 base\_plikHM\_TTTEEE\_lowl

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022555	$0.02251 \pm 0.00016$ (+0.5 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.096458	$0.09641 \pm 0.00030$ (+0.6 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8205	$0.8197 \pm 0.0066$ (−0.2 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11829	$0.1185 \pm 0.0015$ (+0.2 $\sigma$ )	$\sigma_8$	0.8551	$0.848 \pm 0.018$ (−0.0 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.45301	$0.4526 \pm 0.0034$ (−0.2 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.041103	$1.04108 \pm 0.00033$ (−0.1 $\sigma$ )	$S_8$	0.8614	$0.857 \pm 0.019$ (+0.1 $\sigma$ )	$H(0.15)$	73.38	$73.28 \pm 0.60$ (−0.0 $\sigma$ )
$\tau$	0.1141	$0.106 \pm 0.024$ (−0.1 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4718	$0.469 \pm 0.010$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	636.4	$637.5 \pm 5.9$ (+0.0 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.1595	$3.143 \pm 0.047$ (−0.0 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6352	$0.631 \pm 0.013$ (+0.1 $\sigma$ )	$H(0.38)$	83.380	$83.31 \pm 0.44$ (−0.0 $\sigma$ )
$n_{\mathrm{s}}$	0.9730	$0.9707 \pm 0.0052$ (−0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	1.0356	$1.028 \pm 0.021$ (+0.0 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1519.6	$1522 \pm 12$ (+0.0 $\sigma$ )
$y_{\mathrm{cal}}$	1.00020	$1.0003 \pm 0.0025$ (−0.0 $\sigma$ )	$r_{\mathrm{drag}}h$	100.44	$100.3 \pm 1.2$ (−0.1 $\sigma$ )	$H(0.51)$	90.032	$89.97 \pm 0.35$ (+0.0 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	42.5	$45 \pm 7$ (−0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.5543	$2.541_{-0.046}^{+0.051}$ (+0.0 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1969.6	$1972 \pm 14$ (+0.0 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.9996	$> 0.420$ (+0.1 $\sigma$ )	$z_{\mathrm{re}}$	12.90	$12.2_{-1.7}^{+2.1}$ (−0.0 $\sigma$ )	$H(0.61)$	95.602	$95.55 \pm 0.28$ (+0.1 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	6.85	$5.7_{-1.8}^{+2.1}$ (+0.1 $\sigma$ )	$10^9 A_{\mathrm{s}}$	2.356	$2.32 \pm 0.11$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2292.8	$2295 \pm 15$ (+0.0 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	239.0	$251 \pm 28$ (−0.1 $\sigma$ )	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8754	$1.875 \pm 0.012$ (+0.2 $\sigma$ )	$H(2.33)$	235.64	$235.74 \pm 0.91$ (+0.3 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	49.7	$43 \pm 8$ (−0.2 $\sigma$ )	$D_{40}$	1239.7	$1241 \pm 14$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5749.3	$5752 \pm 12$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	57.7	$42 \pm 9$ (−0.0 $\sigma$ )	$D_{220}$	5727.6	$5731 \pm 38$ (+0.3 $\sigma$ )	$f\sigma_8(0.15)$	0.4773	$0.474 \pm 0.010$ (+0.1 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	124.3	$116 \pm 10$ (+0.1 $\sigma$ )	$D_{810}$	2535.6	$2534 \pm 14$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7909	$0.785 \pm 0.017$ (−0.0 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.00	$< 3.24$ (−0.1 $\sigma$ )	$D_{1420}$	818.26	$816.7 \pm 4.7$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4983	$0.495 \pm 0.010$ (+0.1 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.68	$8.8 \pm 1.9$ (−0.0 $\sigma$ )	$D_{2000}$	232.84	$232.0 \pm 1.7$ (+0.3 $\sigma$ )	$\sigma_8(0.38)$	0.7019	$0.696 \pm 0.016$ (−0.0 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	10.72	$10.6 \pm 1.8$ (+0.0 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.9730	$0.9707 \pm 0.0052$ (−0.1 $\sigma$ )	$f\sigma_8(0.51)$	0.4977	$0.494 \pm 0.010$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.79	$18.2 \pm 3.3$ (+0.0 $\sigma$ )	$Y_{\mathrm{P}}$	0.245464	$0.245448 \pm 0.000062$ (+0.5 $\sigma$ )	$\sigma_8(0.51)$	0.6572	$0.652 \pm 0.015$ (−0.0 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	95.5	$93.7 \pm 7.3$ (+0.0 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246791	$0.246775 \pm 0.000062$ (+0.5 $\sigma$ )	$f\sigma_8(0.61)$	0.4930	$0.489 \pm 0.010$ (+0.0 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1131	$0.113 \pm 0.038$	$10^5 \mathrm{D}/\mathrm{H}$	2.5522	$2.560 \pm 0.029$ (−0.5 $\sigma$ )	$\sigma_8(0.61)$	0.6255	$0.620 \pm 0.014$ (−0.0 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1342	$0.134 \pm 0.029$	Age/Gyr	13.7660	$13.772 \pm 0.027$ (−0.2 $\sigma$ )	$f\sigma_8(2.33)$	0.3157	$0.3130 \pm 0.0074$ (−0.0 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.477	$0.483 \pm 0.085$	$z_*$	1089.539	$1089.61 \pm 0.31$ (−0.2 $\sigma$ )	$\sigma_8(2.33)$	0.3258	$0.3230 \pm 0.0078$ (−0.0 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.221	$0.222 \pm 0.054$	$r_*$	144.732	$144.71 \pm 0.33$ (−0.4 $\sigma$ )	$f_{2000}^{143}$	25.70	$27.2 \pm 2.9$ (−0.3 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.662	$0.663 \pm 0.080$	$100\theta_*$	1.041272	$1.04125 \pm 0.00032$ (−0.1 $\sigma$ )	$f_{2000}^{143 \times 217}$	29.78	$30.4 \pm 2.0$ (−0.3 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.057	$2.07 \pm 0.27$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8995	$13.897 \pm 0.031$ (−0.4 $\sigma$ )	$f_{2000}^{217}$	104.53	$105.4 \pm 1.9$ (−0.3 $\sigma$ )
$c_{100}$	0.99975	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$z_{\mathrm{drag}}$	1060.238	$1060.16 \pm 0.31$ (+0.6 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	24.77	$25.0 \pm 1.4$ (−0.0 $\sigma$ )
$c_{217}$	0.99812	$0.99814 \pm 0.00062$ (−0.1 $\sigma$ )	$r_{\mathrm{drag}}$	147.338	$147.33 \pm 0.32$ (−0.5 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2337.6	$2354.2 \pm 5.9$ (+279.7 $\sigma$ )
$H_0$	68.17	$68.06 \pm 0.70$ (−0.1 $\sigma$ )	$k_{\mathrm{D}}$	0.140745	$0.14073 \pm 0.00033$ (+0.7 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.29	$11.3 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_{\Lambda}$	0.6955	$0.6940 \pm 0.0093$ (−0.1 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160589	$0.16064 \pm 0.00018$ (−0.7 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	2362.3	$2379.2 \pm 5.8$ (+288.7 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3045	$0.3060 \pm 0.0093$ (+0.1 $\sigma$ )	$z_{\mathrm{eq}}$	3365.8	$3370 \pm 34$ (+0.2 $\sigma$ )			
$\Omega_{\mathrm{m}}h^2$	0.14149	$0.1417 \pm 0.0014$ (+0.2 $\sigma$ )	$k_{\mathrm{eq}}$	0.010273	$0.01029 \pm 0.00011$ (+0.2 $\sigma$ )			

Best-fit  $\chi_{\mathrm{eff}}^2 = 2363.64$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1584.16$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2390.54$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1590.34$ ;  $R - 1 = 0.00817$   
 $\chi_{\mathrm{eff}}^2$ : CMB - commander\_dx12.v3.2.29: 24.77 ( $\Delta$  -0.12) plik\_rd12\_HM.v22b.TTTEEE: 2337.58



## 2.218 base\_plikHM\_TTTEEE\_lowl\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022555	$0.02252 \pm 0.00014$ (+0.7 $\sigma$ )	$\sigma_8$	0.8549	$0.849 \pm 0.017$ (+0.0 $\sigma$ )	$H(0.15)$	73.386	$73.33 \pm 0.42$ (+0.1 $\sigma$ )
$\Omega_c h^2$	0.11828	$0.1184 \pm 0.0011$ (+0.2 $\sigma$ )	$S_8$	0.8611	$0.856 \pm 0.018$ (+0.1 $\sigma$ )	$D_M(0.15)$	636.40	$637.0 \pm 4.1$ (-0.1 $\sigma$ )
$100\theta_{MC}$	1.041105	$1.04110 \pm 0.00030$ (-0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4716	$0.4690 \pm 0.0098$ (+0.1 $\sigma$ )	$H(0.38)$	83.383	$83.34 \pm 0.31$ (+0.2 $\sigma$ )
$\tau$	0.1142	$0.107 \pm 0.022$ (+0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6350	$0.631 \pm 0.013$ (+0.1 $\sigma$ )	$D_M(0.38)$	1519.5	$1520.7 \pm 8.3$ (-0.1 $\sigma$ )
$\ln(10^{10} A_s)$	3.1593	$3.145^{+0.044}_{-0.040}$ (+0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	1.0353	$1.029 \pm 0.021$ (+0.0 $\sigma$ )	$H(0.51)$	90.034	$89.99 \pm 0.25$ (+0.2 $\sigma$ )
$n_s$	0.97278	$0.9710 \pm 0.0042$ (+0.0 $\sigma$ )	$r_{drag} h$	100.45	$100.36 \pm 0.84$ (-0.1 $\sigma$ )	$D_M(0.51)$	1969.5	$1970.9 \pm 9.7$ (-0.1 $\sigma$ )
$y_{cal}$	0.99998	$1.0003 \pm 0.0025$ (-0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.5543	$2.542^{+0.051}_{-0.045}$ (+0.0 $\sigma$ )	$H(0.61)$	95.603	$95.57 \pm 0.21$ (+0.3 $\sigma$ )
$A_{217}^{CIB}$	42.4	$45 \pm 7$ (-0.1 $\sigma$ )	$z_{re}$	12.91	$12.3^{+1.9}_{-1.5}$ (+0.0 $\sigma$ )	$D_M(0.61)$	2292.7	$2294 \pm 11$ (-0.1 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.9996	$> 0.423$ (+0.1 $\sigma$ )	$10^9 A_s$	2.355	$2.324 \pm 0.099$ (+0.0 $\sigma$ )	$H(2.33)$	235.63	$235.67 \pm 0.65$ (+0.4 $\sigma$ )
$A_{143}^{tSZ}$	6.90	$5.7^{+2.1}_{-1.8}$ (+0.1 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8744	$1.875 \pm 0.011$ (+0.2 $\sigma$ )	$D_M(2.33)$	5749.3	$5751.0 \pm 9.6$ (-0.4 $\sigma$ )
$A_{100}^{PS}$	238.4	$251 \pm 30$ (-0.1 $\sigma$ )	$D_{40}$	1239.8	$1241 \pm 14$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4771	$0.4743 \pm 0.0098$ (+0.1 $\sigma$ )
$A_{143}^{PS}$	50.0	$43 \pm 8$ (-0.2 $\sigma$ )	$D_{220}$	5726.3	$5731 \pm 38$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7907	$0.785 \pm 0.016$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{PS}$	57.8	$42 \pm 9$ (-0.0 $\sigma$ )	$D_{810}$	2534.3	$2534 \pm 13$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.4981	$0.4950 \pm 0.0099$ (+0.1 $\sigma$ )
$A_{217}^{PS}$	124.3	$116.1 \pm 9.9$ (+0.1 $\sigma$ )	$D_{1420}$	817.74	$816.8 \pm 4.7$ (+0.3 $\sigma$ )	$\sigma_8(0.38)$	0.7017	$0.697 \pm 0.015$ (+0.0 $\sigma$ )
$A^{kSZ}$	0.00	$< 3.23$ (-0.2 $\sigma$ )	$D_{2000}$	232.67	$232.1 \pm 1.6$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.4975	$0.4943 \pm 0.0099$ (+0.0 $\sigma$ )
$A_{100}^{dustTT}$	8.67	$8.8 \pm 1.8$ (-0.0 $\sigma$ )	$n_{s,0.002}$	0.97278	$0.9710 \pm 0.0042$ (+0.0 $\sigma$ )	$\sigma_8(0.51)$	0.6570	$0.652 \pm 0.014$ (+0.0 $\sigma$ )
$A_{143}^{dustTT}$	10.75	$10.6 \pm 1.8$ (+0.0 $\sigma$ )	$Y_P$	0.245464	$0.245451 \pm 0.000053$ (+0.7 $\sigma$ )	$f\sigma_8(0.61)$	0.4929	$0.4896 \pm 0.0098$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.98	$18.2 \pm 3.3$ (+0.0 $\sigma$ )	$Y_P^{BBN}$	0.246791	$0.246778 \pm 0.000053$ (+0.7 $\sigma$ )	$\sigma_8(0.61)$	0.6254	$0.621 \pm 0.013$ (+0.0 $\sigma$ )
$A_{217}^{dustTT}$	95.9	$93.6 \pm 7.3$ (-0.0 $\sigma$ )	$10^5 D/H$	2.5522	$2.559 \pm 0.025$ (-0.7 $\sigma$ )	$f\sigma_8(2.33)$	0.3156	$0.3133 \pm 0.0068$ (+0.0 $\sigma$ )
$A_{100}^{dustTE}$	0.1131	$0.114 \pm 0.038$	Age/Gyr	13.7660	$13.770 \pm 0.021$ (-0.5 $\sigma$ )	$\sigma_8(2.33)$	0.3257	$0.3233 \pm 0.0071$ (+0.0 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1334	$0.135 \pm 0.030$	$z_*$	1089.537	$1089.59 \pm 0.24$ (-0.5 $\sigma$ )	$f_{2000}^{143}$	25.85	$27.1 \pm 2.9$ (-0.4 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.487	$0.483 \pm 0.084$	$r_*$	144.736	$144.73 \pm 0.25$ (-0.5 $\sigma$ )	$f_{2000}^{143 \times 217}$	29.84	$30.3 \pm 2.0$ (-0.4 $\sigma$ )
$A_{143}^{dustTE}$	0.220	$0.222 \pm 0.054$	$100\theta_*$	1.041270	$1.04127 \pm 0.00029$ (-0.1 $\sigma$ )	$f_{2000}^{217}$	104.50	$105.4 \pm 1.9$ (-0.4 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.661	$0.663 \pm 0.080$	$D_M(z_*)/\text{Gpc}$	13.8999	$13.900 \pm 0.024$ (-0.5 $\sigma$ )	$\chi_{lowl}^2$	24.83	$24.9 \pm 1.4$ (-0.0 $\sigma$ )
$A_{217}^{dustTE}$	2.066	$2.07 \pm 0.27$	$z_{drag}$	1060.238	$1060.17 \pm 0.30$ (+0.8 $\sigma$ )	$\chi_{plik}^2$	2337.4	$2353.9 \pm 5.8$ (+289.0 $\sigma$ )
$c_{100}$	0.99973	$0.99968 \pm 0.00062$ (+0.1 $\sigma$ )	$r_{drag}$	147.342	$147.35 \pm 0.25$ (-0.7 $\sigma$ )	$\chi_{6DF}^2$	0.0001	$0.030 \pm 0.043$ (-0.2 $\sigma$ )
$c_{217}$	0.99813	$0.99814 \pm 0.00061$ (-0.1 $\sigma$ )	$k_D$	0.140742	$0.14071 \pm 0.00030$ (+0.8 $\sigma$ )	$\chi_{MGS}^2$	1.68	$1.68 \pm 0.51$ (-0.1 $\sigma$ )
$H_0$	68.176	$68.11 \pm 0.49$ (+0.1 $\sigma$ )	$100\theta_D$	0.160588	$0.16063 \pm 0.00017$ (-0.8 $\sigma$ )	$\chi_{DR12BAO}^2$	3.528	$4.05 \pm 0.90$ (-0.1 $\sigma$ )
$\Omega_\Lambda$	0.6956	$0.6948 \pm 0.0064$ (-0.1 $\sigma$ )	$z_{eq}$	3365.5	$3367 \pm 24$ (+0.3 $\sigma$ )	$\chi_{prior}^2$	1.40	$11.3 \pm 4.4$ (+1.1 $\sigma$ )
$\Omega_m$	0.3044	$0.3052 \pm 0.0064$ (+0.1 $\sigma$ )	$k_{eq}$	0.010272	$0.010277 \pm 0.000075$ (+0.3 $\sigma$ )	$\chi_{BAO}^2$	5.205	$5.77 \pm 0.75$ (-0.2 $\sigma$ )
$\Omega_m h^2$	0.14148	$0.1416 \pm 0.0010$ (+0.3 $\sigma$ )	$100\theta_{eq}$	0.82058	$0.8202 \pm 0.0047$ (-0.2 $\sigma$ )	$\chi_{CMB}^2$	2362.3	$2378.8 \pm 5.6$ (+301.4 $\sigma$ )
$\Omega_m h^3$	0.096454	$0.09641 \pm 0.00030$ (+0.7 $\sigma$ )	$100\theta_{s,eq}$	0.45305	$0.4529 \pm 0.0024$ (-0.3 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2368.86$ ;  $\Delta\chi_{eff}^2 = 1584.08$ ;  $\bar{\chi}_{eff}^2 = 2395.83$ ;  $\Delta\bar{\chi}_{eff}^2 = 1590.41$ ;  $R - 1 = 0.01077$

$\chi_{eff}^2$ : BAO - 6DF: 0.00 ( $\Delta$  -0.00) MGS: 1.68 ( $\Delta$  -0.14) DR12BAO: 3.53 ( $\Delta$  0.13) CMB - commander\_dx12\_v3.2.29: 24.83 ( $\Delta$  0.14) plik\_rd12\_HM\_v22b\_TTTEEE: 2337.43



## 2.219 base\_plikHM\_TTTEEE\_lowl\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02252 \pm 0.00016 \quad (+0.5\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09641 \pm 0.00030 \quad (+0.6\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8197 \pm 0.0066 \quad (-0.2\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1185 \pm 0.0015 \quad (+0.2\sigma)$	$\sigma_8$	$0.849 \pm 0.018 \quad (-0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4526 \pm 0.0034 \quad (-0.3\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04109 \pm 0.00033 \quad (-0.1\sigma)$	$S_8$	$0.857 \pm 0.019 \quad (+0.1\sigma)$	$H(0.15)$	$73.29 \pm 0.60 \quad (-0.1\sigma)$
$\tau$	$0.106 \pm 0.024 \quad (-0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.469 \pm 0.010 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$637.4 \pm 5.9 \quad (+0.1\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.144 \pm 0.045 \quad (-0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.631 \pm 0.013 \quad (+0.0\sigma)$	$H(0.38)$	$83.31 \pm 0.44 \quad (-0.0\sigma)$
$n_{\mathrm{s}}$	$0.9708 \pm 0.0051 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$1.029 \pm 0.020 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1521 \pm 12 \quad (+0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0003 \pm 0.0025 \quad (-0.0\sigma)$	$r_{\mathrm{drag}}h$	$100.3 \pm 1.2 \quad (-0.2\sigma)$	$H(0.51)$	$89.98 \pm 0.35 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{CIB}}$	$45 \pm 7 \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.542 \pm 0.048 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1972 \pm 14 \quad (+0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	$> 0.420 \quad (+0.1\sigma)$	$z_{\mathrm{re}}$	$12.2^{+2.1}_{-1.7} \quad (-0.1\sigma)$	$H(0.61)$	$95.56 \pm 0.28 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.7^{+2.1}_{-1.8} \quad (+0.1\sigma)$	$10^9 A_{\mathrm{s}}$	$2.32 \pm 0.11 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2295 \pm 15 \quad (+0.0\sigma)$
$A_{100}^{\mathrm{PS}}$	$251 \pm 28 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.875 \pm 0.012 \quad (+0.2\sigma)$	$H(2.33)$	$235.73 \pm 0.90 \quad (+0.3\sigma)$
$A_{143}^{\mathrm{PS}}$	$43 \pm 8 \quad (-0.2\sigma)$	$D_{40}$	$1241 \pm 14 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5752 \pm 12 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.0\sigma)$	$D_{220}$	$5731 \pm 38 \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.475 \pm 0.010 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$116 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2534 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.785 \pm 0.017 \quad (-0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 3.24 \quad (-0.1\sigma)$	$D_{1420}$	$816.7 \pm 4.7 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4952 \pm 0.0099 \quad (+0.0\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.8 \pm 1.9 \quad (-0.0\sigma)$	$D_{2000}$	$232.1 \pm 1.7 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.696 \pm 0.015 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.6 \pm 1.8 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9708 \pm 0.0051 \quad (-0.1\sigma)$	$f\sigma_8(0.51)$	$0.4944 \pm 0.0098 \quad (+0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.2 \pm 3.3 \quad (+0.0\sigma)$	$Y_{\mathrm{P}}$	$0.245449 \pm 0.000061 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.652 \pm 0.014 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.7 \pm 7.3 \quad (+0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246776 \pm 0.000061 \quad (+0.5\sigma)$	$f\sigma_8(0.61)$	$0.4897 \pm 0.0098 \quad (-0.0\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.113 \pm 0.038$	$10^5 \mathrm{D}/\mathrm{H}$	$2.560 \pm 0.029 \quad (-0.5\sigma)$	$\sigma_8(0.61)$	$0.621 \pm 0.014 \quad (-0.1\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.134 \pm 0.029$	$\mathrm{Age}/\mathrm{Gyr}$	$13.771 \pm 0.027 \quad (-0.2\sigma)$	$f\sigma_8(2.33)$	$0.3132 \pm 0.0072 \quad (-0.1\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.483 \pm 0.085$	$z_*$	$1089.61 \pm 0.30 \quad (-0.2\sigma)$	$\sigma_8(2.33)$	$0.3231 \pm 0.0076 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.222 \pm 0.054$	$r_*$	$144.71 \pm 0.33 \quad (-0.4\sigma)$	$f_{2000}^{143}$	$27.2 \pm 2.9 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.663 \pm 0.080$	$100\theta_*$	$1.04126 \pm 0.00032 \quad (-0.1\sigma)$	$f_{2000}^{143 \times 217}$	$30.4 \pm 2.0 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.07 \pm 0.27$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.898 \pm 0.031 \quad (-0.4\sigma)$	$f_{2000}^{217}$	$105.4 \pm 1.9 \quad (-0.3\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$z_{\mathrm{drag}}$	$1060.16 \pm 0.31 \quad (+0.6\sigma)$	$\chi_{\mathrm{lowl}}^2$	$25.0 \pm 1.4 \quad (-0.0\sigma)$
$c_{217}$	$0.99814 \pm 0.00062 \quad (-0.1\sigma)$	$r_{\mathrm{drag}}$	$147.33 \pm 0.32 \quad (-0.5\sigma)$	$\chi_{\mathrm{plik}}^2$	$2354.2 \pm 5.8 \quad (+283.3\sigma)$
$H_0$	$68.06 \pm 0.70 \quad (-0.1\sigma)$	$k_{\mathrm{D}}$	$0.14072 \pm 0.00033 \quad (+0.7\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.3 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\Lambda}$	$0.6941 \pm 0.0093 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16063 \pm 0.00018 \quad (-0.7\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2379.2 \pm 5.7 \quad (+291.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3059 \pm 0.0093 \quad (+0.1\sigma)$	$z_{\mathrm{eq}}$	$3370 \pm 34 \quad (+0.3\sigma)$		
$\Omega_{\mathrm{m}}h^2$	$0.1417 \pm 0.0014 \quad (+0.3\sigma)$	$k_{\mathrm{eq}}$	$0.01028 \pm 0.00010 \quad (+0.3\sigma)$		

$\bar{\chi}_{\mathrm{eff}}^2 = 2390.49$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1590.41$ ;  $R - 1 = 0.00813$



## 2.220 base\_plikHM\_TTTEEE\_lowl\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02252 \pm 0.00014 \quad (+0.7\sigma)$	$\sigma_8$	$0.849 \pm 0.017 \quad (+0.0\sigma)$	$H(0.15)$	$73.33 \pm 0.42 \quad (+0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1184 \pm 0.0011 \quad (+0.2\sigma)$	$S_8$	$0.856 \pm 0.018 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.15)$	$637.0 \pm 4.1 \quad (-0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04110 \pm 0.00030 \quad (-0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4691 \pm 0.0097 \quad (+0.0\sigma)$	$H(0.38)$	$83.34 \pm 0.31 \quad (+0.2\sigma)$
$\tau$	$0.107 \pm 0.022 \quad (-0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.631 \pm 0.012 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1520.7 \pm 8.3 \quad (-0.1\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.146 \pm 0.042 \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$1.029 \pm 0.020 \quad (-0.0\sigma)$	$H(0.51)$	$90.00 \pm 0.25 \quad (+0.2\sigma)$
$n_{\mathrm{s}}$	$0.9711 \pm 0.0042 \quad (+0.0\sigma)$	$r_{\mathrm{drag}}h$	$100.36 \pm 0.84 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1970.9 \pm 9.7 \quad (-0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0003 \pm 0.0025 \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.542 \pm 0.048 \quad (+0.0\sigma)$	$H(0.61)$	$95.57 \pm 0.21 \quad (+0.3\sigma)$
$A_{217}^{\mathrm{CIB}}$	$45 \pm 7 \quad (-0.1\sigma)$	$z_{\mathrm{re}}$	$12.3_{-1.5}^{+1.9} \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2294 \pm 10 \quad (-0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	$> 0.423 \quad (+0.1\sigma)$	$10^9 A_{\mathrm{s}}$	$2.325 \pm 0.097 \quad (-0.0\sigma)$	$H(2.33)$	$235.66 \pm 0.65 \quad (+0.4\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.7_{-1.8}^{+2.1} \quad (+0.1\sigma)$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.875 \pm 0.011 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5751.0 \pm 9.6 \quad (-0.4\sigma)$
$A_{100}^{\mathrm{PS}}$	$251 \pm 30 \quad (-0.1\sigma)$	$D_{40}$	$1241 \pm 14 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4744 \pm 0.0096 \quad (+0.0\sigma)$
$A_{143}^{\mathrm{PS}}$	$43 \pm 8 \quad (-0.2\sigma)$	$D_{220}$	$5731 \pm 38 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.785 \pm 0.016 \quad (+0.0\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.0\sigma)$	$D_{810}$	$2533 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4951 \pm 0.0098 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{PS}}$	$116.1 \pm 9.9 \quad (+0.1\sigma)$	$D_{1420}$	$816.8 \pm 4.7 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.697 \pm 0.014 \quad (+0.0\sigma)$
$A^{\mathrm{kSZ}}$	$< 3.23 \quad (-0.2\sigma)$	$D_{2000}$	$232.1 \pm 1.6 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4944 \pm 0.0097 \quad (+0.0\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.8 \pm 1.8 \quad (-0.0\sigma)$	$n_{\mathrm{s},0.002}$	$0.9711 \pm 0.0042 \quad (+0.0\sigma)$	$\sigma_8(0.51)$	$0.652 \pm 0.014 \quad (-0.0\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.6 \pm 1.8 \quad (+0.0\sigma)$	$Y_{\mathrm{P}}$	$0.245451 \pm 0.000053 \quad (+0.7\sigma)$	$f\sigma_8(0.61)$	$0.4897 \pm 0.0097 \quad (+0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.2 \pm 3.3 \quad (+0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246778 \pm 0.000053 \quad (+0.7\sigma)$	$\sigma_8(0.61)$	$0.621 \pm 0.013 \quad (-0.0\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.6 \pm 7.3 \quad (-0.0\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.558 \pm 0.025 \quad (-0.7\sigma)$	$f\sigma_8(2.33)$	$0.3134 \pm 0.0067 \quad (-0.0\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.114 \pm 0.038$	Age/Gyr	$13.770 \pm 0.021 \quad (-0.4\sigma)$	$\sigma_8(2.33)$	$0.3234 \pm 0.0070 \quad (-0.0\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.030$	$z_*$	$1089.59 \pm 0.23 \quad (-0.5\sigma)$	$f_{2000}^{143}$	$27.1 \pm 2.9 \quad (-0.4\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.483 \pm 0.084$	$r_*$	$144.73 \pm 0.25 \quad (-0.5\sigma)$	$f_{2000}^{143 \times 217}$	$30.3 \pm 2.0 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.222 \pm 0.054$	$100\theta_*$	$1.04127 \pm 0.00029 \quad (-0.1\sigma)$	$f_{2000}^{217}$	$105.4 \pm 1.9 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.663 \pm 0.080$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.900 \pm 0.024 \quad (-0.5\sigma)$	$\chi_{\mathrm{lowl}}^2$	$24.9 \pm 1.4 \quad (-0.0\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.07 \pm 0.27$	$z_{\mathrm{drag}}$	$1060.17 \pm 0.30 \quad (+0.8\sigma)$	$\chi_{\mathrm{plik}}^2$	$2353.8 \pm 5.7 \quad (+293.1\sigma)$
$c_{100}$	$0.99968 \pm 0.00062 \quad (+0.1\sigma)$	$r_{\mathrm{drag}}$	$147.35 \pm 0.25 \quad (-0.7\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.030 \pm 0.042 \quad (-0.2\sigma)$
$c_{217}$	$0.99814 \pm 0.00061 \quad (-0.1\sigma)$	$k_{\mathrm{D}}$	$0.14071 \pm 0.00030 \quad (+0.8\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.69 \pm 0.51 \quad (-0.1\sigma)$
$H_0$	$68.11 \pm 0.49 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16063 \pm 0.00017 \quad (-0.8\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.05 \pm 0.89 \quad (-0.1\sigma)$
$\Omega_{\Lambda}$	$0.6948 \pm 0.0064 \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3367 \pm 24 \quad (+0.3\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.3 \pm 4.4 \quad (+1.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3052 \pm 0.0064 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010277 \pm 0.000074 \quad (+0.3\sigma)$	$\chi_{\mathrm{BAO}}^2$	$5.77 \pm 0.74 \quad (-0.2\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1416 \pm 0.0010 \quad (+0.3\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8202 \pm 0.0046 \quad (-0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2378.8 \pm 5.6 \quad (+303.7\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09641 \pm 0.00030 \quad (+0.7\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4529 \pm 0.0024 \quad (-0.3\sigma)$		

$\bar{\chi}_{\mathrm{eff}}^2 = 2395.80$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1590.47$ ;  $R - 1 = 0.01085$



## 2.221 base\_plikHM\_TTTEEE\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022348	$0.02233 \pm 0.00015$ (+1.3 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.096359	$0.09634 \pm 0.00029$ (+1.0 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8107	$0.8105 \pm 0.0058$ (+0.5 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.12060	$0.1207 \pm 0.0014$ (−0.5 $\sigma$ )	$\sigma_8$	0.8136	$0.8136 \pm 0.0075$ (−0.2 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.44807	$0.4480 \pm 0.0030$ (+0.5 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.040857	$1.04086 \pm 0.00031$ (+0.4 $\sigma$ )	$S_8$	0.8387	$0.840 \pm 0.016$ (−0.5 $\sigma$ )	$H(0.15)$	72.47	$72.44 \pm 0.52$ (+0.8 $\sigma$ )
$\tau$	0.0540	$0.0545^{+0.0070}_{-0.0079}$ (+0.4 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4594	$0.4598 \pm 0.0089$ (−0.5 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	645.5	$645.8 \pm 5.2$ (−0.8 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0460	$3.047 \pm 0.016$ (+0.3 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6113	$0.6117 \pm 0.0083$ (−0.5 $\sigma$ )	$H(0.38)$	82.719	$82.70 \pm 0.37$ (+0.8 $\sigma$ )
$n_{\mathrm{s}}$	0.96384	$0.9625 \pm 0.0045$ (+0.6 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9931	$0.994 \pm 0.012$ (−0.5 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1537.7	$1538 \pm 10$ (−0.8 $\sigma$ )
$y_{\mathrm{cal}}$	1.00076	$1.0006 \pm 0.0025$ (+0.1 $\sigma$ )	$r_{\mathrm{drag}}h$	98.62	$98.6 \pm 1.1$ (+0.6 $\sigma$ )	$H(0.51)$	89.516	$89.50 \pm 0.29$ (+0.9 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	47.5	$47 \pm 7$ (−0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4560	$2.460 \pm 0.029$ (−0.4 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1990.8	$1992 \pm 12$ (−0.8 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.43	—	$z_{\mathrm{re}}$	7.66	$7.70 \pm 0.78$ (+0.3 $\sigma$ )	$H(0.61)$	95.196	$95.18 \pm 0.23$ (+1.0 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	7.14	$5.3^{+2.2}_{-1.9}$ (+0.2 $\sigma$ )	$10^9 A_{\mathrm{s}}$	2.1031	$2.105 \pm 0.034$ (+0.3 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2315.6	$2316 \pm 13$ (−0.8 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	251.8	$261 \pm 28$ (−0.2 $\sigma$ )	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8879	$1.887 \pm 0.012$ (−0.3 $\sigma$ )	$H(2.33)$	236.93	$236.96 \pm 0.83$ (−0.4 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	48.5	$47 \pm 8$ (−0.5 $\sigma$ )	$D_{40}$	1235.0	$1238 \pm 13$ (−0.4 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5766.7	$5767 \pm 11$ (−1.1 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	48.0	$42 \pm 9$ (−0.2 $\sigma$ )	$D_{220}$	5738.1	$5739 \pm 39$ (+0.5 $\sigma$ )	$f\sigma_8(0.15)$	0.4634	$0.4638 \pm 0.0083$ (−0.5 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	119.8	$115 \pm 10$ (−0.0 $\sigma$ )	$D_{810}$	2542.6	$2540 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7510	$0.7511 \pm 0.0066$ (−0.1 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.01	$< 4.59$ (−0.2 $\sigma$ )	$D_{1420}$	818.01	$816.5 \pm 4.8$ (+0.6 $\sigma$ )	$f\sigma_8(0.38)$	0.4801	$0.4804 \pm 0.0068$ (−0.5 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.79	$8.8 \pm 1.8$ (−0.0 $\sigma$ )	$D_{2000}$	231.10	$230.6 \pm 1.6$ (+0.8 $\sigma$ )	$\sigma_8(0.38)$	0.6649	$0.6649 \pm 0.0056$ (+0.1 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	10.98	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.96384	$0.9625 \pm 0.0045$ (+0.6 $\sigma$ )	$f\sigma_8(0.51)$	0.4779	$0.4780 \pm 0.0060$ (−0.4 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.84	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}$	0.245387	$0.245378 \pm 0.000060$ (+1.3 $\sigma$ )	$\sigma_8(0.51)$	0.6219	$0.6219 \pm 0.0052$ (+0.1 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	95.0	$93.5 \pm 7.3$ (+0.0 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246713	$0.246705 \pm 0.000060$ (+1.3 $\sigma$ )	$f\sigma_8(0.61)$	0.4723	$0.4724 \pm 0.0054$ (−0.4 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1147	$0.115 \pm 0.038$	$10^5 \mathrm{D}/\mathrm{H}$	2.5896	$2.593 \pm 0.028$ (−1.3 $\sigma$ )	$\sigma_8(0.61)$	0.59159	$0.5915 \pm 0.0049$ (+0.2 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1345	$0.135 \pm 0.029$	Age/Gyr	13.8040	$13.806 \pm 0.024$ (−1.1 $\sigma$ )	$f\sigma_8(2.33)$	0.29799	$0.2979 \pm 0.0025$ (+0.3 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.484	$0.481 \pm 0.084$	$z_*$	1090.000	$1090.03 \pm 0.28$ (−1.1 $\sigma$ )	$\sigma_8(2.33)$	0.30690	$0.3068 \pm 0.0026$ (+0.4 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.226	$0.225 \pm 0.054$	$r_*$	144.294	$144.29 \pm 0.30$ (+0.2 $\sigma$ )	$f_{2000}^{143}$	29.27	$30.1 \pm 2.8$ (−0.6 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.664	$0.667 \pm 0.080$	$100\theta_*$	1.041044	$1.04104 \pm 0.00031$ (+0.4 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.33	$32.6 \pm 1.9$ (−0.8 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.087	$2.09 \pm 0.27$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8605	$13.860 \pm 0.028$ (+0.1 $\sigma$ )	$f_{2000}^{217}$	106.90	$107.4 \pm 1.8$ (−0.7 $\sigma$ )
$c_{100}$	0.99973	$0.99968 \pm 0.00061$ (+0.1 $\sigma$ )	$z_{\mathrm{drag}}$	1059.933	$1059.90 \pm 0.30$ (+1.3 $\sigma$ )	$\chi_{\mathrm{simall}}^2$	396.06	$397.2 \pm 2.0$ (+0.1 $\sigma$ )
$c_{217}$	0.99820	$0.99821 \pm 0.00062$ (−0.1 $\sigma$ )	$r_{\mathrm{drag}}$	146.958	$146.96 \pm 0.30$ (−0.0 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2344.5	$2359.4 \pm 5.8$ (+297.4 $\sigma$ )
$H_0$	67.11	$67.07 \pm 0.61$ (+0.7 $\sigma$ )	$k_{\mathrm{D}}$	0.140990	$0.14098 \pm 0.00032$ (+0.4 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.72	$11.5 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_{\Lambda}$	0.6811	$0.6806 \pm 0.0086$ (+0.6 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160761	$0.16078 \pm 0.00018$ (−1.3 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	2740.5	$2756.7 \pm 5.8$ (+288.2 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3189	$0.3194 \pm 0.0086$ (−0.6 $\sigma$ )	$z_{\mathrm{eq}}$	3416.0	$3417 \pm 31$ (−0.4 $\sigma$ )			
$\Omega_{\mathrm{m}}h^2$	0.14359	$0.1436 \pm 0.0013$ (−0.4 $\sigma$ )	$k_{\mathrm{eq}}$	0.010426	$0.010430 \pm 0.000095$ (−0.4 $\sigma$ )			

Best-fit  $\chi_{\mathrm{eff}}^2 = 2742.24$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1586.69$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2768.16$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.79$ ;  $R - 1 = 0.00605$

$\chi_{\mathrm{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.06 ( $\Delta$  0.16) plik\_rd12\_HM.v22b\_TTTEEE: 2344.46



## 2.222 base\_CamSpecHM\_TT

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022571	$0.02248 \pm 0.00029$	$S_8$	0.8750	$0.871 \pm 0.026$	$k_{\text{eq}}$	0.010181	$0.01023 \pm 0.00019$
$\Omega_c h^2$	0.11702	$0.1178 \pm 0.0027$	$\sigma_8 \Omega_m^{0.5}$	0.4793	$0.477 \pm 0.014$	$100\theta_{\text{eq}}$	0.8263	$0.823 \pm 0.012$
$100\theta_{\text{MC}}$	1.04136	$1.04126 \pm 0.00055$	$\sigma_8 \Omega_m^{0.25}$	0.6493	$0.644 \pm 0.017$	$100\theta_{\text{s,eq}}$	0.4560	$0.4545 \pm 0.0061$
$\tau$	0.1485	$0.134^{+0.040}_{-0.034}$	$\sigma_8/h^{0.5}$	1.0610	$1.051 \pm 0.028$	$H(0.15)$	73.86	$73.5 \pm 1.1$
$\ln(10^{10} A_s)$	3.224	$3.196^{+0.074}_{-0.063}$	$r_{\text{drag}} h$	101.48	$100.9 \pm 2.2$	$D_M(0.15)$	631.8	$635 \pm 11$
$n_s$	0.9767	$0.9731 \pm 0.0088$	$\langle d^2 \rangle^{1/2}$	2.615	$2.596^{+0.069}_{-0.061}$	$H(0.38)$	83.71	$83.48 \pm 0.82$
$A_{100}^{\text{PS}}$	218.3	$232 \pm 26$	$z_{\text{re}}$	15.47	$14.3^{+3.1}_{-2.1}$	$D_M(0.38)$	1510.3	$1517 \pm 22$
$A_{143}^{\text{PS}}$	45.5	$35 \pm 9$	$10^9 A_s$	2.512	$2.45 \pm 0.17$	$H(0.51)$	90.29	$90.10 \pm 0.65$
$A_{217}^{\text{PS}}$	108.9	$104 \pm 10$	$10^9 A_s e^{-2\tau}$	1.8666	$1.869 \pm 0.016$	$D_M(0.51)$	1958.8	$1966 \pm 26$
$A_{217}^{\text{CIB}}$	37.5	$37^{+7}_{-8}$	$D_{40}$	1251.9	$1253^{+17}_{-19}$	$H(0.61)$	95.79	$95.64 \pm 0.53$
$A_{143}^{\text{tSZ}}$	6.29	$4.1 \pm 2.1$	$D_{220}$	5716.6	$5717 \pm 41$	$D_M(0.61)$	2281.2	$2289 \pm 28$
$r_{143 \times 217}^{\text{PS}}$	0.787	$0.68 \pm 0.13$	$D_{810}$	2527.8	$2527 \pm 14$	$H(2.33)$	234.84	$235.2 \pm 1.6$
$r_{143 \times 217}^{\text{CIB}}$	0.777	$0.51^{+0.33}_{-0.27}$	$D_{1420}$	816.1	$814.4 \pm 5.2$	$D_M(2.33)$	5742.0	$5749 \pm 23$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.99	—	$D_{2000}$	232.89	$231.9 \pm 2.2$	$f\sigma_8(0.15)$	0.4855	$0.483 \pm 0.014$
$A^{\text{kSZ}}$	0.01	$< 5.46$	$n_{\text{s},0.002}$	0.9767	$0.9731 \pm 0.0088$	$\sigma_8(0.15)$	0.8144	$0.804^{+0.026}_{-0.023}$
$A_{100}^{\text{dust}}$	0.992	$0.998 \pm 0.20$	$Y_{\text{P}}$	0.245470	$0.24543 \pm 0.00012$	$f\sigma_8(0.38)$	0.5089	$0.505 \pm 0.013$
$A_{143}^{\text{dust}}$	0.958	$0.95 \pm 0.18$	$Y_{\text{P}}^{\text{BBN}}$	0.246797	$0.24676 \pm 0.00012$	$\sigma_8(0.38)$	0.7236	$0.714^{+0.024}_{-0.022}$
$A_{217}^{\text{dust}}$	0.992	$0.98 \pm 0.10$	$10^5 \text{D}/\text{H}$	2.549	$2.567 \pm 0.053$	$f\sigma_8(0.51)$	0.5093	$0.505 \pm 0.013$
$A_{143 \times 217}^{\text{dust}}$	1.017	$1.02 \pm 0.16$	$\text{Age}/\text{Gyr}$	13.751	$13.767 \pm 0.051$	$\sigma_8(0.51)$	0.6779	$0.669^{+0.023}_{-0.021}$
$y_{\text{cal}}$	1.00009	$1.0002 \pm 0.0025$	$z_*$	1089.41	$1089.60 \pm 0.56$	$f\sigma_8(0.61)$	0.5052	$0.500 \pm 0.013$
$c_{100}$	0.99785	$0.9975 \pm 0.0011$	$r_*$	145.05	$144.93 \pm 0.58$	$\sigma_8(0.61)$	0.6455	$0.637^{+0.022}_{-0.020}$
$c_{217}$	1.00088	$1.0009 \pm 0.0016$	$100\theta_*$	1.04153	$1.04143 \pm 0.00053$	$f\sigma_8(2.33)$	0.3261	$0.322^{+0.012}_{-0.011}$
$H_0$	68.73	$68.4 \pm 1.3$	$D_M(z_*)/\text{Gpc}$	13.927	$13.917 \pm 0.052$	$\sigma_8(2.33)$	0.3370	$0.332 \pm 0.012$
$\Omega_\Lambda$	0.7031	$0.698^{+0.018}_{-0.016}$	$z_{\text{drag}}$	1060.20	$1060.02 \pm 0.55$	$f_{2000}^{143}$	25.87	$27 \pm 4$
$\Omega_m$	0.2969	$0.302^{+0.016}_{-0.018}$	$r_{\text{drag}}$	147.66	$147.57 \pm 0.55$	$f_{2000}^{217}$	103.71	$104.9 \pm 2.5$
$\Omega_m h^2$	0.14024	$0.1409 \pm 0.0025$	$k_{\text{D}}$	0.14042	$0.14044 \pm 0.00054$	$f_{2000}^{143 \times 217}$	28.96	$29.9 \pm 2.8$
$\Omega_m h^3$	0.096384	$0.09628 \pm 0.00049$	$100\theta_{\text{D}}$	0.160649	$0.16074 \pm 0.00030$	$\chi_{\text{CamSpec}}^2$	7045.25	$7059.6 \pm 5.3$
$\sigma_8$	0.8796	$0.869^{+0.027}_{-0.024}$	$z_{\text{eq}}$	3336	$3351 \pm 61$	$\chi_{\text{prior}}^2$	1.44	$7.3 \pm 3.4$

Best-fit  $\chi_{\text{eff}}^2 = 7046.70$ ;  $\bar{\chi}_{\text{eff}}^2 = 7066.87$ ;  $R - 1 = 0.00646$   
 $\chi_{\text{eff}}^2$ : CMB - CamSpec like\_10.7HM: 7045.25



## 2.223 base\_CamSpecHM\_TT\_lowl

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022525	$0.02242 \pm 0.00028$	$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4693	$0.468 \pm 0.014$	$100\theta_{\text{s,eq}}$	0.4563	$0.4547 \pm 0.0058$
$\Omega_{\text{c}}h^2$	0.11691	$0.1177 \pm 0.0026$	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6359	$0.631 \pm 0.016$	$H(0.15)$	73.84	$73.5 \pm 1.0$
$100\theta_{\text{MC}}$	1.04132	$1.04122 \pm 0.00053$	$\sigma_8/h^{0.5}$	1.0394	$1.030 \pm 0.026$	$D_{\text{M}}(0.15)$	631.9	$635 \pm 10$
$\tau$	0.1282	$0.113^{+0.036}_{-0.032}$	$r_{\text{drag}}h$	101.52	$100.9 \pm 2.1$	$H(0.38)$	83.69	$83.44 \pm 0.77$
$\ln(10^{10}A_{\text{s}})$	3.183	$3.154^{+0.068}_{-0.060}$	$\langle d^2 \rangle^{1/2}$	2.560	$2.542 \pm 0.061$	$D_{\text{M}}(0.38)$	1510.7	$1518 \pm 20$
$n_{\text{s}}$	0.9775	$0.9734 \pm 0.0081$	$z_{\text{re}}$	13.98	$12.7^{+3.0}_{-2.1}$	$H(0.51)$	90.26	$90.05 \pm 0.61$
$y_{\text{cal}}$	1.00018	$1.0003 \pm 0.0025$	$10^9 A_{\text{s}}$	2.411	$2.35 \pm 0.15$	$D_{\text{M}}(0.51)$	1959.3	$1967 \pm 24$
$A_{100}^{\text{PS}}$	219.3	$233 \pm 25$	$10^9 A_{\text{s}}e^{-2\tau}$	1.8656	$1.868 \pm 0.015$	$H(0.61)$	95.758	$95.60 \pm 0.49$
$A_{143}^{\text{PS}}$	45.0	$36 \pm 9$	$D_{40}$	1234.6	$1237 \pm 16$	$D_{\text{M}}(0.61)$	2281.8	$2291 \pm 26$
$A_{217}^{\text{PS}}$	109.7	$104 \pm 10$	$D_{220}$	5706.2	$5708 \pm 41$	$H(2.33)$	234.71	$235.1 \pm 1.5$
$A_{217}^{\text{CIB}}$	37.6	$38^{+7}_{-8}$	$D_{810}$	2529.3	$2528 \pm 14$	$D_{\text{M}}(2.33)$	5744.2	$5752 \pm 22$
$A_{143}^{\text{tSZ}}$	6.20	$4.0^{+2.0}_{-2.4}$	$D_{1420}$	817.0	$815.1 \pm 5.2$	$f\sigma_8(0.15)$	0.4754	$0.473 \pm 0.013$
$r_{143 \times 217}^{\text{PS}}$	0.807	$0.67 \pm 0.13$	$D_{2000}$	232.68	$231.6 \pm 2.2$	$\sigma_8(0.15)$	0.7978	$0.788 \pm 0.022$
$r_{143 \times 217}^{\text{CIB}}$	0.700	$0.52^{+0.35}_{-0.25}$	$n_{\text{s},0.002}$	0.9775	$0.9734 \pm 0.0081$	$f\sigma_8(0.38)$	0.4984	$0.495 \pm 0.013$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.96	—	$Y_{\text{P}}$	0.245453	$0.24541 \pm 0.00011$	$\sigma_8(0.38)$	0.7089	$0.700 \pm 0.021$
$A^{\text{kSZ}}$	0.06	$< 5.56$	$Y_{\text{P}}^{\text{BBN}}$	0.246780	$0.24674 \pm 0.00011$	$f\sigma_8(0.51)$	0.4988	$0.495 \pm 0.013$
$A_{100}^{\text{dust}}$	1.006	$1.01 \pm 0.20$	$10^5 \text{D}/\text{H}$	2.557	$2.577 \pm 0.051$	$\sigma_8(0.51)$	0.6642	$0.655 \pm 0.020$
$A_{143}^{\text{dust}}$	0.962	$0.96 \pm 0.18$	$\text{Age}/\text{Gyr}$	13.7563	$13.773 \pm 0.048$	$f\sigma_8(0.61)$	0.4948	$0.490 \pm 0.013$
$A_{217}^{\text{dust}}$	0.978	$0.98 \pm 0.10$	$z_*$	1089.46	$1089.66 \pm 0.52$	$\sigma_8(0.61)$	0.6324	$0.624 \pm 0.019$
$A_{143 \times 217}^{\text{dust}}$	1.030	$1.02 \pm 0.16$	$r_*$	145.12	$144.99 \pm 0.55$	$f\sigma_8(2.33)$	0.3195	$0.315 \pm 0.010$
$c_{100}$	0.99783	$0.9975 \pm 0.0011$	$100\theta_*$	1.04150	$1.04140 \pm 0.00051$	$\sigma_8(2.33)$	0.3302	$0.325 \pm 0.011$
$c_{217}$	1.00070	$1.0009 \pm 0.0016$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9335	$13.922 \pm 0.050$	$f_{2000}^{143}$	25.95	$27 \pm 4$
$H_0$	68.72	$68.3 \pm 1.2$	$z_{\text{drag}}$	1060.09	$1059.89 \pm 0.53$	$f_{2000}^{217}$	103.94	$105.3 \pm 2.4$
$\Omega_{\Lambda}$	0.7034	$0.698^{+0.016}_{-0.015}$	$r_{\text{drag}}$	147.74	$147.65 \pm 0.53$	$f_{2000}^{143 \times 217}$	29.32	$30.3 \pm 2.6$
$\Omega_{\text{m}}$	0.2966	$0.302^{+0.015}_{-0.016}$	$k_{\text{D}}$	0.14030	$0.14032 \pm 0.00053$	$\chi_{\text{lowl}}^2$	24.50	$24.8 \pm 1.7$
$\Omega_{\text{m}}h^2$	0.14008	$0.1408 \pm 0.0024$	$100\theta_{\text{D}}$	0.160707	$0.16081 \pm 0.00029$	$\chi_{\text{CamSpec}}^2$	7046.4	$7060.1 \pm 5.5$
$\Omega_{\text{m}}h^3$	0.096258	$0.09616 \pm 0.00048$	$z_{\text{eq}}$	3332	$3349 \pm 57$	$\chi_{\text{prior}}^2$	1.41	$7.4 \pm 3.3$
$\sigma_8$	0.8616	$0.851 \pm 0.023$	$k_{\text{eq}}$	0.010170	$0.01022 \pm 0.00018$	$\chi_{\text{CMB}}^2$	7070.9	$7084.8 \pm 5.4$
$S_8$	0.8568	$0.854 \pm 0.025$	$100\theta_{\text{eq}}$	0.8268	$0.824 \pm 0.011$			

Best-fit  $\chi_{\text{eff}}^2 = 7072.29$ ;  $\bar{\chi}_{\text{eff}}^2 = 7092.24$ ;  $R - 1 = 0.00797$

$\chi_{\text{eff}}^2$ : CMB - commander\_dx12\_v3\_2\_29: 24.50 CamSpec like\_10.7HM: 7046.38



## 2.224 base\_CamSpecHM\_TT\_lowl\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02239 \pm 0.00022$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.631 \pm 0.016$	$D_{\mathrm{M}}(0.15)$	$636.9 \pm 5.1$
$\Omega_{\mathrm{c}} h^2$	$0.1181 \pm 0.0013$	$\sigma_8 / h^{0.5}$	$1.030 \pm 0.026$	$H(0.38)$	$83.31 \pm 0.40$
$100\theta_{\mathrm{MC}}$	$1.04117 \pm 0.00043$	$r_{\mathrm{drag}} h$	$100.6 \pm 1.0$	$D_{\mathrm{M}}(0.38)$	$1521 \pm 10$
$\tau$	$0.109^{+0.029}_{-0.026}$	$\langle d^2 \rangle^{1/2}$	$2.540 \pm 0.061$	$H(0.51)$	$89.96 \pm 0.33$
$\ln(10^{10} A_{\mathrm{s}})$	$3.147^{+0.057}_{-0.051}$	$z_{\mathrm{re}}$	$12.5^{+2.5}_{-1.8}$	$D_{\mathrm{M}}(0.51)$	$1971 \pm 12$
$n_{\mathrm{s}}$	$0.9721 \pm 0.0050$	$10^9 A_{\mathrm{s}}$	$2.33 \pm 0.12$	$H(0.61)$	$95.52 \pm 0.28$
$y_{\mathrm{cal}}$	$1.0003 \pm 0.0025$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.870 \pm 0.012$	$D_{\mathrm{M}}(0.61)$	$2294 \pm 13$
$A_{100}^{\mathrm{PS}}$	$234 \pm 25$	$D_{40}$	$1237 \pm 16$	$H(2.33)$	$235.34 \pm 0.80$
$A_{143}^{\mathrm{PS}}$	$36 \pm 9$	$D_{220}$	$5707 \pm 40$	$D_{\mathrm{M}}(2.33)$	$5755 \pm 14$
$A_{217}^{\mathrm{PS}}$	$104^{+10}_{-10}$	$D_{810}$	$2529 \pm 14$	$f\sigma_8(0.15)$	$0.474 \pm 0.012$
$A_{217}^{\mathrm{CIB}}$	$38^{+7}_{-8}$	$D_{1420}$	$814.9 \pm 5.0$	$\sigma_8(0.15)$	$0.786 \pm 0.021$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+1.9}_{-2.5}$	$D_{2000}$	$231.4 \pm 1.9$	$f\sigma_8(0.38)$	$0.495 \pm 0.013$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.67 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9721 \pm 0.0050$	$\sigma_8(0.38)$	$0.698 \pm 0.019$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.53^{+0.37}_{-0.23}$	$Y_{\mathrm{P}}$	$0.245400 \pm 0.000086$	$f\sigma_8(0.51)$	$0.494 \pm 0.013$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246726 \pm 0.000086$	$\sigma_8(0.51)$	$0.653 \pm 0.018$
$A^{\mathrm{kSZ}}$	$< 5.72$	$10^5 \mathrm{D}/\mathrm{H}$	$2.583 \pm 0.040$	$f\sigma_8(0.61)$	$0.490 \pm 0.013$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.780 \pm 0.031$	$\sigma_8(0.61)$	$0.622 \pm 0.017$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$z_*$	$1089.73 \pm 0.33$	$f\sigma_8(2.33)$	$0.3139 \pm 0.0086$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$r_*$	$144.91 \pm 0.32$	$\sigma_8(2.33)$	$0.3240 \pm 0.0090$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$100\theta_*$	$1.04136 \pm 0.00043$	$f_{2000}^{143}$	$28 \pm 3$
$c_{100}$	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.916 \pm 0.031$	$f_{2000}^{217}$	$105.5 \pm 2.2$
$c_{217}$	$1.0010 \pm 0.0015$	$z_{\mathrm{drag}}$	$1059.84 \pm 0.47$	$f_{2000}^{143 \times 217}$	$30.6 \pm 2.4$
$H_0$	$68.13 \pm 0.60$	$r_{\mathrm{drag}}$	$147.58 \pm 0.35$	$\chi_{\mathrm{lowl}}^2$	$24.7 \pm 1.6$
$\Omega_{\Lambda}$	$0.6959 \pm 0.0077$	$k_{\mathrm{D}}$	$0.14037 \pm 0.00045$	$\chi_{\mathrm{CamSpec}}^2$	$7059.6 \pm 5.4$
$\Omega_{\mathrm{m}}$	$0.3041 \pm 0.0077$	$100\theta_{\mathrm{D}}$	$0.16083 \pm 0.00027$	$\chi_{6\mathrm{DF}}^2$	$0.044 \pm 0.061$
$\Omega_{\mathrm{m}} h^2$	$0.1411 \pm 0.0012$	$z_{\mathrm{eq}}$	$3357 \pm 30$	$\chi_{\mathrm{MGS}}^2$	$1.82 \pm 0.63$
$\Omega_{\mathrm{m}} h^3$	$0.09615 \pm 0.00048$	$k_{\mathrm{eq}}$	$0.010246 \pm 0.000090$	$\chi_{\mathrm{DR12BAO}}^2$	$4.1 \pm 1.1$
$\sigma_8$	$0.850 \pm 0.022$	$100\theta_{\mathrm{eq}}$	$0.8218 \pm 0.0056$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.3$
$S_8$	$0.856 \pm 0.023$	$100\theta_{\mathrm{s,eq}}$	$0.4538 \pm 0.0029$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.1$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.469 \pm 0.012$	$H(0.15)$	$73.34 \pm 0.52$	$\chi_{\mathrm{CMB}}^2$	$7084.3 \pm 5.3$
$\bar{\chi}_{\mathrm{eff}}^2 = 7097.63; R - 1 = 0.01179$					



## 2.225 base\_CamSpecHM\_TT\_lowl\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02243 \pm 0.00027$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.468 \pm 0.014$	$100\theta_{\mathrm{s,eq}}$	$0.4549 \pm 0.0057$
$\Omega_{\mathrm{c}}h^2$	$0.1176 \pm 0.0025$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.632 \pm 0.016$	$H(0.15)$	$73.5 \pm 1.0$
$100\theta_{\mathrm{MC}}$	$1.04123 \pm 0.00052$	$\sigma_8/h^{0.5}$	$1.031 \pm 0.025$	$D_{\mathrm{M}}(0.15)$	$635.1 \pm 9.9$
$\tau$	$0.115 \pm 0.032$	$r_{\mathrm{drag}}h$	$100.9 \pm 2.0$	$H(0.38)$	$83.46 \pm 0.75$
$\ln(10^{10}A_{\mathrm{s}})$	$3.157 \pm 0.060$	$\langle d^2 \rangle^{1/2}$	$2.544 \pm 0.058$	$D_{\mathrm{M}}(0.38)$	$1517 \pm 20$
$n_{\mathrm{s}}$	$0.9737 \pm 0.0079$	$z_{\mathrm{re}}$	$12.9^{+2.8}_{-2.2}$	$H(0.51)$	$90.08 \pm 0.60$
$y_{\mathrm{cal}}$	$1.0003 \pm 0.0025$	$10^9 A_{\mathrm{s}}$	$2.36 \pm 0.14$	$D_{\mathrm{M}}(0.51)$	$1967 \pm 23$
$A_{100}^{\mathrm{PS}}$	$232 \pm 25$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.868 \pm 0.015$	$H(0.61)$	$95.61^{+0.45}_{-0.51}$
$A_{143}^{\mathrm{PS}}$	$35 \pm 9$	$D_{40}$	$1237 \pm 16$	$D_{\mathrm{M}}(0.61)$	$2290 \pm 25$
$A_{217}^{\mathrm{PS}}$	$104 \pm 10$	$D_{220}$	$5708 \pm 41$	$H(2.33)$	$235.1 \pm 1.5$
$A_{217}^{\mathrm{CIB}}$	$38 \pm 7$	$D_{810}$	$2528 \pm 14$	$D_{\mathrm{M}}(2.33)$	$5751 \pm 21$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+2.0}_{-2.4}$	$D_{1420}$	$815.2 \pm 5.2$	$f\sigma_8(0.15)$	$0.474 \pm 0.013$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.67 \pm 0.13$	$D_{2000}$	$231.6 \pm 2.1$	$\sigma_8(0.15)$	$0.789 \pm 0.021$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.52^{+0.35}_{-0.25}$	$n_{\mathrm{s},0.002}$	$0.9737 \pm 0.0079$	$f\sigma_8(0.38)$	$0.495 \pm 0.012$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24542 \pm 0.00011$	$\sigma_8(0.38)$	$0.701 \pm 0.020$
$A^{\mathrm{kSZ}}$	$< 5.53$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24674 \pm 0.00011$	$f\sigma_8(0.51)$	$0.495 \pm 0.012$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$10^5 \mathrm{D}/\mathrm{H}$	$2.576 \pm 0.050$	$\sigma_8(0.51)$	$0.656 \pm 0.019$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$\mathrm{Age}/\mathrm{Gyr}$	$13.771 \pm 0.047$	$f\sigma_8(0.61)$	$0.491 \pm 0.012$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$z_*$	$1089.64 \pm 0.51$	$\sigma_8(0.61)$	$0.625 \pm 0.018$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$r_*$	$145.00 \pm 0.54$	$f\sigma_8(2.33)$	$0.3154 \pm 0.0095$
$c_{100}$	$0.9975 \pm 0.0011$	$100\theta_*$	$1.04141 \pm 0.00051$	$\sigma_8(2.33)$	$0.326 \pm 0.010$
$c_{217}$	$1.0009 \pm 0.0016$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.924 \pm 0.050$	$f_{2000}^{143}$	$27 \pm 4$
$H_0$	$68.4 \pm 1.2$	$z_{\mathrm{drag}}$	$1059.90 \pm 0.52$	$f_{2000}^{217}$	$105.2 \pm 2.4$
$\Omega_{\Lambda}$	$0.698 \pm 0.015$	$r_{\mathrm{drag}}$	$147.66 \pm 0.53$	$f_{2000}^{143 \times 217}$	$30.2 \pm 2.6$
$\Omega_{\mathrm{m}}$	$0.302 \pm 0.015$	$k_{\mathrm{D}}$	$0.14031 \pm 0.00053$	$\chi_{\mathrm{lowl}}^2$	$24.8 \pm 1.7$
$\Omega_{\mathrm{m}}h^2$	$0.1407 \pm 0.0024$	$100\theta_{\mathrm{D}}$	$0.16081 \pm 0.00029$	$\chi_{\mathrm{CamSpec}}^2$	$7060.0 \pm 5.4$
$\Omega_{\mathrm{m}}h^3$	$0.09616 \pm 0.00047$	$z_{\mathrm{eq}}$	$3347 \pm 56$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.3$
$\sigma_8$	$0.853 \pm 0.022$	$k_{\mathrm{eq}}$	$0.01022 \pm 0.00017$	$\chi_{\mathrm{CMB}}^2$	$7084.8 \pm 5.3$
$S_8$	$0.854 \pm 0.025$	$100\theta_{\mathrm{eq}}$	$0.824 \pm 0.011$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7092.14$ ;  $R - 1 = 0.00760$



## 2.226 base\_CamSpecHM\_TT\_lowl\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02239 \pm 0.00021$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.632 \pm 0.016$	$D_{\mathrm{M}}(0.15)$	$636.8 \pm 5.1$
$\Omega_{\mathrm{c}}h^2$	$0.1181 \pm 0.0013$	$\sigma_8/h^{0.5}$	$1.030 \pm 0.025$	$H(0.38)$	$83.32 \pm 0.39$
$100\theta_{\mathrm{MC}}$	$1.04117 \pm 0.00043$	$r_{\mathrm{drag}}h$	$100.6 \pm 1.0$	$D_{\mathrm{M}}(0.38)$	$1521 \pm 10$
$\tau$	$0.110 \pm 0.026$	$\langle d^2 \rangle^{1/2}$	$2.542 \pm 0.059$	$H(0.51)$	$89.96 \pm 0.33$
$\ln(10^{10}A_{\mathrm{s}})$	$3.149 \pm 0.052$	$z_{\mathrm{re}}$	$12.6^{+2.4}_{-1.9}$	$D_{\mathrm{M}}(0.51)$	$1971 \pm 12$
$n_{\mathrm{s}}$	$0.9722 \pm 0.0050$	$10^9 A_{\mathrm{s}}$	$2.33 \pm 0.12$	$H(0.61)$	$95.52 \pm 0.28$
$y_{\mathrm{cal}}$	$1.0003 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.870 \pm 0.012$	$D_{\mathrm{M}}(0.61)$	$2294 \pm 13$
$A_{100}^{\mathrm{PS}}$	$233 \pm 25$	$D_{40}$	$1237 \pm 15$	$H(2.33)$	$235.34 \pm 0.80$
$A_{143}^{\mathrm{PS}}$	$36 \pm 9$	$D_{220}$	$5707 \pm 40$	$D_{\mathrm{M}}(2.33)$	$5755 \pm 14$
$A_{217}^{\mathrm{PS}}$	$104^{+10}_{-10}$	$D_{810}$	$2529 \pm 14$	$f\sigma_8(0.15)$	$0.474 \pm 0.012$
$A_{217}^{\mathrm{CIB}}$	$38^{+7}_{-8}$	$D_{1420}$	$814.9 \pm 5.0$	$\sigma_8(0.15)$	$0.787 \pm 0.020$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+1.9}_{-2.5}$	$D_{2000}$	$231.4 \pm 1.9$	$f\sigma_8(0.38)$	$0.495 \pm 0.012$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.67 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9722 \pm 0.0050$	$\sigma_8(0.38)$	$0.698 \pm 0.018$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.52^{+0.37}_{-0.24}$	$Y_{\mathrm{P}}$	$0.245401 \pm 0.000085$	$f\sigma_8(0.51)$	$0.495 \pm 0.012$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246727 \pm 0.000085$	$\sigma_8(0.51)$	$0.654 \pm 0.017$
$A^{\mathrm{kSZ}}$	$< 5.69$	$10^5 \mathrm{D}/\mathrm{H}$	$2.582 \pm 0.040$	$f\sigma_8(0.61)$	$0.490 \pm 0.012$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.779 \pm 0.031$	$\sigma_8(0.61)$	$0.622 \pm 0.016$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$z_*$	$1089.73 \pm 0.32$	$f\sigma_8(2.33)$	$0.3141 \pm 0.0083$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$r_*$	$144.91 \pm 0.32$	$\sigma_8(2.33)$	$0.3242 \pm 0.0087$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$100\theta_*$	$1.04136 \pm 0.00043$	$f_{2000}^{143}$	$28 \pm 3$
$c_{100}$	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.916 \pm 0.031$	$f_{2000}^{217}$	$105.5 \pm 2.2$
$c_{217}$	$1.0010 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.85 \pm 0.47$	$f_{2000}^{143 \times 217}$	$30.5 \pm 2.4$
$H_0$	$68.14 \pm 0.60$	$r_{\mathrm{drag}}$	$147.58 \pm 0.35$	$\chi_{\mathrm{lowl}}^2$	$24.7 \pm 1.6$
$\Omega_{\Lambda}$	$0.6960 \pm 0.0077$	$k_{\mathrm{D}}$	$0.14037 \pm 0.00045$	$\chi_{\mathrm{CamSpec}}^2$	$7059.5 \pm 5.3$
$\Omega_{\mathrm{m}}$	$0.3040 \pm 0.0077$	$100\theta_{\mathrm{D}}$	$0.16083 \pm 0.00027$	$\chi_{6\mathrm{DF}}^2$	$0.043 \pm 0.061$
$\Omega_{\mathrm{m}}h^2$	$0.1411 \pm 0.0012$	$z_{\mathrm{eq}}$	$3357 \pm 29$	$\chi_{\mathrm{MGS}}^2$	$1.82 \pm 0.63$
$\Omega_{\mathrm{m}}h^3$	$0.09615 \pm 0.00048$	$k_{\mathrm{eq}}$	$0.010245 \pm 0.000090$	$\chi_{\mathrm{DR12BAO}}^2$	$4.1 \pm 1.0$
$\sigma_8$	$0.851 \pm 0.021$	$100\theta_{\mathrm{eq}}$	$0.8218 \pm 0.0056$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.3$
$S_8$	$0.856 \pm 0.022$	$100\theta_{\mathrm{s,eq}}$	$0.4538 \pm 0.0029$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.1$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.469 \pm 0.012$	$H(0.15)$	$73.34 \pm 0.52$	$\chi_{\mathrm{CMB}}^2$	$7084.2 \pm 5.3$
$\bar{\chi}_{\mathrm{eff}}^2 = 7097.56; R - 1 = 0.01150$					



## 2.227 base\_CamSpecHM\_TT\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022053	$0.02207 \pm 0.00021$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4653	$0.465 \pm 0.014$	$100\theta_{\mathrm{s,eq}}$	0.44618	$0.4464 \pm 0.0046$
$\Omega_{\mathrm{c}}h^2$	0.12163	$0.1216 \pm 0.0022$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6154	$0.615 \pm 0.012$	$H(0.15)$	71.90	$71.95 \pm 0.79$
$100\theta_{\mathrm{MC}}$	1.040725	$1.04073 \pm 0.00048$	$\sigma_8/h^{0.5}$	0.9985	$0.998 \pm 0.016$	$D_{\mathrm{M}}(0.15)$	651.2	$650.8 \pm 8.1$
$\tau$	0.0513	$0.0517 \pm 0.0080$	$r_{\mathrm{drag}}h$	97.71	$97.8 \pm 1.6$	$H(0.38)$	82.27	$82.31 \pm 0.56$
$\ln(10^{10}A_{\mathrm{s}})$	3.0400	$3.041 \pm 0.016$	$\langle d^2 \rangle^{1/2}$	2.4710	$2.469 \pm 0.039$	$D_{\mathrm{M}}(0.38)$	1549.3	$1549 \pm 16$
$n_{\mathrm{s}}$	0.9590	$0.9599 \pm 0.0060$	$z_{\mathrm{re}}$	7.47	$7.48 \pm 0.83$	$H(0.51)$	89.134	$89.17 \pm 0.44$
$y_{\mathrm{cal}}$	1.00029	$1.0004 \pm 0.0025$	$10^9 A_{\mathrm{s}}$	2.0905	$2.092 \pm 0.034$	$D_{\mathrm{M}}(0.51)$	2004.6	$2004 \pm 19$
$A_{100}^{\mathrm{PS}}$	248.9	$245 \pm 25$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8866	$1.887 \pm 0.014$	$H(0.61)$	94.866	$94.90 \pm 0.35$
$A_{143}^{\mathrm{PS}}$	39.9	$42 \pm 8$	$D_{40}$	1240.5	$1239 \pm 16$	$D_{\mathrm{M}}(0.61)$	2330.7	$2330 \pm 20$
$A_{217}^{\mathrm{PS}}$	97.9	$100 \pm 10$	$D_{220}$	5709.7	$5709 \pm 42$	$H(2.33)$	237.30	$237.3 \pm 1.3$
$A_{217}^{\mathrm{CIB}}$	44.6	$42 \pm 7$	$D_{810}$	2533.3	$2534 \pm 14$	$D_{\mathrm{M}}(2.33)$	5783.3	$5782 \pm 16$
$A_{143}^{\mathrm{tSZ}}$	4.22	$3.6_{-2.6}^{+1.7}$	$D_{1420}$	812.1	$812.9 \pm 5.2$	$f\sigma_8(0.15)$	0.4686	$0.468 \pm 0.012$
$r_{143 \times 217}^{\mathrm{PS}}$	0.539	$0.64 \pm 0.13$	$D_{2000}$	228.72	$229.0 \pm 1.8$	$\sigma_8(0.15)$	0.7507	$0.7509 \pm 0.0076$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.693	$> 0.473$	$n_{\mathrm{s},0.002}$	0.9590	$0.9599 \pm 0.0060$	$f\sigma_8(0.38)$	0.4836	$0.4834 \pm 0.0097$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.01	—	$Y_{\mathrm{P}}$	0.245264	$0.24526_{-0.000089}^{+0.00010}$	$\sigma_8(0.38)$	0.6638	$0.6640 \pm 0.0060$
$A^{\mathrm{kSZ}}$	3.92	$5.2_{-2.2}^{+4.0}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246590	$0.24659_{-0.000089}^{+0.00011}$	$f\sigma_8(0.51)$	0.4804	$0.4803 \pm 0.0083$
$A_{100}^{\mathrm{dust}}$	1.005	$1.01 \pm 0.20$	$10^5 \mathrm{D}/\mathrm{H}$	2.6461	$2.643 \pm 0.041$	$\sigma_8(0.51)$	0.6206	$0.6208 \pm 0.0055$
$A_{143}^{\mathrm{dust}}$	0.986	$0.97 \pm 0.18$	$\mathrm{Age}/\mathrm{Gyr}$	13.8419	$13.839 \pm 0.036$	$f\sigma_8(0.61)$	0.4742	$0.4741 \pm 0.0073$
$A_{217}^{\mathrm{dust}}$	0.958	$0.97 \pm 0.10$	$z_*$	1090.466	$1090.44 \pm 0.41$	$\sigma_8(0.61)$	0.59006	$0.5903 \pm 0.0051$
$A_{143 \times 217}^{\mathrm{dust}}$	1.001	$1.03 \pm 0.16$	$r_*$	144.254	$144.26 \pm 0.49$	$f\sigma_8(2.33)$	0.29692	$0.2971 \pm 0.0025$
$c_{100}$	0.99748	$0.9975 \pm 0.0011$	$100\theta_*$	1.040937	$1.04094 \pm 0.00047$	$\sigma_8(2.33)$	0.30548	$0.3056 \pm 0.0027$
$c_{217}$	1.00140	$1.0013 \pm 0.0016$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8581	$13.859 \pm 0.045$	$f_{2000}^{143}$	32.33	$31.6 \pm 3.0$
$H_0$	66.46	$66.51 \pm 0.93$	$z_{\mathrm{drag}}$	1059.322	$1059.35 \pm 0.44$	$f_{2000}^{217}$	108.39	$108.0 \pm 2.0$
$\Omega_{\Lambda}$	0.6733	$0.674_{-0.013}^{+0.014}$	$r_{\mathrm{drag}}$	147.016	$147.02 \pm 0.49$	$f_{2000}^{143 \times 217}$	33.80	$33.6 \pm 2.2$
$\Omega_{\mathrm{m}}$	0.3267	$0.326_{-0.014}^{+0.013}$	$k_{\mathrm{D}}$	0.14070	$0.14071 \pm 0.00052$	$\chi_{\mathrm{small}}^2$	395.83	$397.0 \pm 1.7$
$\Omega_{\mathrm{m}}h^2$	0.14433	$0.1443 \pm 0.0021$	$100\theta_{\mathrm{D}}$	0.161123	$0.16111 \pm 0.00026$	$\chi_{\mathrm{CamSpec}}^2$	7049.7	$7062.9 \pm 5.3$
$\Omega_{\mathrm{m}}h^3$	0.095922	$0.09594 \pm 0.00045$	$z_{\mathrm{eq}}$	3433.5	$3432 \pm 49$	$\chi_{\mathrm{prior}}^2$	2.29	$7.7 \pm 3.5$
$\sigma_8$	0.8140	$0.8142 \pm 0.0090$	$k_{\mathrm{eq}}$	0.010479	$0.01048 \pm 0.00015$	$\chi_{\mathrm{CMB}}^2$	7445.5	$7459.8 \pm 5.5$
$S_8$	0.8495	$0.849 \pm 0.025$	$100\theta_{\mathrm{eq}}$	0.8067	$0.8071 \pm 0.0090$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 7447.83$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 7467.49$ ;  $R - 1 = 0.00861$

$\chi_{\mathrm{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.83 CamSpec like\_10.7HM: 7049.71



## 2.228 base\_CamSpecHM\_TTTEE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022485	$0.02246 \pm 0.00019$ $(-0.0\sigma)$	$\sigma_8$	0.8525	$0.850^{+0.021}_{-0.026}$ $(-0.7\sigma)$	$k_{\text{eq}}$	0.010269	$0.01027 \pm 0.00011$ $(+0.2\sigma)$
$\Omega_c h^2$	0.11831	$0.1183 \pm 0.0017$ $(+0.2\sigma)$	$S_8$	0.8597	$0.858 \pm 0.022$ $(-0.5\sigma)$	$100\theta_{\text{eq}}$	0.8205	$0.8206 \pm 0.0073$ $(-0.2\sigma)$
$100\theta_{\text{MC}}$	1.041043	$1.04104 \pm 0.00034$ $(-0.4\sigma)$	$\sigma_8 \Omega_m^{0.5}$	0.4709	$0.470 \pm 0.012$ $(-0.5\sigma)$	$100\theta_{\text{s,eq}}$	0.45306	$0.4531 \pm 0.0037$ $(-0.2\sigma)$
$\tau$	0.1119	$0.110^{+0.029}_{-0.034}$ $(-0.7\sigma)$	$\sigma_8 \Omega_m^{0.25}$	0.6336	$0.632^{+0.015}_{-0.017}$ $(-0.7\sigma)$	$H(0.15)$	73.30	$73.29 \pm 0.68$ $(-0.2\sigma)$
$\ln(10^{10} A_s)$	3.154	$3.149^{+0.056}_{-0.065}$ $(-0.7\sigma)$	$\sigma_8/h^{0.5}$	1.0331	$1.031^{+0.025}_{-0.028}$ $(-0.7\sigma)$	$D_M(0.15)$	637.2	$637.4 \pm 6.6$ $(+0.2\sigma)$
$n_s$	0.9714	$0.9705 \pm 0.0060$ $(-0.3\sigma)$	$r_{\text{drag}} h$	100.37	$100.4 \pm 1.3$ $(-0.2\sigma)$	$H(0.38)$	83.307	$83.29 \pm 0.50$ $(-0.2\sigma)$
$A_{100}^{\text{PS}}$	221.2	$233 \pm 25$ $(+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	2.551	$2.548^{+0.060}_{-0.066}$ $(-0.7\sigma)$	$D_M(0.38)$	1521.1	$1522 \pm 13$ $(+0.2\sigma)$
$A_{143}^{\text{PS}}$	48.6	$36 \pm 8$ $(+0.1\sigma)$	$z_{\text{re}}$	12.76	$12.4 \pm 2.6$ $(-0.7\sigma)$	$H(0.51)$	89.962	$89.95 \pm 0.40$ $(-0.2\sigma)$
$A_{217}^{\text{PS}}$	107.7	$104 \pm 10$ $(+0.0\sigma)$	$10^9 A_s$	2.343	$2.34^{+0.12}_{-0.16}$ $(-0.7\sigma)$	$D_M(0.51)$	1971.5	$1972 \pm 16$ $(+0.2\sigma)$
$A_{217}^{\text{CIB}}$	39.2	$37 \pm 7$ $(+0.0\sigma)$	$10^9 A_s e^{-2\tau}$	1.8728	$1.872 \pm 0.013$ $(+0.2\sigma)$	$H(0.61)$	95.534	$95.52^{+0.30}_{-0.33}$ $(-0.2\sigma)$
$A_{143}^{\text{tSZ}}$	6.49	$4.0^{+2.0}_{-2.4}$ $(-0.0\sigma)$	$D_{40}$	1240.1	$1243^{+14}_{-17}$ $(-0.5\sigma)$	$D_M(0.61)$	2295.0	$2295 \pm 17$ $(+0.2\sigma)$
$r_{143 \times 217}^{\text{PS}}$	0.774	$0.68 \pm 0.13$ $(-0.0\sigma)$	$D_{220}$	5721.4	$5722 \pm 39$ $(+0.1\sigma)$	$H(2.33)$	235.57	$235.55 \pm 0.98$ $(+0.2\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	0.866	$0.51^{+0.34}_{-0.26}$ $(+0.0\sigma)$	$D_{810}$	2531.0	$2529 \pm 14$ $(+0.1\sigma)$	$D_M(2.33)$	5753.1	$5754 \pm 14$ $(+0.2\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.999	—	$D_{1420}$	815.85	$814.7 \pm 4.8$ $(+0.1\sigma)$	$f\sigma_8(0.15)$	0.4762	$0.475 \pm 0.012$ $(-0.6\sigma)$
$A^{\text{kSZ}}$	0.00	$< 5.48$ $(+0.0\sigma)$	$D_{2000}$	231.86	$231.4 \pm 1.8$ $(-0.2\sigma)$	$\sigma_8(0.15)$	0.7884	$0.786^{+0.020}_{-0.024}$ $(-0.7\sigma)$
$A_{100}^{\text{dust}}$	0.995	$1.00 \pm 0.19$ $(+0.0\sigma)$	$n_{\text{s},0.002}$	0.9714	$0.9705 \pm 0.0060$ $(-0.3\sigma)$	$f\sigma_8(0.38)$	0.4971	$0.496 \pm 0.013$ $(-0.7\sigma)$
$A_{143}^{\text{dust}}$	0.963	$0.95 \pm 0.17$ $(-0.0\sigma)$	$Y_{\text{P}}$	0.245439	$0.245429 \pm 0.000075$ $(-0.0\sigma)$	$\sigma_8(0.38)$	0.6996	$0.698^{+0.018}_{-0.022}$ $(-0.7\sigma)$
$A_{217}^{\text{dust}}$	0.987	$0.98 \pm 0.10$ $(+0.0\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	0.246766	$0.246756 \pm 0.000075$ $(-0.0\sigma)$	$f\sigma_8(0.51)$	0.4964	$0.495^{+0.012}_{-0.013}$ $(-0.7\sigma)$
$A_{143 \times 217}^{\text{dust}}$	0.998	$1.02 \pm 0.16$ $(+0.0\sigma)$	$10^5 \text{D}/\text{H}$	2.5645	$2.569 \pm 0.035$ $(+0.0\sigma)$	$\sigma_8(0.51)$	0.6550	$0.653^{+0.017}_{-0.021}$ $(-0.7\sigma)$
$y_{\text{cal}}$	1.00001	$1.0001 \pm 0.0025$ $(-0.0\sigma)$	Age/Gyr	13.7749	$13.777 \pm 0.031$ $(+0.2\sigma)$	$f\sigma_8(0.61)$	0.4917	$0.490^{+0.012}_{-0.014}$ $(-0.7\sigma)$
$c_{100}$	0.99792	$0.9976 \pm 0.0011$ $(+0.0\sigma)$	$z_*$	1089.628	$1089.66 \pm 0.36$ $(+0.1\sigma)$	$\sigma_8(0.61)$	0.6235	$0.622^{+0.017}_{-0.020}$ $(-0.7\sigma)$
$c_{217}$	1.00103	$1.0009 \pm 0.0016$ $(+0.0\sigma)$	$r_*$	144.782	$144.80 \pm 0.36$ $(-0.2\sigma)$	$f\sigma_8(2.33)$	0.3146	$0.3138^{+0.0085}_{-0.011}$ $(-0.7\sigma)$
$c_{TE}$	0.9925	$0.9924 \pm 0.0055$	$100\theta_*$	1.041219	$1.04122 \pm 0.00033$ $(-0.4\sigma)$	$\sigma_8(2.33)$	0.3247	$0.3239^{+0.0091}_{-0.011}$ $(-0.7\sigma)$
$c_{EE}$	0.99028	$0.9903 \pm 0.0050$	$D_M(z_*)/\text{Gpc}$	13.9050	$13.907 \pm 0.033$ $(-0.2\sigma)$	$f_{2000}^{143}$	27.34	$27 \pm 3$ $(+0.1\sigma)$
$H_0$	68.09	$68.07 \pm 0.78$ $(-0.2\sigma)$	$z_{\text{drag}}$	1060.085	$1060.03 \pm 0.37$ $(+0.0\sigma)$	$f_{2000}^{217}$	104.70	$105.3 \pm 2.2$ $(+0.2\sigma)$
$\Omega_\Lambda$	0.6949	$0.695 \pm 0.010$ $(-0.2\sigma)$	$r_{\text{drag}}$	147.412	$147.44 \pm 0.34$ $(-0.2\sigma)$	$f_{2000}^{143 \times 217}$	30.06	$30.3 \pm 2.4$ $(+0.2\sigma)$
$\Omega_m$	0.3051	$0.305 \pm 0.010$ $(+0.2\sigma)$	$k_{\text{D}}$	0.140616	$0.14057 \pm 0.00035$ $(+0.2\sigma)$	$\chi_{\text{CamSpec}}^2$	11495.8	$11512.0 \pm 5.6$ $(+842.7\sigma)$
$\Omega_m h^2$	0.14144	$0.1414 \pm 0.0016$ $(+0.2\sigma)$	$100\theta_{\text{D}}$	0.160674	$0.16071 \pm 0.00021$ $(-0.1\sigma)$	$\chi_{\text{prior}}^2$	1.86	$7.7 \pm 3.3$ $(+0.1\sigma)$
$\Omega_m h^3$	0.096302	$0.09626 \pm 0.00032$ $(-0.0\sigma)$	$z_{\text{eq}}$	3364.5	$3364 \pm 38$ $(+0.2\sigma)$			

Best-fit  $\chi_{\text{eff}}^2 = 11497.65$ ;  $\Delta\chi_{\text{eff}}^2 = 4450.95$ ;  $\bar{\chi}_{\text{eff}}^2 = 11519.77$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4452.89$ ;  $R - 1 = 0.00880$

$\chi_{\text{eff}}^2$ : CMB - CamSpec like\_10.7HM\_1400\_unified: 11495.79



## 2.229 base\_CamSpecHM\_TTTEEE\_low1

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022467	$0.02243 \pm 0.00018$ (+0.0 $\sigma$ )	$S_8$	0.8498	$0.846 \pm 0.020$ (−0.3 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.45334	$0.4530 \pm 0.0034$ (−0.3 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11820	$0.1184 \pm 0.0016$ (+0.3 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4655	$0.463 \pm 0.011$ (−0.3 $\sigma$ )	$H(0.15)$	73.32	$73.23 \pm 0.62$ (−0.3 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.041045	$1.04102 \pm 0.00033$ (−0.4 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6265	$0.623 \pm 0.015$ (−0.5 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	637.0	$637.9 \pm 6.1$ (+0.2 $\sigma$ )
$\tau$	0.1012	$0.094 \pm 0.028$ (−0.6 $\sigma$ )	$\sigma_8/h^{0.5}$	1.0219	$1.015 \pm 0.024$ (−0.6 $\sigma$ )	$H(0.38)$	83.314	$83.25 \pm 0.46$ (−0.2 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.132	$3.117 \pm 0.054$ (−0.6 $\sigma$ )	$r_{\mathrm{drag}}h$	100.44	$100.3 \pm 1.2$ (−0.3 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1520.8	$1523 \pm 12$ (+0.2 $\sigma$ )
$n_{\mathrm{s}}$	0.9723	$0.9707 \pm 0.0055$ (−0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.521	$2.508 \pm 0.056$ (−0.5 $\sigma$ )	$H(0.51)$	89.963	$89.91 \pm 0.37$ (−0.2 $\sigma$ )
$y_{\mathrm{cal}}$	1.00023	$1.0002 \pm 0.0024$ (−0.0 $\sigma$ )	$z_{\mathrm{re}}$	11.89	$11.2^{+2.6}_{-2.0}$ (−0.6 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1971.2	$1973 \pm 14$ (+0.2 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	221.6	$234 \pm 25$ (+0.0 $\sigma$ )	$10^9 A_{\mathrm{s}}$	2.293	$2.26 \pm 0.12$ (−0.6 $\sigma$ )	$H(0.61)$	95.530	$95.48^{+0.28}_{-0.31}$ (−0.2 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	48.3	$37 \pm 9$ (+0.1 $\sigma$ )	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8726	$1.872 \pm 0.012$ (+0.2 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2294.6	$2297 \pm 16$ (+0.2 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	108.5	$104 \pm 10$ (+0.1 $\sigma$ )	$D_{40}$	1231.7	$1233 \pm 14$ (−0.3 $\sigma$ )	$H(2.33)$	235.48	$235.56 \pm 0.91$ (+0.3 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	38.8	$38 \pm 7$ (−0.0 $\sigma$ )	$D_{220}$	5716.2	$5716 \pm 38$ (+0.2 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5753.6	$5756 \pm 13$ (+0.2 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	6.38	$4.0^{+2.0}_{-2.4}$ (−0.0 $\sigma$ )	$D_{810}$	2532.6	$2531 \pm 13$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4708	$0.468 \pm 0.011$ (−0.4 $\sigma$ )
$r_{143 \times 217}^{\mathrm{PS}}$	0.768	$0.67 \pm 0.13$ (+0.0 $\sigma$ )	$D_{1420}$	816.86	$815.5 \pm 4.7$ (+0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7800	$0.774 \pm 0.020$ (−0.6 $\sigma$ )
$r_{143 \times 217}^{\mathrm{CIB}}$	0.842	$0.52^{+0.36}_{-0.24}$ (+0.0 $\sigma$ )	$D_{2000}$	231.94	$231.3 \pm 1.8$ (−0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.4915	$0.489 \pm 0.011$ (−0.5 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.96	—	$n_{\mathrm{s},0.002}$	0.9723	$0.9707 \pm 0.0055$ (−0.3 $\sigma$ )	$\sigma_8(0.38)$	0.6922	$0.687 \pm 0.018$ (−0.6 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.01	$< 5.50$ (−0.0 $\sigma$ )	$Y_{\mathrm{P}}$	0.245433	$0.245416 \pm 0.000071$ (+0.0 $\sigma$ )	$f\sigma_8(0.51)$	0.4909	$0.488 \pm 0.011$ (−0.5 $\sigma$ )
$A_{100}^{\mathrm{dust}}$	1.000	$1.00 \pm 0.20$ (−0.0 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246759	$0.246743 \pm 0.000072$ (+0.0 $\sigma$ )	$\sigma_8(0.51)$	0.6481	$0.643 \pm 0.017$ (−0.6 $\sigma$ )
$A_{143}^{\mathrm{dust}}$	0.960	$0.95 \pm 0.18$ (−0.1 $\sigma$ )	$10^5 \mathrm{D}/\mathrm{H}$	2.5677	$2.575 \pm 0.034$ (−0.0 $\sigma$ )	$f\sigma_8(0.61)$	0.4863	$0.483 \pm 0.011$ (−0.6 $\sigma$ )
$A_{217}^{\mathrm{dust}}$	0.993	$0.98 \pm 0.10$ (−0.0 $\sigma$ )	$\mathrm{Age}/\mathrm{Gyr}$	13.7762	$13.781 \pm 0.029$ (+0.2 $\sigma$ )	$\sigma_8(0.61)$	0.6169	$0.612 \pm 0.016$ (−0.6 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dust}}$	1.008	$1.01 \pm 0.16$ (−0.0 $\sigma$ )	$z_*$	1089.641	$1089.70 \pm 0.33$ (+0.1 $\sigma$ )	$f\sigma_8(2.33)$	0.3114	$0.3090 \pm 0.0084$ (−0.6 $\sigma$ )
$c_{100}$	0.99782	$0.9975 \pm 0.0011$ (+0.0 $\sigma$ )	$r_*$	144.824	$144.81 \pm 0.33$ (−0.3 $\sigma$ )	$\sigma_8(2.33)$	0.3213	$0.3188 \pm 0.0089$ (−0.6 $\sigma$ )
$c_{217}$	1.00104	$1.0009 \pm 0.0016$ (−0.0 $\sigma$ )	$100\theta_*$	1.041222	$1.04120 \pm 0.00032$ (−0.4 $\sigma$ )	$f_{2000}^{143}$	27.38	$28 \pm 3$ (+0.1 $\sigma$ )
$c_{TE}$	0.9932	$0.9938 \pm 0.0053$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.9091	$13.908 \pm 0.031$ (−0.3 $\sigma$ )	$f_{2000}^{217}$	104.79	$105.5 \pm 2.1$ (+0.1 $\sigma$ )
$c_{EE}$	0.9906	$0.9907 \pm 0.0050$	$z_{\mathrm{drag}}$	1060.047	$1059.96 \pm 0.36$ (+0.1 $\sigma$ )	$f_{2000}^{143 \times 217}$	30.07	$30.6 \pm 2.3$ (+0.1 $\sigma$ )
$H_0$	68.11	$68.01 \pm 0.72$ (−0.3 $\sigma$ )	$r_{\mathrm{drag}}$	147.460	$147.46 \pm 0.33$ (−0.4 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	23.92	$24.1 \pm 1.4$ (−0.4 $\sigma$ )
$\Omega_{\Lambda}$	0.6954	$0.6940 \pm 0.0095$ (−0.2 $\sigma$ )	$k_{\mathrm{D}}$	0.140550	$0.14053 \pm 0.00034$ (+0.4 $\sigma$ )	$\chi_{\mathrm{CamSpec}}^2$	11496.2	$11512.2 \pm 5.7$ (+812.8 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3046	$0.3060 \pm 0.0095$ (+0.2 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160702	$0.16075 \pm 0.00021$ (−0.2 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.90	$7.8 \pm 3.4$ (+0.1 $\sigma$ )
$\Omega_{\mathrm{m}}h^2$	0.14131	$0.1415 \pm 0.0015$ (+0.3 $\sigma$ )	$z_{\mathrm{eq}}$	3361.4	$3365 \pm 35$ (+0.3 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	11520.1	$11536.3 \pm 5.6$ (+827.7 $\sigma$ )
$\Omega_{\mathrm{m}}h^3$	0.096250	$0.09620 \pm 0.00032$ (+0.1 $\sigma$ )	$k_{\mathrm{eq}}$	0.010259	$0.01027 \pm 0.00011$ (+0.3 $\sigma$ )			
$\sigma_8$	0.8434	$0.837 \pm 0.021$ (−0.6 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8210	$0.8203 \pm 0.0067$ (−0.3 $\sigma$ )			

Best-fit  $\chi_{\mathrm{eff}}^2 = 11522.05$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 4449.76$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 11544.10$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 4451.86$ ;  $R - 1 = 0.00836$   
 $\chi_{\mathrm{eff}}^2$ : CMB - commander\_dx12\_v3\_2\_29: 23.92 ( $\Delta$  -0.58) CamSpec like\_10.7HM\_1400\_unified: 11496.23



## 2.230 base\_CamSpecHM\_TTTEE\_lowl\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02244 \pm 0.00016 \quad (+0.2\sigma)$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.463 \pm 0.011 \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.15)$	$637.4 \pm 4.2 \quad (+0.1\sigma)$
$\Omega_{\mathrm{c}} h^2$	$0.1183 \pm 0.0011 \quad (+0.1\sigma)$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.623 \pm 0.014 \quad (-0.5\sigma)$	$H(0.38)$	$83.28 \pm 0.32 \quad (-0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04103 \pm 0.00030 \quad (-0.3\sigma)$	$\sigma_8/h^{0.5}$	$1.015 \pm 0.023 \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.38)$	$1521.8 \pm 8.5 \quad (+0.1\sigma)$
$\tau$	$0.095^{+0.026}_{-0.023} \quad (-0.5\sigma)$	$r_{\mathrm{drag}} h$	$100.38 \pm 0.85 \quad (-0.2\sigma)$	$H(0.51)$	$89.93 \pm 0.26 \quad (-0.1\sigma)$
$\ln(10^{10} A_{\mathrm{s}})$	$3.119^{+0.051}_{-0.045} \quad (-0.5\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.508^{+0.057}_{-0.052} \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.51)$	$1972 \pm 10 \quad (+0.1\sigma)$
$n_{\mathrm{s}}$	$0.9709 \pm 0.0044 \quad (-0.2\sigma)$	$z_{\mathrm{re}}$	$11.3^{+2.4}_{-1.8} \quad (-0.5\sigma)$	$H(0.61)$	$95.50 \pm 0.22 \quad (-0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0002 \pm 0.0024 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.26 \pm 0.11 \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.61)$	$2296 \pm 11 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$233 \pm 25 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.872 \pm 0.011 \quad (+0.1\sigma)$	$H(2.33)$	$235.49 \pm 0.64 \quad (+0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$36 \pm 9 \quad (+0.0\sigma)$	$D_{40}$	$1232 \pm 14 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(2.33)$	$5755 \pm 10 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{PS}}$	$104 \pm 10 \quad (+0.1\sigma)$	$D_{220}$	$5717 \pm 38 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.468 \pm 0.011 \quad (-0.5\sigma)$
$A_{217}^{\mathrm{CIB}}$	$38 \pm 7 \quad (-0.0\sigma)$	$D_{810}$	$2530 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.775 \pm 0.019 \quad (-0.5\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+2.0}_{-2.4} \quad (+0.0\sigma)$	$D_{1420}$	$815.6 \pm 4.7 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.488 \pm 0.011 \quad (-0.5\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.67 \pm 0.13 \quad (+0.0\sigma)$	$D_{2000}$	$231.3 \pm 1.7 \quad (-0.0\sigma)$	$\sigma_8(0.38)$	$0.688 \pm 0.017 \quad (-0.5\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.52^{+0.35}_{-0.25} \quad (-0.0\sigma)$	$n_{\mathrm{s},0.002}$	$0.9709 \pm 0.0044 \quad (-0.2\sigma)$	$f\sigma_8(0.51)$	$0.488 \pm 0.011 \quad (-0.5\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.245419 \pm 0.000061 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.644 \pm 0.016 \quad (-0.5\sigma)$
$A^{\mathrm{kSZ}}$	$< 5.54 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246746 \pm 0.000061 \quad (+0.2\sigma)$	$f\sigma_8(0.61)$	$0.483 \pm 0.011 \quad (-0.5\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.00 \pm 0.20 \quad (-0.0\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.574 \pm 0.029 \quad (-0.2\sigma)$	$\sigma_8(0.61)$	$0.613 \pm 0.015 \quad (-0.5\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.17 \quad (-0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.780 \pm 0.023 \quad (+0.0\sigma)$	$f\sigma_8(2.33)$	$0.3092 \pm 0.0077 \quad (-0.5\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (-0.0\sigma)$	$z_*$	$1089.68 \pm 0.26 \quad (-0.1\sigma)$	$\sigma_8(2.33)$	$0.3191 \pm 0.0081 \quad (-0.5\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.01 \pm 0.16 \quad (-0.0\sigma)$	$r_*$	$144.83 \pm 0.25 \quad (-0.3\sigma)$	$f_{2000}^{143}$	$27.7 \pm 3.1 \quad (-0.0\sigma)$
$c_{100}$	$0.9975 \pm 0.0010 \quad (+0.0\sigma)$	$100\theta_*$	$1.04121 \pm 0.00030 \quad (-0.3\sigma)$	$f_{2000}^{217}$	$105.5 \pm 2.1 \quad (+0.0\sigma)$
$c_{217}$	$1.0009 \pm 0.0016 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.910 \pm 0.024 \quad (-0.2\sigma)$	$f_{2000}^{143 \times 217}$	$30.6 \pm 2.2 \quad (-0.0\sigma)$
$c_{TE}$	$0.9937 \pm 0.0052$	$z_{\mathrm{drag}}$	$1059.97 \pm 0.34 \quad (+0.3\sigma)$	$\chi_{\mathrm{lowl}}^2$	$24.1 \pm 1.3 \quad (-0.4\sigma)$
$c_{EE}$	$0.9907 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.48 \pm 0.26 \quad (-0.3\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11511.7 \pm 5.5 \quad (+824.8\sigma)$
$H_0$	$68.06 \pm 0.50 \quad (-0.1\sigma)$	$k_{\mathrm{D}}$	$0.14051 \pm 0.00031 \quad (+0.3\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.030 \pm 0.043 \quad (-0.2\sigma)$
$\Omega_{\Lambda}$	$0.6948 \pm 0.0065 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16074 \pm 0.00020 \quad (-0.3\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.69 \pm 0.51 \quad (-0.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.3052 \pm 0.0065 \quad (+0.1\sigma)$	$z_{\mathrm{eq}}$	$3362 \pm 24 \quad (+0.2\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.03 \pm 0.89 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}} h^2$	$0.1413 \pm 0.0010 \quad (+0.2\sigma)$	$k_{\mathrm{eq}}$	$0.010262 \pm 0.000074 \quad (+0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}} h^3$	$0.09620 \pm 0.00032 \quad (+0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8208 \pm 0.0046 \quad (-0.2\sigma)$	$\chi_{\mathrm{BAO}}^2$	$5.76 \pm 0.76 \quad (-0.2\sigma)$
$\sigma_8$	$0.838 \pm 0.020 \quad (-0.5\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4532 \pm 0.0024 \quad (-0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11535.7 \pm 5.4 \quad (+842.1\sigma)$
$S_8$	$0.845 \pm 0.020 \quad (-0.5\sigma)$	$H(0.15)$	$73.28 \pm 0.43 \quad (-0.1\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11549.23; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4451.60; R - 1 = 0.01419$$



## 2.231 base\_CamSpecHM\_TTTEE\_lowl\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02244 \pm 0.00018 \quad (+0.0\sigma)$	$S_8$	$0.847 \pm 0.020 \quad (-0.3\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4532 \pm 0.0034 \quad (-0.3\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1183 \pm 0.0015 \quad (+0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.464 \pm 0.011 \quad (-0.3\sigma)$	$H(0.15)$	$73.26 \pm 0.61 \quad (-0.3\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04102 \pm 0.00033 \quad (-0.4\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.624 \pm 0.013 \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.15)$	$637.6 \pm 6.0 \quad (+0.3\sigma)$
$\tau$	$0.097 \pm 0.025 \quad (-0.6\sigma)$	$\sigma_8/h^{0.5}$	$1.018^{+0.021}_{-0.023} \quad (-0.6\sigma)$	$H(0.38)$	$83.27 \pm 0.45 \quad (-0.3\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.122 \pm 0.049 \quad (-0.6\sigma)$	$r_{\mathrm{drag}}h$	$100.3 \pm 1.2 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.38)$	$1522 \pm 12 \quad (+0.3\sigma)$
$n_{\mathrm{s}}$	$0.9710 \pm 0.0053 \quad (-0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.513^{+0.049}_{-0.055} \quad (-0.5\sigma)$	$H(0.51)$	$89.93^{+0.33}_{-0.37} \quad (-0.2\sigma)$
$y_{\mathrm{cal}}$	$1.0002 \pm 0.0024 \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$11.4 \pm 2.1 \quad (-0.6\sigma)$	$D_{\mathrm{M}}(0.51)$	$1973 \pm 14 \quad (+0.3\sigma)$
$A_{100}^{\mathrm{PS}}$	$233 \pm 25 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.273^{+0.099}_{-0.12} \quad (-0.6\sigma)$	$H(0.61)$	$95.50^{+0.27}_{-0.31} \quad (-0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$36 \pm 9 \quad (+0.1\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.872 \pm 0.012 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.61)$	$2296 \pm 15 \quad (+0.3\sigma)$
$A_{217}^{\mathrm{PS}}$	$104 \pm 10 \quad (+0.1\sigma)$	$D_{40}$	$1233 \pm 14 \quad (-0.3\sigma)$	$H(2.33)$	$235.52 \pm 0.89 \quad (+0.3\sigma)$
$A_{217}^{\mathrm{CIB}}$	$38 \pm 7 \quad (-0.0\sigma)$	$D_{220}$	$5716 \pm 38 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5755^{+14}_{-12} \quad (+0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+2.0}_{-2.4} \quad (-0.0\sigma)$	$D_{810}$	$2530 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.469 \pm 0.011 \quad (-0.3\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.68 \pm 0.13 \quad (+0.0\sigma)$	$D_{1420}$	$815.5 \pm 4.7 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.776^{+0.017}_{-0.019} \quad (-0.6\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.52^{+0.36}_{-0.25} \quad (+0.0\sigma)$	$D_{2000}$	$231.3 \pm 1.7 \quad (-0.1\sigma)$	$f\sigma_8(0.38)$	$0.489 \pm 0.011 \quad (-0.5\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.9710 \pm 0.0053 \quad (-0.3\sigma)$	$\sigma_8(0.38)$	$0.689^{+0.015}_{-0.018} \quad (-0.6\sigma)$
$A^{\mathrm{kSZ}}$	$< 5.45 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.245419 \pm 0.000070 \quad (+0.0\sigma)$	$f\sigma_8(0.51)$	$0.4888^{+0.0099}_{-0.011} \quad (-0.5\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.00 \pm 0.20 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246746 \pm 0.000070 \quad (+0.0\sigma)$	$\sigma_8(0.51)$	$0.645^{+0.014}_{-0.017} \quad (-0.6\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.18 \quad (-0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.574 \pm 0.033 \quad (-0.0\sigma)$	$f\sigma_8(0.61)$	$0.4841^{+0.0098}_{-0.011} \quad (-0.5\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (-0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.780 \pm 0.029 \quad (+0.2\sigma)$	$\sigma_8(0.61)$	$0.614^{+0.014}_{-0.016} \quad (-0.6\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.01 \pm 0.16 \quad (-0.0\sigma)$	$z_*$	$1089.69 \pm 0.33 \quad (+0.1\sigma)$	$f\sigma_8(2.33)$	$0.3098^{+0.0070}_{-0.0083} \quad (-0.6\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$r_*$	$144.82 \pm 0.33 \quad (-0.3\sigma)$	$\sigma_8(2.33)$	$0.3196^{+0.0074}_{-0.0088} \quad (-0.6\sigma)$
$c_{217}$	$1.0009 \pm 0.0016 \quad (-0.0\sigma)$	$100\theta_*$	$1.04120 \pm 0.00032 \quad (-0.4\sigma)$	$f_{2000}^{143}$	$28 \pm 3 \quad (+0.1\sigma)$
$c_{TE}$	$0.9936 \pm 0.0052$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.909 \pm 0.030 \quad (-0.3\sigma)$	$f_{2000}^{217}$	$105.4 \pm 2.1 \quad (+0.1\sigma)$
$c_{EE}$	$0.9906 \pm 0.0050$	$z_{\mathrm{drag}}$	$1059.97 \pm 0.36 \quad (+0.1\sigma)$	$f_{2000}^{143 \times 217}$	$30.5 \pm 2.3 \quad (+0.1\sigma)$
$H_0$	$68.05 \pm 0.71 \quad (-0.3\sigma)$	$r_{\mathrm{drag}}$	$147.47 \pm 0.32 \quad (-0.4\sigma)$	$\chi_{\mathrm{lowl}}^2$	$24.2 \pm 1.4 \quad (-0.4\sigma)$
$\Omega_{\Lambda}$	$0.6945 \pm 0.0093 \quad (-0.3\sigma)$	$k_{\mathrm{D}}$	$0.14052 \pm 0.00034 \quad (+0.4\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11512.0 \pm 5.6 \quad (+821.5\sigma)$
$\Omega_{\mathrm{m}}$	$0.3055 \pm 0.0093 \quad (+0.3\sigma)$	$100\theta_{\mathrm{D}}$	$0.16074 \pm 0.00021 \quad (-0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1414 \pm 0.0014 \quad (+0.3\sigma)$	$z_{\mathrm{eq}}$	$3363 \pm 34 \quad (+0.3\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11536.2 \pm 5.6 \quad (+832.9\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09620 \pm 0.00032 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.01027 \pm 0.00010 \quad (+0.3\sigma)$		
$\sigma_8$	$0.839^{+0.018}_{-0.020} \quad (-0.6\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8206 \pm 0.0066 \quad (-0.3\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11543.93; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4451.79; R - 1 = 0.00900$$



## 2.232 base\_CamSpecHM\_TTTEE\_lowl\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02244 \pm 0.00016 \quad (+0.2\sigma)$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.463 \pm 0.010 \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.15)$	$637.3 \pm 4.2 \quad (+0.1\sigma)$
$\Omega_{\mathrm{c}} h^2$	$0.1182 \pm 0.0011 \quad (+0.1\sigma)$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.624 \pm 0.013 \quad (-0.5\sigma)$	$H(0.38)$	$83.29 \pm 0.32 \quad (-0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04104 \pm 0.00030 \quad (-0.3\sigma)$	$\sigma_8/h^{0.5}$	$1.017 \pm 0.022 \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.38)$	$1521.5 \pm 8.4 \quad (+0.1\sigma)$
$\tau$	$0.097 \pm 0.023 \quad (-0.5\sigma)$	$r_{\mathrm{drag}} h$	$100.40 \pm 0.84 \quad (-0.2\sigma)$	$H(0.51)$	$89.94 \pm 0.26 \quad (-0.1\sigma)$
$\ln(10^{10} A_{\mathrm{s}})$	$3.122 \pm 0.046 \quad (-0.5\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.512 \pm 0.052 \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.51)$	$1972.0 \pm 9.9 \quad (+0.1\sigma)$
$n_{\mathrm{s}}$	$0.9711 \pm 0.0043 \quad (-0.2\sigma)$	$z_{\mathrm{re}}$	$11.4^{+2.1}_{-1.8} \quad (-0.5\sigma)$	$H(0.61)$	$95.51 \pm 0.22 \quad (-0.0\sigma)$
$y_{\mathrm{cal}}$	$1.0002 \pm 0.0024 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.27 \pm 0.10 \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.61)$	$2296 \pm 11 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$233 \pm 25 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.871 \pm 0.011 \quad (+0.1\sigma)$	$H(2.33)$	$235.48 \pm 0.64 \quad (+0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$36 \pm 8 \quad (+0.0\sigma)$	$D_{40}$	$1233 \pm 14 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(2.33)$	$5755 \pm 10 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{PS}}$	$105 \pm 10 \quad (+0.1\sigma)$	$D_{220}$	$5717 \pm 38 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.469 \pm 0.010 \quad (-0.5\sigma)$
$A_{217}^{\mathrm{CIB}}$	$38 \pm 7 \quad (-0.1\sigma)$	$D_{810}$	$2530 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.776 \pm 0.017 \quad (-0.5\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+2.0}_{-2.4} \quad (+0.0\sigma)$	$D_{1420}$	$815.5 \pm 4.7 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.489 \pm 0.011 \quad (-0.5\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.67 \pm 0.13 \quad (+0.0\sigma)$	$D_{2000}$	$231.3 \pm 1.7 \quad (-0.0\sigma)$	$\sigma_8(0.38)$	$0.689 \pm 0.016 \quad (-0.5\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.52^{+0.35}_{-0.25} \quad (-0.0\sigma)$	$n_{\mathrm{s},0.002}$	$0.9711 \pm 0.0043 \quad (-0.2\sigma)$	$f\sigma_8(0.51)$	$0.489 \pm 0.011 \quad (-0.5\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.245421 \pm 0.000060 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.645 \pm 0.015 \quad (-0.5\sigma)$
$A^{\mathrm{kSZ}}$	$< 5.50 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246748 \pm 0.000061 \quad (+0.2\sigma)$	$f\sigma_8(0.61)$	$0.484 \pm 0.010 \quad (-0.5\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.00 \pm 0.19 \quad (-0.0\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.573 \pm 0.029 \quad (-0.2\sigma)$	$\sigma_8(0.61)$	$0.614 \pm 0.014 \quad (-0.5\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.17 \quad (-0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.779 \pm 0.023 \quad (-0.0\sigma)$	$f\sigma_8(2.33)$	$0.3097 \pm 0.0072 \quad (-0.5\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (-0.0\sigma)$	$z_*$	$1089.68 \pm 0.25 \quad (-0.2\sigma)$	$\sigma_8(2.33)$	$0.3196 \pm 0.0075 \quad (-0.5\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.01 \pm 0.16 \quad (-0.1\sigma)$	$r_*$	$144.83 \pm 0.25 \quad (-0.3\sigma)$	$f_{2000}^{143}$	$27.6 \pm 3.0 \quad (-0.0\sigma)$
$c_{100}$	$0.9975 \pm 0.0010 \quad (+0.0\sigma)$	$100\theta_*$	$1.04121 \pm 0.00030 \quad (-0.3\sigma)$	$f_{2000}^{217}$	$105.5 \pm 2.0 \quad (-0.0\sigma)$
$c_{217}$	$1.0009 \pm 0.0016 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.910 \pm 0.023 \quad (-0.2\sigma)$	$f_{2000}^{143 \times 217}$	$30.5 \pm 2.2 \quad (-0.0\sigma)$
$c_{TE}$	$0.9936 \pm 0.0052$	$z_{\mathrm{drag}}$	$1059.98 \pm 0.33 \quad (+0.3\sigma)$	$\chi_{\mathrm{lowl}}^2$	$24.1 \pm 1.3 \quad (-0.4\sigma)$
$c_{EE}$	$0.9906 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.48 \pm 0.26 \quad (-0.3\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11511.5 \pm 5.4 \quad (+834.3\sigma)$
$H_0$	$68.08 \pm 0.49 \quad (-0.1\sigma)$	$k_{\mathrm{D}}$	$0.14051 \pm 0.00031 \quad (+0.3\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.030 \pm 0.042 \quad (-0.2\sigma)$
$\Omega_{\Lambda}$	$0.6950 \pm 0.0064 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16073 \pm 0.00019 \quad (-0.4\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.71 \pm 0.51 \quad (-0.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.3050 \pm 0.0064 \quad (+0.1\sigma)$	$z_{\mathrm{eq}}$	$3362 \pm 24 \quad (+0.2\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.01 \pm 0.86 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}} h^2$	$0.1413 \pm 0.0010 \quad (+0.2\sigma)$	$k_{\mathrm{eq}}$	$0.010261 \pm 0.000073 \quad (+0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}} h^3$	$0.09621 \pm 0.00032 \quad (+0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8209 \pm 0.0046 \quad (-0.2\sigma)$	$\chi_{\mathrm{BAO}}^2$	$5.75 \pm 0.74 \quad (-0.2\sigma)$
$\sigma_8$	$0.839 \pm 0.018 \quad (-0.5\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4533 \pm 0.0023 \quad (-0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11535.6 \pm 5.3 \quad (+847.1\sigma)$
$S_8$	$0.846 \pm 0.019 \quad (-0.5\sigma)$	$H(0.15)$	$73.29 \pm 0.43 \quad (-0.1\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11549.09; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4451.53; R - 1 = 0.01512$$



### 2.233 base\_CamSpecHM\_TTTEEE\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022266	$0.02227 \pm 0.00016$ (+0.9 $\sigma$ )	$S_8$	0.8311	$0.831 \pm 0.016$ (−0.7 $\sigma$ )	$100\theta_{s,eq}$	0.44945	$0.4495 \pm 0.0030$ (+0.7 $\sigma$ )
$\Omega_c h^2$	0.12002	$0.1200 \pm 0.0014$ (−0.7 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4552	$0.4552 \pm 0.0090$ (−0.7 $\sigma$ )	$H(0.15)$	72.56	$72.57 \pm 0.53$ (+0.8 $\sigma$ )
$100\theta_{MC}$	1.040829	$1.04084 \pm 0.00032$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6070	$0.6069 \pm 0.0084$ (−0.7 $\sigma$ )	$D_M(0.15)$	644.5	$644.5 \pm 5.3$ (−0.8 $\sigma$ )
$\tau$	0.0527	$0.0527 \pm 0.0078$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9872	$0.987 \pm 0.012$ (−0.7 $\sigma$ )	$H(0.38)$	82.753	$82.76 \pm 0.38$ (+0.8 $\sigma$ )
$\ln(10^{10} A_s)$	3.0397	$3.040 \pm 0.016$ (−0.1 $\sigma$ )	$r_{drag} h$	98.96	$99.0 \pm 1.1$ (+0.7 $\sigma$ )	$D_M(0.38)$	1536.0	$1536 \pm 11$ (−0.8 $\sigma$ )
$n_s$	0.96396	$0.9639 \pm 0.0045$ (+0.7 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4431	$2.443 \pm 0.029$ (−0.7 $\sigma$ )	$H(0.51)$	89.518	$89.53 \pm 0.30$ (+0.8 $\sigma$ )
$y_{cal}$	1.00037	$1.0005 \pm 0.0025$ (+0.0 $\sigma$ )	$z_{re}$	7.54	$7.52 \pm 0.80$ (+0.1 $\sigma$ )	$D_M(0.51)$	1989.0	$1989 \pm 12$ (−0.8 $\sigma$ )
$A_{100}^{PS}$	238.7	$242 \pm 25$ (−0.1 $\sigma$ )	$10^9 A_s$	2.0899	$2.090 \pm 0.033$ (−0.1 $\sigma$ )	$H(0.61)$	95.173	$95.18 \pm 0.24$ (+0.8 $\sigma$ )
$A_{143}^{PS}$	43.9	$40 \pm 8$ (−0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8808	$1.881 \pm 0.012$ (−0.4 $\sigma$ )	$D_M(0.61)$	2313.8	$2314 \pm 13$ (−0.8 $\sigma$ )
$A_{217}^{PS}$	101.4	$102 \pm 10$ (+0.1 $\sigma$ )	$D_{40}$	1230.7	$1231 \pm 13$ (−0.5 $\sigma$ )	$H(2.33)$	236.46	$236.46 \pm 0.84$ (−0.6 $\sigma$ )
$A_{217}^{CIB}$	43.3	$40 \pm 7$ (−0.2 $\sigma$ )	$D_{220}$	5723.0	$5724 \pm 39$ (+0.4 $\sigma$ )	$D_M(2.33)$	5769.4	$5769 \pm 11$ (−0.8 $\sigma$ )
$A_{143}^{tSZ}$	5.45	$3.8_{-2.5}^{+1.9}$ (+0.1 $\sigma$ )	$D_{810}$	2535.1	$2535 \pm 14$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4594	$0.4593 \pm 0.0084$ (−0.7 $\sigma$ )
$r_{143 \times 217}^{PS}$	0.637	$0.65 \pm 0.13$ (+0.1 $\sigma$ )	$D_{1420}$	815.02	$815.0 \pm 4.9$ (+0.4 $\sigma$ )	$\sigma_8(0.15)$	0.7475	$0.7475 \pm 0.0066$ (−0.5 $\sigma$ )
$r_{143 \times 217}^{CIB}$	0.780	$0.57_{-0.16}^{+0.39}$ (−0.1 $\sigma$ )	$D_{2000}$	229.94	$229.9 \pm 1.6$ (+0.5 $\sigma$ )	$f\sigma_8(0.38)$	0.4766	$0.4766 \pm 0.0069$ (−0.7 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.39	—	$n_{s,0.002}$	0.96396	$0.9639 \pm 0.0045$ (+0.7 $\sigma$ )	$\sigma_8(0.38)$	0.6621	$0.6621 \pm 0.0056$ (−0.3 $\sigma$ )
$A^{kSZ}$	1.92	$4.8_{-3.7}^{+2.6}$ (−0.2 $\sigma$ )	$Y_P$	0.245353	$0.245352_{-0.000061}^{+0.000068}$ (+0.9 $\sigma$ )	$f\sigma_8(0.51)$	0.4747	$0.4746 \pm 0.0060$ (−0.7 $\sigma$ )
$A_{100}^{dust}$	1.006	$1.01 \pm 0.19$ (+0.0 $\sigma$ )	$Y_P^{BBN}$	0.246680	$0.246678_{-0.000061}^{+0.000068}$ (+0.9 $\sigma$ )	$\sigma_8(0.51)$	0.6194	$0.6194 \pm 0.0051$ (−0.3 $\sigma$ )
$A_{143}^{dust}$	0.977	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	$10^5 D/H$	2.6052	$2.606 \pm 0.030$ (−0.9 $\sigma$ )	$f\sigma_8(0.61)$	0.4693	$0.4693 \pm 0.0055$ (−0.7 $\sigma$ )
$A_{217}^{dust}$	0.968	$0.97 \pm 0.10$ (+0.1 $\sigma$ )	Age/Gyr	13.8109	$13.810 \pm 0.025$ (−0.8 $\sigma$ )	$\sigma_8(0.61)$	0.58923	$0.5892 \pm 0.0048$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{dust}$	0.996	$1.03 \pm 0.16$ (−0.0 $\sigma$ )	$z_*$	1090.053	$1090.05 \pm 0.29$ (−0.9 $\sigma$ )	$f\sigma_8(2.33)$	0.29691	$0.2969 \pm 0.0024$ (−0.1 $\sigma$ )
$c_{100}$	0.99769	$0.9976 \pm 0.0011$ (+0.1 $\sigma$ )	$r_*$	144.505	$144.51 \pm 0.32$ (+0.5 $\sigma$ )	$\sigma_8(2.33)$	0.30590	$0.3059 \pm 0.0025$ (+0.1 $\sigma$ )
$c_{217}$	1.00131	$1.0011 \pm 0.0016$ (−0.1 $\sigma$ )	$100\theta_*$	1.041020	$1.04103 \pm 0.00031$ (+0.2 $\sigma$ )	$f_{2000}^{143}$	30.67	$30.3 \pm 2.8$ (−0.4 $\sigma$ )
$c_{TE}$	0.99656	$0.9966 \pm 0.0049$	$D_M(z_*)/\text{Gpc}$	13.8811	$13.881 \pm 0.029$ (+0.5 $\sigma$ )	$f_{2000}^{217}$	107.15	$107.2 \pm 1.9$ (−0.4 $\sigma$ )
$c_{EE}$	0.99247	$0.9924 \pm 0.0049$	$z_{drag}$	1059.704	$1059.70 \pm 0.33$ (+0.8 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.59	$32.5 \pm 2.0$ (−0.5 $\sigma$ )
$H_0$	67.23	$67.24 \pm 0.62$ (+0.8 $\sigma$ )	$r_{drag}$	147.201	$147.21 \pm 0.32$ (+0.4 $\sigma$ )	$\chi_{small}^2$	395.86	$396.9 \pm 1.7$ (−0.0 $\sigma$ )
$\Omega_\Lambda$	0.6838	$0.6837 \pm 0.0086$ (+0.7 $\sigma$ )	$k_D$	0.140671	$0.14067 \pm 0.00035$ (−0.1 $\sigma$ )	$\chi_{CamSpec}^2$	11499.5	$11514.4 \pm 5.6$ (+840.5 $\sigma$ )
$\Omega_m$	0.3162	$0.3163 \pm 0.0086$ (−0.7 $\sigma$ )	$100\theta_D$	0.160888	$0.16089 \pm 0.00019$ (−0.8 $\sigma$ )	$\chi_{prior}^2$	2.14	$7.8 \pm 3.4$ (+0.0 $\sigma$ )
$\Omega_m h^2$	0.14293	$0.1429 \pm 0.0013$ (−0.7 $\sigma$ )	$z_{eq}$	3400.2	$3400 \pm 32$ (−0.7 $\sigma$ )	$\chi_{CMB}^2$	11895.4	$11911.3 \pm 5.7$ (+813.8 $\sigma$ )
$\Omega_m h^3$	0.096092	$0.09609 \pm 0.00032$ (+0.3 $\sigma$ )	$k_{eq}$	0.010378	$0.010377 \pm 0.000096$ (−0.7 $\sigma$ )			
$\sigma_8$	0.8094	$0.8094 \pm 0.0075$ (−0.5 $\sigma$ )	$100\theta_{eq}$	0.8133	$0.8134 \pm 0.0059$ (+0.7 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 11897.49$ ;  $\Delta\chi_{\text{eff}}^2 = 4449.66$ ;  $\bar{\chi}_{\text{eff}}^2 = 11919.09$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4451.60$ ;  $R - 1 = 0.00575$   
 $\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.86 ( $\Delta$  0.04) CamSpec like\_10.7HM\_1400\_unified: 11499.49



## 2.234 base\_WMAP

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022608	$0.02265 \pm 0.00049$	$D_{40}$	1219.6	$1219 \pm 24$	$H(0.15)$	74.44	$74.6 \pm 1.9$
$\Omega_{\mathrm{c}}h^2$	0.11413	$0.1136 \pm 0.0045$	$D_{220}$	5751.7	$5748 \pm 35$	$D_{\mathrm{M}}(0.15)$	626.0	$625 \pm 17$
$100\theta_{\mathrm{MC}}$	1.04031	$1.0401 \pm 0.0022$	$D_{810}$	2517.1	$2507 \pm 32$	$H(0.38)$	84.04	$84.2 \pm 1.4$
$\tau$	0.0878	$0.089^{+0.012}_{-0.015}$	$D_{1420}$	811.2	$808 \pm 15$	$D_{\mathrm{M}}(0.38)$	1499.4	$1496 \pm 35$
$\ln(10^{10}A_{\mathrm{s}})$	3.0934	$3.092 \pm 0.030$	$D_{2000}$	229.4	$228.4 \pm 5.9$	$H(0.51)$	90.46	$90.6 \pm 1.2$
$n_{\mathrm{s}}$	0.9737	$0.973 \pm 0.013$	$n_{\mathrm{s},0.002}$	0.9737	$0.973 \pm 0.013$	$D_{\mathrm{M}}(0.51)$	1946.6	$1943 \pm 42$
$A_{\mathrm{tsz}}$	0.08	—	$Y_{\mathrm{P}}$	0.245483	$0.24550 \pm 0.00021$	$H(0.61)$	95.85	$95.9 \pm 1.0$
$H_0$	69.46	$69.7 \pm 2.1$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246810	$0.24683 \pm 0.00021$	$D_{\mathrm{M}}(0.61)$	2268.6	$2265 \pm 46$
$\Omega_{\Lambda}$	0.7152	$0.717^{+0.028}_{-0.023}$	$10^5D/H$	2.543	$2.538 \pm 0.088$	$H(2.33)$	232.87	$232.5 \pm 2.9$
$\Omega_{\mathrm{m}}$	0.2848	$0.283^{+0.023}_{-0.028}$	Age/Gyr	13.765	$13.76 \pm 0.11$	$D_{\mathrm{M}}(2.33)$	5746.0	$5744 \pm 49$
$\Omega_{\mathrm{m}}h^2$	0.13739	$0.1369 \pm 0.0044$	$z_{*}$	1089.11	$1089.03 \pm 0.80$	$f\sigma_8(0.15)$	0.4396	$0.436 \pm 0.028$
$\Omega_{\mathrm{m}}h^3$	0.09543	$0.0953 \pm 0.0017$	$r_{*}$	145.79	$145.9 \pm 1.2$	$\sigma_8(0.15)$	0.7525	$0.749 \pm 0.020$
$\sigma_8$	0.8114	$0.808 \pm 0.023$	$100\theta_{*}$	1.04047	$1.0403 \pm 0.0022$	$f\sigma_8(0.38)$	0.4639	$0.461 \pm 0.023$
$S_8$	0.790	$0.785^{+0.050}_{-0.056}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	14.012	$14.03 \pm 0.12$	$\sigma_8(0.38)$	0.6701	$0.668 \pm 0.016$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4330	$0.430^{+0.027}_{-0.031}$	$z_{\mathrm{drag}}$	1060.05	$1060.1 \pm 1.1$	$f\sigma_8(0.51)$	0.4657	$0.463 \pm 0.020$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.5927	$0.589 \pm 0.028$	$r_{\mathrm{drag}}$	148.40	$148.5 \pm 1.2$	$\sigma_8(0.51)$	0.6284	$0.626 \pm 0.014$
$\sigma_8/h^{0.5}$	0.9735	$0.968 \pm 0.038$	$k_{\mathrm{D}}$	0.13967	$0.1396 \pm 0.0014$	$f\sigma_8(0.61)$	0.4630	$0.460 \pm 0.018$
$r_{\mathrm{drag}}h$	103.08	$103.5 \pm 3.7$	$100\theta_{\mathrm{D}}$	0.16053	$0.16050 \pm 0.00050$	$\sigma_8(0.61)$	0.5987	$0.597 \pm 0.013$
$\langle d^2 \rangle^{1/2}$	2.429	$2.423 \pm 0.076$	$z_{\mathrm{eq}}$	3268	$3256 \pm 100$	$f\sigma_8(2.33)$	0.3030	$0.3021 \pm 0.0064$
$z_{\mathrm{re}}$	10.61	$10.7 \pm 1.1$	$k_{\mathrm{eq}}$	0.009973	$0.00994 \pm 0.00032$	$\sigma_8(2.33)$	0.3137	$0.3129 \pm 0.0064$
$10^9A_{\mathrm{s}}$	2.205	$2.203^{+0.061}_{-0.070}$	$100\theta_{\mathrm{eq}}$	0.8384	$0.841 \pm 0.021$	$\chi_{\mathrm{WMAP}}^2$	7557.95	$7564.0 \pm 3.3$
$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8500	$1.843 \pm 0.030$	$100\theta_{\mathrm{s,eq}}$	0.4623	$0.464 \pm 0.011$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 7557.95$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 7563.97$ ;  $R - 1 = 0.00844$   
 $\chi_{\mathrm{eff}}^2$ : CMB - WMAP: 7557.95



## 2.235 base\_WMAP\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022403	$0.02246 \pm 0.00043$	$D_{220}$	5740.4	$5739 \pm 32$	$H(0.38)$	83.14	$83.20 \pm 0.62$
$\Omega_{\mathrm{c}}h^2$	0.11645	$0.1167 \pm 0.0021$	$D_{810}$	2518.4	$2516 \pm 31$	$D_{\mathrm{M}}(0.38)$	1522.4	$1522 \pm 14$
$100\theta_{\mathrm{MC}}$	1.03933	$1.0395 \pm 0.0020$	$D_{1420}$	809.4	$809 \pm 16$	$H(0.51)$	89.72	$89.79 \pm 0.61$
$\tau$	0.0862	$0.086^{+0.012}_{-0.013}$	$D_{2000}$	228.7	$228.7 \pm 6.0$	$D_{\mathrm{M}}(0.51)$	1973.9	$1973 \pm 17$
$\ln(10^{10}A_{\mathrm{s}})$	3.0958	$3.095^{+0.028}_{-0.031}$	$n_{\mathrm{s},0.002}$	0.9678	$0.967 \pm 0.010$	$H(0.61)$	95.23	$95.31 \pm 0.61$
$n_{\mathrm{s}}$	0.9678	$0.967 \pm 0.010$	$Y_{\mathrm{P}}$	0.245409	$0.24543 \pm 0.00018$	$D_{\mathrm{M}}(0.61)$	2298.3	$2297 \pm 19$
$A_{\mathrm{tsz}}$	0.03	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246735	$0.24675 \pm 0.00018$	$H(2.33)$	234.09	$234.4 \pm 1.7$
$H_0$	68.11	$68.14 \pm 0.73$	$10^5 D/H$	2.579	$2.571 \pm 0.080$	$D_{\mathrm{M}}(2.33)$	5773.9	$5769 \pm 36$
$\Omega_{\Lambda}$	0.6993	$0.6988 \pm 0.0084$	Age/Gyr	13.826	$13.815 \pm 0.086$	$f\sigma_8(0.15)$	0.4547	$0.455 \pm 0.013$
$\Omega_{\mathrm{m}}$	0.3007	$0.3012 \pm 0.0084$	$z_*$	1089.57	$1089.53 \pm 0.51$	$\sigma_8(0.15)$	0.7580	$0.759 \pm 0.016$
$\Omega_{\mathrm{m}}h^2$	0.13949	$0.1398 \pm 0.0023$	$r_*$	145.33	$145.22 \pm 0.73$	$f\sigma_8(0.38)$	0.4757	$0.476 \pm 0.012$
$\Omega_{\mathrm{m}}h^3$	0.09501	$0.0953 \pm 0.0018$	$100\theta_*$	1.03951	$1.0397 \pm 0.0020$	$\sigma_8(0.38)$	0.6732	$0.674^{+0.013}_{-0.015}$
$\sigma_8$	0.8192	$0.820 \pm 0.018$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.981	$13.967 \pm 0.092$	$f\sigma_8(0.51)$	0.4756	$0.476 \pm 0.012$
$S_8$	0.8201	$0.821 \pm 0.025$	$z_{\mathrm{drag}}$	1059.74	$1059.9 \pm 1.1$	$\sigma_8(0.51)$	0.6305	$0.631^{+0.012}_{-0.014}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4492	$0.450 \pm 0.013$	$r_{\mathrm{drag}}$	148.00	$147.87 \pm 0.86$	$f\sigma_8(0.61)$	0.4714	$0.472 \pm 0.011$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6066	$0.607 \pm 0.015$	$k_{\mathrm{D}}$	0.13993	$0.1401 \pm 0.0012$	$\sigma_8(0.61)$	0.6002	$0.600^{+0.012}_{-0.013}$
$\sigma_8/h^{0.5}$	0.9926	$0.993 \pm 0.022$	$100\theta_{\mathrm{D}}$	0.16058	$0.16054 \pm 0.00051$	$f\sigma_8(2.33)$	0.3031	$0.3032^{+0.0059}_{-0.0065}$
$r_{\mathrm{drag}}h$	100.81	$100.8 \pm 1.1$	$z_{\mathrm{eq}}$	3318	$3326 \pm 54$	$\sigma_8(2.33)$	0.3130	$0.3131^{+0.0060}_{-0.0067}$
$\langle d^2 \rangle^{1/2}$	2.4717	$2.474 \pm 0.041$	$k_{\mathrm{eq}}$	0.010127	$0.01015 \pm 0.00016$	$\chi_{\mathrm{WMAP}}^2$	7558.29	$7563.6 \pm 3.2$
$z_{\mathrm{re}}$	10.59	$10.5 \pm 1.1$	$100\theta_{\mathrm{eq}}$	0.8275	$0.8265 \pm 0.0084$	$\chi_{6\mathrm{DF}}^2$	0.0040	$0.055 \pm 0.079$
$10^9 A_{\mathrm{s}}$	2.210	$2.210^{+0.059}_{-0.070}$	$100\theta_{\mathrm{s,eq}}$	0.45672	$0.4561 \pm 0.0045$	$\chi_{\mathrm{MGS}}^2$	1.89	$1.94 \pm 0.70$
$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8604	$1.859 \pm 0.022$	$H(0.15)$	73.26	$73.30 \pm 0.67$	$\chi_{\mathrm{DR12BAO}}^2$	3.47	$4.3 \pm 1.2$
$D_{40}$	1231.4	$1233 \pm 18$	$D_{\mathrm{M}}(0.15)$	637.3	$637.0 \pm 6.3$	$\chi_{\mathrm{BAO}}^2$	5.37	$6.3 \pm 1.4$

Best-fit  $\chi_{\mathrm{eff}}^2 = 7563.66$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 7569.93$ ;  $R - 1 = 0.00961$

$\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.89 DR12BAO: 3.47 CMB - WMAP: 7558.29



## 2.236 base\_DES\_lenspriors

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022199	$0.02220 \pm 0.00050$	$\Omega_m h^2$	0.1256	$0.1302^{+0.0088}_{-0.013}$	$k_D$	0.13559	$0.1369^{+0.0029}_{-0.0038}$
$\Omega_c h^2$	0.1028	$0.1074^{+0.0087}_{-0.013}$	$\Omega_m h^3$	0.0888	$0.095^{+0.011}_{-0.020}$	$100\theta_D$	0.16018	$0.1614^{+0.0037}_{-0.0053}$
$100\theta_{MC}$	1.0317	$1.040^{+0.026}_{-0.036}$	$\sigma_8$	0.872	$0.866^{+0.067}_{-0.089}$	$z_{eq}$	2987	$3097^{+210}_{-300}$
$\ln(10^{10} A_s)$	3.375	$3.30^{+0.17}_{-0.15}$	$S_8$	0.7986	$0.790 \pm 0.025$	$k_{eq}$	0.00912	$0.00945^{+0.00064}_{-0.00093}$
$n_s$	0.9617	$0.960 \pm 0.020$	$\sigma_8 \Omega_m^{0.5}$	0.4374	$0.433 \pm 0.014$	$100\theta_{eq}$	0.8885	$0.875 \pm 0.034$
$b_{DES}^1$	1.339	$1.36^{+0.14}_{-0.16}$	$\sigma_8 \Omega_m^{0.25}$	0.6177	$0.612^{+0.032}_{-0.039}$	$100\theta_{s,eq}$	0.4883	$0.481 \pm 0.017$
$b_{DES}^2$	1.534	$1.56^{+0.14}_{-0.16}$	$\sigma_8/h^{0.5}$	1.038	$1.019 \pm 0.055$	$H(0.15)$	75.2	$76.8^{+5.1}_{-8.2}$
$b_{DES}^3$	1.521	$1.55^{+0.14}_{-0.16}$	$r_{drag} h$	107.5	$108.7^{+7.1}_{-10}$	$D_M(0.15)$	617	$611^{+60}_{-54}$
$b_{DES}^4$	1.835	$1.87^{+0.17}_{-0.19}$	$\langle d^2 \rangle^{1/2}$	2.717	$2.65 \pm 0.15$	$H(0.38)$	83.9	$85.7^{+5.0}_{-8.1}$
$b_{DES}^5$	1.893	$1.93^{+0.18}_{-0.21}$	$z_{re}$	7.487	$7.58^{+0.22}_{-0.30}$	$D_M(0.38)$	1487	$1470^{+140}_{-120}$
$m_{DES}^1$	0.0132	$0.012 \pm 0.023$	$10^9 A_s$	2.922	$2.74^{+0.39}_{-0.46}$	$H(0.51)$	89.8	$91.6^{+5.0}_{-8.0}$
$m_{DES}^2$	0.0154	$0.014 \pm 0.022$	$10^9 A_s e^{-2\tau}$	2.618	$2.45^{+0.35}_{-0.41}$	$D_M(0.51)$	1936	$1913^{+170}_{-150}$
$m_{DES}^3$	0.0062	$0.009 \pm 0.021$	$D_{40}$	1795	$1680^{+200}_{-300}$	$H(0.61)$	94.8	$96.7^{+5.0}_{-8.0}$
$m_{DES}^4$	0.0087	$0.011 \pm 0.021$	$D_{220}$	8615	$7948^{+1000}_{-2000}$	$D_M(0.61)$	2261	$2233^{+200}_{-170}$
$A_{IA,DES}$	0.507	$0.49^{+0.18}_{-0.22}$	$D_{810}$	3566	$3256^{+500}_{-600}$	$H(2.33)$	224.0	$228.0^{+8.5}_{-12}$
$\alpha_{IA,DES}$	-1.19	$-0.2^{+2.3}_{-2.7}$	$D_{1420}$	1125	$1013 \pm 200$	$D_M(2.33)$	5835	$5754^{+410}_{-340}$
$\Delta z_{l,DES}^1$	0.0041	$0.0044 \pm 0.0075$	$D_{2000}$	319	$297^{+50}_{-60}$	$f\sigma_8(0.15)$	0.4467	$0.442 \pm 0.016$
$\Delta z_{l,DES}^2$	0.0017	$0.0020 \pm 0.0067$	$n_{s,0.002}$	0.9617	$0.960 \pm 0.020$	$\sigma_8(0.15)$	0.813	$0.808^{+0.066}_{-0.088}$
$\Delta z_{l,DES}^3$	0.0044	$0.0044 \pm 0.0066$	$Y_P$	0.245325	$0.24531^{+0.00023}_{-0.00019}$	$f\sigma_8(0.38)$	0.4806	$0.475 \pm 0.025$
$\Delta z_{l,DES}^4$	0.0029	$0.0025 \pm 0.0092$	$Y_P^{BBN}$	0.246652	$0.24664^{+0.00023}_{-0.00019}$	$\sigma_8(0.38)$	0.728	$0.724^{+0.062}_{-0.084}$
$\Delta z_{l,DES}^5$	0.0012	$0.0009 \pm 0.0098$	$10^5 D/H$	2.618	$2.621^{+0.085}_{-0.10}$	$f\sigma_8(0.51)$	0.4871	$0.482 \pm 0.030$
$\Delta z_{s,DES}^1$	-0.0011	$-0.003 \pm 0.014$	Age/Gyr	14.00	$13.80^{+0.96}_{-0.79}$	$\sigma_8(0.51)$	0.685	$0.681^{+0.060}_{-0.082}$
$\Delta z_{s,DES}^2$	-0.0288	$-0.030 \pm 0.011$	$z_*$	1088.58	$1088.99^{+0.97}_{-1.3}$	$f\sigma_8(0.61)$	0.4873	$0.482^{+0.030}_{-0.034}$
$\Delta z_{s,DES}^3$	0.0059	$0.0069 \pm 0.0097$	$r_*$	149.26	$148.1^{+3.4}_{-2.8}$	$\sigma_8(0.61)$	0.654	$0.650^{+0.058}_{-0.080}$
$\Delta z_{s,DES}^4$	-0.0266	$-0.024 \pm 0.019$	$100\theta_*$	1.0319	$1.040^{+0.026}_{-0.036}$	$f\sigma_8(2.33)$	0.3327	$0.331^{+0.031}_{-0.043}$
$H_0$	70.7	$72.2^{+5.3}_{-8.4}$	$D_M(z_*)/\text{Gpc}$	14.46	$14.26^{+0.77}_{-0.65}$	$\sigma_8(2.33)$	0.3466	$0.345^{+0.034}_{-0.048}$
$\Omega_\Lambda$	0.7486	$0.745 \pm 0.039$	$z_{drag}$	1058.25	$1058.6 \pm 1.5$	$\chi_{DES}^2$	500.49	$512.8 \pm 5.2$
$\Omega_m$	0.2514	$0.255 \pm 0.039$	$r_{drag}$	152.09	$150.9^{+3.6}_{-2.9}$	$\chi_{prior}^2$	1.32	$14.3 \pm 5.3$

Best-fit  $\chi_{eff}^2 = 501.82$ ;  $\bar{\chi}_{eff}^2 = 527.14$ ;  $R - 1 = 0.00444$   
 $\chi_{eff}^2$ : WL - DES\_1YR\_final: 500.49



## 2.237 base\_DESlens\_lenspriors

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022164	$0.02219 \pm 0.00049$	$r_{\text{drag}} h$	110.1	$112^{+20}_{-10}$	$100\theta_{\text{eq}}$	0.830	$0.796 \pm 0.091$
$\Omega_c h^2$	0.1204	$0.137^{+0.022}_{-0.041}$	$\langle d^2 \rangle^{1/2}$	2.537	$2.39^{+0.39}_{-0.44}$	$100\theta_{\text{s,eq}}$	0.459	$0.441 \pm 0.047$
$100\theta_{\text{MC}}$	1.064	$1.084^{+0.060}_{-0.047}$	$z_{\text{re}}$	7.85	$8.13^{+0.50}_{-0.69}$	$H(0.15)$	79.7	$84^{+10}_{-10}$
$\ln(10^{10} A_s)$	3.15	$2.95^{+0.58}_{-0.45}$	$10^9 A_s$	2.34	$2.14^{+0.57}_{-1.3}$	$D_{\text{M}}(0.15)$	583	$570^{+39}_{-120}$
$n_s$	0.9598	$0.960 \pm 0.020$	$10^9 A_s e^{-2\tau}$	2.10	$1.91^{+0.51}_{-1.1}$	$H(0.38)$	89.1	$94^{+10}_{-10}$
$m_{\text{DES}}^1$	0.0147	$0.014 \pm 0.023$	$D_{40}$	1407	$1288^{+300}_{-800}$	$D_{\text{M}}(0.38)$	1403	$1365^{+95}_{-260}$
$m_{\text{DES}}^2$	0.0136	$0.013 \pm 0.022$	$D_{220}$	6383	$5754^{+2000}_{-4000}$	$H(0.51)$	95.4	$100^{+10}_{-10}$
$m_{\text{DES}}^3$	0.0017	$0.005 \pm 0.022$	$D_{810}$	2800	$2357^{+700}_{-2000}$	$D_{\text{M}}(0.51)$	1826	$1774^{+130}_{-330}$
$m_{\text{DES}}^4$	0.0162	$0.017 \pm 0.022$	$D_{1420}$	883	$704^{+200}_{-500}$	$H(0.61)$	100.7	$106^{+10}_{-10}$
$A_{\text{IA,DES}}$	1.34	$0.66^{+0.97}_{-0.55}$	$D_{2000}$	252	$208^{+60}_{-200}$	$D_{\text{M}}(0.61)$	2132	$2068^{+150}_{-370}$
$\alpha_{\text{IA,DES}}$	3.38	$> 1.13$	$n_{\text{s},0.002}$	0.9598	$0.960 \pm 0.020$	$H(2.33)$	239.0	$252^{+21}_{-29}$
$\Delta z_{\text{s,DES}}^1$	0.0029	$0.002 \pm 0.015$	$Y_{\text{P}}$	0.245311	$0.24531^{+0.00022}_{-0.00020}$	$D_{\text{M}}(2.33)$	5488	$5288^{+430}_{-700}$
$\Delta z_{\text{s,DES}}^2$	-0.0192	$-0.020 \pm 0.012$	$Y_{\text{P}}^{\text{BBN}}$	0.246637	$0.24664^{+0.00022}_{-0.00020}$	$f\sigma_8(0.15)$	0.4532	$0.440^{+0.029}_{-0.018}$
$\Delta z_{\text{s,DES}}^3$	0.0080	$0.009 \pm 0.011$	$10^5 D/H$	2.625	$2.622 \pm 0.094$	$\sigma_8(0.15)$	0.818	$0.80^{+0.16}_{-0.13}$
$\Delta z_{\text{s,DES}}^4$	-0.0164	$-0.016 \pm 0.021$	Age/Gyr	13.16	$12.7^{+1.0}_{-1.7}$	$f\sigma_8(0.38)$	0.4863	$0.470^{+0.052}_{-0.030}$
$H_0$	74.8	$78^{+20}_{-10}$	$z_*$	1090.22	$1091.5^{+2.2}_{-3.4}$	$\sigma_8(0.38)$	0.732	$0.72^{+0.16}_{-0.13}$
$\Omega_{\Lambda}$	0.744	$0.724^{+0.11}_{-0.038}$	$r_*$	144.5	$141.0^{+8.7}_{-6.8}$	$f\sigma_8(0.51)$	0.492	$0.475^{+0.063}_{-0.037}$
$\Omega_{\text{m}}$	0.256	$0.276^{+0.038}_{-0.11}$	$100\theta_*$	1.064	$1.085^{+0.060}_{-0.047}$	$\sigma_8(0.51)$	0.688	$0.67^{+0.15}_{-0.13}$
$\Omega_{\text{m}} h^2$	0.1432	$0.160^{+0.022}_{-0.041}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.58	$13.1^{+1.2}_{-1.4}$	$f\sigma_8(0.61)$	0.492	$0.475^{+0.071}_{-0.043}$
$\Omega_{\text{m}} h^3$	0.1072	$0.127^{+0.029}_{-0.046}$	$z_{\text{drag}}$	1059.47	$1060.6^{+2.2}_{-2.8}$	$\sigma_8(0.61)$	0.657	$0.64^{+0.15}_{-0.12}$
$\sigma_8$	0.878	$0.86^{+0.17}_{-0.13}$	$r_{\text{drag}}$	147.2	$143.7^{+8.9}_{-7.0}$	$f\sigma_8(2.33)$	0.334	$0.328^{+0.078}_{-0.068}$
$S_8$	0.8110	$0.791^{+0.042}_{-0.029}$	$k_{\text{D}}$	0.1406	$0.1447^{+0.0069}_{-0.010}$	$\sigma_8(2.33)$	0.347	$0.343 \pm 0.079$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4442	$0.433^{+0.023}_{-0.016}$	$100\theta_{\text{D}}$	0.1646	$0.1675^{+0.0086}_{-0.0068}$	$\chi_{\text{DES}}^2$	228.71	$233.7 \pm 2.8$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.625	$0.608^{+0.072}_{-0.051}$	$z_{\text{eq}}$	3408	$3814^{+500}_{-1000}$	$\chi_{\text{prior}}^2$	0.33	$9.4 \pm 4.3$
$\sigma_8/h^{0.5}$	1.015	$0.97^{+0.13}_{-0.10}$	$k_{\text{eq}}$	0.01040	$0.0116^{+0.0016}_{-0.0030}$			

Best-fit  $\chi_{\text{eff}}^2 = 229.04$ ;  $\bar{\chi}_{\text{eff}}^2 = 243.17$ ;  $R - 1 = 0.00629$   
 $\chi_{\text{eff}}^2$ : WL - DES\_1YR\_final: 228.72



## 2.238 base\_DES\_lenspriors\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02221 \pm 0.00050$	$\Omega_{\mathrm{m}}h^3$	$0.0915^{+0.0086}_{-0.012}$	$z_{\mathrm{eq}}$	$3119^{+170}_{-210}$
$\Omega_{\mathrm{c}}h^2$	$0.1083^{+0.0068}_{-0.0088}$	$\sigma_8$	$0.816^{+0.029}_{-0.033}$	$k_{\mathrm{eq}}$	$0.00952^{+0.00050}_{-0.00065}$
$100\theta_{\mathrm{MC}}$	$1.034^{+0.019}_{-0.022}$	$S_8$	$0.776 \pm 0.015$	$100\theta_{\mathrm{eq}}$	$0.864 \pm 0.024$
$\ln(10^{10}A_{\mathrm{s}})$	$3.181 \pm 0.071$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4251 \pm 0.0083$	$100\theta_{\mathrm{s,eq}}$	$0.476 \pm 0.012$
$n_{\mathrm{s}}$	$0.961 \pm 0.020$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.589 \pm 0.014$	$H(0.15)$	$74.3^{+3.7}_{-4.7}$
$b_{\mathrm{DES}}^1$	$1.442 \pm 0.095$	$\sigma_8/h^{0.5}$	$0.979 \pm 0.017$	$D_{\mathrm{M}}(0.15)$	$629 \pm 38$
$b_{\mathrm{DES}}^2$	$1.652 \pm 0.081$	$r_{\mathrm{drag}}h$	$104.6^{+4.7}_{-5.6}$	$H(0.38)$	$83.5^{+3.7}_{-4.7}$
$b_{\mathrm{DES}}^3$	$1.640 \pm 0.073$	$\langle d^2 \rangle^{1/2}$	$2.518 \pm 0.044$	$D_{\mathrm{M}}(0.38)$	$1508 \pm 86$
$b_{\mathrm{DES}}^4$	$1.983 \pm 0.085$	$z_{\mathrm{re}}$	$7.58^{+0.18}_{-0.21}$	$H(0.51)$	$89.7^{+3.7}_{-4.7}$
$b_{\mathrm{DES}}^5$	$2.06 \pm 0.10$	$10^9 A_{\mathrm{s}}$	$2.41^{+0.16}_{-0.18}$	$D_{\mathrm{M}}(0.51)$	$1960 \pm 110$
$m_{\mathrm{DES}}^1$	$0.012 \pm 0.023$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$2.16^{+0.14}_{-0.16}$	$H(0.61)$	$94.9^{+3.8}_{-4.7}$
$m_{\mathrm{DES}}^2$	$0.015 \pm 0.022$	$D_{40}$	$1462 \pm 91$	$D_{\mathrm{M}}(0.61)$	$2286 \pm 120$
$m_{\mathrm{DES}}^3$	$0.012 \pm 0.021$	$D_{220}$	$6949 \pm 640$	$H(2.33)$	$228.0^{+6.6}_{-8.1}$
$m_{\mathrm{DES}}^4$	$0.013 \pm 0.021$	$D_{810}$	$2906 \pm 220$	$D_{\mathrm{M}}(2.33)$	$5827 \pm 260$
$A_{\mathrm{IA,DES}}$	$0.46^{+0.18}_{-0.21}$	$D_{1420}$	$916 \pm 76$	$f\sigma_8(0.15)$	$0.4325 \pm 0.0080$
$\alpha_{\mathrm{IA,DES}}$	$-0.2^{+2.4}_{-2.7}$	$D_{2000}$	$264^{+22}_{-28}$	$\sigma_8(0.15)$	$0.758^{+0.029}_{-0.033}$
$\Delta z_{\mathrm{l,DES}}^1$	$0.0044 \pm 0.0076$	$n_{\mathrm{s},0.002}$	$0.961 \pm 0.020$	$f\sigma_8(0.38)$	$0.4597 \pm 0.0095$
$\Delta z_{\mathrm{l,DES}}^2$	$0.0017 \pm 0.0067$	$Y_{\mathrm{P}}$	$0.24532^{+0.00023}_{-0.00020}$	$\sigma_8(0.38)$	$0.677^{+0.028}_{-0.032}$
$\Delta z_{\mathrm{l,DES}}^3$	$0.0040 \pm 0.0066$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665^{+0.00023}_{-0.00020}$	$f\sigma_8(0.51)$	$0.463 \pm 0.011$
$\Delta z_{\mathrm{l,DES}}^4$	$0.0023 \pm 0.0091$	$10^5 \mathrm{D}/\mathrm{H}$	$2.618^{+0.089}_{-0.099}$	$\sigma_8(0.51)$	$0.635^{+0.027}_{-0.032}$
$\Delta z_{\mathrm{l,DES}}^5$	$0.0003 \pm 0.0098$	$\mathrm{Age}/\mathrm{Gyr}$	$13.97 \pm 0.60$	$f\sigma_8(0.61)$	$0.462 \pm 0.013$
$\Delta z_{\mathrm{s,DES}}^1$	$-0.004 \pm 0.014$	$z_*$	$1089.07^{+0.82}_{-0.96}$	$\sigma_8(0.61)$	$0.606^{+0.027}_{-0.031}$
$\Delta z_{\mathrm{s,DES}}^2$	$-0.029 \pm 0.011$	$r_*$	$147.7^{+2.4}_{-2.1}$	$f\sigma_8(2.33)$	$0.307^{+0.014}_{-0.017}$
$\Delta z_{\mathrm{s,DES}}^3$	$0.0079 \pm 0.0097$	$100\theta_*$	$1.034^{+0.019}_{-0.022}$	$\sigma_8(2.33)$	$0.319^{+0.016}_{-0.019}$
$\Delta z_{\mathrm{s,DES}}^4$	$-0.021 \pm 0.018$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.29 \pm 0.50$	$\chi_{\mathrm{lensing}}^2$	$9.0 \pm 1.5$
$H_0$	$69.5^{+3.8}_{-4.7}$	$z_{\mathrm{drag}}$	$1058.7 \pm 1.4$	$\chi_{\mathrm{DES}}^2$	$512.9 \pm 4.5$
$\Omega_{\Lambda}$	$0.727 \pm 0.023$	$r_{\mathrm{drag}}$	$150.5^{+2.5}_{-2.2}$	$\chi_{\mathrm{prior}}^2$	$14.1 \pm 5.2$
$\Omega_{\mathrm{m}}$	$0.273 \pm 0.023$	$k_{\mathrm{D}}$	$0.1372^{+0.0024}_{-0.0028}$		
$\Omega_{\mathrm{m}}h^2$	$0.1312^{+0.0069}_{-0.0089}$	$100\theta_{\mathrm{D}}$	$0.1604^{+0.0028}_{-0.0032}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 535.95; R - 1 = 0.00951$$



### 2.239 base\_DESlens\_lenspriors\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022213	$0.02221 \pm 0.00049$	$r_{\text{drag}} h$	102.8	$108.1^{+6.5}_{-11}$	$100\theta_{\text{eq}}$	0.8421	$0.845 \pm 0.033$
$\Omega_c h^2$	0.1132	$0.115^{+0.010}_{-0.013}$	$\langle d^2 \rangle^{1/2}$	2.496	$2.489 \pm 0.053$	$100\theta_{\text{s,eq}}$	0.4645	$0.466 \pm 0.017$
$100\theta_{\text{MC}}$	1.0388	$1.051^{+0.030}_{-0.035}$	$z_{\text{re}}$	7.674	$7.73^{+0.24}_{-0.28}$	$H(0.15)$	73.9	$77.6^{+5.5}_{-8.5}$
$\ln(10^{10} A_s)$	3.126	$3.134 \pm 0.091$	$10^9 A_s$	2.278	$2.31^{+0.19}_{-0.22}$	$D_{\text{M}}(0.15)$	630	$605 \pm 60$
$n_s$	0.9597	$0.960 \pm 0.020$	$10^9 A_s e^{-2\tau}$	2.041	$2.07^{+0.17}_{-0.20}$	$H(0.38)$	83.5	$87.0^{+5.5}_{-8.2}$
$m_{\text{DES}}^1$	0.0143	$0.013 \pm 0.023$	$D_{40}$	1371	$1390^{+110}_{-130}$	$D_{\text{M}}(0.38)$	1510	$1452 \pm 140$
$m_{\text{DES}}^2$	0.0140	$0.013 \pm 0.022$	$D_{220}$	6416	$6444^{+800}_{-900}$	$H(0.51)$	89.9	$93.2^{+5.6}_{-8.1}$
$m_{\text{DES}}^3$	0.0027	$0.005 \pm 0.021$	$D_{810}$	2764	$2727^{+300}_{-300}$	$D_{\text{M}}(0.51)$	1959	$1888 \pm 170$
$m_{\text{DES}}^4$	0.0180	$0.018 \pm 0.021$	$D_{1420}$	881	$850^{+100}_{-80}$	$H(0.61)$	95.3	$98.5^{+5.7}_{-8.1}$
$A_{\text{IA,DES}}$	1.27	$0.46^{+1.1}_{-0.44}$	$D_{2000}$	247.7	$246 \pm 40$	$D_{\text{M}}(0.61)$	2283	$2203 \pm 190$
$\alpha_{\text{IA,DES}}$	3.31	$> 1.17$	$n_{\text{s},0.002}$	0.9597	$0.960 \pm 0.020$	$H(2.33)$	231.7	$234.5^{+9.8}_{-11}$
$\Delta z_{\text{s,DES}}^1$	0.0026	$0.001 \pm 0.015$	$Y_{\text{P}}$	0.245331	$0.24532^{+0.00023}_{-0.00019}$	$D_{\text{M}}(2.33)$	5780	$5638 \pm 380$
$\Delta z_{\text{s,DES}}^2$	-0.0191	$-0.020 \pm 0.012$	$Y_{\text{P}}^{\text{BBN}}$	0.246658	$0.24664^{+0.00023}_{-0.00019}$	$f\sigma_8(0.15)$	0.4438	$0.436^{+0.016}_{-0.0085}$
$\Delta z_{\text{s,DES}}^3$	0.0082	$0.009 \pm 0.011$	$10^5 D/H$	2.615	$2.620^{+0.086}_{-0.098}$	$\sigma_8(0.15)$	0.7580	$0.779^{+0.042}_{-0.053}$
$\Delta z_{\text{s,DES}}^4$	-0.0166	$-0.016 \pm 0.020$	Age/Gyr	13.85	$13.52 \pm 0.89$	$f\sigma_8(0.38)$	0.4680	$0.466^{+0.014}_{-0.012}$
$H_0$	69.0	$72.8^{+5.6}_{-8.7}$	$z_*$	1089.52	$1089.7^{+1.0}_{-1.2}$	$\sigma_8(0.38)$	0.6748	$0.697^{+0.041}_{-0.053}$
$\Omega_{\Lambda}$	0.7139	$0.734^{+0.033}_{-0.041}$	$r_*$	146.34	$145.9 \pm 3.1$	$f\sigma_8(0.51)$	0.4697	$0.470 \pm 0.015$
$\Omega_{\text{m}}$	0.2861	$0.266^{+0.041}_{-0.033}$	$100\theta_*$	1.0390	$1.052^{+0.029}_{-0.035}$	$\sigma_8(0.51)$	0.6327	$0.655^{+0.039}_{-0.053}$
$\Omega_{\text{m}} h^2$	0.1361	$0.138^{+0.010}_{-0.013}$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.08	$13.89 \pm 0.69$	$f\sigma_8(0.61)$	0.4668	$0.470 \pm 0.017$
$\Omega_{\text{m}} h^3$	0.0939	$0.101^{+0.014}_{-0.021}$	$z_{\text{drag}}$	1059.09	$1059.2 \pm 1.5$	$\sigma_8(0.61)$	0.6028	$0.625^{+0.038}_{-0.052}$
$\sigma_8$	0.8174	$0.837^{+0.042}_{-0.052}$	$r_{\text{drag}}$	149.10	$148.6 \pm 3.2$	$f\sigma_8(2.33)$	0.3050	$0.317^{+0.020}_{-0.029}$
$S_8$	0.7982	$0.783^{+0.032}_{-0.016}$	$k_{\text{D}}$	0.13865	$0.1392^{+0.0032}_{-0.0036}$	$\sigma_8(2.33)$	0.3157	$0.330^{+0.022}_{-0.033}$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4372	$0.429^{+0.017}_{-0.0090}$	$100\theta_{\text{D}}$	0.16087	$0.1628^{+0.0042}_{-0.0051}$	$\chi_{\text{lensing}}^2$	7.71	$9.6 \pm 2.0$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5978	$0.599 \pm 0.018$	$z_{\text{eq}}$	3236	$3289^{+240}_{-300}$	$\chi_{\text{DES}}^2$	228.96	$232.8 \pm 2.5$
$\sigma_8/h^{0.5}$	0.9843	$0.982 \pm 0.018$	$k_{\text{eq}}$	0.00988	$0.01004^{+0.00073}_{-0.00092}$	$\chi_{\text{prior}}^2$	0.31	$9.3 \pm 4.2$

Best-fit  $\chi_{\text{eff}}^2 = 236.98$ ;  $\bar{\chi}_{\text{eff}}^2 = 251.72$ ;  $R - 1 = 0.00394$

$\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb\_consext8\_CMBmargd: 7.71 WL - DES\_1YR\_final: 228.96



## 2.240 base\_DES\_lenspriors\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022232	$0.02222 \pm 0.00050$	$\sigma_8$	0.8171	$0.803 \pm 0.030$	$100\theta_{\text{eq}}$	0.8816	$0.873 \pm 0.029$
$\Omega_c h^2$	0.1020	$0.1046^{+0.0067}_{-0.0080}$	$S_8$	0.7899	$0.780 \pm 0.022$	$100\theta_{\text{s,eq}}$	0.4844	$0.480 \pm 0.015$
$100\theta_{\text{MC}}$	1.0188	$1.023 \pm 0.011$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4326	$0.427 \pm 0.012$	$H(0.15)$	71.45	$71.8^{+1.1}_{-1.3}$
$\ln(10^{10} A_{\text{s}})$	3.279	$3.21 \pm 0.15$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5946	$0.586 \pm 0.018$	$D_{\text{M}}(0.15)$	651.9	$649 \pm 11$
$n_{\text{s}}$	0.9578	$0.958 \pm 0.020$	$\sigma_8/h^{0.5}$	1.0002	$0.981 \pm 0.039$	$H(0.38)$	80.55	$81.0^{+1.4}_{-1.6}$
$b_{\text{DES}}^1$	1.443	$1.468^{+0.086}_{-0.096}$	$r_{\text{drag}} h$	101.63	$101.6 \pm 1.1$	$D_{\text{M}}(0.38)$	1562.5	$1555 \pm 26$
$b_{\text{DES}}^2$	1.646	$1.677 \pm 0.084$	$\langle d^2 \rangle^{1/2}$	2.626	$2.56 \pm 0.14$	$H(0.51)$	86.64	$87.2^{+1.6}_{-1.8}$
$b_{\text{DES}}^3$	1.629	$1.662^{+0.074}_{-0.087}$	$z_{\text{re}}$	7.439	$7.49 \pm 0.17$	$D_{\text{M}}(0.51)$	2029.2	$2019 \pm 35$
$b_{\text{DES}}^4$	1.966	$2.007^{+0.092}_{-0.11}$	$10^9 A_{\text{s}}$	2.655	$2.51^{+0.32}_{-0.42}$	$H(0.61)$	91.75	$92.4^{+1.8}_{-2.0}$
$b_{\text{DES}}^5$	2.034	$2.08^{+0.12}_{-0.13}$	$10^9 A_{\text{s}} e^{-2\tau}$	2.378	$2.25^{+0.29}_{-0.38}$	$D_{\text{M}}(0.61)$	2365.6	$2353 \pm 42$
$m_{\text{DES}}^1$	0.0133	$0.012 \pm 0.023$	$D_{40}$	1634	$1539^{+200}_{-300}$	$H(2.33)$	222.2	$224.3^{+5.8}_{-6.5}$
$m_{\text{DES}}^2$	0.0148	$0.014 \pm 0.022$	$D_{220}$	7889	$7399^{+1000}_{-1000}$	$D_{\text{M}}(2.33)$	6006	$5964 \pm 130$
$m_{\text{DES}}^3$	0.0054	$0.009 \pm 0.021$	$D_{810}$	3202	$3022^{+400}_{-500}$	$f\sigma_8(0.15)$	0.4397	$0.434 \pm 0.012$
$m_{\text{DES}}^4$	0.0082	$0.011 \pm 0.021$	$D_{1420}$	1002	$949^{+100}_{-100}$	$\sigma_8(0.15)$	0.7583	$0.745 \pm 0.029$
$A_{\text{IA,DES}}$	0.464	$0.45^{+0.17}_{-0.20}$	$D_{2000}$	289.9	$275^{+30}_{-60}$	$f\sigma_8(0.38)$	0.4652	$0.458 \pm 0.014$
$\alpha_{\text{IA,DES}}$	-1.59	$-0.3^{+2.2}_{-2.8}$	$n_{\text{s},0.002}$	0.9578	$0.958 \pm 0.020$	$\sigma_8(0.38)$	0.6758	$0.664 \pm 0.027$
$\Delta z_{\text{l,DES}}^1$	0.0039	$0.0042 \pm 0.0075$	$Y_{\text{P}}$	0.245339	$0.24532 \pm 0.00022$	$f\sigma_8(0.51)$	0.4675	$0.460 \pm 0.015$
$\Delta z_{\text{l,DES}}^2$	0.0015	$0.0016 \pm 0.0066$	$Y_{\text{P}}^{\text{BBN}}$	0.246665	$0.24665 \pm 0.00022$	$\sigma_8(0.51)$	0.6339	$0.622 \pm 0.026$
$\Delta z_{\text{l,DES}}^3$	0.0040	$0.0040 \pm 0.0066$	$10^5 \text{D/H}$	2.612	$2.617 \pm 0.095$	$f\sigma_8(0.61)$	0.4651	$0.458 \pm 0.015$
$\Delta z_{\text{l,DES}}^4$	0.0019	$0.0018 \pm 0.0091$	Age/Gyr	14.388	$14.29 \pm 0.31$	$\sigma_8(0.61)$	0.6042	$0.593 \pm 0.025$
$\Delta z_{\text{l,DES}}^5$	0.0001	$-0.0001 \pm 0.0098$	$z_*$	1088.46	$1088.73 \pm 0.86$	$f\sigma_8(2.33)$	0.3061	$0.300 \pm 0.013$
$\Delta z_{\text{s,DES}}^1$	-0.0014	$-0.004 \pm 0.014$	$r_*$	149.47	$148.8 \pm 2.2$	$\sigma_8(2.33)$	0.3171	$0.311 \pm 0.014$
$\Delta z_{\text{s,DES}}^2$	-0.0290	$-0.029 \pm 0.011$	$100\theta_*$	1.0190	$1.023 \pm 0.011$	$\chi_{6\text{DF}}^2$	0.0394	$0.09 \pm 0.12$
$\Delta z_{\text{s,DES}}^3$	0.0059	$0.0071 \pm 0.0098$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.668	$14.55 \pm 0.37$	$\chi_{\text{MGS}}^2$	2.27	$2.34 \pm 0.74$
$\Delta z_{\text{s,DES}}^4$	-0.0249	$-0.023 \pm 0.019$	$z_{\text{drag}}$	1058.29	$1058.4 \pm 1.4$	$\chi_{\text{DR12BAO}}^2$	4.64	$5.3 \pm 1.5$
$H_0$	66.74	$67.0 \pm 1.1$	$r_{\text{drag}}$	152.30	$151.6 \pm 2.3$	$\chi_{\text{DES}}^2$	501.43	$512.8 \pm 4.9$
$\Omega_{\Lambda}$	0.7197	$0.716^{+0.013}_{-0.011}$	$k_{\text{D}}$	0.13541	$0.1361 \pm 0.0025$	$\chi_{\text{prior}}^2$	1.24	$14.2 \pm 5.2$
$\Omega_{\text{m}}$	0.2803	$0.284^{+0.011}_{-0.013}$	$100\theta_{\text{D}}$	0.15816	$0.1587 \pm 0.0016$	$\chi_{\text{BAO}}^2$	6.95	$7.7 \pm 1.7$
$\Omega_{\text{m}} h^2$	0.1249	$0.1275^{+0.0068}_{-0.0080}$	$z_{\text{eq}}$	2968	$3031^{+160}_{-190}$			
$\Omega_{\text{m}} h^3$	0.0833	$0.0855^{+0.0054}_{-0.0066}$	$k_{\text{eq}}$	0.00906	$0.00925^{+0.00049}_{-0.00059}$			

Best-fit  $\chi_{\text{eff}}^2 = 509.62$ ;  $\bar{\chi}_{\text{eff}}^2 = 534.74$ ;  $R - 1 = 0.00577$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.04 MGS: 2.27 DR12BAO: 4.64 WL - DES\_1YR\_final: 501.43



## 2.241 base\_DESlens\_lenspriors\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02217	$0.02220 \pm 0.00051$	$\langle d^2 \rangle^{1/2}$	2.100	$2.05^{+0.22}_{-0.30}$	$H(0.15)$	76.19	$77.0^{+2.8}_{-3.7}$
$\Omega_c h^2$	0.1456	$0.153^{+0.024}_{-0.035}$	$z_{\text{re}}$	8.26	$8.35^{+0.47}_{-0.55}$	$D_{\text{M}}(0.15)$	615.6	$611^{+25}_{-22}$
$100\theta_{\text{MC}}$	1.0737	$1.078 \pm 0.031$	$10^9 A_{\text{s}}$	1.368	$1.36^{+0.28}_{-0.63}$	$H(0.38)$	87.58	$88.7^{+4.0}_{-5.3}$
$\ln(10^{10} A_{\text{s}})$	2.616	$2.53 \pm 0.38$	$10^9 A_{\text{s}} e^{-2\tau}$	1.226	$1.21^{+0.25}_{-0.56}$	$D_{\text{M}}(0.38)$	1461	$1449^{+67}_{-60}$
$n_{\text{s}}$	0.9583	$0.959 \pm 0.020$	$D_{40}$	784	$782^{+200}_{-400}$	$H(0.51)$	95.1	$96.4^{+4.8}_{-6.3}$
$m_{\text{DES}}^1$	0.0146	$0.013 \pm 0.023$	$D_{220}$	3383	$3439^{+700}_{-2000}$	$D_{\text{M}}(0.51)$	1888	$1872^{+92}_{-83}$
$m_{\text{DES}}^2$	0.0131	$0.012 \pm 0.022$	$D_{810}$	1575	$1546^{+400}_{-800}$	$H(0.61)$	101.4	$102.8^{+5.5}_{-7.1}$
$m_{\text{DES}}^3$	0.0008	$0.002 \pm 0.021$	$D_{1420}$	499	$482^{+100}_{-300}$	$D_{\text{M}}(0.61)$	2194	$2175 \pm 100$
$m_{\text{DES}}^4$	0.0189	$0.019 \pm 0.022$	$D_{2000}$	144	$139^{+40}_{-80}$	$H(2.33)$	255.9	$260^{+19}_{-24}$
$A_{\text{IA,DES}}$	1.37	$1.01 \pm 0.66$	$n_{\text{s},0.002}$	0.9583	$0.959 \pm 0.020$	$D_{\text{M}}(2.33)$	5408	$5355 \pm 340$
$\alpha_{\text{IA,DES}}$	2.71	$> 1.06$	$Y_{\text{P}}$	0.245314	$0.24531^{+0.00023}_{-0.00020}$	$f\sigma_8(0.15)$	0.4367	$0.429^{+0.017}_{-0.015}$
$\Delta z_{\text{s,DES}}^1$	0.0041	$0.003 \pm 0.015$	$Y_{\text{P}}^{\text{BBN}}$	0.246641	$0.24664^{+0.00023}_{-0.00020}$	$\sigma_8(0.15)$	0.685	$0.670 \pm 0.051$
$\Delta z_{\text{s,DES}}^2$	-0.0206	$-0.021 \pm 0.012$	$10^5 \text{D/H}$	2.623	$2.620^{+0.089}_{-0.10}$	$f\sigma_8(0.38)$	0.4472	$0.438 \pm 0.021$
$\Delta z_{\text{s,DES}}^3$	0.0075	$0.008 \pm 0.011$	Age/Gyr	12.94	$12.81 \pm 0.82$	$\sigma_8(0.38)$	0.6042	$0.591 \pm 0.048$
$\Delta z_{\text{s,DES}}^4$	-0.0167	$-0.016 \pm 0.021$	$z_*$	1092.33	$1092.8^{+2.2}_{-2.7}$	$f\sigma_8(0.51)$	0.4427	$0.433 \pm 0.024$
$H_0$	70.19	$70.8^{+2.1}_{-2.8}$	$r_*$	138.5	$137.3 \pm 6.5$	$\sigma_8(0.51)$	0.5642	$0.551 \pm 0.046$
$\Omega_{\Lambda}$	0.6583	$0.652^{+0.041}_{-0.034}$	$100\theta_*$	1.0738	$1.078 \pm 0.031$	$f\sigma_8(0.61)$	0.4360	$0.426 \pm 0.025$
$\Omega_{\text{m}}$	0.3417	$0.348^{+0.034}_{-0.041}$	$D_{\text{M}}(z_*)/\text{Gpc}$	12.89	$12.76 \pm 0.97$	$\sigma_8(0.61)$	0.5361	$0.524 \pm 0.044$
$\Omega_{\text{m}} h^2$	0.1684	$0.176^{+0.024}_{-0.035}$	$z_{\text{drag}}$	1061.23	$1061.7 \pm 2.4$	$f\sigma_8(2.33)$	0.2692	$0.263^{+0.022}_{-0.025}$
$\Omega_{\text{m}} h^3$	0.1182	$0.125^{+0.019}_{-0.031}$	$r_{\text{drag}}$	141.0	$139.9 \pm 6.7$	$\sigma_8(2.33)$	0.2765	$0.270^{+0.023}_{-0.027}$
$\sigma_8$	0.744	$0.728 \pm 0.052$	$k_{\text{D}}$	0.1473	$0.1489^{+0.0069}_{-0.0084}$	$\chi_{6\text{DF}}^2$	0.059	$0.17 \pm 0.22$
$S_8$	0.7942	$0.781^{+0.028}_{-0.024}$	$100\theta_{\text{D}}$	0.16543	$0.1661 \pm 0.0042$	$\chi_{\text{MGS}}^2$	1.10	$1.20 \pm 0.76$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4350	$0.428^{+0.015}_{-0.013}$	$z_{\text{eq}}$	4008	$4189^{+600}_{-800}$	$\chi_{\text{DR12BAO}}^2$	2.31	$3.5 \pm 1.5$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5689	$0.558 \pm 0.028$	$k_{\text{eq}}$	0.01223	$0.0128^{+0.0018}_{-0.0026}$	$\chi_{\text{DES}}^2$	229.45	$233.6 \pm 2.9$
$\sigma_8/h^{0.5}$	0.888	$0.866 \pm 0.074$	$100\theta_{\text{eq}}$	0.743	$0.735^{+0.067}_{-0.077}$	$\chi_{\text{prior}}^2$	0.49	$9.6 \pm 4.3$
$r_{\text{drag}} h$	99.00	$98.9 \pm 1.8$	$100\theta_{\text{s,eq}}$	0.4131	$0.409^{+0.035}_{-0.040}$	$\chi_{\text{BAO}}^2$	3.46	$4.9 \pm 1.8$

Best-fit  $\chi_{\text{eff}}^2 = 233.41$ ;  $\bar{\chi}_{\text{eff}}^2 = 248.10$ ;  $R - 1 = 0.01028$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.06 MGS: 1.10 DR12BAO: 2.31 WL - DES\_1YR\_final: 229.45



## 2.242 base\_DES\_lensprior\_lens\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022215	$0.02220 \pm 0.00050$	$\sigma_8$	0.8009	$0.799 \pm 0.013$	$100\theta_{\text{eq}}$	0.8646	$0.866 \pm 0.021$
$\Omega_c h^2$	0.1063	$0.1062 \pm 0.0053$	$S_8$	0.7833	$0.780 \pm 0.015$	$100\theta_{\text{s,eq}}$	0.4758	$0.476 \pm 0.011$
$100\theta_{\text{MC}}$	1.0251	$1.0250 \pm 0.0084$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4290	$0.4274 \pm 0.0082$	$H(0.15)$	71.92	$72.0 \pm 1.0$
$\ln(10^{10} A_{\text{s}})$	3.180	$3.179 \pm 0.068$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5862	$0.5844 \pm 0.0096$	$D_{\text{M}}(0.15)$	648.1	$647.7 \pm 9.3$
$n_{\text{s}}$	0.9591	$0.959 \pm 0.020$	$\sigma_8/h^{0.5}$	0.9778	$0.975 \pm 0.016$	$H(0.38)$	81.26	$81.3 \pm 1.2$
$b_{\text{DES}}^1$	1.484	$1.477 \pm 0.075$	$r_{\text{drag}} h$	101.33	$101.5 \pm 1.0$	$D_{\text{M}}(0.38)$	1551.6	$1551 \pm 23$
$b_{\text{DES}}^2$	1.686	$1.688 \pm 0.056$	$\langle d^2 \rangle^{1/2}$	2.5279	$2.524 \pm 0.041$	$H(0.51)$	87.50	$87.5 \pm 1.4$
$b_{\text{DES}}^3$	1.6722	$1.673 \pm 0.048$	$z_{\text{re}}$	7.527	$7.53 \pm 0.14$	$D_{\text{M}}(0.51)$	2014.0	$2013 \pm 30$
$b_{\text{DES}}^4$	2.021	$2.023 \pm 0.056$	$10^9 A_{\text{s}}$	2.405	$2.41^{+0.15}_{-0.17}$	$H(0.61)$	92.74	$92.7 \pm 1.5$
$b_{\text{DES}}^5$	2.102	$2.097 \pm 0.079$	$10^9 A_{\text{s}} e^{-2\tau}$	2.155	$2.16^{+0.13}_{-0.16}$	$D_{\text{M}}(0.61)$	2346.9	$2346 \pm 35$
$m_{\text{DES}}^1$	0.0129	$0.012 \pm 0.022$	$D_{40}$	1464	$1464^{+80}_{-90}$	$H(2.33)$	225.70	$225.6 \pm 4.5$
$m_{\text{DES}}^2$	0.0165	$0.014 \pm 0.022$	$D_{220}$	6995	$7009^{+510}_{-590}$	$D_{\text{M}}(2.33)$	5937	$5939 \pm 98$
$m_{\text{DES}}^3$	0.0084	$0.009 \pm 0.020$	$D_{810}$	2913	$2910 \pm 200$	$f\sigma_8(0.15)$	0.4355	$0.4339 \pm 0.0080$
$m_{\text{DES}}^4$	0.0098	$0.011 \pm 0.021$	$D_{1420}$	919	$917 \pm 63$	$\sigma_8(0.15)$	0.7425	$0.741 \pm 0.013$
$A_{\text{IA,DES}}$	0.458	$0.45^{+0.17}_{-0.19}$	$D_{2000}$	261.1	$262^{+19}_{-26}$	$f\sigma_8(0.38)$	0.4590	$0.4576 \pm 0.0076$
$\alpha_{\text{IA,DES}}$	-1.46	$-0.4^{+2.3}_{-2.8}$	$n_{\text{s},0.002}$	0.9591	$0.959 \pm 0.020$	$\sigma_8(0.38)$	0.6609	$0.660 \pm 0.012$
$\Delta z_{\text{l,DES}}^1$	0.0045	$0.0041 \pm 0.0075$	$Y_{\text{P}}$	0.245332	$0.24531^{+0.00023}_{-0.00020}$	$f\sigma_8(0.51)$	0.4605	$0.4592 \pm 0.0074$
$\Delta z_{\text{l,DES}}^2$	0.0013	$0.0017 \pm 0.0066$	$Y_{\text{P}}^{\text{BBN}}$	0.246659	$0.24664^{+0.00023}_{-0.00020}$	$\sigma_8(0.51)$	0.6197	$0.619 \pm 0.011$
$\Delta z_{\text{l,DES}}^3$	0.0037	$0.0039 \pm 0.0067$	$10^5 \text{D}/\text{H}$	2.615	$2.621^{+0.088}_{-0.099}$	$f\sigma_8(0.61)$	0.4576	$0.4564 \pm 0.0074$
$\Delta z_{\text{l,DES}}^4$	0.0015	$0.0017 \pm 0.0091$	Age/Gyr	14.222	$14.23 \pm 0.24$	$\sigma_8(0.61)$	0.5904	$0.589 \pm 0.011$
$\Delta z_{\text{l,DES}}^5$	0.0000	$0.0000 \pm 0.0096$	$z_*$	1088.88	$1088.90 \pm 0.72$	$f\sigma_8(2.33)$	0.2988	$0.2983 \pm 0.0057$
$\Delta z_{\text{s,DES}}^1$	-0.0020	$-0.004 \pm 0.014$	$r_*$	148.25	$148.3 \pm 1.6$	$\sigma_8(2.33)$	0.3091	$0.3087 \pm 0.0061$
$\Delta z_{\text{s,DES}}^2$	-0.0286	$-0.029 \pm 0.011$	$100\theta_*$	1.0253	$1.0252 \pm 0.0084$	$\chi_{\text{lensing}}^2$	7.73	$8.8 \pm 1.4$
$\Delta z_{\text{s,DES}}^3$	0.0064	$0.0071 \pm 0.0096$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.459	$14.47 \pm 0.27$	$\chi_{6\text{DF}}^2$	0.0213	$0.075 \pm 0.097$
$\Delta z_{\text{s,DES}}^4$	-0.0238	$-0.023 \pm 0.018$	$z_{\text{drag}}$	1058.56	$1058.5 \pm 1.3$	$\chi_{\text{MGS}}^2$	2.12	$2.27 \pm 0.69$
$H_0$	67.08	$67.14 \pm 0.96$	$r_{\text{drag}}$	151.05	$151.1 \pm 1.7$	$\chi_{\text{DR12BAO}}^2$	4.25	$5.1 \pm 1.4$
$\Omega_{\Lambda}$	0.7130	$0.7138 \pm 0.0088$	$k_{\text{D}}$	0.13665	$0.1366 \pm 0.0019$	$\chi_{\text{DES}}^2$	502.63	$512.5 \pm 4.4$
$\Omega_{\text{m}}$	0.2870	$0.2862 \pm 0.0088$	$100\theta_{\text{D}}$	0.15900	$0.1590 \pm 0.0012$	$\chi_{\text{prior}}^2$	1.12	$13.9 \pm 5.1$
$\Omega_{\text{m}} h^2$	0.1291	$0.1290 \pm 0.0054$	$z_{\text{eq}}$	3071	$3067 \pm 130$	$\chi_{\text{BAO}}^2$	6.39	$7.4 \pm 1.5$
$\Omega_{\text{m}} h^3$	0.08663	$0.0866 \pm 0.0046$	$k_{\text{eq}}$	0.009372	$0.00936 \pm 0.00040$			

Best-fit  $\chi_{\text{eff}}^2 = 517.88$ ;  $\bar{\chi}_{\text{eff}}^2 = 542.64$ ;  $R - 1 = 0.00500$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 MGS: 2.12 DR12BAO: 4.25 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb\_consext8\_CMBmargd: 7.73 WL - DES\_1YR\_final: 502.63



### 2.243 base\_DESlens\_lenspriors\_lensing\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022190	$0.02220 \pm 0.00049$	$z_{\text{re}}$	7.671	$7.65 \pm 0.16$	$H(0.38)$	82.42	$82.3 \pm 1.4$
$\Omega_c h^2$	0.1133	$0.1121^{+0.0063}_{-0.0071}$	$10^9 A_s$	2.242	$2.27^{+0.16}_{-0.18}$	$D_M(0.38)$	1534.3	$1537 \pm 25$
$100\theta_{\text{MC}}$	1.0350	$1.033 \pm 0.010$	$10^9 A_s e^{-2\tau}$	2.009	$2.04^{+0.14}_{-0.16}$	$H(0.51)$	88.90	$88.7 \pm 1.6$
$\ln(10^{10} A_s)$	3.110	$3.121 \pm 0.076$	$D_{40}$	1353	$1371 \pm 100$	$D_M(0.51)$	1989.8	$1993 \pm 33$
$n_s$	0.9569	$0.958 \pm 0.019$	$D_{220}$	6328	$6454^{+560}_{-650}$	$H(0.61)$	94.33	$94.1 \pm 1.8$
$m_{\text{DES}}^1$	0.0151	$0.014 \pm 0.023$	$D_{810}$	2715	$2747 \pm 220$	$D_M(0.61)$	2317.2	$2321 \pm 39$
$m_{\text{DES}}^2$	0.0137	$0.013 \pm 0.022$	$D_{1420}$	864	$872 \pm 69$	$H(2.33)$	231.4	$230.4 \pm 5.6$
$m_{\text{DES}}^3$	-0.0004	$0.000 \pm 0.021$	$D_{2000}$	242.8	$247^{+20}_{-24}$	$D_M(2.33)$	5831	$5849 \pm 110$
$m_{\text{DES}}^4$	0.0162	$0.015 \pm 0.021$	$n_{s,0.002}$	0.9569	$0.958 \pm 0.019$	$f\sigma_8(0.15)$	0.4461	$0.443 \pm 0.010$
$A_{\text{IA,DES}}$	1.30	$1.01^{+0.56}_{-0.63}$	$Y_{\text{P}}$	0.245322	$0.24531^{+0.00023}_{-0.00019}$	$\sigma_8(0.15)$	0.7475	$0.746 \pm 0.013$
$\alpha_{\text{IA,DES}}$	2.80	$> 1.09$	$Y_{\text{P}}^{\text{BBN}}$	0.246648	$0.24664^{+0.00023}_{-0.00019}$	$f\sigma_8(0.38)$	0.4675	$0.4651 \pm 0.0092$
$\Delta z_{s,\text{DES}}^1$	0.0030	$0.003 \pm 0.015$	$10^5 D/H$	2.620	$2.621^{+0.086}_{-0.099}$	$\sigma_8(0.38)$	0.6641	$0.663 \pm 0.012$
$\Delta z_{s,\text{DES}}^2$	-0.0192	$-0.020 \pm 0.012$	Age/Gyr	13.963	$14.01 \pm 0.28$	$f\sigma_8(0.51)$	0.4677	$0.4657 \pm 0.0087$
$\Delta z_{s,\text{DES}}^3$	0.0068	$0.007 \pm 0.010$	$z_*$	1089.55	$1089.44 \pm 0.82$	$\sigma_8(0.51)$	0.6222	$0.621 \pm 0.011$
$\Delta z_{s,\text{DES}}^4$	-0.0187	$-0.018 \pm 0.020$	$r_*$	146.34	$146.7 \pm 1.9$	$f\sigma_8(0.61)$	0.4639	$0.4621 \pm 0.0084$
$H_0$	67.64	$67.6 \pm 1.0$	$100\theta_*$	1.0352	$1.033 \pm 0.010$	$\sigma_8(0.61)$	0.5924	$0.592 \pm 0.011$
$\Omega_\Lambda$	0.7025	$0.705 \pm 0.011$	$D_M(z_*)/\text{Gpc}$	14.136	$14.20 \pm 0.32$	$f\sigma_8(2.33)$	0.2993	$0.2990 \pm 0.0057$
$\Omega_m$	0.2975	$0.295 \pm 0.011$	$z_{\text{drag}}$	1059.02	$1058.9 \pm 1.3$	$\sigma_8(2.33)$	0.3092	$0.3090 \pm 0.0061$
$\Omega_m h^2$	0.1361	$0.1350^{+0.0064}_{-0.0071}$	$r_{\text{drag}}$	149.10	$149.5 \pm 2.0$	$\chi_{\text{lensing}}^2$	7.72	$8.9 \pm 1.5$
$\Omega_m h^3$	0.0921	$0.0913^{+0.0053}_{-0.0060}$	$k_{\text{D}}$	0.13863	$0.1383 \pm 0.0023$	$\chi_{6\text{DF}}^2$	0.0045	$0.057 \pm 0.083$
$\sigma_8$	0.8074	$0.805 \pm 0.014$	$100\theta_{\text{D}}$	0.16031	$0.1601 \pm 0.0014$	$\chi_{\text{MGS}}^2$	1.89	$2.06 \pm 0.69$
$S_8$	0.8041	$0.799 \pm 0.019$	$z_{\text{eq}}$	3238	$3210^{+150}_{-170}$	$\chi_{\text{DR12BAO}}^2$	3.71	$4.7 \pm 1.5$
$\sigma_8 \Omega_m^{0.5}$	0.4404	$0.437 \pm 0.011$	$k_{\text{eq}}$	0.009882	$0.00980^{+0.00047}_{-0.00052}$	$\chi_{\text{DES}}^2$	228.94	$232.1 \pm 2.3$
$\sigma_8 \Omega_m^{0.25}$	0.5963	$0.594 \pm 0.011$	$100\theta_{\text{eq}}$	0.8387	$0.844 \pm 0.024$	$\chi_{\text{prior}}^2$	0.48	$9.3 \pm 4.1$
$\sigma_8/h^{0.5}$	0.9817	$0.979 \pm 0.016$	$100\theta_{s,\text{eq}}$	0.4626	$0.465 \pm 0.013$	$\chi_{\text{BAO}}^2$	5.60	$6.8 \pm 1.6$
$r_{\text{drag}} h$	100.86	$101.0 \pm 1.1$	$H(0.15)$	72.70	$72.6 \pm 1.2$			
$\langle d^2 \rangle^{1/2}$	2.4931	$2.494 \pm 0.045$	$D_M(0.15)$	641.9	$643 \pm 10$			

Best-fit  $\chi_{\text{eff}}^2 = 242.74$ ;  $\bar{\chi}_{\text{eff}}^2 = 257.11$ ;  $R - 1 = 0.00702$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.89 DR12BAO: 3.71 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmargd: 7.71 WL - DES\_1YR\_final: 228.94

### 2.244 base\_DES\_DESpriors

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_m$	0.2378	$0.256^{+0.023}_{-0.031}$	$m_{\text{DES}}^3$	0.0080	$0.008 \pm 0.021$	$\Delta z_{s,\text{DES}}^4$	-0.0268	$-0.025 \pm 0.019$
$\Omega_b$	0.0660	$0.0511^{+0.015}_{-0.0091}$	$m_{\text{DES}}^4$	0.0098	$0.010 \pm 0.021$	$\Omega_b h^2$	0.0543	$0.0295^{+0.0084}_{-0.016}$
$H_0$	90.8	$> 68.8$	$A_{\text{IA,DES}}$	0.533	$0.49^{+0.18}_{-0.22}$	$\Omega_c h^2$	0.1409	$0.112^{+0.021}_{-0.027}$
$10^9 A_s$	2.72	$2.86^{+0.47}_{-0.71}$	$\alpha_{\text{IA,DES}}$	-1.05	$-0.3^{+2.3}_{-2.7}$	$\Omega_\Lambda$	0.7622	$0.744^{+0.031}_{-0.023}$
$n_s$	1.026	$> 0.953$	$\Delta z_{l,\text{DES}}^1$	0.0041	$0.0045 \pm 0.0075$	$\ln(10^{10} A_s)$	3.303	$3.33 \pm 0.21$
$b_{\text{DES}}^1$	1.307	$1.37^{+0.11}_{-0.13}$	$\Delta z_{l,\text{DES}}^2$	0.0020	$0.0020 \pm 0.0066$	$\sigma_8$	0.908	$0.863 \pm 0.063$
$b_{\text{DES}}^2$	1.504	$1.57^{+0.11}_{-0.13}$	$\Delta z_{l,\text{DES}}^3$	0.0045	$0.0045 \pm 0.0066$	$S_8$	0.8081	$0.793 \pm 0.024$
$b_{\text{DES}}^3$	1.493	$1.55^{+0.10}_{-0.13}$	$\Delta z_{l,\text{DES}}^4$	0.0032	$0.0025 \pm 0.0090$	$\sigma_8 \Omega_m^{0.5}$	0.4426	$0.434 \pm 0.013$
$b_{\text{DES}}^4$	1.805	$1.88^{+0.13}_{-0.16}$	$\Delta z_{l,\text{DES}}^5$	0.0007	$0.0008 \pm 0.0098$	$\sigma_8 \Omega_m^{0.25}$	0.6339	$0.612 \pm 0.030$
$b_{\text{DES}}^5$	1.867	$1.94^{+0.14}_{-0.17}$	$\Delta z_{s,\text{DES}}^1$	-0.0012	$-0.004 \pm 0.014$	$\chi_{\text{DES}}^2$	498.64	$511.6 \pm 5.0$
$m_{\text{DES}}^1$	0.0135	$0.012 \pm 0.023$	$\Delta z_{s,\text{DES}}^2$	-0.0290	$-0.030 \pm 0.011$	$\chi_{\text{prior}}^2$	1.28	$12.4 \pm 4.9$
$m_{\text{DES}}^2$	0.0155	$0.015 \pm 0.022$	$\Delta z_{s,\text{DES}}^3$	0.0064	$0.0066 \pm 0.0098$			



Best-fit  $\chi^2_{\text{eff}} = 499.92$ ;  $\bar{\chi}^2_{\text{eff}} = 523.99$ ;  $R - 1 = 0.00668$   
 $\chi^2_{\text{eff}}$ : WL - DES\_1YR\_final: 498.64

## 2.245 base\_DESlens\_DESpriors

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.256	$0.279^{+0.038}_{-0.076}$	$A_{\text{IA,DES}}$	1.33	$0.75^{+0.83}_{-0.60}$	$\ln(10^{10} A_{\text{s}})$	3.180	$3.13^{+0.60}_{-0.31}$
$\Omega_b$	0.0380	$< 0.0544$	$\alpha_{\text{IA,DES}}$	3.29	$> 1.08$	$\sigma_8$	0.878	$0.835^{+0.11}_{-0.098}$
$H_0$	72.8	—	$\Delta z_{\text{s,DES}}^1$	0.0027	$0.002 \pm 0.015$	$S_8$	0.8113	$0.790^{+0.035}_{-0.026}$
$10^9 A_{\text{s}}$	2.41	$2.53^{+0.81}_{-1.4}$	$\Delta z_{\text{s,DES}}^2$	-0.0193	$-0.020 \pm 0.012$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4443	$0.433^{+0.019}_{-0.014}$
$n_{\text{s}}$	0.975	$> 0.947$	$\Delta z_{\text{s,DES}}^3$	0.0080	$0.008 \pm 0.011$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6246	$0.601^{+0.050}_{-0.041}$
$m_{\text{DES}}^1$	0.0147	$0.013 \pm 0.023$	$\Delta z_{\text{s,DES}}^4$	-0.0162	$-0.016 \pm 0.020$	$\chi_{\text{DES}}^2$	228.74	$233.3 \pm 2.7$
$m_{\text{DES}}^2$	0.0132	$0.013 \pm 0.022$	$\Omega_{\text{b}} h^2$	0.0201	$0.0265^{+0.0060}_{-0.013}$	$\chi_{\text{prior}}^2$	0.30	$7.4 \pm 3.7$
$m_{\text{DES}}^3$	0.0027	$0.003 \pm 0.021$	$\Omega_{\text{c}} h^2$	0.1150	$0.122^{+0.019}_{-0.039}$			
$m_{\text{DES}}^4$	0.0173	$0.017 \pm 0.021$	$\Omega_{\Lambda}$	0.744	$0.721^{+0.076}_{-0.038}$			

Best-fit  $\chi^2_{\text{eff}} = 229.04$ ;  $\bar{\chi}^2_{\text{eff}} = 240.73$ ;  $R - 1 = 0.00678$   
 $\chi^2_{\text{eff}}$ : WL - DES\_1YR\_final: 228.74

## 2.246 base\_DESwt\_DESpriors

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.2740	$0.275^{+0.028}_{-0.038}$	$m_{\text{DES}}^3$	0.0194	$0.022 \pm 0.022$	$\Delta z_{\text{s,DES}}^4$	-0.0264	$-0.024 \pm 0.019$
$\Omega_b$	0.0599	$0.0517^{+0.016}_{-0.0076}$	$m_{\text{DES}}^4$	0.0051	$0.007 \pm 0.022$	$\Omega_{\text{b}} h^2$	0.0406	$0.0263^{+0.0059}_{-0.014}$
$H_0$	82.3	$< 74.8$	$A_{\text{IA,DES}}$	0.381	$0.43^{+0.16}_{-0.21}$	$\Omega_{\text{c}} h^2$	0.1445	$0.107^{+0.016}_{-0.028}$
$10^9 A_{\text{s}}$	2.20	$2.75^{+0.44}_{-0.74}$	$\alpha_{\text{IA,DES}}$	-2.80	$-0.6^{+2.1}_{-3.4}$	$\Omega_{\Lambda}$	0.7260	$0.725^{+0.038}_{-0.028}$
$n_{\text{s}}$	0.877	$< 0.987$	$\Delta z_{\text{l,DES}}^1$	0.0028	$0.0036 \pm 0.0077$	$\ln(10^{10} A_{\text{s}})$	3.093	$3.29 \pm 0.22$
$b_{\text{DES}}^1$	1.372	$1.40^{+0.12}_{-0.15}$	$\Delta z_{\text{l,DES}}^2$	0.0018	$0.0021 \pm 0.0068$	$\sigma_8$	0.829	$0.825 \pm 0.071$
$b_{\text{DES}}^2$	1.600	$1.63^{+0.13}_{-0.16}$	$\Delta z_{\text{l,DES}}^3$	0.0051	$0.0051 \pm 0.0068$	$S_8$	0.7918	$0.785 \pm 0.035$
$b_{\text{DES}}^3$	1.587	$1.62^{+0.12}_{-0.16}$	$\Delta z_{\text{l,DES}}^4$	0.0035	$0.0031 \pm 0.0091$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4337	$0.430 \pm 0.019$
$b_{\text{DES}}^4$	1.914	$1.95^{+0.15}_{-0.19}$	$\Delta z_{\text{l,DES}}^5$	0.0009	$0.0003 \pm 0.0098$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5994	$0.595 \pm 0.037$
$b_{\text{DES}}^5$	1.973	$2.01^{+0.16}_{-0.20}$	$\Delta z_{\text{s,DES}}^1$	0.0003	$-0.004 \pm 0.015$	$\chi_{\text{DES}}^2$	249.62	$261.2 \pm 4.8$
$m_{\text{DES}}^1$	0.0126	$0.011 \pm 0.023$	$\Delta z_{\text{s,DES}}^2$	-0.0303	$-0.031 \pm 0.011$	$\chi_{\text{prior}}^2$	1.55	$13.1 \pm 5.1$
$m_{\text{DES}}^2$	0.0099	$0.009 \pm 0.022$	$\Delta z_{\text{s,DES}}^3$	0.0067	$0.0080 \pm 0.0099$			

Best-fit  $\chi^2_{\text{eff}} = 251.17$ ;  $\bar{\chi}^2_{\text{eff}} = 274.25$ ;  $R - 1 = 0.00686$   
 $\chi^2_{\text{eff}}$ : WL - DES\_1YR\_final: 249.62

## 2.247 base\_DES\_DESpriors\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.2607	$0.269^{+0.018}_{-0.022}$	$m_{\text{DES}}^3$	0.0140	$0.013 \pm 0.021$	$\Delta z_{\text{s,DES}}^4$	-0.0228	$-0.021 \pm 0.018$
$\Omega_b$	0.0634	$0.0523^{+0.014}_{-0.0079}$	$m_{\text{DES}}^4$	0.0138	$0.014 \pm 0.021$	$\Omega_{\text{b}} h^2$	0.0408	$0.0288^{+0.0082}_{-0.015}$
$H_0$	80.2	$73^{+10}_{-10}$	$A_{\text{IA,DES}}$	0.489	$0.46^{+0.18}_{-0.21}$	$\Omega_{\text{c}} h^2$	0.1262	$0.114^{+0.020}_{-0.027}$
$10^9 A_{\text{s}}$	2.441	$2.51^{+0.31}_{-0.49}$	$\alpha_{\text{IA,DES}}$	-0.94	$-0.1^{+2.4}_{-2.7}$	$\Omega_{\Lambda}$	0.7393	$0.731^{+0.022}_{-0.018}$
$n_{\text{s}}$	1.021	$> 0.960$	$\Delta z_{\text{l,DES}}^1$	0.0039	$0.0043 \pm 0.0075$	$\ln(10^{10} A_{\text{s}})$	3.195	$3.21^{+0.16}_{-0.17}$
$b_{\text{DES}}^1$	1.416	$1.435 \pm 0.089$	$\Delta z_{\text{l,DES}}^2$	0.0018	$0.0020 \pm 0.0066$	$\sigma_8$	0.8400	$0.822 \pm 0.031$
$b_{\text{DES}}^2$	1.628	$1.646 \pm 0.075$	$\Delta z_{\text{l,DES}}^3$	0.0042	$0.0041 \pm 0.0067$	$S_8$	0.7831	$0.778 \pm 0.015$
$b_{\text{DES}}^3$	1.618	$1.636 \pm 0.067$	$\Delta z_{\text{l,DES}}^4$	0.0019	$0.0021 \pm 0.0091$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4289	$0.4261 \pm 0.0084$
$b_{\text{DES}}^4$	1.960	$1.979 \pm 0.078$	$\Delta z_{\text{l,DES}}^5$	0.0002	$0.0004 \pm 0.0097$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6003	$0.592 \pm 0.014$
$b_{\text{DES}}^5$	2.038	$2.053 \pm 0.094$	$\Delta z_{\text{s,DES}}^1$	-0.0020	$-0.004 \pm 0.014$	$\chi_{\text{lensing}}^2$	7.76	$9.0 \pm 1.5$
$m_{\text{DES}}^1$	0.0132	$0.012 \pm 0.023$	$\Delta z_{\text{s,DES}}^2$	-0.0284	$-0.029 \pm 0.011$	$\chi_{\text{DES}}^2$	501.25	$512.3 \pm 4.5$
$m_{\text{DES}}^2$	0.0162	$0.015 \pm 0.022$	$\Delta z_{\text{s,DES}}^3$	0.0079	$0.0080 \pm 0.0096$	$\chi_{\text{prior}}^2$	0.99	$12.1 \pm 4.8$



Best-fit  $\chi^2_{\text{eff}} = 510.00$ ;  $\bar{\chi}^2_{\text{eff}} = 533.39$ ;  $R - 1 = 0.00725$   
 $\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmargd: 7.76 WL - DES\_1YR\_final: 501.25

## 2.248 base\_DESlens\_DESpriors\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.2843	$0.277^{+0.028}_{-0.032}$	$A_{\text{IA,DES}}$	1.33	$0.75^{+0.74}_{-0.65}$	$\ln(10^{10} A_{\text{s}})$	3.406	$3.17 \pm 0.16$
$\Omega_b$	0.0564	—	$\alpha_{\text{IA,DES}}$	3.35	$> 1.11$	$\sigma_8$	0.8266	$0.826 \pm 0.040$
$H_0$	63.5	$72^{+8}_{-10}$	$\Delta z_{\text{s,DES}}^1$	0.0027	$0.002 \pm 0.015$	$S_8$	0.8046	$0.790^{+0.025}_{-0.019}$
$10^9 A_{\text{s}}$	3.014	$2.41^{+0.32}_{-0.48}$	$\Delta z_{\text{s,DES}}^2$	-0.0192	$-0.020 \pm 0.012$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4407	$0.433^{+0.014}_{-0.010}$
$n_{\text{s}}$	1.070	$> 0.949$	$\Delta z_{\text{s,DES}}^3$	0.0081	$0.008 \pm 0.011$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6036	$0.598 \pm 0.017$
$m_{\text{DES}}^1$	0.0146	$0.013 \pm 0.023$	$\Delta z_{\text{s,DES}}^4$	-0.0165	$-0.016 \pm 0.020$	$\chi^2_{\text{lensing}}$	7.37	$9.3 \pm 1.7$
$m_{\text{DES}}^2$	0.0141	$0.013 \pm 0.022$	$\Omega_{\text{b}} h^2$	0.0228	$0.0267^{+0.0067}_{-0.013}$	$\chi^2_{\text{DES}}$	228.89	$232.6 \pm 2.4$
$m_{\text{DES}}^3$	0.0017	$0.004 \pm 0.021$	$\Omega_{\text{c}} h^2$	0.0913	$0.116^{+0.018}_{-0.029}$	$\chi^2_{\text{prior}}$	0.35	$7.3 \pm 3.7$
$m_{\text{DES}}^4$	0.0178	$0.018 \pm 0.021$	$\Omega_{\Lambda}$	0.7157	$0.723^{+0.032}_{-0.028}$			

Best-fit  $\chi^2_{\text{eff}} = 236.62$ ;  $\bar{\chi}^2_{\text{eff}} = 249.24$ ;  $R - 1 = 0.00861$   
 $\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmargd: 7.37 WL - DES\_1YR\_final: 228.89

## 2.249 base\_DESwt\_DESpriors\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.2729	$0.277^{+0.022}_{-0.031}$	$m_{\text{DES}}^3$	0.0225	$0.023 \pm 0.021$	$\Delta z_{\text{s,DES}}^4$	-0.0229	$-0.022 \pm 0.019$
$\Omega_b$	0.0606	$0.0520^{+0.015}_{-0.0080}$	$m_{\text{DES}}^4$	0.0088	$0.009 \pm 0.022$	$\Omega_{\text{b}} h^2$	0.0392	$0.0275^{+0.0071}_{-0.015}$
$H_0$	80.5	$< 76.2$	$A_{\text{IA,DES}}$	0.399	$0.43^{+0.16}_{-0.20}$	$\Omega_{\text{c}} h^2$	0.1368	$0.112^{+0.018}_{-0.029}$
$10^9 A_{\text{s}}$	2.124	$2.46^{+0.28}_{-0.50}$	$\alpha_{\text{IA,DES}}$	-2.38	$-0.6^{+2.1}_{-3.4}$	$\Omega_{\Lambda}$	0.7271	$0.723^{+0.031}_{-0.022}$
$n_{\text{s}}$	0.941	—	$\Delta z_{\text{l,DES}}^1$	0.0028	$0.0032 \pm 0.0077$	$\ln(10^{10} A_{\text{s}})$	3.056	$3.19^{+0.14}_{-0.19}$
$b_{\text{DES}}^1$	1.424	$1.428 \pm 0.096$	$\Delta z_{\text{l,DES}}^2$	0.0013	$0.0017 \pm 0.0068$	$\sigma_8$	0.8099	$0.806 \pm 0.036$
$b_{\text{DES}}^2$	1.661	$1.668^{+0.079}_{-0.089}$	$\Delta z_{\text{l,DES}}^3$	0.0043	$0.0045 \pm 0.0066$	$S_8$	0.7725	$0.772 \pm 0.020$
$b_{\text{DES}}^3$	1.653	$1.660^{+0.071}_{-0.080}$	$\Delta z_{\text{l,DES}}^4$	0.0027	$0.0026 \pm 0.0092$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4231	$0.423 \pm 0.011$
$b_{\text{DES}}^4$	1.999	$2.006^{+0.083}_{-0.094}$	$\Delta z_{\text{l,DES}}^5$	-0.0001	$0.0002 \pm 0.0098$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5854	$0.584 \pm 0.015$
$b_{\text{DES}}^5$	2.071	$2.08 \pm 0.10$	$\Delta z_{\text{s,DES}}^1$	-0.0007	$-0.004 \pm 0.015$	$\chi^2_{\text{lensing}}$	7.87	$9.3 \pm 1.6$
$m_{\text{DES}}^1$	0.0122	$0.011 \pm 0.023$	$\Delta z_{\text{s,DES}}^2$	-0.0300	$-0.030 \pm 0.011$	$\chi^2_{\text{DES}}$	251.25	$261.4 \pm 4.5$
$m_{\text{DES}}^2$	0.0094	$0.009 \pm 0.023$	$\Delta z_{\text{s,DES}}^3$	0.0083	$0.0089 \pm 0.0097$	$\chi^2_{\text{prior}}$	1.29	$12.7 \pm 4.9$

Best-fit  $\chi^2_{\text{eff}} = 260.41$ ;  $\bar{\chi}^2_{\text{eff}} = 283.37$ ;  $R - 1 = 0.00571$   
 $\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmargd: 7.87 WL - DES\_1YR\_final: 251.25



## 2.250 base\_DES\_DESpriors\_BAO\_CookeDH

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.2934	$0.283 \pm 0.017$	$m_{\text{DES}}^4$	0.0085	$0.011 \pm 0.021$	$\Omega_{\text{c}} h^2$	0.1110	$0.104^{+0.010}_{-0.012}$
$\Omega_b$	0.04868	$0.0497 \pm 0.0019$	$A_{\text{IA,DES}}$	0.443	$0.45^{+0.17}_{-0.20}$	$\Omega_{\Lambda}$	0.7066	$0.717 \pm 0.017$
$H_0$	67.54	$66.9 \pm 1.2$	$\alpha_{\text{IA,DES}}$	-1.78	$-0.4^{+2.2}_{-2.8}$	$\ln(10^{10} A_{\text{s}})$	3.144	$3.23 \pm 0.20$
$10^9 A_{\text{s}}$	2.32	$2.59^{+0.40}_{-0.61}$	$\Delta z_{\text{l,DES}}^1$	0.0036	$0.0043 \pm 0.0074$	$\sigma_8$	0.7937	$0.806 \pm 0.039$
$n_{\text{s}}$	0.901	$< 0.987$	$\Delta z_{\text{l,DES}}^2$	0.0011	$0.0017 \pm 0.0066$	$S_8$	0.7849	$0.782 \pm 0.023$
$b_{\text{DES}}^1$	1.477	$1.462^{+0.092}_{-0.10}$	$\Delta z_{\text{l,DES}}^3$	0.0039	$0.0040 \pm 0.0066$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4299	$0.428 \pm 0.013$
$b_{\text{DES}}^2$	1.682	$1.671^{+0.086}_{-0.099}$	$\Delta z_{\text{l,DES}}^4$	0.0020	$0.0019 \pm 0.0091$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5841	$0.588 \pm 0.022$
$b_{\text{DES}}^3$	1.663	$1.655^{+0.082}_{-0.098}$	$\Delta z_{\text{l,DES}}^5$	0.0002	$0.0000 \pm 0.0097$	$\chi_{6\text{DF}}^2$	0.0137	$0.09 \pm 0.13$
$b_{\text{DES}}^4$	2.006	$2.00^{+0.10}_{-0.12}$	$\Delta z_{\text{s,DES}}^1$	-0.0009	$-0.004 \pm 0.014$	$\chi_{\text{MGS}}^2$	2.04	$2.31 \pm 0.77$
$b_{\text{DES}}^5$	2.072	$2.07^{+0.12}_{-0.14}$	$\Delta z_{\text{s,DES}}^2$	-0.0286	$-0.030 \pm 0.011$	$\chi_{\text{DR12BAO}}^2$	3.83	$5.5 \pm 1.8$
$m_{\text{DES}}^1$	0.0133	$0.012 \pm 0.023$	$\Delta z_{\text{s,DES}}^3$	0.0059	$0.0070 \pm 0.0098$	$\chi_{\text{DES}}^2$	502.45	$512.7 \pm 4.9$
$m_{\text{DES}}^2$	0.0149	$0.014 \pm 0.022$	$\Delta z_{\text{s,DES}}^4$	-0.0249	$-0.023 \pm 0.019$	$\chi_{\text{prior}}^2$	1.18	$13.2 \pm 5.0$
$m_{\text{DES}}^3$	0.0045	$0.008 \pm 0.021$	$\Omega_{\text{b}} h^2$	0.02221	$0.02220 \pm 0.00050$	$\chi_{\text{BAO}}^2$	5.88	$7.9 \pm 2.0$

Best-fit  $\chi_{\text{eff}}^2 = 509.50$ ;  $\bar{\chi}_{\text{eff}}^2 = 533.77$ ;  $R - 1 = 0.00944$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.01 MGS: 2.04 DR12BAO: 3.83 WL - DES\_1YR\_final: 502.44

## 2.251 base\_DESlens\_DESpriors\_BAO\_CookeDH

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.3454	$0.330^{+0.033}_{-0.040}$	$\alpha_{\text{IA,DES}}$	2.72	$> 1.08$	$S_8$	0.7908	$0.785 \pm 0.028$
$\Omega_b$	0.04455	$0.0460 \pm 0.0031$	$\Delta z_{\text{s,DES}}^1$	0.0038	$0.003 \pm 0.015$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4331	$0.430 \pm 0.015$
$H_0$	70.58	$69.6^{+2.0}_{-2.6}$	$\Delta z_{\text{s,DES}}^2$	-0.0204	$-0.021 \pm 0.012$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5650	$0.569 \pm 0.028$
$10^9 A_{\text{s}}$	1.34	$1.64^{+0.35}_{-0.76}$	$\Delta z_{\text{s,DES}}^3$	0.0077	$0.008 \pm 0.011$	$\chi_{6\text{DF}}^2$	0.061	$0.13 \pm 0.17$
$n_{\text{s}}$	0.922	$< 0.992$	$\Delta z_{\text{s,DES}}^4$	-0.0164	$-0.016 \pm 0.021$	$\chi_{\text{MGS}}^2$	1.10	$1.43 \pm 0.82$
$m_{\text{DES}}^1$	0.0146	$0.014 \pm 0.023$	$\Omega_{\text{b}} h^2$	0.022190	$0.02220 \pm 0.00049$	$\chi_{\text{DR12BAO}}^2$	2.20	$3.9 \pm 1.7$
$m_{\text{DES}}^2$	0.0135	$0.012 \pm 0.022$	$\Omega_{\text{c}} h^2$	0.1492	$0.139^{+0.021}_{-0.032}$	$\chi_{\text{DES}}^2$	229.41	$233.2 \pm 2.7$
$m_{\text{DES}}^3$	0.0012	$0.002 \pm 0.022$	$\Omega_{\Lambda}$	0.6546	$0.670^{+0.040}_{-0.033}$	$\chi_{\text{prior}}^2$	0.45	$8.5 \pm 4.0$
$m_{\text{DES}}^4$	0.0187	$0.018 \pm 0.022$	$\ln(10^{10} A_{\text{s}})$	2.594	$2.73 \pm 0.38$	$\chi_{\text{BAO}}^2$	3.36	$5.4 \pm 2.1$
$A_{\text{IA,DES}}$	1.33	$0.99 \pm 0.66$	$\sigma_8$	0.737	$0.752 \pm 0.054$			

Best-fit  $\chi_{\text{eff}}^2 = 233.21$ ;  $\bar{\chi}_{\text{eff}}^2 = 247.19$ ;  $R - 1 = 0.00929$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.06 MGS: 1.10 DR12BAO: 2.20 WL - DES\_1YR\_final: 229.41



### 2.252 base\_DESwt\_DESpriors\_BAO\_CookeDH

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.2999	$0.287 \pm 0.016$	$m_{\text{DES}}^4$	0.0056	$0.007 \pm 0.022$	$\Omega_{\text{c}} h^2$	0.1148	$0.106 \pm 0.010$
$\Omega_{\text{b}}$	0.04840	$0.0495^{+0.0017}_{-0.0019}$	$A_{\text{IA,DES}}$	0.354	$0.41^{+0.16}_{-0.19}$	$\Omega_{\Lambda}$	0.7001	$0.713 \pm 0.016$
$H_0$	67.76	$67.0 \pm 1.2$	$\alpha_{\text{IA,DES}}$	-3.06	$-0.6^{+2.0}_{-3.5}$	$\ln(10^{10} A_{\text{s}})$	3.086	$3.19^{+0.19}_{-0.21}$
$10^9 A_{\text{s}}$	2.189	$2.49^{+0.36}_{-0.59}$	$\Delta z_{\text{l,DES}}^1$	0.0026	$0.0035 \pm 0.0077$	$\sigma_8$	0.7801	$0.797^{+0.043}_{-0.048}$
$n_{\text{s}}$	0.8701	$< 0.951$	$\Delta z_{\text{l,DES}}^2$	0.0015	$0.0020 \pm 0.0068$	$S_8$	0.7800	$0.779 \pm 0.035$
$b_{\text{DES}}^1$	1.456	$1.44^{+0.10}_{-0.12}$	$\Delta z_{\text{l,DES}}^3$	0.0049	$0.0048 \pm 0.0067$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4272	$0.426 \pm 0.019$
$b_{\text{DES}}^2$	1.693	$1.678^{+0.098}_{-0.12}$	$\Delta z_{\text{l,DES}}^4$	0.0031	$0.0028 \pm 0.0091$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5773	$0.583 \pm 0.029$
$b_{\text{DES}}^3$	1.681	$1.666^{+0.096}_{-0.11}$	$\Delta z_{\text{l,DES}}^5$	0.0005	$0.0001 \pm 0.0097$	$\chi_{\text{6DF}}^2$	0.0018	$0.08 \pm 0.11$
$b_{\text{DES}}^4$	2.028	$2.01^{+0.12}_{-0.14}$	$\Delta z_{\text{s,DES}}^1$	0.0000	$-0.004 \pm 0.015$	$\chi_{\text{MGS}}^2$	1.82	$2.16 \pm 0.75$
$b_{\text{DES}}^5$	2.090	$2.08^{+0.13}_{-0.16}$	$\Delta z_{\text{s,DES}}^2$	-0.0300	$-0.031 \pm 0.011$	$\chi_{\text{DR12BAO}}^2$	3.63	$5.3 \pm 1.7$
$m_{\text{DES}}^1$	0.0125	$0.011 \pm 0.023$	$\Delta z_{\text{s,DES}}^3$	0.0070	$0.008 \pm 0.010$	$\chi_{\text{DES}}^2$	250.45	$261.1 \pm 5.0$
$m_{\text{DES}}^2$	0.0102	$0.009 \pm 0.023$	$\Delta z_{\text{s,DES}}^4$	-0.0247	$-0.024 \pm 0.019$	$\chi_{\text{prior}}^2$	1.38	$14.1 \pm 5.2$
$m_{\text{DES}}^3$	0.0191	$0.021 \pm 0.021$	$\Omega_{\text{b}} h^2$	0.02222	$0.02218 \pm 0.00051$	$\chi_{\text{BAO}}^2$	5.45	$7.5 \pm 1.9$

Best-fit  $\chi_{\text{eff}}^2 = 257.28$ ;  $\bar{\chi}_{\text{eff}}^2 = 282.67$ ;  $R - 1 = 0.00957$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.82 DR12BAO: 3.63 WL - DES\_1YR\_final: 250.45

### 2.253 base\_DES\_DESpriors\_lensing\_BAO\_CookeDH

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.2919	$0.285 \pm 0.014$	$A_{\text{IA,DES}}$	0.455	$0.45^{+0.17}_{-0.20}$	$\ln(10^{10} A_{\text{s}})$	3.130	$3.20^{+0.12}_{-0.16}$
$\Omega_{\text{b}}$	0.04891	$0.0495 \pm 0.0017$	$\alpha_{\text{IA,DES}}$	-1.47	$-0.4^{+2.2}_{-2.8}$	$\sigma_8$	0.7917	$0.802^{+0.023}_{-0.026}$
$H_0$	67.42	$67.0 \pm 1.2$	$\Delta z_{\text{l,DES}}^1$	0.0041	$0.0042 \pm 0.0075$	$S_8$	0.7809	$0.780 \pm 0.015$
$10^9 A_{\text{s}}$	2.287	$2.47^{+0.25}_{-0.43}$	$\Delta z_{\text{l,DES}}^2$	0.0011	$0.0017 \pm 0.0066$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4277	$0.4273 \pm 0.0083$
$n_{\text{s}}$	0.935	—	$\Delta z_{\text{l,DES}}^3$	0.0036	$0.0039 \pm 0.0065$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5819	$0.585 \pm 0.013$
$b_{\text{DES}}^1$	1.494	$1.473 \pm 0.080$	$\Delta z_{\text{l,DES}}^4$	0.0015	$0.0016 \pm 0.0090$	$\chi_{\text{lensing}}^2$	7.91	$8.9 \pm 1.5$
$b_{\text{DES}}^2$	1.701	$1.685 \pm 0.062$	$\Delta z_{\text{l,DES}}^5$	-0.0001	$0.0000 \pm 0.0097$	$\chi_{\text{6DF}}^2$	0.0141	$0.08 \pm 0.11$
$b_{\text{DES}}^3$	1.685	$1.671 \pm 0.055$	$\Delta z_{\text{s,DES}}^1$	-0.0012	$-0.004 \pm 0.014$	$\chi_{\text{MGS}}^2$	2.04	$2.27 \pm 0.73$
$b_{\text{DES}}^4$	2.035	$2.019 \pm 0.064$	$\Delta z_{\text{s,DES}}^2$	-0.0287	$-0.029 \pm 0.011$	$\chi_{\text{DR12BAO}}^2$	3.94	$5.3 \pm 1.6$
$b_{\text{DES}}^5$	2.112	$2.094 \pm 0.084$	$\Delta z_{\text{s,DES}}^3$	0.0066	$0.0071 \pm 0.0097$	$\chi_{\text{DES}}^2$	502.90	$512.4 \pm 4.4$
$m_{\text{DES}}^1$	0.0135	$0.012 \pm 0.023$	$\Delta z_{\text{s,DES}}^4$	-0.0236	$-0.023 \pm 0.018$	$\chi_{\text{prior}}^2$	1.06	$13.0 \pm 4.9$
$m_{\text{DES}}^2$	0.0148	$0.015 \pm 0.022$	$\Omega_{\text{b}} h^2$	0.022230	$0.02219 \pm 0.00050$	$\chi_{\text{BAO}}^2$	6.00	$7.7 \pm 1.8$
$m_{\text{DES}}^3$	0.0078	$0.009 \pm 0.020$	$\Omega_{\text{c}} h^2$	0.1098	$0.1050^{+0.0093}_{-0.010}$			
$m_{\text{DES}}^4$	0.0102	$0.011 \pm 0.021$	$\Omega_{\Lambda}$	0.7081	$0.715 \pm 0.014$			

Best-fit  $\chi_{\text{eff}}^2 = 517.86$ ;  $\bar{\chi}_{\text{eff}}^2 = 541.96$ ;  $R - 1 = 0.00592$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.01 MGS: 2.04 DR12BAO: 3.94 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmargd: 7.91 WL - DES\_1YR\_final: 502.90



## 2.254 base\_DESlens\_DESpriors\_lensing\_BAO\_CookeDH

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.3106	$0.295 \pm 0.016$	$\alpha_{\text{IA,DES}}$	2.80	$> 1.08$	$S_8$	0.8009	$0.798 \pm 0.020$
$\Omega_b$	0.04731	$0.0487 \pm 0.0018$	$\Delta z_{\text{s,DES}}^1$	0.0034	$0.003 \pm 0.015$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4387	$0.437 \pm 0.011$
$H_0$	68.49	$67.6 \pm 1.3$	$\Delta z_{\text{s,DES}}^2$	-0.0195	$-0.020 \pm 0.012$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5876	$0.593 \pm 0.014$
$10^9 A_{\text{s}}$	1.992	$2.30^{+0.24}_{-0.40}$	$\Delta z_{\text{s,DES}}^3$	0.0067	$0.007 \pm 0.010$	$\chi_{\text{lensing}}^2$	7.79	$9.0 \pm 1.5$
$n_{\text{s}}$	0.902	$< 0.988$	$\Delta z_{\text{s,DES}}^4$	-0.0190	$-0.018 \pm 0.020$	$\chi_{6\text{DF}}^2$	0.0002	$0.066 \pm 0.092$
$m_{\text{DES}}^1$	0.0142	$0.013 \pm 0.023$	$\Omega_{\text{b}} h^2$	0.022191	$0.02219 \pm 0.00050$	$\chi_{\text{MGS}}^2$	1.68	$2.05 \pm 0.73$
$m_{\text{DES}}^2$	0.0138	$0.013 \pm 0.022$	$\Omega_{\text{c}} h^2$	0.1229	$0.112 \pm 0.011$	$\chi_{\text{DR12BAO}}^2$	3.08	$4.8 \pm 1.6$
$m_{\text{DES}}^3$	-0.0018	$0.000 \pm 0.021$	$\Omega_{\Lambda}$	0.6894	$0.705 \pm 0.016$	$\chi_{\text{DES}}^2$	229.27	$232.2 \pm 2.3$
$m_{\text{DES}}^4$	0.0157	$0.015 \pm 0.021$	$\ln(10^{10} A_{\text{s}})$	2.992	$3.13^{+0.12}_{-0.16}$	$\chi_{\text{prior}}^2$	0.52	$8.4 \pm 4.0$
$A_{\text{IA,DES}}$	1.30	$0.996^{+0.57}_{-0.63}$	$\sigma_8$	0.7871	$0.806^{+0.022}_{-0.027}$	$\chi_{\text{BAO}}^2$	4.76	$6.9 \pm 1.8$

Best-fit  $\chi_{\text{eff}}^2 = 242.34$ ;  $\bar{\chi}_{\text{eff}}^2 = 256.54$ ;  $R - 1 = 0.00700$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.08 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 7.79 WL - DES\_1YR\_final: 229.27

## 2.255 base\_DESwt\_DESpriors\_lensing\_BAO\_CookeDH

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.3056	$0.289^{+0.017}_{-0.014}$	$A_{\text{IA,DES}}$	0.350	$0.42^{+0.16}_{-0.20}$	$\ln(10^{10} A_{\text{s}})$	3.000	$3.154^{+0.094}_{-0.16}$
$\Omega_b$	0.04763	$0.0492 \pm 0.0017$	$\alpha_{\text{IA,DES}}$	-3.07	$-0.7^{+2.0}_{-3.4}$	$\sigma_8$	0.7686	$0.791^{+0.018}_{-0.027}$
$H_0$	68.30	$67.2 \pm 1.1$	$\Delta z_{\text{l,DES}}^1$	0.0026	$0.0033 \pm 0.0077$	$S_8$	0.7757	$0.776 \pm 0.018$
$10^9 A_{\text{s}}$	2.008	$2.36^{+0.18}_{-0.39}$	$\Delta z_{\text{l,DES}}^2$	0.0013	$0.0019 \pm 0.0067$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4249	$0.425 \pm 0.010$
$n_{\text{s}}$	0.8721	$< 0.965$	$\Delta z_{\text{l,DES}}^3$	0.0046	$0.0046 \pm 0.0067$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5714	$0.580^{+0.012}_{-0.014}$
$b_{\text{DES}}^1$	1.487	$1.454 \pm 0.081$	$\Delta z_{\text{l,DES}}^4$	0.0030	$0.0025 \pm 0.0090$	$\chi_{\text{lensing}}^2$	8.54	$9.2 \pm 1.6$
$b_{\text{DES}}^2$	1.729	$1.693 \pm 0.063$	$\Delta z_{\text{l,DES}}^5$	0.0002	$0.0002 \pm 0.0097$	$\chi_{6\text{DF}}^2$	0.0013	$0.070 \pm 0.097$
$b_{\text{DES}}^3$	1.716	$1.684 \pm 0.054$	$\Delta z_{\text{s,DES}}^1$	0.0003	$-0.004 \pm 0.015$	$\chi_{\text{MGS}}^2$	1.82	$2.14 \pm 0.72$
$b_{\text{DES}}^4$	2.075	$2.035 \pm 0.063$	$\Delta z_{\text{s,DES}}^2$	-0.0302	$-0.031 \pm 0.011$	$\chi_{\text{DR12BAO}}^2$	3.23	$5.1 \pm 1.6$
$b_{\text{DES}}^5$	2.147	$2.107 \pm 0.084$	$\Delta z_{\text{s,DES}}^3$	0.0075	$0.0083 \pm 0.0098$	$\chi_{\text{DES}}^2$	251.42	$260.8 \pm 4.5$
$m_{\text{DES}}^1$	0.0126	$0.011 \pm 0.023$	$\Delta z_{\text{s,DES}}^4$	-0.0241	$-0.023 \pm 0.019$	$\chi_{\text{prior}}^2$	1.35	$13.7 \pm 5.2$
$m_{\text{DES}}^2$	0.0097	$0.009 \pm 0.023$	$\Omega_{\text{b}} h^2$	0.022218	$0.02219 \pm 0.00050$	$\chi_{\text{BAO}}^2$	5.05	$7.3 \pm 1.7$
$m_{\text{DES}}^3$	0.0199	$0.022 \pm 0.021$	$\Omega_{\text{c}} h^2$	0.1197	$0.108^{+0.010}_{-0.0090}$			
$m_{\text{DES}}^4$	0.0062	$0.007 \pm 0.021$	$\Omega_{\Lambda}$	0.6944	$0.711^{+0.014}_{-0.017}$			

Best-fit  $\chi_{\text{eff}}^2 = 266.38$ ;  $\bar{\chi}_{\text{eff}}^2 = 291.02$ ;  $R - 1 = 0.00577$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.82 DR12BAO: 3.23 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 8.54 WL - DES\_1YR\_final: 251.43



## 2.256 base\_plikHM\_TTTEEE\_lowl\_lowE\_DES

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022524	$0.02252 \pm 0.00014$	$\Delta z_{l,DES}^1$	0.0030	$0.0036 \pm 0.0074$	$z_{\text{drag}}$	1060.162	$1060.12 \pm 0.30$
$\Omega_c h^2$	0.11811	$0.1179 \pm 0.0011$	$\Delta z_{l,DES}^2$	0.0007	$0.0008 \pm 0.0066$	$r_{\text{drag}}$	147.420	$147.49 \pm 0.25$
$100\theta_{\text{MC}}$	1.041116	$1.04112 \pm 0.00030$	$\Delta z_{l,DES}^3$	0.0035	$0.0034 \pm 0.0066$	$k_D$	0.140636	$0.14056 \pm 0.00030$
$\tau$	0.0552	$0.0546 \pm 0.0080$	$\Delta z_{l,DES}^4$	0.0007	$0.0006 \pm 0.0090$	$100\theta_D$	0.160639	$0.16066 \pm 0.00017$
$\ln(10^{10} A_s)$	3.0416	$3.039 \pm 0.016$	$\Delta z_{l,DES}^5$	-0.0004	$-0.0006 \pm 0.0099$	$z_{\text{eq}}$	3360.8	$3355 \pm 24$
$n_s$	0.97003	$0.9696 \pm 0.0040$	$\Delta z_{s,DES}^1$	0.0007	$-0.003 \pm 0.014$	$k_{\text{eq}}$	0.010257	$0.010240 \pm 0.000074$
$y_{\text{cal}}$	1.00041	$1.0005 \pm 0.0025$	$\Delta z_{s,DES}^2$	-0.0301	$-0.031 \pm 0.011$	$100\theta_{\text{eq}}$	0.82136	$0.8224 \pm 0.0046$
$A_{217}^{\text{CIB}}$	47.6	$47 \pm 7$	$\Delta z_{s,DES}^3$	0.0029	$0.0041 \pm 0.0096$	$100\theta_{s,\text{eq}}$	0.45348	$0.4540 \pm 0.0024$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.44	—	$\Delta z_{s,DES}^4$	-0.0301	$-0.030 \pm 0.018$	$H(0.15)$	73.415	$73.48 \pm 0.42$
$A_{143}^{\text{tSZ}}$	7.25	$5.5^{+2.1}_{-1.9}$	$H_0$	68.215	$68.30 \pm 0.49$	$D_M(0.15)$	636.09	$635.4 \pm 4.1$
$A_{100}^{\text{PS}}$	249.4	$259 \pm 28$	$\Omega_\Lambda$	0.6964	$0.6975 \pm 0.0064$	$H(0.38)$	83.395	$83.44 \pm 0.31$
$A_{143}^{\text{PS}}$	46.7	$45 \pm 8$	$\Omega_m$	0.3036	$0.3025 \pm 0.0064$	$D_M(0.38)$	1518.9	$1517.7 \pm 8.3$
$A_{143 \times 217}^{\text{PS}}$	46.9	$41 \pm 9$	$\Omega_m h^2$	0.14128	$0.1410 \pm 0.0010$	$H(0.51)$	90.037	$90.07 \pm 0.25$
$A_{217}^{\text{PS}}$	118.5	$114 \pm 10$	$\Omega_m h^3$	0.096375	$0.09632 \pm 0.00029$	$D_M(0.51)$	1968.9	$1967.4 \pm 9.8$
$A^{\text{kSZ}}$	0.00	$< 4.37$	$\sigma_8$	0.8048	$0.8030 \pm 0.0068$	$H(0.61)$	95.598	$95.62 \pm 0.21$
$A_{100}^{\text{dustTT}}$	8.78	$8.9 \pm 1.8$	$S_8$	0.8097	$0.806 \pm 0.012$	$D_M(0.61)$	2292.1	$2291 \pm 11$
$A_{143}^{\text{dustTT}}$	11.04	$11.0 \pm 1.8$	$\sigma_8 \Omega_m^{0.5}$	0.4435	$0.4416 \pm 0.0067$	$H(2.33)$	235.49	$235.33 \pm 0.64$
$A_{143 \times 217}^{\text{dustTT}}$	19.77	$18.7 \pm 3.3$	$\sigma_8 \Omega_m^{0.25}$	0.5974	$0.5955 \pm 0.0066$	$D_M(2.33)$	5750.0	$5749.6 \pm 9.7$
$A_{217}^{\text{dustTT}}$	94.7	$93.7 \pm 7.4$	$\sigma_8/h^{0.5}$	0.9745	$0.9717 \pm 0.0096$	$f\sigma_8(0.15)$	0.4487	$0.4469 \pm 0.0063$
$A_{100}^{\text{dustTE}}$	0.1149	$0.114 \pm 0.038$	$r_{\text{drag}} h$	100.56	$100.73 \pm 0.85$	$\sigma_8(0.15)$	0.7445	$0.7429 \pm 0.0061$
$A_{100 \times 143}^{\text{dustTE}}$	0.1345	$0.135 \pm 0.029$	$\langle d^2 \rangle^{1/2}$	2.4120	$2.408 \pm 0.023$	$f\sigma_8(0.38)$	0.4686	$0.4670 \pm 0.0054$
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.481 \pm 0.084$	$z_{\text{re}}$	7.71	$7.62 \pm 0.80$	$\sigma_8(0.38)$	0.6608	$0.6595 \pm 0.0053$
$A_{143}^{\text{dustTE}}$	0.223	$0.222 \pm 0.054$	$10^9 A_s$	2.0940	$2.090 \pm 0.034$	$f\sigma_8(0.51)$	0.46816	$0.4667 \pm 0.0049$
$A_{143 \times 217}^{\text{dustTE}}$	0.665	$0.661 \pm 0.080$	$10^9 A_s e^{-2\tau}$	1.8750	$1.873 \pm 0.011$	$\sigma_8(0.51)$	0.61875	$0.6176 \pm 0.0050$
$A_{217}^{\text{dustTE}}$	2.071	$2.06 \pm 0.27$	$D_{40}$	1220.3	$1221 \pm 12$	$f\sigma_8(0.61)$	0.46385	$0.4625 \pm 0.0045$
$c_{100}$	0.99970	$0.99967 \pm 0.00061$	$D_{220}$	5741.4	$5744 \pm 39$	$\sigma_8(0.61)$	0.58898	$0.5880 \pm 0.0048$
$c_{217}$	0.99819	$0.99819 \pm 0.00063$	$D_{810}$	2538.6	$2537 \pm 14$	$f\sigma_8(2.33)$	0.29728	$0.2968 \pm 0.0024$
$b_{\text{DES}}^1$	1.506	$1.508 \pm 0.073$	$D_{1420}$	818.89	$817.9 \pm 4.8$	$\sigma_8(2.33)$	0.30684	$0.3064 \pm 0.0026$
$b_{\text{DES}}^2$	1.710	$1.710 \pm 0.052$	$D_{2000}$	231.56	$231.2 \pm 1.6$	$f_{2000}^{143}$	28.49	$29.3 \pm 2.7$
$b_{\text{DES}}^3$	1.6967	$1.698 \pm 0.044$	$n_{s,0.002}$	0.97003	$0.9696 \pm 0.0040$	$f_{2000}^{143 \times 217}$	31.72	$31.9 \pm 1.8$
$b_{\text{DES}}^4$	2.058	$2.059 \pm 0.052$	$Y_P$	0.245453	$0.245450 \pm 0.000053$	$f_{2000}^{217}$	106.29	$106.7 \pm 1.8$
$b_{\text{DES}}^5$	2.161	$2.159 \pm 0.076$	$Y_P^{\text{BBN}}$	0.246780	$0.246777 \pm 0.000053$	$\chi_{\text{small}}^2$	396.08	$397.0 \pm 1.8$
$m_{\text{DES}}^1$	0.0133	$0.012 \pm 0.023$	$10^5 D/H$	2.5577	$2.559 \pm 0.025$	$\chi_{\text{lowl}}^2$	22.49	$22.59 \pm 0.77$
$m_{\text{DES}}^2$	0.0137	$0.012 \pm 0.022$	Age/Gyr	13.7679	$13.767 \pm 0.022$	$\chi_{\text{plik}}^2$	2348.0	$2363.4 \pm 6.4$
$m_{\text{DES}}^3$	-0.0028	$-0.002 \pm 0.020$	$z_*$	1089.564	$1089.55 \pm 0.23$	$\chi_{\text{DES}}^2$	509.16	$518.0 \pm 4.9$
$m_{\text{DES}}^4$	0.0018	$0.003 \pm 0.021$	$r_*$	144.803	$144.87 \pm 0.25$	$\chi_{\text{prior}}^2$	4.0	$25 \pm 7$
$A_{\text{IA,DES}}$	0.434	$0.47^{+0.15}_{-0.18}$	$100\theta_*$	1.041291	$1.04129 \pm 0.00030$	$\chi_{\text{CMB}}^2$	2766.6	$2783.0 \pm 6.3$
$\alpha_{\text{IA,DES}}$	-2.55	$-1.1^{+1.7}_{-2.9}$	$D_M(z_*)/\text{Gpc}$	13.9061	$13.912 \pm 0.023$			

Best-fit  $\chi_{\text{eff}}^2 = 3279.69$ ;  $\bar{\chi}_{\text{eff}}^2 = 3325.69$ ;  $R - 1 = 0.00524$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.08 commander\_dx12\_v3.2\_29: 22.49 plik\_rd12\_HM\_v22b\_TTTEEE: 2347.99 WL - DES\_1YR\_final: 509.16



## 2.257 base\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022502	$0.02251 \pm 0.00013$	$\Delta z_{l,DES}^2$	0.0005	$0.0008 \pm 0.0066$	$k_D$	0.140590	$0.14057 \pm 0.00028$
$\Omega_c h^2$	0.11810	$0.11801 \pm 0.00087$	$\Delta z_{l,DES}^3$	0.0034	$0.0033 \pm 0.0066$	$100\theta_D$	0.160668	$0.16066 \pm 0.00017$
$100\theta_{MC}$	1.041121	$1.04111 \pm 0.00029$	$\Delta z_{l,DES}^4$	0.0008	$0.0004 \pm 0.0091$	$z_{eq}$	3359.9	$3358 \pm 20$
$\tau$	0.0552	$0.0543 \pm 0.0078$	$\Delta z_{l,DES}^5$	-0.0003	$-0.0005 \pm 0.0099$	$k_{eq}$	0.010255	$0.010249 \pm 0.000061$
$\ln(10^{10} A_s)$	3.0412	$3.039 \pm 0.016$	$\Delta z_{s,DES}^1$	0.0007	$-0.003 \pm 0.014$	$100\theta_{eq}$	0.82145	$0.8219 \pm 0.0038$
$n_s$	0.96987	$0.9693 \pm 0.0037$	$\Delta z_{s,DES}^2$	-0.0301	$-0.031 \pm 0.011$	$100\theta_{s,eq}$	0.45354	$0.4537 \pm 0.0019$
$y_{cal}$	1.00029	$1.0004 \pm 0.0025$	$\Delta z_{s,DES}^3$	0.0033	$0.0039 \pm 0.0096$	$H(0.15)$	73.400	$73.43 \pm 0.35$
$A_{217}^{CIB}$	48.1	$47 \pm 7$	$\Delta z_{s,DES}^4$	-0.0300	$-0.030 \pm 0.018$	$D_M(0.15)$	636.23	$635.9 \pm 3.4$
$\xi^{tSZ \times CIB}$	0.34	—	$H_0$	68.200	$68.24 \pm 0.40$	$H(0.38)$	83.380	$83.40 \pm 0.26$
$A_{143}^{tSZ}$	7.33	$5.5 \pm 2.0$	$\Omega_\Lambda$	0.6963	$0.6968 \pm 0.0052$	$D_M(0.38)$	1519.2	$1518.7 \pm 6.8$
$A_{100}^{PS}$	250.8	$258 \pm 28$	$\Omega_m$	0.3037	$0.3032 \pm 0.0052$	$H(0.51)$	90.021	$90.04 \pm 0.21$
$A_{143}^{PS}$	45.5	$45 \pm 8$	$\Omega_m h^2$	0.14125	$0.14116 \pm 0.00083$	$D_M(0.51)$	1969.3	$1968.6 \pm 8.0$
$A_{143 \times 217}^{PS}$	44.5	$41 \pm 9$	$\Omega_m h^3$	0.096330	$0.09632 \pm 0.00029$	$H(0.61)$	95.582	$95.59 \pm 0.18$
$A_{217}^{PS}$	117.7	$114 \pm 10$	$\sigma_8$	0.8046	$0.8033 \pm 0.0066$	$D_M(0.61)$	2292.5	$2291.8 \pm 8.7$
$A^{kSZ}$	0.00	$< 4.37$	$S_8$	0.8095	$0.808 \pm 0.011$	$H(2.33)$	235.46	$235.40 \pm 0.54$
$A_{100}^{dustTT}$	8.86	$8.9 \pm 1.8$	$\sigma_8 \Omega_m^{0.5}$	0.4434	$0.4423 \pm 0.0058$	$D_M(2.33)$	5750.9	$5750.5 \pm 8.6$
$A_{143}^{dustTT}$	11.12	$10.9 \pm 1.8$	$\sigma_8 \Omega_m^{0.25}$	0.5973	$0.5961 \pm 0.0060$	$f\sigma_8(0.15)$	0.4486	$0.4475 \pm 0.0055$
$A_{143 \times 217}^{dustTT}$	19.85	$18.7 \pm 3.3$	$\sigma_8/h^{0.5}$	0.9743	$0.9724 \pm 0.0090$	$\sigma_8(0.15)$	0.7443	$0.7431 \pm 0.0061$
$A_{217}^{dustTT}$	94.9	$93.7 \pm 7.3$	$r_{drag} h$	100.56	$100.63 \pm 0.68$	$f\sigma_8(0.38)$	0.46853	$0.4675 \pm 0.0049$
$A_{100}^{dustTE}$	0.1134	$0.115 \pm 0.038$	$\langle d^2 \rangle^{1/2}$	2.4118	$2.410 \pm 0.022$	$\sigma_8(0.38)$	0.6606	$0.6596 \pm 0.0053$
$A_{100 \times 143}^{dustTE}$	0.1350	$0.135 \pm 0.030$	$z_{re}$	7.71	$7.60 \pm 0.79$	$f\sigma_8(0.51)$	0.46806	$0.4671 \pm 0.0045$
$A_{100 \times 217}^{dustTE}$	0.481	$0.481 \pm 0.085$	$10^9 A_s$	2.0930	$2.089 \pm 0.033$	$\sigma_8(0.51)$	0.61859	$0.6176 \pm 0.0050$
$A_{143}^{dustTE}$	0.224	$0.222 \pm 0.054$	$10^9 A_s e^{-2\tau}$	1.8741	$1.874 \pm 0.011$	$f\sigma_8(0.61)$	0.46375	$0.4628 \pm 0.0043$
$A_{143 \times 217}^{dustTE}$	0.660	$0.662 \pm 0.081$	$D_{40}$	1219.9	$1222 \pm 11$	$\sigma_8(0.61)$	0.58882	$0.5879 \pm 0.0048$
$A_{217}^{dustTE}$	2.058	$2.07 \pm 0.27$	$D_{220}$	5737.9	$5743 \pm 38$	$f\sigma_8(2.33)$	0.29720	$0.2968 \pm 0.0024$
$c_{100}$	0.99969	$0.99967 \pm 0.00062$	$D_{810}$	2537.2	$2537 \pm 13$	$\sigma_8(2.33)$	0.30675	$0.3063 \pm 0.0025$
$c_{217}$	0.99821	$0.99820 \pm 0.00063$	$D_{1420}$	818.29	$817.8 \pm 4.8$	$f_{2000}^{143}$	28.73	$29.3 \pm 2.7$
$b_{DES}^1$	1.508	$1.509 \pm 0.073$	$D_{2000}$	231.33	$231.1 \pm 1.6$	$f_{2000}^{143 \times 217}$	31.86	$32.0 \pm 1.8$
$b_{DES}^2$	1.709	$1.709 \pm 0.053$	$n_{s,0.002}$	0.96987	$0.9693 \pm 0.0037$	$f_{2000}^{217}$	106.48	$106.8 \pm 1.8$
$b_{DES}^3$	1.6969	$1.697 \pm 0.044$	$Y_P$	0.2454451	$0.245446 \pm 0.000050$	$\chi_{simall}^2$	396.08	$397.0 \pm 1.7$
$b_{DES}^4$	2.058	$2.059 \pm 0.052$	$Y_P^{BBN}$	0.2467718	$0.246773 \pm 0.000050$	$\chi_{lowl}^2$	22.50	$22.63 \pm 0.73$
$b_{DES}^5$	2.162	$2.159 \pm 0.077$	$10^5 D/H$	2.5616	$2.561 \pm 0.024$	$\chi_{plik}^2$	2347.8	$2362.9 \pm 6.2$
$m_{DES}^1$	0.0132	$0.011 \pm 0.023$	Age/Gyr	13.7702	$13.769 \pm 0.019$	$\chi_{6DF}^2$	0.0002	$0.021 \pm 0.029$
$m_{DES}^2$	0.0141	$0.012 \pm 0.022$	$z_*$	1089.590	$1089.57 \pm 0.21$	$\chi_{MGS}^2$	1.748	$1.84 \pm 0.43$
$m_{DES}^3$	-0.0024	$-0.003 \pm 0.019$	$r_*$	144.823	$144.84 \pm 0.21$	$\chi_{DR12BAO}^2$	3.458	$3.74 \pm 0.49$
$m_{DES}^4$	0.0026	$0.003 \pm 0.021$	$100\theta_*$	1.041289	$1.04128 \pm 0.00029$	$\chi_{DES}^2$	509.26	$518.2 \pm 4.8$
$A_{IA,DES}$	0.444	$0.47_{-0.18}^{+0.14}$	$D_M(z_*)/Gpc$	13.9080	$13.910 \pm 0.021$	$\chi_{prior}^2$	4.0	$25 \pm 7$
$\alpha_{IA,DES}$	-2.44	$-1.2_{-2.9}^{+1.7}$	$z_{drag}$	1060.085	$1060.11 \pm 0.29$	$\chi_{BAO}^2$	5.206	$5.60 \pm 0.52$
$\Delta z_{l,DES}^1$	0.0029	$0.0036 \pm 0.0075$	$r_{drag}$	147.450	$147.47 \pm 0.23$	$\chi_{CMB}^2$	2766.4	$2782.5 \pm 6.1$

Best-fit  $\chi_{eff}^2 = 3284.92$ ;  $\bar{\chi}_{eff}^2 = 3331.02$ ;  $R - 1 = 0.00830$

$\chi_{eff}^2$ : BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.46 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.08 commander\_dx12\_v3\_2\_29: 22.50 plik\_rd12\_HM\_v22b\_TTTEEE: 2347.84 WL - DES\_1YR\_final: 509.26



## 2.258 base\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022522	$0.02251 \pm 0.00014$	$\alpha_{\text{IA,DES}}$	-2.59	$-1.3^{+1.6}_{-2.9}$	$100\theta_*$	1.041243	$1.04127 \pm 0.00029$
$\Omega_c h^2$	0.11831	$0.1181 \pm 0.0010$	$\Delta z_{\text{l,DES}}^1$	0.0029	$0.0036 \pm 0.0075$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9019	$13.907 \pm 0.022$
$100\theta_{\text{MC}}$	1.041072	$1.04109 \pm 0.00030$	$\Delta z_{\text{l,DES}}^2$	0.0005	$0.0008 \pm 0.0067$	$z_{\text{drag}}$	1060.162	$1060.13 \pm 0.30$
$\tau$	0.0560	$0.0569 \pm 0.0076$	$\Delta z_{\text{l,DES}}^3$	0.0035	$0.0034 \pm 0.0066$	$r_{\text{drag}}$	147.370	$147.43 \pm 0.24$
$\ln(10^{10} A_{\text{s}})$	3.0441	$3.046 \pm 0.015$	$\Delta z_{\text{l,DES}}^4$	0.0008	$0.0004 \pm 0.0091$	$k_{\text{D}}$	0.140689	$0.14062 \pm 0.00029$
$n_{\text{s}}$	0.96914	$0.9688 \pm 0.0039$	$\Delta z_{\text{l,DES}}^5$	-0.0009	$-0.0006 \pm 0.0099$	$100\theta_{\text{D}}$	0.160626	$0.16065 \pm 0.00017$
$y_{\text{cal}}$	1.00055	$1.0007 \pm 0.0025$	$\Delta z_{\text{s,DES}}^1$	0.0007	$-0.003 \pm 0.014$	$z_{\text{eq}}$	3365.5	$3361 \pm 23$
$A_{217}^{\text{CIB}}$	47.3	$47 \pm 7$	$\Delta z_{\text{s,DES}}^2$	-0.0303	$-0.031 \pm 0.011$	$k_{\text{eq}}$	0.010272	$0.010259 \pm 0.000069$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.40	—	$\Delta z_{\text{s,DES}}^3$	0.0030	$0.0034 \pm 0.0097$	$100\theta_{\text{eq}}$	0.82046	$0.8213 \pm 0.0043$
$A_{143}^{\text{tSZ}}$	7.26	$5.5^{+2.2}_{-1.9}$	$\Delta z_{\text{s,DES}}^4$	-0.0310	$-0.031 \pm 0.018$	$100\theta_{\text{s,eq}}$	0.45301	$0.4534 \pm 0.0022$
$A_{100}^{\text{PS}}$	249.8	$258 \pm 28$	$H_0$	68.127	$68.19 \pm 0.46$	$H(0.15)$	73.340	$73.39 \pm 0.40$
$A_{143}^{\text{PS}}$	46.2	$45 \pm 8$	$\Omega_{\Lambda}$	0.6952	$0.6960 \pm 0.0060$	$D_{\text{M}}(0.15)$	636.83	$636.3 \pm 3.9$
$A_{143 \times 217}^{\text{PS}}$	46.0	$42 \pm 9$	$\Omega_{\text{m}}$	0.3048	$0.3040 \pm 0.0060$	$H(0.38)$	83.342	$83.38 \pm 0.30$
$A_{217}^{\text{PS}}$	118.9	$115 \pm 10$	$\Omega_{\text{m}} h^2$	0.14148	$0.14130 \pm 0.00095$	$D_{\text{M}}(0.38)$	1520.4	$1519.4 \pm 7.8$
$A^{\text{kSZ}}$	0.00	$< 4.21$	$\Omega_{\text{m}} h^3$	0.096385	$0.09634 \pm 0.00029$	$H(0.51)$	89.997	$90.02 \pm 0.24$
$A_{100}^{\text{dustTT}}$	8.85	$8.9 \pm 1.8$	$\sigma_8$	0.8062	$0.8062 \pm 0.0057$	$D_{\text{M}}(0.51)$	1970.6	$1969.5 \pm 9.2$
$A_{143}^{\text{dustTT}}$	11.06	$10.9 \pm 1.8$	$S_8$	0.8126	$0.811 \pm 0.010$	$H(0.61)$	95.568	$95.58 \pm 0.20$
$A_{143 \times 217}^{\text{dustTT}}$	19.77	$18.6 \pm 3.3$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4451	$0.4444 \pm 0.0057$	$D_{\text{M}}(0.61)$	2293.9	$2293 \pm 10$
$A_{217}^{\text{dustTT}}$	95.0	$93.8 \pm 7.3$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5990	$0.5986 \pm 0.0055$	$H(2.33)$	235.61	$235.49 \pm 0.61$
$A_{100}^{\text{dustTE}}$	0.1133	$0.115 \pm 0.038$	$\sigma_8/h^{0.5}$	0.9767	$0.9763 \pm 0.0080$	$D_{\text{M}}(2.33)$	5751.2	$5750.8 \pm 9.4$
$A_{100 \times 143}^{\text{dustTE}}$	0.1342	$0.135 \pm 0.030$	$r_{\text{drag}} h$	100.40	$100.53 \pm 0.79$	$f\sigma_8(0.15)$	0.4502	$0.4496 \pm 0.0053$
$A_{100 \times 217}^{\text{dustTE}}$	0.484	$0.481 \pm 0.085$	$\langle d^2 \rangle^{1/2}$	2.4188	$2.420 \pm 0.019$	$\sigma_8(0.15)$	0.7456	$0.7457 \pm 0.0052$
$A_{143}^{\text{dustTE}}$	0.223	$0.223 \pm 0.054$	$z_{\text{re}}$	7.79	$7.86 \pm 0.74$	$f\sigma_8(0.38)$	0.46993	$0.4695 \pm 0.0045$
$A_{143 \times 217}^{\text{dustTE}}$	0.663	$0.662 \pm 0.081$	$10^9 A_{\text{s}}$	2.0991	$2.102 \pm 0.031$	$\sigma_8(0.38)$	0.66166	$0.6618 \pm 0.0047$
$A_{217}^{\text{dustTE}}$	2.070	$2.07 \pm 0.27$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8768	$1.876 \pm 0.010$	$f\sigma_8(0.51)$	0.46932	$0.4690 \pm 0.0040$
$c_{100}$	0.99971	$0.99968 \pm 0.00061$	$D_{40}$	1223.3	$1225 \pm 11$	$\sigma_8(0.51)$	0.61951	$0.6197 \pm 0.0044$
$c_{217}$	0.99818	$0.99819 \pm 0.00063$	$D_{220}$	5746.6	$5749 \pm 38$	$f\sigma_8(0.61)$	0.46491	$0.4647 \pm 0.0037$
$b_{\text{DES}}^1$	1.508	$1.505 \pm 0.073$	$D_{810}$	2539.5	$2539 \pm 13$	$\sigma_8(0.61)$	0.58966	$0.5899 \pm 0.0043$
$b_{\text{DES}}^2$	1.706	$1.704 \pm 0.052$	$D_{1420}$	818.88	$818.3 \pm 4.8$	$f\sigma_8(2.33)$	0.29758	$0.2977 \pm 0.0022$
$b_{\text{DES}}^3$	1.6944	$1.691 \pm 0.044$	$D_{2000}$	231.55	$231.3 \pm 1.6$	$\sigma_8(2.33)$	0.30709	$0.3073 \pm 0.0024$
$b_{\text{DES}}^4$	2.055	$2.052 \pm 0.051$	$n_{\text{s},0.002}$	0.96914	$0.9688 \pm 0.0039$	$\chi_{\text{lensing}}^2$	9.04	$9.44 \pm 0.97$
$b_{\text{DES}}^5$	2.159	$2.152 \pm 0.075$	$Y_{\text{P}}$	0.245452	$0.245448 \pm 0.000052$	$\chi_{\text{simall}}^2$	396.23	$397.3 \pm 2.0$
$m_{\text{DES}}^1$	0.0137	$0.012 \pm 0.023$	$Y_{\text{P}}^{\text{BBN}}$	0.246779	$0.246774 \pm 0.000052$	$\chi_{\text{lowl}}^2$	22.70	$22.82 \pm 0.76$
$m_{\text{DES}}^2$	0.0141	$0.012 \pm 0.022$	$10^5 \text{D}/\text{H}$	2.5580	$2.560 \pm 0.025$	$\chi_{\text{plik}}^2$	2347.2	$2361.9 \pm 6.0$
$m_{\text{DES}}^3$	-0.0043	$-0.004 \pm 0.019$	$\text{Age}/\text{Gyr}$	13.7704	$13.770 \pm 0.021$	$\chi_{\text{DES}}^2$	509.51	$518.5 \pm 5.0$
$m_{\text{DES}}^4$	0.0017	$0.001 \pm 0.021$	$z_*$	1089.584	$1089.58 \pm 0.23$	$\chi_{\text{prior}}^2$	4.2	$25 \pm 7$
$A_{\text{IA,DES}}$	0.439	$0.47^{+0.14}_{-0.18}$	$r_*$	144.752	$144.81 \pm 0.23$	$\chi_{\text{CMB}}^2$	2775.1	$2791.5 \pm 6.3$

Best-fit  $\chi_{\text{eff}}^2 = 3288.86$ ;  $\bar{\chi}_{\text{eff}}^2 = 3334.91$ ;  $R - 1 = 0.01020$

$\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 9.04 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.23 commander\_dx12\_v3.2\_29: 22.70 plik\_rd12\_HM\_v22b\_TTTEEE: 2347.17 WL - DES\_1YR\_final: 509.51



## 2.259 base\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_BAO\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022513	$0.02251 \pm 0.00013$	$\Delta z_{l,DES}^2$	0.0005	$0.0008 \pm 0.0067$	$k_D$	0.140650	$0.14062 \pm 0.00028$
$\Omega_c h^2$	0.11824	$0.11818 \pm 0.00084$	$\Delta z_{l,DES}^3$	0.0034	$0.0033 \pm 0.0066$	$100\theta_D$	0.160643	$0.16066 \pm 0.00017$
$100\theta_{MC}$	1.041084	$1.04109 \pm 0.00029$	$\Delta z_{l,DES}^4$	0.0005	$0.0003 \pm 0.0091$	$z_{eq}$	3363.5	$3362 \pm 19$
$\tau$	0.0561	$0.0568 \pm 0.0073$	$\Delta z_{l,DES}^5$	-0.0005	$-0.0005 \pm 0.0099$	$k_{eq}$	0.010266	$0.010261 \pm 0.000058$
$\ln(10^{10} A_s)$	3.0444	$3.045 \pm 0.014$	$\Delta z_{s,DES}^1$	0.00099	$-0.003 \pm 0.014$	$100\theta_{eq}$	0.82080	$0.8211 \pm 0.0036$
$n_s$	0.96936	$0.9687 \pm 0.0036$	$\Delta z_{s,DES}^2$	-0.0301	$-0.031 \pm 0.011$	$100\theta_{s,eq}$	0.45320	$0.4534 \pm 0.0019$
$y_{cal}$	1.00068	$1.0007 \pm 0.0025$	$\Delta z_{s,DES}^3$	0.0029	$0.0033 \pm 0.0096$	$H(0.15)$	73.358	$73.37 \pm 0.33$
$A_{217}^{CIB}$	47.5	$47 \pm 7$	$\Delta z_{s,DES}^4$	-0.0310	$-0.031 \pm 0.018$	$D_M(0.15)$	636.65	$636.5 \pm 3.3$
$\xi^{tSZ \times CIB}$	0.39	—	$H_0$	68.149	$68.17 \pm 0.39$	$H(0.38)$	83.352	$83.36 \pm 0.25$
$A_{143}^{tSZ}$	7.28	$5.5^{+2.1}_{-1.9}$	$\Omega_\Lambda$	0.6955	$0.6958 \pm 0.0050$	$D_M(0.38)$	1520.1	$1519.8 \pm 6.6$
$A_{100}^{PS}$	250.9	$258 \pm 28$	$\Omega_m$	0.3045	$0.3042 \pm 0.0050$	$H(0.51)$	90.002	$90.01 \pm 0.21$
$A_{143}^{PS}$	46.4	$45 \pm 8$	$\Omega_m h^2$	0.14140	$0.14133 \pm 0.00080$	$D_M(0.51)$	1970.2	$1969.9 \pm 7.8$
$A_{143 \times 217}^{PS}$	46.1	$42 \pm 9$	$\Omega_m h^3$	0.096359	$0.09634 \pm 0.00029$	$H(0.61)$	95.570	$95.57 \pm 0.18$
$A_{217}^{PS}$	118.9	$115 \pm 10$	$\sigma_8$	0.8062	$0.8062 \pm 0.0057$	$D_M(0.61)$	2293.5	$2293.2 \pm 8.4$
$A^{kSZ}$	0.00	$< 4.22$	$S_8$	0.8121	$0.8117 \pm 0.0092$	$H(2.33)$	235.56	$235.51 \pm 0.52$
$A_{100}^{dustTT}$	8.88	$8.9 \pm 1.8$	$\sigma_8 \Omega_m^{0.5}$	0.4448	$0.4446 \pm 0.0050$	$D_M(2.33)$	5751.2	$5751.2 \pm 8.5$
$A_{143}^{dustTT}$	11.06	$10.9 \pm 1.8$	$\sigma_8 \Omega_m^{0.25}$	0.5988	$0.5987 \pm 0.0051$	$f\sigma_8(0.15)$	0.44995	$0.4498 \pm 0.0048$
$A_{143 \times 217}^{dustTT}$	19.75	$18.6 \pm 3.3$	$\sigma_8/h^{0.5}$	0.9766	$0.9764 \pm 0.0076$	$\sigma_8(0.15)$	0.7456	$0.7457 \pm 0.0052$
$A_{217}^{dustTT}$	94.9	$93.8 \pm 7.4$	$r_{drag} h$	100.45	$100.50 \pm 0.66$	$f\sigma_8(0.38)$	0.46977	$0.4696 \pm 0.0041$
$A_{100}^{dustTE}$	0.1136	$0.115 \pm 0.038$	$\langle d^2 \rangle^{1/2}$	2.4181	$2.420 \pm 0.019$	$\sigma_8(0.38)$	0.66173	$0.6618 \pm 0.0047$
$A_{100 \times 143}^{dustTE}$	0.1351	$0.134 \pm 0.030$	$z_{re}$	7.80	$7.85 \pm 0.72$	$f\sigma_8(0.51)$	0.46920	$0.4691 \pm 0.0038$
$A_{100 \times 217}^{dustTE}$	0.481	$0.481 \pm 0.085$	$10^9 A_s$	2.0998	$2.102 \pm 0.030$	$\sigma_8(0.51)$	0.61959	$0.6197 \pm 0.0044$
$A_{143}^{dustTE}$	0.223	$0.222 \pm 0.054$	$10^9 A_s e^{-2\tau}$	1.8768	$1.876 \pm 0.010$	$f\sigma_8(0.61)$	0.46482	$0.4647 \pm 0.0036$
$A_{143 \times 217}^{dustTE}$	0.660	$0.662 \pm 0.080$	$D_{40}$	1222.9	$1225 \pm 11$	$\sigma_8(0.61)$	0.58975	$0.5898 \pm 0.0042$
$A_{217}^{dustTE}$	2.072	$2.07 \pm 0.27$	$D_{220}$	5746.3	$5749 \pm 38$	$f\sigma_8(2.33)$	0.29764	$0.2977 \pm 0.0022$
$c_{100}$	0.99974	$0.99968 \pm 0.00061$	$D_{810}$	2539.8	$2539 \pm 13$	$\sigma_8(2.33)$	0.30717	$0.3072 \pm 0.0023$
$c_{217}$	0.99817	$0.99819 \pm 0.00063$	$D_{1420}$	819.00	$818.3 \pm 4.7$	$\chi^2_{lensing}$	9.08	$9.40 \pm 0.92$
$b_{DES}^1$	1.507	$1.505 \pm 0.073$	$D_{2000}$	231.57	$231.3 \pm 1.6$	$\chi^2_{small}$	396.28	$397.3 \pm 1.9$
$b_{DES}^2$	1.704	$1.704 \pm 0.052$	$n_{s,0.002}$	0.96936	$0.9687 \pm 0.0036$	$\chi^2_{lowl}$	22.65	$22.83 \pm 0.73$
$b_{DES}^3$	1.6953	$1.691 \pm 0.044$	$Y_P$	0.2454491	$0.245446 \pm 0.000050$	$\chi^2_{plik}$	2347.3	$2361.7 \pm 5.9$
$b_{DES}^4$	2.055	$2.052 \pm 0.051$	$Y_P^{BBN}$	0.2467758	$0.246773 \pm 0.000050$	$\chi^2_{6DF}$	0.0001	$0.018 \pm 0.025$
$b_{DES}^5$	2.158	$2.152 \pm 0.075$	$10^5 D/H$	2.5596	$2.561 \pm 0.024$	$\chi^2_{MGS}$	1.677	$1.76 \pm 0.41$
$m_{DES}^1$	0.0137	$0.012 \pm 0.022$	Age/Gyr	13.7707	$13.771 \pm 0.019$	$\chi^2_{DR12BAO}$	3.521	$3.78 \pm 0.52$
$m_{DES}^2$	0.0137	$0.012 \pm 0.022$	$z_*$	1089.589	$1089.59 \pm 0.20$	$\chi^2_{DES}$	509.38	$518.5 \pm 4.9$
$m_{DES}^3$	-0.0044	$-0.004 \pm 0.019$	$r_*$	144.778	$144.80 \pm 0.20$	$\chi^2_{prior}$	4.2	$25 \pm 7$
$m_{DES}^4$	0.0015	$0.001 \pm 0.021$	$100\theta_*$	1.041253	$1.04126 \pm 0.00028$	$\chi^2_{CMB}$	2775.3	$2791.2 \pm 6.1$
$A_{IA,DES}$	0.437	$0.47^{+0.14}_{-0.18}$	$D_M(z_*)/Gpc$	13.9042	$13.906 \pm 0.020$	$\chi^2_{BAO}$	5.198	$5.55 \pm 0.45$
$\alpha_{IA,DES}$	-2.62	$-1.3^{+1.6}_{-2.9}$	$z_{drag}$	1060.123	$1060.12 \pm 0.29$			
$\Delta z_{l,DES}^1$	0.0031	$0.0036 \pm 0.0075$	$r_{drag}$	147.401	$147.42 \pm 0.22$			

Best-fit  $\chi^2_{eff} = 3294.09$ ;  $\bar{\chi}^2_{eff} = 3340.17$ ;  $R - 1 = 0.01031$

$\chi^2_{eff}$ : BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.52 CMB - smicadx12.Dec5.ftl.mv2.ndclpp.p.teb.consext8: 9.08 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.28 commander\_dx12.v3.2.29: 22.65 plik\_rd12\_HM\_v22b\_TTTEEE: 2347.27 WL - DES\_1YR.final: 509.38



## 2.260 base\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02252 \pm 0.00014$	$\Delta z_{1,\text{DES}}^1$	$0.0036 \pm 0.0074$	$z_{\text{drag}}$	$1060.13 \pm 0.30$
$\Omega_c h^2$	$0.1178 \pm 0.0011$	$\Delta z_{1,\text{DES}}^2$	$0.0008 \pm 0.0066$	$r_{\text{drag}}$	$147.50 \pm 0.25$
$100\theta_{\text{MC}}$	$1.04112 \pm 0.00030$	$\Delta z_{1,\text{DES}}^3$	$0.0034 \pm 0.0065$	$k_{\text{D}}$	$0.14055 \pm 0.00030$
$\tau$	$0.0559^{+0.0053}_{-0.0082}$	$\Delta z_{1,\text{DES}}^4$	$0.0006 \pm 0.0091$	$100\theta_{\text{D}}$	$0.16065 \pm 0.00017$
$\ln(10^{10} A_{\text{s}})$	$3.042^{+0.012}_{-0.016}$	$\Delta z_{1,\text{DES}}^5$	$-0.0006 \pm 0.0099$	$z_{\text{eq}}$	$3354 \pm 24$
$n_{\text{s}}$	$0.9697 \pm 0.0040$	$\Delta z_{\text{s,DES}}^1$	$-0.003 \pm 0.014$	$k_{\text{eq}}$	$0.010237 \pm 0.000073$
$y_{\text{cal}}$	$1.0005 \pm 0.0025$	$\Delta z_{\text{s,DES}}^2$	$-0.031 \pm 0.011$	$100\theta_{\text{eq}}$	$0.8226 \pm 0.0046$
$A_{217}^{\text{CIB}}$	$47 \pm 7$	$\Delta z_{\text{s,DES}}^3$	$0.0041 \pm 0.0096$	$100\theta_{\text{s,eq}}$	$0.4541 \pm 0.0024$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$\Delta z_{\text{s,DES}}^4$	$-0.030 \pm 0.018$	$H(0.15)$	$73.50 \pm 0.42$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.1}_{-1.9}$	$H_0$	$68.32 \pm 0.48$	$D_{\text{M}}(0.15)$	$635.3 \pm 4.1$
$A_{100}^{\text{PS}}$	$258 \pm 28$	$\Omega_{\Lambda}$	$0.6978 \pm 0.0063$	$H(0.38)$	$83.45 \pm 0.31$
$A_{143}^{\text{PS}}$	$45 \pm 8$	$\Omega_{\text{m}}$	$0.3022 \pm 0.0063$	$D_{\text{M}}(0.38)$	$1517.3 \pm 8.2$
$A_{143 \times 217}^{\text{PS}}$	$41 \pm 9$	$\Omega_{\text{m}} h^2$	$0.1410 \pm 0.0010$	$H(0.51)$	$90.08 \pm 0.25$
$A_{217}^{\text{PS}}$	$114 \pm 10$	$\Omega_{\text{m}} h^3$	$0.09632 \pm 0.00030$	$D_{\text{M}}(0.51)$	$1967.0 \pm 9.7$
$A^{\text{kSZ}}$	$< 4.32$	$\sigma_8$	$0.8039^{+0.0057}_{-0.0066}$	$H(0.61)$	$95.63 \pm 0.21$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$S_8$	$0.807 \pm 0.012$	$D_{\text{M}}(0.61)$	$2290 \pm 10$
$A_{143}^{\text{dustTT}}$	$11.0 \pm 1.8$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4419 \pm 0.0066$	$H(2.33)$	$235.30 \pm 0.64$
$A_{143 \times 217}^{\text{dustTT}}$	$18.7 \pm 3.3$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.5960 \pm 0.0064$	$D_{\text{M}}(2.33)$	$5749.2 \pm 9.6$
$A_{217}^{\text{dustTT}}$	$93.7 \pm 7.4$	$\sigma_8/h^{0.5}$	$0.9726 \pm 0.0092$	$f\sigma_8(0.15)$	$0.4471 \pm 0.0062$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$r_{\text{drag}} h$	$100.77 \pm 0.84$	$\sigma_8(0.15)$	$0.7437^{+0.0050}_{-0.0060}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.029$	$\langle d^2 \rangle^{1/2}$	$2.410 \pm 0.023$	$f\sigma_8(0.38)$	$0.4674 \pm 0.0052$
$A_{100 \times 217}^{\text{dustTE}}$	$0.481 \pm 0.084$	$z_{\text{re}}$	$7.76^{+0.58}_{-0.79}$	$\sigma_8(0.38)$	$0.6603^{+0.0042}_{-0.0052}$
$A_{143}^{\text{dustTE}}$	$0.222 \pm 0.054$	$10^9 A_{\text{s}}$	$2.095^{+0.025}_{-0.033}$	$f\sigma_8(0.51)$	$0.4671 \pm 0.0047$
$A_{143 \times 217}^{\text{dustTE}}$	$0.661 \pm 0.080$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.873 \pm 0.011$	$\sigma_8(0.51)$	$0.6184^{+0.0039}_{-0.0049}$
$A_{217}^{\text{dustTE}}$	$2.06 \pm 0.27$	$D_{40}$	$1221 \pm 12$	$f\sigma_8(0.61)$	$0.4629 \pm 0.0043$
$c_{100}$	$0.99967 \pm 0.00062$	$D_{220}$	$5744 \pm 39$	$\sigma_8(0.61)$	$0.5886^{+0.0037}_{-0.0047}$
$c_{217}$	$0.99819 \pm 0.00063$	$D_{810}$	$2536 \pm 14$	$f\sigma_8(2.33)$	$0.2972^{+0.0018}_{-0.0024}$
$b_{\text{DES}}^1$	$1.507 \pm 0.073$	$D_{1420}$	$817.9 \pm 4.8$	$\sigma_8(2.33)$	$0.3068^{+0.0019}_{-0.0025}$
$b_{\text{DES}}^2$	$1.708 \pm 0.052$	$D_{2000}$	$231.2 \pm 1.6$	$f_{2000}^{143}$	$29.2 \pm 2.7$
$b_{\text{DES}}^3$	$1.696 \pm 0.044$	$n_{\text{s},0.002}$	$0.9697 \pm 0.0040$	$f_{2000}^{143 \times 217}$	$31.9 \pm 1.8$
$b_{\text{DES}}^4$	$2.057 \pm 0.051$	$Y_{\text{P}}$	$0.245452 \pm 0.000053$	$f_{2000}^{217}$	$106.7 \pm 1.8$
$b_{\text{DES}}^5$	$2.157 \pm 0.075$	$Y_{\text{P}}^{\text{BBN}}$	$0.246778 \pm 0.000053$	$\chi_{\text{simall}}^2$	$397.0 \pm 1.8$
$m_{\text{DES}}^1$	$0.012 \pm 0.023$	$10^5 \text{D/H}$	$2.558 \pm 0.025$	$\chi_{\text{lowl}}^2$	$22.59 \pm 0.77$
$m_{\text{DES}}^2$	$0.012 \pm 0.022$	$\text{Age/Gyr}$	$13.767 \pm 0.022$	$\chi_{\text{plik}}^2$	$2363.2 \pm 6.4$
$m_{\text{DES}}^3$	$-0.003 \pm 0.020$	$z_*$	$1089.54 \pm 0.23$	$\chi_{\text{DES}}^2$	$518.0 \pm 4.9$
$m_{\text{DES}}^4$	$0.003 \pm 0.021$	$r_*$	$144.88 \pm 0.25$	$\chi_{\text{prior}}^2$	$25 \pm 7$
$A_{\text{IA,DES}}$	$0.47^{+0.15}_{-0.18}$	$100\theta_*$	$1.04130 \pm 0.00030$	$\chi_{\text{CMB}}^2$	$2782.8 \pm 6.3$
$\alpha_{\text{IA,DES}}$	$-1.1^{+1.7}_{-2.9}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.913 \pm 0.023$		

$\bar{\chi}_{\text{eff}}^2 = 3325.44$ ;  $R - 1 = 0.00547$



# 2.261 base\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02251 \pm 0.00013$	$\Delta z_{\text{l,DES}}^2$	$0.0008 \pm 0.0066$	$k_{\text{D}}$	$0.14057 \pm 0.00028$
$\Omega_c h^2$	$0.11798 \pm 0.00087$	$\Delta z_{\text{l,DES}}^3$	$0.0034 \pm 0.0066$	$100\theta_{\text{D}}$	$0.16066 \pm 0.00017$
$100\theta_{\text{MC}}$	$1.04111 \pm 0.00029$	$\Delta z_{\text{l,DES}}^4$	$0.0004 \pm 0.0091$	$z_{\text{eq}}$	$3357 \pm 20$
$\tau$	$0.0556^{+0.0052}_{-0.0080}$	$\Delta z_{\text{l,DES}}^5$	$-0.0005 \pm 0.0098$	$k_{\text{eq}}$	$0.010246 \pm 0.000061$
$\ln(10^{10} A_{\text{s}})$	$3.042^{+0.012}_{-0.016}$	$\Delta z_{\text{s,DES}}^1$	$-0.003 \pm 0.014$	$100\theta_{\text{eq}}$	$0.8220 \pm 0.0038$
$n_{\text{s}}$	$0.9694 \pm 0.0036$	$\Delta z_{\text{s,DES}}^2$	$-0.031 \pm 0.011$	$100\theta_{\text{s,eq}}$	$0.4538 \pm 0.0019$
$y_{\text{cal}}$	$1.0004 \pm 0.0025$	$\Delta z_{\text{s,DES}}^3$	$0.0038 \pm 0.0096$	$H(0.15)$	$73.44 \pm 0.34$
$A_{217}^{\text{CIB}}$	$47 \pm 7$	$\Delta z_{\text{s,DES}}^4$	$-0.030 \pm 0.018$	$D_{\text{M}}(0.15)$	$635.8 \pm 3.3$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$H_0$	$68.25 \pm 0.40$	$H(0.38)$	$83.41 \pm 0.26$
$A_{143}^{\text{tSZ}}$	$5.5 \pm 2.0$	$\Omega_{\Lambda}$	$0.6970 \pm 0.0051$	$D_{\text{M}}(0.38)$	$1518.4 \pm 6.8$
$A_{100}^{\text{PS}}$	$258 \pm 28$	$\Omega_{\text{m}}$	$0.3030 \pm 0.0051$	$H(0.51)$	$90.04 \pm 0.21$
$A_{143}^{\text{PS}}$	$45 \pm 8$	$\Omega_{\text{m}} h^2$	$0.14113 \pm 0.00083$	$D_{\text{M}}(0.51)$	$1968.3 \pm 8.0$
$A_{143 \times 217}^{\text{PS}}$	$41 \pm 9$	$\Omega_{\text{m}} h^3$	$0.09632 \pm 0.00030$	$H(0.61)$	$95.60 \pm 0.18$
$A_{217}^{\text{PS}}$	$114 \pm 10$	$\sigma_8$	$0.8042^{+0.0054}_{-0.0064}$	$D_{\text{M}}(0.61)$	$2291.5 \pm 8.6$
$A^{\text{kSZ}}$	$< 4.32$	$S_8$	$0.808 \pm 0.010$	$H(2.33)$	$235.38 \pm 0.54$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4427 \pm 0.0057$	$D_{\text{M}}(2.33)$	$5750.3 \pm 8.6$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.5966 \pm 0.0057$	$f\sigma_8(0.15)$	$0.4479 \pm 0.0054$
$A_{143 \times 217}^{\text{dustTT}}$	$18.7 \pm 3.3$	$\sigma_8/h^{0.5}$	$0.9734 \pm 0.0084$	$\sigma_8(0.15)$	$0.7439^{+0.0048}_{-0.0058}$
$A_{217}^{\text{dustTT}}$	$93.8 \pm 7.3$	$r_{\text{drag}} h$	$100.65 \pm 0.68$	$f\sigma_8(0.38)$	$0.4680 \pm 0.0047$
$A_{100}^{\text{dustTE}}$	$0.115 \pm 0.038$	$\langle d^2 \rangle^{1/2}$	$2.412 \pm 0.021$	$\sigma_8(0.38)$	$0.6604^{+0.0041}_{-0.0052}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$z_{\text{re}}$	$7.73^{+0.57}_{-0.78}$	$f\sigma_8(0.51)$	$0.4676 \pm 0.0042$
$A_{100 \times 217}^{\text{dustTE}}$	$0.481 \pm 0.085$	$10^9 A_{\text{s}}$	$2.094^{+0.024}_{-0.033}$	$\sigma_8(0.51)$	$0.6184^{+0.0038}_{-0.0048}$
$A_{143}^{\text{dustTE}}$	$0.222 \pm 0.054$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.874 \pm 0.011$	$f\sigma_8(0.61)$	$0.4633 \pm 0.0040$
$A_{143 \times 217}^{\text{dustTE}}$	$0.662 \pm 0.081$	$D_{40}$	$1222 \pm 11$	$\sigma_8(0.61)$	$0.5887^{+0.0036}_{-0.0046}$
$A_{217}^{\text{dustTE}}$	$2.07 \pm 0.27$	$D_{220}$	$5743 \pm 38$	$f\sigma_8(2.33)$	$0.2971^{+0.0018}_{-0.0024}$
$c_{100}$	$0.99967 \pm 0.00061$	$D_{810}$	$2537 \pm 13$	$\sigma_8(2.33)$	$0.3067^{+0.0019}_{-0.0025}$
$c_{217}$	$0.99820 \pm 0.00063$	$D_{1420}$	$817.8 \pm 4.8$	$f_{2000}^{143}$	$29.3 \pm 2.7$
$b_{\text{DES}}^1$	$1.507 \pm 0.073$	$D_{2000}$	$231.1 \pm 1.6$	$f_{2000}^{143 \times 217}$	$31.9 \pm 1.8$
$b_{\text{DES}}^2$	$1.708 \pm 0.052$	$n_{\text{s},0.002}$	$0.9694 \pm 0.0036$	$f_{2000}^{217}$	$106.7 \pm 1.8$
$b_{\text{DES}}^3$	$1.695 \pm 0.044$	$Y_{\text{P}}$	$0.245447 \pm 0.000050$	$\chi_{\text{simall}}^2$	$396.9 \pm 1.7$
$b_{\text{DES}}^4$	$2.057 \pm 0.052$	$Y_{\text{P}}^{\text{BBN}}$	$0.246774 \pm 0.000050$	$\chi_{\text{lowl}}^2$	$22.64 \pm 0.74$
$b_{\text{DES}}^5$	$2.157 \pm 0.076$	$10^5 \text{D/H}$	$2.560 \pm 0.024$	$\chi_{\text{plik}}^2$	$2362.7 \pm 6.2$
$m_{\text{DES}}^1$	$0.012 \pm 0.023$	$\text{Age/Gyr}$	$13.769 \pm 0.019$	$\chi_{6\text{DF}}^2$	$0.021 \pm 0.029$
$m_{\text{DES}}^2$	$0.012 \pm 0.022$	$z_*$	$1089.57 \pm 0.21$	$\chi_{\text{MGS}}^2$	$1.85 \pm 0.43$
$m_{\text{DES}}^3$	$-0.003 \pm 0.019$	$r_*$	$144.85 \pm 0.21$	$\chi_{\text{DR12BAO}}^2$	$3.73 \pm 0.48$
$m_{\text{DES}}^4$	$0.002 \pm 0.021$	$100\theta_*$	$1.04128 \pm 0.00029$	$\chi_{\text{DES}}^2$	$518.2 \pm 4.9$
$A_{\text{IA,DES}}$	$0.47^{+0.14}_{-0.18}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.911 \pm 0.021$	$\chi_{\text{prior}}^2$	$25 \pm 7$
$\alpha_{\text{IA,DES}}$	$-1.2^{+1.7}_{-2.9}$	$z_{\text{drag}}$	$1060.11 \pm 0.29$	$\chi_{\text{BAO}}^2$	$5.60 \pm 0.53$
$\Delta z_{\text{l,DES}}^1$	$0.0036 \pm 0.0075$	$r_{\text{drag}}$	$147.47 \pm 0.23$	$\chi_{\text{CMB}}^2$	$2782.2 \pm 6.1$

$\bar{\chi}_{\text{eff}}^2 = 3330.75$ ;  $R - 1 = 0.00777$



## 2.262 base\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02251 \pm 0.00014$	$\Delta z_{1,\text{DES}}^1$	$0.0036 \pm 0.0075$	$z_{\text{drag}}$	$1060.13 \pm 0.30$
$\Omega_c h^2$	$0.11811 \pm 0.00099$	$\Delta z_{1,\text{DES}}^2$	$0.0008 \pm 0.0066$	$r_{\text{drag}}$	$147.43 \pm 0.24$
$100\theta_{\text{MC}}$	$1.04110 \pm 0.00030$	$\Delta z_{1,\text{DES}}^3$	$0.0034 \pm 0.0066$	$k_{\text{D}}$	$0.14061 \pm 0.00029$
$\tau$	$0.0575^{+0.0060}_{-0.0080}$	$\Delta z_{1,\text{DES}}^4$	$0.0004 \pm 0.0091$	$100\theta_{\text{D}}$	$0.16065 \pm 0.00017$
$\ln(10^{10} A_{\text{s}})$	$3.047^{+0.012}_{-0.015}$	$\Delta z_{1,\text{DES}}^5$	$-0.0006 \pm 0.0099$	$z_{\text{eq}}$	$3360 \pm 22$
$n_{\text{s}}$	$0.9689 \pm 0.0039$	$\Delta z_{\text{s,DES}}^1$	$-0.003 \pm 0.014$	$k_{\text{eq}}$	$0.010256 \pm 0.000068$
$y_{\text{cal}}$	$1.0007 \pm 0.0025$	$\Delta z_{\text{s,DES}}^2$	$-0.031 \pm 0.011$	$100\theta_{\text{eq}}$	$0.8214 \pm 0.0043$
$A_{217}^{\text{CIB}}$	$47 \pm 7$	$\Delta z_{\text{s,DES}}^3$	$0.0034 \pm 0.0097$	$100\theta_{\text{s,eq}}$	$0.4535 \pm 0.0022$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$\Delta z_{\text{s,DES}}^4$	$-0.031 \pm 0.018$	$H(0.15)$	$73.40 \pm 0.39$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.1}_{-1.9}$	$H_0$	$68.20 \pm 0.45$	$D_{\text{M}}(0.15)$	$636.2 \pm 3.8$
$A_{100}^{\text{PS}}$	$258 \pm 28$	$\Omega_{\Lambda}$	$0.6962 \pm 0.0059$	$H(0.38)$	$83.38 \pm 0.29$
$A_{143}^{\text{PS}}$	$45 \pm 8$	$\Omega_{\text{m}}$	$0.3038 \pm 0.0059$	$D_{\text{M}}(0.38)$	$1519.2 \pm 7.7$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9$	$\Omega_{\text{m}} h^2$	$0.14127 \pm 0.00093$	$H(0.51)$	$90.03 \pm 0.24$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$\Omega_{\text{m}} h^3$	$0.09634 \pm 0.00029$	$D_{\text{M}}(0.51)$	$1969.2 \pm 9.1$
$A^{\text{kSZ}}$	$< 4.19$	$\sigma_8$	$0.8065^{+0.0051}_{-0.0057}$	$H(0.61)$	$95.59 \pm 0.20$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$S_8$	$0.811 \pm 0.010$	$D_{\text{M}}(0.61)$	$2292.4 \pm 9.8$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4445 \pm 0.0057$	$H(2.33)$	$235.47 \pm 0.60$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.5987 \pm 0.0054$	$D_{\text{M}}(2.33)$	$5750.6 \pm 9.3$
$A_{217}^{\text{dustTT}}$	$93.8 \pm 7.3$	$\sigma_8/h^{0.5}$	$0.9766 \pm 0.0078$	$f\sigma_8(0.15)$	$0.4496 \pm 0.0053$
$A_{100}^{\text{dustTE}}$	$0.115 \pm 0.038$	$r_{\text{drag}} h$	$100.56 \pm 0.78$	$\sigma_8(0.15)$	$0.7460^{+0.0045}_{-0.0053}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134 \pm 0.030$	$\langle d^2 \rangle^{1/2}$	$2.420 \pm 0.019$	$f\sigma_8(0.38)$	$0.4696 \pm 0.0044$
$A_{100 \times 217}^{\text{dustTE}}$	$0.481 \pm 0.085$	$z_{\text{re}}$	$7.92^{+0.63}_{-0.76}$	$\sigma_8(0.38)$	$0.6621^{+0.0040}_{-0.0048}$
$A_{143}^{\text{dustTE}}$	$0.222 \pm 0.054$	$10^9 A_{\text{s}}$	$2.105^{+0.025}_{-0.032}$	$f\sigma_8(0.51)$	$0.4691 \pm 0.0039$
$A_{143 \times 217}^{\text{dustTE}}$	$0.662 \pm 0.081$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.876 \pm 0.010$	$\sigma_8(0.51)$	$0.6200^{+0.0037}_{-0.0046}$
$A_{217}^{\text{dustTE}}$	$2.07 \pm 0.27$	$D_{40}$	$1224 \pm 11$	$f\sigma_8(0.61)$	$0.4648 \pm 0.0036$
$c_{100}$	$0.99968 \pm 0.00061$	$D_{220}$	$5749 \pm 38$	$\sigma_8(0.61)$	$0.5902^{+0.0035}_{-0.0044}$
$c_{217}$	$0.99819 \pm 0.00063$	$D_{810}$	$2539 \pm 13$	$f\sigma_8(2.33)$	$0.2979^{+0.0018}_{-0.0023}$
$b_{\text{DES}}^1$	$1.504 \pm 0.073$	$D_{1420}$	$818.3 \pm 4.8$	$\sigma_8(2.33)$	$0.3075^{+0.0020}_{-0.0025}$
$b_{\text{DES}}^2$	$1.704 \pm 0.052$	$D_{2000}$	$231.3 \pm 1.6$	$f_{2000}^{143}$	$29.1 \pm 2.7$
$b_{\text{DES}}^3$	$1.691 \pm 0.044$	$n_{\text{s},0.002}$	$0.9689 \pm 0.0039$	$f_{2000}^{143 \times 217}$	$31.8 \pm 1.9$
$b_{\text{DES}}^4$	$2.051 \pm 0.051$	$Y_{\text{P}}$	$0.245449 \pm 0.000052$	$f_{2000}^{217}$	$106.7 \pm 1.8$
$b_{\text{DES}}^5$	$2.151 \pm 0.075$	$Y_{\text{P}}^{\text{BBN}}$	$0.246775 \pm 0.000052$	$\chi_{\text{lensing}}^2$	$9.39 \pm 0.91$
$m_{\text{DES}}^1$	$0.012 \pm 0.022$	$10^5 \text{D/H}$	$2.560 \pm 0.025$	$\chi_{\text{simall}}^2$	$397.3 \pm 2.0$
$m_{\text{DES}}^2$	$0.012 \pm 0.022$	$\text{Age/Gyr}$	$13.770 \pm 0.021$	$\chi_{\text{lowl}}^2$	$22.82 \pm 0.76$
$m_{\text{DES}}^3$	$-0.004 \pm 0.019$	$z_*$	$1089.58 \pm 0.22$	$\chi_{\text{plik}}^2$	$2361.8 \pm 6.0$
$m_{\text{DES}}^4$	$0.002 \pm 0.021$	$r_*$	$144.81 \pm 0.23$	$\chi_{\text{DES}}^2$	$518.4 \pm 5.0$
$A_{\text{IA,DES}}$	$0.47^{+0.14}_{-0.18}$	$100\theta_*$	$1.04127 \pm 0.00029$	$\chi_{\text{prior}}^2$	$25 \pm 7$
$\alpha_{\text{IA,DES}}$	$-1.3^{+1.6}_{-2.9}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.907 \pm 0.022$	$\chi_{\text{CMB}}^2$	$2791.4 \pm 6.3$

$$\bar{\chi}_{\text{eff}}^2 = 3334.75; R - 1 = 0.01067$$



## 2.263 base\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02251 \pm 0.00013$	$\Delta z_{\text{l,DES}}^3$	$0.0034 \pm 0.0066$	$z_{\text{eq}}$	$3361 \pm 19$
$\Omega_c h^2$	$0.11816 \pm 0.00083$	$\Delta z_{\text{l,DES}}^4$	$0.0003 \pm 0.0091$	$k_{\text{eq}}$	$0.010260 \pm 0.000058$
$100\theta_{\text{MC}}$	$1.04109 \pm 0.00029$	$\Delta z_{\text{l,DES}}^5$	$-0.0005 \pm 0.0099$	$100\theta_{\text{eq}}$	$0.8212 \pm 0.0036$
$\tau$	$0.0573^{+0.0059}_{-0.0076}$	$\Delta z_{\text{s,DES}}^1$	$-0.003 \pm 0.014$	$100\theta_{\text{s,eq}}$	$0.4534 \pm 0.0018$
$\ln(10^{10} A_{\text{s}})$	$3.046^{+0.012}_{-0.015}$	$\Delta z_{\text{s,DES}}^2$	$-0.031 \pm 0.011$	$H(0.15)$	$73.38 \pm 0.33$
$n_{\text{s}}$	$0.9688 \pm 0.0036$	$\Delta z_{\text{s,DES}}^3$	$0.0033 \pm 0.0096$	$D_{\text{M}}(0.15)$	$636.4 \pm 3.2$
$y_{\text{cal}}$	$1.0007 \pm 0.0025$	$\Delta z_{\text{s,DES}}^4$	$-0.031 \pm 0.018$	$H(0.38)$	$83.37 \pm 0.25$
$A_{217}^{\text{CIB}}$	$47 \pm 7$	$H_0$	$68.18 \pm 0.38$	$D_{\text{M}}(0.38)$	$1519.6 \pm 6.5$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$\Omega_{\Lambda}$	$0.6959 \pm 0.0050$	$H(0.51)$	$90.01 \pm 0.21$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.1}_{-1.9}$	$\Omega_{\text{m}}$	$0.3041 \pm 0.0050$	$D_{\text{M}}(0.51)$	$1969.7 \pm 7.7$
$A_{100}^{\text{PS}}$	$258 \pm 28$	$\Omega_{\text{m}} h^2$	$0.14131 \pm 0.00079$	$H(0.61)$	$95.58 \pm 0.17$
$A_{143}^{\text{PS}}$	$45 \pm 8$	$\Omega_{\text{m}} h^3$	$0.09634 \pm 0.00029$	$D_{\text{M}}(0.61)$	$2293.0 \pm 8.4$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9$	$\sigma_8$	$0.8065^{+0.0050}_{-0.0057}$	$H(2.33)$	$235.50 \pm 0.51$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$S_8$	$0.8119 \pm 0.0092$	$D_{\text{M}}(2.33)$	$5751.1 \pm 8.4$
$A^{\text{kSZ}}$	$< 4.20$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4447 \pm 0.0050$	$f\sigma_8(0.15)$	$0.4498 \pm 0.0047$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.5989 \pm 0.0050$	$\sigma_8(0.15)$	$0.7460^{+0.0045}_{-0.0053}$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8$	$\sigma_8/h^{0.5}$	$0.9767 \pm 0.0074$	$f\sigma_8(0.38)$	$0.4698 \pm 0.0041$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3$	$r_{\text{drag}} h$	$100.51 \pm 0.65$	$\sigma_8(0.38)$	$0.6621^{+0.0040}_{-0.0048}$
$A_{217}^{\text{dustTT}}$	$93.8 \pm 7.3$	$\langle d^2 \rangle^{1/2}$	$2.421 \pm 0.018$	$f\sigma_8(0.51)$	$0.4692 \pm 0.0037$
$A_{100}^{\text{dustTE}}$	$0.115 \pm 0.038$	$z_{\text{re}}$	$7.90^{+0.62}_{-0.74}$	$\sigma_8(0.51)$	$0.6199^{+0.0037}_{-0.0045}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134 \pm 0.030$	$10^9 A_{\text{s}}$	$2.104^{+0.025}_{-0.031}$	$f\sigma_8(0.61)$	$0.4649 \pm 0.0035$
$A_{100 \times 217}^{\text{dustTE}}$	$0.481 \pm 0.085$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.876 \pm 0.010$	$\sigma_8(0.61)$	$0.5901^{+0.0035}_{-0.0043}$
$A_{143}^{\text{dustTE}}$	$0.222 \pm 0.054$	$D_{40}$	$1225 \pm 11$	$f\sigma_8(2.33)$	$0.2978^{+0.0018}_{-0.0022}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.662 \pm 0.080$	$D_{220}$	$5749 \pm 38$	$\sigma_8(2.33)$	$0.3074^{+0.0019}_{-0.0024}$
$A_{217}^{\text{dustTE}}$	$2.07 \pm 0.27$	$D_{810}$	$2539 \pm 13$	$f_{2000}^{143}$	$29.2 \pm 2.7$
$c_{100}$	$0.99968 \pm 0.00061$	$D_{1420}$	$818.2 \pm 4.7$	$f_{2000}^{143 \times 217}$	$31.9 \pm 1.8$
$c_{217}$	$0.99819 \pm 0.00063$	$D_{2000}$	$231.3 \pm 1.6$	$f_{2000}^{217}$	$106.7 \pm 1.8$
$b_{\text{DES}}^1$	$1.504 \pm 0.073$	$n_{\text{s},0.002}$	$0.9688 \pm 0.0036$	$\chi_{\text{lensing}}^2$	$9.35 \pm 0.86$
$b_{\text{DES}}^2$	$1.704 \pm 0.052$	$Y_{\text{P}}$	$0.245447 \pm 0.000050$	$\chi_{\text{simall}}^2$	$397.3 \pm 2.0$
$b_{\text{DES}}^3$	$1.691 \pm 0.044$	$Y_{\text{P}}^{\text{BBN}}$	$0.246773 \pm 0.000050$	$\chi_{\text{lowl}}^2$	$22.83 \pm 0.73$
$b_{\text{DES}}^4$	$2.051 \pm 0.051$	$10^5 \text{D/H}$	$2.561 \pm 0.024$	$\chi_{\text{plik}}^2$	$2361.6 \pm 5.9$
$b_{\text{DES}}^5$	$2.151 \pm 0.075$	$\text{Age/Gyr}$	$13.770 \pm 0.019$	$\chi_{6\text{DF}}^2$	$0.018 \pm 0.025$
$m_{\text{DES}}^1$	$0.012 \pm 0.022$	$z_*$	$1089.59 \pm 0.20$	$\chi_{\text{MGS}}^2$	$1.77 \pm 0.40$
$m_{\text{DES}}^2$	$0.012 \pm 0.022$	$r_*$	$144.80 \pm 0.20$	$\chi_{\text{DR12BAO}}^2$	$3.77 \pm 0.50$
$m_{\text{DES}}^3$	$-0.004 \pm 0.019$	$100\theta_*$	$1.04126 \pm 0.00028$	$\chi_{\text{DES}}^2$	$518.5 \pm 4.9$
$m_{\text{DES}}^4$	$0.001 \pm 0.021$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.906 \pm 0.020$	$\chi_{\text{prior}}^2$	$25 \pm 7$
$A_{\text{IA,DES}}$	$0.47^{+0.14}_{-0.18}$	$z_{\text{drag}}$	$1060.12 \pm 0.29$	$\chi_{\text{CMB}}^2$	$2791.1 \pm 6.1$
$\alpha_{\text{IA,DES}}$	$-1.3^{+1.6}_{-2.9}$	$r_{\text{drag}}$	$147.43 \pm 0.22$	$\chi_{\text{BAO}}^2$	$5.55 \pm 0.44$
$\Delta z_{\text{l,DES}}^1$	$0.0036 \pm 0.0075$	$k_{\text{D}}$	$0.14062 \pm 0.00028$		
$\Delta z_{\text{l,DES}}^2$	$0.0008 \pm 0.0066$	$100\theta_{\text{D}}$	$0.16065 \pm 0.00017$		

$\bar{\chi}_{\text{eff}}^2 = 3340.03$ ;  $R - 1 = 0.01092$



## 2.264 base\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022441	$0.02244 \pm 0.00014$	$\Delta z_{s,\text{DES}}^3$	0.0048	$0.004 \pm 0.010$	$z_{\text{eq}}$	3384.2	$3380 \pm 25$
$\Omega_c h^2$	0.11918	$0.1190 \pm 0.0011$	$\Delta z_{s,\text{DES}}^4$	-0.0218	$-0.022 \pm 0.020$	$k_{\text{eq}}$	0.010329	$0.010317 \pm 0.000077$
$100\theta_{\text{MC}}$	1.040995	$1.04103 \pm 0.00030$	$H_0$	67.72	$67.80 \pm 0.50$	$100\theta_{\text{eq}}$	0.81677	$0.8176 \pm 0.0048$
$\tau$	0.0533	$0.0534^{+0.0071}_{-0.0079}$	$\Omega_\Lambda$	0.6898	$0.6908 \pm 0.0068$	$100\theta_{s,\text{eq}}$	0.45114	$0.4516 \pm 0.0025$
$\ln(10^{10} A_s)$	3.0403	$3.040 \pm 0.016$	$\Omega_m$	0.3102	$0.3092 \pm 0.0068$	$H(0.15)$	72.994	$73.06 \pm 0.43$
$n_s$	0.96784	$0.9673 \pm 0.0040$	$\Omega_m h^2$	0.14226	$0.1421 \pm 0.0011$	$D_M(0.15)$	640.23	$639.6 \pm 4.3$
$y_{\text{cal}}$	1.00045	$1.0005 \pm 0.0025$	$\Omega_m h^3$	0.096347	$0.09633 \pm 0.00029$	$H(0.38)$	83.090	$83.13 \pm 0.32$
$A_{217}^{\text{CIB}}$	47.0	$47 \pm 7$	$\sigma_8$	0.8075	$0.8066 \pm 0.0066$	$D_M(0.38)$	1527.2	$1526.1 \pm 8.6$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.44	—	$S_8$	0.8211	$0.819 \pm 0.013$	$H(0.51)$	89.799	$89.83 \pm 0.25$
$A_{143}^{\text{tSZ}}$	7.23	$5.5^{+2.2}_{-1.9}$	$\sigma_8 \Omega_m^{0.5}$	0.4497	$0.4485 \pm 0.0069$	$D_M(0.51)$	1978.6	$1977 \pm 10$
$A_{100}^{\text{PS}}$	249.9	$259 \pm 28$	$\sigma_8 \Omega_m^{0.25}$	0.6026	$0.6015 \pm 0.0066$	$H(0.61)$	95.412	$95.44 \pm 0.21$
$A_{143}^{\text{PS}}$	47.3	$45 \pm 8$	$\sigma_8/h^{0.5}$	0.9812	$0.9797 \pm 0.0096$	$D_M(0.61)$	2302.5	$2301 \pm 11$
$A_{143 \times 217}^{\text{PS}}$	47.5	$42 \pm 9$	$r_{\text{drag}} h$	99.71	$99.85 \pm 0.87$	$H(2.33)$	236.09	$235.98 \pm 0.67$
$A_{217}^{\text{PS}}$	119.8	$115 \pm 10$	$\langle d^2 \rangle^{1/2}$	2.4261	$2.425 \pm 0.023$	$D_M(2.33)$	5757.8	$5757.0 \pm 9.7$
$A^{\text{kSZ}}$	0.00	$< 4.33$	$z_{\text{re}}$	7.55	$7.54 \pm 0.78$	$f\sigma_8(0.15)$	0.4544	$0.4533 \pm 0.0065$
$A_{100}^{\text{dustTT}}$	8.81	$8.9 \pm 1.8$	$10^9 A_s$	2.0911	$2.091 \pm 0.033$	$\sigma_8(0.15)$	0.7463	$0.7456 \pm 0.0060$
$A_{143}^{\text{dustTT}}$	11.08	$10.9 \pm 1.8$	$10^9 A_s e^{-2\tau}$	1.8797	$1.879 \pm 0.011$	$f\sigma_8(0.38)$	0.4730	$0.4720 \pm 0.0054$
$A_{143 \times 217}^{\text{dustTT}}$	19.89	$18.6 \pm 3.3$	$D_{40}$	1224.4	$1226 \pm 12$	$\sigma_8(0.38)$	0.6617	$0.6612 \pm 0.0052$
$A_{217}^{\text{dustTT}}$	95.2	$93.7 \pm 7.4$	$D_{220}$	5734.1	$5737 \pm 38$	$f\sigma_8(0.51)$	0.47172	$0.4709 \pm 0.0048$
$A_{100}^{\text{dustTE}}$	0.1139	$0.114 \pm 0.038$	$D_{810}$	2539.7	$2538 \pm 13$	$\sigma_8(0.51)$	0.61926	$0.6189 \pm 0.0049$
$A_{100 \times 143}^{\text{dustTE}}$	0.1352	$0.135 \pm 0.030$	$D_{1420}$	818.52	$817.7 \pm 4.7$	$f\sigma_8(0.61)$	0.46687	$0.4661 \pm 0.0045$
$A_{100 \times 217}^{\text{dustTE}}$	0.483	$0.482 \pm 0.084$	$D_{2000}$	231.35	$231.0 \pm 1.6$	$\sigma_8(0.61)$	0.58928	$0.5889 \pm 0.0046$
$A_{143}^{\text{dustTE}}$	0.225	$0.225 \pm 0.054$	$n_{s,0.002}$	0.96784	$0.9673 \pm 0.0040$	$f\sigma_8(2.33)$	0.29717	$0.2970 \pm 0.0024$
$A_{143 \times 217}^{\text{dustTE}}$	0.664	$0.664 \pm 0.081$	$Y_{\text{P}}$	0.245423	$0.245419 \pm 0.000053$	$\sigma_8(2.33)$	0.30643	$0.3063 \pm 0.0025$
$A_{217}^{\text{dustTE}}$	2.074	$2.08 \pm 0.27$	$Y_{\text{P}}^{\text{BBN}}$	0.246749	$0.246746 \pm 0.000053$	$f_{2000}^{143}$	28.67	$29.4 \pm 2.7$
$c_{100}$	0.99972	$0.99966 \pm 0.00062$	$10^5 \text{D}/\text{H}$	2.5725	$2.574 \pm 0.025$	$f_{2000}^{143 \times 217}$	31.88	$32.1 \pm 1.8$
$c_{217}$	0.99818	$0.99820 \pm 0.00062$	$\text{Age}/\text{Gyr}$	13.7848	$13.783 \pm 0.022$	$f_{2000}^{217}$	106.55	$106.9 \pm 1.8$
$m_{\text{DES}}^1$	0.0151	$0.014 \pm 0.023$	$z_*$	1089.759	$1089.75 \pm 0.23$	$\chi_{\text{small}}^2$	395.86	$396.9 \pm 1.7$
$m_{\text{DES}}^2$	0.0119	$0.012 \pm 0.022$	$r_*$	144.590	$144.64 \pm 0.26$	$\chi_{\text{lowl}}^2$	22.84	$22.99 \pm 0.83$
$m_{\text{DES}}^3$	-0.0072	$-0.008 \pm 0.020$	$100\theta_*$	1.041167	$1.04121 \pm 0.00029$	$\chi_{\text{plik}}^2$	2346.0	$2360.9 \pm 5.9$
$m_{\text{DES}}^4$	0.0127	$0.011 \pm 0.021$	$D_M(z_*)/\text{Gpc}$	13.8873	$13.891 \pm 0.024$	$\chi_{\text{DES}}^2$	229.20	$232.0 \pm 2.5$
$A_{\text{IA,DES}}$	1.44	$1.24 \pm 0.50$	$z_{\text{drag}}$	1060.047	$1060.02 \pm 0.29$	$\chi_{\text{prior}}^2$	2.8	$19.5 \pm 6.0$
$\alpha_{\text{IA,DES}}$	2.49	$1.9^{+2.8}_{-1.0}$	$r_{\text{drag}}$	147.230	$147.28 \pm 0.26$	$\chi_{\text{CMB}}^2$	2764.7	$2780.7 \pm 5.9$
$\Delta z_{s,\text{DES}}^1$	0.0046	$0.005 \pm 0.015$	$k_{\text{D}}$	0.140773	$0.14072 \pm 0.00030$			
$\Delta z_{s,\text{DES}}^2$	-0.0203	$-0.021 \pm 0.012$	$100\theta_{\text{D}}$	0.160699	$0.16072 \pm 0.00017$			

Best-fit  $\chi_{\text{eff}}^2 = 2996.67$ ;  $\bar{\chi}_{\text{eff}}^2 = 3032.33$ ;  $R - 1 = 0.00975$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.86 commander\_dx12\_v3.2\_29: 22.84 plik\_rd12\_HM\_v22b\_TTTEEE: 2346.01 WL - DES\_1YR\_final: 229.20



## 2.265 base\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022468	$0.02245 \pm 0.00013$	$\Delta z_{s,\text{DES}}^4$	-0.0212	$-0.022 \pm 0.020$	$100\theta_{\text{eq}}$	0.81819	$0.8187 \pm 0.0039$
$\Omega_c h^2$	0.11885	$0.11875 \pm 0.00090$	$H_0$	67.889	$67.91 \pm 0.41$	$100\theta_{s,\text{eq}}$	0.45187	$0.4521 \pm 0.0020$
$100\theta_{\text{MC}}$	1.041073	$1.04107 \pm 0.00029$	$\Omega_\Lambda$	0.6920	$0.6924 \pm 0.0054$	$H(0.15)$	73.137	$73.16 \pm 0.35$
$\tau$	0.0548	$0.0541^{+0.0069}_{-0.0078}$	$\Omega_m$	0.3080	$0.3076 \pm 0.0054$	$D_M(0.15)$	638.83	$638.6 \pm 3.5$
$\ln(10^{10} A_s)$	3.0430	$3.041 \pm 0.016$	$\Omega_m h^2$	0.14197	$0.14185 \pm 0.00086$	$H(0.38)$	83.196	$83.21 \pm 0.26$
$n_s$	0.96898	$0.9680 \pm 0.0037$	$\Omega_m h^3$	0.096379	$0.09633 \pm 0.00029$	$D_M(0.38)$	1524.4	$1524.1 \pm 7.0$
$y_{\text{cal}}$	1.00059	$1.0006 \pm 0.0025$	$\sigma_8$	0.8078	$0.8062 \pm 0.0065$	$H(0.51)$	89.883	$89.89 \pm 0.21$
$A_{217}^{\text{CIB}}$	46.7	$47 \pm 7$	$S_8$	0.8185	$0.816 \pm 0.011$	$D_M(0.51)$	1975.3	$1974.9 \pm 8.2$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.56	—	$\sigma_8 \Omega_m^{0.5}$	0.4483	$0.4471 \pm 0.0059$	$H(0.61)$	95.479	$95.48 \pm 0.18$
$A_{143}^{\text{tSZ}}$	7.23	$5.5 \pm 2.0$	$\sigma_8 \Omega_m^{0.25}$	0.6018	$0.6004 \pm 0.0060$	$D_M(0.61)$	2299.0	$2298.6 \pm 8.8$
$A_{100}^{\text{PS}}$	248.1	$259 \pm 28$	$\sigma_8/h^{0.5}$	0.9804	$0.9783 \pm 0.0089$	$H(2.33)$	235.92	$235.83 \pm 0.56$
$A_{143}^{\text{PS}}$	48.6	$45 \pm 8$	$r_{\text{drag}} h$	99.99	$100.06 \pm 0.70$	$D_M(2.33)$	5754.8	$5755.2 \pm 8.5$
$A_{143 \times 217}^{\text{PS}}$	50.4	$42 \pm 9$	$\langle d^2 \rangle^{1/2}$	2.4236	$2.422 \pm 0.022$	$f\sigma_8(0.15)$	0.4532	$0.4520 \pm 0.0056$
$A_{217}^{\text{PS}}$	120.2	$114 \pm 10$	$z_{\text{re}}$	7.70	$7.60 \pm 0.76$	$\sigma_8(0.15)$	0.7468	$0.7454 \pm 0.0059$
$A^{\text{kSZ}}$	0.00	$< 4.36$	$10^9 A_s$	2.0968	$2.092^{+0.030}_{-0.034}$	$f\sigma_8(0.38)$	0.47223	$0.4711 \pm 0.0048$
$A_{100}^{\text{dustTT}}$	8.84	$8.9 \pm 1.8$	$10^9 A_s e^{-2\tau}$	1.8790	$1.878 \pm 0.010$	$\sigma_8(0.38)$	0.6623	$0.6612^{+0.0048}_{-0.0054}$
$A_{143}^{\text{dustTT}}$	11.04	$10.9 \pm 1.8$	$D_{40}$	1222.6	$1225 \pm 11$	$f\sigma_8(0.51)$	0.47124	$0.4702 \pm 0.0044$
$A_{143 \times 217}^{\text{dustTT}}$	20.11	$18.6 \pm 3.3$	$D_{220}$	5735.9	$5739 \pm 38$	$\sigma_8(0.51)$	0.61999	$0.6189^{+0.0045}_{-0.0051}$
$A_{217}^{\text{dustTT}}$	95.2	$93.6 \pm 7.3$	$D_{810}$	2540.5	$2538 \pm 13$	$f\sigma_8(0.61)$	0.46656	$0.4656 \pm 0.0042$
$A_{100}^{\text{dustTE}}$	0.1136	$0.114 \pm 0.038$	$D_{1420}$	819.21	$818.0 \pm 4.7$	$\sigma_8(0.61)$	0.59003	$0.5890^{+0.0043}_{-0.0048}$
$A_{100 \times 143}^{\text{dustTE}}$	0.1347	$0.135 \pm 0.030$	$D_{2000}$	231.64	$231.1 \pm 1.5$	$f\sigma_8(2.33)$	0.29763	$0.2972^{+0.0022}_{-0.0025}$
$A_{100 \times 217}^{\text{dustTE}}$	0.479	$0.481 \pm 0.084$	$n_{s,0.002}$	0.96898	$0.9680 \pm 0.0037$	$\sigma_8(2.33)$	0.30700	$0.3065^{+0.0023}_{-0.0026}$
$A_{143}^{\text{dustTE}}$	0.224	$0.224 \pm 0.054$	$Y_{\text{P}}$	0.2454329	$0.245426 \pm 0.000049$	$f_{2000}^{143}$	28.40	$29.3 \pm 2.7$
$A_{143 \times 217}^{\text{dustTE}}$	0.660	$0.663 \pm 0.080$	$Y_{\text{P}}^{\text{BBN}}$	0.2467596	$0.246752 \pm 0.000050$	$f_{2000}^{143 \times 217}$	31.74	$32.0 \pm 1.8$
$A_{217}^{\text{dustTE}}$	2.072	$2.07 \pm 0.27$	$10^5 \text{D}/\text{H}$	2.5676	$2.571 \pm 0.024$	$f_{2000}^{217}$	106.29	$106.8 \pm 1.8$
$c_{100}$	0.99973	$0.99967 \pm 0.00062$	Age/Gyr	13.7782	$13.779 \pm 0.019$	$\chi_{\text{simall}}^2$	396.05	$396.9 \pm 1.7$
$c_{217}$	0.99818	$0.99821 \pm 0.00061$	$z_*$	1089.697	$1089.71 \pm 0.21$	$\chi_{\text{lowl}}^2$	22.68	$22.87 \pm 0.77$
$m_{\text{DES}}^1$	0.0142	$0.014 \pm 0.023$	$r_*$	144.653	$144.69 \pm 0.22$	$\chi_{\text{plik}}^2$	2346.4	$2361.0 \pm 5.9$
$m_{\text{DES}}^2$	0.0126	$0.012 \pm 0.022$	$100\theta_*$	1.041246	$1.04124 \pm 0.00028$	$\chi_{6\text{DF}}^2$	0.0103	$0.028 \pm 0.038$
$m_{\text{DES}}^3$	-0.0062	$-0.007 \pm 0.020$	$D_M(z_*)/\text{Gpc}$	13.8923	$13.896 \pm 0.021$	$\chi_{\text{MGS}}^2$	1.407	$1.50 \pm 0.41$
$m_{\text{DES}}^4$	0.0129	$0.012 \pm 0.021$	$z_{\text{drag}}$	1060.085	$1060.04 \pm 0.28$	$\chi_{\text{DR12BAO}}^2$	3.94	$4.18 \pm 0.91$
$A_{\text{IA,DES}}$	1.42	$1.21 \pm 0.50$	$r_{\text{drag}}$	147.285	$147.33 \pm 0.23$	$\chi_{\text{DES}}^2$	229.06	$231.9 \pm 2.4$
$\alpha_{\text{IA,DES}}$	2.58	$1.85^{+2.9}_{-0.95}$	$k_{\text{D}}$	0.140736	$0.14068 \pm 0.00028$	$\chi_{\text{prior}}^2$	2.6	$19.4 \pm 6.0$
$\Delta z_{s,\text{DES}}^1$	0.0046	$0.004 \pm 0.015$	$100\theta_{\text{D}}$	0.160683	$0.16071 \pm 0.00016$	$\chi_{\text{BAO}}^2$	5.354	$5.71 \pm 0.65$
$\Delta z_{s,\text{DES}}^2$	-0.0207	$-0.021 \pm 0.012$	$z_{\text{eq}}$	3377.1	$3374 \pm 21$	$\chi_{\text{CMB}}^2$	2765.1	$2780.8 \pm 5.8$
$\Delta z_{s,\text{DES}}^3$	0.0053	$0.005 \pm 0.010$	$k_{\text{eq}}$	0.010307	$0.010299 \pm 0.000063$			

Best-fit  $\chi_{\text{eff}}^2 = 3002.12$ ;  $\bar{\chi}_{\text{eff}}^2 = 3037.77$ ;  $R - 1 = 0.01621$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.94 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.05 commander\_dx12\_v3\_2\_29: 22.68 plik\_rd12\_HM\_v22b\_TTTEEE: 2346.36 WL - DES\_1YR\_final: 229.06



## 2.266 base\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022454	$0.02244 \pm 0.00014$	$\Delta z_{\mathrm{s,DES}}^3$	0.0047	$0.004 \pm 0.010$	$z_{\mathrm{eq}}$	3384.0	$3383 \pm 24$
$\Omega_{\mathrm{c}}h^2$	0.11916	$0.1191 \pm 0.0010$	$\Delta z_{\mathrm{s,DES}}^4$	-0.0220	$-0.023 \pm 0.020$	$k_{\mathrm{eq}}$	0.010328	$0.010325 \pm 0.000072$
$100\theta_{\mathrm{MC}}$	1.041001	$1.04102 \pm 0.00030$	$H_0$	67.746	$67.75 \pm 0.48$	$100\theta_{\mathrm{eq}}$	0.81685	$0.8170 \pm 0.0045$
$\tau$	0.0554	$0.0546^{+0.0068}_{-0.0078}$	$\Omega_{\Lambda}$	0.6900	$0.6901 \pm 0.0064$	$100\theta_{\mathrm{s,eq}}$	0.45118	$0.4513 \pm 0.0023$
$\ln(10^{10}A_{\mathrm{s}})$	3.0447	$3.043 \pm 0.014$	$\Omega_{\mathrm{m}}$	0.3100	$0.3099 \pm 0.0064$	$H(0.15)$	73.015	$73.02 \pm 0.41$
$n_{\mathrm{s}}$	0.96825	$0.9669 \pm 0.0040$	$\Omega_{\mathrm{m}}h^2$	0.14225	$0.14221 \pm 0.00098$	$D_{\mathrm{M}}(0.15)$	640.04	$640.0 \pm 4.0$
$y_{\mathrm{cal}}$	1.00043	$1.0007 \pm 0.0025$	$\Omega_{\mathrm{m}}h^3$	0.096372	$0.09634 \pm 0.00029$	$H(0.38)$	83.107	$83.11 \pm 0.30$
$A_{217}^{\mathrm{CIB}}$	46.0	$47 \pm 7$	$\sigma_8$	0.8093	$0.8081 \pm 0.0056$	$D_{\mathrm{M}}(0.38)$	1526.8	$1526.8 \pm 8.1$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.62	—	$S_8$	0.8226	$0.821 \pm 0.011$	$H(0.51)$	89.814	$89.81 \pm 0.24$
$A_{143}^{\mathrm{tSZ}}$	7.17	$5.5 \pm 2.0$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4505	$0.4498 \pm 0.0059$	$D_{\mathrm{M}}(0.51)$	1978.1	$1978.1 \pm 9.6$
$A_{100}^{\mathrm{PS}}$	246.9	$259 \pm 28$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6038	$0.6029 \pm 0.0055$	$H(0.61)$	95.426	$95.42 \pm 0.20$
$A_{143}^{\mathrm{PS}}$	49.3	$45 \pm 8$	$\sigma_8/h^{0.5}$	0.9832	$0.9818 \pm 0.0079$	$D_{\mathrm{M}}(0.61)$	2302.0	$2302 \pm 10$
$A_{143 \times 217}^{\mathrm{PS}}$	52.0	$42 \pm 9$	$r_{\mathrm{drag}}h$	99.74	$99.76 \pm 0.82$	$H(2.33)$	236.09	$236.06 \pm 0.63$
$A_{217}^{\mathrm{PS}}$	121.4	$115 \pm 10$	$\langle d^2 \rangle^{1/2}$	2.4304	$2.431 \pm 0.019$	$D_{\mathrm{M}}(2.33)$	5757.1	$5757.5 \pm 9.4$
$A^{\mathrm{kSZ}}$	0.00	$< 4.36$	$z_{\mathrm{re}}$	7.76	$7.66 \pm 0.74$	$f\sigma_8(0.15)$	0.4553	$0.4545 \pm 0.0055$
$A_{100}^{\mathrm{dustTT}}$	8.78	$8.9 \pm 1.8$	$10^9 A_{\mathrm{s}}$	2.1004	$2.097^{+0.028}_{-0.032}$	$\sigma_8(0.15)$	0.7480	$0.7469 \pm 0.0052$
$A_{143}^{\mathrm{dustTT}}$	11.01	$10.9 \pm 1.8$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8802	$1.880 \pm 0.010$	$f\sigma_8(0.38)$	0.47392	$0.4732 \pm 0.0045$
$A_{143 \times 217}^{\mathrm{dustTT}}$	20.06	$18.6 \pm 3.3$	$D_{40}$	1224.4	$1228 \pm 11$	$\sigma_8(0.38)$	0.66318	$0.6623 \pm 0.0047$
$A_{217}^{\mathrm{dustTT}}$	95.4	$93.6 \pm 7.3$	$D_{220}$	5734.8	$5741 \pm 38$	$f\sigma_8(0.51)$	0.47270	$0.4720 \pm 0.0040$
$A_{100}^{\mathrm{dustTE}}$	0.1143	$0.113 \pm 0.038$	$D_{810}$	2540.5	$2539 \pm 13$	$\sigma_8(0.51)$	0.62069	$0.6198^{+0.0041}_{-0.0046}$
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1335	$0.135 \pm 0.030$	$D_{1420}$	818.96	$817.9 \pm 4.7$	$f\sigma_8(0.61)$	0.46785	$0.4672 \pm 0.0037$
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.482	$0.480 \pm 0.084$	$D_{2000}$	231.57	$231.1 \pm 1.6$	$\sigma_8(0.61)$	0.59064	$0.5898^{+0.0039}_{-0.0044}$
$A_{143}^{\mathrm{dustTE}}$	0.223	$0.224 \pm 0.054$	$n_{\mathrm{s},0.002}$	0.96825	$0.9669 \pm 0.0040$	$f\sigma_8(2.33)$	0.29787	$0.2975^{+0.0020}_{-0.0023}$
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.662	$0.664 \pm 0.080$	$Y_{\mathrm{P}}$	0.245428	$0.245419 \pm 0.000052$	$\sigma_8(2.33)$	0.30715	$0.3068^{+0.0022}_{-0.0025}$
$A_{217}^{\mathrm{dustTE}}$	2.081	$2.07 \pm 0.27$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246754	$0.246746 \pm 0.000053$	$f_{2000}^{143}$	28.24	$29.4 \pm 2.7$
$c_{100}$	0.99975	$0.99967 \pm 0.00062$	$10^5 \mathrm{D}/\mathrm{H}$	2.5701	$2.574 \pm 0.025$	$f_{2000}^{143 \times 217}$	31.68	$32.1 \pm 1.8$
$c_{217}$	0.99817	$0.99821 \pm 0.00061$	$\mathrm{Age}/\mathrm{Gyr}$	13.7831	$13.784 \pm 0.021$	$f_{2000}^{217}$	106.24	$106.9 \pm 1.8$
$m_{\mathrm{DES}}^1$	0.0144	$0.014 \pm 0.023$	$z_*$	1089.740	$1089.76 \pm 0.23$	$\chi_{\mathrm{lensing}}^2$	8.767	$9.16 \pm 0.65$
$m_{\mathrm{DES}}^2$	0.0120	$0.012 \pm 0.022$	$r_*$	144.586	$144.61 \pm 0.24$	$\chi_{\mathrm{small}}^2$	396.20	$397.0 \pm 1.7$
$m_{\mathrm{DES}}^3$	-0.0073	$-0.009 \pm 0.020$	$100\theta_*$	1.041176	$1.04120 \pm 0.00029$	$\chi_{\mathrm{lowl}}^2$	22.85	$23.12 \pm 0.80$
$m_{\mathrm{DES}}^4$	0.0119	$0.010 \pm 0.021$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8868	$13.889 \pm 0.023$	$\chi_{\mathrm{plik}}^2$	2345.8	$2360.1 \pm 5.7$
$A_{\mathrm{IA,DES}}$	1.45	$1.25 \pm 0.49$	$z_{\mathrm{drag}}$	1060.085	$1060.03 \pm 0.29$	$\chi_{\mathrm{DES}}^2$	229.30	$232.1 \pm 2.6$
$\alpha_{\mathrm{IA,DES}}$	2.50	$1.8^{+2.7}_{-1.1}$	$r_{\mathrm{drag}}$	147.220	$147.25 \pm 0.24$	$\chi_{\mathrm{prior}}^2$	2.6	$19.7 \pm 6.0$
$\Delta z_{\mathrm{s,DES}}^1$	0.0045	$0.005 \pm 0.015$	$k_{\mathrm{D}}$	0.140792	$0.14075 \pm 0.00029$	$\chi_{\mathrm{CMB}}^2$	2773.6	$2789.4 \pm 5.9$
$\Delta z_{\mathrm{s,DES}}^2$	-0.0204	$-0.021 \pm 0.012$	$100\theta_{\mathrm{D}}$	0.160683	$0.16071 \pm 0.00017$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 3005.49$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 3041.15$ ;  $R - 1 = 0.01376$

$\chi_{\mathrm{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.77 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.20 commander\_dx12\_v3.2\_29: 22.85 plik\_rd12\_HM\_v22b\_TTTEEE: 2345.76 WL - DES\_1YR\_final: 229.30



## 2.267 base\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens\_post\_BAO\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022468	$0.02246 \pm 0.00013$	$\Delta z_{s,\text{DES}}^4$	-0.0211	$-0.022 \pm 0.020$	$100\theta_{\text{eq}}$	0.81832	$0.8182 \pm 0.0037$
$\Omega_c h^2$	0.11882	$0.11885 \pm 0.00086$	$H_0$	67.889	$67.88 \pm 0.40$	$100\theta_{s,\text{eq}}$	0.45193	$0.4519 \pm 0.0019$
$100\theta_{\text{MC}}$	1.041035	$1.04106 \pm 0.00029$	$\Omega_\Lambda$	0.6921	$0.6919 \pm 0.0052$	$H(0.15)$	73.135	$73.13 \pm 0.34$
$\tau$	0.0555	$0.0555^{+0.0066}_{-0.0076}$	$\Omega_m$	0.3079	$0.3081 \pm 0.0052$	$D_M(0.15)$	638.84	$638.9 \pm 3.4$
$\ln(10^{10} A_s)$	3.0444	$3.044 \pm 0.014$	$\Omega_m h^2$	0.14193	$0.14195 \pm 0.00082$	$H(0.38)$	83.192	$83.19 \pm 0.26$
$n_s$	0.96880	$0.9676 \pm 0.0037$	$\Omega_m h^3$	0.096355	$0.09635 \pm 0.00029$	$D_M(0.38)$	1524.4	$1524.6 \pm 6.8$
$y_{\text{cal}}$	1.00060	$1.0008 \pm 0.0025$	$\sigma_8$	0.8081	$0.8080 \pm 0.0057$	$H(0.51)$	89.878	$89.87 \pm 0.21$
$A_{217}^{\text{CIB}}$	46.6	$47 \pm 7$	$S_8$	0.8187	$0.8188 \pm 0.0093$	$D_M(0.51)$	1975.3	$1975.6 \pm 8.0$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.49	—	$\sigma_8 \Omega_m^{0.5}$	0.4484	$0.4485 \pm 0.0051$	$H(0.61)$	95.473	$95.47 \pm 0.18$
$A_{143}^{\text{tSZ}}$	7.30	$5.5 \pm 2.0$	$\sigma_8 \Omega_m^{0.25}$	0.6020	$0.6020 \pm 0.0051$	$D_M(0.61)$	2299.0	$2299.3 \pm 8.6$
$A_{100}^{\text{PS}}$	248.5	$259 \pm 28$	$\sigma_8/h^{0.5}$	0.9808	$0.9807 \pm 0.0076$	$H(2.33)$	235.89	$235.90 \pm 0.53$
$A_{143}^{\text{PS}}$	47.4	$45 \pm 8$	$r_{\text{drag}} h$	99.997	$99.99 \pm 0.67$	$D_M(2.33)$	5755.2	$5755.5 \pm 8.5$
$A_{143 \times 217}^{\text{PS}}$	48.7	$42 \pm 9$	$\langle d^2 \rangle^{1/2}$	2.4254	$2.428 \pm 0.019$	$f\sigma_8(0.15)$	0.45331	$0.4533 \pm 0.0048$
$A_{217}^{\text{PS}}$	120.2	$115 \pm 10$	$z_{\text{re}}$	7.77	$7.75 \pm 0.72$	$\sigma_8(0.15)$	0.7471	$0.7469 \pm 0.0052$
$A^{\text{kSZ}}$	0.00	$< 4.29$	$10^9 A_s$	2.0997	$2.100^{+0.028}_{-0.031}$	$f\sigma_8(0.38)$	0.47239	$0.4724 \pm 0.0041$
$A_{100}^{\text{dustTT}}$	8.86	$8.9 \pm 1.8$	$10^9 A_s e^{-2\tau}$	1.8789	$1.879 \pm 0.010$	$\sigma_8(0.38)$	0.66263	$0.6625^{+0.0043}_{-0.0048}$
$A_{143}^{\text{dustTT}}$	11.04	$10.9 \pm 1.8$	$D_{40}$	1223.4	$1227 \pm 11$	$f\sigma_8(0.51)$	0.47141	$0.4714 \pm 0.0038$
$A_{143 \times 217}^{\text{dustTT}}$	19.98	$18.6 \pm 3.3$	$D_{220}$	5737.7	$5743 \pm 38$	$\sigma_8(0.51)$	0.62027	$0.6201^{+0.0041}_{-0.0046}$
$A_{217}^{\text{dustTT}}$	95.3	$93.6 \pm 7.4$	$D_{810}$	2540.4	$2540 \pm 13$	$f\sigma_8(0.61)$	0.46674	$0.4667 \pm 0.0036$
$A_{100}^{\text{dustTE}}$	0.1138	$0.113 \pm 0.038$	$D_{1420}$	819.05	$818.2 \pm 4.7$	$\sigma_8(0.61)$	0.59030	$0.5901^{+0.0039}_{-0.0044}$
$A_{100 \times 143}^{\text{dustTE}}$	0.1342	$0.135 \pm 0.030$	$D_{2000}$	231.59	$231.2 \pm 1.5$	$f\sigma_8(2.33)$	0.29777	$0.2977^{+0.0020}_{-0.0023}$
$A_{100 \times 217}^{\text{dustTE}}$	0.480	$0.480 \pm 0.084$	$n_{s,0.002}$	0.96880	$0.9676 \pm 0.0037$	$\sigma_8(2.33)$	0.30715	$0.3071^{+0.0021}_{-0.0025}$
$A_{143}^{\text{dustTE}}$	0.224	$0.224 \pm 0.054$	$Y_{\text{P}}$	0.2454330	$0.245427 \pm 0.000049$	$f_{2000}^{143}$	28.41	$29.3 \pm 2.7$
$A_{143 \times 217}^{\text{dustTE}}$	0.664	$0.663 \pm 0.080$	$Y_{\text{P}}^{\text{BBN}}$	0.2467597	$0.246753 \pm 0.000050$	$f_{2000}^{143 \times 217}$	31.70	$32.0 \pm 1.8$
$A_{217}^{\text{dustTE}}$	2.078	$2.07 \pm 0.27$	$10^5 \text{D}/\text{H}$	2.5675	$2.570 \pm 0.024$	$f_{2000}^{217}$	106.38	$106.8 \pm 1.8$
$c_{100}$	0.99974	$0.99968 \pm 0.00062$	Age/Gyr	13.7792	$13.780 \pm 0.019$	$\chi_{\text{lensing}}^2$	8.854	$9.17 \pm 0.68$
$c_{217}$	0.99818	$0.99820 \pm 0.00061$	$z_*$	1089.693	$1089.71 \pm 0.20$	$\chi_{\text{small}}^2$	396.20	$397.1 \pm 1.8$
$m_{\text{DES}}^1$	0.0139	$0.014 \pm 0.023$	$r_*$	144.662	$144.66 \pm 0.21$	$\chi_{\text{lowl}}^2$	22.73	$23.01 \pm 0.76$
$m_{\text{DES}}^2$	0.0120	$0.012 \pm 0.022$	$100\theta_*$	1.041207	$1.04124 \pm 0.00029$	$\chi_{\text{plik}}^2$	2346.1	$2360.3 \pm 5.7$
$m_{\text{DES}}^3$	-0.0065	$-0.008 \pm 0.020$	$D_M(z_*)/\text{Gpc}$	13.8937	$13.894 \pm 0.020$	$\chi_{6\text{DF}}^2$	0.0101	$0.030 \pm 0.038$
$m_{\text{DES}}^4$	0.0134	$0.011 \pm 0.021$	$z_{\text{drag}}$	1060.085	$1060.05 \pm 0.28$	$\chi_{\text{MGS}}^2$	1.407	$1.45 \pm 0.39$
$A_{\text{IA,DES}}$	1.42	$1.24 \pm 0.49$	$r_{\text{drag}}$	147.295	$147.30 \pm 0.22$	$\chi_{\text{DR12BAO}}^2$	3.93	$4.24 \pm 0.92$
$\alpha_{\text{IA,DES}}$	2.57	$1.8^{+2.8}_{-1.0}$	$k_{\text{D}}$	0.140726	$0.14071 \pm 0.00027$	$\chi_{\text{DES}}^2$	229.07	$231.9 \pm 2.4$
$\Delta z_{s,\text{DES}}^1$	0.0049	$0.005 \pm 0.015$	$100\theta_{\text{D}}$	0.160678	$0.16070 \pm 0.00016$	$\chi_{\text{prior}}^2$	2.7	$19.5 \pm 6.0$
$\Delta z_{s,\text{DES}}^2$	-0.0205	$-0.021 \pm 0.012$	$z_{\text{eq}}$	3376.3	$3377 \pm 20$	$\chi_{\text{CMB}}^2$	2773.9	$2789.5 \pm 5.8$
$\Delta z_{s,\text{DES}}^3$	0.0055	$0.005 \pm 0.010$	$k_{\text{eq}}$	0.010305	$0.010306 \pm 0.000060$	$\chi_{\text{BAO}}^2$	5.350	$5.73 \pm 0.66$

Best-fit  $\chi_{\text{eff}}^2 = 3011.01$ ;  $\bar{\chi}_{\text{eff}}^2 = 3046.67$ ;  $R - 1 = 0.01525$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.93 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p.teb\_consext8: 8.85 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.20 commander\_dx12.v3.2.29: 22.73 plik\_rd12\_HM\_v22b\_TTTEEE: 2346.15 WL - DES\_1YR\_final: 229.07



## 2.268 base\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02244 \pm 0.00014$	$\Delta z_{s,\text{DES}}^3$	$0.004 \pm 0.010$	$z_{\text{eq}}$	$3379 \pm 25$
$\Omega_c h^2$	$0.1190 \pm 0.0011$	$\Delta z_{s,\text{DES}}^4$	$-0.023 \pm 0.020$	$k_{\text{eq}}$	$0.010313 \pm 0.000076$
$100\theta_{\text{MC}}$	$1.04104 \pm 0.00030$	$H_0$	$67.82 \pm 0.50$	$100\theta_{\text{eq}}$	$0.8178 \pm 0.0047$
$\tau$	$0.0548^{+0.0046}_{-0.0083}$	$\Omega_{\Lambda}$	$0.6911 \pm 0.0067$	$100\theta_{s,\text{eq}}$	$0.4517 \pm 0.0024$
$\ln(10^{10} A_s)$	$3.042^{+0.011}_{-0.016}$	$\Omega_{\text{m}}$	$0.3089 \pm 0.0067$	$H(0.15)$	$73.08 \pm 0.43$
$n_s$	$0.9675 \pm 0.0040$	$\Omega_{\text{m}} h^2$	$0.1420 \pm 0.0010$	$D_{\text{M}}(0.15)$	$639.4 \pm 4.2$
$y_{\text{cal}}$	$1.0005 \pm 0.0025$	$\Omega_{\text{m}} h^3$	$0.09633 \pm 0.00029$	$H(0.38)$	$83.15 \pm 0.32$
$A_{217}^{\text{CIB}}$	$47 \pm 7$	$\sigma_8$	$0.8075^{+0.0056}_{-0.0065}$	$D_{\text{M}}(0.38)$	$1525.6 \pm 8.5$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$S_8$	$0.819 \pm 0.013$	$H(0.51)$	$89.84 \pm 0.25$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.2}_{-1.9}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4488 \pm 0.0069$	$D_{\text{M}}(0.51)$	$1977 \pm 10$
$A_{100}^{\text{PS}}$	$258 \pm 28$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.6020 \pm 0.0065$	$H(0.61)$	$95.45 \pm 0.21$
$A_{143}^{\text{PS}}$	$45 \pm 8$	$\sigma_8/h^{0.5}$	$0.9805 \pm 0.0093$	$D_{\text{M}}(0.61)$	$2301 \pm 11$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9$	$r_{\text{drag}} h$	$99.90 \pm 0.86$	$H(2.33)$	$235.95 \pm 0.67$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$\langle d^2 \rangle^{1/2}$	$2.427 \pm 0.023$	$D_{\text{M}}(2.33)$	$5756.6 \pm 9.6$
$A^{\text{kSZ}}$	$< 4.30$	$z_{\text{re}}$	$7.68^{+0.52}_{-0.81}$	$f\sigma_8(0.15)$	$0.4535 \pm 0.0064$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$10^9 A_s$	$2.096^{+0.023}_{-0.033}$	$\sigma_8(0.15)$	$0.7464^{+0.0048}_{-0.0059}$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8$	$10^9 A_s e^{-2\tau}$	$1.878 \pm 0.011$	$f\sigma_8(0.38)$	$0.4724 \pm 0.0053$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3$	$D_{40}$	$1226 \pm 12$	$\sigma_8(0.38)$	$0.6619^{+0.0040}_{-0.0052}$
$A_{217}^{\text{dustTT}}$	$93.7 \pm 7.4$	$D_{220}$	$5737 \pm 38$	$f\sigma_8(0.51)$	$0.4713 \pm 0.0047$
$A_{100}^{\text{dustTE}}$	$0.113 \pm 0.038$	$D_{810}$	$2538 \pm 13$	$\sigma_8(0.51)$	$0.6196^{+0.0036}_{-0.0049}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$D_{1420}$	$817.7 \pm 4.7$	$f\sigma_8(0.61)$	$0.4666 \pm 0.0043$
$A_{100 \times 217}^{\text{dustTE}}$	$0.481 \pm 0.084$	$D_{2000}$	$231.1 \pm 1.6$	$\sigma_8(0.61)$	$0.5896^{+0.0034}_{-0.0047}$
$A_{143}^{\text{dustTE}}$	$0.225 \pm 0.054$	$n_{s,0.002}$	$0.9675 \pm 0.0040$	$f\sigma_8(2.33)$	$0.2974^{+0.0017}_{-0.0024}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.664 \pm 0.080$	$Y_{\text{P}}$	$0.245421 \pm 0.000052$	$\sigma_8(2.33)$	$0.3067^{+0.0018}_{-0.0026}$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.27$	$Y_{\text{P}}^{\text{BBN}}$	$0.246748 \pm 0.000053$	$f_{2000}^{143}$	$29.3 \pm 2.7$
$c_{100}$	$0.99966 \pm 0.00062$	$10^5 \text{D/H}$	$2.573 \pm 0.025$	$f_{2000}^{143 \times 217}$	$32.0 \pm 1.8$
$c_{217}$	$0.99820 \pm 0.00062$	$\text{Age/Gyr}$	$13.782 \pm 0.022$	$f_{2000}^{217}$	$106.8 \pm 1.8$
$m_{\text{DES}}^1$	$0.014 \pm 0.023$	$z_*$	$1089.74 \pm 0.23$	$\chi_{\text{simall}}^2$	$396.8 \pm 1.7$
$m_{\text{DES}}^2$	$0.012 \pm 0.022$	$r_*$	$144.65 \pm 0.25$	$\chi_{\text{lowl}}^2$	$22.99 \pm 0.83$
$m_{\text{DES}}^3$	$-0.008 \pm 0.020$	$100\theta_*$	$1.04122 \pm 0.00029$	$\chi_{\text{plik}}^2$	$2360.7 \pm 5.9$
$m_{\text{DES}}^4$	$0.011 \pm 0.021$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.892 \pm 0.024$	$\chi_{\text{DES}}^2$	$232.1 \pm 2.5$
$A_{\text{IA,DES}}$	$1.24 \pm 0.50$	$z_{\text{drag}}$	$1060.02 \pm 0.29$	$\chi_{\text{prior}}^2$	$19.5 \pm 6.0$
$\alpha_{\text{IA,DES}}$	$1.9^{+2.8}_{-1.0}$	$r_{\text{drag}}$	$147.29 \pm 0.26$	$\chi_{\text{CMB}}^2$	$2780.5 \pm 5.8$
$\Delta z_{s,\text{DES}}^1$	$0.005 \pm 0.015$	$k_{\text{D}}$	$0.14071 \pm 0.00030$		
$\Delta z_{s,\text{DES}}^2$	$-0.021 \pm 0.012$	$100\theta_{\text{D}}$	$0.16071 \pm 0.00017$		

$\bar{\chi}_{\text{eff}}^2 = 3032.07$ ;  $R - 1 = 0.00937$



**2.269**    **base\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens\_post\_BAO\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02246 \pm 0.00013$	$\Delta z_{\mathrm{s,DES}}^4$	$-0.022 \pm 0.020$	$100\theta_{\mathrm{eq}}$	$0.8188 \pm 0.0039$
$\Omega_{\mathrm{c}}h^2$	$0.11872 \pm 0.00090$	$H_0$	$67.93 \pm 0.41$	$100\theta_{\mathrm{s,eq}}$	$0.4522 \pm 0.0020$
$100\theta_{\mathrm{MC}}$	$1.04107 \pm 0.00029$	$\Omega_{\Lambda}$	$0.6926 \pm 0.0054$	$H(0.15)$	$73.17 \pm 0.35$
$\tau$	$0.0551^{+0.0049}_{-0.0081}$	$\Omega_{\mathrm{m}}$	$0.3074 \pm 0.0054$	$D_{\mathrm{M}}(0.15)$	$638.5 \pm 3.4$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.012}_{-0.016}$	$\Omega_{\mathrm{m}}h^2$	$0.14182 \pm 0.00086$	$H(0.38)$	$83.21 \pm 0.26$
$n_{\mathrm{s}}$	$0.9681 \pm 0.0037$	$\Omega_{\mathrm{m}}h^3$	$0.09633 \pm 0.00029$	$D_{\mathrm{M}}(0.38)$	$1523.8 \pm 6.9$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$\sigma_8$	$0.8070^{+0.0054}_{-0.0065}$	$H(0.51)$	$89.89 \pm 0.21$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$S_8$	$0.817 \pm 0.011$	$D_{\mathrm{M}}(0.51)$	$1974.6 \pm 8.1$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4474 \pm 0.0058$	$H(0.61)$	$95.48 \pm 0.18$
$A_{143}^{\mathrm{tSZ}}$	$5.5 \pm 2.0$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6009 \pm 0.0058$	$D_{\mathrm{M}}(0.61)$	$2298.3 \pm 8.8$
$A_{100}^{\mathrm{PS}}$	$258 \pm 28$	$\sigma_8/h^{0.5}$	$0.9791 \pm 0.0085$	$H(2.33)$	$235.81 \pm 0.56$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8$	$r_{\mathrm{drag}}h$	$100.08 \pm 0.70$	$D_{\mathrm{M}}(2.33)$	$5755.0 \pm 8.5$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9$	$\langle d^2 \rangle^{1/2}$	$2.424 \pm 0.021$	$f\sigma_8(0.15)$	$0.4523 \pm 0.0055$
$A_{217}^{\mathrm{PS}}$	$114 \pm 10$	$z_{\mathrm{re}}$	$7.71^{+0.54}_{-0.80}$	$\sigma_8(0.15)$	$0.7461^{+0.0048}_{-0.0060}$
$A^{\mathrm{kSZ}}$	$< 4.35$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.024}_{-0.033}$	$f\sigma_8(0.38)$	$0.4715 \pm 0.0047$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.010$	$\sigma_8(0.38)$	$0.6618^{+0.0040}_{-0.0053}$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8$	$D_{40}$	$1225 \pm 11$	$f\sigma_8(0.51)$	$0.4706 \pm 0.0043$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.6 \pm 3.3$	$D_{220}$	$5739 \pm 38$	$\sigma_8(0.51)$	$0.6195^{+0.0037}_{-0.0050}$
$A_{217}^{\mathrm{dust}TT}$	$93.6 \pm 7.3$	$D_{810}$	$2538 \pm 13$	$f\sigma_8(0.61)$	$0.4659 \pm 0.0040$
$A_{100}^{\mathrm{dust}TE}$	$0.113 \pm 0.038$	$D_{1420}$	$817.9 \pm 4.7$	$\sigma_8(0.61)$	$0.5896^{+0.0035}_{-0.0048}$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.030$	$D_{2000}$	$231.2 \pm 1.5$	$f\sigma_8(2.33)$	$0.2975^{+0.0018}_{-0.0024}$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.481 \pm 0.084$	$n_{\mathrm{s},0.002}$	$0.9681 \pm 0.0037$	$\sigma_8(2.33)$	$0.3069^{+0.0018}_{-0.0026}$
$A_{143}^{\mathrm{dust}TE}$	$0.224 \pm 0.054$	$Y_{\mathrm{P}}$	$0.245427 \pm 0.000049$	$f_{2000}^{143}$	$29.3 \pm 2.7$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.663 \pm 0.080$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246754 \pm 0.000050$	$f_{2000}^{143 \times 217}$	$32.0 \pm 1.8$
$A_{217}^{\mathrm{dust}TE}$	$2.07 \pm 0.27$	$10^5 \mathrm{D}/\mathrm{H}$	$2.570 \pm 0.024$	$f_{2000}^{217}$	$106.8 \pm 1.7$
$c_{100}$	$0.99966 \pm 0.00062$	$\mathrm{Age}/\mathrm{Gyr}$	$13.779 \pm 0.019$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.7$
$c_{217}$	$0.99820 \pm 0.00061$	$z_*$	$1089.70 \pm 0.20$	$\chi_{\mathrm{lowl}}^2$	$22.88 \pm 0.77$
$m_{\mathrm{DES}}^1$	$0.014 \pm 0.023$	$r_*$	$144.70 \pm 0.22$	$\chi_{\mathrm{plik}}^2$	$2360.8 \pm 5.9$
$m_{\mathrm{DES}}^2$	$0.012 \pm 0.022$	$100\theta_*$	$1.04125 \pm 0.00029$	$\chi_{6\mathrm{DF}}^2$	$0.027 \pm 0.036$
$m_{\mathrm{DES}}^3$	$-0.007 \pm 0.020$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.897 \pm 0.021$	$\chi_{\mathrm{MGS}}^2$	$1.51 \pm 0.41$
$m_{\mathrm{DES}}^4$	$0.011 \pm 0.021$	$z_{\mathrm{drag}}$	$1060.04 \pm 0.28$	$\chi_{\mathrm{DR12BAO}}^2$	$4.15 \pm 0.88$
$A_{\mathrm{IA,DES}}$	$1.22 \pm 0.50$	$r_{\mathrm{drag}}$	$147.34 \pm 0.23$	$\chi_{\mathrm{DES}}^2$	$231.9 \pm 2.4$
$\alpha_{\mathrm{IA,DES}}$	$1.84^{+2.9}_{-0.98}$	$k_{\mathrm{D}}$	$0.14067 \pm 0.00028$	$\chi_{\mathrm{prior}}^2$	$19.4 \pm 6.0$
$\Delta z_{\mathrm{s,DES}}^1$	$0.004 \pm 0.015$	$100\theta_{\mathrm{D}}$	$0.16071 \pm 0.00016$	$\chi_{\mathrm{BAO}}^2$	$5.69 \pm 0.63$
$\Delta z_{\mathrm{s,DES}}^2$	$-0.021 \pm 0.012$	$z_{\mathrm{eq}}$	$3374 \pm 21$	$\chi_{\mathrm{CMB}}^2$	$2780.5 \pm 5.7$
$\Delta z_{\mathrm{s,DES}}^3$	$0.005 \pm 0.010$	$k_{\mathrm{eq}}$	$0.010297 \pm 0.000063$		
$\bar{\chi}_{\mathrm{eff}}^2 = 3037.53$ ; $R - 1 = 0.01574$					



2.270 base\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02244 \pm 0.00014$	$\Delta z_{s,\text{DES}}^3$	$0.004 \pm 0.010$	$z_{\text{eq}}$	$3382 \pm 23$
$\Omega_c h^2$	$0.1191 \pm 0.0010$	$\Delta z_{s,\text{DES}}^4$	$-0.023 \pm 0.020$	$k_{\text{eq}}$	$0.010321 \pm 0.000070$
$100\theta_{\text{MC}}$	$1.04103 \pm 0.00030$	$H_0$	$67.77 \pm 0.47$	$100\theta_{\text{eq}}$	$0.8173 \pm 0.0044$
$\tau$	$0.0555^{+0.0051}_{-0.0080}$	$\Omega_{\Lambda}$	$0.6904 \pm 0.0062$	$100\theta_{s,\text{eq}}$	$0.4514 \pm 0.0022$
$\ln(10^{10} A_s)$	$3.045^{+0.011}_{-0.015}$	$\Omega_{\text{m}}$	$0.3096 \pm 0.0062$	$H(0.15)$	$73.04 \pm 0.40$
$n_s$	$0.9671 \pm 0.0039$	$\Omega_{\text{m}} h^2$	$0.14216 \pm 0.00097$	$D_{\text{M}}(0.15)$	$639.8 \pm 4.0$
$y_{\text{cal}}$	$1.0006 \pm 0.0025$	$\Omega_{\text{m}} h^3$	$0.09634 \pm 0.00029$	$H(0.38)$	$83.12 \pm 0.30$
$A_{217}^{\text{CIB}}$	$47 \pm 7$	$\sigma_8$	$0.8086^{+0.0049}_{-0.0056}$	$D_{\text{M}}(0.38)$	$1526.4 \pm 8.0$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$S_8$	$0.821 \pm 0.011$	$H(0.51)$	$89.82 \pm 0.24$
$A_{143}^{\text{tSZ}}$	$5.5 \pm 2.0$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4499 \pm 0.0059$	$D_{\text{M}}(0.51)$	$1977.7 \pm 9.4$
$A_{100}^{\text{PS}}$	$259 \pm 28$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.6031 \pm 0.0054$	$H(0.61)$	$95.43 \pm 0.20$
$A_{143}^{\text{PS}}$	$45 \pm 8$	$\sigma_8/h^{0.5}$	$0.9823 \pm 0.0078$	$D_{\text{M}}(0.61)$	$2302 \pm 10$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9$	$r_{\text{drag}} h$	$99.80 \pm 0.80$	$H(2.33)$	$236.03 \pm 0.62$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.019$	$D_{\text{M}}(2.33)$	$5757.1 \pm 9.4$
$A^{\text{kSZ}}$	$< 4.34$	$z_{\text{re}}$	$7.75^{+0.55}_{-0.78}$	$f\sigma_8(0.15)$	$0.4546 \pm 0.0055$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$10^9 A_s$	$2.100^{+0.023}_{-0.032}$	$\sigma_8(0.15)$	$0.7474^{+0.0043}_{-0.0052}$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8$	$10^9 A_s e^{-2\tau}$	$1.880 \pm 0.010$	$f\sigma_8(0.38)$	$0.4733 \pm 0.0044$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3$	$D_{40}$	$1228 \pm 11$	$\sigma_8(0.38)$	$0.6627^{+0.0037}_{-0.0048}$
$A_{217}^{\text{dustTT}}$	$93.6 \pm 7.3$	$D_{220}$	$5741 \pm 38$	$f\sigma_8(0.51)$	$0.4722 \pm 0.0039$
$A_{100}^{\text{dustTE}}$	$0.113 \pm 0.038$	$D_{810}$	$2539 \pm 13$	$\sigma_8(0.51)$	$0.6203^{+0.0035}_{-0.0045}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$D_{1420}$	$817.9 \pm 4.7$	$f\sigma_8(0.61)$	$0.4674 \pm 0.0036$
$A_{100 \times 217}^{\text{dustTE}}$	$0.480 \pm 0.084$	$D_{2000}$	$231.1 \pm 1.6$	$\sigma_8(0.61)$	$0.5903^{+0.0033}_{-0.0044}$
$A_{143}^{\text{dustTE}}$	$0.224 \pm 0.054$	$n_{s,0.002}$	$0.9671 \pm 0.0039$	$f\sigma_8(2.33)$	$0.2977^{+0.0017}_{-0.0023}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.663 \pm 0.080$	$Y_{\text{P}}$	$0.245421 \pm 0.000052$	$\sigma_8(2.33)$	$0.3070^{+0.0018}_{-0.0025}$
$A_{217}^{\text{dustTE}}$	$2.07 \pm 0.27$	$Y_{\text{P}}^{\text{BBN}}$	$0.246747 \pm 0.000052$	$f_{2000}^{143}$	$29.3 \pm 2.7$
$c_{100}$	$0.99967 \pm 0.00062$	$10^5 \text{D/H}$	$2.573 \pm 0.025$	$f_{2000}^{143 \times 217}$	$32.0 \pm 1.8$
$c_{217}$	$0.99820 \pm 0.00061$	$\text{Age/Gyr}$	$13.783 \pm 0.021$	$f_{2000}^{217}$	$106.9 \pm 1.8$
$m_{\text{DES}}^1$	$0.014 \pm 0.023$	$z_*$	$1089.75 \pm 0.23$	$\chi_{\text{lensing}}^2$	$9.12 \pm 0.60$
$m_{\text{DES}}^2$	$0.012 \pm 0.022$	$r_*$	$144.62 \pm 0.23$	$\chi_{\text{simall}}^2$	$396.9 \pm 1.8$
$m_{\text{DES}}^3$	$-0.009 \pm 0.020$	$100\theta_*$	$1.04120 \pm 0.00029$	$\chi_{\text{lowl}}^2$	$23.12 \pm 0.80$
$m_{\text{DES}}^4$	$0.010 \pm 0.021$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.890 \pm 0.022$	$\chi_{\text{plik}}^2$	$2360.0 \pm 5.7$
$A_{\text{IA,DES}}$	$1.26 \pm 0.49$	$z_{\text{drag}}$	$1060.03 \pm 0.29$	$\chi_{\text{DES}}^2$	$232.1 \pm 2.5$
$\alpha_{\text{IA,DES}}$	$1.8^{+2.7}_{-1.1}$	$r_{\text{drag}}$	$147.26 \pm 0.24$	$\chi_{\text{prior}}^2$	$19.6 \pm 6.1$
$\Delta z_{s,\text{DES}}^1$	$0.005 \pm 0.015$	$k_{\text{D}}$	$0.14074 \pm 0.00028$	$\chi_{\text{CMB}}^2$	$2789.2 \pm 5.8$
$\Delta z_{s,\text{DES}}^2$	$-0.021 \pm 0.012$	$100\theta_{\text{D}}$	$0.16071 \pm 0.00017$		

$\bar{\chi}_{\text{eff}}^2 = 3040.94$ ;  $R - 1 = 0.01565$



2.271 base\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02246 \pm 0.00013$	$\Delta z_{\mathrm{s,DES}}^4$	$-0.022 \pm 0.020$	$100\theta_{\mathrm{eq}}$	$0.8184 \pm 0.0037$
$\Omega_{\mathrm{c}}h^2$	$0.11882 \pm 0.00086$	$H_0$	$67.89 \pm 0.39$	$100\theta_{\mathrm{s,eq}}$	$0.4520 \pm 0.0019$
$100\theta_{\mathrm{MC}}$	$1.04106 \pm 0.00029$	$\Omega_{\Lambda}$	$0.6920 \pm 0.0052$	$H(0.15)$	$73.14 \pm 0.34$
$\tau$	$0.0562^{+0.0054}_{-0.0077}$	$\Omega_{\mathrm{m}}$	$0.3080 \pm 0.0052$	$D_{\mathrm{M}}(0.15)$	$638.8 \pm 3.3$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046^{+0.012}_{-0.015}$	$\Omega_{\mathrm{m}}h^2$	$0.14192 \pm 0.00082$	$H(0.38)$	$83.19 \pm 0.25$
$n_{\mathrm{s}}$	$0.9677 \pm 0.0037$	$\Omega_{\mathrm{m}}h^3$	$0.09635 \pm 0.00029$	$D_{\mathrm{M}}(0.38)$	$1524.4 \pm 6.7$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025$	$\sigma_8$	$0.8083^{+0.0049}_{-0.0057}$	$H(0.51)$	$89.88 \pm 0.21$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$S_8$	$0.8190 \pm 0.0093$	$D_{\mathrm{M}}(0.51)$	$1975.3 \pm 7.9$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4486 \pm 0.0051$	$H(0.61)$	$95.47 \pm 0.18$
$A_{143}^{\mathrm{tSZ}}$	$5.5 \pm 2.0$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6022 \pm 0.0050$	$D_{\mathrm{M}}(0.61)$	$2299.0 \pm 8.6$
$A_{100}^{\mathrm{PS}}$	$259 \pm 28$	$\sigma_8/h^{0.5}$	$0.9811 \pm 0.0074$	$H(2.33)$	$235.88 \pm 0.53$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8$	$r_{\mathrm{drag}}h$	$100.01 \pm 0.67$	$D_{\mathrm{M}}(2.33)$	$5755.3 \pm 8.5$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9$	$\langle d^2 \rangle^{1/2}$	$2.429 \pm 0.018$	$f\sigma_8(0.15)$	$0.4534 \pm 0.0048$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$z_{\mathrm{re}}$	$7.82^{+0.58}_{-0.75}$	$\sigma_8(0.15)$	$0.7473^{+0.0044}_{-0.0053}$
$A^{\mathrm{kSZ}}$	$< 4.29$	$10^9 A_{\mathrm{s}}$	$2.102^{+0.024}_{-0.031}$	$f\sigma_8(0.38)$	$0.4725 \pm 0.0041$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879 \pm 0.010$	$\sigma_8(0.38)$	$0.6628^{+0.0039}_{-0.0048}$
$A_{143}^{\mathrm{dustTT}}$	$10.9 \pm 1.8$	$D_{40}$	$1227 \pm 11$	$f\sigma_8(0.51)$	$0.4715 \pm 0.0037$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.5 \pm 3.3$	$D_{220}$	$5743 \pm 38$	$\sigma_8(0.51)$	$0.6204^{+0.0036}_{-0.0046}$
$A_{217}^{\mathrm{dustTT}}$	$93.6 \pm 7.4$	$D_{810}$	$2539 \pm 13$	$f\sigma_8(0.61)$	$0.4669 \pm 0.0035$
$A_{100}^{\mathrm{dustTE}}$	$0.113 \pm 0.038$	$D_{1420}$	$818.2 \pm 4.7$	$\sigma_8(0.61)$	$0.5905^{+0.0034}_{-0.0044}$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.030$	$D_{2000}$	$231.2 \pm 1.5$	$f\sigma_8(2.33)$	$0.2979^{+0.0018}_{-0.0023}$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.480 \pm 0.084$	$n_{\mathrm{s},0.002}$	$0.9677 \pm 0.0037$	$\sigma_8(2.33)$	$0.3072^{+0.0019}_{-0.0025}$
$A_{143}^{\mathrm{dustTE}}$	$0.224 \pm 0.054$	$Y_{\mathrm{P}}$	$0.245427 \pm 0.000049$	$f_{2000}^{143}$	$29.2 \pm 2.7$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.663 \pm 0.080$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246754 \pm 0.000049$	$f_{2000}^{143 \times 217}$	$32.0 \pm 1.8$
$A_{217}^{\mathrm{dustTE}}$	$2.07 \pm 0.27$	$10^5 \mathrm{D}/\mathrm{H}$	$2.570 \pm 0.024$	$f_{2000}^{217}$	$106.8 \pm 1.8$
$c_{100}$	$0.99967 \pm 0.00062$	$\mathrm{Age}/\mathrm{Gyr}$	$13.779 \pm 0.019$	$\chi_{\mathrm{lensing}}^2$	$9.13 \pm 0.62$
$c_{217}$	$0.99820 \pm 0.00061$	$z_*$	$1089.71 \pm 0.20$	$\chi_{\mathrm{small}}^2$	$397.1 \pm 1.8$
$m_{\mathrm{DES}}^1$	$0.014 \pm 0.023$	$r_*$	$144.67 \pm 0.21$	$\chi_{\mathrm{lowl}}^2$	$23.01 \pm 0.76$
$m_{\mathrm{DES}}^2$	$0.012 \pm 0.022$	$100\theta_*$	$1.04124 \pm 0.00029$	$\chi_{\mathrm{plik}}^2$	$2360.2 \pm 5.7$
$m_{\mathrm{DES}}^3$	$-0.008 \pm 0.020$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.894 \pm 0.020$	$\chi_{6\mathrm{DF}}^2$	$0.028 \pm 0.037$
$m_{\mathrm{DES}}^4$	$0.011 \pm 0.021$	$z_{\mathrm{drag}}$	$1060.05 \pm 0.28$	$\chi_{\mathrm{MGS}}^2$	$1.46 \pm 0.39$
$A_{\mathrm{IA,DES}}$	$1.24 \pm 0.49$	$r_{\mathrm{drag}}$	$147.31 \pm 0.22$	$\chi_{\mathrm{DR12BAO}}^2$	$4.21 \pm 0.89$
$\alpha_{\mathrm{IA,DES}}$	$1.8^{+2.8}_{-1.0}$	$k_{\mathrm{D}}$	$0.14071 \pm 0.00027$	$\chi_{\mathrm{DES}}^2$	$231.9 \pm 2.4$
$\Delta z_{\mathrm{s,DES}}^1$	$0.005 \pm 0.015$	$100\theta_{\mathrm{D}}$	$0.16070 \pm 0.00016$	$\chi_{\mathrm{prior}}^2$	$19.5 \pm 6.0$
$\Delta z_{\mathrm{s,DES}}^2$	$-0.021 \pm 0.012$	$z_{\mathrm{eq}}$	$3376 \pm 19$	$\chi_{\mathrm{CMB}}^2$	$2789.4 \pm 5.8$
$\Delta z_{\mathrm{s,DES}}^3$	$0.005 \pm 0.010$	$k_{\mathrm{eq}}$	$0.010304 \pm 0.000059$	$\chi_{\mathrm{BAO}}^2$	$5.71 \pm 0.63$

$\bar{\chi}_{\mathrm{eff}}^2 = 3046.49$ ;  $R - 1 = 0.01631$



## 2.272 base\_BAO\_Cooke17

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022095	$0.02225 \pm 0.00050$	$r_*$	137.0	$129.8 \pm 8.3$	$D_M(0.38)$	1447	$1378 \pm 81$
$\Omega_c h^2$	0.1527	$0.194^{+0.036}_{-0.056}$	$100\theta_*$	1.0813	$1.112^{+0.039}_{-0.036}$	$H(0.51)$	96.4	$103.3^{+6.9}_{-9.0}$
$100\theta_{MC}$	1.0811	$1.112^{+0.039}_{-0.035}$	$D_M(z_*)/\text{Gpc}$	12.67	$11.7^{+1.1}_{-1.2}$	$D_M(0.51)$	1869	$1774 \pm 110$
$H_0$	70.69	$73.7^{+3.0}_{-3.9}$	$z_{\text{drag}}$	1061.54	$1064.2^{+2.8}_{-3.3}$	$H(0.61)$	102.8	$110.6^{+7.8}_{-10}$
$\Omega_\Lambda$	0.649	$0.607^{+0.054}_{-0.048}$	$r_{\text{drag}}$	139.5	$132.2 \pm 8.5$	$D_M(0.61)$	2171	$2057 \pm 130$
$\Omega_m$	0.351	$0.393^{+0.048}_{-0.054}$	$k_D$	0.1489	$0.1583^{+0.0096}_{-0.012}$	$H(2.33)$	260.9	$287^{+27}_{-34}$
$\Omega_m h^2$	0.1754	$0.217^{+0.036}_{-0.056}$	$100\theta_D$	0.1665	$0.1707 \pm 0.0053$	$D_M(2.33)$	5329	$4980 \pm 410$
$\Omega_m h^3$	0.1240	$0.161^{+0.029}_{-0.051}$	$z_{\text{eq}}$	4177	$5159^{+900}_{-1000}$	$\chi^2_{\text{Cooke17}}$	0.045	$1.0 \pm 1.4$
$r_{\text{drag}} h$	98.64	$97.2 \pm 2.1$	$k_{\text{eq}}$	0.01275	$0.0157^{+0.0026}_{-0.0041}$	$\chi^2_{6\text{DF}}$	0.092	$0.42 \pm 0.42$
$Y_P$	0.245282	$0.24533 \pm 0.00021$	$100\theta_{\text{eq}}$	0.726	$0.659^{+0.071}_{-0.091}$	$\chi^2_{\text{MGS}}$	0.982	$0.70 \pm 0.65$
$Y_P^{\text{BBN}}$	0.246608	$0.24666 \pm 0.00021$	$100\theta_{s,\text{eq}}$	0.4042	$0.369^{+0.038}_{-0.048}$	$\chi^2_{\text{DR12BAO}}$	2.18	$3.8 \pm 1.7$
$10^5 \text{D}/\text{H}$	2.638	$2.611 \pm 0.094$	$H(0.15)$	76.89	$80.9^{+4.0}_{-5.3}$	$\chi^2_{\text{BAO}}$	3.26	$5.0 \pm 1.9$
Age/Gyr	12.75	$11.91 \pm 0.99$	$D_M(0.15)$	610.6	$584 \pm 30$			
$z_*$	1093.01	$1095.7^{+3.0}_{-3.7}$	$H(0.38)$	88.6	$94.5^{+5.8}_{-7.6}$			

Best-fit  $\chi^2_{\text{eff}} = 3.30$ ;  $\bar{\chi}^2_{\text{eff}} = 5.96$ ;  $R - 1 = 0.00985$

$\chi^2_{\text{eff}}$ : Abund - D.Cooke2017: 0.04 BAO - 6DF: 0.09 MGS: 0.98 DR12BAO: 2.18

## 2.273 base\_BAO\_Cooke17\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022221	$0.02223 \pm 0.00050$	$r_*$	143.27	$143.0 \pm 3.8$	$D_M(0.38)$	1503.6	$1501 \pm 41$
$\Omega_c h^2$	0.1250	$0.127^{+0.014}_{-0.016}$	$100\theta_*$	1.0507	$1.052 \pm 0.019$	$H(0.51)$	91.32	$91.6^{+3.0}_{-3.3}$
$100\theta_{MC}$	1.0505	$1.052 \pm 0.019$	$D_M(z_*)/\text{Gpc}$	13.64	$13.61 \pm 0.60$	$D_M(0.51)$	1948	$1944 \pm 56$
$H_0$	68.74	$68.9^{+1.5}_{-1.7}$	$z_{\text{drag}}$	1059.93	$1060.0 \pm 1.6$	$H(0.61)$	97.06	$97.4 \pm 3.5$
$\Omega_\Lambda$	0.6870	$0.686 \pm 0.019$	$r_{\text{drag}}$	145.95	$145.7 \pm 3.9$	$D_M(0.61)$	2266	$2262 \pm 67$
$\Omega_m$	0.3130	$0.314 \pm 0.019$	$k_D$	0.14196	$0.1423 \pm 0.0043$	$H(2.33)$	240.6	$242 \pm 12$
$\Omega_m h^2$	0.1479	$0.150^{+0.014}_{-0.016}$	$100\theta_D$	0.16230	$0.1625 \pm 0.0026$	$D_M(2.33)$	5659	$5648 \pm 210$
$\Omega_m h^3$	0.1016	$0.103^{+0.011}_{-0.014}$	$z_{\text{eq}}$	3518	$3559^{+330}_{-390}$	$\chi^2_{\text{Cooke17}}$	0.002	$1.0 \pm 1.4$
$r_{\text{drag}} h$	100.33	$100.3 \pm 1.2$	$k_{\text{eq}}$	0.01074	$0.0109^{+0.0010}_{-0.0012}$	$\chi^2_{\text{JLA}}$	1035.14	$1036.0 \pm 1.5$
$Y_P$	0.245335	$0.24532^{+0.00022}_{-0.00020}$	$100\theta_{\text{eq}}$	0.8001	$0.799^{+0.042}_{-0.049}$	$\chi^2_{6\text{DF}}$	0.0002	$0.051 \pm 0.073$
$Y_P^{\text{BBN}}$	0.246661	$0.24665^{+0.00022}_{-0.00020}$	$100\theta_{s,\text{eq}}$	0.4428	$0.442^{+0.022}_{-0.025}$	$\chi^2_{\text{MGS}}$	1.68	$1.75 \pm 0.66$
$10^5 \text{D}/\text{H}$	2.614	$2.616 \pm 0.094$	$H(0.15)$	74.13	$74.3^{+1.9}_{-2.1}$	$\chi^2_{\text{DR12BAO}}$	2.95	$4.0 \pm 1.6$
Age/Gyr	13.55	$13.52 \pm 0.51$	$D_M(0.15)$	630.6	$630 \pm 16$	$\chi^2_{\text{BAO}}$	4.63	$5.8 \pm 1.8$
$z_*$	1090.55	$1090.7 \pm 1.4$	$H(0.38)$	84.46	$84.7^{+2.6}_{-2.9}$			

Best-fit  $\chi^2_{\text{eff}} = 1039.76$ ;  $\bar{\chi}^2_{\text{eff}} = 1042.72$ ;  $R - 1 = 0.00647$

$\chi^2_{\text{eff}}$ : Abund - D.Cooke2017: 0.00 BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 2.95 SN - JLA Pantheon18: 1035.14



2.274    base\_BAO\_Cooke17\_JLA

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02217	$0.02227 \pm 0.00050$	$z_*$	1091.08	$1091.4^{+1.7}_{-1.9}$	$D_{\text{M}}(0.38)$	1493	$1481 \pm 50$
$\Omega_{\text{c}}h^2$	0.1306	$0.136^{+0.018}_{-0.024}$	$r_*$	141.9	$140.8 \pm 4.9$	$H(0.51)$	92.31	$93.4^{+3.7}_{-4.5}$
$100\theta_{\text{MC}}$	1.0571	$1.062 \pm 0.024$	$100\theta_*$	1.0573	$1.062 \pm 0.024$	$D_{\text{M}}(0.51)$	1932	$1916 \pm 68$
$\alpha_{\text{JLA}}$	0.1411	$0.1410 \pm 0.0066$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.43	$13.28 \pm 0.76$	$H(0.61)$	98.19	$99.4^{+4.2}_{-5.1}$
$\beta_{\text{JLA}}$	3.096	$3.097 \pm 0.081$	$z_{\text{drag}}$	1060.24	$1060.8 \pm 1.9$	$D_{\text{M}}(0.61)$	2247	$2228 \pm 82$
$H_0$	69.08	$69.6^{+1.8}_{-2.2}$	$r_{\text{drag}}$	144.6	$143.5 \pm 5.0$	$H(2.33)$	244.8	$249^{+14}_{-17}$
$\Omega_{\Lambda}$	0.6786	$0.673^{+0.028}_{-0.026}$	$k_{\text{D}}$	0.1434	$0.1448^{+0.0052}_{-0.0061}$	$D_{\text{M}}(2.33)$	5590	$5535 \pm 260$
$\Omega_{\text{m}}$	0.3214	$0.327^{+0.026}_{-0.028}$	$100\theta_{\text{D}}$	0.16323	$0.1638 \pm 0.0032$	$\chi^2_{\text{Cooke17}}$	0.00	$1.0 \pm 1.4$
$\Omega_{\text{m}}h^2$	0.1534	$0.159^{+0.018}_{-0.024}$	$z_{\text{eq}}$	3650	$3784^{+400}_{-600}$	$\chi^2_{\text{JLA}}$	695.68	$698.5 \pm 2.7$
$\Omega_{\text{m}}h^3$	0.1060	$0.111^{+0.014}_{-0.020}$	$k_{\text{eq}}$	0.01114	$0.0115^{+0.0013}_{-0.0017}$	$\chi^2_{6\text{DF}}$	0.0085	$0.08 \pm 0.11$
$r_{\text{drag}}h$	99.89	$99.8 \pm 1.4$	$100\theta_{\text{eq}}$	0.783	$0.774^{+0.054}_{-0.061}$	$\chi^2_{\text{MGS}}$	1.47	$1.54 \pm 0.71$
$Y_{\text{P}}$	0.245314	$0.24534^{+0.00023}_{-0.00020}$	$100\theta_{\text{s,eq}}$	0.4342	$0.429^{+0.028}_{-0.032}$	$\chi^2_{\text{DR12BAO}}$	2.73	$3.7 \pm 1.5$
$Y_{\text{P}}^{\text{BBN}}$	0.246640	$0.24667^{+0.00023}_{-0.00020}$	$H(0.15)$	74.64	$75.3^{+2.3}_{-2.7}$	$\chi^2_{\text{BAO}}$	4.21	$5.3 \pm 1.8$
$10^5\text{D}/\text{H}$	2.623	$2.608 \pm 0.094$	$D_{\text{M}}(0.15)$	626.9	$622 \pm 19$			
Age/Gyr	13.38	$13.25 \pm 0.64$	$H(0.38)$	85.27	$86.2^{+3.1}_{-3.8}$			

Best-fit  $\chi^2_{\text{eff}} = 699.89$ ;  $\bar{\chi}^2_{\text{eff}} = 704.85$ ;  $R - 1 = 0.01324$   
 $\chi^2_{\text{eff}}$ : Abund - D.Cooke2017: 0.00 BAO - 6DF: 0.01 MGS: 1.47 DR12BAO: 2.73 SN - JLA December\_2013: 695.68

2.275    base\_BAO\_Cooke17\_Pantheon18\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02219	$0.02222^{+0.00046}_{-0.00053}$	$r_*$	145.15	$145.11 \pm 0.62$	$D_{\text{M}}(0.38)$	1523.6	$1523 \pm 11$
$\Omega_{\text{c}}h^2$	0.11776	$0.1178 \pm 0.0016$	$100\theta_*$	1.04111	$1.04111 \pm 0.00062$	$H(0.51)$	89.777	$89.80^{+0.39}_{-0.44}$
$100\theta_{\text{MC}}$	1.04091	$1.04091 \pm 0.00062$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.942	$13.938 \pm 0.061$	$D_{\text{M}}(0.51)$	1974.9	$1975 \pm 13$
$H_0$	68.00	$68.00 \pm 0.64$	$z_{\text{drag}}$	1059.36	$1059.4 \pm 1.2$	$H(0.61)$	95.327	$95.35^{+0.36}_{-0.42}$
$\Omega_{\Lambda}$	0.6959	$0.6956 \pm 0.0084$	$r_{\text{drag}}$	147.89	$147.84 \pm 0.77$	$D_{\text{M}}(0.61)$	2299.0	$2299 \pm 15$
$\Omega_{\text{m}}$	0.3041	$0.3044 \pm 0.0084$	$k_{\text{D}}$	0.13989	$0.1400 \pm 0.0011$	$H(2.33)$	234.90	$235.0 \pm 1.3$
$\Omega_{\text{m}}h^2$	0.14059	$0.1407 \pm 0.0018$	$100\theta_{\text{D}}$	0.16108	$0.16105 \pm 0.00071$	$D_{\text{M}}(2.33)$	5766.1	$5765^{+23}_{-21}$
$\Omega_{\text{m}}h^3$	0.09560	$0.0957 \pm 0.0011$	$z_{\text{eq}}$	3344.3	$3347 \pm 43$	$\chi^2_{\text{Cooke17}}$	0.00	$0.99 \pm 1.3$
$r_{\text{drag}}h$	100.56	$100.5 \pm 1.1$	$k_{\text{eq}}$	0.010207	$0.01021 \pm 0.00013$	$\chi^2_{\text{JLA}}$	1034.789	$1034.94 \pm 0.28$
$Y_{\text{P}}$	0.245322	$0.24532 \pm 0.00021$	$100\theta_{\text{eq}}$	0.8233	$0.8230 \pm 0.0073$	$\chi^2_{6\text{DF}}$	0.0002	$0.051 \pm 0.072$
$Y_{\text{P}}^{\text{BBN}}$	0.246648	$0.24665 \pm 0.00022$	$100\theta_{\text{s,eq}}$	0.45472	$0.4546 \pm 0.0039$	$\chi^2_{\text{MGS}}$	1.75	$1.81 \pm 0.68$
$10^5\text{D}/\text{H}$	2.620	$2.617 \pm 0.094$	$H(0.15)$	73.19	$73.20 \pm 0.56$	$\chi^2_{\text{DR12BAO}}$	3.42	$4.2 \pm 1.2$
Age/Gyr	13.806	$13.803^{+0.055}_{-0.049}$	$D_{\text{M}}(0.15)$	638.1	$638.1 \pm 5.4$	$\chi^2_{\text{prior}}$	0.00	$1.1 \pm 1.6$
$z_*$	1089.95	$1089.93 \pm 0.62$	$H(0.38)$	83.148	$83.16 \pm 0.45$	$\chi^2_{\text{BAO}}$	5.17	$6.1 \pm 1.3$

Best-fit  $\chi^2_{\text{eff}} = 1039.96$ ;  $\bar{\chi}^2_{\text{eff}} = 1043.12$ ;  $R - 1 = 0.00669$   
 $\chi^2_{\text{eff}}$ : Abund - D.Cooke2017: 0.00 BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.42 SN - JLA Pantheon18: 1034.79



## 2.276 base\_BAO\_Cooke17\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02216	$0.02224^{+0.00047}_{-0.00053}$	$r_*$	145.14	$145.04 \pm 0.63$	$D_{\text{M}}(0.38)$	1525.0	$1524 \pm 12$
$\Omega_{\text{c}}h^2$	0.11790	$0.1180 \pm 0.0017$	$100\theta_*$	1.04110	$1.04111 \pm 0.00059$	$H(0.51)$	89.733	$89.79 \pm 0.42$
$100\theta_{\text{MC}}$	1.04088	$1.04091 \pm 0.00059$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.941	$13.932 \pm 0.062$	$D_{\text{M}}(0.51)$	1976.5	$1976 \pm 14$
$H_0$	67.92	$67.95 \pm 0.67$	$z_{\text{drag}}$	1059.32	$1059.5 \pm 1.2$	$H(0.61)$	95.290	$95.35 \pm 0.40$
$\Omega_{\Lambda}$	0.6950	$0.6946 \pm 0.0089$	$r_{\text{drag}}$	147.88	$147.77 \pm 0.78$	$D_{\text{M}}(0.61)$	2300.8	$2300 \pm 15$
$\Omega_{\text{m}}$	0.3050	$0.3054 \pm 0.0089$	$k_{\text{D}}$	0.13988	$0.1401 \pm 0.0011$	$H(2.33)$	234.96	$235.1 \pm 1.3$
$\Omega_{\text{m}}h^2$	0.14071	$0.1409 \pm 0.0019$	$100\theta_{\text{D}}$	0.16111	$0.16102 \pm 0.00072$	$D_{\text{M}}(2.33)$	5767.8	$5764 \pm 22$
$\Omega_{\text{m}}h^3$	0.09556	$0.0957^{+0.0010}_{-0.0011}$	$z_{\text{eq}}$	3347.0	$3352 \pm 44$	$\chi^2_{\text{Cooke17}}$	0.01	$1.0 \pm 1.5$
$r_{\text{drag}}h$	100.44	$100.4 \pm 1.2$	$k_{\text{eq}}$	0.010216	$0.01023 \pm 0.00014$	$\chi^2_{6\text{DF}}$	0.0001	$0.057 \pm 0.079$
$Y_{\text{P}}$	0.245311	$0.24533 \pm 0.00022$	$100\theta_{\text{eq}}$	0.8227	$0.8221 \pm 0.0076$	$\chi^2_{\text{MGS}}$	1.68	$1.74 \pm 0.70$
$Y_{\text{P}}^{\text{BBN}}$	0.246637	$0.24666 \pm 0.00022$	$100\theta_{\text{s,eq}}$	0.45444	$0.4541 \pm 0.0040$	$\chi^2_{\text{DR12BAO}}$	3.48	$4.4 \pm 1.5$
$10^5\text{D}/\text{H}$	2.625	$2.613 \pm 0.095$	$H(0.15)$	73.12	$73.16 \pm 0.59$	$\chi^2_{\text{prior}}$	0.00	$0.97 \pm 1.3$
Age/Gyr	13.810	$13.802^{+0.055}_{-0.050}$	$D_{\text{M}}(0.15)$	638.8	$638.5 \pm 5.7$	$\chi^2_{\text{BAO}}$	5.16	$6.2 \pm 1.4$
$z_*$	1090.00	$1089.92 \pm 0.64$	$H(0.38)$	83.096	$83.14 \pm 0.47$			

Best-fit  $\chi^2_{\text{eff}} = 5.17$ ;  $\bar{\chi}^2_{\text{eff}} = 8.20$ ;  $R - 1 = 0.00680$

$\chi^2_{\text{eff}}$ : Abund - D.Cooke2017: 0.01 BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.48



### 3 Alens

#### 3.1 base\_Alens\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022700	$0.02260 \pm 0.00029$	$\sigma_8 \Omega_m^{0.5}$	0.4291	$0.432 \pm 0.016$	$100\theta_{s,eq}$	0.4579	$0.4569 \pm 0.0055$
$\Omega_c h^2$	0.11613	$0.1166 \pm 0.0025$	$\sigma_8 \Omega_m^{0.25}$	0.5840	$0.586 \pm 0.015$	$H(0.15)$	74.25	$74.0 \pm 1.0$
$100\theta_{MC}$	1.04143	$1.04139 \pm 0.00053$	$\sigma_8/h^{0.5}$	0.9556	$0.958 \pm 0.020$	$D_M(0.15)$	628.1	$630.4 \pm 9.8$
$\tau$	0.0519	$0.0500^{+0.0087}_{-0.0074}$	$r_{drag}h$	102.21	$101.8 \pm 2.0$	$H(0.38)$	84.01	$83.84^{+0.72}_{-0.80}$
$A_L$	1.263	$1.243 \pm 0.096$	$\langle d^2 \rangle^{1/2}$	2.656	$2.640 \pm 0.077$	$D_M(0.38)$	1502.8	$1507 \pm 20$
$\ln(10^{10} A_s)$	3.0300	$3.027^{+0.018}_{-0.016}$	$z_{re}$	7.30	$7.11^{+0.93}_{-0.71}$	$H(0.51)$	90.52	$90.39^{+0.57}_{-0.65}$
$n_s$	0.9769	$0.9741 \pm 0.0071$	$10^9 A_s$	2.0697	$2.064^{+0.038}_{-0.033}$	$D_M(0.51)$	1949.9	$1955 \pm 23$
$y_{cal}$	0.99986	$1.0000 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8656	$1.867 \pm 0.014$	$H(0.61)$	95.99	$95.88^{+0.46}_{-0.54}$
$A_{217}^{CIB}$	42.5	$45 \pm 7$	$D_{40}$	1203.3	$1209 \pm 17$	$D_M(0.61)$	2271.5	$2277 \pm 25$
$\xi^{tSZ \times CIB}$	0.999	$> 0.417$	$D_{220}$	5737.0	$5736 \pm 42$	$H(2.33)$	234.39	$234.6 \pm 1.4$
$A_{143}^{tSZ}$	6.83	$5.6^{+2.1}_{-1.8}$	$D_{810}$	2527.7	$2527 \pm 14$	$D_M(2.33)$	5733.4	$5739^{+23}_{-21}$
$A_{100}^{PS}$	238.2	$250 \pm 30$	$D_{1420}$	815.8	$814.3 \pm 5.1$	$f\sigma_8(0.15)$	0.4351	$0.437 \pm 0.015$
$A_{143}^{PS}$	48.5	$42 \pm 8$	$D_{2000}$	233.15	$232.3 \pm 2.0$	$\sigma_8(0.15)$	0.7364	$0.7361^{+0.0096}_{-0.0086}$
$A_{143 \times 217}^{PS}$	56.6	$41 \pm 9$	$n_{s,0.002}$	0.9769	$0.9741 \pm 0.0071$	$f\sigma_8(0.38)$	0.4575	$0.459 \pm 0.012$
$A_{217}^{PS}$	123.0	$115 \pm 10$	$Y_P$	0.245516	$0.24549^{+0.00010}_{-0.00012}$	$\sigma_8(0.38)$	0.6550	$0.6543^{+0.0075}_{-0.0066}$
$A^{kSZ}$	0.00	$< 3.28$	$Y_P^{BBN}$	0.246843	$0.24681^{+0.00010}_{-0.00012}$	$f\sigma_8(0.51)$	0.4584	$0.459 \pm 0.011$
$A_{100}^{dustTT}$	8.91	$8.9 \pm 1.8$	$10^5 D/H$	2.527	$2.544 \pm 0.052$	$\sigma_8(0.51)$	0.6139	$0.6131^{+0.0067}_{-0.0058}$
$A_{143}^{dustTT}$	10.60	$10.5 \pm 1.8$	Age/Gyr	13.7323	$13.745^{+0.051}_{-0.046}$	$f\sigma_8(0.61)$	0.4552	$0.4559 \pm 0.0094$
$A_{143 \times 217}^{dustTT}$	19.58	$17.9 \pm 3.3$	$z_*$	1089.18	$1089.34 \pm 0.52$	$\sigma_8(0.61)$	0.5847	$0.5838^{+0.0062}_{-0.0053}$
$A_{217}^{dustTT}$	95.6	$93.6 \pm 7.3$	$r_*$	145.19	$145.13 \pm 0.52$	$f\sigma_8(2.33)$	0.29562	$0.2951^{+0.0029}_{-0.0025}$
$c_{100}$	0.99973	$0.99962 \pm 0.00062$	$100\theta_*$	1.04157	$1.04156 \pm 0.00051$	$\sigma_8(2.33)$	0.30570	$0.3050^{+0.0029}_{-0.0025}$
$c_{217}$	0.99813	$0.99817 \pm 0.00063$	$D_M(z_*)/\text{Gpc}$	13.9391	$13.934 \pm 0.048$	$f_{2000}^{143}$	25.13	$27 \pm 3$
$H_0$	69.18	$68.9 \pm 1.2$	$z_{drag}$	1060.43	$1060.23 \pm 0.56$	$f_{2000}^{143 \times 217}$	29.23	$30.0 \pm 2.4$
$\Omega_\Lambda$	0.7085	$0.705 \pm 0.015$	$r_{drag}$	147.75	$147.73 \pm 0.50$	$f_{2000}^{217}$	103.90	$105.0 \pm 2.2$
$\Omega_m$	0.2915	$0.295 \pm 0.015$	$k_D$	0.14041	$0.14037 \pm 0.00052$	$\chi_{small}^2$	395.66	$396.8 \pm 1.6$
$\Omega_m h^2$	0.13947	$0.1399 \pm 0.0023$	$100\theta_D$	0.160513	$0.16063 \pm 0.00030$	$\chi_{lowl}^2$	21.34	$21.8 \pm 1.1$
$\Omega_m h^3$	0.09648	$0.09638 \pm 0.00050$	$z_{eq}$	3318	$3328 \pm 55$	$\chi_{plik}^2$	752.9	$767.3 \pm 5.6$
$\sigma_8$	0.7948	$0.795 \pm 0.011$	$k_{eq}$	0.010126	$0.01016 \pm 0.00017$	$\chi_{prior}^2$	0.97	$7.1 \pm 3.5$
$S_8$	0.7834	$0.788 \pm 0.029$	$100\theta_{eq}$	0.8301	$0.828 \pm 0.011$	$\chi_{CMB}^2$	1169.9	$1186.0 \pm 5.8$

Best-fit  $\chi_{eff}^2 = 1170.89$ ;  $\bar{\chi}_{eff}^2 = 1193.04$ ;  $R - 1 = 0.00760$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.66 commander\_dx12.v3.2.29: 21.34 plik\_rd12\_HM.v22\_TT: 752.92



### 3.2 base\_Alens\_plikHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022567	$0.02249 \pm 0.00022$	$\sigma_8/h^{0.5}$	0.9675	$0.967 \pm 0.013$	$D_M(0.38)$	1515.3	$1517 \pm 10$
$\Omega_c h^2$	0.11772	$0.1179 \pm 0.0013$	$r_{\text{drag}} h$	100.91	$100.8 \pm 1.0$	$H(0.51)$	90.149	$90.08 \pm 0.33$
$100\theta_{\text{MC}}$	1.041226	$1.04122 \pm 0.00043$	$\langle d^2 \rangle^{1/2}$	2.652	$2.630 \pm 0.076$	$D_M(0.51)$	1964.6	$1967 \pm 12$
$\tau$	0.0507	$0.0492^{+0.0086}_{-0.0072}$	$z_{\text{re}}$	7.24	$7.07^{+0.93}_{-0.71}$	$H(0.61)$	95.690	$95.62 \pm 0.28$
$A_L$	1.231	$1.211 \pm 0.078$	$10^9 A_s$	2.0732	$2.066^{+0.037}_{-0.032}$	$D_M(0.61)$	2287.5	$2290 \pm 13$
$\ln(10^{10} A_s)$	3.0317	$3.028^{+0.018}_{-0.015}$	$10^9 A_s e^{-2\tau}$	1.8731	$1.872 \pm 0.011$	$H(2.33)$	235.28	$235.31 \pm 0.79$
$n_s$	0.97299	$0.9709 \pm 0.0044$	$D_{40}$	1211.7	$1215 \pm 13$	$D_M(2.33)$	5745.9	$5749 \pm 14$
$y_{\text{cal}}$	0.999996	$0.99998 \pm 0.0025$	$D_{220}$	5730.6	$5730 \pm 40$	$f\sigma_8(0.15)$	0.4444	$0.4445 \pm 0.0084$
$A_{217}^{\text{CIB}}$	42.8	$45 \pm 7$	$D_{810}$	2530.5	$2528 \pm 14$	$\sigma_8(0.15)$	0.7405	$0.7392^{+0.0078}_{-0.0067}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.999	$> 0.406$	$D_{1420}$	815.53	$813.8 \pm 5.0$	$f\sigma_8(0.38)$	0.4648	$0.4646 \pm 0.0072$
$A_{143}^{\text{tSZ}}$	6.67	$5.6^{+2.1}_{-1.8}$	$D_{2000}$	232.70	$231.7 \pm 1.8$	$\sigma_8(0.38)$	0.6576	$0.6563^{+0.0065}_{-0.0055}$
$A_{100}^{\text{PS}}$	239.7	$251 \pm 30$	$n_{s,0.002}$	0.97299	$0.9709 \pm 0.0044$	$f\sigma_8(0.51)$	0.4647	$0.4643 \pm 0.0065$
$A_{143}^{\text{PS}}$	50.3	$43 \pm 8$	$Y_{\text{P}}$	0.245468	$0.245441 \pm 0.000086$	$\sigma_8(0.51)$	0.6159	$0.6146^{+0.0060}_{-0.0051}$
$A_{143 \times 217}^{\text{PS}}$	57.4	$42 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	0.246795	$0.246767 \pm 0.000087$	$f\sigma_8(0.61)$	0.4606	$0.4602 \pm 0.0060$
$A_{217}^{\text{PS}}$	123.5	$115 \pm 10$	$10^5 D/H$	2.5502	$2.564 \pm 0.040$	$\sigma_8(0.61)$	0.5863	$0.5851^{+0.0057}_{-0.0048}$
$A^{\text{kSZ}}$	0.00	$< 3.44$	Age/Gyr	13.7589	$13.767 \pm 0.031$	$f\sigma_8(2.33)$	0.29604	$0.2954^{+0.0028}_{-0.0024}$
$A_{100}^{\text{dustTT}}$	8.85	$8.9 \pm 1.8$	$z_*$	1089.476	$1089.58 \pm 0.33$	$\sigma_8(2.33)$	0.30567	$0.3049^{+0.0028}_{-0.0024}$
$A_{143}^{\text{dustTT}}$	10.67	$10.5 \pm 1.8$	$r_*$	144.872	$144.89 \pm 0.32$	$f_{2000}^{143}$	25.87	$27 \pm 3$
$A_{143 \times 217}^{\text{dustTT}}$	19.73	$18.0 \pm 3.2$	$100\theta_*$	1.041387	$1.04139 \pm 0.00042$	$f_{2000}^{143 \times 217}$	29.80	$30.5 \pm 2.2$
$A_{217}^{\text{dustTT}}$	95.9	$93.7 \pm 7.2$	$D_M(z_*)/\text{Gpc}$	13.9115	$13.913 \pm 0.031$	$f_{2000}^{217}$	104.42	$105.5 \pm 2.0$
$c_{100}$	0.99966	$0.99961 \pm 0.00061$	$z_{\text{drag}}$	1060.238	$1060.07 \pm 0.48$	$\chi_{\text{small}}^2$	395.68	$396.8 \pm 1.6$
$c_{217}$	0.99814	$0.99819 \pm 0.00064$	$r_{\text{drag}}$	147.477	$147.52 \pm 0.34$	$\chi_{\text{lowl}}^2$	21.89	$22.23 \pm 0.80$
$H_0$	68.43	$68.31 \pm 0.60$	$k_{\text{D}}$	0.140607	$0.14051 \pm 0.00045$	$\chi_{\text{plik}}^2$	752.7	$766.3 \pm 5.3$
$\Omega_{\Lambda}$	0.6990	$0.6977 \pm 0.0076$	$100\theta_{\text{D}}$	0.160609	$0.16071 \pm 0.00027$	$\chi_{6\text{DF}}^2$	0.0076	$0.046 \pm 0.066$
$\Omega_{\text{m}}$	0.3010	$0.3023 \pm 0.0076$	$z_{\text{eq}}$	3352.4	$3354 \pm 29$	$\chi_{\text{MGS}}^2$	1.97	$1.95 \pm 0.64$
$\Omega_{\text{m}} h^2$	0.14093	$0.1410 \pm 0.0012$	$k_{\text{eq}}$	0.010232	$0.010238 \pm 0.000089$	$\chi_{\text{DR12BAO}}^2$	3.382	$4.05 \pm 0.96$
$\Omega_{\text{m}} h^3$	0.096432	$0.09632 \pm 0.00049$	$100\theta_{\text{eq}}$	0.8231	$0.8226 \pm 0.0055$	$\chi_{\text{prior}}^2$	1.02	$7.1 \pm 3.5$
$\sigma_8$	0.8003	$0.7990^{+0.0088}_{-0.0076}$	$100\theta_{s,\text{eq}}$	0.45435	$0.4541 \pm 0.0028$	$\chi_{\text{BAO}}^2$	5.35	$6.0 \pm 1.2$
$S_8$	0.8016	$0.802 \pm 0.016$	$H(0.15)$	73.60	$73.50 \pm 0.52$	$\chi_{\text{CMB}}^2$	1170.2	$1185.3 \pm 5.6$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4391	$0.4393 \pm 0.0088$	$D_M(0.15)$	634.32	$635.3 \pm 5.0$			
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5928	$0.5924 \pm 0.0088$	$H(0.38)$	83.533	$83.45 \pm 0.40$			

Best-fit  $\chi_{\text{eff}}^2 = 1176.61$ ;  $\bar{\chi}_{\text{eff}}^2 = 1198.50$ ;  $R - 1 = 0.01593$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.01 MGS: 1.97 DR12BAO: 3.38 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.68 commander\_dx12\_v3.2.29: 21.89 plik\_rd12\_HM\_v22\_TT: 752.66



### 3.3 base\_Alens\_plikHM\_TT\_lowl\_lowE\_post\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.023009	$0.02292 \pm 0.00027$	$\sigma_8 \Omega_m^{0.25}$	0.5656	$0.568 \pm 0.012$	$D_M(0.15)$	615.3	$617.4 \pm 8.1$
$\Omega_c h^2$	0.11302	$0.1135 \pm 0.0020$	$\sigma_8/h^{0.5}$	0.9302	$0.933 \pm 0.018$	$H(0.38)$	85.05	$84.88 \pm 0.68$
$100\theta_{MC}$	1.04193	$1.04189 \pm 0.00051$	$r_{drag}h$	104.90	$104.5 \pm 1.7$	$D_M(0.38)$	1476.7	$1481 \pm 17$
$\tau$	0.0520	$0.0520 \pm 0.0087$	$\langle d^2 \rangle^{1/2}$	2.680	$2.668 \pm 0.075$	$H(0.51)$	91.37	$91.23 \pm 0.56$
$A_L$	1.351	$1.329 \pm 0.093$	$z_{re}$	7.21	$7.20^{+0.88}_{-0.73}$	$D_M(0.51)$	1919.0	$1924 \pm 20$
$\ln(10^{10} A_s)$	3.0238	$3.024 \pm 0.018$	$10^9 A_s$	2.0568	$2.058 \pm 0.037$	$H(0.61)$	96.677	$96.56 \pm 0.47$
$n_s$	0.9852	$0.9826 \pm 0.0063$	$10^9 A_s e^{-2\tau}$	1.8537	$1.854 \pm 0.013$	$D_M(0.61)$	2238.0	$2243 \pm 21$
$y_{cal}$	0.99995	$1.0000 \pm 0.0026$	$D_{40}$	1187.1	$1192 \pm 15$	$H(2.33)$	232.71	$232.9 \pm 1.2$
$A_{217}^{CIB}$	41.8	$44 \pm 7$	$D_{220}$	5758.1	$5755 \pm 41$	$D_M(2.33)$	5704.7	$5710 \pm 20$
$\xi^{tSZ \times CIB}$	0.999	$> 0.442$	$D_{810}$	2525.0	$2523 \pm 14$	$f\sigma_8(0.15)$	0.4159	$0.419 \pm 0.012$
$A_{143}^{tSZ}$	6.87	$5.8 \pm 1.9$	$D_{1420}$	817.4	$815.7 \pm 5.2$	$\sigma_8(0.15)$	0.7269	$0.7278 \pm 0.0088$
$A_{100}^{PS}$	233.7	$245 \pm 30$	$D_{2000}$	234.60	$233.7 \pm 2.0$	$f\sigma_8(0.38)$	0.4419	$0.444 \pm 0.011$
$A_{143}^{PS}$	44.0	$38 \pm 8$	$n_{s,0.002}$	0.9852	$0.9826 \pm 0.0063$	$\sigma_8(0.38)$	0.6486	$0.6491 \pm 0.0071$
$A_{143 \times 217}^{PS}$	53.2	$39 \pm 9$	$Y_P$	0.245654	$0.24562^{+0.00011}_{-0.00013}$	$f\sigma_8(0.51)$	0.4450	$0.4467 \pm 0.0093$
$A_{217}^{PS}$	121.0	$114.3 \pm 9.8$	$Y_P^{BBN}$	0.246982	$0.24694^{+0.00011}_{-0.00013}$	$\sigma_8(0.51)$	0.6088	$0.6091 \pm 0.0064$
$A^{kSZ}$	0.00	$< 2.80$	$10^5 D/H$	2.4714	$2.488 \pm 0.047$	$f\sigma_8(0.61)$	0.4433	$0.4448 \pm 0.0084$
$A_{100}^{dustTT}$	8.96	$8.9 \pm 1.8$	Age/Gyr	13.6707	$13.683 \pm 0.044$	$\sigma_8(0.61)$	0.5805	$0.5807 \pm 0.0059$
$A_{143}^{dustTT}$	10.61	$10.4 \pm 1.8$	$z_*$	1088.536	$1088.69 \pm 0.44$	$f\sigma_8(2.33)$	0.29429	$0.2943 \pm 0.0028$
$A_{143 \times 217}^{dustTT}$	19.33	$17.8 \pm 3.3$	$r_*$	145.770	$145.73 \pm 0.46$	$\sigma_8(2.33)$	0.30530	$0.3051 \pm 0.0028$
$A_{217}^{dustTT}$	95.4	$93.7 \pm 7.5$	$100\theta_*$	1.04205	$1.04203 \pm 0.00050$	$f_{2000}^{143}$	23.14	$25 \pm 3$
$c_{100}$	0.99973	$0.99964 \pm 0.00061$	$D_M(z_*)/Gpc$	13.9887	$13.985 \pm 0.042$	$f_{2000}^{143 \times 217}$	27.59	$28.4 \pm 2.3$
$c_{217}$	0.99813	$0.99813 \pm 0.00063$	$z_{drag}$	1060.89	$1060.72 \pm 0.54$	$f_{2000}^{217}$	102.52	$103.7 \pm 2.1$
$H_0$	70.76	$70.5 \pm 1.0$	$r_{drag}$	148.252	$148.24 \pm 0.45$	$\chi_{small}^2$	395.66	$396.8 \pm 1.6$
$\Omega_\Lambda$	0.7270	$0.724 \pm 0.012$	$k_D$	0.14010	$0.14005 \pm 0.00050$	$\chi_{lowl}^2$	20.46	$20.80 \pm 0.67$
$\Omega_m$	0.2730	$0.276 \pm 0.012$	$100\theta_D$	0.160297	$0.16040 \pm 0.00028$	$\chi_{plik}^2$	755.6	$769.6 \pm 6.0$
$\Omega_m h^2$	0.13668	$0.1370 \pm 0.0019$	$z_{eq}$	3250.7	$3259 \pm 46$	$\chi_{H073p45}^2$	2.63	$3.5 \pm 2.2$
$\Omega_m h^3$	0.09671	$0.09661 \pm 0.00051$	$k_{eq}$	0.009922	$0.00995 \pm 0.00014$	$\chi_{prior}^2$	1.01	$7.1 \pm 3.5$
$\sigma_8$	0.7825	$0.784 \pm 0.010$	$100\theta_{eq}$	0.8441	$0.8423 \pm 0.0094$	$\chi_{CMB}^2$	1171.7	$1187.2 \pm 6.0$
$S_8$	0.7464	$0.752 \pm 0.024$	$100\theta_{s,eq}$	0.46497	$0.4641 \pm 0.0048$			
$\sigma_8 \Omega_m^{0.5}$	0.4088	$0.412 \pm 0.013$	$H(0.15)$	75.63	$75.41 \pm 0.89$			

Best-fit  $\chi_{eff}^2 = 1175.32$ ;  $\bar{\chi}_{eff}^2 = 1197.77$ ;  $R - 1 = 0.01750$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.66 commander\_dx12\_v3.2\_29: 20.46 plik\_rd12\_HM\_v22\_TT: 755.56 Hubble - H073p45: 2.63



### 3.4 base\_Alens\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02261 \pm 0.00029$	$\sigma_8 \Omega_m^{0.5}$	$0.433 \pm 0.016$	$100\theta_{s,eq}$	$0.4571 \pm 0.0056$
$\Omega_c h^2$	$0.1166 \pm 0.0025$	$\sigma_8 \Omega_m^{0.25}$	$0.587 \pm 0.014$	$H(0.15)$	$74.1 \pm 1.0$
$100\theta_{MC}$	$1.04141 \pm 0.00053$	$\sigma_8/h^{0.5}$	$0.960 \pm 0.020$	$D_M(0.15)$	$630.1 \pm 9.9$
$\tau$	$0.0533^{+0.0038}_{-0.0077}$	$r_{drag}h$	$101.9 \pm 2.0$	$H(0.38)$	$83.86^{+0.72}_{-0.81}$
$A_L$	$1.236^{+0.089}_{-0.10}$	$\langle d^2 \rangle^{1/2}$	$2.640 \pm 0.077$	$D_M(0.38)$	$1507 \pm 20$
$\ln(10^{10} A_s)$	$3.033^{+0.011}_{-0.015}$	$z_{re}$	$7.46^{+0.38}_{-0.81}$	$H(0.51)$	$90.40^{+0.58}_{-0.66}$
$n_s$	$0.9744 \pm 0.0071$	$10^9 A_s$	$2.077^{+0.023}_{-0.032}$	$D_M(0.51)$	$1955 \pm 24$
$y_{cal}$	$1.0000 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.867 \pm 0.014$	$H(0.61)$	$95.89^{+0.46}_{-0.54}$
$A_{217}^{CIB}$	$45 \pm 7$	$D_{40}$	$1209 \pm 17$	$D_M(0.61)$	$2277 \pm 26$
$\xi^{tSZ \times CIB}$	$> 0.418$	$D_{220}$	$5736 \pm 42$	$H(2.33)$	$234.6 \pm 1.4$
$A_{143}^{tSZ}$	$5.6^{+2.1}_{-1.8}$	$D_{810}$	$2527 \pm 14$	$D_M(2.33)$	$5738^{+24}_{-21}$
$A_{100}^{PS}$	$250 \pm 30$	$D_{1420}$	$814.4 \pm 5.0$	$f\sigma_8(0.15)$	$0.438 \pm 0.015$
$A_{143}^{PS}$	$42 \pm 8$	$D_{2000}$	$232.3 \pm 2.0$	$\sigma_8(0.15)$	$0.7383 \pm 0.0083$
$A_{143 \times 217}^{PS}$	$41 \pm 9$	$n_{s,0.002}$	$0.9744 \pm 0.0071$	$f\sigma_8(0.38)$	$0.460 \pm 0.012$
$A_{217}^{PS}$	$114.9 \pm 9.9$	$Y_P$	$0.24549^{+0.00010}_{-0.00012}$	$\sigma_8(0.38)$	$0.6563 \pm 0.0061$
$A^{kSZ}$	$< 3.26$	$Y_P^{BBN}$	$0.24681^{+0.00010}_{-0.00012}$	$f\sigma_8(0.51)$	$0.461 \pm 0.010$
$A_{100}^{dustTT}$	$8.9 \pm 1.8$	$10^5 D/H$	$2.543 \pm 0.052$	$\sigma_8(0.51)$	$0.6150 \pm 0.0053$
$A_{143}^{dustTT}$	$10.5 \pm 1.8$	Age/Gyr	$13.743^{+0.052}_{-0.046}$	$f\sigma_8(0.61)$	$0.4571 \pm 0.0092$
$A_{143 \times 217}^{dustTT}$	$17.9 \pm 3.3$	$z_*$	$1089.33 \pm 0.53$	$\sigma_8(0.61)$	$0.5857 \pm 0.0048$
$A_{217}^{dustTT}$	$93.7 \pm 7.3$	$r_*$	$145.14 \pm 0.53$	$f\sigma_8(2.33)$	$0.2960^{+0.0019}_{-0.0023}$
$c_{100}$	$0.99962 \pm 0.00061$	$100\theta_*$	$1.04157 \pm 0.00051$	$\sigma_8(2.33)$	$0.3060^{+0.0017}_{-0.0024}$
$c_{217}$	$0.99818 \pm 0.00063$	$D_M(z_*)/\text{Gpc}$	$13.935 \pm 0.048$	$f_{2000}^{143}$	$27 \pm 3$
$H_0$	$69.0 \pm 1.2$	$z_{drag}$	$1060.24 \pm 0.56$	$f_{2000}^{143 \times 217}$	$29.9 \pm 2.4$
$\Omega_\Lambda$	$0.705 \pm 0.015$	$r_{drag}$	$147.74 \pm 0.51$	$f_{2000}^{217}$	$105.0 \pm 2.2$
$\Omega_m$	$0.295 \pm 0.015$	$k_D$	$0.14036 \pm 0.00052$	$\chi_{simall}^2$	$396.4 \pm 1.1$
$\Omega_m h^2$	$0.1398 \pm 0.0023$	$100\theta_D$	$0.16063 \pm 0.00030$	$\chi_{lowl}^2$	$21.9 \pm 1.1$
$\Omega_m h^3$	$0.09638 \pm 0.00050$	$z_{eq}$	$3326 \pm 55$	$\chi_{plik}^2$	$767.3 \pm 5.6$
$\sigma_8$	$0.797 \pm 0.010$	$k_{eq}$	$0.01015 \pm 0.00017$	$\chi_{prior}^2$	$7.1 \pm 3.5$
$S_8$	$0.790 \pm 0.029$	$100\theta_{eq}$	$0.828 \pm 0.011$	$\chi_{CMB}^2$	$1185.5 \pm 5.7$

$\bar{\chi}_{eff}^2 = 1192.62$ ;  $R - 1 = 0.00588$



### 3.5 base\_Alens\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02249 \pm 0.00022$	$\sigma_8/h^{0.5}$	$0.970 \pm 0.011$	$D_M(0.38)$	$1517 \pm 10$
$\Omega_c h^2$	$0.1179 \pm 0.0013$	$r_{\text{drag}} h$	$100.8 \pm 1.0$	$H(0.51)$	$90.08 \pm 0.33$
$100\theta_{\text{MC}}$	$1.04122 \pm 0.00043$	$\langle d^2 \rangle^{1/2}$	$2.629 \pm 0.076$	$D_M(0.51)$	$1967 \pm 12$
$\tau$	$0.0526^{+0.0038}_{-0.0072}$	$z_{\text{re}}$	$7.44^{+0.36}_{-0.80}$	$H(0.61)$	$95.63 \pm 0.28$
$A_L$	$1.202 \pm 0.076$	$10^9 A_s$	$2.080^{+0.021}_{-0.030}$	$D_M(0.61)$	$2290 \pm 13$
$\ln(10^{10} A_s)$	$3.035^{+0.010}_{-0.015}$	$10^9 A_s e^{-2\tau}$	$1.872 \pm 0.011$	$H(2.33)$	$235.30 \pm 0.79$
$n_s$	$0.9710 \pm 0.0044$	$D_{40}$	$1216 \pm 13$	$D_M(2.33)$	$5749 \pm 14$
$y_{\text{cal}}$	$0.99999 \pm 0.0025$	$D_{220}$	$5729 \pm 40$	$f\sigma_8(0.15)$	$0.4460 \pm 0.0079$
$A_{217}^{\text{CIB}}$	$45 \pm 7$	$D_{810}$	$2528 \pm 14$	$\sigma_8(0.15)$	$0.7418^{+0.0054}_{-0.0063}$
$\xi^{\text{tSZ} \times \text{CIB}}$	$> 0.408$	$D_{1420}$	$813.9 \pm 4.9$	$f\sigma_8(0.38)$	$0.4662 \pm 0.0066$
$A_{143}^{\text{tSZ}}$	$5.6^{+2.1}_{-1.8}$	$D_{2000}$	$231.8 \pm 1.8$	$\sigma_8(0.38)$	$0.6585^{+0.0043}_{-0.0053}$
$A_{100}^{\text{PS}}$	$251 \pm 30$	$n_{s,0.002}$	$0.9710 \pm 0.0044$	$f\sigma_8(0.51)$	$0.4659 \pm 0.0058$
$A_{143}^{\text{PS}}$	$43 \pm 8$	$Y_{\text{P}}$	$0.245440 \pm 0.000086$	$\sigma_8(0.51)$	$0.6167^{+0.0038}_{-0.0048}$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	$0.246767 \pm 0.000086$	$f\sigma_8(0.61)$	$0.4617 \pm 0.0052$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$10^5 D/H$	$2.564 \pm 0.040$	$\sigma_8(0.61)$	$0.5871^{+0.0035}_{-0.0045}$
$A^{\text{kSZ}}$	$< 3.40$	Age/Gyr	$13.767 \pm 0.031$	$f\sigma_8(2.33)$	$0.2964^{+0.0017}_{-0.0023}$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$z_*$	$1089.58 \pm 0.33$	$\sigma_8(2.33)$	$0.3060^{+0.0017}_{-0.0023}$
$A_{143}^{\text{dustTT}}$	$10.5 \pm 1.8$	$r_*$	$144.89 \pm 0.32$	$f_{2000}^{143}$	$27 \pm 3$
$A_{143 \times 217}^{\text{dustTT}}$	$18.0 \pm 3.2$	$100\theta_*$	$1.04140 \pm 0.00042$	$f_{2000}^{143 \times 217}$	$30.5 \pm 2.2$
$A_{217}^{\text{dustTT}}$	$93.8 \pm 7.2$	$D_M(z_*)/\text{Gpc}$	$13.913 \pm 0.031$	$f_{2000}^{217}$	$105.4 \pm 2.0$
$c_{100}$	$0.99960 \pm 0.00061$	$z_{\text{drag}}$	$1060.07 \pm 0.48$	$\chi_{\text{small}}^2$	$396.4 \pm 1.1$
$c_{217}$	$0.99819 \pm 0.00064$	$r_{\text{drag}}$	$147.52 \pm 0.34$	$\chi_{\text{lowl}}^2$	$22.29 \pm 0.80$
$H_0$	$68.32 \pm 0.60$	$k_{\text{D}}$	$0.14050 \pm 0.00045$	$\chi_{\text{plik}}^2$	$766.2 \pm 5.3$
$\Omega_{\Lambda}$	$0.6978 \pm 0.0076$	$100\theta_{\text{D}}$	$0.16071 \pm 0.00027$	$\chi_{6\text{DF}}^2$	$0.046 \pm 0.067$
$\Omega_{\text{m}}$	$0.3022 \pm 0.0076$	$z_{\text{eq}}$	$3354 \pm 29$	$\chi_{\text{MGS}}^2$	$1.96 \pm 0.64$
$\Omega_{\text{m}} h^2$	$0.1410 \pm 0.0012$	$k_{\text{eq}}$	$0.010237 \pm 0.000089$	$\chi_{\text{DR12BAO}}^2$	$4.04 \pm 0.96$
$\Omega_{\text{m}} h^3$	$0.09632 \pm 0.00048$	$100\theta_{\text{eq}}$	$0.8226 \pm 0.0055$	$\chi_{\text{prior}}^2$	$7.2 \pm 3.6$
$\sigma_8$	$0.8017 \pm 0.0069$	$100\theta_{\text{s,eq}}$	$0.4542 \pm 0.0028$	$\chi_{\text{BAO}}^2$	$6.0 \pm 1.2$
$S_8$	$0.805 \pm 0.015$	$H(0.15)$	$73.50 \pm 0.52$	$\chi_{\text{CMB}}^2$	$1184.9 \pm 5.5$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4407 \pm 0.0084$	$D_M(0.15)$	$635.3 \pm 5.0$		
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.5944 \pm 0.0080$	$H(0.38)$	$83.45 \pm 0.39$		

$\bar{\chi}_{\text{eff}}^2 = 1198.08; R - 1 = 0.01471$



### 3.6 base\_Alens\_plikHM\_TT\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02292 \pm 0.00027$	$\sigma_8 \Omega_m^{0.25}$	$0.569 \pm 0.012$	$D_M(0.15)$	$617.2 \pm 8.1$
$\Omega_c h^2$	$0.1134 \pm 0.0020$	$\sigma_8 / h^{0.5}$	$0.936 \pm 0.017$	$H(0.38)$	$84.90 \pm 0.68$
$100\theta_{MC}$	$1.04190 \pm 0.00051$	$r_{drag} h$	$104.6 \pm 1.7$	$D_M(0.38)$	$1480 \pm 17$
$\tau$	$0.0548^{+0.0043}_{-0.0077}$	$\langle d^2 \rangle^{1/2}$	$2.670 \pm 0.075$	$H(0.51)$	$91.24 \pm 0.56$
$A_L$	$1.325 \pm 0.093$	$z_{re}$	$7.50^{+0.39}_{-0.83}$	$D_M(0.51)$	$1923 \pm 20$
$\ln(10^{10} A_s)$	$3.030^{+0.011}_{-0.016}$	$10^9 A_s$	$2.069^{+0.023}_{-0.034}$	$H(0.61)$	$96.57 \pm 0.46$
$n_s$	$0.9829 \pm 0.0064$	$10^9 A_s e^{-2\tau}$	$1.854 \pm 0.013$	$D_M(0.61)$	$2243 \pm 21$
$y_{cal}$	$1.0001 \pm 0.0026$	$D_{40}$	$1192 \pm 16$	$H(2.33)$	$232.9 \pm 1.2$
$A_{217}^{CIB}$	$44 \pm 7$	$D_{220}$	$5755 \pm 41$	$D_M(2.33)$	$5710 \pm 20$
$\xi^{tSZ \times CIB}$	$> 0.442$	$D_{810}$	$2523 \pm 14$	$f\sigma_8(0.15)$	$0.419 \pm 0.012$
$A_{143}^{tSZ}$	$5.8 \pm 1.9$	$D_{1420}$	$815.7 \pm 5.1$	$\sigma_8(0.15)$	$0.7296 \pm 0.0080$
$A_{100}^{PS}$	$245 \pm 30$	$D_{2000}$	$233.7 \pm 2.0$	$f\sigma_8(0.38)$	$0.445 \pm 0.010$
$A_{143}^{PS}$	$38 \pm 8$	$n_{s,0.002}$	$0.9829 \pm 0.0064$	$\sigma_8(0.38)$	$0.6508 \pm 0.0061$
$A_{143 \times 217}^{PS}$	$39 \pm 9$	$Y_P$	$0.24562 \pm 0.00012$	$f\sigma_8(0.51)$	$0.4477 \pm 0.0091$
$A_{217}^{PS}$	$114.2 \pm 9.8$	$Y_P^{BBN}$	$0.24694 \pm 0.00012$	$\sigma_8(0.51)$	$0.6108^{+0.0051}_{-0.0058}$
$A^{kSZ}$	$< 2.78$	$10^5 D/H$	$2.488 \pm 0.047$	$f\sigma_8(0.61)$	$0.4458 \pm 0.0082$
$A_{100}^{dustTT}$	$9.0 \pm 1.8$	Age/Gyr	$13.682 \pm 0.044$	$\sigma_8(0.61)$	$0.5822^{+0.0046}_{-0.0053}$
$A_{143}^{dustTT}$	$10.4 \pm 1.8$	$z_*$	$1088.68 \pm 0.44$	$f\sigma_8(2.33)$	$0.2951^{+0.0020}_{-0.0025}$
$A_{143 \times 217}^{dustTT}$	$17.8 \pm 3.3$	$r_*$	$145.74 \pm 0.46$	$\sigma_8(2.33)$	$0.3060^{+0.0018}_{-0.0025}$
$A_{217}^{dustTT}$	$93.8 \pm 7.5$	$100\theta_*$	$1.04203 \pm 0.00049$	$f_{2000}^{143}$	$25 \pm 3$
$c_{100}$	$0.99963 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	$13.986 \pm 0.042$	$f_{2000}^{143 \times 217}$	$28.4 \pm 2.3$
$c_{217}$	$0.99813 \pm 0.00063$	$z_{drag}$	$1060.72 \pm 0.54$	$f_{2000}^{217}$	$103.6 \pm 2.1$
$H_0$	$70.5 \pm 1.0$	$r_{drag}$	$148.25 \pm 0.45$	$\chi_{simall}^2$	$396.4 \pm 1.2$
$\Omega_\Lambda$	$0.724 \pm 0.012$	$k_D$	$0.14004 \pm 0.00050$	$\chi_{lowl}^2$	$20.81 \pm 0.68$
$\Omega_m$	$0.276 \pm 0.012$	$100\theta_D$	$0.16040 \pm 0.00029$	$\chi_{plik}^2$	$769.7 \pm 6.0$
$\Omega_m h^2$	$0.1370 \pm 0.0019$	$z_{eq}$	$3258 \pm 45$	$\chi_{H073p45}^2$	$3.4 \pm 2.2$
$\Omega_m h^3$	$0.09660 \pm 0.00051$	$k_{eq}$	$0.00994 \pm 0.00014$	$\chi_{prior}^2$	$7.1 \pm 3.5$
$\sigma_8$	$0.7857 \pm 0.0096$	$100\theta_{eq}$	$0.8426 \pm 0.0094$	$\chi_{CMB}^2$	$1186.9 \pm 6.0$
$S_8$	$0.753 \pm 0.024$	$100\theta_{s,eq}$	$0.4643 \pm 0.0048$		
$\sigma_8 \Omega_m^{0.5}$	$0.412 \pm 0.013$	$H(0.15)$	$75.44 \pm 0.89$		

$\bar{\chi}_{eff}^2 = 1197.44$ ;  $R - 1 = 0.01845$



### 3.7 base\_Alens\_plikHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022631	$0.02259 \pm 0.00017$ $(-0.1\sigma)$	$\Omega_{\text{m}}h^2$	0.14113	$0.1413 \pm 0.0014$ $(+0.6\sigma)$	$k_{\text{eq}}$	0.010247	$0.01026 \pm 0.00011$ $(+0.6\sigma)$
$\Omega_{\text{c}}h^2$	0.11786	$0.1181 \pm 0.0016$ $(+0.6\sigma)$	$\Omega_{\text{m}}h^3$	0.096556	$0.09650 \pm 0.00030$ $(+0.2\sigma)$	$100\theta_{\text{eq}}$	0.8224	$0.8214 \pm 0.0067$ $(-0.6\sigma)$
$100\theta_{\text{MC}}$	1.041184	$1.04114 \pm 0.00032$ $(-0.5\sigma)$	$\sigma_8$	0.8010	$0.7997 \pm 0.0090$ $(+0.4\sigma)$	$100\theta_{\text{s,eq}}$	0.45392	$0.4534 \pm 0.0034$ $(-0.6\sigma)$
$\tau$	0.0511	$0.0492^{+0.0088}_{-0.0073}$ $(-0.1\sigma)$	$S_8$	0.8030	$0.804 \pm 0.019$ $(+0.6\sigma)$	$H(0.15)$	73.60	$73.48 \pm 0.62$ $(-0.5\sigma)$
$A_{\text{L}}$	1.191	$1.180 \pm 0.065$ $(-0.7\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4398	$0.440 \pm 0.011$ $(+0.6\sigma)$	$D_{\text{M}}(0.15)$	634.4	$635.6 \pm 6.0$ $(+0.5\sigma)$
$\ln(10^{10}A_{\text{s}})$	3.0331	$3.029^{+0.018}_{-0.015}$ $(+0.1\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.5935	$0.593 \pm 0.010$ $(+0.5\sigma)$	$H(0.38)$	83.545	$83.46 \pm 0.45$ $(-0.5\sigma)$
$n_{\text{s}}$	0.97286	$0.9708 \pm 0.0048$ $(-0.5\sigma)$	$\sigma_8/h^{0.5}$	0.9683	$0.968 \pm 0.014$ $(+0.5\sigma)$	$D_{\text{M}}(0.38)$	1515.3	$1518 \pm 12$ $(+0.5\sigma)$
$y_{\text{cal}}$	0.99999	$1.0000 \pm 0.0024$ $(+0.0\sigma)$	$r_{\text{drag}}h$	100.82	$100.6 \pm 1.2$ $(-0.6\sigma)$	$H(0.51)$	90.168	$90.10 \pm 0.36$ $(-0.5\sigma)$
$A_{217}^{\text{CIB}}$	42.2	$45 \pm 7$ $(-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	2.612	$2.600 \pm 0.058$ $(-0.5\sigma)$	$D_{\text{M}}(0.51)$	1964.6	$1967 \pm 14$ $(+0.5\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.999	$> 0.436$ $(+0.0\sigma)$	$z_{\text{re}}$	7.27	$7.05^{+0.95}_{-0.71}$ $(-0.1\sigma)$	$H(0.61)$	95.716	$95.66 \pm 0.29$ $(-0.4\sigma)$
$A_{143}^{\text{tSZ}}$	6.93	$5.8^{+2.0}_{-1.8}$ $(+0.1\sigma)$	$10^9 A_{\text{s}}$	2.0761	$2.068^{+0.037}_{-0.032}$ $(+0.1\sigma)$	$D_{\text{M}}(0.61)$	2287.3	$2290 \pm 15$ $(+0.5\sigma)$
$A_{100}^{\text{PS}}$	237.2	$249 \pm 30$ $(-0.0\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	1.8743	$1.874 \pm 0.012$ $(+0.5\sigma)$	$H(2.33)$	235.43	$235.55 \pm 0.91$ $(+0.6\sigma)$
$A_{143}^{\text{PS}}$	49.1	$42 \pm 8$ $(+0.0\sigma)$	$D_{40}$	1212.9	$1217 \pm 13$ $(+0.5\sigma)$	$D_{\text{M}}(2.33)$	5744.0	$5747 \pm 13$ $(+0.4\sigma)$
$A_{143 \times 217}^{\text{PS}}$	57.2	$42^{+10}_{-9}$ $(+0.1\sigma)$	$D_{220}$	5737.3	$5739 \pm 38$ $(+0.1\sigma)$	$f\sigma_8(0.15)$	0.4451	$0.4456 \pm 0.0099$ $(+0.5\sigma)$
$A_{217}^{\text{PS}}$	124.1	$116.2 \pm 9.9$ $(+0.1\sigma)$	$D_{810}$	2533.2	$2531 \pm 13$ $(+0.3\sigma)$	$\sigma_8(0.15)$	0.7411	$0.7398 \pm 0.0078$ $(+0.4\sigma)$
$A^{\text{kSZ}}$	0.00	$< 3.04$ $(-0.1\sigma)$	$D_{1420}$	817.03	$815.6 \pm 4.7$ $(+0.2\sigma)$	$f\sigma_8(0.38)$	0.4655	$0.4654 \pm 0.0083$ $(+0.5\sigma)$
$A_{100}^{\text{dustTT}}$	8.72	$8.8 \pm 1.8$ $(-0.1\sigma)$	$D_{2000}$	232.94	$232.2 \pm 1.6$ $(-0.0\sigma)$	$\sigma_8(0.38)$	0.6580	$0.6566 \pm 0.0064$ $(+0.3\sigma)$
$A_{143}^{\text{dustTT}}$	10.68	$10.6 \pm 1.8$ $(+0.0\sigma)$	$n_{\text{s},0.002}$	0.97286	$0.9708 \pm 0.0048$ $(-0.5\sigma)$	$f\sigma_8(0.51)$	0.4652	$0.4650 \pm 0.0073$ $(+0.5\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	19.80	$18.1 \pm 3.2$ $(+0.1\sigma)$	$Y_{\text{P}}$	0.245491	$0.245477 \pm 0.000066$ $(-0.1\sigma)$	$\sigma_8(0.51)$	0.6163	$0.6149^{+0.0060}_{-0.0052}$ $(+0.3\sigma)$
$A_{217}^{\text{dustTT}}$	95.7	$93.7 \pm 7.2$ $(+0.0\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	0.246818	$0.246804 \pm 0.000067$ $(-0.1\sigma)$	$f\sigma_8(0.61)$	0.4611	$0.4608 \pm 0.0067$ $(+0.5\sigma)$
$A_{100}^{\text{dustTE}}$	0.1125	$0.114 \pm 0.038$	$10^5 \text{D/H}$	2.5389	$2.546 \pm 0.031$ $(+0.0\sigma)$	$\sigma_8(0.61)$	0.5867	$0.5853^{+0.0056}_{-0.0049}$ $(+0.2\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	0.1348	$0.134 \pm 0.030$	Age/Gyr	13.7542	$13.761 \pm 0.028$ $(+0.3\sigma)$	$f\sigma_8(2.33)$	0.29620	$0.2954^{+0.0027}_{-0.0024}$ $(+0.1\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	0.480	$0.479 \pm 0.085$	$z_*$	1089.410	$1089.48 \pm 0.32$ $(+0.3\sigma)$	$\sigma_8(2.33)$	0.30582	$0.3050^{+0.0028}_{-0.0024}$ $(-0.0\sigma)$
$A_{143}^{\text{dustTE}}$	0.224	$0.222 \pm 0.054$	$r_*$	144.787	$144.76 \pm 0.33$ $(-0.7\sigma)$	$f_{2000}^{143}$	25.45	$26.7 \pm 2.9$ $(-0.0\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	0.659	$0.661 \pm 0.080$	$100\theta_*$	1.041338	$1.04130 \pm 0.00032$ $(-0.5\sigma)$	$f_{2000}^{143 \times 217}$	29.48	$29.9 \pm 2.0$ $(-0.0\sigma)$
$A_{217}^{\text{dustTE}}$	2.051	$2.05 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9039	$13.902 \pm 0.031$ $(-0.7\sigma)$	$f_{2000}^{217}$	104.23	$105.0 \pm 1.9$ $(+0.0\sigma)$
$c_{100}$	0.99976	$0.99969 \pm 0.00061$ $(+0.1\sigma)$	$z_{\text{drag}}$	1060.390	$1060.30 \pm 0.33$ $(+0.1\sigma)$	$\chi_{\text{small}}^2$	395.67	$396.9 \pm 1.6$ $(+0.0\sigma)$
$c_{217}$	0.99810	$0.99812 \pm 0.00062$ $(-0.1\sigma)$	$r_{\text{drag}}$	147.369	$147.35 \pm 0.32$ $(-0.7\sigma)$	$\chi_{\text{lowl}}^2$	21.96	$22.32 \pm 0.89$ $(+0.5\sigma)$
$H_0$	68.42	$68.28 \pm 0.72$ $(-0.5\sigma)$	$k_{\text{D}}$	0.140770	$0.14076 \pm 0.00033$ $(+0.7\sigma)$	$\chi_{\text{plik}}^2$	2337.1	$2353.8 \pm 5.7$ $(+285.8\sigma)$
$\Omega_{\Lambda}$	0.6985	$0.6967 \pm 0.0094$ $(-0.6\sigma)$	$100\theta_{\text{D}}$	0.160510	$0.16056 \pm 0.00019$ $(-0.2\sigma)$	$\chi_{\text{prior}}^2$	1.38	$11.3 \pm 4.4$ $(+1.2\sigma)$
$\Omega_{\text{m}}$	0.3015	$0.3033 \pm 0.0094$ $(+0.6\sigma)$	$z_{\text{eq}}$	3357.2	$3362 \pm 35$ $(+0.6\sigma)$	$\chi_{\text{CMB}}^2$	2754.7	$2773.0 \pm 6.0$ $(+275.5\sigma)$

Best-fit  $\chi_{\text{eff}}^2 = 2756.11$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.23$ ;  $\bar{\chi}_{\text{eff}}^2 = 2784.27$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.23$ ;  $R - 1 = 0.01070$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.67 ( $\Delta$  0.01) commander\_dx12\_v3.2.29: 21.96 ( $\Delta$  0.61) plik\_rd12\_HM\_v22b\_TTTEEE: 2337.11



### 3.8 base\_Alens\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022617	$0.02258 \pm 0.00015$ (+0.4 $\sigma$ )	$\sigma_8$	0.8011	$0.8000 \pm 0.0081$ (+0.1 $\sigma$ )	$D_M(0.15)$	635.07	$635.9 \pm 4.1$ (+0.1 $\sigma$ )
$\Omega_c h^2$	0.11802	$0.1182 \pm 0.0011$ (+0.3 $\sigma$ )	$S_8$	0.8046	$0.805 \pm 0.014$ (+0.2 $\sigma$ )	$H(0.38)$	83.492	$83.43 \pm 0.32$ (-0.1 $\sigma$ )
$100\theta_{MC}$	1.041150	$1.04113 \pm 0.00029$ (-0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4407	$0.4410 \pm 0.0078$ (+0.2 $\sigma$ )	$D_M(0.38)$	1516.7	$1518.5 \pm 8.4$ (+0.1 $\sigma$ )
$\tau$	0.0507	$0.0491^{+0.0089}_{-0.0074}$ (-0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.5942	$0.5940 \pm 0.0079$ (+0.2 $\sigma$ )	$H(0.51)$	90.126	$90.07 \pm 0.26$ (-0.0 $\sigma$ )
$A_L$	1.185	$1.177 \pm 0.060$ (-0.4 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9691	$0.969 \pm 0.012$ (+0.1 $\sigma$ )	$D_M(0.51)$	1966.2	$1968.3 \pm 9.9$ (+0.1 $\sigma$ )
$\ln(10^{10} A_s)$	3.0325	$3.029^{+0.018}_{-0.016}$ (+0.1 $\sigma$ )	$r_{drag} h$	100.68	$100.53 \pm 0.84$ (-0.2 $\sigma$ )	$H(0.61)$	95.682	$95.64 \pm 0.21$ (+0.0 $\sigma$ )
$n_s$	0.97216	$0.9705 \pm 0.0039$ (-0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.607	$2.599 \pm 0.058$ (-0.4 $\sigma$ )	$D_M(0.61)$	2289.1	$2291 \pm 11$ (+0.1 $\sigma$ )
$y_{cal}$	0.99994	$1.0000 \pm 0.0025$ (+0.0 $\sigma$ )	$z_{re}$	7.23	$7.04^{+0.96}_{-0.72}$ (-0.0 $\sigma$ )	$H(2.33)$	235.52	$235.60 \pm 0.64$ (+0.4 $\sigma$ )
$A_{217}^{CIB}$	42.4	$45 \pm 7$ (-0.1 $\sigma$ )	$10^9 A_s$	2.0749	$2.068^{+0.038}_{-0.033}$ (+0.1 $\sigma$ )	$D_M(2.33)$	5745.5	$5747.7 \pm 9.9$ (-0.1 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.997	$> 0.440$ (+0.1 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8747	$1.875 \pm 0.011$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4459	$0.4461 \pm 0.0074$ (+0.2 $\sigma$ )
$A_{143}^{tSZ}$	6.86	$5.8^{+2.1}_{-1.8}$ (+0.1 $\sigma$ )	$D_{40}$	1214.3	$1217 \pm 12$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7412	$0.7400 \pm 0.0073$ (+0.1 $\sigma$ )
$A_{100}^{PS}$	237.9	$249 \pm 30$ (-0.1 $\sigma$ )	$D_{220}$	5737.3	$5738 \pm 38$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.4660	$0.4659 \pm 0.0064$ (+0.2 $\sigma$ )
$A_{143}^{PS}$	49.8	$42 \pm 8$ (-0.1 $\sigma$ )	$D_{810}$	2533.0	$2531 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6580	$0.6568^{+0.0063}_{-0.0056}$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{PS}$	57.6	$42^{+10}_{-9}$ (+0.0 $\sigma$ )	$D_{1420}$	816.75	$815.5 \pm 4.7$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.4657	$0.4654 \pm 0.0059$ (+0.2 $\sigma$ )
$A_{217}^{PS}$	124.3	$116.3 \pm 9.9$ (+0.1 $\sigma$ )	$D_{2000}$	232.76	$232.2 \pm 1.6$ (+0.2 $\sigma$ )	$\sigma_8(0.51)$	0.6161	$0.6150^{+0.0059}_{-0.0051}$ (+0.1 $\sigma$ )
$A^{kSZ}$	0.00	$< 3.11$ (-0.1 $\sigma$ )	$n_{s,0.002}$	0.97216	$0.9705 \pm 0.0039$ (-0.1 $\sigma$ )	$f\sigma_8(0.61)$	0.4615	$0.4611 \pm 0.0055$ (+0.2 $\sigma$ )
$A_{100}^{dustTT}$	8.76	$8.8 \pm 1.8$ (-0.1 $\sigma$ )	$Y_P$	0.245486	$0.245473 \pm 0.000056$ (+0.4 $\sigma$ )	$\sigma_8(0.61)$	0.5865	$0.5854^{+0.0055}_{-0.0048}$ (+0.1 $\sigma$ )
$A_{143}^{dustTT}$	10.62	$10.6 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246813	$0.246800 \pm 0.000057$ (+0.4 $\sigma$ )	$f\sigma_8(2.33)$	0.29608	$0.2955^{+0.0028}_{-0.0024}$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.71	$18.1 \pm 3.2$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5414	$2.548 \pm 0.027$ (-0.4 $\sigma$ )	$\sigma_8(2.33)$	0.30565	$0.3050^{+0.0028}_{-0.0024}$ (+0.0 $\sigma$ )
$A_{217}^{dustTT}$	95.4	$93.7 \pm 7.2$ (+0.0 $\sigma$ )	Age/Gyr	13.7574	$13.763 \pm 0.022$ (-0.1 $\sigma$ )	$f_{2000}^{143}$	25.75	$26.7 \pm 2.8$ (-0.2 $\sigma$ )
$A_{100}^{dustTE}$	0.1146	$0.114 \pm 0.039$	$z_*$	1089.441	$1089.50 \pm 0.24$ (-0.2 $\sigma$ )	$f_{2000}^{143 \times 217}$	29.74	$30.0 \pm 2.0$ (-0.2 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1336	$0.135 \pm 0.030$	$r_*$	144.755	$144.74 \pm 0.24$ (-0.5 $\sigma$ )	$f_{2000}^{217}$	104.44	$105.1 \pm 1.8$ (-0.2 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.480	$0.479 \pm 0.086$	$100\theta_*$	1.041305	$1.04129 \pm 0.00029$ (-0.2 $\sigma$ )	$\chi_{small}^2$	395.67	$396.9 \pm 1.7$ (+0.0 $\sigma$ )
$A_{143}^{dustTE}$	0.220	$0.222 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	13.9013	$13.900 \pm 0.023$ (-0.4 $\sigma$ )	$\chi_{lowl}^2$	22.06	$22.34 \pm 0.75$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.659	$0.660 \pm 0.080$	$z_{drag}$	1060.352	$1060.29 \pm 0.31$ (+0.5 $\sigma$ )	$\chi_{plik}^2$	2337.1	$2353.2 \pm 5.6$ (+297.5 $\sigma$ )
$A_{217}^{dustTE}$	2.048	$2.06 \pm 0.27$	$r_{drag}$	147.342	$147.34 \pm 0.25$ (-0.5 $\sigma$ )	$\chi_{6DF}^2$	0.0016	$0.030 \pm 0.043$ (-0.2 $\sigma$ )
$c_{100}$	0.99975	$0.99969 \pm 0.00060$ (+0.1 $\sigma$ )	$k_D$	0.140789	$0.14076 \pm 0.00029$ (+0.6 $\sigma$ )	$\chi_{MGS}^2$	1.82	$1.79 \pm 0.52$ (-0.3 $\sigma$ )
$c_{217}$	0.99814	$0.99813 \pm 0.00063$ (-0.1 $\sigma$ )	$100\theta_D$	0.160519	$0.16056 \pm 0.00018$ (-0.5 $\sigma$ )	$\chi_{DR12BAO}^2$	3.428	$3.95 \pm 0.79$ (-0.1 $\sigma$ )
$H_0$	68.333	$68.23 \pm 0.49$ (-0.1 $\sigma$ )	$z_{eq}$	3360.8	$3364 \pm 24$ (+0.3 $\sigma$ )	$\chi_{prior}^2$	1.30	$11.3 \pm 4.4$ (+1.2 $\sigma$ )
$\Omega_\Lambda$	0.6974	$0.6962 \pm 0.0064$ (-0.2 $\sigma$ )	$k_{eq}$	0.010258	$0.010268 \pm 0.000073$ (+0.3 $\sigma$ )	$\chi_{BAO}^2$	5.249	$5.77 \pm 0.76$ (-0.2 $\sigma$ )
$\Omega_m$	0.3026	$0.3038 \pm 0.0064$ (+0.2 $\sigma$ )	$100\theta_{eq}$	0.82163	$0.8209 \pm 0.0046$ (-0.3 $\sigma$ )	$\chi_{CMB}^2$	2754.9	$2772.4 \pm 5.8$ (+284.0 $\sigma$ )
$\Omega_m h^2$	0.14128	$0.1414 \pm 0.0010$ (+0.3 $\sigma$ )	$100\theta_{s,eq}$	0.45355	$0.4532 \pm 0.0024$ (-0.3 $\sigma$ )			
$\Omega_m h^3$	0.096543	$0.09649 \pm 0.00030$ (+0.4 $\sigma$ )	$H(0.15)$	73.525	$73.44 \pm 0.43$ (-0.1 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2761.40$ ;  $\Delta\chi_{eff}^2 = 1584.79$ ;  $\bar{\chi}_{eff}^2 = 2789.54$ ;  $\Delta\bar{\chi}_{eff}^2 = 1591.04$ ;  $R - 1 = 0.01310$

$\chi_{eff}^2$ : BAO - 6DF: 0.00 ( $\Delta$  -0.01) MGS: 1.82 ( $\Delta$  -0.15) DR12BAO: 3.43 ( $\Delta$  0.05) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.67 ( $\Delta$  -0.01) commander\_dx12\_v3\_2\_29: 22.06 ( $\Delta$  0.17) plik\_rd12\_HM\_v22b\_TTTEEE: 2337.12



### 3.9 base\_Alens\_plikHM\_TTTEEE\_lowl\_lowE\_post\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022780	$0.02274 \pm 0.00016$ $(-0.7\sigma)$	$\Omega_m h^3$	0.096631	$0.09658 \pm 0.00031$ $(-0.0\sigma)$	$100\theta_{s,eq}$	0.45736	$0.4571^{+0.0033}_{-0.0029}$ $(-1.5\sigma)$
$\Omega_c h^2$	0.11629	$0.1164^{+0.0013}_{-0.0015}$ $(+1.4\sigma)$	$\sigma_8$	0.7953	$0.7938 \pm 0.0086$ $(+1.0\sigma)$	$H(0.15)$	74.24	$74.17 \pm 0.56$ $(-1.4\sigma)$
$100\theta_{MC}$	1.041348	$1.04135^{+0.00030}_{-0.00033}$ $(-1.1\sigma)$	$S_8$	0.7848	$0.785^{+0.016}_{-0.018}$ $(+1.4\sigma)$	$D_M(0.15)$	628.2	$628.9^{+4.9}_{-5.6}$ $(+1.4\sigma)$
$\tau$	0.0519	$0.0501^{+0.0087}_{-0.0071}$ $(-0.2\sigma)$	$\sigma_8 \Omega_m^{0.5}$	0.4298	$0.4297^{+0.0088}_{-0.0098}$ $(+1.4\sigma)$	$H(0.38)$	84.021	$83.97 \pm 0.42$ $(-1.3\sigma)$
$A_L$	1.229	$1.220 \pm 0.064$ $(-1.2\sigma)$	$\sigma_8 \Omega_m^{0.25}$	0.5847	$0.5841 \pm 0.0092$ $(+1.3\sigma)$	$D_M(0.38)$	1502.8	$1504^{+10}_{-11}$ $(+1.4\sigma)$
$\ln(10^{10} A_s)$	3.0310	$3.027^{+0.018}_{-0.015}$ $(+0.2\sigma)$	$\sigma_8/h^{0.5}$	0.9564	$0.955 \pm 0.013$ $(+1.2\sigma)$	$H(0.51)$	90.546	$90.50 \pm 0.33$ $(-1.3\sigma)$
$n_s$	0.97691	$0.9750 \pm 0.0044$ $(-1.2\sigma)$	$r_{drag} h$	102.10	$102.0^{+1.2}_{-1.0}$ $(-1.5\sigma)$	$D_M(0.51)$	1949.8	$1951^{+12}_{-13}$ $(+1.4\sigma)$
$y_{cal}$	0.99991	$0.99996 \pm 0.0024$ $(-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	2.622	$2.612 \pm 0.057$ $(-0.7\sigma)$	$H(0.61)$	96.018	$95.98 \pm 0.27$ $(-1.2\sigma)$
$A_{217}^{CIB}$	41.8	$44 \pm 7$ $(+0.0\sigma)$	$z_{re}$	7.29	$7.09^{+0.92}_{-0.69}$ $(-0.1\sigma)$	$D_M(0.61)$	2271.4	$2273 \pm 14$ $(+1.4\sigma)$
$\xi^{tSZ \times CIB}$	0.9998	$> 0.451$ $(+0.0\sigma)$	$10^9 A_s$	2.0717	$2.064 \pm 0.036$ $(+0.2\sigma)$	$H(2.33)$	234.57	$234.62^{+0.75}_{-0.86}$ $(+1.4\sigma)$
$A_{143}^{tSZ}$	7.03	$5.9^{+2.0}_{-1.8}$ $(+0.0\sigma)$	$10^9 A_s e^{-2\tau}$	1.8675	$1.867 \pm 0.012$ $(+0.9\sigma)$	$D_M(2.33)$	5731.3	$5733 \pm 12$ $(+1.1\sigma)$
$A_{100}^{PS}$	233.8	$246 \pm 30$ $(+0.0\sigma)$	$D_{40}$	1204.5	$1208 \pm 13$ $(+1.0\sigma)$	$f\sigma_8(0.15)$	0.4358	$0.4356 \pm 0.0088$ $(+1.4\sigma)$
$A_{143}^{PS}$	46.5	$40 \pm 8$ $(+0.2\sigma)$	$D_{220}$	5745.4	$5748 \pm 37$ $(-0.2\sigma)$	$\sigma_8(0.15)$	0.7369	$0.7354 \pm 0.0075$ $(+0.9\sigma)$
$A_{143 \times 217}^{PS}$	55.7	$41 \pm 9$ $(+0.2\sigma)$	$D_{810}$	2530.9	$2529 \pm 13$ $(+0.4\sigma)$	$f\sigma_8(0.38)$	0.4581	$0.4576 \pm 0.0075$ $(+1.3\sigma)$
$A_{217}^{PS}$	123.3	$115.8 \pm 9.9$ $(+0.2\sigma)$	$D_{1420}$	817.54	$816.1 \pm 4.6$ $(+0.1\sigma)$	$\sigma_8(0.38)$	0.6553	$0.6539^{+0.0063}_{-0.0057}$ $(+0.7\sigma)$
$A^{kSZ}$	0.00	$< 2.76$ $(-0.0\sigma)$	$D_{2000}$	233.55	$232.8 \pm 1.6$ $(-0.4\sigma)$	$f\sigma_8(0.51)$	0.4590	$0.4584 \pm 0.0068$ $(+1.3\sigma)$
$A_{100}^{dustTT}$	8.60	$8.9 \pm 1.8$ $(-0.0\sigma)$	$n_{s,0.002}$	0.97691	$0.9750 \pm 0.0044$ $(-1.2\sigma)$	$\sigma_8(0.51)$	0.6142	$0.6128^{+0.0058}_{-0.0052}$ $(+0.6\sigma)$
$A_{143}^{dustTT}$	10.61	$10.5 \pm 1.8$ $(+0.1\sigma)$	$Y_P$	0.245548	$0.245537^{+0.000061}_{-0.000071}$ $(-0.7\sigma)$	$f\sigma_8(0.61)$	0.4557	$0.4550 \pm 0.0062$ $(+1.2\sigma)$
$A_{143 \times 217}^{dustTT}$	19.57	$18.0 \pm 3.2$ $(+0.1\sigma)$	$Y_P^{BBN}$	0.246875	$0.246864^{+0.000061}_{-0.000072}$ $(-0.7\sigma)$	$\sigma_8(0.61)$	0.5850	$0.5836^{+0.0054}_{-0.0049}$ $(+0.5\sigma)$
$A_{217}^{dustTT}$	95.3	$93.5 \pm 7.3$ $(-0.0\sigma)$	$10^5 D/H$	2.5125	$2.519 \pm 0.029$ $(+0.7\sigma)$	$f\sigma_8(2.33)$	0.29573	$0.2950^{+0.0027}_{-0.0023}$ $(+0.3\sigma)$
$A_{100}^{dustTE}$	0.1126	$0.115 \pm 0.039$	Age/Gyr	13.7269	$13.731 \pm 0.027$ $(+1.1\sigma)$	$\sigma_8(2.33)$	0.30578	$0.3050^{+0.0027}_{-0.0024}$ $(-0.0\sigma)$
$A_{100 \times 143}^{dustTE}$	0.1334	$0.136 \pm 0.030$	$z_*$	1089.093	$1089.15^{+0.27}_{-0.30}$ $(+1.0\sigma)$	$f_{2000}^{143}$	24.33	$26 \pm 3$ $(+0.3\sigma)$
$A_{100 \times 217}^{dustTE}$	0.484	$0.479 \pm 0.086$	$r_*$	145.082	$145.08 \pm 0.30$ $(-1.4\sigma)$	$f_{2000}^{143 \times 217}$	28.64	$29.1 \pm 2.0$ $(+0.3\sigma)$
$A_{143}^{dustTE}$	0.215	$0.219 \pm 0.054$	$100\theta_*$	1.041500	$1.04150^{+0.00029}_{-0.00033}$ $(-1.1\sigma)$	$f_{2000}^{217}$	103.54	$104.3 \pm 1.9$ $(+0.3\sigma)$
$A_{143 \times 217}^{dustTE}$	0.657	$0.658 \pm 0.081$	$D_M(z_*)/\text{Gpc}$	13.9301	$13.930 \pm 0.028$ $(-1.3\sigma)$	$\chi_{small}^2$	395.65	$396.8 \pm 1.6$ $(+0.0\sigma)$
$A_{217}^{dustTE}$	2.030	$2.04 \pm 0.27$	$z_{drag}$	1060.619	$1060.53 \pm 0.32$ $(-0.3\sigma)$	$\chi_{lowl}^2$	21.38	$21.66 \pm 0.71$ $(+1.3\sigma)$
$c_{100}$	0.99974	$0.99970 \pm 0.00062$ $(+0.1\sigma)$	$r_{drag}$	147.622	$147.63 \pm 0.29$ $(-1.3\sigma)$	$\chi_{plik}^2$	2338.7	$2355.3 \pm 6.1$ $(+265.7\sigma)$
$c_{217}$	0.99809	$0.99809 \pm 0.00063$ $(-0.1\sigma)$	$k_D$	0.140609	$0.14057 \pm 0.00032$ $(+1.0\sigma)$	$\chi_{H073p45}^2$	6.67	$7.1 \pm 2.1$ $(+1.6\sigma)$
$H_0$	69.16	$69.08^{+0.68}_{-0.61}$ $(-1.4\sigma)$	$100\theta_D$	0.160391	$0.16044 \pm 0.00018$ $(+0.1\sigma)$	$\chi_{prior}^2$	1.44	$11.3 \pm 4.3$ $(+1.2\sigma)$
$\Omega_\Lambda$	0.7079	$0.7069^{+0.0087}_{-0.0073}$ $(-1.5\sigma)$	$z_{eq}$	3323.3	$3326^{+28}_{-33}$ $(+1.5\sigma)$	$\chi_{CMB}^2$	2755.8	$2773.8 \pm 6.1$ $(+263.6\sigma)$
$\Omega_m$	0.2921	$0.2931^{+0.0073}_{-0.0087}$ $(+1.5\sigma)$	$k_{eq}$	0.010143	$0.010150^{+0.000087}_{-0.00010}$ $(+1.5\sigma)$			
$\Omega_m h^2$	0.13972	$0.1398^{+0.0012}_{-0.0014}$ $(+1.5\sigma)$	$100\theta_{eq}$	0.8292	$0.8287^{+0.0064}_{-0.0057}$ $(-1.4\sigma)$			

Best-fit  $\chi_{eff}^2 = 2763.88$ ;  $\Delta\chi_{eff}^2 = 1588.57$ ;  $\bar{\chi}_{eff}^2 = 2792.09$ ;  $\Delta\bar{\chi}_{eff}^2 = 1594.32$ ;  $R - 1 = 0.02684$   
 $\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck.B: 395.65 ( $\Delta$  -0.01) commander\_dx12\_v3.2.29: 21.38 ( $\Delta$  0.92) plik\_rd12\_HM\_v22b\_TTTEEE: 2338.75 Hubble - H073p45: 6.67 ( $\Delta$  4.04)



### 3.10 base\_Alens\_plikHM\_TTTEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02259 \pm 0.00017 \quad (-0.1\sigma)$	$\Omega_{\text{m}}h^2$	$0.1413 \pm 0.0014 \quad (+0.6\sigma)$	$k_{\text{eq}}$	$0.01026 \pm 0.00011 \quad (+0.6\sigma)$
$\Omega_{\text{c}}h^2$	$0.1181 \pm 0.0016 \quad (+0.6\sigma)$	$\Omega_{\text{m}}h^3$	$0.09650 \pm 0.00030 \quad (+0.2\sigma)$	$100\theta_{\text{eq}}$	$0.8215 \pm 0.0067 \quad (-0.6\sigma)$
$100\theta_{\text{MC}}$	$1.04114 \pm 0.00032 \quad (-0.5\sigma)$	$\sigma_8$	$0.8023^{+0.0071}_{-0.0079} \quad (+0.5\sigma)$	$100\theta_{\text{s,eq}}$	$0.4535 \pm 0.0034 \quad (-0.6\sigma)$
$\tau$	$0.0527^{+0.0034}_{-0.0076} \quad (-0.1\sigma)$	$S_8$	$0.806 \pm 0.019 \quad (+0.6\sigma)$	$H(0.15)$	$73.49 \pm 0.62 \quad (-0.5\sigma)$
$A_{\text{L}}$	$1.173 \pm 0.064 \quad (-0.7\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.442 \pm 0.010 \quad (+0.6\sigma)$	$D_{\text{M}}(0.15)$	$635.5 \pm 6.0 \quad (+0.5\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.036^{+0.010}_{-0.015} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.5953 \pm 0.0095 \quad (+0.6\sigma)$	$H(0.38)$	$83.46 \pm 0.46 \quad (-0.5\sigma)$
$n_{\text{s}}$	$0.9709 \pm 0.0048 \quad (-0.5\sigma)$	$\sigma_8/h^{0.5}$	$0.971 \pm 0.013 \quad (+0.5\sigma)$	$D_{\text{M}}(0.38)$	$1518 \pm 12 \quad (+0.5\sigma)$
$y_{\text{cal}}$	$1.0000 \pm 0.0024 \quad (-0.0\sigma)$	$r_{\text{drag}}h$	$100.6 \pm 1.2 \quad (-0.6\sigma)$	$H(0.51)$	$90.10 \pm 0.36 \quad (-0.5\sigma)$
$A_{217}^{\text{CIB}}$	$45 \pm 7 \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.601 \pm 0.059 \quad (-0.5\sigma)$	$D_{\text{M}}(0.51)$	$1967 \pm 14 \quad (+0.5\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	$> 0.432 \quad (+0.0\sigma)$	$z_{\text{re}}$	$7.43^{+0.31}_{-0.84} \quad (-0.1\sigma)$	$H(0.61)$	$95.66 \pm 0.29 \quad (-0.4\sigma)$
$A_{143}^{\text{tSZ}}$	$5.8^{+2.0}_{-1.8} \quad (+0.1\sigma)$	$10^9 A_{\text{s}}$	$2.082^{+0.021}_{-0.032} \quad (+0.2\sigma)$	$D_{\text{M}}(0.61)$	$2290 \pm 15 \quad (+0.5\sigma)$
$A_{100}^{\text{PS}}$	$249 \pm 28 \quad (-0.0\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.874 \pm 0.012 \quad (+0.5\sigma)$	$H(2.33)$	$235.53 \pm 0.91 \quad (+0.7\sigma)$
$A_{143}^{\text{PS}}$	$42 \pm 8 \quad (+0.0\sigma)$	$D_{40}$	$1217 \pm 13 \quad (+0.5\sigma)$	$D_{\text{M}}(2.33)$	$5747 \pm 13 \quad (+0.4\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42^{+10}_{-9} \quad (+0.1\sigma)$	$D_{220}$	$5739 \pm 38 \quad (+0.0\sigma)$	$f\sigma_8(0.15)$	$0.4469 \pm 0.0096 \quad (+0.6\sigma)$
$A_{217}^{\text{PS}}$	$116.1 \pm 9.9 \quad (+0.1\sigma)$	$D_{810}$	$2531 \pm 13 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7422^{+0.0059}_{-0.0068} \quad (+0.5\sigma)$
$A^{\text{kSZ}}$	$< 3.03 \quad (-0.1\sigma)$	$D_{1420}$	$815.5 \pm 4.7 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4669 \pm 0.0078 \quad (+0.6\sigma)$
$A_{100}^{\text{dustTT}}$	$8.8 \pm 1.8 \quad (-0.1\sigma)$	$D_{2000}$	$232.2 \pm 1.6 \quad (-0.1\sigma)$	$\sigma_8(0.38)$	$0.6588^{+0.0044}_{-0.0055} \quad (+0.4\sigma)$
$A_{143}^{\text{dustTT}}$	$10.6 \pm 1.8 \quad (+0.1\sigma)$	$n_{\text{s},0.002}$	$0.9709 \pm 0.0048 \quad (-0.5\sigma)$	$f\sigma_8(0.51)$	$0.4665 \pm 0.0068 \quad (+0.6\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.1 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.245477 \pm 0.000067 \quad (-0.1\sigma)$	$\sigma_8(0.51)$	$0.6170^{+0.0039}_{-0.0050} \quad (+0.4\sigma)$
$A_{217}^{\text{dustTT}}$	$93.7 \pm 7.3 \quad (+0.0\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246804 \pm 0.000067 \quad (-0.1\sigma)$	$f\sigma_8(0.61)$	$0.4622 \pm 0.0061 \quad (+0.6\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$10^5 \text{D}/\text{H}$	$2.546 \pm 0.031 \quad (+0.1\sigma)$	$\sigma_8(0.61)$	$0.5873^{+0.0035}_{-0.0047} \quad (+0.3\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134 \pm 0.030$	$\text{Age}/\text{Gyr}$	$13.760 \pm 0.029 \quad (+0.3\sigma)$	$f\sigma_8(2.33)$	$0.2965^{+0.0016}_{-0.0023} \quad (+0.2\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.480 \pm 0.086$	$z_*$	$1089.48 \pm 0.32 \quad (+0.3\sigma)$	$\sigma_8(2.33)$	$0.3060^{+0.0016}_{-0.0023} \quad (+0.0\sigma)$
$A_{143}^{\text{dustTE}}$	$0.221 \pm 0.054$	$r_*$	$144.76 \pm 0.33 \quad (-0.7\sigma)$	$f_{2000}^{143}$	$26.7 \pm 2.9 \quad (-0.0\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.660 \pm 0.080$	$100\theta_*$	$1.04130 \pm 0.00032 \quad (-0.5\sigma)$	$f_{2000}^{143 \times 217}$	$29.9 \pm 2.0 \quad (-0.0\sigma)$
$A_{217}^{\text{dustTE}}$	$2.05 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.902 \pm 0.031 \quad (-0.7\sigma)$	$f_{2000}^{217}$	$105.0 \pm 1.9 \quad (+0.0\sigma)$
$c_{100}$	$0.99968 \pm 0.00061 \quad (+0.1\sigma)$	$z_{\text{drag}}$	$1060.30 \pm 0.33 \quad (+0.1\sigma)$	$\chi_{\text{small}}^2$	$396.4 \pm 1.1 \quad (-0.0\sigma)$
$c_{217}$	$0.99812 \pm 0.00063 \quad (-0.1\sigma)$	$r_{\text{drag}}$	$147.36 \pm 0.32 \quad (-0.8\sigma)$	$\chi_{\text{lowl}}^2$	$22.38 \pm 0.90 \quad (+0.5\sigma)$
$H_0$	$68.29 \pm 0.72 \quad (-0.6\sigma)$	$k_{\text{D}}$	$0.14075 \pm 0.00033 \quad (+0.8\sigma)$	$\chi_{\text{plik}}^2$	$2353.8 \pm 5.7 \quad (+285.0\sigma)$
$\Omega_{\Lambda}$	$0.6969 \pm 0.0094 \quad (-0.6\sigma)$	$100\theta_{\text{D}}$	$0.16056 \pm 0.00019 \quad (-0.2\sigma)$	$\chi_{\text{prior}}^2$	$11.3 \pm 4.4 \quad (+1.2\sigma)$
$\Omega_{\text{m}}$	$0.3031 \pm 0.0094 \quad (+0.6\sigma)$	$z_{\text{eq}}$	$3361 \pm 35 \quad (+0.6\sigma)$	$\chi_{\text{CMB}}^2$	$2772.6 \pm 5.8 \quad (+279.8\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 2783.87; \Delta\bar{\chi}_{\text{eff}}^2 = 1591.25; R - 1 = 0.01066$$



### 3.11 base\_Alens\_plikHM\_TTTEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02258 \pm 0.00015 \quad (+0.4\sigma)$	$\sigma_8$	$0.8028^{+0.0059}_{-0.0069} \quad (+0.2\sigma)$	$D_M(0.15)$	$635.9 \pm 4.2 \quad (+0.1\sigma)$
$\Omega_c h^2$	$0.1182 \pm 0.0011 \quad (+0.3\sigma)$	$S_8$	$0.808 \pm 0.013 \quad (+0.2\sigma)$	$H(0.38)$	$83.43 \pm 0.32 \quad (-0.1\sigma)$
$100\theta_{MC}$	$1.04113 \pm 0.00029 \quad (-0.2\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4425 \pm 0.0073 \quad (+0.2\sigma)$	$D_M(0.38)$	$1518.4 \pm 8.4 \quad (+0.1\sigma)$
$\tau$	$0.0527^{+0.0035}_{-0.0076} \quad (+0.0\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.5960 \pm 0.0071 \quad (+0.2\sigma)$	$H(0.51)$	$90.07 \pm 0.26 \quad (-0.0\sigma)$
$A_L$	$1.170 \pm 0.058 \quad (-0.4\sigma)$	$\sigma_8/h^{0.5}$	$0.972 \pm 0.010 \quad (+0.2\sigma)$	$D_M(0.51)$	$1968.2 \pm 9.9 \quad (+0.1\sigma)$
$\ln(10^{10} A_s)$	$3.036^{+0.010}_{-0.015} \quad (+0.1\sigma)$	$r_{drag} h$	$100.54 \pm 0.85 \quad (-0.2\sigma)$	$H(0.61)$	$95.64 \pm 0.21 \quad (+0.0\sigma)$
$n_s$	$0.9706 \pm 0.0039 \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.600 \pm 0.058 \quad (-0.4\sigma)$	$D_M(0.61)$	$2291 \pm 11 \quad (+0.1\sigma)$
$y_{cal}$	$1.0000 \pm 0.0025 \quad (+0.0\sigma)$	$z_{re}$	$7.43^{+0.29}_{-0.87} \quad (-0.0\sigma)$	$H(2.33)$	$235.60 \pm 0.64 \quad (+0.4\sigma)$
$A_{217}^{CIB}$	$44 \pm 7 \quad (-0.1\sigma)$	$10^9 A_s$	$2.083^{+0.021}_{-0.031} \quad (+0.1\sigma)$	$D_M(2.33)$	$5747.6 \pm 9.9 \quad (-0.1\sigma)$
$\xi^{tSZ \times CIB}$	$> 0.434 \quad (+0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.874 \pm 0.011 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4476 \pm 0.0069 \quad (+0.2\sigma)$
$A_{143}^{tSZ}$	$5.8^{+2.1}_{-1.7} \quad (+0.1\sigma)$	$D_{40}$	$1218 \pm 12 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.7426^{+0.0050}_{-0.0061} \quad (+0.1\sigma)$
$A_{100}^{PS}$	$250 \pm 28 \quad (-0.0\sigma)$	$D_{220}$	$5738 \pm 38 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4675 \pm 0.0058 \quad (+0.2\sigma)$
$A_{143}^{PS}$	$42 \pm 8 \quad (-0.1\sigma)$	$D_{810}$	$2531 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6591^{+0.0040}_{-0.0052} \quad (+0.1\sigma)$
$A_{143 \times 217}^{PS}$	$42^{+10}_{-9} \quad (+0.0\sigma)$	$D_{1420}$	$815.5 \pm 4.7 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4670 \pm 0.0052 \quad (+0.2\sigma)$
$A_{217}^{PS}$	$116.4 \pm 9.9 \quad (+0.1\sigma)$	$D_{2000}$	$232.2 \pm 1.6 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6172^{+0.0036}_{-0.0048} \quad (+0.1\sigma)$
$A^{kSZ}$	$< 3.06 \quad (-0.1\sigma)$	$n_{s,0.002}$	$0.9706 \pm 0.0039 \quad (-0.1\sigma)$	$f\sigma_8(0.61)$	$0.4627 \pm 0.0047 \quad (+0.2\sigma)$
$A_{100}^{dustTT}$	$8.8 \pm 1.9 \quad (-0.0\sigma)$	$Y_P$	$0.245473 \pm 0.000056 \quad (+0.4\sigma)$	$\sigma_8(0.61)$	$0.5875^{+0.0033}_{-0.0046} \quad (+0.1\sigma)$
$A_{143}^{dustTT}$	$10.6 \pm 1.8 \quad (+0.1\sigma)$	$Y_P^{BBN}$	$0.246800 \pm 0.000056 \quad (+0.4\sigma)$	$f\sigma_8(2.33)$	$0.2965^{+0.0016}_{-0.0023} \quad (+0.1\sigma)$
$A_{143 \times 217}^{dustTT}$	$18.2 \pm 3.3 \quad (+0.1\sigma)$	$10^5 D/H$	$2.548 \pm 0.026 \quad (-0.4\sigma)$	$\sigma_8(2.33)$	$0.3060^{+0.0016}_{-0.0023} \quad (+0.0\sigma)$
$A_{217}^{dustTT}$	$93.8 \pm 7.3 \quad (+0.0\sigma)$	Age/Gyr	$13.762 \pm 0.022 \quad (-0.1\sigma)$	$f_{2000}^{143}$	$26.7 \pm 2.9 \quad (-0.2\sigma)$
$A_{100}^{dustTE}$	$0.114 \pm 0.039$	$z_*$	$1089.50 \pm 0.24 \quad (-0.2\sigma)$	$f_{2000}^{143 \times 217}$	$30.0 \pm 2.0 \quad (-0.2\sigma)$
$A_{100 \times 143}^{dustTE}$	$0.135 \pm 0.030$	$r_*$	$144.74 \pm 0.24 \quad (-0.5\sigma)$	$f_{2000}^{217}$	$105.1 \pm 1.8 \quad (-0.2\sigma)$
$A_{100 \times 217}^{dustTE}$	$0.479 \pm 0.086$	$100\theta_*$	$1.04129 \pm 0.00029 \quad (-0.2\sigma)$	$\chi_{small}^2$	$396.4 \pm 1.1 \quad (+0.0\sigma)$
$A_{143}^{dustTE}$	$0.221 \pm 0.053$	$D_M(z_*)/\text{Gpc}$	$13.900 \pm 0.023 \quad (-0.4\sigma)$	$\chi_{lowl}^2$	$22.40 \pm 0.75 \quad (+0.1\sigma)$
$A_{143 \times 217}^{dustTE}$	$0.659 \pm 0.080$	$z_{drag}$	$1060.29 \pm 0.31 \quad (+0.5\sigma)$	$\chi_{plik}^2$	$2353.2 \pm 5.5 \quad (+297.0\sigma)$
$A_{217}^{dustTE}$	$2.06 \pm 0.27$	$r_{drag}$	$147.34 \pm 0.25 \quad (-0.5\sigma)$	$\chi_{6DF}^2$	$0.030 \pm 0.043 \quad (-0.2\sigma)$
$c_{100}$	$0.99969 \pm 0.00061 \quad (+0.1\sigma)$	$k_D$	$0.14076 \pm 0.00029 \quad (+0.6\sigma)$	$\chi_{MGS}^2$	$1.79 \pm 0.52 \quad (-0.3\sigma)$
$c_{217}$	$0.99812 \pm 0.00063 \quad (-0.1\sigma)$	$100\theta_D$	$0.16056 \pm 0.00018 \quad (-0.5\sigma)$	$\chi_{DR12BAO}^2$	$3.95 \pm 0.79 \quad (-0.1\sigma)$
$H_0$	$68.24 \pm 0.50 \quad (-0.1\sigma)$	$z_{eq}$	$3364 \pm 24 \quad (+0.3\sigma)$	$\chi_{prior}^2$	$11.3 \pm 4.4 \quad (+1.2\sigma)$
$\Omega_\Lambda$	$0.6962 \pm 0.0064 \quad (-0.2\sigma)$	$k_{eq}$	$0.010267 \pm 0.000073 \quad (+0.3\sigma)$	$\chi_{BAO}^2$	$5.78 \pm 0.76 \quad (-0.2\sigma)$
$\Omega_m$	$0.3038 \pm 0.0064 \quad (+0.2\sigma)$	$100\theta_{eq}$	$0.8210 \pm 0.0046 \quad (-0.3\sigma)$	$\chi_{CMB}^2$	$2772.0 \pm 5.7 \quad (+290.2\sigma)$
$\Omega_m h^2$	$0.1414 \pm 0.0010 \quad (+0.3\sigma)$	$100\theta_{s,eq}$	$0.4532 \pm 0.0024 \quad (-0.3\sigma)$		
$\Omega_m h^3$	$0.09649 \pm 0.00030 \quad (+0.4\sigma)$	$H(0.15)$	$73.44 \pm 0.43 \quad (-0.1\sigma)$		

$$\bar{\chi}_{eff}^2 = 2789.13; \Delta \bar{\chi}_{eff}^2 = 1591.05; R - 1 = 0.01550$$



### 3.12 base\_Alens\_plikHM\_TTTEE\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02274 \pm 0.00016 \quad (-0.7\sigma)$	$\Omega_{\text{m}}h^3$	$0.09658 \pm 0.00030 \quad (-0.0\sigma)$	$100\theta_{\text{s,eq}}$	$0.4572 \pm 0.0031 \quad (-1.5\sigma)$
$\Omega_{\text{c}}h^2$	$0.1164^{+0.0013}_{-0.0015} \quad (+1.5\sigma)$	$\sigma_8$	$0.7962^{+0.0065}_{-0.0076} \quad (+1.1\sigma)$	$H(0.15)$	$74.19 \pm 0.56 \quad (-1.4\sigma)$
$100\theta_{\text{MC}}$	$1.04136^{+0.00030}_{-0.00034} \quad (-1.1\sigma)$	$S_8$	$0.787^{+0.015}_{-0.018} \quad (+1.4\sigma)$	$D_{\text{M}}(0.15)$	$628.7 \pm 5.3 \quad (+1.4\sigma)$
$\tau$	$0.0534^{+0.0040}_{-0.0071} \quad (-0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4309^{+0.0084}_{-0.0096} \quad (+1.4\sigma)$	$H(0.38)$	$83.98 \pm 0.42 \quad (-1.4\sigma)$
$A_{\text{L}}$	$1.214 \pm 0.065 \quad (-1.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.5857^{+0.0080}_{-0.0091} \quad (+1.3\sigma)$	$D_{\text{M}}(0.38)$	$1504 \pm 11 \quad (+1.4\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.033^{+0.011}_{-0.015} \quad (+0.3\sigma)$	$\sigma_8/h^{0.5}$	$0.958^{+0.011}_{-0.013} \quad (+1.3\sigma)$	$H(0.51)$	$90.51 \pm 0.34 \quad (-1.3\sigma)$
$n_{\text{s}}$	$0.9751 \pm 0.0044 \quad (-1.2\sigma)$	$r_{\text{drag}}h$	$102.0 \pm 1.1 \quad (-1.5\sigma)$	$D_{\text{M}}(0.51)$	$1951 \pm 13 \quad (+1.4\sigma)$
$y_{\text{cal}}$	$0.9999 \pm 0.0024 \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.614 \pm 0.058 \quad (-0.7\sigma)$	$H(0.61)$	$95.99 \pm 0.28 \quad (-1.3\sigma)$
$A_{217}^{\text{CIB}}$	$44 \pm 7 \quad (+0.0\sigma)$	$z_{\text{re}}$	$7.44^{+0.35}_{-0.80} \quad (-0.1\sigma)$	$D_{\text{M}}(0.61)$	$2273 \pm 14 \quad (+1.4\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	$> 0.446 \quad (+0.0\sigma)$	$10^9 A_{\text{s}}$	$2.077^{+0.022}_{-0.030} \quad (+0.3\sigma)$	$H(2.33)$	$234.60^{+0.76}_{-0.86} \quad (+1.5\sigma)$
$A_{143}^{\text{tSZ}}$	$5.9^{+2.0}_{-1.7} \quad (+0.0\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.867 \pm 0.012 \quad (+0.9\sigma)$	$D_{\text{M}}(2.33)$	$5733 \pm 12 \quad (+1.2\sigma)$
$A_{100}^{\text{PS}}$	$246 \pm 30 \quad (+0.1\sigma)$	$D_{40}$	$1208 \pm 13 \quad (+1.0\sigma)$	$f\sigma_8(0.15)$	$0.4368^{+0.0080}_{-0.0091} \quad (+1.4\sigma)$
$A_{143}^{\text{PS}}$	$40 \pm 8 \quad (+0.2\sigma)$	$D_{220}$	$5747^{+39}_{-35} \quad (-0.2\sigma)$	$\sigma_8(0.15)$	$0.7376^{+0.0055}_{-0.0065} \quad (+1.0\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$41 \pm 9 \quad (+0.2\sigma)$	$D_{810}$	$2528 \pm 13 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4589^{+0.0066}_{-0.0075} \quad (+1.4\sigma)$
$A_{217}^{\text{PS}}$	$116 \pm 10 \quad (+0.2\sigma)$	$D_{1420}$	$816.0 \pm 4.6 \quad (+0.0\sigma)$	$\sigma_8(0.38)$	$0.6559^{+0.0043}_{-0.0053} \quad (+0.8\sigma)$
$A^{\text{kSZ}}$	$< 2.75 \quad (-0.0\sigma)$	$D_{2000}$	$232.8 \pm 1.5 \quad (-0.5\sigma)$	$f\sigma_8(0.51)$	$0.4597^{+0.0058}_{-0.0066} \quad (+1.3\sigma)$
$A_{100}^{\text{dustTT}}$	$8.8 \pm 1.8 \quad (-0.1\sigma)$	$n_{\text{s},0.002}$	$0.9751 \pm 0.0044 \quad (-1.2\sigma)$	$\sigma_8(0.51)$	$0.6147^{+0.0038}_{-0.0048} \quad (+0.7\sigma)$
$A_{143}^{\text{dustTT}}$	$10.6 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.245537^{+0.000059}_{-0.000071} \quad (-0.7\sigma)$	$f\sigma_8(0.61)$	$0.4563^{+0.0053}_{-0.0060} \quad (+1.3\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$17.9 \pm 3.3 \quad (+0.0\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246864^{+0.000059}_{-0.000072} \quad (-0.7\sigma)$	$\sigma_8(0.61)$	$0.5854^{+0.0035}_{-0.0045} \quad (+0.6\sigma)$
$A_{217}^{\text{dustTT}}$	$93.5 \pm 7.4 \quad (-0.1\sigma)$	$10^5 \text{D/H}$	$2.519 \pm 0.029 \quad (+0.7\sigma)$	$f\sigma_8(2.33)$	$0.2959^{+0.0017}_{-0.0022} \quad (+0.4\sigma)$
$A_{100}^{\text{dustTE}}$	$0.115 \pm 0.039$	Age/Gyr	$13.731 \pm 0.027 \quad (+1.1\sigma)$	$\sigma_8(2.33)$	$0.3060^{+0.0016}_{-0.0022} \quad (-0.0\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$z_*$	$1089.15 \pm 0.29 \quad (+1.1\sigma)$	$f_{2000}^{143}$	$26 \pm 3 \quad (+0.3\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.480 \pm 0.087$	$r_*$	$145.09 \pm 0.30 \quad (-1.4\sigma)$	$f_{2000}^{143 \times 217}$	$29.1 \pm 2.0 \quad (+0.3\sigma)$
$A_{143}^{\text{dustTE}}$	$0.219 \pm 0.054$	$100\theta_*$	$1.04151^{+0.00029}_{-0.00033} \quad (-1.1\sigma)$	$f_{2000}^{217}$	$104.3 \pm 1.9 \quad (+0.3\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.659 \pm 0.081$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.930 \pm 0.028 \quad (-1.3\sigma)$	$\chi_{\text{small}}^2$	$396.3 \pm 1.0 \quad (-0.1\sigma)$
$A_{217}^{\text{dustTE}}$	$2.04 \pm 0.27$	$z_{\text{drag}}$	$1060.53 \pm 0.32 \quad (-0.4\sigma)$	$\chi_{\text{lowl}}^2$	$21.71 \pm 0.72 \quad (+1.3\sigma)$
$c_{100}$	$0.99970 \pm 0.00062 \quad (+0.1\sigma)$	$r_{\text{drag}}$	$147.64 \pm 0.29 \quad (-1.3\sigma)$	$\chi_{\text{plik}}^2$	$2355.4 \pm 6.1 \quad (+265.6\sigma)$
$c_{217}$	$0.99808 \pm 0.00062 \quad (-0.1\sigma)$	$k_{\text{D}}$	$0.14056 \pm 0.00031 \quad (+1.0\sigma)$	$\chi_{\text{H073p45}}^2$	$7.0 \pm 2.1 \quad (+1.6\sigma)$
$H_0$	$69.10 \pm 0.65 \quad (-1.4\sigma)$	$100\theta_{\text{D}}$	$0.16044 \pm 0.00018 \quad (+0.1\sigma)$	$\chi_{\text{prior}}^2$	$11.3 \pm 4.4 \quad (+1.2\sigma)$
$\Omega_{\Lambda}$	$0.7072^{+0.0086}_{-0.0075} \quad (-1.5\sigma)$	$z_{\text{eq}}$	$3325^{+29}_{-33} \quad (+1.5\sigma)$	$\chi_{\text{CMB}}^2$	$2773.4 \pm 6.1 \quad (+266.6\sigma)$
$\Omega_{\text{m}}$	$0.2928^{+0.0075}_{-0.0086} \quad (+1.5\sigma)$	$k_{\text{eq}}$	$0.010148^{+0.000088}_{-0.00010} \quad (+1.5\sigma)$		
$\Omega_{\text{m}}h^2$	$0.1398^{+0.0012}_{-0.0014} \quad (+1.5\sigma)$	$100\theta_{\text{eq}}$	$0.8289 \pm 0.0061 \quad (-1.5\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2791.77; \Delta\bar{\chi}_{\text{eff}}^2 = 1594.32; R - 1 = 0.03556$$



### 3.13 base\_Alens\_CamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022700	$0.02263 \pm 0.00029$	$\sigma_8 \Omega_m^{0.5}$	0.4286	$0.430 \pm 0.016$	$H(0.15)$	74.25	$74.1 \pm 1.1$
$\Omega_c h^2$	0.11620	$0.1164 \pm 0.0025$	$\sigma_8 \Omega_m^{0.25}$	0.5833	$0.584 \pm 0.015$	$D_M(0.15)$	628.1	$629 \pm 10$
$100\theta_{MC}$	1.04149	$1.04144 \pm 0.00054$	$\sigma_8/h^{0.5}$	0.9543	$0.956 \pm 0.021$	$H(0.38)$	84.02	$83.92 \pm 0.79$
$\tau$	0.0502	$0.0503^{+0.0087}_{-0.0076}$	$r_{\text{drag}} h$	102.20	$102.0 \pm 2.1$	$D_M(0.38)$	1502.7	$1505 \pm 20$
$A_L$	1.270	$1.246^{+0.092}_{-0.10}$	$\langle d^2 \rangle^{1/2}$	2.656	$2.636 \pm 0.079$	$H(0.51)$	90.53	$90.45 \pm 0.64$
$\ln(10^{10} A_s)$	3.0260	$3.026^{+0.019}_{-0.016}$	$z_{\text{re}}$	7.14	$7.13^{+0.93}_{-0.72}$	$D_M(0.51)$	1949.8	$1953 \pm 24$
$n_s$	0.9776	$0.9756 \pm 0.0073$	$10^9 A_s$	2.0614	$2.062^{+0.038}_{-0.034}$	$H(0.61)$	96.00	$95.93 \pm 0.52$
$y_{\text{cal}}$	0.99990	$1.0001 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8643	$1.864 \pm 0.014$	$D_M(0.61)$	2271.4	$2275 \pm 26$
$A_{100}^{\text{PS}}$	217.0	$229 \pm 25$	$D_{40}$	1200.1	$1204 \pm 17$	$H(2.33)$	234.44	$234.5 \pm 1.4$
$A_{143}^{\text{PS}}$	44.2	$33 \pm 9$	$D_{220}$	5727.4	$5728 \pm 43$	$D_M(2.33)$	5732.6	$5737 \pm 23$
$A_{217}^{\text{PS}}$	109.9	$104 \pm 10$	$D_{810}$	2526.2	$2525 \pm 14$	$f\sigma_8(0.15)$	0.4346	$0.436 \pm 0.015$
$A_{217}^{\text{CIB}}$	36.7	$37 \pm 7$	$D_{1420}$	815.6	$814.3 \pm 5.2$	$\sigma_8(0.15)$	0.7354	$0.7354 \pm 0.0093$
$A_{143}^{\text{tSZ}}$	6.24	$4.2 \pm 2.1$	$D_{2000}$	233.18	$232.3 \pm 2.1$	$f\sigma_8(0.38)$	0.4569	$0.458 \pm 0.012$
$r_{143 \times 217}^{\text{PS}}$	0.796	$0.68 \pm 0.14$	$n_{s,0.002}$	0.9776	$0.9756 \pm 0.0073$	$\sigma_8(0.38)$	0.6541	$0.6539 \pm 0.0072$
$r_{143 \times 217}^{\text{CIB}}$	0.739	$0.50 \pm 0.27$	$Y_P$	0.245516	$0.24549^{+0.00011}_{-0.00012}$	$f\sigma_8(0.51)$	0.4579	$0.458 \pm 0.011$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.996	—	$Y_P^{\text{BBN}}$	0.246843	$0.24682^{+0.00011}_{-0.00013}$	$\sigma_8(0.51)$	0.6130	$0.6128 \pm 0.0064$
$A^{\text{kSZ}}$	0.00	$< 5.18$	$10^5 D/H$	2.527	$2.540 \pm 0.053$	$f\sigma_8(0.61)$	0.4546	$0.4550 \pm 0.0095$
$A_{100}^{\text{dust}}$	1.010	$1.01 \pm 0.19$	Age/Gyr	13.730	$13.740 \pm 0.050$	$\sigma_8(0.61)$	0.5839	$0.5836^{+0.0060}_{-0.0055}$
$A_{143}^{\text{dust}}$	0.948	$0.95 \pm 0.18$	$z_*$	1089.18	$1089.29 \pm 0.53$	$f\sigma_8(2.33)$	0.29521	$0.2950^{+0.0028}_{-0.0025}$
$A_{217}^{\text{dust}}$	0.990	$0.98 \pm 0.10$	$r_*$	145.17	$145.18 \pm 0.53$	$\sigma_8(2.33)$	0.30527	$0.3050 \pm 0.0028$
$A_{143 \times 217}^{\text{dust}}$	1.016	$1.02 \pm 0.16$	$100\theta_*$	1.04165	$1.04161 \pm 0.00052$	$f_{2000}^{143}$	25.22	$26 \pm 3$
$c_{100}$	0.99788	$0.9975 \pm 0.0010$	$D_M(z_*)/\text{Gpc}$	13.9362	$13.938 \pm 0.048$	$f_{2000}^{217}$	103.32	$104.3 \pm 2.4$
$c_{217}$	1.00076	$1.0008 \pm 0.0016$	$z_{\text{drag}}$	1060.43	$1060.27 \pm 0.56$	$f_{2000}^{143 \times 217}$	28.50	$29.2 \pm 2.6$
$H_0$	69.18	$69.0 \pm 1.2$	$r_{\text{drag}}$	147.74	$147.77 \pm 0.50$	$\chi_{\text{small}}^2$	395.71	$396.8 \pm 1.6$
$\Omega_\Lambda$	0.7084	$0.707^{+0.016}_{-0.014}$	$k_D$	0.14043	$0.14034 \pm 0.00051$	$\chi_{\text{lowl}}^2$	21.18	$21.6 \pm 1.0$
$\Omega_m$	0.2916	$0.293^{+0.014}_{-0.016}$	$100\theta_D$	0.160522	$0.16061 \pm 0.00030$	$\chi_{\text{CamSpec}}^2$	7046.0	$7059.9 \pm 5.3$
$\Omega_m h^2$	0.13955	$0.1397 \pm 0.0023$	$z_{\text{eq}}$	3319	$3322 \pm 55$	$\chi_{\text{prior}}^2$	1.37	$7.2 \pm 3.3$
$\Omega_m h^3$	0.09654	$0.09640 \pm 0.00050$	$k_{\text{eq}}$	0.010131	$0.01014 \pm 0.00017$	$\chi_{\text{CMB}}^2$	7462.8	$7478.3 \pm 5.5$
$\sigma_8$	0.7937	$0.794 \pm 0.011$	$100\theta_{\text{eq}}$	0.8298	$0.829 \pm 0.011$			
$S_8$	0.7825	$0.785 \pm 0.029$	$100\theta_{s,\text{eq}}$	0.4578	$0.4575 \pm 0.0056$			

Best-fit  $\chi_{\text{eff}}^2 = 7464.21$ ;  $\bar{\chi}_{\text{eff}}^2 = 7485.53$ ;  $R - 1 = 0.00653$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.71 commander\_dx12.v3.2\_29: 21.18 CamSpec like\_10.7HM: 7045.95



### 3.14 base\_Alens\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02250 \pm 0.00022$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5921 \pm 0.0088$	$H(0.38)$	$83.47 \pm 0.41$
$\Omega_{\mathrm{c}}h^2$	$0.1178 \pm 0.0013$	$\sigma_8/h^{0.5}$	$0.966 \pm 0.013$	$D_{\mathrm{M}}(0.38)$	$1517 \pm 10$
$100\theta_{\mathrm{MC}}$	$1.04124 \pm 0.00043$	$r_{\mathrm{drag}}h$	$100.8 \pm 1.0$	$H(0.51)$	$90.10 \pm 0.34$
$\tau$	$0.0495^{+0.0089}_{-0.0072}$	$\langle d^2 \rangle^{1/2}$	$2.624 \pm 0.077$	$D_{\mathrm{M}}(0.51)$	$1966 \pm 12$
$A_{\mathrm{L}}$	$1.209 \pm 0.079$	$z_{\mathrm{re}}$	$7.10^{+0.96}_{-0.70}$	$H(0.61)$	$95.64 \pm 0.29$
$\ln(10^{10}A_{\mathrm{s}})$	$3.028^{+0.019}_{-0.016}$	$10^9 A_{\mathrm{s}}$	$2.065^{+0.039}_{-0.033}$	$D_{\mathrm{M}}(0.61)$	$2289 \pm 13$
$n_{\mathrm{s}}$	$0.9719 \pm 0.0047$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.870 \pm 0.012$	$H(2.33)$	$235.27 \pm 0.79$
$y_{\mathrm{cal}}$	$1.0001 \pm 0.0026$	$D_{40}$	$1212 \pm 13$	$D_{\mathrm{M}}(2.33)$	$5749 \pm 14$
$A_{100}^{\mathrm{PS}}$	$230 \pm 25$	$D_{220}$	$5720 \pm 42$	$f\sigma_8(0.15)$	$0.4441 \pm 0.0085$
$A_{143}^{\mathrm{PS}}$	$35 \pm 8$	$D_{810}$	$2526 \pm 14$	$\sigma_8(0.15)$	$0.7392^{+0.0078}_{-0.0069}$
$A_{217}^{\mathrm{PS}}$	$104 \pm 10$	$D_{1420}$	$813.7 \pm 5.2$	$f\sigma_8(0.38)$	$0.4643 \pm 0.0072$
$A_{217}^{\mathrm{CIB}}$	$37 \pm 7$	$D_{2000}$	$231.8 \pm 2.0$	$\sigma_8(0.38)$	$0.6563^{+0.0066}_{-0.0058}$
$A_{143}^{\mathrm{tSZ}}$	$4.1 \pm 2.0$	$n_{\mathrm{s},0.002}$	$0.9719 \pm 0.0047$	$f\sigma_8(0.51)$	$0.4641 \pm 0.0065$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.68 \pm 0.13$	$Y_{\mathrm{P}}$	$0.245443 \pm 0.000088$	$\sigma_8(0.51)$	$0.6146^{+0.0061}_{-0.0053}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.52^{+0.35}_{-0.27}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246770 \pm 0.000088$	$f\sigma_8(0.61)$	$0.4600 \pm 0.0060$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.563 \pm 0.041$	$\sigma_8(0.61)$	$0.5851^{+0.0057}_{-0.0050}$
$A^{\mathrm{kSZ}}$	$< 5.21$	$\mathrm{Age}/\mathrm{Gyr}$	$13.765 \pm 0.032$	$f\sigma_8(2.33)$	$0.2954^{+0.0028}_{-0.0025}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$z_*$	$1089.57 \pm 0.34$	$\sigma_8(2.33)$	$0.3050^{+0.0029}_{-0.0025}$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$r_*$	$144.90 \pm 0.32$	$f_{2000}^{143}$	$27 \pm 3$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$100\theta_*$	$1.04141 \pm 0.00043$	$f_{2000}^{217}$	$104.8 \pm 2.2$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.914 \pm 0.031$	$f_{2000}^{143 \times 217}$	$29.9 \pm 2.4$
$c_{100}$	$0.9975 \pm 0.0010$	$z_{\mathrm{drag}}$	$1060.08 \pm 0.49$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.6$
$c_{217}$	$1.0008 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.53 \pm 0.34$	$\chi_{\mathrm{lowl}}^2$	$22.00 \pm 0.80$
$H_0$	$68.35 \pm 0.61$	$k_{\mathrm{D}}$	$0.14050 \pm 0.00045$	$\chi_{\mathrm{CamSpec}}^2$	$7058.9 \pm 5.2$
$\Omega_{\Lambda}$	$0.6982 \pm 0.0077$	$100\theta_{\mathrm{D}}$	$0.16070 \pm 0.00027$	$\chi_{6\mathrm{DF}}^2$	$0.049 \pm 0.069$
$\Omega_{\mathrm{m}}$	$0.3018 \pm 0.0077$	$z_{\mathrm{eq}}$	$3353 \pm 29$	$\chi_{\mathrm{MGS}}^2$	$1.99 \pm 0.65$
$\Omega_{\mathrm{m}}h^2$	$0.1409 \pm 0.0012$	$k_{\mathrm{eq}}$	$0.010233 \pm 0.000089$	$\chi_{\mathrm{DR12BAO}}^2$	$4.06 \pm 0.98$
$\Omega_{\mathrm{m}}h^3$	$0.09633 \pm 0.00050$	$100\theta_{\mathrm{eq}}$	$0.8229 \pm 0.0056$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.4$
$\sigma_8$	$0.7989^{+0.0088}_{-0.0079}$	$100\theta_{\mathrm{s,eq}}$	$0.4543 \pm 0.0029$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.2$
$S_8$	$0.801 \pm 0.016$	$H(0.15)$	$73.53 \pm 0.53$	$\chi_{\mathrm{CMB}}^2$	$7477.8 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4389 \pm 0.0089$	$D_{\mathrm{M}}(0.15)$	$635.0 \pm 5.2$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7491.23$ ;  $R - 1 = 0.01433$



### 3.15 base\_Alens\_CamSpecHM\_TT\_lowl\_lowE\_post\_Riess18

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02293 \pm 0.00025$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.411^{+0.012}_{-0.013}$	$H(0.15)$	$75.48 \pm 0.85$
$\Omega_{\text{c}}h^2$	$0.1133 \pm 0.0020$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.567 \pm 0.012$	$D_{\text{M}}(0.15)$	$616.7^{+7.4}_{-8.3}$
$100\theta_{\text{MC}}$	$1.04192 \pm 0.00048$	$\sigma_8/h^{0.5}$	$0.932 \pm 0.017$	$H(0.38)$	$84.94 \pm 0.65$
$\tau$	$0.0524 \pm 0.0089$	$r_{\text{drag}}h$	$104.7 \pm 1.7$	$D_{\text{M}}(0.38)$	$1480 \pm 16$
$A_{\text{L}}$	$1.334 \pm 0.097$	$\langle d^2 \rangle^{1/2}$	$2.667 \pm 0.077$	$H(0.51)$	$91.27 \pm 0.53$
$\ln(10^{10}A_{\text{s}})$	$3.023 \pm 0.018$	$z_{\text{re}}$	$7.24^{+0.91}_{-0.81}$	$D_{\text{M}}(0.51)$	$1922 \pm 19$
$n_{\text{s}}$	$0.9839 \pm 0.0061$	$10^9 A_{\text{s}}$	$2.056 \pm 0.037$	$H(0.61)$	$96.60 \pm 0.44$
$y_{\text{cal}}$	$1.0001 \pm 0.0024$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.852 \pm 0.013$	$D_{\text{M}}(0.61)$	$2242 \pm 20$
$A_{100}^{\text{PS}}$	$225 \pm 25$	$D_{40}$	$1188^{+14}_{-16}$	$H(2.33)$	$232.8 \pm 1.1$
$A_{143}^{\text{PS}}$	$30 \pm 8$	$D_{220}$	$5746 \pm 41$	$D_{\text{M}}(2.33)$	$5709 \pm 19$
$A_{217}^{\text{PS}}$	$105 \pm 10$	$D_{810}$	$2521 \pm 14$	$f\sigma_8(0.15)$	$0.418 \pm 0.012$
$A_{217}^{\text{CIB}}$	$35^{+7}_{-7}$	$D_{1420}$	$815.5 \pm 5.0$	$\sigma_8(0.15)$	$0.7274 \pm 0.0084$
$A_{143}^{\text{tSZ}}$	$4.4 \pm 2.1$	$D_{2000}$	$233.8 \pm 2.0$	$f\sigma_8(0.38)$	$0.443 \pm 0.010$
$r_{143 \times 217}^{\text{PS}}$	$0.69 \pm 0.14$	$n_{\text{s},0.002}$	$0.9839 \pm 0.0061$	$\sigma_8(0.38)$	$0.6489 \pm 0.0068$
$r_{143 \times 217}^{\text{CIB}}$	$0.47^{+0.26}_{-0.35}$	$Y_{\text{P}}$	$0.24562 \pm 0.00011$	$f\sigma_8(0.51)$	$0.4461 \pm 0.0088$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.24695 \pm 0.00011$	$\sigma_8(0.51)$	$0.6090 \pm 0.0061$
$A^{\text{kSZ}}$	$< 4.70$	$10^5 \text{D}/\text{H}$	$2.486 \pm 0.044$	$f\sigma_8(0.61)$	$0.4442 \pm 0.0080$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.19$	$\text{Age}/\text{Gyr}$	$13.680 \pm 0.041$	$\sigma_8(0.61)$	$0.5805 \pm 0.0057$
$A_{143}^{\text{dust}}$	$0.95 \pm 0.17$	$z_*$	$1088.65^{+0.40}_{-0.45}$	$f\sigma_8(2.33)$	$0.2943 \pm 0.0027$
$A_{217}^{\text{dust}}$	$0.98 \pm 0.10$	$r_*$	$145.76 \pm 0.44$	$\sigma_8(2.33)$	$0.3052 \pm 0.0028$
$A_{143 \times 217}^{\text{dust}}$	$1.01 \pm 0.16$	$100\theta_*$	$1.04206 \pm 0.00047$	$f_{2000}^{143}$	$24 \pm 3$
$c_{100}$	$0.9976 \pm 0.0011$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.987 \pm 0.041$	$f_{2000}^{217}$	$102.9 \pm 2.3$
$c_{217}$	$1.0006 \pm 0.0016$	$z_{\text{drag}}$	$1060.74 \pm 0.51$	$f_{2000}^{143 \times 217}$	$27.6 \pm 2.4$
$H_0$	$70.60 \pm 0.97$	$r_{\text{drag}}$	$148.26 \pm 0.44$	$\chi_{\text{simall}}^2$	$396.8 \pm 1.5$
$\Omega_{\Lambda}$	$0.725^{+0.012}_{-0.010}$	$k_{\text{D}}$	$0.14004 \pm 0.00048$	$\chi_{\text{lowl}}^2$	$20.64 \pm 0.59$
$\Omega_{\text{m}}$	$0.275^{+0.010}_{-0.012}$	$100\theta_{\text{D}}$	$0.16039 \pm 0.00027$	$\chi_{\text{CamSpec}}^2$	$7062.5 \pm 5.7$
$\Omega_{\text{m}}h^2$	$0.1369 \pm 0.0018$	$z_{\text{eq}}$	$3256 \pm 44$	$\chi_{\text{H073p45}}^2$	$3.3 \pm 2.1$
$\Omega_{\text{m}}h^3$	$0.09662 \pm 0.00048$	$k_{\text{eq}}$	$0.00994 \pm 0.00013$	$\chi_{\text{prior}}^2$	$6.9 \pm 3.1$
$\sigma_8$	$0.7832 \pm 0.0098$	$100\theta_{\text{eq}}$	$0.8430 \pm 0.0091$	$\chi_{\text{CMB}}^2$	$7479.9 \pm 5.8$
$S_8$	$0.750^{+0.021}_{-0.024}$	$100\theta_{\text{s,eq}}$	$0.4645 \pm 0.0046$		

$$\bar{\chi}_{\text{eff}}^2 = 7490.17; R - 1 = 0.03353$$



### 3.16 base\_Alens\_CamSpecHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02263 \pm 0.00029$	$\sigma_8 \Omega_m^{0.5}$	$0.431 \pm 0.016$	$H(0.15)$	$74.1 \pm 1.1$
$\Omega_c h^2$	$0.1164 \pm 0.0025$	$\sigma_8 \Omega_m^{0.25}$	$0.586 \pm 0.015$	$D_M(0.15)$	$629 \pm 10$
$100\theta_{MC}$	$1.04144 \pm 0.00053$	$\sigma_8/h^{0.5}$	$0.958 \pm 0.020$	$H(0.38)$	$83.93 \pm 0.79$
$\tau$	$0.0535^{+0.0039}_{-0.0079}$	$r_{\text{drag}} h$	$102.1 \pm 2.1$	$D_M(0.38)$	$1505 \pm 20$
$A_L$	$1.239 \pm 0.097$	$\langle d^2 \rangle^{1/2}$	$2.635 \pm 0.078$	$H(0.51)$	$90.46 \pm 0.64$
$\ln(10^{10} A_s)$	$3.032^{+0.012}_{-0.015}$	$z_{\text{re}}$	$7.47^{+0.37}_{-0.83}$	$D_M(0.51)$	$1953 \pm 24$
$n_s$	$0.9758 \pm 0.0073$	$10^9 A_s$	$2.075^{+0.024}_{-0.032}$	$H(0.61)$	$95.93 \pm 0.52$
$y_{\text{cal}}$	$1.0001 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.864 \pm 0.015$	$D_M(0.61)$	$2274 \pm 26$
$A_{100}^{\text{PS}}$	$228 \pm 25$	$D_{40}$	$1205 \pm 17$	$H(2.33)$	$234.5 \pm 1.4$
$A_{143}^{\text{PS}}$	$33 \pm 9$	$D_{220}$	$5727 \pm 43$	$D_M(2.33)$	$5736 \pm 23$
$A_{217}^{\text{PS}}$	$104 \pm 10$	$D_{810}$	$2525 \pm 14$	$f\sigma_8(0.15)$	$0.437 \pm 0.015$
$A_{217}^{\text{CIB}}$	$37 \pm 7$	$D_{1420}$	$814.3 \pm 5.2$	$\sigma_8(0.15)$	$0.7376 \pm 0.0083$
$A_{143}^{\text{tSZ}}$	$4.2 \pm 2.1$	$D_{2000}$	$232.4 \pm 2.1$	$f\sigma_8(0.38)$	$0.459 \pm 0.012$
$r_{143 \times 217}^{\text{PS}}$	$0.68 \pm 0.14$	$n_{s,0.002}$	$0.9758 \pm 0.0073$	$\sigma_8(0.38)$	$0.6559 \pm 0.0061$
$r_{143 \times 217}^{\text{CIB}}$	$0.50 \pm 0.27$	$Y_P$	$0.24549^{+0.00011}_{-0.00012}$	$f\sigma_8(0.51)$	$0.460 \pm 0.010$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24682^{+0.00011}_{-0.00012}$	$\sigma_8(0.51)$	$0.6147 \pm 0.0053$
$A^{\text{kSZ}}$	$< 5.15$	$10^5 \text{D/H}$	$2.540 \pm 0.053$	$f\sigma_8(0.61)$	$0.4563 \pm 0.0092$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.19$	Age/Gyr	$13.739 \pm 0.050$	$\sigma_8(0.61)$	$0.5854^{+0.0045}_{-0.0051}$
$A_{143}^{\text{dust}}$	$0.95 \pm 0.17$	$z_*$	$1089.29 \pm 0.53$	$f\sigma_8(2.33)$	$0.2959^{+0.0019}_{-0.0024}$
$A_{217}^{\text{dust}}$	$0.98 \pm 0.10$	$r_*$	$145.19 \pm 0.53$	$\sigma_8(2.33)$	$0.3060^{+0.0018}_{-0.0024}$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.16$	$100\theta_*$	$1.04161 \pm 0.00052$	$f_{2000}^{143}$	$26 \pm 3$
$c_{100}$	$0.9975 \pm 0.0010$	$D_M(z_*)/\text{Gpc}$	$13.939 \pm 0.048$	$f_{2000}^{217}$	$104.3 \pm 2.4$
$c_{217}$	$1.0008 \pm 0.0016$	$z_{\text{drag}}$	$1060.27 \pm 0.56$	$f_{2000}^{143 \times 217}$	$29.1 \pm 2.6$
$H_0$	$69.1 \pm 1.2$	$r_{\text{drag}}$	$147.78 \pm 0.50$	$\chi_{\text{simall}}^2$	$396.4 \pm 1.1$
$\Omega_\Lambda$	$0.707^{+0.016}_{-0.014}$	$k_D$	$0.14033 \pm 0.00051$	$\chi_{\text{lowl}}^2$	$21.6 \pm 1.1$
$\Omega_m$	$0.293^{+0.014}_{-0.016}$	$100\theta_D$	$0.16061 \pm 0.00030$	$\chi_{\text{CamSpec}}^2$	$7059.9 \pm 5.3$
$\Omega_m h^2$	$0.1396 \pm 0.0023$	$z_{\text{eq}}$	$3321 \pm 55$	$\chi_{\text{prior}}^2$	$7.2 \pm 3.3$
$\Omega_m h^3$	$0.09640 \pm 0.00050$	$k_{\text{eq}}$	$0.01014 \pm 0.00017$	$\chi_{\text{CMB}}^2$	$7477.9 \pm 5.4$
$\sigma_8$	$0.796 \pm 0.010$	$100\theta_{\text{eq}}$	$0.829 \pm 0.011$		
$S_8$	$0.787 \pm 0.029$	$100\theta_{s,\text{eq}}$	$0.4576 \pm 0.0056$		

$\bar{\chi}_{\text{eff}}^2 = 7485.10$ ;  $R - 1 = 0.00928$



### 3.17 base\_Alens\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02250 \pm 0.00022$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5940 \pm 0.0081$	$H(0.38)$	$83.48 \pm 0.41$
$\Omega_{\mathrm{c}}h^2$	$0.1178 \pm 0.0013$	$\sigma_8/h^{0.5}$	$0.969 \pm 0.011$	$D_{\mathrm{M}}(0.38)$	$1517 \pm 10$
$100\theta_{\mathrm{MC}}$	$1.04123 \pm 0.00043$	$r_{\mathrm{drag}}h$	$100.8 \pm 1.0$	$H(0.51)$	$90.10 \pm 0.34$
$\tau$	$0.0528^{+0.0040}_{-0.0074}$	$\langle d^2 \rangle^{1/2}$	$2.624 \pm 0.076$	$D_{\mathrm{M}}(0.51)$	$1966 \pm 12$
$A_{\mathrm{L}}$	$1.201 \pm 0.077$	$z_{\mathrm{re}}$	$7.45^{+0.34}_{-0.86}$	$H(0.61)$	$95.64 \pm 0.29$
$\ln(10^{10}A_{\mathrm{s}})$	$3.034^{+0.011}_{-0.015}$	$10^9 A_{\mathrm{s}}$	$2.078^{+0.023}_{-0.031}$	$D_{\mathrm{M}}(0.61)$	$2289 \pm 13$
$n_{\mathrm{s}}$	$0.9721 \pm 0.0046$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.870 \pm 0.012$	$H(2.33)$	$235.26 \pm 0.79$
$y_{\mathrm{cal}}$	$1.0001 \pm 0.0026$	$D_{40}$	$1212 \pm 13$	$D_{\mathrm{M}}(2.33)$	$5749 \pm 14$
$A_{100}^{\mathrm{PS}}$	$230 \pm 25$	$D_{220}$	$5719 \pm 42$	$f\sigma_8(0.15)$	$0.4455 \pm 0.0080$
$A_{143}^{\mathrm{PS}}$	$35 \pm 8$	$D_{810}$	$2526 \pm 14$	$\sigma_8(0.15)$	$0.7416^{+0.0057}_{-0.0064}$
$A_{217}^{\mathrm{PS}}$	$104 \pm 10$	$D_{1420}$	$813.8 \pm 5.2$	$f\sigma_8(0.38)$	$0.4658 \pm 0.0066$
$A_{217}^{\mathrm{CIB}}$	$37 \pm 7$	$D_{2000}$	$231.8 \pm 2.0$	$\sigma_8(0.38)$	$0.6584^{+0.0046}_{-0.0053}$
$A_{143}^{\mathrm{tSZ}}$	$4.1 \pm 2.0$	$n_{\mathrm{s},0.002}$	$0.9721 \pm 0.0046$	$f\sigma_8(0.51)$	$0.4656 \pm 0.0059$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.68 \pm 0.13$	$Y_{\mathrm{P}}$	$0.245442 \pm 0.000087$	$\sigma_8(0.51)$	$0.6166^{+0.0041}_{-0.0049}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.51^{+0.34}_{-0.27}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246769 \pm 0.000088$	$f\sigma_8(0.61)$	$0.4614 \pm 0.0053$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.563 \pm 0.041$	$\sigma_8(0.61)$	$0.5870^{+0.0038}_{-0.0046}$
$A^{\mathrm{kSZ}}$	$< 5.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.765 \pm 0.032$	$f\sigma_8(2.33)$	$0.2964^{+0.0018}_{-0.0023}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$z_*$	$1089.57 \pm 0.33$	$\sigma_8(2.33)$	$0.3060^{+0.0018}_{-0.0024}$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$r_*$	$144.91 \pm 0.32$	$f_{2000}^{143}$	$27 \pm 3$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$100\theta_*$	$1.04141 \pm 0.00042$	$f_{2000}^{217}$	$104.8 \pm 2.2$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.915 \pm 0.031$	$f_{2000}^{143 \times 217}$	$29.9 \pm 2.4$
$c_{100}$	$0.9975 \pm 0.0010$	$z_{\mathrm{drag}}$	$1060.07 \pm 0.49$	$\chi_{\mathrm{simall}}^2$	$396.4 \pm 1.1$
$c_{217}$	$1.0008 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.54 \pm 0.34$	$\chi_{\mathrm{lowl}}^2$	$22.05 \pm 0.80$
$H_0$	$68.35 \pm 0.61$	$k_{\mathrm{D}}$	$0.14049 \pm 0.00045$	$\chi_{\mathrm{CamSpec}}^2$	$7058.9 \pm 5.2$
$\Omega_{\Lambda}$	$0.6983 \pm 0.0077$	$100\theta_{\mathrm{D}}$	$0.16071 \pm 0.00027$	$\chi_{6\mathrm{DF}}^2$	$0.049 \pm 0.070$
$\Omega_{\mathrm{m}}$	$0.3017 \pm 0.0077$	$z_{\mathrm{eq}}$	$3352 \pm 29$	$\chi_{\mathrm{MGS}}^2$	$2.00 \pm 0.65$
$\Omega_{\mathrm{m}}h^2$	$0.1409 \pm 0.0012$	$k_{\mathrm{eq}}$	$0.010232 \pm 0.000089$	$\chi_{\mathrm{DR12BAO}}^2$	$4.06 \pm 0.98$
$\Omega_{\mathrm{m}}h^3$	$0.09632 \pm 0.00049$	$100\theta_{\mathrm{eq}}$	$0.8230 \pm 0.0056$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.4$
$\sigma_8$	$0.8015 \pm 0.0070$	$100\theta_{\mathrm{s,eq}}$	$0.4543 \pm 0.0028$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.2$
$S_8$	$0.804 \pm 0.016$	$H(0.15)$	$73.53 \pm 0.53$	$\chi_{\mathrm{CMB}}^2$	$7477.4 \pm 5.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4402 \pm 0.0085$	$D_{\mathrm{M}}(0.15)$	$635.0 \pm 5.1$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7490.78; R - 1 = 0.01851$



### 3.18 base\_Alens\_CamSpecHM\_TT\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02293 \pm 0.00025$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.412^{+0.011}_{-0.013}$	$H(0.15)$	$75.49 \pm 0.84$
$\Omega_{\mathrm{c}}h^2$	$0.1133 \pm 0.0020$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.569 \pm 0.011$	$D_{\mathrm{M}}(0.15)$	$616.6^{+7.2}_{-8.2}$
$100\theta_{\mathrm{MC}}$	$1.04192 \pm 0.00048$	$\sigma_8/h^{0.5}$	$0.935 \pm 0.016$	$H(0.38)$	$84.94 \pm 0.64$
$\tau$	$0.0553^{+0.0045}_{-0.0083}$	$r_{\mathrm{drag}}h$	$104.7 \pm 1.7$	$D_{\mathrm{M}}(0.38)$	$1479^{+15}_{-17}$
$A_{\mathrm{L}}$	$1.326 \pm 0.095$	$\langle d^2 \rangle^{1/2}$	$2.666 \pm 0.077$	$H(0.51)$	$91.27 \pm 0.52$
$\ln(10^{10}A_{\mathrm{s}})$	$3.029^{+0.012}_{-0.016}$	$z_{\mathrm{re}}$	$7.54^{+0.37}_{-0.92}$	$D_{\mathrm{M}}(0.51)$	$1922^{+18}_{-20}$
$n_{\mathrm{s}}$	$0.9840^{+0.0064}_{-0.0058}$	$10^9 A_{\mathrm{s}}$	$2.068^{+0.024}_{-0.034}$	$H(0.61)$	$96.60 \pm 0.44$
$y_{\mathrm{cal}}$	$1.0000 \pm 0.0024$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.851 \pm 0.013$	$D_{\mathrm{M}}(0.61)$	$2242 \pm 20$
$A_{100}^{\mathrm{PS}}$	$225 \pm 25$	$D_{40}$	$1188^{+14}_{-16}$	$H(2.33)$	$232.8 \pm 1.1$
$A_{143}^{\mathrm{PS}}$	$30 \pm 8$	$D_{220}$	$5744 \pm 41$	$D_{\mathrm{M}}(2.33)$	$5709 \pm 19$
$A_{217}^{\mathrm{PS}}$	$105 \pm 10$	$D_{810}$	$2520 \pm 14$	$f\sigma_8(0.15)$	$0.419^{+0.011}_{-0.012}$
$A_{217}^{\mathrm{CIB}}$	$35^{+6}_{-7}$	$D_{1420}$	$815.4^{+5.3}_{-4.8}$	$\sigma_8(0.15)$	$0.7294 \pm 0.0075$
$A_{143}^{\mathrm{tSZ}}$	$4.4 \pm 2.1$	$D_{2000}$	$233.7^{+2.0}_{-1.9}$	$f\sigma_8(0.38)$	$0.4443 \pm 0.0097$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.69 \pm 0.14$	$n_{\mathrm{s},0.002}$	$0.9840^{+0.0064}_{-0.0058}$	$\sigma_8(0.38)$	$0.6507^{+0.0054}_{-0.0062}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.48 \pm 0.27$	$Y_{\mathrm{P}}$	$0.24562 \pm 0.00011$	$f\sigma_8(0.51)$	$0.4472 \pm 0.0085$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24695 \pm 0.00011$	$\sigma_8(0.51)$	$0.6107^{+0.0048}_{-0.0055}$
$A^{\mathrm{kSZ}}$	$< 4.62$	$10^5 \mathrm{D}/\mathrm{H}$	$2.486 \pm 0.044$	$f\sigma_8(0.61)$	$0.4454 \pm 0.0076$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$\mathrm{Age}/\mathrm{Gyr}$	$13.680 \pm 0.041$	$\sigma_8(0.61)$	$0.5822^{+0.0043}_{-0.0051}$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.17$	$z_*$	$1088.65^{+0.39}_{-0.45}$	$f\sigma_8(2.33)$	$0.2951^{+0.0020}_{-0.0025}$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$r_*$	$145.77 \pm 0.44$	$\sigma_8(2.33)$	$0.3060^{+0.0019}_{-0.0025}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.00 \pm 0.17$	$100\theta_*$	$1.04206 \pm 0.00047$	$f_{2000}^{143}$	$24 \pm 3$
$c_{100}$	$0.9976 \pm 0.0010$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.988 \pm 0.041$	$f_{2000}^{217}$	$102.9 \pm 2.3$
$c_{217}$	$1.0005 \pm 0.0016$	$z_{\mathrm{drag}}$	$1060.74 \pm 0.51$	$f_{2000}^{143 \times 217}$	$27.5 \pm 2.4$
$H_0$	$70.61 \pm 0.96$	$r_{\mathrm{drag}}$	$148.27 \pm 0.44$	$\chi_{\mathrm{simall}}^2$	$396.5 \pm 1.3$
$\Omega_{\Lambda}$	$0.725^{+0.012}_{-0.010}$	$k_{\mathrm{D}}$	$0.14003 \pm 0.00048$	$\chi_{\mathrm{lowl}}^2$	$20.65 \pm 0.61$
$\Omega_{\mathrm{m}}$	$0.275^{+0.010}_{-0.012}$	$100\theta_{\mathrm{D}}$	$0.16039 \pm 0.00027$	$\chi_{\mathrm{CamSpec}}^2$	$7062.6 \pm 5.8$
$\Omega_{\mathrm{m}}h^2$	$0.1369 \pm 0.0018$	$z_{\mathrm{eq}}$	$3255 \pm 44$	$\chi_{\mathrm{H073p45}}^2$	$3.3 \pm 2.1$
$\Omega_{\mathrm{m}}h^3$	$0.09661 \pm 0.00048$	$k_{\mathrm{eq}}$	$0.00993 \pm 0.00013$	$\chi_{\mathrm{prior}}^2$	$6.9 \pm 3.1$
$\sigma_8$	$0.7854 \pm 0.0090$	$100\theta_{\mathrm{eq}}$	$0.8432 \pm 0.0090$	$\chi_{\mathrm{CMB}}^2$	$7479.7 \pm 5.9$
$S_8$	$0.752^{+0.021}_{-0.024}$	$100\theta_{\mathrm{s,eq}}$	$0.4645 \pm 0.0046$		
$\bar{\chi}_{\mathrm{eff}}^2 = 7489.90$ ; $R - 1 = 0.05184$					



### 3.19 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022542	$0.02251 \pm 0.00019$ $(-0.4\sigma)$	$\sigma_8$	0.8000	$0.7988 \pm 0.0085$ $(+0.4\sigma)$	$100\theta_{\text{eq}}$	0.8228	$0.8224 \pm 0.0067$ $(-0.6\sigma)$
$\Omega_c h^2$	0.11776	$0.1179 \pm 0.0016$ $(+0.6\sigma)$	$S_8$	0.8023	$0.802 \pm 0.019$ $(+0.6\sigma)$	$100\theta_{\text{s,eq}}$	0.45424	$0.4540 \pm 0.0034$ $(-0.6\sigma)$
$100\theta_{\text{MC}}$	1.041089	$1.04108 \pm 0.00033$ $(-0.7\sigma)$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4394	$0.439 \pm 0.010$ $(+0.6\sigma)$	$H(0.15)$	73.53	$73.46 \pm 0.63$ $(-0.6\sigma)$
$\tau$	0.0508	$0.0496^{+0.0083}_{-0.0073}$ $(-0.1\sigma)$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5929	$0.5925 \pm 0.0098$ $(+0.6\sigma)$	$D_{\text{M}}(0.15)$	635.0	$635.6 \pm 6.2$ $(+0.6\sigma)$
$A_{\text{L}}$	1.155	$1.149 \pm 0.072$ $(-1.0\sigma)$	$\sigma_8/h^{0.5}$	0.9676	$0.967 \pm 0.014$ $(+0.5\sigma)$	$H(0.38)$	83.471	$83.42 \pm 0.47$ $(-0.6\sigma)$
$\ln(10^{10} A_{\text{s}})$	3.0309	$3.028^{+0.017}_{-0.015}$ $(+0.1\sigma)$	$r_{\text{drag}} h$	100.81	$100.7 \pm 1.2$ $(-0.6\sigma)$	$D_{\text{M}}(0.38)$	1516.8	$1518 \pm 12$ $(+0.6\sigma)$
$n_{\text{s}}$	0.9725	$0.9713 \pm 0.0051$ $(-0.6\sigma)$	$\langle d^2 \rangle^{1/2}$	2.570	$2.561 \pm 0.065$ $(-0.9\sigma)$	$H(0.51)$	90.092	$90.05 \pm 0.38$ $(-0.6\sigma)$
$y_{\text{cal}}$	1.00007	$1.0000 \pm 0.0025$ $(-0.0\sigma)$	$z_{\text{re}}$	7.25	$7.11^{+0.89}_{-0.71}$ $(-0.0\sigma)$	$D_{\text{M}}(0.51)$	1966.4	$1968 \pm 15$ $(+0.6\sigma)$
$A_{100}^{\text{PS}}$	223.5	$232 \pm 25$ $(+0.1\sigma)$	$10^9 A_{\text{s}}$	2.0716	$2.065 \pm 0.035$ $(+0.1\sigma)$	$H(0.61)$	95.637	$95.60 \pm 0.31$ $(-0.6\sigma)$
$A_{143}^{\text{PS}}$	46.5	$36 \pm 8$ $(+0.2\sigma)$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8715	$1.870 \pm 0.012$ $(+0.4\sigma)$	$D_{\text{M}}(0.61)$	2289.4	$2291 \pm 16$ $(+0.6\sigma)$
$A_{217}^{\text{PS}}$	109.5	$105^{+10}_{-10}$ $(+0.0\sigma)$	$D_{40}$	1211.5	$1213 \pm 14$ $(+0.5\sigma)$	$H(2.33)$	235.27	$235.32 \pm 0.90$ $(+0.6\sigma)$
$A_{217}^{\text{CIB}}$	37.8	$37^{+7}_{-8}$ $(+0.1\sigma)$	$D_{220}$	5726.1	$5723 \pm 39$ $(-0.1\sigma)$	$D_{\text{M}}(2.33)$	5748.6	$5750 \pm 14$ $(+0.6\sigma)$
$A_{143}^{\text{tSZ}}$	6.07	$4.1^{+2.0}_{-2.4}$ $(-0.0\sigma)$	$D_{810}$	2531.0	$2528 \pm 14$ $(+0.2\sigma)$	$f\sigma_8(0.15)$	0.4447	$0.4447 \pm 0.0097$ $(+0.6\sigma)$
$r_{143 \times 217}^{\text{PS}}$	0.792	$0.68 \pm 0.13$ $(-0.0\sigma)$	$D_{1420}$	816.09	$814.6 \pm 4.8$ $(+0.1\sigma)$	$\sigma_8(0.15)$	0.7402	$0.7390 \pm 0.0074$ $(+0.4\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	0.703	$0.51^{+0.34}_{-0.27}$ $(+0.0\sigma)$	$D_{2000}$	232.14	$231.5 \pm 1.7$ $(-0.4\sigma)$	$f\sigma_8(0.38)$	0.4650	$0.4647 \pm 0.0080$ $(+0.6\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.94	—	$n_{\text{s},0.002}$	0.9725	$0.9713 \pm 0.0051$ $(-0.6\sigma)$	$\sigma_8(0.38)$	0.6572	$0.6560 \pm 0.0061$ $(+0.3\sigma)$
$A^{\text{kSZ}}$	0.17	$< 5.28$ $(+0.0\sigma)$	$Y_{\text{P}}$	0.245459	$0.245447 \pm 0.000075$ $(-0.4\sigma)$	$f\sigma_8(0.51)$	0.4647	$0.4643 \pm 0.0071$ $(+0.5\sigma)$
$A_{100}^{\text{dust}}$	1.021	$1.01 \pm 0.20$ $(-0.0\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	0.246786	$0.246773 \pm 0.000075$ $(-0.4\sigma)$	$\sigma_8(0.51)$	0.6155	$0.6143 \pm 0.0056$ $(+0.2\sigma)$
$A_{143}^{\text{dust}}$	0.946	$0.95 \pm 0.17$ $(-0.0\sigma)$	$10^5 \text{D}/\text{H}$	2.5545	$2.561 \pm 0.035$ $(+0.4\sigma)$	$f\sigma_8(0.61)$	0.4606	$0.4601 \pm 0.0064$ $(+0.5\sigma)$
$A_{217}^{\text{dust}}$	0.993	$0.98 \pm 0.10$ $(+0.0\sigma)$	Age/Gyr	13.7653	$13.769 \pm 0.031$ $(+0.6\sigma)$	$\sigma_8(0.61)$	0.5859	$0.5848 \pm 0.0052$ $(+0.2\sigma)$
$A_{143 \times 217}^{\text{dust}}$	1.050	$1.02 \pm 0.16$ $(+0.0\sigma)$	$z_*$	1089.509	$1089.56 \pm 0.34$ $(+0.5\sigma)$	$f\sigma_8(2.33)$	0.29580	$0.2952 \pm 0.0026$ $(+0.1\sigma)$
$c_{100}$	0.99794	$0.9975 \pm 0.0011$ $(+0.0\sigma)$	$r_*$	144.881	$144.88 \pm 0.33$ $(-0.6\sigma)$	$\sigma_8(2.33)$	0.30540	$0.3048 \pm 0.0026$ $(-0.1\sigma)$
$c_{217}$	1.00093	$1.0009 \pm 0.0016$ $(+0.1\sigma)$	$100\theta_*$	1.041265	$1.04125 \pm 0.00033$ $(-0.7\sigma)$	$f_{2000}^{143}$	26.72	$27 \pm 3$ $(+0.3\sigma)$
$c_{TE}$	0.9917	$0.9924 \pm 0.0053$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9139	$13.914 \pm 0.030$ $(-0.5\sigma)$	$f_{2000}^{217}$	104.43	$105.1 \pm 2.1$ $(+0.3\sigma)$
$c_{EE}$	0.99020	$0.9903 \pm 0.0049$	$z_{\text{drag}}$	1060.162	$1060.10 \pm 0.38$ $(-0.3\sigma)$	$f_{2000}^{143 \times 217}$	29.81	$30.0 \pm 2.2$ $(+0.3\sigma)$
$H_0$	68.35	$68.28 \pm 0.73$ $(-0.6\sigma)$	$r_{\text{drag}}$	147.495	$147.50 \pm 0.32$ $(-0.5\sigma)$	$\chi_{\text{simall}}^2$	395.68	$396.8 \pm 1.5$ $(-0.0\sigma)$
$\Omega_{\Lambda}$	0.6983	$0.6973 \pm 0.0095$ $(-0.6\sigma)$	$k_{\text{D}}$	0.140571	$0.14054 \pm 0.00034$ $(+0.4\sigma)$	$\chi_{\text{lowl}}^2$	21.90	$22.12 \pm 0.89$ $(+0.5\sigma)$
$\Omega_{\text{m}}$	0.3017	$0.3027 \pm 0.0095$ $(+0.6\sigma)$	$100\theta_{\text{D}}$	0.160623	$0.16066 \pm 0.00022$ $(+0.2\sigma)$	$\chi_{\text{CamSpec}}^2$	11496.5	$11512.3 \pm 5.7$ $(+836.1\sigma)$
$\Omega_{\text{m}} h^2$	0.14095	$0.1410 \pm 0.0014$ $(+0.6\sigma)$	$z_{\text{eq}}$	3352.8	$3355 \pm 34$ $(+0.6\sigma)$	$\chi_{\text{prior}}^2$	1.85	$7.7 \pm 3.3$ $(+0.2\sigma)$
$\Omega_{\text{m}} h^3$	0.096334	$0.09629 \pm 0.00034$ $(-0.2\sigma)$	$k_{\text{eq}}$	0.010233	$0.01024 \pm 0.00010$ $(+0.6\sigma)$	$\chi_{\text{CMB}}^2$	11914.1	$11931.2 \pm 5.8$ $(+810.7\sigma)$

Best-fit  $\chi_{\text{eff}}^2 = 11915.94$ ;  $\Delta\chi_{\text{eff}}^2 = 4451.73$ ;  $\bar{\chi}_{\text{eff}}^2 = 11938.97$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4453.44$ ;  $R - 1 = 0.01096$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.68 ( $\Delta$  -0.03) commander\_dx12\_v3.2.29: 21.90 ( $\Delta$  0.72) CamSpec like\_10.7HM\_1400\_unified: 11496.51



### 3.20 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02249 \pm 0.00017 \quad (-0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4405 \pm 0.0076 \quad (+0.2\sigma)$	$H(0.38)$	$83.37 \pm 0.33 \quad (-0.3\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1181 \pm 0.0011 \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5934 \pm 0.0077 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1519.5 \pm 8.5 \quad (+0.3\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04106 \pm 0.00030 \quad (-0.4\sigma)$	$\sigma_8/h^{0.5}$	$0.968 \pm 0.011 \quad (+0.1\sigma)$	$H(0.51)$	$90.01 \pm 0.27 \quad (-0.3\sigma)$
$\tau$	$0.0494^{+0.0084}_{-0.0073} \quad (-0.0\sigma)$	$r_{\mathrm{drag}}h$	$100.56 \pm 0.85 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.51)$	$1970 \pm 10 \quad (+0.3\sigma)$
$A_{\mathrm{L}}$	$1.145 \pm 0.065 \quad (-0.8\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.560 \pm 0.064 \quad (-0.8\sigma)$	$H(0.61)$	$95.57 \pm 0.22 \quad (-0.2\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.028^{+0.017}_{-0.016} \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.09^{+0.91}_{-0.71} \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2293 \pm 11 \quad (+0.3\sigma)$
$n_{\mathrm{s}}$	$0.9708 \pm 0.0042 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.065 \pm 0.036 \quad (+0.0\sigma)$	$H(2.33)$	$235.42 \pm 0.64 \quad (+0.2\sigma)$
$y_{\mathrm{cal}}$	$1.0000 \pm 0.0025 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.871 \pm 0.011 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5752 \pm 11 \quad (+0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$232 \pm 25 \quad (+0.1\sigma)$	$D_{40}$	$1214 \pm 12 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4456 \pm 0.0072 \quad (+0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$36 \pm 8 \quad (+0.1\sigma)$	$D_{220}$	$5722 \pm 38 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7394 \pm 0.0069 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{PS}}$	$105^{+10}_{-10} \quad (+0.0\sigma)$	$D_{810}$	$2528 \pm 14 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4655 \pm 0.0062 \quad (+0.2\sigma)$
$A_{217}^{\mathrm{CIB}}$	$37 \pm 7 \quad (-0.0\sigma)$	$D_{1420}$	$814.6 \pm 4.8 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6563 \pm 0.0060 \quad (+0.0\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$4.1^{+2.0}_{-2.4} \quad (-0.0\sigma)$	$D_{2000}$	$231.4 \pm 1.7 \quad (-0.2\sigma)$	$f\sigma_8(0.51)$	$0.4650 \pm 0.0057 \quad (+0.1\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.68 \pm 0.13 \quad (-0.0\sigma)$	$n_{\mathrm{s},0.002}$	$0.9708 \pm 0.0042 \quad (-0.2\sigma)$	$\sigma_8(0.51)$	$0.6145 \pm 0.0055 \quad (-0.0\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.52^{+0.35}_{-0.27} \quad (+0.0\sigma)$	$Y_{\mathrm{P}}$	$0.245441^{+0.000063}_{-0.000057} \quad (-0.0\sigma)$	$f\sigma_8(0.61)$	$0.4607 \pm 0.0053 \quad (+0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246768^{+0.000063}_{-0.000057} \quad (-0.0\sigma)$	$\sigma_8(0.61)$	$0.5850 \pm 0.0052 \quad (-0.0\sigma)$
$A^{\mathrm{kSZ}}$	$< 5.37 \quad (+0.0\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.563 \pm 0.030 \quad (+0.0\sigma)$	$f\sigma_8(2.33)$	$0.2953 \pm 0.0026 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.00 \pm 0.20 \quad (-0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.772 \pm 0.024 \quad (+0.2\sigma)$	$\sigma_8(2.33)$	$0.3047^{+0.0027}_{-0.0024} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.17 \quad (-0.1\sigma)$	$z_*$	$1089.60 \pm 0.26 \quad (+0.1\sigma)$	$f_{2000}^{143}$	$27.2 \pm 2.9 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.0\sigma)$	$r_*$	$144.84 \pm 0.25 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$105.1 \pm 2.0 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16 \quad (+0.0\sigma)$	$100\theta_*$	$1.04123 \pm 0.00030 \quad (-0.4\sigma)$	$f_{2000}^{143 \times 217}$	$30.1 \pm 2.1 \quad (+0.1\sigma)$
$c_{100}$	$0.9975 \pm 0.0010 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.910 \pm 0.024 \quad (-0.1\sigma)$	$\chi_{\mathrm{small}}^2$	$396.8 \pm 1.5 \quad (-0.0\sigma)$
$c_{217}$	$1.0009 \pm 0.0016 \quad (+0.1\sigma)$	$z_{\mathrm{drag}}$	$1060.08 \pm 0.35 \quad (+0.0\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.17 \pm 0.76 \quad (+0.2\sigma)$
$c_{TE}$	$0.9925 \pm 0.0053$	$r_{\mathrm{drag}}$	$147.47 \pm 0.26 \quad (-0.2\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11511.8 \pm 5.5 \quad (+860.5\sigma)$
$c_{EE}$	$0.9903 \pm 0.0050$	$k_{\mathrm{D}}$	$0.14056 \pm 0.00032 \quad (+0.1\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.030 \pm 0.044 \quad (-0.3\sigma)$
$H_0$	$68.19 \pm 0.50 \quad (-0.3\sigma)$	$100\theta_{\mathrm{D}}$	$0.16067 \pm 0.00020 \quad (-0.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.81 \pm 0.53 \quad (-0.3\sigma)$
$\Omega_{\Lambda}$	$0.6963 \pm 0.0065 \quad (-0.2\sigma)$	$z_{\mathrm{eq}}$	$3359 \pm 24 \quad (+0.2\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$3.93 \pm 0.78 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3037 \pm 0.0065 \quad (+0.2\sigma)$	$k_{\mathrm{eq}}$	$0.010251 \pm 0.000073 \quad (+0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1412 \pm 0.0010 \quad (+0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8216 \pm 0.0046 \quad (-0.2\sigma)$	$\chi_{\mathrm{BAO}}^2$	$5.77 \pm 0.77 \quad (-0.3\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09628 \pm 0.00033 \quad (-0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4536 \pm 0.0024 \quad (-0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11930.7 \pm 5.7 \quad (+819.7\sigma)$
$\sigma_8$	$0.7994 \pm 0.0078 \quad (+0.1\sigma)$	$H(0.15)$	$73.39 \pm 0.43 \quad (-0.3\sigma)$		
$S_8$	$0.804 \pm 0.014 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$636.3 \pm 4.2 \quad (+0.3\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11944.29; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4453.06; R - 1 = 0.01598$$



### 3.21 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Riess18

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02268 \pm 0.00018 \quad (-1.0\sigma)$	$S_8$	$0.783 \pm 0.017 \quad (+1.4\sigma)$	$H(0.15)$	$74.20 \pm 0.59 \quad (-1.5\sigma)$
$\Omega_{\text{c}}h^2$	$0.1161 \pm 0.0014 \quad (+1.4\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4286 \pm 0.0094 \quad (+1.4\sigma)$	$D_{\text{M}}(0.15)$	$628.6 \pm 5.6 \quad (+1.5\sigma)$
$100\theta_{\text{MC}}$	$1.04132 \pm 0.00034 \quad (-1.3\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.5830 \pm 0.0091 \quad (+1.3\sigma)$	$H(0.38)$	$83.97 \pm 0.44 \quad (-1.5\sigma)$
$\tau$	$0.0508 \pm 0.0081 \quad (-0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.954 \pm 0.013 \quad (+1.3\sigma)$	$D_{\text{M}}(0.38)$	$1504 \pm 11 \quad (+1.5\sigma)$
$A_{\text{L}}$	$1.195 \pm 0.074 \quad (-1.4\sigma)$	$r_{\text{drag}}h$	$102.1 \pm 1.2 \quad (-1.5\sigma)$	$H(0.51)$	$90.49 \pm 0.36 \quad (-1.5\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.026^{+0.017}_{-0.015} \quad (+0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.579 \pm 0.067 \quad (-1.1\sigma)$	$D_{\text{M}}(0.51)$	$1951 \pm 13 \quad (+1.5\sigma)$
$n_{\text{s}}$	$0.9760 \pm 0.0048 \quad (-1.3\sigma)$	$z_{\text{re}}$	$7.18^{+0.85}_{-0.74} \quad (-0.1\sigma)$	$H(0.61)$	$95.95 \pm 0.30 \quad (-1.5\sigma)$
$y_{\text{cal}}$	$1.0000 \pm 0.0025 \quad (-0.0\sigma)$	$10^9 A_{\text{s}}$	$2.063 \pm 0.035 \quad (+0.2\sigma)$	$D_{\text{M}}(0.61)$	$2273 \pm 15 \quad (+1.5\sigma)$
$A_{100}^{\text{PS}}$	$228 \pm 24 \quad (+0.1\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.863 \pm 0.011 \quad (+0.9\sigma)$	$H(2.33)$	$234.37 \pm 0.83 \quad (+1.4\sigma)$
$A_{143}^{\text{PS}}$	$33 \pm 8 \quad (+0.4\sigma)$	$D_{40}$	$1204 \pm 13 \quad (+1.0\sigma)$	$D_{\text{M}}(2.33)$	$5735 \pm 13 \quad (+1.4\sigma)$
$A_{217}^{\text{PS}}$	$105^{+10}_{-10} \quad (+0.0\sigma)$	$D_{220}$	$5733 \pm 39 \quad (-0.3\sigma)$	$f\sigma_8(0.15)$	$0.4345 \pm 0.0089 \quad (+1.4\sigma)$
$A_{217}^{\text{CIB}}$	$36^{+7}_{-8} \quad (+0.2\sigma)$	$D_{810}$	$2526 \pm 13 \quad (+0.4\sigma)$	$\sigma_8(0.15)$	$0.7348^{+0.0073}_{-0.0066} \quad (+0.9\sigma)$
$A_{143}^{\text{tSZ}}$	$4.2 \pm 2.1 \quad (-0.1\sigma)$	$D_{1420}$	$815.5 \pm 4.7 \quad (-0.0\sigma)$	$f\sigma_8(0.38)$	$0.4567 \pm 0.0075 \quad (+1.4\sigma)$
$r_{143 \times 217}^{\text{PS}}$	$0.68 \pm 0.13 \quad (-0.1\sigma)$	$D_{2000}$	$232.4 \pm 1.6 \quad (-0.7\sigma)$	$\sigma_8(0.38)$	$0.6535^{+0.0061}_{-0.0055} \quad (+0.7\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	$0.50 \pm 0.27 \quad (+0.1\sigma)$	$n_{\text{s},0.002}$	$0.9760 \pm 0.0048 \quad (-1.3\sigma)$	$f\sigma_8(0.51)$	$0.4576 \pm 0.0067 \quad (+1.3\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}$	$0.245513^{+0.000063}_{-0.000076} \quad (-1.0\sigma)$	$\sigma_8(0.51)$	$0.6125^{+0.0056}_{-0.0050} \quad (+0.6\sigma)$
$A^{\text{kSZ}}$	$< 4.89 \quad (+0.1\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246840^{+0.000063}_{-0.000077} \quad (-1.0\sigma)$	$f\sigma_8(0.61)$	$0.4543 \pm 0.0061 \quad (+1.3\sigma)$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$10^5 \text{D/H}$	$2.530 \pm 0.032 \quad (+1.0\sigma)$	$\sigma_8(0.61)$	$0.5834^{+0.0053}_{-0.0047} \quad (+0.5\sigma)$
$A_{143}^{\text{dust}}$	$0.94 \pm 0.18 \quad (-0.1\sigma)$	$\text{Age/Gyr}$	$13.737 \pm 0.029 \quad (+1.4\sigma)$	$f\sigma_8(2.33)$	$0.2949^{+0.0026}_{-0.0023} \quad (+0.2\sigma)$
$A_{217}^{\text{dust}}$	$0.99 \pm 0.10 \quad (+0.0\sigma)$	$z_*$	$1089.20 \pm 0.31 \quad (+1.3\sigma)$	$\sigma_8(2.33)$	$0.3050^{+0.0027}_{-0.0024} \quad (-0.1\sigma)$
$A_{143 \times 217}^{\text{dust}}$	$1.01 \pm 0.16 \quad (+0.0\sigma)$	$r_*$	$145.20 \pm 0.31 \quad (-1.3\sigma)$	$f_{2000}^{143}$	$25.9 \pm 2.8 \quad (+0.5\sigma)$
$c_{100}$	$0.9976 \pm 0.0011 \quad (-0.0\sigma)$	$100\theta_*$	$1.04147 \pm 0.00033 \quad (-1.3\sigma)$	$f_{2000}^{217}$	$104.2 \pm 2.0 \quad (+0.6\sigma)$
$c_{217}$	$1.0009 \pm 0.0016 \quad (+0.2\sigma)$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.941 \pm 0.029 \quad (-1.1\sigma)$	$f_{2000}^{143 \times 217}$	$29.0 \pm 2.1 \quad (+0.6\sigma)$
$c_{TE}$	$0.9913 \pm 0.0052$	$z_{\text{drag}}$	$1060.38 \pm 0.37 \quad (-0.7\sigma)$	$\chi_{\text{small}}^2$	$396.7 \pm 1.5 \quad (-0.1\sigma)$
$c_{EE}$	$0.9899 \pm 0.0050$	$r_{\text{drag}}$	$147.77 \pm 0.31 \quad (-1.1\sigma)$	$\chi_{\text{lowl}}^2$	$21.45 \pm 0.71 \quad (+1.4\sigma)$
$H_0$	$69.13 \pm 0.68 \quad (-1.5\sigma)$	$k_{\text{D}}$	$0.14038 \pm 0.00034 \quad (+0.7\sigma)$	$\chi_{\text{CamSpec}}^2$	$11514.4 \pm 6.3 \quad (+776.2\sigma)$
$\Omega_{\Lambda}$	$0.7080 \pm 0.0084 \quad (-1.5\sigma)$	$100\theta_{\text{D}}$	$0.16053 \pm 0.00020 \quad (+0.5\sigma)$	$\chi_{\text{H073p45}}^2$	$7.0 \pm 2.1 \quad (+1.7\sigma)$
$\Omega_{\text{m}}$	$0.2920 \pm 0.0084 \quad (+1.5\sigma)$	$z_{\text{eq}}$	$3318 \pm 32 \quad (+1.4\sigma)$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.4 \quad (+0.3\sigma)$
$\Omega_{\text{m}}h^2$	$0.1395 \pm 0.0013 \quad (+1.4\sigma)$	$k_{\text{eq}}$	$0.010126 \pm 0.000096 \quad (+1.4\sigma)$	$\chi_{\text{CMB}}^2$	$11932.6 \pm 6.3 \quad (+766.7\sigma)$
$\Omega_{\text{m}}h^3$	$0.09640 \pm 0.00034 \quad (-0.5\sigma)$	$100\theta_{\text{eq}}$	$0.8300 \pm 0.0063 \quad (-1.4\sigma)$		
$\sigma_8$	$0.7931 \pm 0.0083 \quad (+1.0\sigma)$	$100\theta_{\text{s,eq}}$	$0.4579 \pm 0.0032 \quad (-1.4\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 11947.36; \Delta\bar{\chi}_{\text{eff}}^2 = 4457.19; R - 1 = 0.04484$$



### 3.22 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02251 \pm 0.00019 \quad (-0.4\sigma)$	$\sigma_8$	$0.8011^{+0.0069}_{-0.0077} \quad (+0.5\sigma)$	$100\theta_{\text{eq}}$	$0.8226 \pm 0.0068 \quad (-0.6\sigma)$
$\Omega_c h^2$	$0.1178 \pm 0.0016 \quad (+0.6\sigma)$	$S_8$	$0.804 \pm 0.019 \quad (+0.6\sigma)$	$100\theta_{\text{s,eq}}$	$0.4541 \pm 0.0034 \quad (-0.6\sigma)$
$100\theta_{\text{MC}}$	$1.04108 \pm 0.00034 \quad (-0.7\sigma)$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.441 \pm 0.010 \quad (+0.6\sigma)$	$H(0.15)$	$73.48 \pm 0.64 \quad (-0.6\sigma)$
$\tau$	$0.0526^{+0.0035}_{-0.0076} \quad (-0.1\sigma)$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.5941 \pm 0.0094 \quad (+0.6\sigma)$	$D_{\text{M}}(0.15)$	$635.5 \pm 6.2 \quad (+0.6\sigma)$
$A_{\text{L}}$	$1.144 \pm 0.070 \quad (-1.0\sigma)$	$\sigma_8/h^{0.5}$	$0.970 \pm 0.013 \quad (+0.6\sigma)$	$H(0.38)$	$83.43 \pm 0.47 \quad (-0.6\sigma)$
$\ln(10^{10} A_{\text{s}})$	$3.034^{+0.010}_{-0.015} \quad (+0.1\sigma)$	$r_{\text{drag}} h$	$100.7 \pm 1.3 \quad (-0.6\sigma)$	$D_{\text{M}}(0.38)$	$1518 \pm 13 \quad (+0.6\sigma)$
$n_{\text{s}}$	$0.9715 \pm 0.0052 \quad (-0.6\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.562 \pm 0.065 \quad (-0.9\sigma)$	$H(0.51)$	$90.06 \pm 0.38 \quad (-0.6\sigma)$
$y_{\text{cal}}$	$1.0000 \pm 0.0025 \quad (-0.0\sigma)$	$z_{\text{re}}$	$7.43^{+0.34}_{-0.82} \quad (-0.1\sigma)$	$D_{\text{M}}(0.51)$	$1968 \pm 15 \quad (+0.6\sigma)$
$A_{100}^{\text{PS}}$	$231 \pm 25 \quad (+0.1\sigma)$	$10^9 A_{\text{s}}$	$2.078^{+0.020}_{-0.031} \quad (+0.1\sigma)$	$H(0.61)$	$95.61 \pm 0.31 \quad (-0.6\sigma)$
$A_{143}^{\text{PS}}$	$35 \pm 8 \quad (+0.2\sigma)$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.870 \pm 0.012 \quad (+0.4\sigma)$	$D_{\text{M}}(0.61)$	$2291 \pm 16 \quad (+0.6\sigma)$
$A_{217}^{\text{PS}}$	$105^{+10}_{-10} \quad (+0.0\sigma)$	$D_{40}$	$1213 \pm 14 \quad (+0.5\sigma)$	$H(2.33)$	$235.29 \pm 0.90 \quad (+0.6\sigma)$
$A_{217}^{\text{CIB}}$	$37^{+7}_{-8} \quad (+0.1\sigma)$	$D_{220}$	$5723 \pm 39 \quad (-0.1\sigma)$	$D_{\text{M}}(2.33)$	$5750 \pm 14 \quad (+0.6\sigma)$
$A_{143}^{\text{tSZ}}$	$4.1^{+2.0}_{-2.4} \quad (-0.1\sigma)$	$D_{810}$	$2528 \pm 14 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4458 \pm 0.0095 \quad (+0.6\sigma)$
$r_{143 \times 217}^{\text{PS}}$	$0.68 \pm 0.13 \quad (-0.0\sigma)$	$D_{1420}$	$814.7 \pm 4.9 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7412^{+0.0056}_{-0.0066} \quad (+0.4\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	$0.51^{+0.33}_{-0.28} \quad (+0.0\sigma)$	$D_{2000}$	$231.5 \pm 1.8 \quad (-0.4\sigma)$	$f\sigma_8(0.38)$	$0.4659 \pm 0.0077 \quad (+0.6\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$n_{\text{s},0.002}$	$0.9715 \pm 0.0052 \quad (-0.6\sigma)$	$\sigma_8(0.38)$	$0.6580^{+0.0042}_{-0.0054} \quad (+0.3\sigma)$
$A^{\text{kSZ}}$	$< 5.25 \quad (+0.0\sigma)$	$Y_{\text{P}}$	$0.245447 \pm 0.000075 \quad (-0.4\sigma)$	$f\sigma_8(0.51)$	$0.4656 \pm 0.0067 \quad (+0.6\sigma)$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.19 \quad (-0.0\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246773 \pm 0.000075 \quad (-0.4\sigma)$	$\sigma_8(0.51)$	$0.6162^{+0.0037}_{-0.0049} \quad (+0.3\sigma)$
$A_{143}^{\text{dust}}$	$0.95 \pm 0.18 \quad (-0.0\sigma)$	$10^5 \text{D}/\text{H}$	$2.561 \pm 0.035 \quad (+0.4\sigma)$	$f\sigma_8(0.61)$	$0.4614 \pm 0.0060 \quad (+0.6\sigma)$
$A_{217}^{\text{dust}}$	$0.98 \pm 0.10 \quad (-0.0\sigma)$	$\text{Age}/\text{Gyr}$	$13.769 \pm 0.031 \quad (+0.6\sigma)$	$\sigma_8(0.61)$	$0.5866^{+0.0034}_{-0.0046} \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.16 \quad (+0.0\sigma)$	$z_*$	$1089.56 \pm 0.35 \quad (+0.5\sigma)$	$f\sigma_8(2.33)$	$0.2961^{+0.0015}_{-0.0023} \quad (+0.1\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$r_*$	$144.89 \pm 0.33 \quad (-0.6\sigma)$	$\sigma_8(2.33)$	$0.3057^{+0.0016}_{-0.0023} \quad (-0.1\sigma)$
$c_{217}$	$1.0009 \pm 0.0016 \quad (+0.1\sigma)$	$100\theta_*$	$1.04125 \pm 0.00033 \quad (-0.7\sigma)$	$f_{2000}^{143}$	$27 \pm 3 \quad (+0.3\sigma)$
$c_{TE}$	$0.9924 \pm 0.0053$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.914 \pm 0.030 \quad (-0.5\sigma)$	$f_{2000}^{217}$	$105.0 \pm 2.1 \quad (+0.3\sigma)$
$c_{EE}$	$0.9903 \pm 0.0049$	$z_{\text{drag}}$	$1060.10 \pm 0.38 \quad (-0.3\sigma)$	$f_{2000}^{143 \times 217}$	$30.0 \pm 2.2 \quad (+0.3\sigma)$
$H_0$	$68.29 \pm 0.74 \quad (-0.6\sigma)$	$r_{\text{drag}}$	$147.51 \pm 0.32 \quad (-0.5\sigma)$	$\chi_{\text{small}}^2$	$396.4 \pm 1.1 \quad (-0.0\sigma)$
$\Omega_{\Lambda}$	$0.6975 \pm 0.0095 \quad (-0.6\sigma)$	$k_{\text{D}}$	$0.14053 \pm 0.00034 \quad (+0.4\sigma)$	$\chi_{\text{lowl}}^2$	$22.16 \pm 0.90 \quad (+0.5\sigma)$
$\Omega_{\text{m}}$	$0.3025 \pm 0.0095 \quad (+0.6\sigma)$	$100\theta_{\text{D}}$	$0.16066 \pm 0.00022 \quad (+0.2\sigma)$	$\chi_{\text{CamSpec}}^2$	$11512.3 \pm 5.7 \quad (+832.5\sigma)$
$\Omega_{\text{m}} h^2$	$0.1410 \pm 0.0014 \quad (+0.6\sigma)$	$z_{\text{eq}}$	$3354 \pm 35 \quad (+0.6\sigma)$	$\chi_{\text{prior}}^2$	$7.7 \pm 3.4 \quad (+0.2\sigma)$
$\Omega_{\text{m}} h^3$	$0.09628 \pm 0.00034 \quad (-0.2\sigma)$	$k_{\text{eq}}$	$0.01024 \pm 0.00011 \quad (+0.6\sigma)$	$\chi_{\text{CMB}}^2$	$11930.9 \pm 5.7 \quad (+823.9\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 11938.62; \Delta\bar{\chi}_{\text{eff}}^2 = 4453.51; R - 1 = 0.01153$$



### 3.23 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02249 \pm 0.00017 \quad (-0.0\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4418 \pm 0.0073 \quad (+0.2\sigma)$	$H(0.38)$	$83.37 \pm 0.33 \quad (-0.3\sigma)$
$\Omega_c h^2$	$0.1180 \pm 0.0011 \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.5952 \pm 0.0070 \quad (+0.2\sigma)$	$D_M(0.38)$	$1519.3 \pm 8.6 \quad (+0.2\sigma)$
$100\theta_{MC}$	$1.04106 \pm 0.00030 \quad (-0.4\sigma)$	$\sigma_8/h^{0.5}$	$0.971 \pm 0.010 \quad (+0.1\sigma)$	$H(0.51)$	$90.01 \pm 0.27 \quad (-0.2\sigma)$
$\tau$	$0.0526^{+0.0036}_{-0.0074} \quad (-0.0\sigma)$	$r_{\text{drag}} h$	$100.58 \pm 0.85 \quad (-0.3\sigma)$	$D_M(0.51)$	$1969 \pm 10 \quad (+0.3\sigma)$
$A_L$	$1.138 \pm 0.063 \quad (-0.8\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.560 \pm 0.064 \quad (-0.8\sigma)$	$H(0.61)$	$95.57 \pm 0.23 \quad (-0.2\sigma)$
$\ln(10^{10} A_s)$	$3.0341^{+0.0098}_{-0.015} \quad (+0.0\sigma)$	$z_{\text{re}}$	$7.44^{+0.34}_{-0.81} \quad (-0.0\sigma)$	$D_M(0.61)$	$2293 \pm 11 \quad (+0.3\sigma)$
$n_s$	$0.9710 \pm 0.0042 \quad (-0.2\sigma)$	$10^9 A_s$	$2.078^{+0.020}_{-0.031} \quad (+0.0\sigma)$	$H(2.33)$	$235.40 \pm 0.64 \quad (+0.2\sigma)$
$y_{\text{cal}}$	$1.0000 \pm 0.0025 \quad (-0.0\sigma)$	$10^9 A_s e^{-2\tau}$	$1.871 \pm 0.011 \quad (+0.1\sigma)$	$D_M(2.33)$	$5752 \pm 11 \quad (+0.2\sigma)$
$A_{100}^{\text{PS}}$	$232 \pm 24 \quad (+0.1\sigma)$	$D_{40}$	$1214 \pm 12 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4470 \pm 0.0069 \quad (+0.2\sigma)$
$A_{143}^{\text{PS}}$	$36 \pm 8 \quad (+0.1\sigma)$	$D_{220}$	$5722 \pm 38 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7418^{+0.0047}_{-0.0061} \quad (+0.0\sigma)$
$A_{217}^{\text{PS}}$	$105^{+10}_{-10} \quad (+0.0\sigma)$	$D_{810}$	$2528 \pm 14 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4669 \pm 0.0058 \quad (+0.2\sigma)$
$A_{217}^{\text{CIB}}$	$37^{+7}_{-8} \quad (-0.0\sigma)$	$D_{1420}$	$814.6 \pm 4.8 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6584^{+0.0037}_{-0.0052} \quad (-0.0\sigma)$
$A_{143}^{\text{tSZ}}$	$4.1^{+2.0}_{-2.4} \quad (-0.0\sigma)$	$D_{2000}$	$231.5 \pm 1.7 \quad (-0.2\sigma)$	$f\sigma_8(0.51)$	$0.4664 \pm 0.0051 \quad (+0.1\sigma)$
$r_{143 \times 217}^{\text{PS}}$	$0.68 \pm 0.13 \quad (-0.0\sigma)$	$n_{s,0.002}$	$0.9710 \pm 0.0042 \quad (-0.2\sigma)$	$\sigma_8(0.51)$	$0.6165^{+0.0034}_{-0.0048} \quad (-0.0\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	$0.52^{+0.35}_{-0.27} \quad (+0.0\sigma)$	$Y_P$	$0.245441^{+0.000064}_{-0.000057} \quad (-0.0\sigma)$	$f\sigma_8(0.61)$	$0.4621 \pm 0.0047 \quad (+0.1\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.246767^{+0.000064}_{-0.000057} \quad (-0.0\sigma)$	$\sigma_8(0.61)$	$0.5868^{+0.0031}_{-0.0045} \quad (-0.0\sigma)$
$A^{\text{kSZ}}$	$< 5.35 \quad (+0.0\sigma)$	$10^5 D/H$	$2.564 \pm 0.030 \quad (+0.0\sigma)$	$f\sigma_8(2.33)$	$0.2962^{+0.0015}_{-0.0022} \quad (-0.1\sigma)$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.19 \quad (-0.0\sigma)$	Age/Gyr	$13.772 \pm 0.024 \quad (+0.2\sigma)$	$\sigma_8(2.33)$	$0.3057^{+0.0015}_{-0.0023} \quad (-0.1\sigma)$
$A_{143}^{\text{dust}}$	$0.95 \pm 0.18 \quad (-0.1\sigma)$	$z_*$	$1089.60 \pm 0.26 \quad (+0.1\sigma)$	$f_{2000}^{143}$	$27.2 \pm 2.9 \quad (+0.1\sigma)$
$A_{217}^{\text{dust}}$	$0.98 \pm 0.10 \quad (+0.0\sigma)$	$r_*$	$144.85 \pm 0.25 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$105.1 \pm 2.0 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_*$	$1.04124 \pm 0.00029 \quad (-0.4\sigma)$	$f_{2000}^{143 \times 217}$	$30.1 \pm 2.1 \quad (+0.1\sigma)$
$c_{100}$	$0.9975 \pm 0.0010 \quad (+0.0\sigma)$	$D_M(z_*)/\text{Gpc}$	$13.911 \pm 0.024 \quad (-0.1\sigma)$	$\chi_{\text{small}}^2$	$396.4 \pm 1.1 \quad (-0.0\sigma)$
$c_{217}$	$1.0009 \pm 0.0016 \quad (+0.1\sigma)$	$z_{\text{drag}}$	$1060.08 \pm 0.35 \quad (+0.0\sigma)$	$\chi_{\text{lowl}}^2$	$22.22 \pm 0.77 \quad (+0.2\sigma)$
$c_{TE}$	$0.9925 \pm 0.0052$	$r_{\text{drag}}$	$147.48 \pm 0.26 \quad (-0.2\sigma)$	$\chi_{\text{CamSpec}}^2$	$11511.7 \pm 5.5 \quad (+863.4\sigma)$
$c_{EE}$	$0.9904 \pm 0.0049$	$k_D$	$0.14055 \pm 0.00032 \quad (+0.1\sigma)$	$\chi_{6\text{DF}}^2$	$0.031 \pm 0.044 \quad (-0.3\sigma)$
$H_0$	$68.20 \pm 0.51 \quad (-0.3\sigma)$	$100\theta_D$	$0.16068 \pm 0.00020 \quad (-0.1\sigma)$	$\chi_{\text{MGS}}^2$	$1.82 \pm 0.53 \quad (-0.3\sigma)$
$\Omega_\Lambda$	$0.6964 \pm 0.0065 \quad (-0.2\sigma)$	$z_{\text{eq}}$	$3358 \pm 24 \quad (+0.2\sigma)$	$\chi_{\text{DR12BAO}}^2$	$3.93 \pm 0.78 \quad (-0.1\sigma)$
$\Omega_m$	$0.3036 \pm 0.0065 \quad (+0.2\sigma)$	$k_{\text{eq}}$	$0.010249 \pm 0.000074 \quad (+0.2\sigma)$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_m h^2$	$0.1412 \pm 0.0010 \quad (+0.2\sigma)$	$100\theta_{\text{eq}}$	$0.8217 \pm 0.0047 \quad (-0.2\sigma)$	$\chi_{\text{BAO}}^2$	$5.78 \pm 0.79 \quad (-0.3\sigma)$
$\Omega_m h^3$	$0.09628 \pm 0.00033 \quad (-0.1\sigma)$	$100\theta_{s,\text{eq}}$	$0.4537 \pm 0.0024 \quad (-0.2\sigma)$	$\chi_{\text{CMB}}^2$	$11930.3 \pm 5.6 \quad (+843.8\sigma)$
$\sigma_8$	$0.8019^{+0.0055}_{-0.0069} \quad (+0.1\sigma)$	$H(0.15)$	$73.40 \pm 0.44 \quad (-0.3\sigma)$		
$S_8$	$0.807 \pm 0.013 \quad (+0.2\sigma)$	$D_M(0.15)$	$636.3 \pm 4.3 \quad (+0.2\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 11943.89; \Delta\bar{\chi}_{\text{eff}}^2 = 4453.11; R - 1 = 0.01823$$



### 3.24 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02268 \pm 0.00018 \quad (-1.0\sigma)$	$S_8$	$0.785^{+0.015}_{-0.018} \quad (+1.5\sigma)$	$H(0.15)$	$74.20^{+0.60}_{-0.54} \quad (-1.5\sigma)$
$\Omega_c h^2$	$0.1161 \pm 0.0014 \quad (+1.5\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4297^{+0.0083}_{-0.0096} \quad (+1.5\sigma)$	$D_M(0.15)$	$628.6^{+5.1}_{-5.8} \quad (+1.6\sigma)$
$100\theta_{MC}$	$1.04132 \pm 0.00033 \quad (-1.3\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.5846^{+0.0078}_{-0.0090} \quad (+1.4\sigma)$	$H(0.38)$	$83.97 \pm 0.42 \quad (-1.5\sigma)$
$\tau$	$0.0536^{+0.0042}_{-0.0073} \quad (-0.3\sigma)$	$\sigma_8/h^{0.5}$	$0.957^{+0.011}_{-0.013} \quad (+1.4\sigma)$	$D_M(0.38)$	$1504^{+10}_{-12} \quad (+1.5\sigma)$
$A_L$	$1.188 \pm 0.071 \quad (-1.4\sigma)$	$r_{\text{drag}} h$	$102.2 \pm 1.1 \quad (-1.5\sigma)$	$H(0.51)$	$90.49 \pm 0.34 \quad (-1.5\sigma)$
$\ln(10^{10} A_s)$	$3.032^{+0.011}_{-0.014} \quad (+0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.579 \pm 0.066 \quad (-1.1\sigma)$	$D_M(0.51)$	$1951^{+12}_{-14} \quad (+1.5\sigma)$
$n_s$	$0.9761 \pm 0.0048 \quad (-1.3\sigma)$	$z_{\text{re}}$	$7.47^{+0.37}_{-0.82} \quad (-0.1\sigma)$	$H(0.61)$	$95.95 \pm 0.28 \quad (-1.5\sigma)$
$y_{\text{cal}}$	$1.0000 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_s$	$2.074^{+0.022}_{-0.030} \quad (+0.2\sigma)$	$D_M(0.61)$	$2273^{+13}_{-15} \quad (+1.5\sigma)$
$A_{100}^{\text{PS}}$	$228 \pm 24 \quad (+0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.863 \pm 0.011 \quad (+0.9\sigma)$	$H(2.33)$	$234.36 \pm 0.81 \quad (+1.4\sigma)$
$A_{143}^{\text{PS}}$	$33 \pm 8 \quad (+0.4\sigma)$	$D_{40}$	$1204 \pm 13 \quad (+1.1\sigma)$	$D_M(2.33)$	$5736 \pm 13 \quad (+1.4\sigma)$
$A_{217}^{\text{PS}}$	$105^{+10}_{-10} \quad (-0.0\sigma)$	$D_{220}$	$5733 \pm 39 \quad (-0.3\sigma)$	$f\sigma_8(0.15)$	$0.4357^{+0.0078}_{-0.0090} \quad (+1.5\sigma)$
$A_{217}^{\text{CIB}}$	$36 \pm 7 \quad (+0.2\sigma)$	$D_{810}$	$2526 \pm 13 \quad (+0.4\sigma)$	$\sigma_8(0.15)$	$0.7369^{+0.0053}_{-0.0064} \quad (+1.0\sigma)$
$A_{143}^{\text{tSZ}}$	$4.2^{+2.1}_{-2.3} \quad (-0.1\sigma)$	$D_{1420}$	$815.6 \pm 4.7 \quad (+0.0\sigma)$	$f\sigma_8(0.38)$	$0.4580^{+0.0065}_{-0.0074} \quad (+1.4\sigma)$
$r_{143 \times 217}^{\text{PS}}$	$0.68 \pm 0.13 \quad (-0.1\sigma)$	$D_{2000}$	$232.4 \pm 1.6 \quad (-0.7\sigma)$	$\sigma_8(0.38)$	$0.6553^{+0.0042}_{-0.0052} \quad (+0.8\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	$0.49 \pm 0.27 \quad (+0.0\sigma)$	$n_{s,0.002}$	$0.9761 \pm 0.0048 \quad (-1.3\sigma)$	$f\sigma_8(0.51)$	$0.4589^{+0.0057}_{-0.0065} \quad (+1.4\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.245512^{+0.000064}_{-0.000072} \quad (-1.0\sigma)$	$\sigma_8(0.51)$	$0.6142^{+0.0038}_{-0.0047} \quad (+0.7\sigma)$
$A^{\text{kSZ}}$	$< 4.93 \quad (+0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.246839^{+0.000064}_{-0.000072} \quad (-1.0\sigma)$	$f\sigma_8(0.61)$	$0.4556^{+0.0052}_{-0.0058} \quad (+1.3\sigma)$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$10^5 D/H$	$2.530 \pm 0.031 \quad (+1.0\sigma)$	$\sigma_8(0.61)$	$0.5850^{+0.0035}_{-0.0044} \quad (+0.6\sigma)$
$A_{143}^{\text{dust}}$	$0.94 \pm 0.18 \quad (-0.1\sigma)$	$\text{Age/Gyr}$	$13.737 \pm 0.028 \quad (+1.4\sigma)$	$f\sigma_8(2.33)$	$0.2958^{+0.0017}_{-0.0022} \quad (+0.3\sigma)$
$A_{217}^{\text{dust}}$	$0.98 \pm 0.10 \quad (-0.0\sigma)$	$z_*$	$1089.20^{+0.28}_{-0.32} \quad (+1.3\sigma)$	$\sigma_8(2.33)$	$0.3058^{+0.0017}_{-0.0022} \quad (-0.1\sigma)$
$A_{143 \times 217}^{\text{dust}}$	$1.01 \pm 0.16 \quad (+0.0\sigma)$	$r_*$	$145.20 \pm 0.31 \quad (-1.3\sigma)$	$f_{2000}^{143}$	$25.8 \pm 2.8 \quad (+0.5\sigma)$
$c_{100}$	$0.9976 \pm 0.0011 \quad (-0.1\sigma)$	$100\theta_*$	$1.04147 \pm 0.00032 \quad (-1.2\sigma)$	$f_{2000}^{217}$	$104.2 \pm 2.0 \quad (+0.6\sigma)$
$c_{217}$	$1.0008 \pm 0.0016 \quad (+0.2\sigma)$	$D_M(z_*)/\text{Gpc}$	$13.942 \pm 0.028 \quad (-1.1\sigma)$	$f_{2000}^{143 \times 217}$	$29.0 \pm 2.1 \quad (+0.6\sigma)$
$c_{TE}$	$0.9913 \pm 0.0052$	$z_{\text{drag}}$	$1060.37 \pm 0.36 \quad (-0.7\sigma)$	$\chi_{\text{small}}^2$	$396.4 \pm 1.2 \quad (-0.1\sigma)$
$c_{EE}$	$0.9900 \pm 0.0049$	$r_{\text{drag}}$	$147.78 \pm 0.30 \quad (-1.1\sigma)$	$\chi_{\text{lowl}}^2$	$21.48 \pm 0.72 \quad (+1.4\sigma)$
$H_0$	$69.13^{+0.69}_{-0.62} \quad (-1.5\sigma)$	$k_D$	$0.14037 \pm 0.00034 \quad (+0.7\sigma)$	$\chi_{\text{CamSpec}}^2$	$11514.2 \pm 5.9 \quad (+764.7\sigma)$
$\Omega_\Lambda$	$0.7080^{+0.0087}_{-0.0075} \quad (-1.6\sigma)$	$100\theta_D$	$0.16053 \pm 0.00020 \quad (+0.5\sigma)$	$\chi_{\text{H073p45}}^2$	$6.9 \pm 2.1 \quad (+1.8\sigma)$
$\Omega_m$	$0.2920^{+0.0075}_{-0.0087} \quad (+1.6\sigma)$	$z_{\text{eq}}$	$3317 \pm 31 \quad (+1.4\sigma)$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.4 \quad (+0.3\sigma)$
$\Omega_m h^2$	$0.1395 \pm 0.0013 \quad (+1.4\sigma)$	$k_{\text{eq}}$	$0.010125 \pm 0.000094 \quad (+1.4\sigma)$	$\chi_{\text{CMB}}^2$	$11932.1 \pm 5.9 \quad (+757.6\sigma)$
$\Omega_m h^3$	$0.09640 \pm 0.00033 \quad (-0.4\sigma)$	$100\theta_{\text{eq}}$	$0.8301 \pm 0.0061 \quad (-1.5\sigma)$		
$\sigma_8$	$0.7953^{+0.0063}_{-0.0074} \quad (+1.1\sigma)$	$100\theta_{s,\text{eq}}$	$0.4579 \pm 0.0031 \quad (-1.5\sigma)$		

$\bar{\chi}_{\text{eff}}^2 = 11946.84$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4456.94$ ;  $R - 1 = 0.04629$



### 3.25 base\_Alens\_plikHM\_TE\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022146	$0.02219 \pm 0.00037$	$r_{\text{drag}} h$	99.57	$99.7 \pm 2.0$	$100\theta_{\text{s,eq}}$	0.4514	$0.4514 \pm 0.0055$
$\Omega_c h^2$	0.11933	$0.1193 \pm 0.0026$	$\langle d^2 \rangle^{1/2}$	2.089	$2.09^{+0.31}_{-0.23}$	$H(0.15)$	72.78	$72.8 \pm 1.1$
$100\theta_{\text{MC}}$	1.04120	$1.04124 \pm 0.00052$	$z_{\text{re}}$	7.14	$7.04^{+0.94}_{-0.74}$	$D_{\text{M}}(0.15)$	642.3	$642 \pm 10$
$\tau$	0.0487	$0.0482^{+0.0085}_{-0.0077}$	$10^9 A_{\text{s}}$	2.0217	$2.021 \pm 0.045$	$H(0.38)$	82.89	$82.96 \pm 0.79$
$A_{\text{L}}$	0.740	$0.76 \pm 0.22$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8340	$1.835 \pm 0.024$	$D_{\text{M}}(0.38)$	1531.6	$1530 \pm 21$
$\ln(10^{10} A_{\text{s}})$	3.0065	$3.006 \pm 0.022$	$D_{40}$	1244.6	$1242 \pm 38$	$H(0.51)$	89.61	$89.67 \pm 0.63$
$n_{\text{s}}$	0.9471	$0.949 \pm 0.020$	$D_{220}$	5679	$5677 \pm 59$	$D_{\text{M}}(0.51)$	1984.0	$1983 \pm 25$
$A_{100}^{\text{dustTE}}$	0.1114	$0.115 \pm 0.038$	$D_{810}$	2473.1	$2475 \pm 38$	$H(0.61)$	95.23	$95.29^{+0.49}_{-0.54}$
$A_{100 \times 143}^{\text{dustTE}}$	0.1373	$0.137 \pm 0.029$	$D_{1420}$	789.8	$791 \pm 18$	$D_{\text{M}}(0.61)$	2308.6	$2307 \pm 27$
$A_{100 \times 217}^{\text{dustTE}}$	0.474	$0.476 \pm 0.084$	$D_{2000}$	218.8	$219.7 \pm 8.3$	$H(2.33)$	235.92	$236.0 \pm 1.5$
$A_{143}^{\text{dustTE}}$	0.228	$0.224 \pm 0.054$	$n_{\text{s},0.002}$	0.9471	$0.949 \pm 0.020$	$D_{\text{M}}(2.33)$	5768.1	$5765 \pm 24$
$A_{143 \times 217}^{\text{dustTE}}$	0.654	$0.656 \pm 0.080$	$Y_{\text{P}}$	0.245303	$0.24531^{+0.00018}_{-0.00014}$	$f\sigma_8(0.15)$	0.4455	$0.445 \pm 0.013$
$A_{217}^{\text{dustTE}}$	2.028	$2.03 \pm 0.27$	$Y_{\text{P}}^{\text{BBN}}$	0.246630	$0.24664^{+0.00018}_{-0.00014}$	$\sigma_8(0.15)$	0.7297	$0.730 \pm 0.010$
$c_{100}$	1.00015	$1.00017 \pm 0.00070$	$10^5 \text{D}/\text{H}$	2.628	$2.622 \pm 0.070$	$f\sigma_8(0.38)$	0.4633	$0.463 \pm 0.011$
$c_{217}$	0.99802	$0.99800 \pm 0.00065$	$\text{Age}/\text{Gyr}$	13.809	$13.803 \pm 0.054$	$\sigma_8(0.38)$	0.6468	$0.6468 \pm 0.0091$
$y_{\text{cal}}$	1.00017	$1.0001 \pm 0.0025$	$z_*$	1090.15	$1090.10 \pm 0.65$	$f\sigma_8(0.51)$	0.4619	$0.4616 \pm 0.0091$
$H_0$	67.50	$67.6 \pm 1.2$	$r_*$	144.78	$144.75 \pm 0.52$	$\sigma_8(0.51)$	0.6052	$0.6053 \pm 0.0086$
$\Omega_{\Lambda}$	0.6881	$0.688^{+0.017}_{-0.015}$	$100\theta_*$	1.04140	$1.04145 \pm 0.00051$	$f\sigma_8(0.61)$	0.4570	$0.4568 \pm 0.0082$
$\Omega_{\text{m}}$	0.3119	$0.312^{+0.015}_{-0.017}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9020	$13.899 \pm 0.049$	$\sigma_8(0.61)$	0.5759	$0.5760 \pm 0.0082$
$\Omega_{\text{m}} h^2$	0.14212	$0.1421 \pm 0.0023$	$z_{\text{drag}}$	1059.36	$1059.46 \pm 0.75$	$f\sigma_8(2.33)$	0.29034	$0.2904 \pm 0.0043$
$\Omega_{\text{m}} h^3$	0.09593	$0.09602 \pm 0.00060$	$r_{\text{drag}}$	147.52	$147.48 \pm 0.51$	$\sigma_8(2.33)$	0.29931	$0.2994 \pm 0.0047$
$\sigma_8$	0.7897	$0.790 \pm 0.011$	$k_{\text{D}}$	0.14024	$0.14031 \pm 0.00059$	$\chi_{\text{small}}^2$	395.64	$396.9 \pm 1.7$
$S_8$	0.8053	$0.805 \pm 0.026$	$100\theta_{\text{D}}$	0.161135	$0.16109 \pm 0.00045$	$\chi_{\text{plikTE}}^2$	851.43	$859.6 \pm 4.0$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4411	$0.441 \pm 0.015$	$z_{\text{eq}}$	3381	$3381 \pm 56$	$\chi_{\text{prior}}^2$	0.54	$7.4 \pm 3.7$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5902	$0.590 \pm 0.013$	$k_{\text{eq}}$	0.010318	$0.01032 \pm 0.00017$	$\chi_{\text{CMB}}^2$	1247.07	$1256.5 \pm 4.4$
$\sigma_8/h^{0.5}$	0.9612	$0.961 \pm 0.018$	$100\theta_{\text{eq}}$	0.8167	$0.817 \pm 0.011$			

Best-fit  $\chi_{\text{eff}}^2 = 1247.61$ ;  $\bar{\chi}_{\text{eff}}^2 = 1263.86$ ;  $R - 1 = 0.00958$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.64 plik\_rd12\_HM\_v22\_TE: 851.43



### 3.26 base\_Alens\_plikHM\_TE\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022242	$0.02226 \pm 0.00029$	$\langle d^2 \rangle^{1/2}$	2.141	$2.13^{+0.28}_{-0.22}$	$D_M(0.15)$	639.0	$638.8 \pm 5.3$
$\Omega_c h^2$	0.11854	$0.1186 \pm 0.0013$	$z_{\text{re}}$	7.17	$7.05^{+0.94}_{-0.73}$	$H(0.38)$	83.139	$83.16 \pm 0.42$
$100\theta_{\text{MC}}$	1.041285	$1.04132 \pm 0.00046$	$10^9 A_s$	2.0265	$2.023 \pm 0.044$	$D_M(0.38)$	1525.0	$1525 \pm 11$
$\tau$	0.0493	$0.0485^{+0.0085}_{-0.0074}$	$10^9 A_s e^{-2\tau}$	1.8362	$1.836 \pm 0.024$	$H(0.51)$	89.806	$89.83 \pm 0.36$
$A_L$	0.787	$0.79 \pm 0.19$	$D_{40}$	1235.5	$1234 \pm 30$	$D_M(0.51)$	1976.2	$1976 \pm 13$
$\ln(10^{10} A_s)$	3.0089	$3.007 \pm 0.022$	$D_{220}$	5684	$5681 \pm 58$	$H(0.61)$	95.386	$95.41 \pm 0.31$
$n_s$	0.9524	$0.953 \pm 0.015$	$D_{810}$	2480.6	$2480 \pm 35$	$D_M(0.61)$	2300.2	$2300 \pm 14$
$y_{\text{cal}}$	1.00025	$1.0001 \pm 0.0025$	$D_{1420}$	794.0	$794 \pm 16$	$H(2.33)$	235.50	$235.54 \pm 0.81$
$A_{100}^{\text{dustTE}}$	0.1153	$0.115 \pm 0.038$	$D_{2000}$	220.8	$221.0 \pm 7.2$	$D_M(2.33)$	5761.0	$5760 \pm 16$
$A_{100 \times 143}^{\text{dustTE}}$	0.1358	$0.137 \pm 0.030$	$n_{s,0.002}$	0.9524	$0.953 \pm 0.015$	$f\sigma_8(0.15)$	0.4421	$0.4417 \pm 0.0084$
$A_{100 \times 217}^{\text{dustTE}}$	0.476	$0.476 \pm 0.085$	$Y_P$	0.245343	$0.24534^{+0.00013}_{-0.00011}$	$\sigma_8(0.15)$	0.7298	$0.729 \pm 0.010$
$A_{143}^{\text{dustTE}}$	0.223	$0.223 \pm 0.055$	$Y_P^{\text{BBN}}$	0.246670	$0.24667^{+0.00014}_{-0.00011}$	$f\sigma_8(0.38)$	0.4609	$0.4606 \pm 0.0075$
$A_{143 \times 217}^{\text{dustTE}}$	0.651	$0.656 \pm 0.080$	$10^5 D/H$	2.610	$2.608 \pm 0.055$	$\sigma_8(0.38)$	0.6474	$0.6469 \pm 0.0090$
$A_{217}^{\text{dustTE}}$	2.017	$2.03 \pm 0.27$	Age/Gyr	13.7934	$13.790 \pm 0.037$	$f\sigma_8(0.51)$	0.4601	$0.4597 \pm 0.0071$
$c_{100}$	1.00015	$1.00019 \pm 0.00070$	$z_*$	1089.953	$1089.94 \pm 0.42$	$\sigma_8(0.51)$	0.6060	$0.6056 \pm 0.0084$
$c_{217}$	0.99802	$0.99800 \pm 0.00065$	$r_*$	144.907	$144.89 \pm 0.34$	$f\sigma_8(0.61)$	0.4556	$0.4552 \pm 0.0068$
$H_0$	67.88	$67.91 \pm 0.63$	$100\theta_*$	1.041482	$1.04152 \pm 0.00046$	$\sigma_8(0.61)$	0.5768	$0.5764 \pm 0.0080$
$\Omega_\Lambda$	0.6931	$0.6931 \pm 0.0079$	$D_M(z_*)/\text{Gpc}$	13.9136	$13.911 \pm 0.033$	$f\sigma_8(2.33)$	0.29099	$0.2908 \pm 0.0041$
$\Omega_m$	0.3069	$0.3069 \pm 0.0079$	$z_{\text{drag}}$	1059.55	$1059.57 \pm 0.66$	$\sigma_8(2.33)$	0.30020	$0.3000 \pm 0.0043$
$\Omega_m h^2$	0.14143	$0.1415 \pm 0.0012$	$r_{\text{drag}}$	147.620	$147.60 \pm 0.39$	$\chi_{\text{small}}^2$	395.63	$396.8 \pm 1.7$
$\Omega_m h^3$	0.09601	$0.09606 \pm 0.00058$	$k_D$	0.14021	$0.14025 \pm 0.00056$	$\chi_{\text{plikTE}}^2$	851.63	$858.9 \pm 3.8$
$\sigma_8$	0.7893	$0.789 \pm 0.011$	$100\theta_D$	0.161040	$0.16103 \pm 0.00039$	$\chi_{6\text{DF}}^2$	0.0031	$0.046 \pm 0.064$
$S_8$	0.7983	$0.798 \pm 0.016$	$z_{\text{eq}}$	3364.3	$3365 \pm 29$	$\chi_{\text{MGS}}^2$	1.54	$1.62 \pm 0.60$
$\sigma_8 \Omega_m^{0.5}$	0.4372	$0.4369 \pm 0.0088$	$k_{\text{eq}}$	0.010268	$0.010271 \pm 0.000090$	$\chi_{\text{DR12BAO}}^2$	3.63	$4.3 \pm 1.3$
$\sigma_8 \Omega_m^{0.25}$	0.5874	$0.5870 \pm 0.0094$	$100\theta_{\text{eq}}$	0.8201	$0.8200 \pm 0.0056$	$\chi_{\text{prior}}^2$	0.46	$7.4 \pm 3.7$
$\sigma_8/h^{0.5}$	0.9579	$0.957 \pm 0.014$	$100\theta_{s,\text{eq}}$	0.45302	$0.4530 \pm 0.0028$	$\chi_{\text{BAO}}^2$	5.176	$6.0 \pm 1.1$
$r_{\text{drag}} h$	100.21	$100.2 \pm 1.0$	$H(0.15)$	73.11	$73.14 \pm 0.55$	$\chi_{\text{CMB}}^2$	1247.26	$1255.8 \pm 4.1$

Best-fit  $\chi_{\text{eff}}^2 = 1252.89$ ;  $\bar{\chi}_{\text{eff}}^2 = 1269.15$ ;  $R - 1 = 0.01278$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.54 DR12BAO: 3.63 CMB - small\_100x143.offlike5\_EE\_Aplanck\_B: 395.63 plik\_rd12\_HM\_v22\_TE: 851.63



### 3.27 base\_Alens\_plikHM\_TE\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02220 \pm 0.00037$	$r_{\text{drag}}h$	$99.7 \pm 2.1$	$100\theta_{\text{s,eq}}$	$0.4517 \pm 0.0056$
$\Omega_{\text{c}}h^2$	$0.1192 \pm 0.0026$	$\langle d^2 \rangle^{1/2}$	$2.10^{+0.31}_{-0.24}$	$H(0.15)$	$72.9 \pm 1.1$
$100\theta_{\text{MC}}$	$1.04126 \pm 0.00052$	$z_{\text{re}}$	$7.43^{+0.32}_{-0.84}$	$D_{\text{M}}(0.15)$	$641 \pm 10$
$\tau$	$0.0518^{+0.0036}_{-0.0076}$	$10^9 A_{\text{s}}$	$2.036^{+0.033}_{-0.040}$	$H(0.38)$	$82.99 \pm 0.79$
$A_{\text{L}}$	$0.76 \pm 0.22$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.836 \pm 0.024$	$D_{\text{M}}(0.38)$	$1530 \pm 21$
$\ln(10^{10} A_{\text{s}})$	$3.014^{+0.017}_{-0.019}$	$D_{40}$	$1241 \pm 37$	$H(0.51)$	$89.70^{+0.59}_{-0.66}$
$n_{\text{s}}$	$0.950 \pm 0.020$	$D_{220}$	$5677 \pm 59$	$D_{\text{M}}(0.51)$	$1981 \pm 25$
$A_{100}^{\text{dustTE}}$	$0.115 \pm 0.038$	$D_{810}$	$2477 \pm 38$	$H(0.61)$	$95.31^{+0.48}_{-0.55}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.137 \pm 0.030$	$D_{1420}$	$792 \pm 18$	$D_{\text{M}}(0.61)$	$2306 \pm 27$
$A_{100 \times 217}^{\text{dustTE}}$	$0.476 \pm 0.084$	$D_{2000}$	$220.1 \pm 8.3$	$H(2.33)$	$235.9 \pm 1.5$
$A_{143}^{\text{dustTE}}$	$0.224 \pm 0.055$	$n_{\text{s},0.002}$	$0.950 \pm 0.020$	$D_{\text{M}}(2.33)$	$5764 \pm 24$
$A_{143 \times 217}^{\text{dustTE}}$	$0.656 \pm 0.080$	$Y_{\text{P}}$	$0.24532^{+0.00018}_{-0.00014}$	$f\sigma_8(0.15)$	$0.446 \pm 0.013$
$A_{217}^{\text{dustTE}}$	$2.03 \pm 0.27$	$Y_{\text{P}}^{\text{BBN}}$	$0.24664^{+0.00018}_{-0.00014}$	$\sigma_8(0.15)$	$0.7324 \pm 0.0092$
$c_{100}$	$1.00017 \pm 0.00070$	$10^5 \text{D/H}$	$2.619 \pm 0.070$	$f\sigma_8(0.38)$	$0.464 \pm 0.010$
$c_{217}$	$0.99800 \pm 0.00065$	$\text{Age/Gyr}$	$13.800 \pm 0.054$	$\sigma_8(0.38)$	$0.6493 \pm 0.0081$
$y_{\text{cal}}$	$1.0001 \pm 0.0025$	$z_*$	$1090.07 \pm 0.65$	$f\sigma_8(0.51)$	$0.4631 \pm 0.0089$
$H_0$	$67.6 \pm 1.2$	$r_*$	$144.77 \pm 0.53$	$\sigma_8(0.51)$	$0.6077 \pm 0.0076$
$\Omega_{\Lambda}$	$0.689 \pm 0.016$	$100\theta_*$	$1.04146 \pm 0.00051$	$f\sigma_8(0.61)$	$0.4582 \pm 0.0079$
$\Omega_{\text{m}}$	$0.311 \pm 0.016$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.901 \pm 0.049$	$\sigma_8(0.61)$	$0.5782^{+0.0068}_{-0.0076}$
$\Omega_{\text{m}}h^2$	$0.1420 \pm 0.0024$	$z_{\text{drag}}$	$1059.49 \pm 0.75$	$f\sigma_8(2.33)$	$0.2916^{+0.0036}_{-0.0040}$
$\Omega_{\text{m}}h^3$	$0.09603 \pm 0.00060$	$r_{\text{drag}}$	$147.49 \pm 0.52$	$\sigma_8(2.33)$	$0.3007 \pm 0.0043$
$\sigma_8$	$0.793 \pm 0.010$	$k_{\text{D}}$	$0.14031 \pm 0.00059$	$\chi_{\text{simall}}^2$	$396.4 \pm 1.2$
$S_8$	$0.807 \pm 0.026$	$100\theta_{\text{D}}$	$0.16108 \pm 0.00045$	$\chi_{\text{plikTE}}^2$	$859.6 \pm 4.1$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.442 \pm 0.014$	$z_{\text{eq}}$	$3379 \pm 56$	$\chi_{\text{prior}}^2$	$7.4 \pm 3.7$
$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.592 \pm 0.013$	$k_{\text{eq}}$	$0.01031 \pm 0.00017$	$\chi_{\text{CMB}}^2$	$1256.1 \pm 4.3$
$\sigma_8/h^{0.5}$	$0.964 \pm 0.017$	$100\theta_{\text{eq}}$	$0.817 \pm 0.011$		

$\bar{\chi}_{\text{eff}}^2 = 1263.45$ ;  $R - 1 = 0.01017$



### 3.28 base\_Alens\_plikHM\_TE\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02226 \pm 0.00029$	$\langle d^2 \rangle^{1/2}$	$2.13^{+0.27}_{-0.22}$	$D_M(0.15)$	$638.7 \pm 5.3$
$\Omega_c h^2$	$0.1186 \pm 0.0013$	$z_{\text{re}}$	$7.44^{+0.34}_{-0.81}$	$H(0.38)$	$83.17 \pm 0.42$
$100\theta_{\text{MC}}$	$1.04133 \pm 0.00045$	$10^9 A_s$	$2.037^{+0.032}_{-0.039}$	$D_M(0.38)$	$1524 \pm 11$
$\tau$	$0.0520^{+0.0036}_{-0.0073}$	$10^9 A_s e^{-2\tau}$	$1.836 \pm 0.024$	$H(0.51)$	$89.83 \pm 0.36$
$A_L$	$0.79 \pm 0.19$	$D_{40}$	$1235 \pm 30$	$D_M(0.51)$	$1976 \pm 13$
$\ln(10^{10} A_s)$	$3.014^{+0.016}_{-0.019}$	$D_{220}$	$5680 \pm 59$	$H(0.61)$	$95.41 \pm 0.32$
$n_s$	$0.953 \pm 0.016$	$D_{810}$	$2481 \pm 35$	$D_M(0.61)$	$2299 \pm 14$
$y_{\text{cal}}$	$1.0001 \pm 0.0025$	$D_{1420}$	$794 \pm 16$	$H(2.33)$	$235.54 \pm 0.81$
$A_{100}^{\text{dustTE}}$	$0.115 \pm 0.038$	$D_{2000}$	$221.1 \pm 7.3$	$D_M(2.33)$	$5760 \pm 16$
$A_{100 \times 143}^{\text{dustTE}}$	$0.137 \pm 0.030$	$n_{s,0.002}$	$0.953 \pm 0.016$	$f\sigma_8(0.15)$	$0.4433 \pm 0.0079$
$A_{100 \times 217}^{\text{dustTE}}$	$0.477 \pm 0.085$	$Y_P$	$0.24534^{+0.00013}_{-0.00011}$	$\sigma_8(0.15)$	$0.7319^{+0.0084}_{-0.0094}$
$A_{143}^{\text{dustTE}}$	$0.223 \pm 0.055$	$Y_P^{\text{BBN}}$	$0.24667^{+0.00013}_{-0.00011}$	$f\sigma_8(0.38)$	$0.4622^{+0.0065}_{-0.0073}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.656 \pm 0.080$	$10^5 \text{D/H}$	$2.607 \pm 0.055$	$\sigma_8(0.38)$	$0.6493 \pm 0.0080$
$A_{217}^{\text{dustTE}}$	$2.03 \pm 0.27$	Age/Gyr	$13.790 \pm 0.037$	$f\sigma_8(0.51)$	$0.4614^{+0.0060}_{-0.0068}$
$c_{100}$	$1.00019 \pm 0.00069$	$z_*$	$1089.94 \pm 0.43$	$\sigma_8(0.51)$	$0.6078 \pm 0.0076$
$c_{217}$	$0.99801 \pm 0.00063$	$r_*$	$144.89 \pm 0.34$	$f\sigma_8(0.61)$	$0.4569^{+0.0057}_{-0.0064}$
$H_0$	$67.91 \pm 0.63$	$100\theta_*$	$1.04153 \pm 0.00045$	$\sigma_8(0.61)$	$0.5785 \pm 0.0072$
$\Omega_\Lambda$	$0.6932 \pm 0.0079$	$D_M(z_*)/\text{Gpc}$	$13.911 \pm 0.033$	$f\sigma_8(2.33)$	$0.2919 \pm 0.0037$
$\Omega_m$	$0.3068 \pm 0.0079$	$z_{\text{drag}}$	$1059.57 \pm 0.66$	$\sigma_8(2.33)$	$0.3011 \pm 0.0039$
$\Omega_m h^2$	$0.1415 \pm 0.0012$	$r_{\text{drag}}$	$147.60 \pm 0.39$	$\chi_{\text{simall}}^2$	$396.4 \pm 1.2$
$\Omega_m h^3$	$0.09607 \pm 0.00059$	$k_D$	$0.14025 \pm 0.00057$	$\chi_{\text{plikTE}}^2$	$859.0 \pm 3.8$
$\sigma_8$	$0.7916^{+0.0091}_{-0.010}$	$100\theta_D$	$0.16103 \pm 0.00039$	$\chi_{6\text{DF}}^2$	$0.045 \pm 0.064$
$S_8$	$0.800 \pm 0.015$	$z_{\text{eq}}$	$3365 \pm 30$	$\chi_{\text{MGS}}^2$	$1.63 \pm 0.60$
$\sigma_8 \Omega_m^{0.5}$	$0.4384 \pm 0.0083$	$k_{\text{eq}}$	$0.010271 \pm 0.000090$	$\chi_{\text{DR12BAO}}^2$	$4.3 \pm 1.3$
$\sigma_8 \Omega_m^{0.25}$	$0.5891^{+0.0081}_{-0.0091}$	$100\theta_{\text{eq}}$	$0.8200 \pm 0.0056$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.6$
$\sigma_8/h^{0.5}$	$0.961^{+0.012}_{-0.013}$	$100\theta_{s,\text{eq}}$	$0.4530 \pm 0.0029$	$\chi_{\text{BAO}}^2$	$6.0 \pm 1.1$
$r_{\text{drag}} h$	$100.2 \pm 1.0$	$H(0.15)$	$73.14 \pm 0.55$	$\chi_{\text{CMB}}^2$	$1255.4 \pm 4.0$

$\bar{\chi}_{\text{eff}}^2 = 1268.67$ ;  $R - 1 = 0.01556$



### 3.29 base\_Alens\_plikHM\_EE\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02434	$0.0245 \pm 0.0013$	$D_{40}$	1224.7	$1222 \pm 31$	$D_M(0.15)$	614.1	$612^{+22}_{-25}$
$\Omega_c h^2$	0.11397	$0.1135^{+0.0045}_{-0.0051}$	$D_{220}$	6006	$6026 \pm 200$	$H(0.38)$	85.36	$85.7 \pm 2.1$
$100\theta_{MC}$	1.04001	$1.04006 \pm 0.00090$	$D_{810}$	2590.4	$2595 \pm 39$	$D_M(0.38)$	1472.9	$1467 \pm 49$
$\tau$	0.0541	$0.0531 \pm 0.0093$	$D_{1420}$	844.3	$847 \pm 19$	$H(0.51)$	91.75	$92.1^{+1.7}_{-1.9}$
$A_L$	1.307	$1.32^{+0.24}_{-0.27}$	$D_{2000}$	244.7	$245.8 \pm 7.9$	$D_M(0.51)$	1913	$1907 \pm 58$
$\ln(10^{10} A_s)$	3.0553	$3.054 \pm 0.023$	$n_{s,0.002}$	0.9858	$0.989 \pm 0.016$	$H(0.61)$	97.13	$97.4^{+1.5}_{-1.7}$
$n_s$	0.9858	$0.989 \pm 0.016$	$Y_P$	0.246154	$0.24625^{+0.00055}_{-0.00044}$	$D_M(0.61)$	2231	$2223 \pm 64$
$y_{cal}$	0.99985	$0.9999 \pm 0.0025$	$Y_P^{BBN}$	0.24748	$0.24758^{+0.00055}_{-0.00045}$	$H(2.33)$	234.50	$234.4^{+1.9}_{-2.2}$
$H_0$	70.87	$71.3 \pm 2.9$	$10^5 D/H$	2.255	$2.24^{+0.18}_{-0.21}$	$D_M(2.33)$	5676	$5664 \pm 73$
$\Omega_\Lambda$	0.7233	$0.725^{+0.033}_{-0.025}$	Age/Gyr	13.599	$13.58 \pm 0.16$	$f\sigma_8(0.15)$	0.4231	$0.420^{+0.028}_{-0.032}$
$\Omega_m$	0.2767	$0.275^{+0.025}_{-0.033}$	$z_*$	1087.14	$1087.0^{+1.6}_{-1.8}$	$\sigma_8(0.15)$	0.7346	$0.732^{+0.016}_{-0.014}$
$\Omega_m h^2$	0.13896	$0.1387^{+0.0035}_{-0.0040}$	$r_*$	144.49	$144.45 \pm 0.65$	$f\sigma_8(0.38)$	0.4486	$0.446 \pm 0.024$
$\Omega_m h^3$	0.09847	$0.0988 \pm 0.0019$	$100\theta_*$	1.03999	$1.04003 \pm 0.00087$	$\sigma_8(0.38)$	0.6551	$0.653^{+0.012}_{-0.010}$
$\sigma_8$	0.7912	$0.788 \pm 0.019$	$D_M(z_*)/\text{Gpc}$	13.893	$13.889 \pm 0.061$	$f\sigma_8(0.51)$	0.4513	$0.448 \pm 0.021$
$S_8$	0.760	$0.755^{+0.053}_{-0.062}$	$z_{drag}$	1063.94	$1064.3 \pm 2.5$	$\sigma_8(0.51)$	0.6147	$0.6130^{+0.0098}_{-0.0085}$
$\sigma_8 \Omega_m^{0.5}$	0.4162	$0.413^{+0.029}_{-0.034}$	$r_{drag}$	146.53	$146.45 \pm 0.72$	$f\sigma_8(0.61)$	0.4493	$0.447 \pm 0.018$
$\sigma_8 \Omega_m^{0.25}$	0.5738	$0.571 \pm 0.028$	$k_D$	0.14280	$0.1429 \pm 0.0013$	$\sigma_8(0.61)$	0.5859	$0.5844^{+0.0087}_{-0.0076}$
$\sigma_8/h^{0.5}$	0.9399	$0.935 \pm 0.041$	$100\theta_D$	0.15836	$0.1583^{+0.0011}_{-0.0014}$	$f\sigma_8(2.33)$	0.29688	$0.2963 \pm 0.0037$
$r_{drag} h$	103.84	$104.4 \pm 4.3$	$z_{eq}$	3305	$3300^{+83}_{-95}$	$\sigma_8(2.33)$	0.30778	$0.3074 \pm 0.0037$
$\langle d^2 \rangle^{1/2}$	2.684	$2.67^{+0.25}_{-0.22}$	$k_{eq}$	0.010088	$0.01007^{+0.00025}_{-0.00029}$	$\chi^2_{small}$	395.57	$396.7 \pm 1.6$
$z_{re}$	7.16	$7.00^{+0.91}_{-0.73}$	$100\theta_{eq}$	0.8360	$0.838 \pm 0.020$	$\chi^2_{plikEE}$	737.57	$743.5 \pm 3.4$
$10^9 A_s$	2.1229	$2.122 \pm 0.049$	$100\theta_{s,eq}$	0.4596	$0.4606 \pm 0.0097$	$\chi^2_{prior}$	0.004	$0.99 \pm 1.4$
$10^9 A_s e^{-2\tau}$	1.9051	$1.907 \pm 0.025$	$H(0.15)$	75.81	$76.2 \pm 2.6$	$\chi^2_{CMB}$	1133.14	$1140.3 \pm 3.8$

Best-fit  $\chi^2_{eff} = 1133.14$ ;  $\bar{\chi}^2_{eff} = 1141.29$ ;  $R - 1 = 0.00947$   
 $\chi^2_{eff}$ : CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.57 plik\_rd12\_HM\_v22\_EE: 737.57



### 3.30 base\_Alens\_plikHM\_EE\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02352	$0.02355 \pm 0.00065$	$D_{810}$	2576.8	$2577 \pm 33$	$D_M(0.51)$	1954.5	$1954 \pm 18$
$\Omega_c h^2$	0.11747	$0.1174 \pm 0.0015$	$D_{1420}$	836.5	$836 \pm 15$	$H(0.61)$	96.10	$96.12 \pm 0.55$
$100\theta_{MC}$	1.03980	$1.03976 \pm 0.00081$	$D_{2000}$	240.9	$240.9 \pm 5.6$	$D_M(0.61)$	2275.9	$2275 \pm 20$
$\tau$	0.0521	$0.0510^{+0.0087}_{-0.0078}$	$n_{s,0.002}$	0.9786	$0.978 \pm 0.010$	$H(2.33)$	235.93	$235.92 \pm 0.97$
$A_L$	1.234	$1.24 \pm 0.23$	$Y_P$	0.245872	$0.24587^{+0.00026}_{-0.00023}$	$D_M(2.33)$	5722.7	$5722 \pm 29$
$\ln(10^{10} A_s)$	3.0511	$3.049^{+0.022}_{-0.019}$	$Y_P^{BBN}$	0.247200	$0.24720^{+0.00026}_{-0.00024}$	$f\sigma_8(0.15)$	0.4449	$0.4440 \pm 0.0097$
$n_s$	0.9786	$0.978 \pm 0.010$	$10^5 D/H$	2.386	$2.38 \pm 0.11$	$\sigma_8(0.15)$	0.7438	$0.7427 \pm 0.0090$
$y_{cal}$	0.99977	$0.9999 \pm 0.0025$	Age/Gyr	13.704	$13.703 \pm 0.067$	$f\sigma_8(0.38)$	0.4659	$0.4650 \pm 0.0083$
$H_0$	68.83	$68.86 \pm 0.85$	$z_*$	1088.33	$1088.31 \pm 0.79$	$\sigma_8(0.38)$	0.6607	$0.6597 \pm 0.0077$
$\Omega_\Lambda$	0.7011	$0.7012 \pm 0.0091$	$r_*$	144.21	$144.20 \pm 0.51$	$f\sigma_8(0.51)$	0.4660	$0.4651 \pm 0.0075$
$\Omega_m$	0.2989	$0.2988 \pm 0.0091$	$100\theta_*$	1.03988	$1.03982 \pm 0.00082$	$\sigma_8(0.51)$	0.6189	$0.6180 \pm 0.0071$
$\Omega_m h^2$	0.14163	$0.1416 \pm 0.0014$	$D_M(z_*)/\text{Gpc}$	13.8679	$13.868 \pm 0.049$	$f\sigma_8(0.61)$	0.4620	$0.4612 \pm 0.0069$
$\Omega_m h^3$	0.09748	$0.0975 \pm 0.0012$	$z_{drag}$	1062.37	$1062.4 \pm 1.4$	$\sigma_8(0.61)$	0.5893	$0.5884 \pm 0.0068$
$\sigma_8$	0.8036	$0.802 \pm 0.010$	$r_{drag}$	146.50	$146.49 \pm 0.68$	$f\sigma_8(2.33)$	0.29761	$0.2972 \pm 0.0034$
$S_8$	0.8022	$0.801 \pm 0.019$	$k_D$	0.14232	$0.1423 \pm 0.0011$	$\sigma_8(2.33)$	0.30739	$0.3070 \pm 0.0035$
$\sigma_8 \Omega_m^{0.5}$	0.4394	$0.439 \pm 0.010$	$100\theta_D$	0.15917	$0.15916 \pm 0.00082$	$\chi_{small}^2$	395.62	$396.8 \pm 1.6$
$\sigma_8 \Omega_m^{0.25}$	0.5942	$0.593 \pm 0.010$	$z_{eq}$	3369.1	$3368 \pm 33$	$\chi_{plikEE}^2$	738.06	$743.1 \pm 3.4$
$\sigma_8/h^{0.5}$	0.9686	$0.967 \pm 0.015$	$k_{eq}$	0.010283	$0.01028 \pm 0.00010$	$\chi_{6DF}^2$	0.0042	$0.060 \pm 0.084$
$r_{drag} h$	100.83	$100.9 \pm 1.1$	$100\theta_{eq}$	0.8216	$0.8218 \pm 0.0060$	$\chi_{MGS}^2$	1.89	$2.00 \pm 0.72$
$\langle d^2 \rangle^{1/2}$	2.662	$2.66^{+0.25}_{-0.23}$	$100\theta_{s,eq}$	0.45282	$0.4529 \pm 0.0031$	$\chi_{DR12BAO}^2$	3.60	$4.4 \pm 1.2$
$z_{re}$	7.18	$7.04^{+0.89}_{-0.75}$	$H(0.15)$	74.00	$74.03 \pm 0.77$	$\chi_{prior}^2$	0.01	$1.0 \pm 1.4$
$10^9 A_s$	2.1139	$2.111^{+0.046}_{-0.042}$	$D_M(0.15)$	630.7	$630.5 \pm 7.2$	$\chi_{BAO}^2$	5.50	$6.5 \pm 1.4$
$10^9 A_s e^{-2\tau}$	1.9046	$1.906 \pm 0.024$	$H(0.38)$	83.93	$83.96 \pm 0.65$	$\chi_{CMB}^2$	1133.68	$1139.9 \pm 3.7$
$D_{40}$	1225.0	$1227 \pm 31$	$D_M(0.38)$	1507.3	$1507 \pm 15$			
$D_{220}$	5885	$5895 \pm 130$	$H(0.51)$	90.55	$90.57 \pm 0.59$			

Best-fit  $\chi_{eff}^2 = 1139.18$ ;  $\bar{\chi}_{eff}^2 = 1147.38$ ;  $R - 1 = 0.01879$

$\chi_{eff}^2$ : BAO - 6DF: 0.00 MGS: 1.89 DR12BAO: 3.60 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.62 plik\_rd12\_HM\_v22\_EE: 738.06



### 3.31 base\_Alens\_plikHM\_EE\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.0245 \pm 0.0013$	$D_{40}$	$1221 \pm 31$	$D_M(0.15)$	$612^{+22}_{-24}$
$\Omega_c h^2$	$0.1136^{+0.0045}_{-0.0051}$	$D_{220}$	$6020 \pm 200$	$H(0.38)$	$85.7 \pm 2.1$
$100\theta_{MC}$	$1.04006 \pm 0.00090$	$D_{810}$	$2594 \pm 38$	$D_M(0.38)$	$1468 \pm 48$
$\tau$	$0.0570^{+0.0051}_{-0.0080}$	$D_{1420}$	$847 \pm 19$	$H(0.51)$	$92.0^{+1.7}_{-1.9}$
$A_L$	$1.31^{+0.23}_{-0.26}$	$D_{2000}$	$245.7 \pm 7.9$	$D_M(0.51)$	$1907 \pm 58$
$\ln(10^{10} A_s)$	$3.062^{+0.018}_{-0.020}$	$n_{s,0.002}$	$0.989 \pm 0.016$	$H(0.61)$	$97.4^{+1.5}_{-1.7}$
$n_s$	$0.989 \pm 0.016$	$Y_P$	$0.24623^{+0.00055}_{-0.00044}$	$D_M(0.61)$	$2224 \pm 64$
$y_{cal}$	$0.9999 \pm 0.0025$	$Y_P^{BBN}$	$0.24756^{+0.00055}_{-0.00044}$	$H(2.33)$	$234.4^{+1.9}_{-2.2}$
$H_0$	$71.2 \pm 2.9$	$10^5 D/H$	$2.24^{+0.18}_{-0.21}$	$D_M(2.33)$	$5665 \pm 72$
$\Omega_\Lambda$	$0.725^{+0.033}_{-0.025}$	Age/Gyr	$13.58 \pm 0.16$	$f\sigma_8(0.15)$	$0.422^{+0.028}_{-0.032}$
$\Omega_m$	$0.275^{+0.025}_{-0.033}$	$z_*$	$1087.0^{+1.6}_{-1.8}$	$\sigma_8(0.15)$	$0.735 \pm 0.015$
$\Omega_m h^2$	$0.1387^{+0.0035}_{-0.0040}$	$r_*$	$144.47 \pm 0.65$	$f\sigma_8(0.38)$	$0.447 \pm 0.024$
$\Omega_m h^3$	$0.0987^{+0.0017}_{-0.0020}$	$100\theta_*$	$1.04003 \pm 0.00087$	$\sigma_8(0.38)$	$0.656^{+0.010}_{-0.0095}$
$\sigma_8$	$0.791 \pm 0.019$	$D_M(z_*)/\text{Gpc}$	$13.891 \pm 0.061$	$f\sigma_8(0.51)$	$0.450 \pm 0.021$
$S_8$	$0.758^{+0.052}_{-0.062}$	$z_{drag}$	$1064.2 \pm 2.5$	$\sigma_8(0.51)$	$0.6154 \pm 0.0084$
$\sigma_8 \Omega_m^{0.5}$	$0.415^{+0.029}_{-0.034}$	$r_{drag}$	$146.48 \pm 0.72$	$f\sigma_8(0.61)$	$0.448 \pm 0.018$
$\sigma_8 \Omega_m^{0.25}$	$0.573 \pm 0.028$	$k_D$	$0.1429 \pm 0.0013$	$\sigma_8(0.61)$	$0.5867 \pm 0.0075$
$\sigma_8/h^{0.5}$	$0.939 \pm 0.040$	$100\theta_D$	$0.1583^{+0.0011}_{-0.0014}$	$f\sigma_8(2.33)$	$0.2974 \pm 0.0032$
$r_{drag} h$	$104.3 \pm 4.3$	$z_{eq}$	$3299^{+83}_{-96}$	$\sigma_8(2.33)$	$0.3086 \pm 0.0032$
$\langle d^2 \rangle^{1/2}$	$2.67^{+0.25}_{-0.22}$	$k_{eq}$	$0.01007^{+0.00025}_{-0.00029}$	$\chi_{simall}^2$	$396.4 \pm 1.3$
$z_{re}$	$7.39^{+0.27}_{-0.84}$	$100\theta_{eq}$	$0.838 \pm 0.020$	$\chi_{plikEE}^2$	$743.5 \pm 3.4$
$10^9 A_s$	$2.137^{+0.038}_{-0.044}$	$100\theta_{s,eq}$	$0.4606 \pm 0.0097$	$\chi_{prior}^2$	$0.99 \pm 1.4$
$10^9 A_s e^{-2\tau}$	$1.906 \pm 0.025$	$H(0.15)$	$76.2 \pm 2.6$	$\chi_{CMB}^2$	$1139.9 \pm 3.6$

$\bar{\chi}_{eff}^2 = 1140.89$ ;  $R - 1 = 0.00557$



### 3.32 base\_Alens\_plikHM\_EE\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02354 \pm 0.00064$	$D_{810}$	$2577 \pm 33$	$D_{\text{M}}(0.51)$	$1954 \pm 18$
$\Omega_{\text{c}}h^2$	$0.1174 \pm 0.0015$	$D_{1420}$	$836 \pm 14$	$H(0.61)$	$96.11 \pm 0.55$
$100\theta_{\text{MC}}$	$1.03975 \pm 0.00081$	$D_{2000}$	$240.9 \pm 5.6$	$D_{\text{M}}(0.61)$	$2275 \pm 20$
$\tau$	$0.0546^{+0.0042}_{-0.0072}$	$n_{\text{s},0.002}$	$0.978 \pm 0.010$	$H(2.33)$	$235.90 \pm 0.98$
$A_{\text{L}}$	$1.23 \pm 0.22$	$Y_{\text{P}}$	$0.24587^{+0.00026}_{-0.00023}$	$D_{\text{M}}(2.33)$	$5722 \pm 29$
$\ln(10^{10}A_{\text{s}})$	$3.056 \pm 0.018$	$Y_{\text{P}}^{\text{BBN}}$	$0.24719^{+0.00026}_{-0.00024}$	$f\sigma_8(0.15)$	$0.4455 \pm 0.0094$
$n_{\text{s}}$	$0.978 \pm 0.010$	$10^5\text{D}/\text{H}$	$2.39 \pm 0.11$	$\sigma_8(0.15)$	$0.7453 \pm 0.0078$
$y_{\text{cal}}$	$0.9999 \pm 0.0025$	Age/Gyr	$13.703 \pm 0.067$	$f\sigma_8(0.38)$	$0.4666 \pm 0.0079$
$H_0$	$68.86 \pm 0.85$	$z_*$	$1088.32 \pm 0.78$	$\sigma_8(0.38)$	$0.6620 \pm 0.0067$
$\Omega_{\Lambda}$	$0.7013 \pm 0.0090$	$r_*$	$144.21 \pm 0.51$	$f\sigma_8(0.51)$	$0.4667 \pm 0.0070$
$\Omega_{\text{m}}$	$0.2987 \pm 0.0090$	$100\theta_*$	$1.03981 \pm 0.00082$	$\sigma_8(0.51)$	$0.6202 \pm 0.0061$
$\Omega_{\text{m}}h^2$	$0.1416 \pm 0.0014$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.869 \pm 0.050$	$f\sigma_8(0.61)$	$0.4628 \pm 0.0064$
$\Omega_{\text{m}}h^3$	$0.0975 \pm 0.0012$	$z_{\text{drag}}$	$1062.4 \pm 1.4$	$\sigma_8(0.61)$	$0.5905 \pm 0.0058$
$\sigma_8$	$0.8051 \pm 0.0089$	$r_{\text{drag}}$	$146.50 \pm 0.67$	$f\sigma_8(2.33)$	$0.2982 \pm 0.0029$
$S_8$	$0.803 \pm 0.018$	$k_{\text{D}}$	$0.1423 \pm 0.0011$	$\sigma_8(2.33)$	$0.3081^{+0.0028}_{-0.0031}$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4400 \pm 0.0099$	$100\theta_{\text{D}}$	$0.15916 \pm 0.00081$	$\chi_{\text{simall}}^2$	$396.4 \pm 1.3$
$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.5952 \pm 0.0096$	$z_{\text{eq}}$	$3368 \pm 33$	$\chi_{\text{plikEE}}^2$	$743.1 \pm 3.4$
$\sigma_8/h^{0.5}$	$0.970 \pm 0.014$	$k_{\text{eq}}$	$0.01028 \pm 0.00010$	$\chi_{6\text{DF}}^2$	$0.060 \pm 0.084$
$r_{\text{drag}}h$	$100.9 \pm 1.1$	$100\theta_{\text{eq}}$	$0.8219 \pm 0.0060$	$\chi_{\text{MGS}}^2$	$2.00 \pm 0.72$
$\langle d^2 \rangle^{1/2}$	$2.66^{+0.25}_{-0.22}$	$100\theta_{\text{s,eq}}$	$0.4530 \pm 0.0031$	$\chi_{\text{DR12BAO}}^2$	$4.4 \pm 1.2$
$z_{\text{re}}$	$7.41^{+0.29}_{-0.85}$	$H(0.15)$	$74.03 \pm 0.77$	$\chi_{\text{prior}}^2$	$1.0 \pm 1.5$
$10^9 A_{\text{s}}$	$2.125 \pm 0.038$	$D_{\text{M}}(0.15)$	$630.5 \pm 7.2$	$\chi_{\text{BAO}}^2$	$6.5 \pm 1.4$
$10^9 A_{\text{s}}e^{-2\tau}$	$1.905 \pm 0.024$	$H(0.38)$	$83.96 \pm 0.65$	$\chi_{\text{CMB}}^2$	$1139.5 \pm 3.6$
$D_{40}$	$1227 \pm 31$	$D_{\text{M}}(0.38)$	$1507 \pm 15$		
$D_{220}$	$5892 \pm 130$	$H(0.51)$	$90.57 \pm 0.59$		

$\bar{\chi}_{\text{eff}}^2 = 1146.99$ ;  $R - 1 = 0.01334$



### 3.33 base\_Alens\_CamSpecHM\_TE\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022329	$0.02238 \pm 0.00039$	$D_{40}$	1216.0	$1209 \pm 38$	$D_M(0.15)$	635.9	$634 \pm 11$
$\Omega_c h^2$	0.11774	$0.1174 \pm 0.0026$	$D_{220}$	5715	$5710 \pm 63$	$H(0.38)$	83.37	$83.51 \pm 0.82$
$100\theta_{MC}$	1.04130	$1.04137 \pm 0.00053$	$D_{810}$	2532.4	$2536 \pm 40$	$D_M(0.38)$	1518.8	$1516 \pm 21$
$\tau$	0.0504	$0.0500 \pm 0.0090$	$D_{1420}$	816.5	$819 \pm 20$	$H(0.51)$	89.99	$90.10 \pm 0.67$
$A_L$	0.890	$0.93^{+0.21}_{-0.24}$	$D_{2000}$	229.3	$230.7 \pm 9.1$	$D_M(0.51)$	1968.9	$1965 \pm 25$
$\ln(10^{10} A_s)$	3.0276	$3.027 \pm 0.023$	$n_{s,0.002}$	0.9689	$0.973 \pm 0.021$	$H(0.61)$	95.53	$95.63 \pm 0.56$
$n_s$	0.9689	$0.973 \pm 0.021$	$Y_P$	0.245379	$0.24539 \pm 0.00017$	$D_M(0.61)$	2292.3	$2288 \pm 27$
$y_{cal}$	1.00006	$0.99997 \pm 0.0025$	$Y_P^{BBN}$	0.246705	$0.24672 \pm 0.00017$	$H(2.33)$	235.07	$234.9 \pm 1.4$
$H_0$	68.25	$68.4 \pm 1.3$	$10^5 D/H$	2.593	$2.586 \pm 0.073$	$D_M(2.33)$	5755.0	$5751 \pm 25$
$\Omega_\Lambda$	0.6979	$0.700^{+0.016}_{-0.015}$	Age/Gyr	13.780	$13.771 \pm 0.057$	$f\sigma_8(0.15)$	0.4442	$0.443 \pm 0.014$
$\Omega_m$	0.3021	$0.300 \pm 0.016$	$z_*$	1089.77	$1089.69 \pm 0.66$	$\sigma_8(0.15)$	0.7388	$0.739 \pm 0.011$
$\Omega_m h^2$	0.14072	$0.1404 \pm 0.0023$	$r_*$	145.05	$145.10 \pm 0.52$	$f\sigma_8(0.38)$	0.4643	$0.463 \pm 0.011$
$\Omega_m h^3$	0.09604	$0.09610 \pm 0.00064$	$100\theta_*$	1.04150	$1.04155 \pm 0.00052$	$\sigma_8(0.38)$	0.6560	$0.6559 \pm 0.0095$
$\sigma_8$	0.7986	$0.798 \pm 0.012$	$D_M(z_*)/\text{Gpc}$	13.9269	$13.931 \pm 0.049$	$f\sigma_8(0.51)$	0.4640	$0.4630 \pm 0.0096$
$S_8$	0.8013	$0.798 \pm 0.027$	$z_{drag}$	1059.67	$1059.77 \pm 0.80$	$\sigma_8(0.51)$	0.6143	$0.6144 \pm 0.0090$
$\sigma_8 \Omega_m^{0.5}$	0.4389	$0.437 \pm 0.015$	$r_{drag}$	147.74	$147.77 \pm 0.52$	$f\sigma_8(0.61)$	0.4599	$0.4590 \pm 0.0087$
$\sigma_8 \Omega_m^{0.25}$	0.5920	$0.591 \pm 0.013$	$k_D$	0.14016	$0.14015 \pm 0.00061$	$\sigma_8(0.61)$	0.5848	$0.5849 \pm 0.0086$
$\sigma_8/h^{0.5}$	0.9666	$0.965 \pm 0.018$	$100\theta_D$	0.160947	$0.16091 \pm 0.00047$	$f\sigma_8(2.33)$	0.29522	$0.2954 \pm 0.0045$
$r_{drag} h$	100.83	$101.1 \pm 2.1$	$z_{eq}$	3347	$3341 \pm 56$	$\sigma_8(2.33)$	0.30478	$0.3051 \pm 0.0050$
$\langle d^2 \rangle^{1/2}$	2.259	$2.28^{+0.27}_{-0.22}$	$k_{eq}$	0.010216	$0.01020 \pm 0.00017$	$\chi^2_{small}$	395.66	$396.9 \pm 1.7$
$z_{re}$	7.25	$7.17^{+0.94}_{-0.78}$	$100\theta_{eq}$	0.8234	$0.825 \pm 0.011$	$\chi^2_{CamSpec}$	2575.80	$2581.9 \pm 3.5$
$10^9 A_s$	2.0647	$2.064 \pm 0.048$	$100\theta_{s,eq}$	0.4547	$0.4555 \pm 0.0056$	$\chi^2_{prior}$	10.03	$11.0 \pm 1.4$
$10^9 A_s e^{-2\tau}$	1.8667	$1.867 \pm 0.025$	$H(0.15)$	73.43	$73.6 \pm 1.1$	$\chi^2_{CMB}$	2971.46	$2978.8 \pm 3.9$

Best-fit  $\chi^2_{eff} = 2981.49$ ;  $\bar{\chi}^2_{eff} = 2989.81$ ;  $R - 1 = 0.00461$

$\chi^2_{eff}$ : CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.66 CamSpec like\_10.7HM\_1400\_unified: 2575.80



### 3.34 base\_Alens\_CamSpecHM\_TE\_lowE\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02230 \pm 0.00031$	$D_{810}$	$2530 \pm 37$	$D_{\mathrm{M}}(0.51)$	$1972 \pm 13$
$\Omega_{\mathrm{c}}h^2$	$0.1181 \pm 0.0013$	$D_{1420}$	$816 \pm 17$	$H(0.61)$	$95.48 \pm 0.33$
$100\theta_{\mathrm{MC}}$	$1.04130 \pm 0.00048$	$D_{2000}$	$229.0^{+7.3}_{-8.2}$	$D_{\mathrm{M}}(0.61)$	$2295 \pm 14$
$\tau$	$0.0496 \pm 0.0087$	$n_{\mathrm{s},0.002}$	$0.968 \pm 0.016$	$H(2.33)$	$235.25 \pm 0.82$
$A_{\mathrm{L}}$	$0.89 \pm 0.19$	$Y_{\mathrm{P}}$	$0.24536^{+0.00013}_{-0.00011}$	$D_{\mathrm{M}}(2.33)$	$5757 \pm 17$
$\ln(10^{10}A_{\mathrm{s}})$	$3.026 \pm 0.023$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24669^{+0.00013}_{-0.00011}$	$f\sigma_8(0.15)$	$0.4456 \pm 0.0086$
$n_{\mathrm{s}}$	$0.968 \pm 0.016$	$10^5\mathrm{D}/\mathrm{H}$	$2.600 \pm 0.058$	$\sigma_8(0.15)$	$0.739 \pm 0.011$
$y_{\mathrm{cal}}$	$1.0000 \pm 0.0025$	Age/Gyr	$13.785 \pm 0.038$	$f\sigma_8(0.38)$	$0.4653 \pm 0.0078$
$H_0$	$68.11 \pm 0.64$	$z_*$	$1089.85 \pm 0.44$	$\sigma_8(0.38)$	$0.6558 \pm 0.0095$
$\Omega_{\Lambda}$	$0.6959 \pm 0.0079$	$r_*$	$144.99 \pm 0.35$	$f\sigma_8(0.51)$	$0.4648 \pm 0.0074$
$\Omega_{\mathrm{m}}$	$0.3041 \pm 0.0079$	$100\theta_*$	$1.04149 \pm 0.00047$	$\sigma_8(0.51)$	$0.6141 \pm 0.0089$
$\Omega_{\mathrm{m}}h^2$	$0.1410 \pm 0.0012$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.921 \pm 0.034$	$f\sigma_8(0.61)$	$0.4605 \pm 0.0071$
$\Omega_{\mathrm{m}}h^3$	$0.09604 \pm 0.00062$	$z_{\mathrm{drag}}$	$1059.63 \pm 0.69$	$\sigma_8(0.61)$	$0.5845 \pm 0.0085$
$\sigma_8$	$0.799 \pm 0.012$	$r_{\mathrm{drag}}$	$147.69 \pm 0.40$	$f\sigma_8(2.33)$	$0.2950 \pm 0.0043$
$S_8$	$0.804 \pm 0.016$	$k_{\mathrm{D}}$	$0.14018 \pm 0.00059$	$\sigma_8(2.33)$	$0.3045 \pm 0.0046$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4405 \pm 0.0089$	$100\theta_{\mathrm{D}}$	$0.16098 \pm 0.00041$	$\chi_{\mathrm{small}}^2$	$396.9 \pm 1.7$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5932 \pm 0.0097$	$z_{\mathrm{eq}}$	$3354 \pm 30$	$\chi_{\mathrm{CamSpec}}^2$	$2581.1 \pm 3.3$
$\sigma_8/h^{0.5}$	$0.968 \pm 0.015$	$k_{\mathrm{eq}}$	$0.010238 \pm 0.000091$	$\chi_{6\mathrm{DF}}^2$	$0.044 \pm 0.063$
$r_{\mathrm{drag}}h$	$100.6 \pm 1.0$	$100\theta_{\mathrm{eq}}$	$0.8221 \pm 0.0056$	$\chi_{\mathrm{MGS}}^2$	$1.84 \pm 0.63$
$\langle d^2 \rangle^{1/2}$	$2.24^{+0.25}_{-0.20}$	$100\theta_{\mathrm{s,eq}}$	$0.4540 \pm 0.0029$	$\chi_{\mathrm{DR12BAO}}^2$	$4.1 \pm 1.0$
$z_{\mathrm{re}}$	$7.16^{+0.90}_{-0.81}$	$H(0.15)$	$73.31 \pm 0.56$	$\chi_{\mathrm{prior}}^2$	$11.0 \pm 1.4$
$10^9 A_{\mathrm{s}}$	$2.061 \pm 0.047$	$D_{\mathrm{M}}(0.15)$	$637.1 \pm 5.4$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.1$
$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.866 \pm 0.025$	$H(0.38)$	$83.28 \pm 0.44$	$\chi_{\mathrm{CMB}}^2$	$2978.0 \pm 3.7$
$D_{40}$	$1217 \pm 31$	$D_{\mathrm{M}}(0.38)$	$1521 \pm 11$		
$D_{220}$	$5707 \pm 62$	$H(0.51)$	$89.92 \pm 0.37$		

$\bar{\chi}_{\mathrm{eff}}^2 = 2995.04$ ;  $R - 1 = 0.00758$



### 3.35 base\_Alens\_CamSpecHM\_TE\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02239 \pm 0.00040$	$D_{40}$	$1209 \pm 38$	$D_{\mathrm{M}}(0.15)$	$634 \pm 10$
$\Omega_{\mathrm{c}}h^2$	$0.1173 \pm 0.0026$	$D_{220}$	$5709 \pm 63$	$H(0.38)$	$83.52 \pm 0.82$
$100\theta_{\mathrm{MC}}$	$1.04137 \pm 0.00053$	$D_{810}$	$2536 \pm 40$	$D_{\mathrm{M}}(0.38)$	$1515 \pm 21$
$\tau$	$0.0533^{+0.0041}_{-0.0081}$	$D_{1420}$	$819 \pm 20$	$H(0.51)$	$90.12 \pm 0.67$
$A_{\mathrm{L}}$	$0.93^{+0.21}_{-0.24}$	$D_{2000}$	$230.9 \pm 9.2$	$D_{\mathrm{M}}(0.51)$	$1965 \pm 25$
$\ln(10^{10}A_{\mathrm{s}})$	$3.034^{+0.018}_{-0.021}$	$n_{\mathrm{s},0.002}$	$0.973 \pm 0.021$	$H(0.61)$	$95.64 \pm 0.56$
$n_{\mathrm{s}}$	$0.973 \pm 0.021$	$Y_{\mathrm{P}}$	$0.24539 \pm 0.00017$	$D_{\mathrm{M}}(0.61)$	$2288 \pm 27$
$y_{\mathrm{cal}}$	$0.99995 \pm 0.0025$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24672 \pm 0.00017$	$H(2.33)$	$234.9 \pm 1.4$
$H_0$	$68.5 \pm 1.3$	$10^5\mathrm{D}/\mathrm{H}$	$2.585 \pm 0.073$	$D_{\mathrm{M}}(2.33)$	$5750 \pm 26$
$\Omega_{\Lambda}$	$0.700^{+0.016}_{-0.015}$	Age/Gyr	$13.770 \pm 0.057$	$f\sigma_8(0.15)$	$0.444 \pm 0.013$
$\Omega_{\mathrm{m}}$	$0.300^{+0.015}_{-0.016}$	$z_*$	$1089.68 \pm 0.66$	$\sigma_8(0.15)$	$0.7409 \pm 0.0099$
$\Omega_{\mathrm{m}}h^2$	$0.1404 \pm 0.0023$	$r_*$	$145.11 \pm 0.52$	$f\sigma_8(0.38)$	$0.464 \pm 0.011$
$\Omega_{\mathrm{m}}h^3$	$0.09610 \pm 0.00064$	$100\theta_*$	$1.04156 \pm 0.00052$	$\sigma_8(0.38)$	$0.6581^{+0.0082}_{-0.0092}$
$\sigma_8$	$0.801 \pm 0.011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.932 \pm 0.049$	$f\sigma_8(0.51)$	$0.4643 \pm 0.0092$
$S_8$	$0.800 \pm 0.026$	$z_{\mathrm{drag}}$	$1059.78 \pm 0.80$	$\sigma_8(0.51)$	$0.6164^{+0.0078}_{-0.0087}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.438 \pm 0.014$	$r_{\mathrm{drag}}$	$147.78 \pm 0.51$	$f\sigma_8(0.61)$	$0.4604 \pm 0.0083$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.592 \pm 0.013$	$k_{\mathrm{D}}$	$0.14014 \pm 0.00061$	$\sigma_8(0.61)$	$0.5869^{+0.0075}_{-0.0084}$
$\sigma_8/h^{0.5}$	$0.968 \pm 0.018$	$100\theta_{\mathrm{D}}$	$0.16090 \pm 0.00047$	$f\sigma_8(2.33)$	$0.2964^{+0.0040}_{-0.0044}$
$r_{\mathrm{drag}}h$	$101.2 \pm 2.1$	$z_{\mathrm{eq}}$	$3339 \pm 55$	$\sigma_8(2.33)$	$0.3061^{+0.0044}_{-0.0049}$
$\langle d^2 \rangle^{1/2}$	$2.28^{+0.27}_{-0.22}$	$k_{\mathrm{eq}}$	$0.01019 \pm 0.00017$	$\chi_{\mathrm{simall}}^2$	$396.5 \pm 1.3$
$z_{\mathrm{re}}$	$7.52^{+0.38}_{-0.87}$	$100\theta_{\mathrm{eq}}$	$0.825 \pm 0.011$	$\chi_{\mathrm{CamSpec}}^2$	$2581.9 \pm 3.5$
$10^9 A_{\mathrm{s}}$	$2.078^{+0.036}_{-0.045}$	$100\theta_{\mathrm{s,eq}}$	$0.4556 \pm 0.0056$	$\chi_{\mathrm{prior}}^2$	$11.0 \pm 1.4$
$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.868 \pm 0.025$	$H(0.15)$	$73.6 \pm 1.1$	$\chi_{\mathrm{CMB}}^2$	$2978.4 \pm 3.8$

$\bar{\chi}_{\mathrm{eff}}^2 = 2989.43$ ;  $R - 1 = 0.00501$



### 3.36 base\_Alens\_CamSpecHM\_TE\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02230 \pm 0.00031$	$D_{810}$	$2531 \pm 37$	$D_{\mathrm{M}}(0.51)$	$1972 \pm 13$
$\Omega_{\mathrm{c}}h^2$	$0.1180 \pm 0.0013$	$D_{1420}$	$816 \pm 18$	$H(0.61)$	$95.48 \pm 0.33$
$100\theta_{\mathrm{MC}}$	$1.04130 \pm 0.00048$	$D_{2000}$	$229.2 \pm 7.9$	$D_{\mathrm{M}}(0.61)$	$2295 \pm 14$
$\tau$	$0.0528^{+0.0038}_{-0.0079}$	$n_{\mathrm{s},0.002}$	$0.969 \pm 0.016$	$H(2.33)$	$235.24 \pm 0.82$
$A_{\mathrm{L}}$	$0.88 \pm 0.19$	$Y_{\mathrm{P}}$	$0.24536^{+0.00014}_{-0.00011}$	$D_{\mathrm{M}}(2.33)$	$5757 \pm 17$
$\ln(10^{10}A_{\mathrm{s}})$	$3.032^{+0.018}_{-0.021}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24669^{+0.00014}_{-0.00011}$	$f\sigma_8(0.15)$	$0.4470 \pm 0.0082$
$n_{\mathrm{s}}$	$0.969 \pm 0.016$	$10^5\mathrm{D}/\mathrm{H}$	$2.600 \pm 0.058$	$\sigma_8(0.15)$	$0.7414 \pm 0.0098$
$y_{\mathrm{cal}}$	$1.0000 \pm 0.0025$	$\mathrm{Age}/\mathrm{Gyr}$	$13.785 \pm 0.039$	$f\sigma_8(0.38)$	$0.4668 \pm 0.0074$
$H_0$	$68.12 \pm 0.64$	$z_*$	$1089.84 \pm 0.45$	$\sigma_8(0.38)$	$0.6580^{+0.0083}_{-0.0092}$
$\Omega_{\Lambda}$	$0.6960 \pm 0.0079$	$r_*$	$144.99 \pm 0.34$	$f\sigma_8(0.51)$	$0.4663 \pm 0.0069$
$\Omega_{\mathrm{m}}$	$0.3040 \pm 0.0079$	$100\theta_*$	$1.04149 \pm 0.00048$	$\sigma_8(0.51)$	$0.6161 \pm 0.0082$
$\Omega_{\mathrm{m}}h^2$	$0.1410 \pm 0.0012$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.922 \pm 0.034$	$f\sigma_8(0.61)$	$0.4620 \pm 0.0066$
$\Omega_{\mathrm{m}}h^3$	$0.09603 \pm 0.00062$	$z_{\mathrm{drag}}$	$1059.63 \pm 0.70$	$\sigma_8(0.61)$	$0.5865^{+0.0074}_{-0.0083}$
$\sigma_8$	$0.802 \pm 0.011$	$r_{\mathrm{drag}}$	$147.69 \pm 0.40$	$f\sigma_8(2.33)$	$0.2960 \pm 0.0040$
$S_8$	$0.807 \pm 0.016$	$k_{\mathrm{D}}$	$0.14018 \pm 0.00059$	$\sigma_8(2.33)$	$0.3055 \pm 0.0043$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4419 \pm 0.0086$	$100\theta_{\mathrm{D}}$	$0.16098 \pm 0.00042$	$\chi_{\mathrm{simall}}^2$	$396.5 \pm 1.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5951 \pm 0.0092$	$z_{\mathrm{eq}}$	$3354 \pm 30$	$\chi_{\mathrm{CamSpec}}^2$	$2581.2 \pm 3.3$
$\sigma_8/h^{0.5}$	$0.971 \pm 0.014$	$k_{\mathrm{eq}}$	$0.010236 \pm 0.000090$	$\chi_{6\mathrm{DF}}^2$	$0.044 \pm 0.063$
$r_{\mathrm{drag}}h$	$100.6 \pm 1.0$	$100\theta_{\mathrm{eq}}$	$0.8222 \pm 0.0056$	$\chi_{\mathrm{MGS}}^2$	$1.85 \pm 0.63$
$\langle d^2 \rangle^{1/2}$	$2.24^{+0.25}_{-0.20}$	$100\theta_{\mathrm{s,eq}}$	$0.4541 \pm 0.0029$	$\chi_{\mathrm{DR12BAO}}^2$	$4.1 \pm 1.0$
$z_{\mathrm{re}}$	$7.50^{+0.34}_{-0.89}$	$H(0.15)$	$73.31 \pm 0.56$	$\chi_{\mathrm{prior}}^2$	$11.0 \pm 1.5$
$10^9 A_{\mathrm{s}}$	$2.075^{+0.036}_{-0.044}$	$D_{\mathrm{M}}(0.15)$	$637.0 \pm 5.4$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.1$
$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.866 \pm 0.025$	$H(0.38)$	$83.29 \pm 0.44$	$\chi_{\mathrm{CMB}}^2$	$2977.7 \pm 3.6$
$D_{40}$	$1217 \pm 31$	$D_{\mathrm{M}}(0.38)$	$1521 \pm 11$		
$D_{220}$	$5707 \pm 62$	$H(0.51)$	$89.92 \pm 0.37$		

$\bar{\chi}_{\mathrm{eff}}^2 = 2994.70$ ;  $R - 1 = 0.00997$



### 3.37 base\_Alens\_CamSpecHM\_EE\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02349	$0.0236 \pm 0.0013$	$D_{40}$	1258.1	$1257 \pm 31$	$D_M(0.15)$	633.9	$632^{+22}_{-25}$
$\Omega_c h^2$	0.11795	$0.1177^{+0.0046}_{-0.0052}$	$D_{220}$	5982	$5998 \pm 200$	$H(0.38)$	83.67	$83.9 \pm 2.0$
$100\theta_{MC}$	1.03926	$1.03932 \pm 0.00086$	$D_{810}$	2599.9	$2601 \pm 39$	$D_M(0.38)$	1513.9	$1510 \pm 49$
$\tau$	0.0509	$0.0505 \pm 0.0089$	$D_{1420}$	841.1	$842 \pm 19$	$H(0.51)$	90.32	$90.6^{+1.6}_{-1.8}$
$A_L$	1.136	$1.16^{+0.22}_{-0.25}$	$D_{2000}$	240.9	$241.6 \pm 8.0$	$D_M(0.51)$	1962	$1957 \pm 59$
$\ln(10^{10} A_s)$	3.0595	$3.059 \pm 0.022$	$n_{s,0.002}$	0.9702	$0.972 \pm 0.015$	$H(0.61)$	95.90	$96.1^{+1.3}_{-1.6}$
$n_s$	0.9702	$0.972 \pm 0.015$	$Y_P$	0.245862	$0.24589^{+0.00045}_{-0.00054}$	$D_M(0.61)$	2285	$2279 \pm 64$
$y_{cal}$	1.00002	$0.9999 \pm 0.0025$	$Y_P^{BBN}$	0.247190	$0.24722^{+0.00045}_{-0.00054}$	$H(2.33)$	236.17	$236.2^{+2.0}_{-2.4}$
$H_0$	68.45	$68.7 \pm 2.9$	$10^5 D/H$	2.390	$2.38^{+0.18}_{-0.22}$	$D_M(2.33)$	5732	$5723 \pm 69$
$\Omega_\Lambda$	0.6967	$0.697^{+0.037}_{-0.028}$	Age/Gyr	13.725	$13.71 \pm 0.16$	$f\sigma_8(0.15)$	0.4489	$0.447^{+0.029}_{-0.032}$
$\Omega_m$	0.3033	$0.303^{+0.028}_{-0.037}$	$z_*$	1088.40	$1088.3^{+1.6}_{-2.0}$	$\sigma_8(0.15)$	0.7453	$0.743^{+0.015}_{-0.014}$
$\Omega_m h^2$	0.14209	$0.1420^{+0.0036}_{-0.0042}$	$r_*$	144.10	$144.06 \pm 0.67$	$f\sigma_8(0.38)$	0.4690	$0.467 \pm 0.024$
$\Omega_m h^3$	0.09726	$0.0975^{+0.0017}_{-0.0019}$	$100\theta_*$	1.03933	$1.03938 \pm 0.00083$	$\sigma_8(0.38)$	0.6616	$0.660^{+0.011}_{-0.0094}$
$\sigma_8$	0.8057	$0.804 \pm 0.019$	$D_M(z_*)/\text{Gpc}$	13.865	$13.861 \pm 0.064$	$f\sigma_8(0.51)$	0.4685	$0.466 \pm 0.021$
$S_8$	0.810	$0.807^{+0.056}_{-0.065}$	$z_{drag}$	1062.34	$1062.6 \pm 2.5$	$\sigma_8(0.51)$	0.6195	$0.6182^{+0.0091}_{-0.0080}$
$\sigma_8 \Omega_m^{0.5}$	0.4437	$0.442^{+0.031}_{-0.036}$	$r_{drag}$	146.40	$146.32 \pm 0.71$	$f\sigma_8(0.61)$	0.4643	$0.462 \pm 0.018$
$\sigma_8 \Omega_m^{0.25}$	0.5979	$0.596 \pm 0.029$	$k_D$	0.14241	$0.1425 \pm 0.0013$	$\sigma_8(0.61)$	0.5897	$0.5886^{+0.0081}_{-0.0073}$
$\sigma_8/h^{0.5}$	0.9738	$0.970 \pm 0.041$	$100\theta_D$	0.15911	$0.1590^{+0.0012}_{-0.0015}$	$f\sigma_8(2.33)$	0.29765	$0.2972 \pm 0.0035$
$r_{drag} h$	100.21	$100.6 \pm 4.2$	$z_{eq}$	3380	$3377^{+86}_{-100}$	$\sigma_8(2.33)$	0.30724	$0.3070 \pm 0.0038$
$\langle d^2 \rangle^{1/2}$	2.590	$2.60^{+0.26}_{-0.23}$	$k_{eq}$	0.010316	$0.01031^{+0.00026}_{-0.00031}$	$\chi^2_{small}$	395.60	$396.8 \pm 1.6$
$z_{re}$	7.07	$6.97 \pm 0.88$	$100\theta_{eq}$	0.8191	$0.821 \pm 0.020$	$\chi^2_{CamSpec}$	1886.12	$1892.2 \pm 3.5$
$10^9 A_s$	2.1316	$2.132 \pm 0.047$	$100\theta_{s,eq}$	0.4515	$0.4521 \pm 0.0097$	$\chi^2_{prior}$	10.03	$11.0 \pm 1.4$
$10^9 A_s e^{-2\tau}$	1.9254	$1.927 \pm 0.025$	$H(0.15)$	73.66	$73.9 \pm 2.5$	$\chi^2_{CMB}$	2281.72	$2289.0 \pm 3.9$

Best-fit  $\chi^2_{eff} = 2291.75$ ;  $\bar{\chi}^2_{eff} = 2300.05$ ;  $R - 1 = 0.00814$

$\chi^2_{eff}$ : CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.60 CamSpec like\_10.7HM\_1400\_unified: 1886.12



### 3.38 base\_Alens\_CamSpecHM\_EE\_lowE\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02361 \pm 0.00066$	$D_{810}$	$2601 \pm 34$	$D_{\mathrm{M}}(0.51)$	$1956 \pm 18$
$\Omega_{\mathrm{c}}h^2$	$0.1175 \pm 0.0015$	$D_{1420}$	$842 \pm 14$	$H(0.61)$	$96.06 \pm 0.56$
$100\theta_{\mathrm{MC}}$	$1.03935 \pm 0.00078$	$D_{2000}$	$241.6 \pm 5.8$	$D_{\mathrm{M}}(0.61)$	$2278 \pm 20$
$\tau$	$0.0507 \pm 0.0087$	$n_{\mathrm{s},0.002}$	$0.972 \pm 0.010$	$H(2.33)$	$236.0 \pm 1.0$
$A_{\mathrm{L}}$	$1.16^{+0.21}_{-0.24}$	$Y_{\mathrm{P}}$	$0.24589^{+0.00027}_{-0.00023}$	$D_{\mathrm{M}}(2.33)$	$5725 \pm 30$
$\ln(10^{10}A_{\mathrm{s}})$	$3.059 \pm 0.022$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24722^{+0.00027}_{-0.00023}$	$f\sigma_8(0.15)$	$0.4457 \pm 0.0099$
$n_{\mathrm{s}}$	$0.972 \pm 0.010$	$10^5\mathrm{D}/\mathrm{H}$	$2.37 \pm 0.11$	$\sigma_8(0.15)$	$0.7440 \pm 0.0092$
$y_{\mathrm{cal}}$	$0.99996 \pm 0.0025$	Age/Gyr	$13.709 \pm 0.069$	$f\sigma_8(0.38)$	$0.4664 \pm 0.0085$
$H_0$	$68.75 \pm 0.86$	$z_*$	$1088.25 \pm 0.79$	$\sigma_8(0.38)$	$0.6607 \pm 0.0079$
$\Omega_{\Lambda}$	$0.7000 \pm 0.0092$	$r_*$	$144.14 \pm 0.54$	$f\sigma_8(0.51)$	$0.4664 \pm 0.0077$
$\Omega_{\mathrm{m}}$	$0.3000 \pm 0.0092$	$100\theta_*$	$1.03941 \pm 0.00079$	$\sigma_8(0.51)$	$0.6189 \pm 0.0073$
$\Omega_{\mathrm{m}}h^2$	$0.1417 \pm 0.0015$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.867 \pm 0.053$	$f\sigma_8(0.61)$	$0.4624 \pm 0.0071$
$\Omega_{\mathrm{m}}h^3$	$0.0974 \pm 0.0012$	$z_{\mathrm{drag}}$	$1062.5 \pm 1.4$	$\sigma_8(0.61)$	$0.5892 \pm 0.0069$
$\sigma_8$	$0.804 \pm 0.010$	$r_{\mathrm{drag}}$	$146.40 \pm 0.71$	$f\sigma_8(2.33)$	$0.2975 \pm 0.0035$
$S_8$	$0.804 \pm 0.019$	$k_{\mathrm{D}}$	$0.1425 \pm 0.0012$	$\sigma_8(2.33)$	$0.3073 \pm 0.0036$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.440 \pm 0.010$	$100\theta_{\mathrm{D}}$	$0.15902 \pm 0.00081$	$\chi_{\mathrm{simall}}^2$	$396.8 \pm 1.7$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.595 \pm 0.010$	$z_{\mathrm{eq}}$	$3371 \pm 35$	$\chi_{\mathrm{CamSpec}}^2$	$1891.3 \pm 3.2$
$\sigma_8/h^{0.5}$	$0.970 \pm 0.015$	$k_{\mathrm{eq}}$	$0.01029 \pm 0.00011$	$\chi_{6\mathrm{DF}}^2$	$0.057 \pm 0.079$
$r_{\mathrm{drag}}h$	$100.7 \pm 1.2$	$100\theta_{\mathrm{eq}}$	$0.8211 \pm 0.0062$	$\chi_{\mathrm{MGS}}^2$	$1.85 \pm 0.71$
$\langle d^2 \rangle^{1/2}$	$2.59 \pm 0.25$	$100\theta_{\mathrm{s,eq}}$	$0.4525 \pm 0.0032$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.4$
$z_{\mathrm{re}}$	$6.99^{+0.89}_{-0.76}$	$H(0.15)$	$73.93 \pm 0.78$	$\chi_{\mathrm{prior}}^2$	$11.0 \pm 1.4$
$10^9A_{\mathrm{s}}$	$2.131 \pm 0.046$	$D_{\mathrm{M}}(0.15)$	$631.5 \pm 7.3$	$\chi_{\mathrm{BAO}}^2$	$6.5 \pm 1.3$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.925 \pm 0.025$	$H(0.38)$	$83.88 \pm 0.66$	$\chi_{\mathrm{CMB}}^2$	$2288.1 \pm 3.6$
$D_{40}$	$1256 \pm 31$	$D_{\mathrm{M}}(0.38)$	$1509 \pm 15$		
$D_{220}$	$5995 \pm 140$	$H(0.51)$	$90.51 \pm 0.60$		

$\bar{\chi}_{\mathrm{eff}}^2 = 2305.61$ ;  $R - 1 = 0.01338$



### 3.39 base\_Alens\_CamSpecHM\_EE\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.0236 \pm 0.0013$	$D_{40}$	$1256 \pm 31$	$D_{\mathrm{M}}(0.15)$	$633^{+22}_{-26}$
$\Omega_{\mathrm{c}}h^2$	$0.1177^{+0.0046}_{-0.0053}$	$D_{220}$	$5990 \pm 200$	$H(0.38)$	$83.9 \pm 2.0$
$100\theta_{\mathrm{MC}}$	$1.03932 \pm 0.00086$	$D_{810}$	$2600 \pm 39$	$D_{\mathrm{M}}(0.38)$	$1511^{+46}_{-52}$
$\tau$	$0.0543^{+0.0047}_{-0.0077}$	$D_{1420}$	$842 \pm 19$	$H(0.51)$	$90.5 \pm 1.7$
$A_{\mathrm{L}}$	$1.16^{+0.22}_{-0.25}$	$D_{2000}$	$241.5 \pm 8.0$	$D_{\mathrm{M}}(0.51)$	$1958 \pm 59$
$\ln(10^{10}A_{\mathrm{s}})$	$3.066 \pm 0.019$	$n_{\mathrm{s},0.002}$	$0.972 \pm 0.015$	$H(0.61)$	$96.1^{+1.3}_{-1.5}$
$n_{\mathrm{s}}$	$0.972 \pm 0.015$	$Y_{\mathrm{P}}$	$0.24588^{+0.00046}_{-0.00052}$	$D_{\mathrm{M}}(0.61)$	$2280 \pm 64$
$y_{\mathrm{cal}}$	$0.99996 \pm 0.0025$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24721^{+0.00047}_{-0.00052}$	$H(2.33)$	$236.2^{+2.0}_{-2.4}$
$H_0$	$68.7 \pm 2.8$	$10^5\mathrm{D}/\mathrm{H}$	$2.38^{+0.18}_{-0.23}$	$D_{\mathrm{M}}(2.33)$	$5725 \pm 69$
$\Omega_{\Lambda}$	$0.697^{+0.037}_{-0.027}$	Age/Gyr	$13.71 \pm 0.16$	$f\sigma_8(0.15)$	$0.449^{+0.029}_{-0.033}$
$\Omega_{\mathrm{m}}$	$0.303^{+0.027}_{-0.037}$	$z_*$	$1088.3^{+1.6}_{-2.0}$	$\sigma_8(0.15)$	$0.746^{+0.014}_{-0.013}$
$\Omega_{\mathrm{m}}h^2$	$0.1420^{+0.0036}_{-0.0042}$	$r_*$	$144.09 \pm 0.67$	$f\sigma_8(0.38)$	$0.469 \pm 0.024$
$\Omega_{\mathrm{m}}h^3$	$0.0974 \pm 0.0018$	$100\theta_*$	$1.03938 \pm 0.00083$	$\sigma_8(0.38)$	$0.6627^{+0.0099}_{-0.0088}$
$\sigma_8$	$0.807 \pm 0.018$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.863 \pm 0.064$	$f\sigma_8(0.51)$	$0.468 \pm 0.020$
$S_8$	$0.810^{+0.055}_{-0.066}$	$z_{\mathrm{drag}}$	$1062.5 \pm 2.5$	$\sigma_8(0.51)$	$0.6206 \pm 0.0079$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.444^{+0.030}_{-0.036}$	$r_{\mathrm{drag}}$	$146.36 \pm 0.71$	$f\sigma_8(0.61)$	$0.464 \pm 0.018$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.598 \pm 0.029$	$k_{\mathrm{D}}$	$0.1425 \pm 0.0013$	$\sigma_8(0.61)$	$0.5908 \pm 0.0070$
$\sigma_8/h^{0.5}$	$0.974 \pm 0.041$	$100\theta_{\mathrm{D}}$	$0.1591^{+0.0012}_{-0.0015}$	$f\sigma_8(2.33)$	$0.2983 \pm 0.0031$
$r_{\mathrm{drag}}h$	$100.6 \pm 4.2$	$z_{\mathrm{eq}}$	$3377^{+85}_{-100}$	$\sigma_8(2.33)$	$0.3081 \pm 0.0033$
$\langle d^2 \rangle^{1/2}$	$2.60^{+0.26}_{-0.22}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00026}_{-0.00031}$	$\chi_{\mathrm{simall}}^2$	$396.5 \pm 1.4$
$z_{\mathrm{re}}$	$< 7.59$	$100\theta_{\mathrm{eq}}$	$0.821 \pm 0.020$	$\chi_{\mathrm{CamSpec}}^2$	$1892.2 \pm 3.5$
$10^9A_{\mathrm{s}}$	$2.147^{+0.038}_{-0.043}$	$100\theta_{\mathrm{s,eq}}$	$0.4522 \pm 0.0098$	$\chi_{\mathrm{prior}}^2$	$11.0 \pm 1.4$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.926 \pm 0.025$	$H(0.15)$	$73.9 \pm 2.5$	$\chi_{\mathrm{CMB}}^2$	$2288.7 \pm 3.8$

$\bar{\chi}_{\mathrm{eff}}^2 = 2299.69$ ;  $R - 1 = 0.00845$



### 3.40 base\_Alens\_CamSpecHM\_EE\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02357 \pm 0.00065$	$D_{810}$	$2601 \pm 33$	$D_{\mathrm{M}}(0.51)$	$1957 \pm 18$
$\Omega_{\mathrm{c}}h^2$	$0.1175 \pm 0.0015$	$D_{1420}$	$842 \pm 14$	$H(0.61)$	$96.03 \pm 0.55$
$100\theta_{\mathrm{MC}}$	$1.03934 \pm 0.00077$	$D_{2000}$	$241.5 \pm 5.7$	$D_{\mathrm{M}}(0.61)$	$2279 \pm 20$
$\tau$	$0.0544^{+0.0039}_{-0.0074}$	$n_{\mathrm{s},0.002}$	$0.972 \pm 0.010$	$H(2.33)$	$235.9 \pm 1.0$
$A_{\mathrm{L}}$	$1.15^{+0.20}_{-0.23}$	$Y_{\mathrm{P}}$	$0.24588^{+0.00027}_{-0.00023}$	$D_{\mathrm{M}}(2.33)$	$5726 \pm 29$
$\ln(10^{10}A_{\mathrm{s}})$	$3.066 \pm 0.019$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24721^{+0.00027}_{-0.00023}$	$f\sigma_8(0.15)$	$0.4475 \pm 0.0094$
$n_{\mathrm{s}}$	$0.972 \pm 0.010$	$10^5\mathrm{D}/\mathrm{H}$	$2.38 \pm 0.11$	$\sigma_8(0.15)$	$0.7467^{+0.0073}_{-0.0083}$
$y_{\mathrm{cal}}$	$0.99997 \pm 0.0025$	Age/Gyr	$13.712 \pm 0.068$	$f\sigma_8(0.38)$	$0.4682 \pm 0.0079$
$H_0$	$68.73 \pm 0.85$	$z_*$	$1088.29 \pm 0.79$	$\sigma_8(0.38)$	$0.6632^{+0.0062}_{-0.0071}$
$\Omega_{\Lambda}$	$0.6999 \pm 0.0091$	$r_*$	$144.17 \pm 0.53$	$f\sigma_8(0.51)$	$0.4682 \pm 0.0070$
$\Omega_{\mathrm{m}}$	$0.3001 \pm 0.0091$	$100\theta_*$	$1.03940 \pm 0.00079$	$\sigma_8(0.51)$	$0.6212^{+0.0057}_{-0.0065}$
$\Omega_{\mathrm{m}}h^2$	$0.1417 \pm 0.0014$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.870 \pm 0.052$	$f\sigma_8(0.61)$	$0.4642 \pm 0.0065$
$\Omega_{\mathrm{m}}h^3$	$0.0974 \pm 0.0012$	$z_{\mathrm{drag}}$	$1062.5 \pm 1.4$	$\sigma_8(0.61)$	$0.5914^{+0.0054}_{-0.0062}$
$\sigma_8$	$0.8069^{+0.0084}_{-0.0094}$	$r_{\mathrm{drag}}$	$146.44 \pm 0.70$	$f\sigma_8(2.33)$	$0.2986^{+0.0027}_{-0.0031}$
$S_8$	$0.807 \pm 0.018$	$k_{\mathrm{D}}$	$0.1424 \pm 0.0012$	$\sigma_8(2.33)$	$0.3084^{+0.0028}_{-0.0032}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.442 \pm 0.010$	$100\theta_{\mathrm{D}}$	$0.15906 \pm 0.00081$	$\chi_{\mathrm{simall}}^2$	$396.5 \pm 1.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5972 \pm 0.0096$	$z_{\mathrm{eq}}$	$3370 \pm 34$	$\chi_{\mathrm{CamSpec}}^2$	$1891.3 \pm 3.2$
$\sigma_8/h^{0.5}$	$0.973 \pm 0.014$	$k_{\mathrm{eq}}$	$0.01029 \pm 0.00011$	$\chi_{6\mathrm{DF}}^2$	$0.055 \pm 0.078$
$r_{\mathrm{drag}}h$	$100.6 \pm 1.1$	$100\theta_{\mathrm{eq}}$	$0.8212 \pm 0.0061$	$\chi_{\mathrm{MGS}}^2$	$1.85 \pm 0.71$
$\langle d^2 \rangle^{1/2}$	$2.59 \pm 0.25$	$100\theta_{\mathrm{s,eq}}$	$0.4526 \pm 0.0032$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.3$
$z_{\mathrm{re}}$	$7.38^{+0.21}_{-0.88}$	$H(0.15)$	$73.91 \pm 0.77$	$\chi_{\mathrm{prior}}^2$	$11.0 \pm 1.4$
$10^9 A_{\mathrm{s}}$	$2.146^{+0.037}_{-0.042}$	$D_{\mathrm{M}}(0.15)$	$631.7 \pm 7.2$	$\chi_{\mathrm{BAO}}^2$	$6.5 \pm 1.3$
$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.924 \pm 0.025$	$H(0.38)$	$83.86 \pm 0.65$	$\chi_{\mathrm{CMB}}^2$	$2287.7 \pm 3.5$
$D_{40}$	$1255^{+33}_{-30}$	$D_{\mathrm{M}}(0.38)$	$1509 \pm 15$		
$D_{220}$	$5988 \pm 140$	$H(0.51)$	$90.48 \pm 0.59$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2305.22; R - 1 = 0.01446$$



### 3.41 base\_Alens\_plikHM\_TT\_lowl\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022406	$0.02239 \pm 0.00026$	$S_8$	0.7664	$0.799^{+0.031}_{-0.037}$	$k_{\text{eq}}$	0.010192	$0.01017 \pm 0.00017$
$\Omega_c h^2$	0.11733	$0.1171 \pm 0.0024$	$\sigma_8 \Omega_m^{0.5}$	0.4198	$0.438^{+0.017}_{-0.020}$	$100\theta_{\text{eq}}$	0.8250	$0.826 \pm 0.011$
$100\theta_{\text{MC}}$	1.04120	$1.04120 \pm 0.00051$	$\sigma_8 \Omega_m^{0.25}$	0.5673	$0.592^{+0.018}_{-0.025}$	$100\theta_{\text{s,eq}}$	0.4555	$0.4562 \pm 0.0055$
$\tau$	0.0101	$< 0.0669$	$\sigma_8/h^{0.5}$	0.9268	$0.967^{+0.026}_{-0.040}$	$H(0.15)$	73.58	$73.66 \pm 0.99$
$A_L$	1.168	$1.075^{+0.085}_{-0.074}$	$r_{\text{drag}} h$	101.10	$101.3 \pm 2.0$	$D_M(0.15)$	634.4	$633.8 \pm 9.6$
$\ln(10^{10} A_s)$	2.948	$3.037^{+0.033}_{-0.085}$	$\langle d^2 \rangle^{1/2}$	2.4771	$2.478 \pm 0.031$	$H(0.38)$	83.48	$83.54 \pm 0.73$
$n_s$	0.9716	$0.9717 \pm 0.0071$	$z_{\text{re}}$	2.12	$7.4^{+2.0}_{-4.7}$	$D_M(0.38)$	1515.8	$1514 \pm 19$
$y_{\text{cal}}$	1.00004	$1.0000 \pm 0.0025$	$10^9 A_s$	1.908	$2.089^{+0.063}_{-0.18}$	$H(0.51)$	90.07	$90.12 \pm 0.59$
$A_{217}^{\text{CIB}}$	47.3	$47 \pm 7$	$10^9 A_s e^{-2\tau}$	1.8694	$1.867 \pm 0.015$	$D_M(0.51)$	1965.5	$1964 \pm 23$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.48	—	$D_{40}$	1206.1	$1216 \pm 18$	$H(0.61)$	95.597	$95.63^{+0.45}_{-0.50}$
$A_{143}^{\text{tSZ}}$	7.02	$5.3 \pm 2.0$	$D_{220}$	5723.8	$5722 \pm 41$	$D_M(0.61)$	2288.6	$2287 \pm 25$
$A_{100}^{\text{PS}}$	249.6	$259 \pm 28$	$D_{810}$	2531.8	$2529 \pm 14$	$H(2.33)$	234.86	$234.7 \pm 1.4$
$A_{143}^{\text{PS}}$	48.8	$46 \pm 8$	$D_{1420}$	815.8	$814.7 \pm 5.1$	$D_M(2.33)$	5752.1	$5751 \pm 21$
$A_{143 \times 217}^{\text{PS}}$	48.9	$42 \pm 9$	$D_{2000}$	230.95	$230.6 \pm 1.9$	$f\sigma_8(0.15)$	0.4250	$0.443^{+0.016}_{-0.020}$
$A_{217}^{\text{PS}}$	119.5	$114 \pm 10$	$n_{\text{s},0.002}$	0.9716	$0.9717 \pm 0.0071$	$\sigma_8(0.15)$	0.7095	$0.741^{+0.015}_{-0.031}$
$A^{\text{kSZ}}$	0.01	$< 4.43$	$Y_{\text{P}}$	0.245410	$0.24540 \pm 0.00011$	$f\sigma_8(0.38)$	0.4448	$0.464^{+0.015}_{-0.019}$
$A_{100}^{\text{dustTT}}$	8.92	$9.0 \pm 1.8$	$Y_{\text{P}}^{\text{BBN}}$	0.246736	$0.24673 \pm 0.00011$	$\sigma_8(0.38)$	0.6301	$0.658^{+0.012}_{-0.027}$
$A_{143}^{\text{dustTT}}$	10.82	$10.7 \pm 1.8$	$10^5 D/H$	2.5788	$2.582 \pm 0.049$	$f\sigma_8(0.51)$	0.4448	$0.464^{+0.013}_{-0.019}$
$A_{143 \times 217}^{\text{dustTT}}$	19.54	$18.3 \pm 3.4$	Age/Gyr	13.7741	$13.773 \pm 0.046$	$\sigma_8(0.51)$	0.5902	$0.617^{+0.011}_{-0.026}$
$A_{217}^{\text{dustTT}}$	94.8	$93.6 \pm 7.4$	$z_*$	1089.64	$1089.64 \pm 0.50$	$f\sigma_8(0.61)$	0.4410	$0.460^{+0.012}_{-0.019}$
$c_{100}$	0.99966	$0.99960 \pm 0.00061$	$r_*$	145.10	$145.18 \pm 0.52$	$\sigma_8(0.61)$	0.5619	$0.587^{+0.010}_{-0.025}$
$c_{217}$	0.99822	$0.99824 \pm 0.00062$	$100\theta_*$	1.04138	$1.04139 \pm 0.00050$	$f\sigma_8(2.33)$	0.2838	$0.2966^{+0.0049}_{-0.013}$
$H_0$	68.42	$68.5 \pm 1.1$	$D_M(z_*)/\text{Gpc}$	13.9333	$13.941 \pm 0.048$	$\sigma_8(2.33)$	0.2931	$0.3064^{+0.0048}_{-0.013}$
$\Omega_\Lambda$	0.7002	$0.701 \pm 0.015$	$z_{\text{drag}}$	1059.818	$1059.78 \pm 0.51$	$\chi^2_{\text{lensing}}$	9.30	$10.1 \pm 2.0$
$\Omega_m$	0.2998	$0.299 \pm 0.015$	$r_{\text{drag}}$	147.76	$147.85 \pm 0.50$	$\chi^2_{\text{lowl}}$	21.32	$22.5 \pm 1.5$
$\Omega_m h^2$	0.14038	$0.1401 \pm 0.0023$	$k_D$	0.14019	$0.14009 \pm 0.00051$	$\chi^2_{\text{plik}}$	757.8	$770.6 \pm 5.6$
$\Omega_m h^3$	0.096052	$0.09598 \pm 0.00046$	$100\theta_D$	0.160838	$0.16087 \pm 0.00029$	$\chi^2_{\text{prior}}$	1.28	$7.3 \pm 3.7$
$\sigma_8$	0.7666	$0.801^{+0.017}_{-0.033}$	$z_{\text{eq}}$	3339	$3333 \pm 54$	$\chi^2_{\text{CMB}}$	788.4	$803.1 \pm 5.7$

Best-fit  $\chi^2_{\text{eff}} = 789.69$ ;  $\bar{\chi}^2_{\text{eff}} = 810.42$ ;  $R - 1 = 0.00995$

$\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 9.30 commander\_dx12\_v3\_2\_29: 21.32 plik\_rd12\_HM\_v22\_TT: 757.80



### 3.42 base\_Alens\_plikHM\_TT\_lowl\_lensing\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02233 \pm 0.00021$	$\sigma_8/h^{0.5}$	$0.970^{+0.019}_{-0.038}$	$D_M(0.38)$	$1521 \pm 10$
$\Omega_c h^2$	$0.1179 \pm 0.0013$	$r_{\text{drag}} h$	$100.6 \pm 1.0$	$H(0.51)$	$89.92 \pm 0.32$
$100\theta_{\text{MC}}$	$1.04110 \pm 0.00043$	$\langle d^2 \rangle^{1/2}$	$2.476 \pm 0.031$	$D_M(0.51)$	$1971 \pm 12$
$\tau$	$< 0.0615$	$z_{\text{re}}$	$7.0^{+1.9}_{-4.3}$	$H(0.61)$	$95.47 \pm 0.27$
$A_L$	$1.067^{+0.083}_{-0.057}$	$10^9 A_s$	$2.076^{+0.056}_{-0.16}$	$D_M(0.61)$	$2295 \pm 13$
$\ln(10^{10} A_s)$	$3.031^{+0.030}_{-0.078}$	$10^9 A_s e^{-2\tau}$	$1.871 \pm 0.012$	$H(2.33)$	$235.13 \pm 0.78$
$n_s$	$0.9696 \pm 0.0045$	$D_{40}$	$1219^{+14}_{-16}$	$D_M(2.33)$	$5758 \pm 13$
$y_{\text{cal}}$	$1.0001 \pm 0.0025$	$D_{220}$	$5719 \pm 41$	$f\sigma_8(0.15)$	$0.446^{+0.011}_{-0.018}$
$A_{217}^{\text{CIB}}$	$47 \pm 7$	$D_{810}$	$2530 \pm 14$	$\sigma_8(0.15)$	$0.741^{+0.012}_{-0.029}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$814.5 \pm 5.0$	$f\sigma_8(0.38)$	$0.4662^{+0.0099}_{-0.018}$
$A_{143}^{\text{tSZ}}$	$5.3 \pm 1.9$	$D_{2000}$	$230.4 \pm 1.7$	$\sigma_8(0.38)$	$0.658^{+0.010}_{-0.026}$
$A_{100}^{\text{PS}}$	$260 \pm 28$	$n_{s,0.002}$	$0.9696 \pm 0.0045$	$f\sigma_8(0.51)$	$0.4657^{+0.0093}_{-0.018}$
$A_{143}^{\text{PS}}$	$47 \pm 8$	$Y_{\text{P}}$	$0.245375^{+0.000085}_{-0.000077}$	$\sigma_8(0.51)$	$0.6157^{+0.0093}_{-0.024}$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	$0.246702^{+0.000086}_{-0.000077}$	$f\sigma_8(0.61)$	$0.4615^{+0.0088}_{-0.018}$
$A_{217}^{\text{PS}}$	$114 \pm 10$	$10^5 D/H$	$2.594 \pm 0.038$	$\sigma_8(0.61)$	$0.5861^{+0.0088}_{-0.023}$
$A^{\text{kSZ}}$	$< 4.48$	Age/Gyr	$13.787 \pm 0.030$	$f\sigma_8(2.33)$	$0.2958^{+0.0043}_{-0.012}$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$z_*$	$1089.79 \pm 0.32$	$\sigma_8(2.33)$	$0.3054^{+0.0044}_{-0.012}$
$A_{143}^{\text{dustTT}}$	$10.7 \pm 1.8$	$r_*$	$145.02 \pm 0.31$	$f_{2000}^{143}$	$29.9 \pm 3.0$
$A_{143 \times 217}^{\text{dustTT}}$	$18.4 \pm 3.4$	$100\theta_*$	$1.04129 \pm 0.00042$	$f_{2000}^{143 \times 217}$	$32.5 \pm 2.0$
$A_{217}^{\text{dustTT}}$	$93.6 \pm 7.4$	$D_M(z_*)/\text{Gpc}$	$13.927 \pm 0.030$	$f_{2000}^{217}$	$107.1 \pm 1.9$
$c_{100}$	$0.99962 \pm 0.00061$	$z_{\text{drag}}$	$1059.68 \pm 0.45$	$\chi_{\text{lensing}}^2$	$10.1 \pm 1.9$
$c_{217}$	$0.99825 \pm 0.00061$	$r_{\text{drag}}$	$147.71 \pm 0.33$	$\chi_{\text{lowl}}^2$	$22.6 \pm 1.3$
$H_0$	$68.14 \pm 0.59$	$k_{\text{D}}$	$0.14019 \pm 0.00043$	$\chi_{\text{plik}}^2$	$769.7 \pm 5.2$
$\Omega_{\Lambda}$	$0.6965 \pm 0.0076$	$100\theta_{\text{D}}$	$0.16092 \pm 0.00026$	$\chi_{6\text{DF}}^2$	$0.043 \pm 0.062$
$\Omega_{\text{m}}$	$0.3035 \pm 0.0076$	$z_{\text{eq}}$	$3350 \pm 29$	$\chi_{\text{MGS}}^2$	$1.87 \pm 0.63$
$\Omega_{\text{m}} h^2$	$0.1408 \pm 0.0012$	$k_{\text{eq}}$	$0.010225 \pm 0.000088$	$\chi_{\text{DR12BAO}}^2$	$4.06 \pm 0.99$
$\Omega_{\text{m}} h^3$	$0.09596 \pm 0.00045$	$100\theta_{\text{eq}}$	$0.8228 \pm 0.0055$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8$	$0.801^{+0.013}_{-0.031}$	$100\theta_{\text{s,eq}}$	$0.4544 \pm 0.0028$	$\chi_{\text{CMB}}^2$	$802.4 \pm 5.4$
$S_8$	$0.805^{+0.020}_{-0.032}$	$H(0.15)$	$73.33 \pm 0.51$	$\chi_{\text{BAO}}^2$	$6.0 \pm 1.1$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.441^{+0.011}_{-0.018}$	$D_M(0.15)$	$636.9 \pm 5.0$		
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.594^{+0.012}_{-0.023}$	$H(0.38)$	$83.29 \pm 0.39$		

$\bar{\chi}_{\text{eff}}^2 = 815.62$ ;  $R - 1 = 0.01089$



### 3.43 base\_Alens\_plikHM\_TT\_lowl\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02241 \pm 0.00027$	$\sigma_8 \Omega_m^{0.5}$	$0.445^{+0.017}_{-0.019}$	$100\theta_{s,eq}$	$0.4570 \pm 0.0055$
$\Omega_c h^2$	$0.1167 \pm 0.0024$	$\sigma_8 \Omega_m^{0.25}$	$0.603^{+0.017}_{-0.021}$	$H(0.15)$	$73.8 \pm 1.0$
$100\theta_{MC}$	$1.04124 \pm 0.00052$	$\sigma_8/h^{0.5}$	$0.987^{+0.025}_{-0.033}$	$D_M(0.15)$	$632.5 \pm 9.6$
$\tau$	$0.078^{+0.011}_{-0.034}$	$r_{drag}h$	$101.6 \pm 2.0$	$H(0.38)$	$83.63 \pm 0.74$
$A_L$	$1.032 \pm 0.066$	$\langle d^2 \rangle^{1/2}$	$2.477 \pm 0.032$	$D_M(0.38)$	$1512 \pm 19$
$\ln(10^{10} A_s)$	$3.082^{+0.026}_{-0.066}$	$z_{re}$	$< 10.7$	$H(0.51)$	$90.19 \pm 0.59$
$n_s$	$0.9730 \pm 0.0072$	$10^9 A_s$	$2.182^{+0.052}_{-0.14}$	$D_M(0.51)$	$1961 \pm 23$
$y_{cal}$	$1.0000 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.865 \pm 0.015$	$H(0.61)$	$95.68 \pm 0.48$
$A_{217}^{CIB}$	$47 \pm 7$	$D_{40}$	$1220 \pm 19$	$D_M(0.61)$	$2284 \pm 25$
$\xi^{tSZ \times CIB}$	—	$D_{220}$	$5720 \pm 42$	$H(2.33)$	$234.5 \pm 1.4$
$A_{143}^{tSZ}$	$5.3^{+2.1}_{-1.9}$	$D_{810}$	$2528 \pm 14$	$D_M(2.33)$	$5749 \pm 21$
$A_{100}^{PS}$	$258 \pm 28$	$D_{1420}$	$814.9 \pm 5.1$	$f\sigma_8(0.15)$	$0.451^{+0.016}_{-0.018}$
$A_{143}^{PS}$	$45 \pm 8$	$D_{2000}$	$230.8 \pm 1.9$	$\sigma_8(0.15)$	$0.757^{+0.013}_{-0.025}$
$A_{143 \times 217}^{PS}$	$42 \pm 9$	$n_{s,0.002}$	$0.9730 \pm 0.0072$	$f\sigma_8(0.38)$	$0.473^{+0.014}_{-0.017}$
$A_{217}^{PS}$	$114 \pm 10$	$Y_P$	$0.24541 \pm 0.00011$	$\sigma_8(0.38)$	$0.673^{+0.010}_{-0.022}$
$A^{kSZ}$	$< 4.27$	$Y_P^{BBN}$	$0.24673 \pm 0.00011$	$f\sigma_8(0.51)$	$0.473^{+0.013}_{-0.016}$
$A_{100}^{dustTT}$	$9.0 \pm 1.8$	$10^5 D/H$	$2.579 \pm 0.049$	$\sigma_8(0.51)$	$0.6303^{+0.0091}_{-0.021}$
$A_{143}^{dustTT}$	$10.8 \pm 1.8$	Age/Gyr	$13.769 \pm 0.046$	$f\sigma_8(0.61)$	$0.469^{+0.011}_{-0.016}$
$A_{143 \times 217}^{dustTT}$	$18.3 \pm 3.3$	$z_*$	$1089.58 \pm 0.50$	$\sigma_8(0.61)$	$0.6002^{+0.0083}_{-0.020}$
$A_{217}^{dustTT}$	$93.6 \pm 7.3$	$r_*$	$145.25 \pm 0.53$	$f\sigma_8(2.33)$	$0.3033^{+0.0039}_{-0.010}$
$c_{100}$	$0.99960 \pm 0.00062$	$100\theta_*$	$1.04142 \pm 0.00050$	$\sigma_8(2.33)$	$0.3134^{+0.0038}_{-0.011}$
$c_{217}$	$0.99822 \pm 0.00063$	$D_M(z_*)/\text{Gpc}$	$13.948 \pm 0.048$	$f_{2000}^{143}$	$29.2 \pm 3.2$
$H_0$	$68.7 \pm 1.2$	$z_{drag}$	$1059.80 \pm 0.52$	$f_{2000}^{143 \times 217}$	$31.9 \pm 2.2$
$\Omega_\Lambda$	$0.703^{+0.016}_{-0.014}$	$r_{drag}$	$147.92 \pm 0.51$	$f_{2000}^{217}$	$106.6 \pm 2.1$
$\Omega_m$	$0.297^{+0.014}_{-0.016}$	$k_D$	$0.14003 \pm 0.00051$	$\chi_{lensing}^2$	$10.0 \pm 2.0$
$\Omega_m h^2$	$0.1398 \pm 0.0023$	$100\theta_D$	$0.16086 \pm 0.00029$	$\chi_{lowl}^2$	$22.9 \pm 1.6$
$\Omega_m h^3$	$0.09597 \pm 0.00046$	$z_{eq}$	$3325 \pm 54$	$\chi_{plik}^2$	$770.8 \pm 5.7$
$\sigma_8$	$0.818^{+0.015}_{-0.027}$	$k_{eq}$	$0.01015 \pm 0.00017$	$\chi_{prior}^2$	$7.3 \pm 3.7$
$S_8$	$0.813^{+0.031}_{-0.034}$	$100\theta_{eq}$	$0.828 \pm 0.011$	$\chi_{CMB}^2$	$803.8 \pm 5.7$

$\bar{\chi}_{eff}^2 = 811.07$ ;  $R - 1 = 0.01320$



### 3.44 base\_Alens\_plikHM\_TT\_lowl\_lensing\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02233 \pm 0.00021$	$\sigma_8/h^{0.5}$	$0.992^{+0.016}_{-0.031}$	$D_M(0.38)$	$1520 \pm 10$
$\Omega_c h^2$	$0.1177 \pm 0.0013$	$r_{\text{drag}} h$	$100.7 \pm 1.0$	$H(0.51)$	$89.94 \pm 0.32$
$100\theta_{\text{MC}}$	$1.04111 \pm 0.00043$	$\langle d^2 \rangle^{1/2}$	$2.475 \pm 0.032$	$D_M(0.51)$	$1970 \pm 12$
$\tau$	$0.074^{+0.010}_{-0.030}$	$z_{\text{re}}$	$< 10.3$	$H(0.61)$	$95.49 \pm 0.27$
$A_L$	$1.020^{+0.065}_{-0.049}$	$10^9 A_s$	$2.172^{+0.050}_{-0.13}$	$D_M(0.61)$	$2294 \pm 13$
$\ln(10^{10} A_s)$	$3.077^{+0.025}_{-0.060}$	$10^9 A_s e^{-2\tau}$	$1.870 \pm 0.012$	$H(2.33)$	$235.05 \pm 0.79$
$n_s$	$0.9703 \pm 0.0046$	$D_{40}$	$1224^{+14}_{-16}$	$D_M(2.33)$	$5757 \pm 13$
$y_{\text{cal}}$	$1.0001 \pm 0.0026$	$D_{220}$	$5716 \pm 41$	$f\sigma_8(0.15)$	$0.456^{+0.010}_{-0.015}$
$A_{217}^{\text{CIB}}$	$47 \pm 7$	$D_{810}$	$2530 \pm 14$	$\sigma_8(0.15)$	$0.758^{+0.010}_{-0.023}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$814.6 \pm 4.9$	$f\sigma_8(0.38)$	$0.4764^{+0.0088}_{-0.015}$
$A_{143}^{\text{tSZ}}$	$5.3 \pm 1.9$	$D_{2000}$	$230.4 \pm 1.7$	$\sigma_8(0.38)$	$0.6726^{+0.0087}_{-0.020}$
$A_{100}^{\text{PS}}$	$259 \pm 29$	$n_{s,0.002}$	$0.9703 \pm 0.0046$	$f\sigma_8(0.51)$	$0.4761^{+0.0080}_{-0.015}$
$A_{143}^{\text{PS}}$	$46 \pm 8$	$Y_{\text{P}}$	$0.245376^{+0.000089}_{-0.000076}$	$\sigma_8(0.51)$	$0.6299^{+0.0080}_{-0.019}$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	$0.246702^{+0.000089}_{-0.000076}$	$f\sigma_8(0.61)$	$0.4718^{+0.0075}_{-0.015}$
$A_{217}^{\text{PS}}$	$114 \pm 10$	$10^5 \text{D}/\text{H}$	$2.594 \pm 0.039$	$\sigma_8(0.61)$	$0.5996^{+0.0075}_{-0.018}$
$A^{\text{kSZ}}$	$< 4.40$	$\text{Age}/\text{Gyr}$	$13.786 \pm 0.030$	$f\sigma_8(2.33)$	$0.3027^{+0.0037}_{-0.0092}$
$A_{100}^{\text{dustTT}}$	$9.0 \pm 1.8$	$z_*$	$1089.77 \pm 0.32$	$\sigma_8(2.33)$	$0.3125^{+0.0038}_{-0.0095}$
$A_{143}^{\text{dustTT}}$	$10.8 \pm 1.8$	$r_*$	$145.05 \pm 0.32$	$f_{2000}^{143}$	$29.7 \pm 3.0$
$A_{143 \times 217}^{\text{dustTT}}$	$18.4 \pm 3.3$	$100\theta_*$	$1.04130 \pm 0.00043$	$f_{2000}^{143 \times 217}$	$32.3 \pm 2.1$
$A_{217}^{\text{dustTT}}$	$93.6 \pm 7.3$	$D_M(z_*)/\text{Gpc}$	$13.930 \pm 0.031$	$f_{2000}^{217}$	$107.0 \pm 2.0$
$c_{100}$	$0.99960 \pm 0.00062$	$z_{\text{drag}}$	$1059.68 \pm 0.46$	$\chi_{\text{lensing}}^2$	$10.1 \pm 2.0$
$c_{217}$	$0.99823 \pm 0.00062$	$r_{\text{drag}}$	$147.74 \pm 0.34$	$\chi_{\text{lowl}}^2$	$23.2 \pm 1.4$
$H_0$	$68.19 \pm 0.60$	$k_{\text{D}}$	$0.14015 \pm 0.00043$	$\chi_{\text{plik}}^2$	$769.8 \pm 5.4$
$\Omega_{\Lambda}$	$0.6972^{+0.0080}_{-0.0072}$	$100\theta_{\text{D}}$	$0.16092 \pm 0.00027$	$\chi_{6\text{DF}}^2$	$0.046 \pm 0.065$
$\Omega_{\text{m}}$	$0.3028 \pm 0.0077$	$z_{\text{eq}}$	$3347 \pm 29$	$\chi_{\text{MGS}}^2$	$1.93 \pm 0.64$
$\Omega_{\text{m}} h^2$	$0.1407 \pm 0.0012$	$k_{\text{eq}}$	$0.010216 \pm 0.000089$	$\chi_{\text{DR12BAO}}^2$	$4.05 \pm 0.99$
$\Omega_{\text{m}} h^3$	$0.09594 \pm 0.00045$	$100\theta_{\text{eq}}$	$0.8233 \pm 0.0056$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.8$
$\sigma_8$	$0.819^{+0.011}_{-0.025}$	$100\theta_{\text{s,eq}}$	$0.4546 \pm 0.0029$	$\chi_{\text{CMB}}^2$	$803.1 \pm 5.5$
$S_8$	$0.823^{+0.019}_{-0.028}$	$H(0.15)$	$73.37 \pm 0.52$	$\chi_{\text{BAO}}^2$	$6.0 \pm 1.2$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.451^{+0.010}_{-0.015}$	$D_M(0.15)$	$636.5 \pm 5.0$		
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.607^{+0.011}_{-0.019}$	$H(0.38)$	$83.32 \pm 0.39$		

$$\bar{\chi}_{\text{eff}}^2 = 816.39; R - 1 = 0.01678$$



### 3.45 base\_Alens\_plikHM\_TTTEEE\_lowl\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022527	$0.02251 \pm 0.00016$ (+0.4 $\sigma$ )	$\Omega_m$	0.3046	$0.3048 \pm 0.0093$ (+0.4 $\sigma$ )	$100\theta_D$	0.160625	$0.16065 \pm 0.00018$ (−0.8 $\sigma$ )
$\Omega_c h^2$	0.11828	$0.1183 \pm 0.0015$ (+0.5 $\sigma$ )	$\Omega_m h^2$	0.14146	$0.1414 \pm 0.0014$ (+0.6 $\sigma$ )	$z_{\text{eq}}$	3365.0	$3365 \pm 34$ (+0.6 $\sigma$ )
$100\theta_{\text{MC}}$	1.041085	$1.04109 \pm 0.00031$ (−0.2 $\sigma$ )	$\Omega_m h^3$	0.096396	$0.09636 \pm 0.00029$ (+0.8 $\sigma$ )	$k_{\text{eq}}$	0.010270	$0.01027 \pm 0.00011$ (+0.6 $\sigma$ )
$\tau$	0.0101	$< 0.0633$ (−0.1 $\sigma$ )	$\sigma_8$	0.7698	$0.803^{+0.014}_{-0.032}$ (+0.1 $\sigma$ )	$100\theta_{\text{eq}}$	0.8206	$0.8207 \pm 0.0067$ (−0.5 $\sigma$ )
$A_L$	1.159	$1.068^{+0.084}_{-0.062}$ (−0.1 $\sigma$ )	$S_8$	0.7757	$0.809^{+0.024}_{-0.034}$ (+0.3 $\sigma$ )	$100\theta_{s,\text{eq}}$	0.45307	$0.4531 \pm 0.0034$ (−0.6 $\sigma$ )
$\ln(10^{10} A_s)$	2.951	$3.034^{+0.032}_{-0.079}$ (−0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4249	$0.443^{+0.013}_{-0.019}$ (+0.3 $\sigma$ )	$H(0.15)$	73.36	$73.35 \pm 0.60$ (−0.3 $\sigma$ )
$n_s$	0.97035	$0.9697 \pm 0.0049$ (−0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.5719	$0.596^{+0.014}_{-0.024}$ (+0.2 $\sigma$ )	$D_M(0.15)$	636.7	$636.8 \pm 5.9$ (+0.3 $\sigma$ )
$y_{\text{cal}}$	0.99990	$0.99995 \pm 0.0025$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9325	$0.973^{+0.021}_{-0.039}$ (+0.2 $\sigma$ )	$H(0.38)$	83.355	$83.35 \pm 0.44$ (−0.3 $\sigma$ )
$A_{217}^{\text{CIB}}$	45.6	$46 \pm 7$ (−0.1 $\sigma$ )	$r_{\text{drag}} h$	100.43	$100.4 \pm 1.2$ (−0.4 $\sigma$ )	$D_M(0.38)$	1520.1	$1520 \pm 12$ (+0.3 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.646	$> 0.376$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4825	$2.483 \pm 0.030$ (+0.2 $\sigma$ )	$H(0.51)$	90.008	$90.00 \pm 0.35$ (−0.2 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.18	$5.6^{+2.2}_{-1.8}$ (+0.2 $\sigma$ )	$z_{\text{re}}$	2.12	$7.1^{+2.0}_{-4.3}$ (−0.1 $\sigma$ )	$D_M(0.51)$	1970.2	$1971 \pm 14$ (+0.3 $\sigma$ )
$A_{100}^{\text{PS}}$	245.5	$255 \pm 28$ (−0.1 $\sigma$ )	$10^9 A_s$	1.912	$2.083^{+0.060}_{-0.17}$ (−0.0 $\sigma$ )	$H(0.61)$	95.577	$95.57 \pm 0.28$ (−0.1 $\sigma$ )
$A_{143}^{\text{PS}}$	48.6	$44 \pm 8$ (−0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8740	$1.873 \pm 0.012$ (+0.4 $\sigma$ )	$D_M(0.61)$	2293.5	$2294 \pm 15$ (+0.3 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	51.7	$41 \pm 9$ (−0.0 $\sigma$ )	$D_{40}$	1210.1	$1221^{+15}_{-17}$ (+0.3 $\sigma$ )	$H(2.33)$	235.60	$235.58 \pm 0.91$ (+0.6 $\sigma$ )
$A_{217}^{\text{PS}}$	121.1	$115 \pm 10$ (+0.1 $\sigma$ )	$D_{220}$	5731.1	$5731 \pm 39$ (+0.2 $\sigma$ )	$D_M(2.33)$	5750.7	$5751 \pm 12$ (−0.0 $\sigma$ )
$A^{\text{kSZ}}$	0.01	$< 3.95$ (−0.1 $\sigma$ )	$D_{810}$	2534.3	$2532 \pm 14$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4297	$0.448^{+0.013}_{-0.019}$ (+0.3 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.87	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$D_{1420}$	817.21	$816.2 \pm 4.6$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7120	$0.742^{+0.013}_{-0.029}$ (+0.1 $\sigma$ )
$A_{143}^{\text{dustTT}}$	11.02	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$D_{2000}$	231.62	$231.3 \pm 1.5$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4486	$0.468^{+0.011}_{-0.019}$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	20.04	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$n_{s,0.002}$	0.97035	$0.9697 \pm 0.0049$ (−0.3 $\sigma$ )	$\sigma_8(0.38)$	0.6318	$0.659^{+0.011}_{-0.026}$ (+0.0 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.3	$93.7 \pm 7.4$ (+0.0 $\sigma$ )	$Y_P$	0.245454	$0.245446 \pm 0.000062$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.4481	$0.467^{+0.010}_{-0.019}$ (+0.2 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1130	$0.114 \pm 0.038$	$Y_P^{\text{BBN}}$	0.246781	$0.246772 \pm 0.000063$ (+0.4 $\sigma$ )	$\sigma_8(0.51)$	0.5916	$0.617^{+0.010}_{-0.024}$ (+0.0 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1346	$0.134 \pm 0.029$	$10^5 D/H$	2.5572	$2.561 \pm 0.030$ (−0.4 $\sigma$ )	$f\sigma_8(0.61)$	0.4439	$0.4629^{+0.0097}_{-0.018}$ (+0.2 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.483	$0.482 \pm 0.084$	Age/Gyr	13.7693	$13.771 \pm 0.027$ (−0.1 $\sigma$ )	$\sigma_8(0.61)$	0.5631	$0.5872^{+0.0094}_{-0.023}$ (−0.0 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.223	$0.222 \pm 0.054$	$z_*$	1089.574	$1089.60 \pm 0.31$ (−0.1 $\sigma$ )	$f\sigma_8(2.33)$	0.2842	$0.2963^{+0.0045}_{-0.012}$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.660	$0.661 \pm 0.080$	$r_*$	144.756	$144.77 \pm 0.33$ (−0.8 $\sigma$ )	$\sigma_8(2.33)$	0.2933	$0.3058^{+0.0046}_{-0.012}$ (−0.1 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.064	$2.07 \pm 0.27$	$100\theta_*$	1.041259	$1.04126 \pm 0.00031$ (−0.2 $\sigma$ )	$\chi^2_{\text{lensing}}$	9.96	$10.6 \pm 2.3$ (+0.3 $\sigma$ )
$c_{100}$	0.99972	$0.99966 \pm 0.00061$ (+0.1 $\sigma$ )	$D_M(z_*)/\text{Gpc}$	13.9020	$13.904 \pm 0.031$ (−0.8 $\sigma$ )	$\chi^2_{\text{lowl}}$	21.55	$22.8 \pm 1.4$ (+0.2 $\sigma$ )
$c_{217}$	0.99817	$0.99817 \pm 0.00062$ (−0.1 $\sigma$ )	$z_{\text{drag}}$	1060.162	$1060.13 \pm 0.32$ (+0.7 $\sigma$ )	$\chi^2_{\text{plik}}$	2341.8	$2357.0 \pm 5.9$ (+281.5 $\sigma$ )
$H_0$	68.15	$68.13 \pm 0.70$ (−0.3 $\sigma$ )	$r_{\text{drag}}$	147.373	$147.40 \pm 0.32$ (−0.9 $\sigma$ )	$\chi^2_{\text{prior}}$	1.66	$11.5 \pm 4.4$ (+1.1 $\sigma$ )
$\Omega_\Lambda$	0.6954	$0.6952 \pm 0.0093$ (−0.4 $\sigma$ )	$k_D$	0.140689	$0.14065 \pm 0.00033$ (+1.1 $\sigma$ )	$\chi^2_{\text{CMB}}$	2373.3	$2390.4 \pm 5.9$ (+280.4 $\sigma$ )

Best-fit  $\chi^2_{\text{eff}} = 2375.01$ ;  $\Delta\chi^2_{\text{eff}} = 1585.32$ ;  $\bar{\chi}^2_{\text{eff}} = 2401.86$ ;  $\Delta\bar{\chi}^2_{\text{eff}} = 1591.44$ ;  $R - 1 = 0.02631$

$\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 9.96 ( $\Delta$  0.66) commander\_dx12\_v3.2\_29: 21.55 ( $\Delta$  0.23) plik\_rd12\_HM\_v22b\_TTTEEE: 2341.84



### 3.46 base\_Alens\_plikHM\_TTTEE\_lowl\_lensing\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02251 \pm 0.00014 \quad (+0.9\sigma)$	$\sigma_8$	$0.802^{+0.014}_{-0.031} \quad (+0.1\sigma)$	$D_M(0.15)$	$636.8 \pm 4.1 \quad (-0.0\sigma)$
$\Omega_c h^2$	$0.1183 \pm 0.0011 \quad (+0.3\sigma)$	$S_8$	$0.809^{+0.020}_{-0.032} \quad (+0.1\sigma)$	$H(0.38)$	$83.34 \pm 0.31 \quad (+0.1\sigma)$
$100\theta_{MC}$	$1.04109 \pm 0.00029 \quad (-0.0\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.443^{+0.011}_{-0.017} \quad (+0.1\sigma)$	$D_M(0.38)$	$1520.4 \pm 8.3 \quad (-0.0\sigma)$
$\tau$	$< 0.0626 \quad (+0.0\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.596^{+0.012}_{-0.023} \quad (+0.1\sigma)$	$H(0.51)$	$90.00 \pm 0.25 \quad (+0.2\sigma)$
$A_L$	$1.069^{+0.082}_{-0.060} \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.972^{+0.019}_{-0.038} \quad (+0.1\sigma)$	$D_M(0.51)$	$1970.6 \pm 9.7 \quad (-0.1\sigma)$
$\ln(10^{10} A_s)$	$3.033^{+0.032}_{-0.078} \quad (+0.0\sigma)$	$r_{drag} h$	$100.43 \pm 0.84 \quad (-0.2\sigma)$	$H(0.61)$	$95.57 \pm 0.21 \quad (+0.3\sigma)$
$n_s$	$0.9697 \pm 0.0040 \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.483 \pm 0.030 \quad (+0.2\sigma)$	$D_M(0.61)$	$2294 \pm 11 \quad (-0.1\sigma)$
$y_{cal}$	$0.99996 \pm 0.0025 \quad (-0.0\sigma)$	$z_{re}$	$7.1^{+2.1}_{-4.1} \quad (+0.0\sigma)$	$H(2.33)$	$235.58 \pm 0.64 \quad (+0.6\sigma)$
$A_{217}^{CIB}$	$46 \pm 7 \quad (-0.2\sigma)$	$10^9 A_s$	$2.081^{+0.060}_{-0.16} \quad (+0.0\sigma)$	$D_M(2.33)$	$5751.5 \pm 9.7 \quad (-0.5\sigma)$
$\xi^{tSZ \times CIB}$	$> 0.379 \quad (+0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.873 \pm 0.011 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.448^{+0.011}_{-0.018} \quad (+0.1\sigma)$
$A_{143}^{tSZ}$	$5.7^{+2.2}_{-1.8} \quad (+0.2\sigma)$	$D_{40}$	$1221^{+13}_{-16} \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.742^{+0.012}_{-0.029} \quad (+0.1\sigma)$
$A_{100}^{PS}$	$256 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5731 \pm 39 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4676^{+0.0099}_{-0.018} \quad (+0.1\sigma)$
$A_{143}^{PS}$	$44 \pm 8 \quad (-0.3\sigma)$	$D_{810}$	$2532 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.659^{+0.011}_{-0.026} \quad (+0.0\sigma)$
$A_{143 \times 217}^{PS}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$816.2 \pm 4.6 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4670^{+0.0094}_{-0.018} \quad (+0.1\sigma)$
$A_{217}^{PS}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$231.3 \pm 1.5 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.6166^{+0.0098}_{-0.024} \quad (+0.0\sigma)$
$A^{kSZ}$	$< 3.94 \quad (-0.2\sigma)$	$n_{s,0.002}$	$0.9697 \pm 0.0040 \quad (+0.0\sigma)$	$f\sigma_8(0.61)$	$0.4626^{+0.0090}_{-0.018} \quad (+0.1\sigma)$
$A_{100}^{dustTT}$	$9.0 \pm 1.8 \quad (+0.0\sigma)$	$Y_P$	$0.245445 \pm 0.000053 \quad (+0.8\sigma)$	$\sigma_8(0.61)$	$0.5869^{+0.0093}_{-0.023} \quad (+0.0\sigma)$
$A_{143}^{dustTT}$	$10.9 \pm 1.7 \quad (+0.1\sigma)$	$Y_P^{BBN}$	$0.246772 \pm 0.000053 \quad (+0.8\sigma)$	$f\sigma_8(2.33)$	$0.2962^{+0.0046}_{-0.012} \quad (+0.0\sigma)$
$A_{143 \times 217}^{dustTT}$	$18.6^{+3.4}_{-3.0} \quad (+0.1\sigma)$	$10^5 D/H$	$2.561 \pm 0.025 \quad (-0.9\sigma)$	$\sigma_8(2.33)$	$0.3057^{+0.0047}_{-0.012} \quad (+0.0\sigma)$
$A_{217}^{dustTT}$	$93.6 \pm 7.3 \quad (+0.0\sigma)$	Age/Gyr	$13.771 \pm 0.022 \quad (-0.5\sigma)$	$f_{2000}^{143}$	$28.5 \pm 2.8 \quad (-0.5\sigma)$
$A_{100}^{dustTE}$	$0.113 \pm 0.037$	$z_*$	$1089.60 \pm 0.24 \quad (-0.6\sigma)$	$f_{2000}^{143 \times 217}$	$31.3 \pm 1.9 \quad (-0.6\sigma)$
$A_{100 \times 143}^{dustTE}$	$0.135 \pm 0.029$	$r_*$	$144.77 \pm 0.24 \quad (-0.8\sigma)$	$f_{2000}^{217}$	$106.1 \pm 1.8 \quad (-0.5\sigma)$
$A_{100 \times 217}^{dustTE}$	$0.484 \pm 0.084$	$100\theta_*$	$1.04126 \pm 0.00029 \quad (-0.1\sigma)$	$\chi_{lensing}^2$	$10.6 \pm 2.3 \quad (+0.3\sigma)$
$A_{143}^{dustTE}$	$0.223 \pm 0.053$	$D_M(z_*)/\text{Gpc}$	$13.904 \pm 0.023 \quad (-0.8\sigma)$	$\chi_{lowl}^2$	$22.7 \pm 1.3 \quad (+0.1\sigma)$
$A_{143 \times 217}^{dustTE}$	$0.660 \pm 0.080$	$z_{drag}$	$1060.13 \pm 0.30 \quad (+1.0\sigma)$	$\chi_{plik}^2$	$2356.4 \pm 5.8 \quad (+302.5\sigma)$
$A_{217}^{dustTE}$	$2.06 \pm 0.27$	$r_{drag}$	$147.40 \pm 0.25 \quad (-0.9\sigma)$	$\chi_{6DF}^2$	$0.030 \pm 0.042 \quad (-0.2\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$k_D$	$0.14065 \pm 0.00029 \quad (+1.1\sigma)$	$\chi_{MGS}^2$	$1.72 \pm 0.51 \quad (-0.2\sigma)$
$c_{217}$	$0.99816 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_D$	$0.16066 \pm 0.00017 \quad (-1.0\sigma)$	$\chi_{DR12BAO}^2$	$4.00 \pm 0.83 \quad (-0.1\sigma)$
$H_0$	$68.13 \pm 0.49 \quad (-0.0\sigma)$	$z_{eq}$	$3364 \pm 24 \quad (+0.5\sigma)$	$\chi_{prior}^2$	$11.5 \pm 4.4 \quad (+1.1\sigma)$
$\Omega_\Lambda$	$0.6953 \pm 0.0064 \quad (-0.2\sigma)$	$k_{eq}$	$0.010268 \pm 0.000074 \quad (+0.5\sigma)$	$\chi_{CMB}^2$	$2389.8 \pm 5.7 \quad (+295.2\sigma)$
$\Omega_m$	$0.3047 \pm 0.0064 \quad (+0.2\sigma)$	$100\theta_{eq}$	$0.8207 \pm 0.0046 \quad (-0.4\sigma)$	$\chi_{BAO}^2$	$5.75 \pm 0.74 \quad (-0.2\sigma)$
$\Omega_m h^2$	$0.1414 \pm 0.0010 \quad (+0.5\sigma)$	$100\theta_{s,eq}$	$0.4531 \pm 0.0024 \quad (-0.4\sigma)$		
$\Omega_m h^3$	$0.09636 \pm 0.00030 \quad (+0.9\sigma)$	$H(0.15)$	$73.34 \pm 0.42 \quad (+0.0\sigma)$		

$$\bar{\chi}_{eff}^2 = 2406.97; \Delta \bar{\chi}_{eff}^2 = 1591.35; R - 1 = 0.02917$$



### 3.47 base\_Alens\_plikHM\_TTTEE\_lowl\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02251 \pm 0.00016 \quad (+0.4\sigma)$	$\Omega_{\text{m}}h^2$	$0.1413 \pm 0.0014 \quad (+0.7\sigma)$	$k_{\text{eq}}$	$0.01026 \pm 0.00011 \quad (+0.7\sigma)$
$\Omega_{\text{c}}h^2$	$0.1181 \pm 0.0015 \quad (+0.6\sigma)$	$\Omega_{\text{m}}h^3$	$0.09634 \pm 0.00029 \quad (+0.8\sigma)$	$100\theta_{\text{eq}}$	$0.8213 \pm 0.0067 \quad (-0.6\sigma)$
$100\theta_{\text{MC}}$	$1.04110 \pm 0.00031 \quad (-0.3\sigma)$	$\sigma_8$	$0.821^{+0.012}_{-0.026} \quad (+0.1\sigma)$	$100\theta_{\text{s,eq}}$	$0.4535 \pm 0.0034 \quad (-0.6\sigma)$
$\tau$	$0.075^{+0.010}_{-0.031} \quad (-0.1\sigma)$	$S_8$	$0.826^{+0.023}_{-0.029} \quad (+0.4\sigma)$	$H(0.15)$	$73.40 \pm 0.60 \quad (-0.4\sigma)$
$A_{\text{L}}$	$1.021^{+0.065}_{-0.053} \quad (-0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.452^{+0.013}_{-0.016} \quad (+0.4\sigma)$	$D_{\text{M}}(0.15)$	$636.3 \pm 5.9 \quad (+0.4\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.080^{+0.024}_{-0.061} \quad (-0.0\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.609^{+0.013}_{-0.020} \quad (+0.3\sigma)$	$H(0.38)$	$83.38 \pm 0.44 \quad (-0.3\sigma)$
$n_{\text{s}}$	$0.9705 \pm 0.0050 \quad (-0.4\sigma)$	$\sigma_8/h^{0.5}$	$0.994^{+0.019}_{-0.032} \quad (+0.2\sigma)$	$D_{\text{M}}(0.38)$	$1519 \pm 12 \quad (+0.4\sigma)$
$y_{\text{cal}}$	$0.99996 \pm 0.0025 \quad (-0.0\sigma)$	$r_{\text{drag}}h$	$100.5 \pm 1.2 \quad (-0.5\sigma)$	$H(0.51)$	$90.02 \pm 0.35 \quad (-0.3\sigma)$
$A_{217}^{\text{CIB}}$	$46 \pm 7 \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.482 \pm 0.030 \quad (+0.2\sigma)$	$D_{\text{M}}(0.51)$	$1969 \pm 14 \quad (+0.4\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	$> 0.383 \quad (+0.1\sigma)$	$z_{\text{re}}$	$< 10.3 \quad (-0.1\sigma)$	$H(0.61)$	$95.59 \pm 0.28 \quad (-0.2\sigma)$
$A_{143}^{\text{tSZ}}$	$5.7^{+2.2}_{-1.8} \quad (+0.2\sigma)$	$10^9 A_{\text{s}}$	$2.178^{+0.048}_{-0.13} \quad (-0.0\sigma)$	$D_{\text{M}}(0.61)$	$2293 \pm 15 \quad (+0.4\sigma)$
$A_{100}^{\text{PS}}$	$255 \pm 28 \quad (-0.1\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.872 \pm 0.013 \quad (+0.5\sigma)$	$H(2.33)$	$235.49 \pm 0.91 \quad (+0.7\sigma)$
$A_{143}^{\text{PS}}$	$44 \pm 8 \quad (-0.2\sigma)$	$D_{40}$	$1226 \pm 16 \quad (+0.3\sigma)$	$D_{\text{M}}(2.33)$	$5751 \pm 12 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$41 \pm 9 \quad (-0.0\sigma)$	$D_{220}$	$5729 \pm 39 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.458^{+0.012}_{-0.015} \quad (+0.4\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2532 \pm 14 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.759^{+0.011}_{-0.024} \quad (+0.1\sigma)$
$A^{\text{kSZ}}$	$< 3.83 \quad (-0.1\sigma)$	$D_{1420}$	$816.4 \pm 4.7 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.478^{+0.011}_{-0.015} \quad (+0.3\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$D_{2000}$	$231.4 \pm 1.5 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6738^{+0.0087}_{-0.021} \quad (+0.1\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$n_{\text{s},0.002}$	$0.9705 \pm 0.0050 \quad (-0.4\sigma)$	$f\sigma_8(0.51)$	$0.4775^{+0.0096}_{-0.015} \quad (+0.3\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.245448 \pm 0.000062 \quad (+0.4\sigma)$	$\sigma_8(0.51)$	$0.6309^{+0.0079}_{-0.020} \quad (+0.0\sigma)$
$A_{217}^{\text{dustTT}}$	$93.7 \pm 7.4 \quad (+0.0\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246774 \pm 0.000062 \quad (+0.4\sigma)$	$f\sigma_8(0.61)$	$0.4730^{+0.0088}_{-0.015} \quad (+0.3\sigma)$
$A_{100}^{\text{dustTE}}$	$0.113 \pm 0.038$	$10^5 \text{D/H}$	$2.560 \pm 0.029 \quad (-0.4\sigma)$	$\sigma_8(0.61)$	$0.6005^{+0.0074}_{-0.019} \quad (+0.0\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134 \pm 0.029$	Age/Gyr	$13.770 \pm 0.027 \quad (+0.0\sigma)$	$f\sigma_8(2.33)$	$0.3031^{+0.0035}_{-0.0093} \quad (-0.0\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.482 \pm 0.084$	$z_*$	$1089.58 \pm 0.31 \quad (-0.0\sigma)$	$\sigma_8(2.33)$	$0.3128^{+0.0036}_{-0.0096} \quad (-0.1\sigma)$
$A_{143}^{\text{dustTE}}$	$0.223 \pm 0.054$	$r_*$	$144.81 \pm 0.33 \quad (-0.8\sigma)$	$f_{2000}^{143}$	$28.2 \pm 2.8 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.661 \pm 0.080$	$100\theta_*$	$1.04127 \pm 0.00030 \quad (-0.3\sigma)$	$f_{2000}^{143 \times 217}$	$31.1 \pm 1.9 \quad (-0.4\sigma)$
$A_{217}^{\text{dustTE}}$	$2.06 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.907 \pm 0.031 \quad (-0.9\sigma)$	$f_{2000}^{217}$	$106.0 \pm 1.9 \quad (-0.3\sigma)$
$c_{100}$	$0.99965 \pm 0.00061 \quad (+0.1\sigma)$	$z_{\text{drag}}$	$1060.13 \pm 0.31 \quad (+0.6\sigma)$	$\chi_{\text{lensing}}^2$	$10.6 \pm 2.3 \quad (+0.3\sigma)$
$c_{217}$	$0.99816 \pm 0.00062 \quad (-0.1\sigma)$	$r_{\text{drag}}$	$147.43 \pm 0.32 \quad (-1.0\sigma)$	$\chi_{\text{lowl}}^2$	$23.3 \pm 1.5 \quad (+0.2\sigma)$
$H_0$	$68.19 \pm 0.70 \quad (-0.4\sigma)$	$k_{\text{D}}$	$0.14062 \pm 0.00033 \quad (+1.2\sigma)$	$\chi_{\text{plik}}^2$	$2356.9 \pm 6.0 \quad (+276.9\sigma)$
$\Omega_{\Lambda}$	$0.6960 \pm 0.0093 \quad (-0.5\sigma)$	$100\theta_{\text{D}}$	$0.16065 \pm 0.00018 \quad (-0.7\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.5 \quad (+1.1\sigma)$
$\Omega_{\text{m}}$	$0.3040 \pm 0.0093 \quad (+0.5\sigma)$	$z_{\text{eq}}$	$3361 \pm 35 \quad (+0.7\sigma)$	$\chi_{\text{CMB}}^2$	$2390.9 \pm 5.9 \quad (+277.9\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 2402.39; \Delta\bar{\chi}_{\text{eff}}^2 = 1591.32; R - 1 = 0.02911$$



### 3.48 base\_Alens\_plikHM\_TTTEE\_lowl\_lensing\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02251 \pm 0.00014 \quad (+0.8\sigma)$	$\sigma_8$	$0.820^{+0.011}_{-0.025} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$636.6 \pm 4.1 \quad (+0.0\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1182 \pm 0.0011 \quad (+0.4\sigma)$	$S_8$	$0.826^{+0.018}_{-0.026} \quad (+0.1\sigma)$	$H(0.38)$	$83.36 \pm 0.31 \quad (+0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04110 \pm 0.00029 \quad (-0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4526^{+0.0096}_{-0.014} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1519.9 \pm 8.3 \quad (-0.0\sigma)$
$\tau$	$0.074^{+0.011}_{-0.030} \quad (-0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.609^{+0.010}_{-0.019} \quad (+0.1\sigma)$	$H(0.51)$	$90.01 \pm 0.25 \quad (+0.2\sigma)$
$A_{\mathrm{L}}$	$1.022^{+0.062}_{-0.048} \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.994^{+0.016}_{-0.030} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1970.0 \pm 9.8 \quad (-0.0\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.078^{+0.025}_{-0.059} \quad (+0.0\sigma)$	$r_{\mathrm{drag}}h$	$100.48 \pm 0.84 \quad (-0.3\sigma)$	$H(0.61)$	$95.57 \pm 0.21 \quad (+0.3\sigma)$
$n_{\mathrm{s}}$	$0.9703 \pm 0.0041 \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.482 \pm 0.030 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.61)$	$2293 \pm 11 \quad (-0.1\sigma)$
$y_{\mathrm{cal}}$	$0.99997 \pm 0.0025 \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$< 10.3 \quad (-0.0\sigma)$	$H(2.33)$	$235.53 \pm 0.64 \quad (+0.6\sigma)$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.175^{+0.051}_{-0.13} \quad (+0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	$5751.2 \pm 9.7 \quad (-0.5\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	$> 0.387 \quad (+0.1\sigma)$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.872 \pm 0.011 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4578^{+0.0093}_{-0.014} \quad (+0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.7^{+2.2}_{-1.8} \quad (+0.2\sigma)$	$D_{40}$	$1226^{+14}_{-16} \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.759^{+0.010}_{-0.023} \quad (+0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$255 \pm 28 \quad (-0.1\sigma)$	$D_{220}$	$5729 \pm 39 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4780^{+0.0085}_{-0.015} \quad (+0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$44 \pm 8 \quad (-0.3\sigma)$	$D_{810}$	$2532 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6734^{+0.0086}_{-0.020} \quad (+0.0\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$816.4 \pm 4.6 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4774^{+0.0079}_{-0.015} \quad (+0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.1\sigma)$	$D_{2000}$	$231.4 \pm 1.5 \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.6305^{+0.0079}_{-0.019} \quad (+0.0\sigma)$
$A^{\mathrm{kSZ}}$	$< 3.83 \quad (-0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.9703 \pm 0.0041 \quad (-0.0\sigma)$	$f\sigma_8(0.61)$	$0.4730^{+0.0074}_{-0.014} \quad (+0.1\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.245446 \pm 0.000053 \quad (+0.8\sigma)$	$\sigma_8(0.61)$	$0.6002^{+0.0075}_{-0.018} \quad (+0.0\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.7 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246772 \pm 0.000053 \quad (+0.8\sigma)$	$f\sigma_8(2.33)$	$0.3029^{+0.0037}_{-0.0090} \quad (+0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.6 \pm 3.3 \quad (+0.0\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.561 \pm 0.025 \quad (-0.8\sigma)$	$\sigma_8(2.33)$	$0.3126^{+0.0038}_{-0.0093} \quad (+0.0\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.7 \pm 7.3 \quad (+0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.771 \pm 0.022 \quad (-0.5\sigma)$	$f_{2000}^{143}$	$28.2 \pm 2.8 \quad (-0.5\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.112 \pm 0.038$	$z_*$	$1089.59 \pm 0.24 \quad (-0.6\sigma)$	$f_{2000}^{143 \times 217}$	$31.1 \pm 1.9 \quad (-0.6\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.029$	$r_*$	$144.79 \pm 0.24 \quad (-0.8\sigma)$	$f_{2000}^{217}$	$106.0 \pm 1.8 \quad (-0.5\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.484 \pm 0.085$	$100\theta_*$	$1.04127 \pm 0.00029 \quad (-0.1\sigma)$	$\chi_{\mathrm{lensing}}^2$	$10.6 \pm 2.3 \quad (+0.3\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.224 \pm 0.053$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.905 \pm 0.023 \quad (-0.8\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.3 \pm 1.4 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.660 \pm 0.080$	$z_{\mathrm{drag}}$	$1060.12 \pm 0.29 \quad (+1.0\sigma)$	$\chi_{\mathrm{plik}}^2$	$2356.3 \pm 5.7 \quad (+294.9\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.06 \pm 0.27$	$r_{\mathrm{drag}}$	$147.42 \pm 0.25 \quad (-0.9\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.030 \pm 0.042 \quad (-0.2\sigma)$
$c_{100}$	$0.99966 \pm 0.00062 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.14063 \pm 0.00029 \quad (+1.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.76 \pm 0.52 \quad (-0.3\sigma)$
$c_{217}$	$0.99816 \pm 0.00061 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16066 \pm 0.00017 \quad (-1.0\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$3.97 \pm 0.80 \quad (-0.1\sigma)$
$H_0$	$68.16 \pm 0.49 \quad (-0.0\sigma)$	$z_{\mathrm{eq}}$	$3363 \pm 24 \quad (+0.5\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.4 \quad (+1.1\sigma)$
$\Omega_{\Lambda}$	$0.6957 \pm 0.0064 \quad (-0.2\sigma)$	$k_{\mathrm{eq}}$	$0.010263 \pm 0.000074 \quad (+0.5\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2390.2 \pm 5.7 \quad (+290.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.3043 \pm 0.0064 \quad (+0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8210 \pm 0.0046 \quad (-0.4\sigma)$	$\chi_{\mathrm{BAO}}^2$	$5.76 \pm 0.75 \quad (-0.2\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1414 \pm 0.0010 \quad (+0.5\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4533 \pm 0.0024 \quad (-0.5\sigma)$		
$\Omega_{\mathrm{m}}h^3$	$0.09635 \pm 0.00029 \quad (+0.9\sigma)$	$H(0.15)$	$73.37 \pm 0.42 \quad (-0.0\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2407.51; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.12; R - 1 = 0.04162$$



### 3.49 base\_Alens\_plikHM\_TT\_lowl\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022431	$0.02239 \pm 0.00026$	$\sigma_8 \Omega_m^{0.25}$	0.5884	$0.589 \pm 0.014$	$D_M(0.15)$	632.9	$634.2 \pm 9.3$
$\Omega_c h^2$	0.11690	$0.1172 \pm 0.0024$	$\sigma_8/h^{0.5}$	0.9620	$0.963 \pm 0.019$	$H(0.38)$	83.59	$83.50 \pm 0.71$
$100\theta_{MC}$	1.04121	$1.04119 \pm 0.00051$	$r_{drag}h$	101.43	$101.2 \pm 1.9$	$D_M(0.38)$	1512.8	$1515 \pm 19$
$\tau$	0.0509	$0.0496^{+0.0086}_{-0.0075}$	$\langle d^2 \rangle^{1/2}$	2.4768	$2.479 \pm 0.031$	$H(0.51)$	90.16	$90.09 \pm 0.57$
$A_L$	1.084	$1.082 \pm 0.052$	$z_{re}$	7.27	$7.13^{+0.92}_{-0.73}$	$D_M(0.51)$	1962.0	$1965 \pm 22$
$\ln(10^{10} A_s)$	3.0285	$3.027^{+0.018}_{-0.016}$	$10^9 A_s$	2.0665	$2.063^{+0.037}_{-0.033}$	$H(0.61)$	95.661	$95.61 \pm 0.46$
$n_s$	0.9733	$0.9710 \pm 0.0068$	$10^9 A_s e^{-2\tau}$	1.8666	$1.868 \pm 0.015$	$D_M(0.61)$	2284.8	$2288 \pm 24$
$y_{cal}$	0.99984	$1.0001 \pm 0.0025$	$D_{40}$	1208.2	$1214 \pm 17$	$H(2.33)$	234.60	$234.8 \pm 1.4$
$A_{217}^{CIB}$	46.7	$47 \pm 7$	$D_{220}$	5719.1	$5725 \pm 41$	$D_M(2.33)$	5749.6	$5752 \pm 20$
$\xi^{tSZ \times CIB}$	0.54	—	$D_{810}$	2530.3	$2530 \pm 14$	$f\sigma_8(0.15)$	0.4401	$0.441 \pm 0.014$
$A_{143}^{tSZ}$	7.01	$5.3 \pm 2.0$	$D_{1420}$	815.9	$814.6 \pm 5.1$	$\sigma_8(0.15)$	0.7377	$0.7371 \pm 0.0089$
$A_{100}^{PS}$	248.8	$260 \pm 28$	$D_{2000}$	231.12	$230.5 \pm 1.9$	$f\sigma_8(0.38)$	0.4613	$0.462 \pm 0.012$
$A_{143}^{PS}$	48.8	$46 \pm 8$	$n_{s,0.002}$	0.9733	$0.9710 \pm 0.0068$	$\sigma_8(0.38)$	0.6554	$0.6547 \pm 0.0069$
$A_{143 \times 217}^{PS}$	50.1	$42 \pm 9$	$Y_P$	0.245419	$0.24540 \pm 0.00010$	$f\sigma_8(0.51)$	0.4615	$0.462 \pm 0.010$
$A_{217}^{PS}$	120.0	$114 \pm 10$	$Y_P^{BBN}$	0.246746	$0.24672 \pm 0.00010$	$\sigma_8(0.51)$	0.6140	$0.6133 \pm 0.0061$
$A^{kSZ}$	0.01	$< 4.50$	$10^5 D/H$	2.5742	$2.583 \pm 0.047$	$f\sigma_8(0.61)$	0.4578	$0.4580 \pm 0.0089$
$A_{100}^{dustTT}$	8.94	$9.0 \pm 1.8$	Age/Gyr	13.7690	$13.775 \pm 0.045$	$\sigma_8(0.61)$	0.5847	$0.5839 \pm 0.0057$
$A_{143}^{dustTT}$	10.81	$10.8 \pm 1.8$	$z_*$	1089.571	$1089.65 \pm 0.48$	$f\sigma_8(2.33)$	0.29536	$0.2949^{+0.0027}_{-0.0025}$
$A_{143 \times 217}^{dustTT}$	19.52	$18.3 \pm 3.3$	$r_*$	145.19	$145.15 \pm 0.51$	$\sigma_8(2.33)$	0.30515	$0.3046 \pm 0.0027$
$A_{217}^{dustTT}$	94.9	$93.4 \pm 7.4$	$100\theta_*$	1.04140	$1.04138 \pm 0.00050$	$f_{2000}^{143}$	28.45	$29.7 \pm 3.0$
$c_{100}$	0.99966	$0.99960 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	13.9421	$13.938 \pm 0.047$	$f_{2000}^{143 \times 217}$	31.77	$32.3 \pm 2.2$
$c_{217}$	0.99823	$0.99823 \pm 0.00062$	$z_{drag}$	1059.856	$1059.78 \pm 0.50$	$f_{2000}^{217}$	106.17	$106.9 \pm 2.0$
$H_0$	68.61	$68.5 \pm 1.1$	$r_{drag}$	147.850	$147.82 \pm 0.50$	$\chi_{lensing}^2$	9.31	$10.1 \pm 2.0$
$\Omega_\Lambda$	0.7026	$0.700^{+0.015}_{-0.014}$	$k_D$	0.14011	$0.14011 \pm 0.00051$	$\chi_{small}^2$	395.67	$396.8 \pm 1.5$
$\Omega_m$	0.2974	$0.300^{+0.014}_{-0.015}$	$100\theta_D$	0.160821	$0.16087 \pm 0.00028$	$\chi_{lowl}^2$	21.74	$22.2 \pm 1.2$
$\Omega_m h^2$	0.13997	$0.1402 \pm 0.0022$	$z_{eq}$	3329	$3336 \pm 53$	$\chi_{plik}^2$	757.8	$770.4 \pm 5.5$
$\Omega_m h^3$	0.096030	$0.09599 \pm 0.00046$	$k_{eq}$	0.010162	$0.01018 \pm 0.00016$	$\chi_{prior}^2$	1.29	$7.3 \pm 3.7$
$\sigma_8$	0.7968	$0.796 \pm 0.011$	$100\theta_{eq}$	0.8269	$0.826 \pm 0.010$	$\chi_{CMB}^2$	1184.5	$1199.5 \pm 5.6$
$S_8$	0.7933	$0.796 \pm 0.028$	$100\theta_{s,eq}$	0.4565	$0.4559 \pm 0.0053$			
$\sigma_8 \Omega_m^{0.5}$	0.4345	$0.436 \pm 0.015$	$H(0.15)$	73.73	$73.61 \pm 0.96$			

Best-fit  $\chi_{eff}^2 = 1185.80$ ;  $\bar{\chi}_{eff}^2 = 1206.83$ ;  $R - 1 = 0.00595$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 9.31 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.67 commander\_dx12\_v3.2\_29: 21.74 plik\_rd12\_HM.v22.TT: 757.79



### 3.50 base\_Alens\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022366	$0.02233 \pm 0.00021$	$\sigma_8/h^{0.5}$	0.9689	$0.968 \pm 0.013$	$D_M(0.38)$	1520.0	$1521 \pm 10$
$\Omega_c h^2$	0.11787	$0.1179 \pm 0.0013$	$r_{\text{drag}} h$	100.67	$100.6 \pm 1.0$	$H(0.51)$	89.954	$89.92 \pm 0.32$
$100\theta_{\text{MC}}$	1.041140	$1.04110 \pm 0.00043$	$\langle d^2 \rangle^{1/2}$	2.4776	$2.478 \pm 0.031$	$D_M(0.51)$	1970.3	$1971 \pm 12$
$\tau$	0.0504	$0.0492^{+0.0086}_{-0.0075}$	$z_{\text{re}}$	7.24	$7.11^{+0.94}_{-0.74}$	$H(0.61)$	95.505	$95.48 \pm 0.27$
$A_L$	1.0696	$1.070 \pm 0.040$	$10^9 A_s$	2.0692	$2.065 \pm 0.036$	$D_M(0.61)$	2293.8	$2295 \pm 13$
$\ln(10^{10} A_s)$	3.0297	$3.027^{+0.018}_{-0.016}$	$10^9 A_s e^{-2\tau}$	1.8709	$1.871 \pm 0.012$	$H(2.33)$	235.17	$235.14 \pm 0.79$
$n_s$	0.97035	$0.9692 \pm 0.0045$	$D_{40}$	1214.8	$1217 \pm 13$	$D_M(2.33)$	5755.9	$5758 \pm 13$
$y_{\text{cal}}$	0.99995	$1.0001 \pm 0.0025$	$D_{220}$	5718.8	$5722 \pm 41$	$f\sigma_8(0.15)$	0.4456	$0.4452 \pm 0.0083$
$A_{217}^{\text{CIB}}$	48.4	$47 \pm 7$	$D_{810}$	2531.3	$2530 \pm 14$	$\sigma_8(0.15)$	0.7401	$0.7390 \pm 0.0074$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.28	—	$D_{1420}$	815.29	$814.3 \pm 5.0$	$f\sigma_8(0.38)$	0.4656	$0.4650 \pm 0.0071$
$A_{143}^{\text{tSZ}}$	7.11	$5.2 \pm 2.0$	$D_{2000}$	230.72	$230.3 \pm 1.7$	$\sigma_8(0.38)$	0.6569	$0.6559 \pm 0.0062$
$A_{100}^{\text{PS}}$	252.3	$261 \pm 28$	$n_{s,0.002}$	0.97035	$0.9692 \pm 0.0045$	$f\sigma_8(0.51)$	0.4652	$0.4646 \pm 0.0064$
$A_{143}^{\text{PS}}$	46.0	$47 \pm 8$	$Y_{\text{P}}$	0.245394	$0.245377^{+0.000086}_{-0.000076}$	$\sigma_8(0.51)$	0.6152	$0.6142 \pm 0.0057$
$A_{143 \times 217}^{\text{PS}}$	43.9	$42 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	0.246721	$0.246704^{+0.000086}_{-0.000077}$	$f\sigma_8(0.61)$	0.4609	$0.4603 \pm 0.0059$
$A_{217}^{\text{PS}}$	117.6	$114 \pm 10$	$10^5 D/H$	2.5862	$2.593 \pm 0.039$	$\sigma_8(0.61)$	0.5856	$0.5846 \pm 0.0054$
$A^{\text{kSZ}}$	0.00	$< 4.61$	Age/Gyr	13.7822	$13.786 \pm 0.030$	$f\sigma_8(2.33)$	0.29559	$0.2951 \pm 0.0027$
$A_{100}^{\text{dustTT}}$	8.98	$9.0 \pm 1.9$	$z_*$	1089.739	$1089.78 \pm 0.32$	$\sigma_8(2.33)$	0.30511	$0.3046 \pm 0.0028$
$A_{143}^{\text{dustTT}}$	10.86	$10.8 \pm 1.8$	$r_*$	144.988	$145.01 \pm 0.32$	$f_{2000}^{143}$	29.14	$30.1 \pm 2.9$
$A_{143 \times 217}^{\text{dustTT}}$	19.27	$18.3 \pm 3.3$	$100\theta_*$	1.041322	$1.04129 \pm 0.00043$	$f_{2000}^{143 \times 217}$	32.18	$32.6 \pm 2.0$
$A_{217}^{\text{dustTT}}$	94.5	$93.4 \pm 7.4$	$D_M(z_*)/\text{Gpc}$	13.9235	$13.926 \pm 0.031$	$f_{2000}^{217}$	106.71	$107.2 \pm 1.9$
$c_{100}$	0.99963	$0.99959 \pm 0.00062$	$z_{\text{drag}}$	1059.780	$1059.70 \pm 0.46$	$\chi_{\text{lensing}}^2$	9.42	$10.1 \pm 2.0$
$c_{217}$	0.99825	$0.99824 \pm 0.00062$	$r_{\text{drag}}$	147.662	$147.70 \pm 0.34$	$\chi_{\text{small}}^2$	395.68	$396.8 \pm 1.6$
$H_0$	68.18	$68.14 \pm 0.60$	$k_{\text{D}}$	0.140263	$0.14020 \pm 0.00043$	$\chi_{\text{lowl}}^2$	22.20	$22.43 \pm 0.87$
$\Omega_\Lambda$	0.6969	$0.6965 \pm 0.0077$	$100\theta_{\text{D}}$	0.160865	$0.16091 \pm 0.00026$	$\chi_{\text{plik}}^2$	757.2	$769.6 \pm 5.4$
$\Omega_{\text{m}}$	0.3031	$0.3035 \pm 0.0077$	$z_{\text{eq}}$	3351.1	$3350 \pm 29$	$\chi_{6\text{DF}}^2$	0.0015	$0.044 \pm 0.062$
$\Omega_{\text{m}} h^2$	0.14088	$0.1409 \pm 0.0012$	$k_{\text{eq}}$	0.010228	$0.010226 \pm 0.000089$	$\chi_{\text{MGS}}^2$	1.82	$1.87 \pm 0.63$
$\Omega_{\text{m}} h^3$	0.096047	$0.09597 \pm 0.00046$	$100\theta_{\text{eq}}$	0.8227	$0.8227 \pm 0.0056$	$\chi_{\text{DR12BAO}}^2$	3.395	$4.1 \pm 1.0$
$\sigma_8$	0.8000	$0.7988 \pm 0.0083$	$100\theta_{s,\text{eq}}$	0.45430	$0.4543 \pm 0.0029$	$\chi_{\text{prior}}^2$	1.47	$7.4 \pm 3.7$
$S_8$	0.8041	$0.803 \pm 0.016$	$H(0.15)$	73.37	$73.33 \pm 0.52$	$\chi_{\text{CMB}}^2$	1184.5	$1199.0 \pm 5.5$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4404	$0.4400 \pm 0.0088$	$D_M(0.15)$	636.5	$636.8 \pm 5.0$	$\chi_{\text{BAO}}^2$	5.22	$6.0 \pm 1.1$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5936	$0.5929 \pm 0.0087$	$H(0.38)$	83.326	$83.29 \pm 0.39$			

Best-fit  $\chi_{\text{eff}}^2 = 1191.14$ ;  $\bar{\chi}_{\text{eff}}^2 = 1212.35$ ;  $R - 1 = 0.01232$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.82 DR12BAO: 3.40 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p\_teb\_consext8: 9.42 small\_100x143.offlike5\_EE\_Aplanck\_B: 395.68 comman-  
der\_dx12.v3.2.29: 22.20 plik\_rd12\_HM.v22\_TT: 757.15



### 3.51 base\_Alens\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02239 \pm 0.00026$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.591 \pm 0.014$	$D_{\text{M}}(0.15)$	$633.9 \pm 9.3$
$\Omega_{\text{c}}h^2$	$0.1171 \pm 0.0024$	$\sigma_8/h^{0.5}$	$0.965 \pm 0.019$	$H(0.38)$	$83.52 \pm 0.71$
$100\theta_{\text{MC}}$	$1.04120 \pm 0.00052$	$r_{\text{drag}}h$	$101.3 \pm 1.9$	$D_{\text{M}}(0.38)$	$1515 \pm 19$
$\tau$	$0.0528^{+0.0039}_{-0.0076}$	$\langle d^2 \rangle^{1/2}$	$2.479 \pm 0.032$	$H(0.51)$	$90.11 \pm 0.57$
$A_{\text{L}}$	$1.076 \pm 0.051$	$z_{\text{re}}$	$7.47^{+0.39}_{-0.81}$	$D_{\text{M}}(0.51)$	$1964 \pm 22$
$\ln(10^{10}A_{\text{s}})$	$3.033^{+0.011}_{-0.015}$	$10^9 A_{\text{s}}$	$2.076^{+0.023}_{-0.031}$	$H(0.61)$	$95.62 \pm 0.46$
$n_{\text{s}}$	$0.9712 \pm 0.0068$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.868 \pm 0.015$	$D_{\text{M}}(0.61)$	$2287 \pm 24$
$y_{\text{cal}}$	$1.0001 \pm 0.0025$	$D_{40}$	$1214 \pm 17$	$H(2.33)$	$234.7 \pm 1.4$
$A_{217}^{\text{CIB}}$	$47 \pm 7$	$D_{220}$	$5725 \pm 41$	$D_{\text{M}}(2.33)$	$5752 \pm 20$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{810}$	$2529 \pm 14$	$f\sigma_8(0.15)$	$0.442 \pm 0.014$
$A_{143}^{\text{tSZ}}$	$5.3 \pm 2.0$	$D_{1420}$	$814.6 \pm 5.1$	$\sigma_8(0.15)$	$0.7393 \pm 0.0080$
$A_{100}^{\text{PS}}$	$259 \pm 28$	$D_{2000}$	$230.6 \pm 1.9$	$f\sigma_8(0.38)$	$0.463 \pm 0.011$
$A_{143}^{\text{PS}}$	$46 \pm 8$	$n_{\text{s},0.002}$	$0.9712 \pm 0.0068$	$\sigma_8(0.38)$	$0.6567 \pm 0.0059$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9$	$Y_{\text{P}}$	$0.24540 \pm 0.00010$	$f\sigma_8(0.51)$	$0.4631 \pm 0.0098$
$A_{217}^{\text{PS}}$	$114 \pm 10$	$Y_{\text{P}}^{\text{BBN}}$	$0.24673 \pm 0.00010$	$\sigma_8(0.51)$	$0.6151^{+0.0048}_{-0.0054}$
$A^{\text{kSZ}}$	$< 4.49$	$10^5 \text{D}/\text{H}$	$2.582 \pm 0.048$	$f\sigma_8(0.61)$	$0.4592 \pm 0.0087$
$A_{100}^{\text{dustTT}}$	$9.0 \pm 1.8$	$\text{Age}/\text{Gyr}$	$13.774 \pm 0.045$	$\sigma_8(0.61)$	$0.5857^{+0.0043}_{-0.0049}$
$A_{143}^{\text{dustTT}}$	$10.8 \pm 1.8$	$z_*$	$1089.64 \pm 0.49$	$f\sigma_8(2.33)$	$0.2958^{+0.0018}_{-0.0023}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3 \pm 3.3$	$r_*$	$145.16 \pm 0.51$	$\sigma_8(2.33)$	$0.3056^{+0.0017}_{-0.0024}$
$A_{217}^{\text{dustTT}}$	$93.4 \pm 7.4$	$100\theta_*$	$1.04139 \pm 0.00050$	$f_{2000}^{143}$	$29.7 \pm 3.1$
$c_{100}$	$0.99960 \pm 0.00062$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.939 \pm 0.047$	$f_{2000}^{143 \times 217}$	$32.3 \pm 2.2$
$c_{217}$	$0.99823 \pm 0.00062$	$z_{\text{drag}}$	$1059.78 \pm 0.50$	$f_{2000}^{217}$	$106.9 \pm 2.0$
$H_0$	$68.5 \pm 1.1$	$r_{\text{drag}}$	$147.83 \pm 0.49$	$\chi_{\text{lensing}}^2$	$10.1 \pm 2.0$
$\Omega_{\Lambda}$	$0.701^{+0.015}_{-0.013}$	$k_{\text{D}}$	$0.14010 \pm 0.00050$	$\chi_{\text{simall}}^2$	$396.4 \pm 1.1$
$\Omega_{\text{m}}$	$0.299^{+0.013}_{-0.015}$	$100\theta_{\text{D}}$	$0.16087 \pm 0.00028$	$\chi_{\text{lowl}}^2$	$22.3 \pm 1.2$
$\Omega_{\text{m}}h^2$	$0.1402 \pm 0.0022$	$z_{\text{eq}}$	$3334 \pm 53$	$\chi_{\text{plik}}^2$	$770.4 \pm 5.6$
$\Omega_{\text{m}}h^3$	$0.09599 \pm 0.00046$	$k_{\text{eq}}$	$0.01018 \pm 0.00016$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8$	$0.7987 \pm 0.0099$	$100\theta_{\text{eq}}$	$0.826 \pm 0.010$	$\chi_{\text{CMB}}^2$	$1199.2 \pm 5.6$
$S_8$	$0.798 \pm 0.028$	$100\theta_{\text{s,eq}}$	$0.4560 \pm 0.0053$		
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.437 \pm 0.015$	$H(0.15)$	$73.64 \pm 0.97$		

$$\bar{\chi}_{\text{eff}}^2 = 1206.48; R - 1 = 0.00707$$



### 3.52 base\_Alens\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02233 \pm 0.00021$	$\sigma_8/h^{0.5}$	$0.971 \pm 0.011$	$D_{\mathrm{M}}(0.38)$	$1521 \pm 10$
$\Omega_{\mathrm{c}}h^2$	$0.1178 \pm 0.0013$	$r_{\mathrm{drag}}h$	$100.7 \pm 1.0$	$H(0.51)$	$89.93 \pm 0.32$
$100\theta_{\mathrm{MC}}$	$1.04110 \pm 0.00043$	$\langle d^2 \rangle^{1/2}$	$2.477 \pm 0.032$	$D_{\mathrm{M}}(0.51)$	$1971 \pm 12$
$\tau$	$0.0526^{+0.0038}_{-0.0074}$	$z_{\mathrm{re}}$	$7.47^{+0.37}_{-0.81}$	$H(0.61)$	$95.48 \pm 0.27$
$A_{\mathrm{L}}$	$1.063 \pm 0.037$	$10^9 A_{\mathrm{s}}$	$2.078^{+0.021}_{-0.031}$	$D_{\mathrm{M}}(0.61)$	$2295 \pm 13$
$\ln(10^{10} A_{\mathrm{s}})$	$3.034^{+0.010}_{-0.015}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.871 \pm 0.012$	$H(2.33)$	$235.12 \pm 0.79$
$n_{\mathrm{s}}$	$0.9693 \pm 0.0045$	$D_{40}$	$1218 \pm 13$	$D_{\mathrm{M}}(2.33)$	$5758 \pm 13$
$y_{\mathrm{cal}}$	$1.0001 \pm 0.0025$	$D_{220}$	$5722 \pm 41$	$f\sigma_8(0.15)$	$0.4465 \pm 0.0080$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$D_{810}$	$2530 \pm 14$	$\sigma_8(0.15)$	$0.7414^{+0.0054}_{-0.0065}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$814.3 \pm 5.0$	$f\sigma_8(0.38)$	$0.4665 \pm 0.0066$
$A_{143}^{\mathrm{tSZ}}$	$5.2 \pm 2.0$	$D_{2000}$	$230.3 \pm 1.7$	$\sigma_8(0.38)$	$0.6581^{+0.0043}_{-0.0054}$
$A_{100}^{\mathrm{PS}}$	$261 \pm 28$	$n_{\mathrm{s},0.002}$	$0.9693 \pm 0.0045$	$f\sigma_8(0.51)$	$0.4661 \pm 0.0058$
$A_{143}^{\mathrm{PS}}$	$47 \pm 8$	$Y_{\mathrm{P}}$	$0.245377^{+0.000085}_{-0.000077}$	$\sigma_8(0.51)$	$0.6162^{+0.0038}_{-0.0049}$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246703^{+0.000086}_{-0.000077}$	$f\sigma_8(0.61)$	$0.4618 \pm 0.0053$
$A_{217}^{\mathrm{PS}}$	$114 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.593 \pm 0.038$	$\sigma_8(0.61)$	$0.5866^{+0.0035}_{-0.0047}$
$A^{\mathrm{kSZ}}$	$< 4.54$	$\mathrm{Age}/\mathrm{Gyr}$	$13.786 \pm 0.030$	$f\sigma_8(2.33)$	$0.2961^{+0.0017}_{-0.0023}$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.9$	$z_*$	$1089.78 \pm 0.32$	$\sigma_8(2.33)$	$0.3056^{+0.0017}_{-0.0023}$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.8$	$r_*$	$145.02 \pm 0.31$	$f_{2000}^{143}$	$30.1 \pm 3.0$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.4$	$100\theta_*$	$1.04129 \pm 0.00043$	$f_{2000}^{143 \times 217}$	$32.5 \pm 2.0$
$A_{217}^{\mathrm{dust}TT}$	$93.5^{+7.8}_{-7.1}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.927 \pm 0.030$	$f_{2000}^{217}$	$107.2 \pm 1.9$
$c_{100}$	$0.99959 \pm 0.00062$	$z_{\mathrm{drag}}$	$1059.69 \pm 0.45$	$\chi_{\mathrm{lensing}}^2$	$10.1 \pm 2.0$
$c_{217}$	$0.99824 \pm 0.00062$	$r_{\mathrm{drag}}$	$147.71 \pm 0.33$	$\chi_{\mathrm{simall}}^2$	$396.4 \pm 1.1$
$H_0$	$68.15 \pm 0.60$	$k_{\mathrm{D}}$	$0.14019 \pm 0.00043$	$\chi_{\mathrm{lowl}}^2$	$22.50 \pm 0.88$
$\Omega_{\Lambda}$	$0.6967 \pm 0.0077$	$100\theta_{\mathrm{D}}$	$0.16091 \pm 0.00026$	$\chi_{\mathrm{plik}}^2$	$769.6 \pm 5.4$
$\Omega_{\mathrm{m}}$	$0.3033 \pm 0.0077$	$z_{\mathrm{eq}}$	$3350 \pm 29$	$\chi_{6\mathrm{DF}}^2$	$0.045 \pm 0.062$
$\Omega_{\mathrm{m}}h^2$	$0.1408 \pm 0.0012$	$k_{\mathrm{eq}}$	$0.010224 \pm 0.000089$	$\chi_{\mathrm{MGS}}^2$	$1.88 \pm 0.63$
$\Omega_{\mathrm{m}}h^3$	$0.09596 \pm 0.00045$	$100\theta_{\mathrm{eq}}$	$0.8228 \pm 0.0056$	$\chi_{\mathrm{DR12BAO}}^2$	$4.07 \pm 0.99$
$\sigma_8$	$0.8014^{+0.0064}_{-0.0074}$	$100\theta_{\mathrm{s,eq}}$	$0.4544 \pm 0.0029$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.8$
$S_8$	$0.806 \pm 0.016$	$H(0.15)$	$73.34 \pm 0.52$	$\chi_{\mathrm{CMB}}^2$	$1198.7 \pm 5.5$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4414 \pm 0.0085$	$D_{\mathrm{M}}(0.15)$	$636.8 \pm 5.0$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.1$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5947 \pm 0.0081$	$H(0.38)$	$83.30 \pm 0.39$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1212.01$ ;  $R - 1 = 0.01863$



### 3.53 base\_Alens\_plikHM\_TTTEEE\_lowl\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022553	$0.02251 \pm 0.00017$ (+0.5 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.096413	$0.09637 \pm 0.00029$ (+0.8 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.45361	$0.4532 \pm 0.0033$ (−0.5 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11803	$0.1182 \pm 0.0015$ (+0.4 $\sigma$ )	$\sigma_8$	0.8008	$0.7999 \pm 0.0086$ (+0.3 $\sigma$ )	$H(0.15)$	73.46	$73.37 \pm 0.60$ (−0.3 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.041111	$1.04110 \pm 0.00032$ (−0.2 $\sigma$ )	$S_8$	0.8049	$0.806 \pm 0.019$ (+0.4 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	635.7	$636.6 \pm 5.9$ (+0.3 $\sigma$ )
$\tau$	0.0506	$0.0491^{+0.0086}_{-0.0076}$ (−0.1 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4409	$0.441 \pm 0.010$ (+0.4 $\sigma$ )	$H(0.38)$	83.432	$83.36 \pm 0.44$ (−0.2 $\sigma$ )
$A_{\mathrm{L}}$	1.0747	$1.071^{+0.038}_{-0.042}$ (−0.2 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.5942	$0.5941 \pm 0.0097$ (+0.4 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1518.0	$1520 \pm 12$ (+0.2 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0314	$3.029^{+0.018}_{-0.016}$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9692	$0.969 \pm 0.014$ (+0.3 $\sigma$ )	$H(0.51)$	90.068	$90.01 \pm 0.35$ (−0.1 $\sigma$ )
$n_{\mathrm{s}}$	0.97176	$0.9696 \pm 0.0048$ (−0.2 $\sigma$ )	$r_{\mathrm{drag}}h$	100.63	$100.5 \pm 1.2$ (−0.4 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1967.8	$1970 \pm 14$ (+0.2 $\sigma$ )
$y_{\mathrm{cal}}$	0.99996	$1.0001 \pm 0.0025$ (−0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4832	$2.482 \pm 0.030$ (+0.1 $\sigma$ )	$H(0.61)$	95.626	$95.58 \pm 0.28$ (−0.1 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	44.2	$46 \pm 7$ (−0.1 $\sigma$ )	$z_{\mathrm{re}}$	7.23	$7.06^{+0.93}_{-0.74}$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2290.9	$2293 \pm 15$ (+0.2 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.83	—	$10^9 A_{\mathrm{s}}$	2.0726	$2.067 \pm 0.036$ (+0.1 $\sigma$ )	$H(2.33)$	235.46	$235.56 \pm 0.88$ (+0.6 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	7.00	$5.6^{+2.1}_{-1.8}$ (+0.2 $\sigma$ )	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8733	$1.874 \pm 0.012$ (+0.4 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5748.6	$5751 \pm 13$ (−0.1 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	244.3	$255 \pm 28$ (−0.2 $\sigma$ )	$D_{40}$	1213.7	$1219 \pm 14$ (+0.3 $\sigma$ )	$f\sigma_8(0.15)$	0.4461	$0.4464 \pm 0.0095$ (+0.4 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	50.3	$44 \pm 8$ (−0.3 $\sigma$ )	$D_{220}$	5730.1	$5735 \pm 39$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7408	$0.7398 \pm 0.0075$ (+0.3 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	55.3	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{810}$	2535.0	$2533 \pm 14$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4661	$0.4661 \pm 0.0079$ (+0.4 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	122.8	$115 \pm 10$ (+0.1 $\sigma$ )	$D_{1420}$	817.98	$816.5 \pm 4.8$ (+0.4 $\sigma$ )	$\sigma_8(0.38)$	0.6576	$0.6566 \pm 0.0062$ (+0.3 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.01	$< 3.94$ (−0.2 $\sigma$ )	$D_{2000}$	232.01	$231.3 \pm 1.6$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.4657	$0.4655 \pm 0.0070$ (+0.4 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.82	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.97176	$0.9696 \pm 0.0048$ (−0.2 $\sigma$ )	$\sigma_8(0.51)$	0.6158	$0.6147 \pm 0.0057$ (+0.2 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	11.02	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}$	0.245463	$0.245449 \pm 0.000064$ (+0.5 $\sigma$ )	$f\sigma_8(0.61)$	0.4614	$0.4611 \pm 0.0064$ (+0.4 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	20.19	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246790	$0.246776 \pm 0.000064$ (+0.5 $\sigma$ )	$\sigma_8(0.61)$	0.5862	$0.5851 \pm 0.0053$ (+0.2 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	95.7	$93.6 \pm 7.3$ (+0.0 $\sigma$ )	$10^5 \mathrm{D}/\mathrm{H}$	2.5526	$2.560 \pm 0.030$ (−0.5 $\sigma$ )	$f\sigma_8(2.33)$	0.29590	$0.2953 \pm 0.0026$ (+0.2 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1138	$0.114 \pm 0.038$	Age/Gyr	13.7648	$13.770 \pm 0.028$ (−0.1 $\sigma$ )	$\sigma_8(2.33)$	0.30543	$0.3048^{+0.0027}_{-0.0025}$ (+0.1 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1343	$0.135 \pm 0.029$	$z_*$	1089.519	$1089.59 \pm 0.31$ (−0.1 $\sigma$ )	$f_{2000}^{143}$	27.21	$28.5 \pm 2.8$ (−0.4 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.480	$0.480 \pm 0.085$	$r_*$	144.801	$144.78 \pm 0.32$ (−0.7 $\sigma$ )	$f_{2000}^{143 \times 217}$	30.80	$31.3 \pm 1.9$ (−0.5 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.224	$0.223 \pm 0.053$	$100\theta_*$	1.041283	$1.04128 \pm 0.00031$ (−0.2 $\sigma$ )	$f_{2000}^{217}$	105.36	$106.2 \pm 1.8$ (−0.4 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.661	$0.663 \pm 0.080$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.9060	$13.904 \pm 0.030$ (−0.7 $\sigma$ )	$\chi_{\mathrm{lensing}}^2$	10.18	$10.5 \pm 2.2$ (+0.2 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.059	$2.06 \pm 0.27$	$z_{\mathrm{drag}}$	1060.200	$1060.14 \pm 0.32$ (+0.7 $\sigma$ )	$\chi_{\mathrm{simall}}^2$	395.66	$396.8 \pm 1.5$ (+0.0 $\sigma$ )
$c_{100}$	0.99974	$0.99966 \pm 0.00061$ (+0.1 $\sigma$ )	$r_{\mathrm{drag}}$	147.411	$147.40 \pm 0.31$ (−0.8 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	22.06	$22.46 \pm 0.91$ (+0.2 $\sigma$ )
$c_{217}$	0.99815	$0.99817 \pm 0.00062$ (−0.1 $\sigma$ )	$k_{\mathrm{D}}$	0.140669	$0.14065 \pm 0.00031$ (+1.1 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2341.8	$2357.1 \pm 6.0$ (+286.3 $\sigma$ )
$H_0$	68.27	$68.16 \pm 0.70$ (−0.3 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160601	$0.16065 \pm 0.00018$ (−0.8 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.45	$11.5 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_{\Lambda}$	0.6969	$0.6955 \pm 0.0092$ (−0.3 $\sigma$ )	$z_{\mathrm{eq}}$	3359.6	$3364 \pm 34$ (+0.5 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	2769.7	$2786.9 \pm 6.0$ (+281.2 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3031	$0.3045 \pm 0.0092$ (+0.3 $\sigma$ )	$k_{\mathrm{eq}}$	0.010254	$0.01027 \pm 0.00010$ (+0.5 $\sigma$ )			
$\Omega_{\mathrm{m}}h^2$	0.14123	$0.1414 \pm 0.0014$ (+0.5 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8217	$0.8209 \pm 0.0065$ (−0.5 $\sigma$ )			

Best-fit  $\chi_{\mathrm{eff}}^2 = 2771.20$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1585.40$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2798.40$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.57$ ;  $R - 1 = 0.01801$   
 $\chi_{\mathrm{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8: 10.18 ( $\Delta$  0.86) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.66 ( $\Delta$  -0.00) commander\_dx12\_v3\_2\_29: 22.06 ( $\Delta$  0.31) plik\_rd12\_HM\_v22b\_TTTEEE: 2341.85



### 3.54 base\_Alens\_plikHM\_TTTEE\_lowl\_lowE\_lensing\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022543	$0.02251 \pm 0.00014$ (+0.9 $\sigma$ )	$\sigma_8$	0.8002	$0.8001 \pm 0.0079$ (+0.1 $\sigma$ )	$D_M(0.15)$	636.48	$636.7 \pm 4.1$ (−0.0 $\sigma$ )
$\Omega_c h^2$	0.11826	$0.1183 \pm 0.0011$ (+0.3 $\sigma$ )	$S_8$	0.8060	$0.806 \pm 0.014$ (+0.2 $\sigma$ )	$H(0.38)$	83.372	$83.36 \pm 0.31$ (+0.2 $\sigma$ )
$100\theta_{MC}$	1.041093	$1.04111 \pm 0.00029$ (+0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4415	$0.4415 \pm 0.0076$ (+0.2 $\sigma$ )	$D_M(0.38)$	1519.7	$1520.1 \pm 8.3$ (−0.1 $\sigma$ )
$\tau$	0.0492	$0.0491^{+0.0086}_{-0.0076}$ (−0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.5943	$0.5943 \pm 0.0077$ (+0.2 $\sigma$ )	$H(0.51)$	90.023	$90.01 \pm 0.25$ (+0.3 $\sigma$ )
$A_L$	1.0723	$1.071^{+0.033}_{-0.038}$ (+0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9692	$0.969 \pm 0.011$ (+0.1 $\sigma$ )	$D_M(0.51)$	1969.7	$1970.2 \pm 9.8$ (−0.1 $\sigma$ )
$\ln(10^{10} A_s)$	3.0288	$3.029^{+0.018}_{-0.016}$ (+0.1 $\sigma$ )	$r_{drag} h$	100.45	$100.45 \pm 0.84$ (−0.2 $\sigma$ )	$H(0.61)$	95.591	$95.57 \pm 0.21$ (+0.4 $\sigma$ )
$n_s$	0.97040	$0.9695 \pm 0.0040$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4824	$2.482 \pm 0.030$ (+0.1 $\sigma$ )	$D_M(0.61)$	2293.0	$2294 \pm 11$ (−0.1 $\sigma$ )
$y_{cal}$	0.99980	$1.0001 \pm 0.0025$ (+0.0 $\sigma$ )	$z_{re}$	7.09	$7.06^{+0.94}_{-0.74}$ (−0.0 $\sigma$ )	$H(2.33)$	235.60	$235.57 \pm 0.63$ (+0.5 $\sigma$ )
$A_{217}^{CIB}$	45.8	$46 \pm 7$ (−0.2 $\sigma$ )	$10^9 A_s$	2.0672	$2.068 \pm 0.036$ (+0.1 $\sigma$ )	$D_M(2.33)$	5750.0	$5751.0 \pm 9.7$ (−0.5 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.625	$> 0.382$ (+0.1 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8735	$1.874 \pm 0.011$ (+0.3 $\sigma$ )	$f\sigma_8(0.15)$	0.4466	$0.4466 \pm 0.0072$ (+0.2 $\sigma$ )
$A_{143}^{tSZ}$	7.17	$5.6^{+2.1}_{-1.8}$ (+0.2 $\sigma$ )	$D_{40}$	1216.2	$1219 \pm 12$ (+0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7401	$0.7400 \pm 0.0070$ (+0.1 $\sigma$ )
$A_{100}^{PS}$	245.9	$255 \pm 28$ (−0.2 $\sigma$ )	$D_{220}$	5731.8	$5735 \pm 38$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4662	$0.4662 \pm 0.0063$ (+0.2 $\sigma$ )
$A_{143}^{PS}$	48.0	$44 \pm 8$ (−0.4 $\sigma$ )	$D_{810}$	2533.8	$2534 \pm 14$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6568	$0.6567 \pm 0.0060$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{PS}$	50.9	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{1420}$	817.12	$816.5 \pm 4.8$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.4657	$0.4657 \pm 0.0057$ (+0.2 $\sigma$ )
$A_{217}^{PS}$	120.4	$115 \pm 10$ (+0.1 $\sigma$ )	$D_{2000}$	231.65	$231.3 \pm 1.6$ (+0.6 $\sigma$ )	$\sigma_8(0.51)$	0.6150	$0.6149 \pm 0.0056$ (+0.1 $\sigma$ )
$A^{kSZ}$	0.01	$< 3.97$ (−0.2 $\sigma$ )	$n_{s,0.002}$	0.97040	$0.9695 \pm 0.0040$ (+0.1 $\sigma$ )	$f\sigma_8(0.61)$	0.4613	$0.4613 \pm 0.0053$ (+0.2 $\sigma$ )
$A_{100}^{dustTT}$	8.88	$8.9 \pm 1.9$ (−0.0 $\sigma$ )	$Y_P$	0.245460	$0.245448 \pm 0.000054$ (+0.8 $\sigma$ )	$\sigma_8(0.61)$	0.5854	$0.5853 \pm 0.0053$ (+0.1 $\sigma$ )
$A_{143}^{dustTT}$	11.03	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246786	$0.246774 \pm 0.000054$ (+0.8 $\sigma$ )	$f\sigma_8(2.33)$	0.29543	$0.2954^{+0.0027}_{-0.0024}$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.93	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5544	$2.560 \pm 0.026$ (−0.9 $\sigma$ )	$\sigma_8(2.33)$	0.30489	$0.3048^{+0.0027}_{-0.0025}$ (+0.1 $\sigma$ )
$A_{217}^{dustTT}$	95.2	$93.5 \pm 7.3$ (+0.0 $\sigma$ )	Age/Gyr	13.7677	$13.770 \pm 0.022$ (−0.5 $\sigma$ )	$f_{2000}^{143}$	27.68	$28.5 \pm 2.7$ (−0.5 $\sigma$ )
$A_{100}^{dustTE}$	0.1140	$0.113 \pm 0.038$	$z_*$	1089.551	$1089.59 \pm 0.24$ (−0.6 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.14	$31.4 \pm 1.9$ (−0.6 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1346	$0.134 \pm 0.030$	$r_*$	144.750	$144.77 \pm 0.24$ (−0.8 $\sigma$ )	$f_{2000}^{217}$	105.65	$106.2 \pm 1.8$ (−0.5 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.479	$0.480 \pm 0.085$	$100\theta_*$	1.041256	$1.04128 \pm 0.00029$ (−0.0 $\sigma$ )	$\chi_{lensing}^2$	9.99	$10.5 \pm 2.2$ (+0.2 $\sigma$ )
$A_{143}^{dustTE}$	0.222	$0.222 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	13.9015	$13.904 \pm 0.023$ (−0.7 $\sigma$ )	$\chi_{simall}^2$	395.70	$396.8 \pm 1.5$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.662	$0.662 \pm 0.080$	$z_{drag}$	1060.200	$1060.14 \pm 0.30$ (+1.0 $\sigma$ )	$\chi_{lowl}^2$	22.25	$22.46 \pm 0.78$ (+0.0 $\sigma$ )
$A_{217}^{dustTE}$	2.069	$2.06 \pm 0.27$	$r_{drag}$	147.362	$147.40 \pm 0.24$ (−0.9 $\sigma$ )	$\chi_{plik}^2$	2341.7	$2356.5 \pm 5.8$ (+296.3 $\sigma$ )
$c_{100}$	0.99971	$0.99966 \pm 0.00062$ (+0.1 $\sigma$ )	$k_D$	0.140712	$0.14065 \pm 0.00028$ (+1.1 $\sigma$ )	$\chi_{6DF}^2$	0.0001	$0.029 \pm 0.041$ (−0.2 $\sigma$ )
$c_{217}$	0.99818	$0.99817 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_D$	0.160604	$0.16065 \pm 0.00017$ (−1.0 $\sigma$ )	$\chi_{MGS}^2$	1.68	$1.74 \pm 0.51$ (−0.2 $\sigma$ )
$H_0$	68.167	$68.15 \pm 0.49$ (+0.0 $\sigma$ )	$z_{eq}$	3364.7	$3364 \pm 24$ (+0.5 $\sigma$ )	$\chi_{DR12BAO}^2$	3.526	$3.98 \pm 0.82$ (−0.1 $\sigma$ )
$\Omega_\Lambda$	0.6956	$0.6954 \pm 0.0064$ (−0.1 $\sigma$ )	$k_{eq}$	0.010270	$0.010267 \pm 0.000073$ (+0.5 $\sigma$ )	$\chi_{prior}^2$	1.64	$11.6 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_m$	0.3044	$0.3046 \pm 0.0064$ (+0.1 $\sigma$ )	$100\theta_{eq}$	0.82067	$0.8207 \pm 0.0046$ (−0.4 $\sigma$ )	$\chi_{CMB}^2$	2769.6	$2786.3 \pm 5.8$ (+286.8 $\sigma$ )
$\Omega_m h^2$	0.14145	$0.1414 \pm 0.0010$ (+0.5 $\sigma$ )	$100\theta_{s,eq}$	0.45310	$0.4532 \pm 0.0023$ (−0.4 $\sigma$ )	$\chi_{BAO}^2$	5.204	$5.75 \pm 0.73$ (−0.2 $\sigma$ )
$\Omega_m h^3$	0.096420	$0.09637 \pm 0.00029$ (+0.9 $\sigma$ )	$H(0.15)$	73.377	$73.36 \pm 0.42$ (+0.1 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 2776.44$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.30$ ;  $\bar{\chi}_{\text{eff}}^2 = 2803.67$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.32$ ;  $R - 1 = 0.02408$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 ( $\Delta$  -0.00) MGS: 1.68 ( $\Delta$  -0.14) DR12BAO: 3.53 ( $\Delta$  0.13) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 9.99 ( $\Delta$  0.57) simall\_100x143\_offlike5\_EE\_Aplanck  
395.70 ( $\Delta$  0.02) commander\_dx12\_v3\_2.29: 22.25 ( $\Delta$  0.05) plik\_rd12\_HM\_v22b\_TTTEE: 2341.65



### 3.55 base\_Alens\_plikHM\_TTTEE\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02252 \pm 0.00017 \quad (+0.5\sigma)$	$\Omega_{\text{m}}h^3$	$0.09637 \pm 0.00029 \quad (+0.8\sigma)$	$100\theta_{\text{s,eq}}$	$0.4533 \pm 0.0033 \quad (-0.5\sigma)$
$\Omega_{\text{c}}h^2$	$0.1182 \pm 0.0015 \quad (+0.4\sigma)$	$\sigma_8$	$0.8024 \pm 0.0074 \quad (+0.4\sigma)$	$H(0.15)$	$73.39 \pm 0.60 \quad (-0.3\sigma)$
$100\theta_{\text{MC}}$	$1.04111 \pm 0.00032 \quad (-0.2\sigma)$	$S_8$	$0.808 \pm 0.018 \quad (+0.4\sigma)$	$D_{\text{M}}(0.15)$	$636.4 \pm 5.9 \quad (+0.3\sigma)$
$\tau$	$0.0526^{+0.0035}_{-0.0076} \quad (-0.0\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4426 \pm 0.0099 \quad (+0.4\sigma)$	$H(0.38)$	$83.38 \pm 0.44 \quad (-0.2\sigma)$
$A_{\text{L}}$	$1.065 \pm 0.039 \quad (-0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.5959 \pm 0.0092 \quad (+0.4\sigma)$	$D_{\text{M}}(0.38)$	$1520 \pm 12 \quad (+0.2\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.035^{+0.010}_{-0.015} \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.972 \pm 0.013 \quad (+0.3\sigma)$	$H(0.51)$	$90.02 \pm 0.35 \quad (-0.1\sigma)$
$n_{\text{s}}$	$0.9698 \pm 0.0048 \quad (-0.2\sigma)$	$r_{\text{drag}}h$	$100.5 \pm 1.2 \quad (-0.4\sigma)$	$D_{\text{M}}(0.51)$	$1970 \pm 14 \quad (+0.2\sigma)$
$y_{\text{cal}}$	$1.0001 \pm 0.0025 \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.482 \pm 0.029 \quad (+0.1\sigma)$	$H(0.61)$	$95.59 \pm 0.28 \quad (-0.1\sigma)$
$A_{217}^{\text{CIB}}$	$46 \pm 7 \quad (-0.1\sigma)$	$z_{\text{re}}$	$7.43^{+0.32}_{-0.84} \quad (-0.1\sigma)$	$D_{\text{M}}(0.61)$	$2293 \pm 15 \quad (+0.2\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_{\text{s}}$	$2.081^{+0.021}_{-0.031} \quad (+0.2\sigma)$	$H(2.33)$	$235.53 \pm 0.88 \quad (+0.6\sigma)$
$A_{143}^{\text{tSZ}}$	$5.6^{+2.1}_{-1.8} \quad (+0.2\sigma)$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.873 \pm 0.012 \quad (+0.4\sigma)$	$D_{\text{M}}(2.33)$	$5750 \pm 13 \quad (-0.1\sigma)$
$A_{100}^{\text{PS}}$	$255 \pm 28 \quad (-0.2\sigma)$	$D_{40}$	$1219 \pm 14 \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4477 \pm 0.0093 \quad (+0.4\sigma)$
$A_{143}^{\text{PS}}$	$44 \pm 8 \quad (-0.3\sigma)$	$D_{220}$	$5734 \pm 39 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.7422 \pm 0.0062 \quad (+0.4\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$41 \pm 9 \quad (-0.1\sigma)$	$D_{810}$	$2533 \pm 14 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4674 \pm 0.0076 \quad (+0.4\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.1\sigma)$	$D_{1420}$	$816.5 \pm 4.8 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6587^{+0.0045}_{-0.0053} \quad (+0.3\sigma)$
$A^{\text{kSZ}}$	$< 3.93 \quad (-0.2\sigma)$	$D_{2000}$	$231.4 \pm 1.6 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4669 \pm 0.0066 \quad (+0.4\sigma)$
$A_{100}^{\text{dustTT}}$	$9.0 \pm 1.8 \quad (-0.0\sigma)$	$n_{\text{s},0.002}$	$0.9698 \pm 0.0048 \quad (-0.2\sigma)$	$\sigma_8(0.51)$	$0.6168^{+0.0040}_{-0.0048} \quad (+0.3\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.245450 \pm 0.000064 \quad (+0.5\sigma)$	$f\sigma_8(0.61)$	$0.4626 \pm 0.0059 \quad (+0.4\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246777 \pm 0.000065 \quad (+0.5\sigma)$	$\sigma_8(0.61)$	$0.5871^{+0.0036}_{-0.0045} \quad (+0.3\sigma)$
$A_{217}^{\text{dustTT}}$	$93.6 \pm 7.3 \quad (+0.0\sigma)$	$10^5 \text{D/H}$	$2.559 \pm 0.030 \quad (-0.5\sigma)$	$f\sigma_8(2.33)$	$0.2963^{+0.0016}_{-0.0022} \quad (+0.2\sigma)$
$A_{100}^{\text{dustTE}}$	$0.113 \pm 0.039$	Age/Gyr	$13.769 \pm 0.028 \quad (-0.1\sigma)$	$\sigma_8(2.33)$	$0.3058^{+0.0016}_{-0.0023} \quad (+0.1\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134 \pm 0.029$	$z_*$	$1089.58 \pm 0.31 \quad (-0.1\sigma)$	$f_{2000}^{143}$	$28.4 \pm 2.8 \quad (-0.4\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.480 \pm 0.085$	$r_*$	$144.79 \pm 0.32 \quad (-0.7\sigma)$	$f_{2000}^{143 \times 217}$	$31.3 \pm 1.9 \quad (-0.5\sigma)$
$A_{143}^{\text{dustTE}}$	$0.222 \pm 0.053$	$100\theta_*$	$1.04128 \pm 0.00031 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$106.1 \pm 1.8 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.662 \pm 0.080$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.905 \pm 0.030 \quad (-0.7\sigma)$	$\chi_{\text{lensing}}^2$	$10.5 \pm 2.2 \quad (+0.2\sigma)$
$A_{217}^{\text{dustTE}}$	$2.06 \pm 0.27$	$z_{\text{drag}}$	$1060.15 \pm 0.33 \quad (+0.7\sigma)$	$\chi_{\text{small}}^2$	$396.4 \pm 1.1 \quad (-0.0\sigma)$
$c_{100}$	$0.99965 \pm 0.00061 \quad (+0.1\sigma)$	$r_{\text{drag}}$	$147.41 \pm 0.31 \quad (-0.9\sigma)$	$\chi_{\text{lowl}}^2$	$22.51 \pm 0.92 \quad (+0.2\sigma)$
$c_{217}$	$0.99817 \pm 0.00062 \quad (-0.1\sigma)$	$k_{\text{D}}$	$0.14064 \pm 0.00031 \quad (+1.1\sigma)$	$\chi_{\text{plik}}^2$	$2357.1 \pm 6.0 \quad (+284.0\sigma)$
$H_0$	$68.18 \pm 0.70 \quad (-0.3\sigma)$	$100\theta_{\text{D}}$	$0.16064 \pm 0.00019 \quad (-0.8\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.5 \quad (+1.1\sigma)$
$\Omega_{\Lambda}$	$0.6958 \pm 0.0091 \quad (-0.4\sigma)$	$z_{\text{eq}}$	$3362 \pm 33 \quad (+0.5\sigma)$	$\chi_{\text{CMB}}^2$	$2786.4 \pm 5.9 \quad (+283.2\sigma)$
$\Omega_{\text{m}}$	$0.3042 \pm 0.0091 \quad (+0.4\sigma)$	$k_{\text{eq}}$	$0.01026 \pm 0.00010 \quad (+0.5\sigma)$		
$\Omega_{\text{m}}h^2$	$0.1414 \pm 0.0014 \quad (+0.5\sigma)$	$100\theta_{\text{eq}}$	$0.8211 \pm 0.0065 \quad (-0.5\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2797.97; \Delta\bar{\chi}_{\text{eff}}^2 = 1591.49; R - 1 = 0.02423$$



### 3.56 base\_Alens\_plikHM\_TTTEE\_lowl\_lowE\_lensing\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02251 \pm 0.00014 \quad (+0.9\sigma)$	$\sigma_8$	$0.8027^{+0.0060}_{-0.0068} \quad (+0.2\sigma)$	$D_M(0.15)$	$636.6 \pm 4.1 \quad (-0.0\sigma)$
$\Omega_c h^2$	$0.1182 \pm 0.0011 \quad (+0.3\sigma)$	$S_8$	$0.809 \pm 0.013 \quad (+0.2\sigma)$	$H(0.38)$	$83.36 \pm 0.31 \quad (+0.2\sigma)$
$100\theta_{MC}$	$1.04110 \pm 0.00029 \quad (+0.0\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4429 \pm 0.0073 \quad (+0.2\sigma)$	$D_M(0.38)$	$1519.9 \pm 8.3 \quad (-0.1\sigma)$
$\tau$	$0.0526^{+0.0036}_{-0.0075} \quad (+0.0\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.5962 \pm 0.0071 \quad (+0.2\sigma)$	$H(0.51)$	$90.01 \pm 0.25 \quad (+0.3\sigma)$
$A_L$	$1.064 \pm 0.033 \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.972 \pm 0.010 \quad (+0.1\sigma)$	$D_M(0.51)$	$1970.0 \pm 9.8 \quad (-0.1\sigma)$
$\ln(10^{10} A_s)$	$3.036^{+0.010}_{-0.015} \quad (+0.1\sigma)$	$r_{drag} h$	$100.47 \pm 0.84 \quad (-0.2\sigma)$	$H(0.61)$	$95.58 \pm 0.21 \quad (+0.4\sigma)$
$n_s$	$0.9696 \pm 0.0040 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.482 \pm 0.029 \quad (+0.2\sigma)$	$D_M(0.61)$	$2293 \pm 11 \quad (-0.1\sigma)$
$y_{cal}$	$1.0001 \pm 0.0025 \quad (+0.0\sigma)$	$z_{re}$	$7.44^{+0.32}_{-0.84} \quad (-0.1\sigma)$	$H(2.33)$	$235.56 \pm 0.64 \quad (+0.6\sigma)$
$A_{217}^{CIB}$	$46 \pm 7 \quad (-0.2\sigma)$	$10^9 A_s$	$2.082^{+0.021}_{-0.031} \quad (+0.1\sigma)$	$D_M(2.33)$	$5750.9 \pm 9.8 \quad (-0.5\sigma)$
$\xi^{tSZ \times CIB}$	$> 0.386 \quad (+0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.874 \pm 0.011 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4480 \pm 0.0069 \quad (+0.2\sigma)$
$A_{143}^{tSZ}$	$5.6^{+2.1}_{-1.8} \quad (+0.2\sigma)$	$D_{40}$	$1219 \pm 12 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7424^{+0.0051}_{-0.0060} \quad (+0.2\sigma)$
$A_{100}^{PS}$	$255 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5735 \pm 38 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4677 \pm 0.0058 \quad (+0.2\sigma)$
$A_{143}^{PS}$	$44 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2533 \pm 14 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6589^{+0.0041}_{-0.0051} \quad (+0.2\sigma)$
$A_{143 \times 217}^{PS}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$816.5 \pm 4.8 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4671 \pm 0.0051 \quad (+0.2\sigma)$
$A_{217}^{PS}$	$115 \pm 10 \quad (+0.1\sigma)$	$D_{2000}$	$231.4 \pm 1.6 \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.6169^{+0.0036}_{-0.0047} \quad (+0.2\sigma)$
$A^{kSZ}$	$< 3.98 \quad (-0.2\sigma)$	$n_{s,0.002}$	$0.9696 \pm 0.0040 \quad (+0.1\sigma)$	$f\sigma_8(0.61)$	$0.4628 \pm 0.0047 \quad (+0.2\sigma)$
$A_{100}^{dustTT}$	$9.0 \pm 1.9 \quad (-0.0\sigma)$	$Y_P$	$0.245448 \pm 0.000054 \quad (+0.9\sigma)$	$\sigma_8(0.61)$	$0.5872^{+0.0034}_{-0.0045} \quad (+0.2\sigma)$
$A_{143}^{dustTT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_P^{BBN}$	$0.246775 \pm 0.000054 \quad (+0.9\sigma)$	$f\sigma_8(2.33)$	$0.2964^{+0.0016}_{-0.0022} \quad (+0.1\sigma)$
$A_{143 \times 217}^{dustTT}$	$18.5 \pm 3.3 \quad (+0.1\sigma)$	$10^5 D/H$	$2.560 \pm 0.026 \quad (-0.9\sigma)$	$\sigma_8(2.33)$	$0.3059^{+0.0016}_{-0.0023} \quad (+0.1\sigma)$
$A_{217}^{dustTT}$	$93.6 \pm 7.4 \quad (+0.0\sigma)$	Age/Gyr	$13.770 \pm 0.022 \quad (-0.5\sigma)$	$f_{2000}^{143}$	$28.4 \pm 2.7 \quad (-0.5\sigma)$
$A_{100}^{dustTE}$	$0.113 \pm 0.038$	$z_*$	$1089.59 \pm 0.24 \quad (-0.6\sigma)$	$f_{2000}^{143 \times 217}$	$31.3 \pm 1.8 \quad (-0.6\sigma)$
$A_{100 \times 143}^{dustTE}$	$0.134 \pm 0.030$	$r_*$	$144.78 \pm 0.24 \quad (-0.8\sigma)$	$f_{2000}^{217}$	$106.2 \pm 1.8 \quad (-0.5\sigma)$
$A_{100 \times 217}^{dustTE}$	$0.480 \pm 0.085$	$100\theta_*$	$1.04128 \pm 0.00029 \quad (-0.0\sigma)$	$\chi_{lensing}^2$	$10.5 \pm 2.2 \quad (+0.2\sigma)$
$A_{143}^{dustTE}$	$0.223 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	$13.904 \pm 0.023 \quad (-0.8\sigma)$	$\chi_{small}^2$	$396.4 \pm 1.1 \quad (-0.0\sigma)$
$A_{143 \times 217}^{dustTE}$	$0.662 \pm 0.080$	$z_{drag}$	$1060.14 \pm 0.30 \quad (+1.0\sigma)$	$\chi_{lowl}^2$	$22.52 \pm 0.78 \quad (+0.0\sigma)$
$A_{217}^{dustTE}$	$2.06 \pm 0.27$	$r_{drag}$	$147.40 \pm 0.24 \quad (-0.9\sigma)$	$\chi_{plik}^2$	$2356.5 \pm 5.8 \quad (+293.9\sigma)$
$c_{100}$	$0.99965 \pm 0.00061 \quad (+0.1\sigma)$	$k_D$	$0.14065 \pm 0.00028 \quad (+1.1\sigma)$	$\chi_{6DF}^2$	$0.030 \pm 0.042 \quad (-0.2\sigma)$
$c_{217}$	$0.99817 \pm 0.00063 \quad (-0.1\sigma)$	$100\theta_D$	$0.16065 \pm 0.00017 \quad (-1.0\sigma)$	$\chi_{MGS}^2$	$1.75 \pm 0.52 \quad (-0.2\sigma)$
$H_0$	$68.16 \pm 0.49 \quad (+0.0\sigma)$	$z_{eq}$	$3363 \pm 24 \quad (+0.5\sigma)$	$\chi_{DR12BAO}^2$	$3.98 \pm 0.81 \quad (-0.1\sigma)$
$\Omega_\Lambda$	$0.6956 \pm 0.0064 \quad (-0.1\sigma)$	$k_{eq}$	$0.010265 \pm 0.000073 \quad (+0.5\sigma)$	$\chi_{prior}^2$	$11.6 \pm 4.5 \quad (+1.1\sigma)$
$\Omega_m$	$0.3044 \pm 0.0064 \quad (+0.1\sigma)$	$100\theta_{eq}$	$0.8209 \pm 0.0046 \quad (-0.4\sigma)$	$\chi_{CMB}^2$	$2785.9 \pm 5.7 \quad (+289.3\sigma)$
$\Omega_m h^2$	$0.1414 \pm 0.0010 \quad (+0.5\sigma)$	$100\theta_{s,eq}$	$0.4532 \pm 0.0023 \quad (-0.4\sigma)$	$\chi_{BAO}^2$	$5.75 \pm 0.74 \quad (-0.2\sigma)$
$\Omega_m h^3$	$0.09637 \pm 0.00029 \quad (+0.9\sigma)$	$H(0.15)$	$73.37 \pm 0.42 \quad (+0.1\sigma)$		

$$\bar{\chi}_{eff}^2 = 2803.19; \Delta \bar{\chi}_{eff}^2 = 1591.19; R - 1 = 0.03248$$



### 3.57 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022439	$0.02243 \pm 0.00018$	$S_8$	0.8055	$0.805 \pm 0.019$	$H(0.15)$	73.34	$73.30 \pm 0.62$
$\Omega_c h^2$	0.11807	$0.1182 \pm 0.0016$	$\sigma_8 \Omega_m^{0.5}$	0.4412	$0.441 \pm 0.010$	$D_M(0.15)$	636.8	$637.2 \pm 6.1$
$100\theta_{MC}$	1.041051	$1.04104 \pm 0.00032$	$\sigma_8 \Omega_m^{0.25}$	0.5941	$0.5937 \pm 0.0099$	$H(0.38)$	83.319	$83.29 \pm 0.46$
$\tau$	0.0504	$0.0490^{+0.0082}_{-0.0072}$	$\sigma_8/h^{0.5}$	0.9693	$0.969 \pm 0.014$	$D_M(0.38)$	1520.5	$1521 \pm 12$
$A_L$	1.0624	$1.064 \pm 0.042$	$r_{\text{drag}} h$	100.52	$100.5 \pm 1.2$	$H(0.51)$	89.961	$89.94 \pm 0.36$
$\ln(10^{10} A_s)$	3.0296	$3.027^{+0.017}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	2.4717	$2.471 \pm 0.031$	$D_M(0.51)$	1970.8	$1972 \pm 14$
$n_s$	0.9700	$0.9695 \pm 0.0051$	$z_{\text{re}}$	7.24	$7.07^{+0.90}_{-0.70}$	$H(0.61)$	95.521	$95.51 \pm 0.29$
$y_{\text{cal}}$	1.00004	$1.0000 \pm 0.0024$	$10^9 A_s$	2.0690	$2.063^{+0.035}_{-0.031}$	$D_M(0.61)$	2294.3	$2295 \pm 16$
$A_{100}^{\text{PS}}$	240.0	$237 \pm 25$	$10^9 A_s e^{-2\tau}$	1.8704	$1.871 \pm 0.012$	$H(2.33)$	235.37	$235.42 \pm 0.92$
$A_{143}^{\text{PS}}$	36.7	$38 \pm 8$	$D_{40}$	1215.4	$1216 \pm 14$	$D_M(2.33)$	5754.4	$5755 \pm 13$
$A_{217}^{\text{PS}}$	105.3	$103 \pm 10$	$D_{220}$	5720.6	$5721 \pm 39$	$f\sigma_8(0.15)$	0.4463	$0.4462 \pm 0.0099$
$A_{217}^{\text{CIB}}$	37.5	$39^{+7}_{-7}$	$D_{810}$	2530.1	$2530 \pm 14$	$\sigma_8(0.15)$	0.7401	$0.7391 \pm 0.0074$
$A_{143}^{\text{tSZ}}$	3.47	$3.9^{+1.9}_{-2.5}$	$D_{1420}$	815.25	$815.0 \pm 4.8$	$f\sigma_8(0.38)$	0.4661	$0.4657 \pm 0.0082$
$r_{143 \times 217}^{\text{PS}}$	0.676	$0.66 \pm 0.13$	$D_{2000}$	230.79	$230.6 \pm 1.6$	$\sigma_8(0.38)$	0.6569	$0.6559^{+0.0062}_{-0.0056}$
$r_{143 \times 217}^{\text{CIB}}$	0.410	$0.54^{+0.36}_{-0.22}$	$n_{s,0.002}$	0.9700	$0.9695 \pm 0.0051$	$f\sigma_8(0.51)$	0.4656	$0.4652 \pm 0.0072$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.36	—	$Y_P$	0.245422	$0.245415 \pm 0.000070$	$\sigma_8(0.51)$	0.6150	$0.6141^{+0.0057}_{-0.0050}$
$A^{\text{kSZ}}$	4.66	$4.6^{+1.8}_{-4.2}$	$Y_P^{\text{BBN}}$	0.246749	$0.246742 \pm 0.000070$	$f\sigma_8(0.61)$	0.4612	$0.4608 \pm 0.0065$
$A_{100}^{\text{dust}}$	1.019	$1.02 \pm 0.19$	$10^5 D/H$	2.5727	$2.576 \pm 0.033$	$\sigma_8(0.61)$	0.5854	$0.5846^{+0.0053}_{-0.0047}$
$A_{143}^{\text{dust}}$	0.957	$0.96 \pm 0.18$	Age/Gyr	13.7783	$13.780 \pm 0.029$	$f\sigma_8(2.33)$	0.29548	$0.2950^{+0.0026}_{-0.0023}$
$A_{217}^{\text{dust}}$	0.971	$0.98 \pm 0.10$	$z_*$	1089.664	$1089.69 \pm 0.33$	$\sigma_8(2.33)$	0.30496	$0.3045^{+0.0026}_{-0.0023}$
$A_{143 \times 217}^{\text{dust}}$	1.052	$1.02 \pm 0.16$	$r_*$	144.879	$144.87 \pm 0.34$	$f_{2000}^{143}$	28.53	$28.7 \pm 2.9$
$c_{100}$	0.99749	$0.9975 \pm 0.0010$	$100\theta_*$	1.041230	$1.04122 \pm 0.00032$	$f_{2000}^{217}$	105.95	$106.1 \pm 2.0$
$c_{217}$	1.00069	$1.0010 \pm 0.0016$	$D_M(z_*)/\text{Gpc}$	13.9142	$13.913 \pm 0.031$	$f_{2000}^{143 \times 217}$	31.29	$31.3 \pm 2.1$
$c_{TE}$	0.9949	$0.9951 \pm 0.0050$	$z_{\text{drag}}$	1059.971	$1059.94 \pm 0.35$	$\chi_{\text{lensing}}^2$	9.02	$9.8 \pm 1.7$
$c_{EE}$	0.99147	$0.9917 \pm 0.0049$	$r_{\text{drag}}$	147.526	$147.52 \pm 0.33$	$\chi_{\text{small}}^2$	395.66	$396.8 \pm 1.5$
$H_0$	68.14	$68.10 \pm 0.72$	$k_D$	0.140460	$0.14046 \pm 0.00035$	$\chi_{\text{lowl}}^2$	22.23	$22.37 \pm 0.94$
$\Omega_\Lambda$	0.6960	$0.6953 \pm 0.0095$	$100\theta_D$	0.160745	$0.16076 \pm 0.00020$	$\chi_{\text{CamSpec}}^2$	11498.6	$11513.3 \pm 5.7$
$\Omega_m$	0.3040	$0.3047 \pm 0.0095$	$z_{\text{eq}}$	3357.7	$3360 \pm 35$	$\chi_{\text{prior}}^2$	2.14	$7.7 \pm 3.3$
$\Omega_m h^2$	0.14115	$0.1412 \pm 0.0015$	$k_{\text{eq}}$	0.010248	$0.01025 \pm 0.00011$	$\chi_{\text{CMB}}^2$	11925.5	$11942.2 \pm 5.8$
$\Omega_m h^3$	0.096178	$0.09616 \pm 0.00032$	$100\theta_{\text{eq}}$	0.8216	$0.8213 \pm 0.0068$			
$\sigma_8$	0.8001	$0.7991 \pm 0.0086$	$100\theta_{s,\text{eq}}$	0.45368	$0.4535 \pm 0.0035$			

Best-fit  $\chi_{\text{eff}}^2 = 11927.65$ ;  $\bar{\chi}_{\text{eff}}^2 = 11949.88$ ;  $R - 1 = 0.01480$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 9.02 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.66 commander\_dx12\_v3.2\_29: 22.23 CamSpec like\_10.7HM\_1400\_unified: 11498.60



### 3.58 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02242 \pm 0.00016$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4411 \pm 0.0078$	$H(0.38)$	$83.29 \pm 0.32$
$\Omega_{\mathrm{c}}h^2$	$0.1182 \pm 0.0011$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5937 \pm 0.0078$	$D_{\mathrm{M}}(0.38)$	$1521.4 \pm 8.5$
$100\theta_{\mathrm{MC}}$	$1.04104 \pm 0.00029$	$\sigma_8/h^{0.5}$	$0.969 \pm 0.012$	$H(0.51)$	$89.94^{+0.24}_{-0.27}$
$\tau$	$0.0489^{+0.0081}_{-0.0072}$	$r_{\mathrm{drag}}h$	$100.44 \pm 0.85$	$D_{\mathrm{M}}(0.51)$	$1972 \pm 10$
$A_{\mathrm{L}}$	$1.064 \pm 0.037$	$\langle d^2 \rangle^{1/2}$	$2.471 \pm 0.031$	$H(0.61)$	$95.50^{+0.20}_{-0.23}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.027^{+0.017}_{-0.015}$	$z_{\mathrm{re}}$	$7.06^{+0.88}_{-0.71}$	$D_{\mathrm{M}}(0.61)$	$2295 \pm 11$
$n_{\mathrm{s}}$	$0.9695 \pm 0.0042$	$10^9 A_{\mathrm{s}}$	$2.063 \pm 0.035$	$H(2.33)$	$235.42 \pm 0.66$
$y_{\mathrm{cal}}$	$1.0000 \pm 0.0024$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.871 \pm 0.011$	$D_{\mathrm{M}}(2.33)$	$5755^{+11}_{-9.6}$
$A_{100}^{\mathrm{PS}}$	$237 \pm 24$	$D_{40}$	$1216 \pm 13$	$f\sigma_8(0.15)$	$0.4462 \pm 0.0074$
$A_{143}^{\mathrm{PS}}$	$38 \pm 8$	$D_{220}$	$5720 \pm 39$	$\sigma_8(0.15)$	$0.7391 \pm 0.0069$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10$	$D_{810}$	$2530 \pm 14$	$f\sigma_8(0.38)$	$0.4658 \pm 0.0064$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7$	$D_{1420}$	$814.9 \pm 4.8$	$\sigma_8(0.38)$	$0.6559 \pm 0.0059$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+2.0}_{-2.5}$	$D_{2000}$	$230.6 \pm 1.6$	$f\sigma_8(0.51)$	$0.4652 \pm 0.0058$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9695 \pm 0.0042$	$\sigma_8(0.51)$	$0.6141 \pm 0.0054$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.54^{+0.38}_{-0.20}$	$Y_{\mathrm{P}}$	$0.245414 \pm 0.000060$	$f\sigma_8(0.61)$	$0.4608 \pm 0.0054$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246741 \pm 0.000060$	$\sigma_8(0.61)$	$0.5846 \pm 0.0051$
$A^{\mathrm{kSZ}}$	$4.6^{+2.0}_{-4.1}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.576 \pm 0.028$	$f\sigma_8(2.33)$	$0.2950 \pm 0.0025$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.781 \pm 0.023$	$\sigma_8(2.33)$	$0.3045 \pm 0.0026$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.17$	$z_*$	$1089.69 \pm 0.25$	$f_{2000}^{143}$	$28.8 \pm 2.8$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$r_*$	$144.87 \pm 0.25$	$f_{2000}^{217}$	$106.1 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$100\theta_*$	$1.04122 \pm 0.00029$	$f_{2000}^{143 \times 217}$	$31.3 \pm 2.0$
$c_{100}$	$0.9975 \pm 0.0010$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.913 \pm 0.024$	$\chi_{\mathrm{lensing}}^2$	$9.8 \pm 1.7$
$c_{217}$	$1.0010 \pm 0.0015$	$z_{\mathrm{drag}}$	$1059.93 \pm 0.33$	$\chi_{\mathrm{small}}^2$	$396.8 \pm 1.5$
$c_{TE}$	$0.9952 \pm 0.0050$	$r_{\mathrm{drag}}$	$147.52 \pm 0.26$	$\chi_{\mathrm{lowl}}^2$	$22.35 \pm 0.81$
$c_{EE}$	$0.9917 \pm 0.0049$	$k_{\mathrm{D}}$	$0.14046 \pm 0.00031$	$\chi_{\mathrm{CamSpec}}^2$	$11512.7 \pm 5.5$
$H_0$	$68.09 \pm 0.50$	$100\theta_{\mathrm{D}}$	$0.16076 \pm 0.00019$	$\chi_{6\mathrm{DF}}^2$	$0.031 \pm 0.043$
$\Omega_{\Lambda}$	$0.6953 \pm 0.0065$	$z_{\mathrm{eq}}$	$3360 \pm 25$	$\chi_{\mathrm{MGS}}^2$	$1.74 \pm 0.52$
$\Omega_{\mathrm{m}}$	$0.3047 \pm 0.0065$	$k_{\mathrm{eq}}$	$0.010254 \pm 0.000075$	$\chi_{\mathrm{DR12BAO}}^2$	$3.99 \pm 0.85$
$\Omega_{\mathrm{m}}h^2$	$0.1412 \pm 0.0010$	$100\theta_{\mathrm{eq}}$	$0.8213 \pm 0.0047$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.3$
$\Omega_{\mathrm{m}}h^3$	$0.09616 \pm 0.00031$	$100\theta_{\mathrm{s,eq}}$	$0.4535 \pm 0.0024$	$\chi_{\mathrm{CMB}}^2$	$11941.7 \pm 5.8$
$\sigma_8$	$0.7992 \pm 0.0078$	$H(0.15)$	$73.30 \pm 0.43$	$\chi_{\mathrm{BAO}}^2$	$5.76 \pm 0.76$
$S_8$	$0.805 \pm 0.014$	$D_{\mathrm{M}}(0.15)$	$637.2 \pm 4.2$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11955.09; R - 1 = 0.01872$$



### 3.59 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02243 \pm 0.00018$	$S_8$	$0.808 \pm 0.019$	$H(0.15)$	$73.31 \pm 0.62$
$\Omega_{\mathrm{c}}h^2$	$0.1181 \pm 0.0016$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.442 \pm 0.010$	$D_{\mathrm{M}}(0.15)$	$637.1 \pm 6.1$
$100\theta_{\mathrm{MC}}$	$1.04104 \pm 0.00033$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5955 \pm 0.0094$	$H(0.38)$	$83.30 \pm 0.46$
$\tau$	$0.0522^{+0.0035}_{-0.0073}$	$\sigma_8/h^{0.5}$	$0.971 \pm 0.013$	$D_{\mathrm{M}}(0.38)$	$1521 \pm 12$
$A_{\mathrm{L}}$	$1.058 \pm 0.040$	$r_{\mathrm{drag}}h$	$100.5 \pm 1.3$	$H(0.51)$	$89.95 \pm 0.37$
$\ln(10^{10}A_{\mathrm{s}})$	$3.033^{+0.010}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	$2.471 \pm 0.031$	$D_{\mathrm{M}}(0.51)$	$1972 \pm 14$
$n_{\mathrm{s}}$	$0.9697 \pm 0.0051$	$z_{\mathrm{re}}$	$7.41^{+0.32}_{-0.81}$	$H(0.61)$	$95.51 \pm 0.30$
$y_{\mathrm{cal}}$	$0.99998 \pm 0.0024$	$10^9 A_{\mathrm{s}}$	$2.076^{+0.021}_{-0.029}$	$D_{\mathrm{M}}(0.61)$	$2295 \pm 16$
$A_{100}^{\mathrm{PS}}$	$237 \pm 25$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.870 \pm 0.012$	$H(2.33)$	$235.40 \pm 0.92$
$A_{143}^{\mathrm{PS}}$	$38 \pm 8$	$D_{40}$	$1217 \pm 14$	$D_{\mathrm{M}}(2.33)$	$5755 \pm 13$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10$	$D_{220}$	$5720 \pm 39$	$f\sigma_8(0.15)$	$0.4474 \pm 0.0096$
$A_{217}^{\mathrm{CIB}}$	$39^{+7}_{-7}$	$D_{810}$	$2530 \pm 14$	$\sigma_8(0.15)$	$0.7414 \pm 0.0062$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5}$	$D_{1420}$	$814.9 \pm 4.8$	$f\sigma_8(0.38)$	$0.4671 \pm 0.0078$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$D_{2000}$	$230.7 \pm 1.6$	$\sigma_8(0.38)$	$0.6579^{+0.0044}_{-0.0052}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.54^{+0.36}_{-0.22}$	$n_{\mathrm{s},0.002}$	$0.9697 \pm 0.0051$	$f\sigma_8(0.51)$	$0.4665 \pm 0.0068$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.245415 \pm 0.000070$	$\sigma_8(0.51)$	$0.6160^{+0.0038}_{-0.0047}$
$A^{\mathrm{kSZ}}$	$4.6^{+1.7}_{-4.2}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246742 \pm 0.000071$	$f\sigma_8(0.61)$	$0.4622 \pm 0.0060$
$A_{100}^{\mathrm{dust}}$	$1.02 \pm 0.19$	$10^5 \mathrm{D}/\mathrm{H}$	$2.576 \pm 0.033$	$\sigma_8(0.61)$	$0.5864^{+0.0035}_{-0.0044}$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.17$	$\mathrm{Age}/\mathrm{Gyr}$	$13.780 \pm 0.029$	$f\sigma_8(2.33)$	$0.2959^{+0.0016}_{-0.0021}$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$z_*$	$1089.69 \pm 0.33$	$\sigma_8(2.33)$	$0.3054^{+0.0016}_{-0.0022}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$r_*$	$144.87 \pm 0.34$	$f_{2000}^{143}$	$28.7 \pm 2.9$
$c_{100}$	$0.9975 \pm 0.0010$	$100\theta_*$	$1.04122 \pm 0.00032$	$f_{2000}^{217}$	$106.1 \pm 2.0$
$c_{217}$	$1.0010 \pm 0.0016$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.914 \pm 0.031$	$f_{2000}^{143 \times 217}$	$31.3 \pm 2.1$
$c_{TE}$	$0.9951 \pm 0.0050$	$z_{\mathrm{drag}}$	$1059.93 \pm 0.36$	$\chi_{\mathrm{lensing}}^2$	$9.8 \pm 1.7$
$c_{EE}$	$0.9917 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.52 \pm 0.33$	$\chi_{\mathrm{simall}}^2$	$396.31 \pm 0.98$
$H_0$	$68.11 \pm 0.73$	$k_{\mathrm{D}}$	$0.14045 \pm 0.00035$	$\chi_{\mathrm{lowl}}^2$	$22.43 \pm 0.95$
$\Omega_{\Lambda}$	$0.6954 \pm 0.0095$	$100\theta_{\mathrm{D}}$	$0.16076 \pm 0.00020$	$\chi_{\mathrm{CamSpec}}^2$	$11513.3 \pm 5.7$
$\Omega_{\mathrm{m}}$	$0.3046 \pm 0.0095$	$z_{\mathrm{eq}}$	$3359 \pm 35$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.3$
$\Omega_{\mathrm{m}}h^2$	$0.1412 \pm 0.0015$	$k_{\mathrm{eq}}$	$0.01025 \pm 0.00011$	$\chi_{\mathrm{CMB}}^2$	$11941.9 \pm 5.8$
$\Omega_{\mathrm{m}}h^3$	$0.09616 \pm 0.00032$	$100\theta_{\mathrm{eq}}$	$0.8214 \pm 0.0068$		
$\sigma_8$	$0.8016 \pm 0.0074$	$100\theta_{\mathrm{s,eq}}$	$0.4536 \pm 0.0035$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11949.57; R - 1 = 0.01602$$



### 3.60 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02242 \pm 0.00016$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4425 \pm 0.0074$	$H(0.38)$	$83.29 \pm 0.32$
$\Omega_{\mathrm{c}}h^2$	$0.1182 \pm 0.0011$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5956 \pm 0.0071$	$D_{\mathrm{M}}(0.38)$	$1521.3 \pm 8.5$
$100\theta_{\mathrm{MC}}$	$1.04104 \pm 0.00030$	$\sigma_8/h^{0.5}$	$0.9715^{+0.0095}_{-0.011}$	$H(0.51)$	$89.94 \pm 0.26$
$\tau$	$0.0521^{+0.0035}_{-0.0071}$	$r_{\mathrm{drag}}h$	$100.45 \pm 0.85$	$D_{\mathrm{M}}(0.51)$	$1972 \pm 10$
$A_{\mathrm{L}}$	$1.057 \pm 0.035$	$\langle d^2 \rangle^{1/2}$	$2.471 \pm 0.031$	$H(0.61)$	$95.50^{+0.20}_{-0.23}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.0329^{+0.0098}_{-0.014}$	$z_{\mathrm{re}}$	$7.40^{+0.31}_{-0.81}$	$D_{\mathrm{M}}(0.61)$	$2295 \pm 11$
$n_{\mathrm{s}}$	$0.9696 \pm 0.0042$	$10^9 A_{\mathrm{s}}$	$2.076^{+0.020}_{-0.030}$	$H(2.33)$	$235.41 \pm 0.66$
$y_{\mathrm{cal}}$	$1.0000 \pm 0.0024$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.871 \pm 0.011$	$D_{\mathrm{M}}(2.33)$	$5755 \pm 10$
$A_{100}^{\mathrm{PS}}$	$237 \pm 25$	$D_{40}$	$1217 \pm 13$	$f\sigma_8(0.15)$	$0.4476 \pm 0.0069$
$A_{143}^{\mathrm{PS}}$	$38 \pm 8$	$D_{220}$	$5720 \pm 39$	$\sigma_8(0.15)$	$0.7415^{+0.0048}_{-0.0061}$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10$	$D_{810}$	$2530 \pm 14$	$f\sigma_8(0.38)$	$0.4672 \pm 0.0058$
$A_{217}^{\mathrm{CIB}}$	$39^{+7}_{-7}$	$D_{1420}$	$814.9 \pm 4.8$	$\sigma_8(0.38)$	$0.6580^{+0.0039}_{-0.0051}$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+2.0}_{-2.5}$	$D_{2000}$	$230.6 \pm 1.6$	$f\sigma_8(0.51)$	$0.4666^{+0.0049}_{-0.0054}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9696 \pm 0.0042$	$\sigma_8(0.51)$	$0.6161^{+0.0035}_{-0.0047}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.54^{+0.38}_{-0.20}$	$Y_{\mathrm{P}}$	$0.245414 \pm 0.000060$	$f\sigma_8(0.61)$	$0.4623^{+0.0044}_{-0.0050}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246741 \pm 0.000060$	$\sigma_8(0.61)$	$0.5864^{+0.0032}_{-0.0044}$
$A^{\mathrm{kSZ}}$	$4.6^{+1.9}_{-4.1}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.576 \pm 0.029$	$f\sigma_8(2.33)$	$0.2959^{+0.0015}_{-0.0022}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.781 \pm 0.023$	$\sigma_8(2.33)$	$0.3054^{+0.0015}_{-0.0023}$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.17$	$z_*$	$1089.69 \pm 0.25$	$f_{2000}^{143}$	$28.7 \pm 2.8$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$r_*$	$144.87 \pm 0.25$	$f_{2000}^{217}$	$106.1 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$100\theta_*$	$1.04122 \pm 0.00029$	$f_{2000}^{143 \times 217}$	$31.3 \pm 2.0$
$c_{100}$	$0.9975 \pm 0.0010$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.913 \pm 0.024$	$\chi_{\mathrm{lensing}}^2$	$9.8 \pm 1.7$
$c_{217}$	$1.0011 \pm 0.0015$	$z_{\mathrm{drag}}$	$1059.93 \pm 0.33$	$\chi_{\mathrm{small}}^2$	$396.31 \pm 0.99$
$c_{TE}$	$0.9951 \pm 0.0050$	$r_{\mathrm{drag}}$	$147.52 \pm 0.26$	$\chi_{\mathrm{lowl}}^2$	$22.41 \pm 0.82$
$c_{EE}$	$0.9917 \pm 0.0050$	$k_{\mathrm{D}}$	$0.14045 \pm 0.00032$	$\chi_{\mathrm{CamSpec}}^2$	$11512.7 \pm 5.6$
$H_0$	$68.09 \pm 0.50$	$100\theta_{\mathrm{D}}$	$0.16076 \pm 0.00019$	$\chi_{6\mathrm{DF}}^2$	$0.031 \pm 0.043$
$\Omega_{\Lambda}$	$0.6953 \pm 0.0065$	$z_{\mathrm{eq}}$	$3359 \pm 24$	$\chi_{\mathrm{MGS}}^2$	$1.74 \pm 0.52$
$\Omega_{\mathrm{m}}$	$0.3047 \pm 0.0065$	$k_{\mathrm{eq}}$	$0.010253 \pm 0.000075$	$\chi_{\mathrm{DR12BAO}}^2$	$3.99 \pm 0.84$
$\Omega_{\mathrm{m}}h^2$	$0.1412 \pm 0.0010$	$100\theta_{\mathrm{eq}}$	$0.8213 \pm 0.0047$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.3$
$\Omega_{\mathrm{m}}h^3$	$0.09616 \pm 0.00032$	$100\theta_{\mathrm{s,eq}}$	$0.4535 \pm 0.0024$	$\chi_{\mathrm{CMB}}^2$	$11941.3 \pm 5.7$
$\sigma_8$	$0.8017^{+0.0056}_{-0.0070}$	$H(0.15)$	$73.30 \pm 0.43$	$\chi_{\mathrm{BAO}}^2$	$5.76 \pm 0.76$
$S_8$	$0.808 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$637.2 \pm 4.2$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11954.75; R - 1 = 0.02132$$



### 3.61 base\_Alens\_CleanedCamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022674	$0.02259 \pm 0.00029$	$\sigma_8/h^{0.5}$	0.9570	$0.956 \pm 0.021$	$D_M(0.15)$	628.9	$630 \pm 10$
$\Omega_c h^2$	0.11638	$0.1165 \pm 0.0025$	$r_{\text{drag}} h$	102.03	$101.9 \pm 2.1$	$H(0.38)$	83.95	$83.85 \pm 0.78$
$100\theta_{\text{MC}}$	1.04145	$1.04139 \pm 0.00053$	$\langle d^2 \rangle^{1/2}$	2.656	$2.630 \pm 0.079$	$D_M(0.38)$	1504.4	$1507 \pm 20$
$\tau$	0.0517	$0.0500^{+0.0087}_{-0.0077}$	$z_{\text{re}}$	7.30	$7.12^{+0.93}_{-0.73}$	$H(0.51)$	90.48	$90.39 \pm 0.63$
$A_L$	1.260	$1.236 \pm 0.098$	$10^9 A_s$	2.0684	$2.061^{+0.038}_{-0.034}$	$D_M(0.51)$	1951.8	$1955 \pm 24$
$\ln(10^{10} A_s)$	3.0294	$3.025^{+0.019}_{-0.016}$	$10^9 A_s e^{-2\tau}$	1.8652	$1.864 \pm 0.015$	$H(0.61)$	95.95	$95.87 \pm 0.51$
$n_s$	0.9761	$0.9737 \pm 0.0073$	$D_{40}$	1204.1	$1208 \pm 18$	$D_M(0.61)$	2273.6	$2277 \pm 26$
$y_{\text{cal}}$	0.99997	$1.0000 \pm 0.0025$	$D_{220}$	5731.7	$5730 \pm 42$	$H(2.33)$	234.53	$234.5 \pm 1.4$
$A_{100}^{\text{PS}}$	225.9	$240 \pm 30$	$D_{810}$	2525.9	$2523 \pm 14$	$D_M(2.33)$	5734.8	$5739 \pm 23$
$A_{143}^{\text{tSZ}}$	6.42	$4.5 \pm 2.1$	$D_{1420}$	814.9	$812.8 \pm 5.2$	$f\sigma_8(0.15)$	0.4363	$0.436 \pm 0.015$
$A^{\text{kSZ}}$	0.00	$< 5.02$	$D_{2000}$	232.82	$231.7 \pm 2.1$	$\sigma_8(0.15)$	0.7368	$0.7351 \pm 0.0094$
$A_{100}^{\text{dust}}$	1.003	$1.01 \pm 0.19$	$n_{s,0.002}$	0.9761	$0.9737 \pm 0.0073$	$f\sigma_8(0.38)$	0.4584	$0.458 \pm 0.012$
$A_{143}^{\text{power}}$	7.71	$8.0^{+2.1}_{-2.4}$	$Y_P$	0.245507	$0.24548^{+0.00011}_{-0.00012}$	$\sigma_8(0.38)$	0.6552	$0.6535 \pm 0.0073$
$A_{217}^{\text{power}}$	6.54	$6.6^{+1.3}_{-2.1}$	$Y_P^{\text{BBN}}$	0.246834	$0.24681^{+0.00011}_{-0.00012}$	$f\sigma_8(0.51)$	0.4592	$0.459 \pm 0.011$
$A_{143 \times 217}^{\text{power}}$	3.25	$2.67^{+0.79}_{-2.5}$	$10^5 D/H$	2.531	$2.547 \pm 0.052$	$\sigma_8(0.51)$	0.6140	$0.6124 \pm 0.0065$
$\gamma_{143}^{\text{power}}$	1.48	$1.34^{+0.50}_{-0.60}$	Age/Gyr	13.7352	$13.746 \pm 0.049$	$f\sigma_8(0.61)$	0.4558	$0.4552 \pm 0.0096$
$\gamma_{217}^{\text{power}}$	2.38	$> 1.29$	$z_*$	1089.23	$1089.35 \pm 0.53$	$\sigma_8(0.61)$	0.5848	$0.5832 \pm 0.0060$
$\gamma_{143 \times 217}^{\text{power}}$	2.17	$1.42^{+0.82}_{-0.53}$	$r_*$	145.14	$145.17 \pm 0.53$	$f\sigma_8(2.33)$	0.29561	$0.2947^{+0.0029}_{-0.0026}$
$c_{100}$	0.99828	$0.9979 \pm 0.0011$	$100\theta_*$	1.04160	$1.04155 \pm 0.00051$	$\sigma_8(2.33)$	0.30562	$0.3047^{+0.0029}_{-0.0026}$
$c_{217}$	0.99823	$0.9992^{+0.0011}_{-0.0015}$	$D_M(z_*)/\text{Gpc}$	13.9343	$13.938 \pm 0.048$	$f_{2000}^{143}$	17.45	$19.4 \pm 3.3$
$H_0$	69.07	$68.9 \pm 1.2$	$z_{\text{drag}}$	1060.39	$1060.19 \pm 0.56$	$f_{2000}^{217}$	12.96	$13.8 \pm 2.3$
$\Omega_\Lambda$	0.7072	$0.705^{+0.016}_{-0.014}$	$r_{\text{drag}}$	147.72	$147.78 \pm 0.51$	$f_{2000}^{143 \times 217}$	6.07	$7.6 \pm 2.4$
$\Omega_m$	0.2928	$0.295^{+0.014}_{-0.016}$	$k_D$	0.14043	$0.14031 \pm 0.00052$	$\chi_{\text{small}}^2$	395.68	$396.8 \pm 1.6$
$\Omega_m h^2$	0.13970	$0.1398 \pm 0.0023$	$100\theta_D$	0.160544	$0.16065 \pm 0.00030$	$\chi_{\text{lowl}}^2$	21.40	$21.8 \pm 1.1$
$\Omega_m h^3$	0.096496	$0.09633 \pm 0.00049$	$z_{\text{eq}}$	3323	$3325 \pm 55$	$\chi_{\text{CamSpec}}^2$	6699.06	$6713.2 \pm 5.2$
$\sigma_8$	0.7953	$0.794 \pm 0.011$	$k_{\text{eq}}$	0.010142	$0.01015 \pm 0.00017$	$\chi_{\text{prior}}^2$	1.59	$5.1 \pm 2.8$
$S_8$	0.7857	$0.786 \pm 0.030$	$100\theta_{\text{eq}}$	0.8290	$0.829 \pm 0.011$	$\chi_{\text{CMB}}^2$	7116.1	$7131.9 \pm 5.4$
$\sigma_8 \Omega_m^{0.5}$	0.4304	$0.431 \pm 0.016$	$100\theta_{s,\text{eq}}$	0.4574	$0.4572 \pm 0.0056$			
$\sigma_8 \Omega_m^{0.25}$	0.5851	$0.585 \pm 0.015$	$H(0.15)$	74.16	$74.0 \pm 1.0$			

Best-fit  $\chi_{\text{eff}}^2 = 7117.73$ ;  $\bar{\chi}_{\text{eff}}^2 = 7136.94$ ;  $R - 1 = 0.00677$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.68 commander\_dx12\_v3.2\_29: 21.40 CamSpec like\_10.7cleaned: 6699.06



### 3.62 base\_Alens\_plikHM\_TT

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022622	$0.02251 \pm 0.00030$	$\sigma_8$	0.8476	$0.832^{+0.032}_{-0.053}$	$100\theta_D$	0.160585	$0.16070 \pm 0.00031$
$\Omega_c h^2$	0.11688	$0.1176 \pm 0.0027$	$S_8$	0.8418	$0.833^{+0.044}_{-0.053}$	$z_{\text{eq}}$	3334	$3348 \pm 60$
$100\theta_{\text{MC}}$	1.04136	$1.04126 \pm 0.00054$	$\sigma_8 \Omega_m^{0.5}$	0.4611	$0.456^{+0.024}_{-0.029}$	$k_{\text{eq}}$	0.010174	$0.01022 \pm 0.00018$
$\tau$	0.112	$< 0.114$	$\sigma_8 \Omega_m^{0.25}$	0.6251	$0.616^{+0.028}_{-0.037}$	$100\theta_{\text{eq}}$	0.8268	$0.824 \pm 0.012$
$A_L$	1.100	$1.13^{+0.13}_{-0.15}$	$\sigma_8/h^{0.5}$	1.022	$1.006^{+0.043}_{-0.061}$	$100\theta_{\text{s,eq}}$	0.4563	$0.4548 \pm 0.0060$
$\ln(10^{10} A_s)$	3.152	$3.109^{+0.068}_{-0.14}$	$r_{\text{drag}} h$	101.61	$101.0 \pm 2.2$	$H(0.15)$	73.94	$73.6 \pm 1.1$
$n_s$	0.9755	$0.9718 \pm 0.0082$	$\langle d^2 \rangle^{1/2}$	2.648	$2.629 \pm 0.076$	$D_M(0.15)$	631.0	$634 \pm 11$
$A_{217}^{\text{CIB}}$	42.7	$45 \pm 7$	$z_{\text{re}}$	12.71	$10.5 \pm 4.4$	$H(0.38)$	83.78	$83.54 \pm 0.82$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.999	$> 0.403$	$10^9 A_s$	2.339	$2.25^{+0.13}_{-0.31}$	$D_M(0.38)$	1508.7	$1515 \pm 22$
$A_{143}^{\text{tSZ}}$	6.71	$5.5^{+2.1}_{-1.8}$	$10^9 A_s e^{-2\tau}$	1.8686	$1.871 \pm 0.016$	$H(0.51)$	90.34	$90.15 \pm 0.65$
$A_{100}^{\text{PS}}$	238.7	$252 \pm 30$	$D_{40}$	1232.6	$1235^{+22}_{-30}$	$D_M(0.51)$	1956.9	$1965 \pm 25$
$A_{143}^{\text{PS}}$	49.6	$43 \pm 9$	$D_{220}$	5732.7	$5733 \pm 42$	$H(0.61)$	95.84	$95.69^{+0.50}_{-0.56}$
$A_{143 \times 217}^{\text{PS}}$	56.8	$41 \pm 9$	$D_{810}$	2528.8	$2528 \pm 14$	$D_M(0.61)$	2279.1	$2287 \pm 28$
$A_{217}^{\text{PS}}$	122.9	$115 \pm 10$	$D_{1420}$	815.7	$814.0 \pm 5.1$	$H(2.33)$	234.79	$235.2 \pm 1.6$
$A^{\text{kSZ}}$	0.00	$< 3.48$	$D_{2000}$	232.97	$231.9 \pm 2.1$	$D_M(2.33)$	5739.6	$5747 \pm 23$
$A_{100}^{\text{dustTT}}$	8.73	$8.8 \pm 1.8$	$n_{\text{s},0.002}$	0.9755	$0.9718 \pm 0.0082$	$f\sigma_8(0.15)$	0.4671	$0.462^{+0.023}_{-0.029}$
$A_{143}^{\text{dustTT}}$	10.53	$10.5 \pm 1.8$	$Y_{\text{P}}$	0.245488	$0.24545 \pm 0.00012$	$\sigma_8(0.15)$	0.7849	$0.770^{+0.028}_{-0.050}$
$A_{143 \times 217}^{\text{dustTT}}$	19.56	$17.9 \pm 3.3$	$Y_{\text{P}}^{\text{BBN}}$	0.246814	$0.24677 \pm 0.00012$	$f\sigma_8(0.38)$	0.4900	$0.483^{+0.022}_{-0.029}$
$A_{217}^{\text{dustTT}}$	95.5	$93.6 \pm 7.3$	$10^5 \text{D/H}$	2.541	$2.561 \pm 0.054$	$\sigma_8(0.38)$	0.6976	$0.684^{+0.024}_{-0.045}$
$c_{100}$	0.99970	$0.99963 \pm 0.00061$	Age/Gyr	13.745	$13.762 \pm 0.051$	$f\sigma_8(0.51)$	0.4905	$0.483^{+0.021}_{-0.029}$
$c_{217}$	0.99816	$0.99818 \pm 0.00062$	$z_*$	1089.33	$1089.54 \pm 0.56$	$\sigma_8(0.51)$	0.6536	$0.640^{+0.022}_{-0.043}$
$y_{\text{cal}}$	0.99987	$1.0001 \pm 0.0025$	$r_*$	145.05	$144.95 \pm 0.57$	$f\sigma_8(0.61)$	0.4866	$0.479^{+0.020}_{-0.029}$
$H_0$	68.82	$68.5 \pm 1.3$	$100\theta_*$	1.04152	$1.04144 \pm 0.00053$	$\sigma_8(0.61)$	0.6224	$0.610^{+0.020}_{-0.041}$
$\Omega_\Lambda$	0.7041	$0.699^{+0.017}_{-0.015}$	$D_M(z_*)/\text{Gpc}$	13.927	$13.919 \pm 0.052$	$f\sigma_8(2.33)$	0.3145	$0.3078^{+0.0098}_{-0.021}$
$\Omega_{\text{m}}$	0.2959	$0.301^{+0.015}_{-0.017}$	$z_{\text{drag}}$	1060.28	$1060.08 \pm 0.56$	$\sigma_8(2.33)$	0.3250	$0.3179^{+0.0099}_{-0.022}$
$\Omega_{\text{m}} h^2$	0.14014	$0.1408 \pm 0.0025$	$r_{\text{drag}}$	147.64	$147.58 \pm 0.54$	$\chi_{\text{plik}}^2$	752.3	$767.2 \pm 5.5$
$\Omega_{\text{m}} h^3$	0.096447	$0.09632 \pm 0.00049$	$k_D$	0.14047	$0.14045 \pm 0.00054$	$\chi_{\text{prior}}^2$	0.97	$7.0 \pm 3.5$

Best-fit  $\chi_{\text{eff}}^2 = 753.23$ ;  $\bar{\chi}_{\text{eff}}^2 = 774.27$ ;  $R - 1 = 0.00661$   
 $\chi_{\text{eff}}^2$ : CMB - plik\_rd12\_HM\_v22\_TT: 752.27



### 3.63 base\_Alens\_plikHM\_TT\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02252 \pm 0.00030$	$S_8$	$0.846^{+0.040}_{-0.048}$	$k_{\mathrm{eq}}$	$0.01021 \pm 0.00019$
$\Omega_{\mathrm{c}} h^2$	$0.1175 \pm 0.0027$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.463^{+0.022}_{-0.026}$	$100\theta_{\mathrm{eq}}$	$0.825 \pm 0.012$
$100\theta_{\mathrm{MC}}$	$1.04128 \pm 0.00054$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.626^{+0.024}_{-0.033}$	$100\theta_{\mathrm{s,eq}}$	$0.4552 \pm 0.0061$
$\tau$	$0.107^{+0.023}_{-0.060}$	$\sigma_8/h^{0.5}$	$1.022^{+0.037}_{-0.053}$	$H(0.15)$	$73.7 \pm 1.1$
$A_{\mathrm{L}}$	$1.09 \pm 0.12$	$r_{\mathrm{drag}} h$	$101.1 \pm 2.2$	$D_{\mathrm{M}}(0.15)$	$634 \pm 11$
$\ln(10^{10} A_{\mathrm{s}})$	$3.143^{+0.052}_{-0.11}$	$\langle d^2 \rangle^{1/2}$	$2.628 \pm 0.077$	$H(0.38)$	$83.58 \pm 0.83$
$n_{\mathrm{s}}$	$0.9725 \pm 0.0082$	$z_{\mathrm{re}}$	$12.1^{+2.4}_{-4.8}$	$D_{\mathrm{M}}(0.38)$	$1514 \pm 22$
$A_{217}^{\mathrm{CIB}}$	$45 \pm 7$	$10^9 A_{\mathrm{s}}$	$2.33^{+0.11}_{-0.26}$	$H(0.51)$	$90.18 \pm 0.66$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	$> 0.406$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.870 \pm 0.016$	$D_{\mathrm{M}}(0.51)$	$1963 \pm 26$
$A_{143}^{\mathrm{tSZ}}$	$5.6^{+2.1}_{-1.8}$	$D_{40}$	$1241^{+22}_{-29}$	$H(0.61)$	$95.71^{+0.50}_{-0.56}$
$A_{100}^{\mathrm{PS}}$	$252 \pm 30$	$D_{220}$	$5732 \pm 42$	$D_{\mathrm{M}}(0.61)$	$2286 \pm 28$
$A_{143}^{\mathrm{PS}}$	$42 \pm 9$	$D_{810}$	$2528 \pm 14$	$H(2.33)$	$235.1 \pm 1.6$
$A_{143 \times 217}^{\mathrm{PS}}$	$41 \pm 9$	$D_{1420}$	$814.2 \pm 5.1$	$D_{\mathrm{M}}(2.33)$	$5746 \pm 23$
$A_{217}^{\mathrm{PS}}$	$114.9 \pm 9.9$	$D_{2000}$	$232.0 \pm 2.1$	$f\sigma_8(0.15)$	$0.469^{+0.021}_{-0.026}$
$A^{\mathrm{kSZ}}$	$< 3.42$	$n_{\mathrm{s},0.002}$	$0.9725 \pm 0.0082$	$\sigma_8(0.15)$	$0.783^{+0.023}_{-0.042}$
$A_{100}^{\mathrm{dust}TT}$	$8.8 \pm 1.8$	$Y_{\mathrm{P}}$	$0.24545 \pm 0.00012$	$f\sigma_8(0.38)$	$0.491^{+0.019}_{-0.026}$
$A_{143}^{\mathrm{dust}TT}$	$10.4 \pm 1.8$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24678 \pm 0.00012$	$\sigma_8(0.38)$	$0.695^{+0.019}_{-0.038}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$17.9 \pm 3.3$	$10^5 \mathrm{D}/\mathrm{H}$	$2.560 \pm 0.054$	$f\sigma_8(0.51)$	$0.491^{+0.018}_{-0.025}$
$A_{217}^{\mathrm{dust}TT}$	$93.6 \pm 7.3$	$\mathrm{Age}/\mathrm{Gyr}$	$13.760 \pm 0.051$	$\sigma_8(0.51)$	$0.651^{+0.018}_{-0.036}$
$c_{100}$	$0.99963 \pm 0.00061$	$z_*$	$1089.52 \pm 0.56$	$f\sigma_8(0.61)$	$0.486^{+0.017}_{-0.025}$
$c_{217}$	$0.99818 \pm 0.00062$	$r_*$	$144.98 \pm 0.58$	$\sigma_8(0.61)$	$0.620^{+0.016}_{-0.034}$
$y_{\mathrm{cal}}$	$1.0001 \pm 0.0025$	$100\theta_*$	$1.04145 \pm 0.00053$	$f\sigma_8(2.33)$	$0.3131^{+0.0079}_{-0.018}$
$H_0$	$68.5 \pm 1.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.921 \pm 0.052$	$\sigma_8(2.33)$	$0.3234^{+0.0078}_{-0.019}$
$\Omega_{\Lambda}$	$0.700^{+0.017}_{-0.016}$	$z_{\mathrm{drag}}$	$1060.09 \pm 0.56$	$f_{2000}^{143}$	$27 \pm 3$
$\Omega_{\mathrm{m}}$	$0.300^{+0.016}_{-0.017}$	$r_{\mathrm{drag}}$	$147.61 \pm 0.55$	$f_{2000}^{143 \times 217}$	$30.3 \pm 2.5$
$\Omega_{\mathrm{m}} h^2$	$0.1406 \pm 0.0025$	$k_{\mathrm{D}}$	$0.14043 \pm 0.00054$	$f_{2000}^{217}$	$105.3 \pm 2.3$
$\Omega_{\mathrm{m}} h^3$	$0.09631 \pm 0.00049$	$100\theta_{\mathrm{D}}$	$0.16070 \pm 0.00031$	$\chi_{\mathrm{plik}}^2$	$767.3 \pm 5.5$
$\sigma_8$	$0.846^{+0.026}_{-0.044}$	$z_{\mathrm{eq}}$	$3345 \pm 61$	$\chi_{\mathrm{prior}}^2$	$7.0 \pm 3.5$

$$\bar{\chi}_{\mathrm{eff}}^2 = 774.31; R - 1 = 0.00620$$



### 3.64 base\_Alens\_plikHM\_TT\_lowl

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022662	$0.02261 \pm 0.00029$	$S_8$	0.7570	$0.792^{+0.033}_{-0.039}$	$k_{\text{eq}}$	0.010159	$0.01014 \pm 0.00017$
$\Omega_c h^2$	0.11662	$0.1165 \pm 0.0025$	$\sigma_8 \Omega_m^{0.5}$	0.4146	$0.434^{+0.018}_{-0.021}$	$100\theta_{\text{eq}}$	0.8279	$0.829 \pm 0.011$
$100\theta_{\text{MC}}$	1.04140	$1.04139 \pm 0.00053$	$\sigma_8 \Omega_m^{0.25}$	0.5629	$0.589^{+0.019}_{-0.026}$	$100\theta_{\text{s,eq}}$	0.4568	$0.4573 \pm 0.0057$
$\tau$	0.0102	$< 0.0705$	$\sigma_8/h^{0.5}$	0.9204	$0.964^{+0.028}_{-0.041}$	$H(0.15)$	74.06	$74.1 \pm 1.1$
$A_L$	1.360	$1.23 \pm 0.12$	$r_{\text{drag}} h$	101.83	$101.9 \pm 2.1$	$D_M(0.15)$	629.9	$630 \pm 10$
$\ln(10^{10} A_s)$	2.948	$3.042^{+0.036}_{-0.090}$	$\langle d^2 \rangle^{1/2}$	2.654	$2.639 \pm 0.076$	$H(0.38)$	83.87	$83.88 \pm 0.79$
$n_s$	0.9753	$0.9748 \pm 0.0074$	$z_{\text{re}}$	2.12	$7.5^{+2.1}_{-4.8}$	$D_M(0.38)$	1506.4	$1506 \pm 20$
$y_{\text{cal}}$	0.99995	$1.0001 \pm 0.0025$	$10^9 A_s$	1.907	$2.099^{+0.068}_{-0.19}$	$H(0.51)$	90.42	$90.42 \pm 0.64$
$A_{217}^{\text{CIB}}$	42.8	$45 \pm 7$	$10^9 A_s e^{-2\tau}$	1.8686	$1.866 \pm 0.015$	$D_M(0.51)$	1954.1	$1954 \pm 24$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.935	$> 0.424$	$D_{40}$	1200.3	$1212^{+17}_{-20}$	$H(0.61)$	95.91	$95.90 \pm 0.52$
$A_{143}^{\text{tSZ}}$	6.79	$5.6^{+2.1}_{-1.8}$	$D_{220}$	5739.2	$5736 \pm 42$	$D_M(0.61)$	2276.1	$2276 \pm 26$
$A_{100}^{\text{PS}}$	239.1	$249 \pm 30$	$D_{810}$	2529.2	$2527 \pm 14$	$H(2.33)$	234.67	$234.5 \pm 1.4$
$A_{143}^{\text{PS}}$	48.4	$41 \pm 9$	$D_{1420}$	815.8	$814.5 \pm 5.0$	$D_M(2.33)$	5736.7	$5738 \pm 23$
$A_{143 \times 217}^{\text{PS}}$	55.5	$41 \pm 9$	$D_{2000}$	232.96	$232.4 \pm 2.1$	$f\sigma_8(0.15)$	0.4202	$0.440^{+0.017}_{-0.021}$
$A_{217}^{\text{PS}}$	123.0	$114.8 \pm 9.9$	$n_{\text{s},0.002}$	0.9753	$0.9748 \pm 0.0074$	$\sigma_8(0.15)$	0.7079	$0.741^{+0.016}_{-0.032}$
$A^{\text{kSZ}}$	0.00	$< 3.27$	$Y_{\text{P}}$	0.245502	$0.24549^{+0.00010}_{-0.00012}$	$f\sigma_8(0.38)$	0.4411	$0.462^{+0.016}_{-0.020}$
$A_{100}^{\text{dustTT}}$	8.88	$9.0 \pm 1.8$	$Y_{\text{P}}^{\text{BBN}}$	0.246829	$0.24682^{+0.00011}_{-0.00012}$	$\sigma_8(0.38)$	0.6293	$0.659^{+0.013}_{-0.029}$
$A_{143}^{\text{dustTT}}$	10.64	$10.5 \pm 1.8$	$10^5 \text{D}/\text{H}$	2.534	$2.543 \pm 0.053$	$f\sigma_8(0.51)$	0.4417	$0.462^{+0.014}_{-0.020}$
$A_{143 \times 217}^{\text{dustTT}}$	19.47	$17.9 \pm 3.3$	$\text{Age}/\text{Gyr}$	13.7392	$13.743 \pm 0.050$	$\sigma_8(0.51)$	0.5897	$0.618^{+0.012}_{-0.027}$
$A_{217}^{\text{dustTT}}$	95.5	$93.6 \pm 7.3$	$z_*$	1089.26	$1089.32 \pm 0.54$	$f\sigma_8(0.61)$	0.4384	$0.459^{+0.013}_{-0.020}$
$c_{100}$	0.99968	$0.99961 \pm 0.00061$	$r_*$	145.09	$145.17 \pm 0.53$	$\sigma_8(0.61)$	0.5616	$0.588^{+0.011}_{-0.026}$
$c_{217}$	0.99815	$0.99818 \pm 0.00062$	$100\theta_*$	1.04155	$1.04156 \pm 0.00051$	$f\sigma_8(2.33)$	0.2838	$0.2974^{+0.0052}_{-0.013}$
$H_0$	68.96	$69.0 \pm 1.2$	$D_M(z_*)/\text{Gpc}$	13.9299	$13.938 \pm 0.048$	$\sigma_8(2.33)$	0.2934	$0.3074^{+0.0052}_{-0.014}$
$\Omega_\Lambda$	0.7057	$0.706^{+0.016}_{-0.014}$	$z_{\text{drag}}$	1060.35	$1060.24 \pm 0.56$	$\chi^2_{\text{lowl}}$	20.98	$22.2 \pm 1.5$
$\Omega_m$	0.2943	$0.294 \pm 0.015$	$r_{\text{drag}}$	147.67	$147.77 \pm 0.51$	$\chi^2_{\text{plik}}$	753.0	$767.1 \pm 5.4$
$\Omega_m h^2$	0.13993	$0.1397 \pm 0.0023$	$k_{\text{D}}$	0.14048	$0.14033 \pm 0.00051$	$\chi^2_{\text{prior}}$	1.06	$7.1 \pm 3.6$
$\Omega_m h^3$	0.096491	$0.09637 \pm 0.00050$	$100\theta_{\text{D}}$	0.160544	$0.16062 \pm 0.00030$	$\chi^2_{\text{CMB}}$	773.9	$789.3 \pm 5.5$
$\sigma_8$	0.7643	$0.800^{+0.018}_{-0.034}$	$z_{\text{eq}}$	3328	$3324 \pm 56$			

Best-fit  $\chi^2_{\text{eff}} = 775.00$ ;  $\bar{\chi}^2_{\text{eff}} = 796.44$ ;  $R - 1 = 0.00820$

$\chi^2_{\text{eff}}$ : CMB - commander\_dx12\_v3\_2\_29: 20.98 plik\_rd12\_HM\_v22\_TT: 752.97



### 3.65 base\_Alens\_plikHM\_TT\_lowl\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02263 \pm 0.00029$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.442^{+0.017}_{-0.020}$	$100\theta_{\mathrm{s,eq}}$	$0.4580 \pm 0.0057$
$\Omega_{\mathrm{c}}h^2$	$0.1162 \pm 0.0025$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.601^{+0.017}_{-0.022}$	$H(0.15)$	$74.2 \pm 1.1$
$100\theta_{\mathrm{MC}}$	$1.04143 \pm 0.00053$	$\sigma_8/h^{0.5}$	$0.984^{+0.025}_{-0.034}$	$D_{\mathrm{M}}(0.15)$	$629 \pm 10$
$\tau$	$0.080^{+0.012}_{-0.036}$	$r_{\mathrm{drag}}h$	$102.2 \pm 2.1$	$H(0.38)$	$83.97 \pm 0.79$
$A_{\mathrm{L}}$	$1.18 \pm 0.10$	$\langle d^2 \rangle^{1/2}$	$2.640 \pm 0.077$	$D_{\mathrm{M}}(0.38)$	$1504 \pm 20$
$\ln(10^{10}A_{\mathrm{s}})$	$3.087^{+0.027}_{-0.069}$	$z_{\mathrm{re}}$	$< 10.8$	$H(0.51)$	$90.49 \pm 0.64$
$n_{\mathrm{s}}$	$0.9760 \pm 0.0074$	$10^9 A_{\mathrm{s}}$	$2.193^{+0.054}_{-0.15}$	$D_{\mathrm{M}}(0.51)$	$1951 \pm 24$
$y_{\mathrm{cal}}$	$1.0001 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.865 \pm 0.015$	$H(0.61)$	$95.95^{+0.49}_{-0.55}$
$A_{217}^{\mathrm{CIB}}$	$45 \pm 7$	$D_{40}$	$1217^{+18}_{-20}$	$D_{\mathrm{M}}(0.61)$	$2273 \pm 26$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	$> 0.427$	$D_{220}$	$5735 \pm 42$	$H(2.33)$	$234.3 \pm 1.4$
$A_{143}^{\mathrm{tSZ}}$	$5.7^{+2.1}_{-1.8}$	$D_{810}$	$2526 \pm 14$	$D_{\mathrm{M}}(2.33)$	$5736 \pm 23$
$A_{100}^{\mathrm{PS}}$	$248 \pm 30$	$D_{1420}$	$814.7 \pm 5.0$	$f\sigma_8(0.15)$	$0.448^{+0.016}_{-0.019}$
$A_{143}^{\mathrm{PS}}$	$41 \pm 9$	$D_{2000}$	$232.6 \pm 2.1$	$\sigma_8(0.15)$	$0.758^{+0.013}_{-0.026}$
$A_{143 \times 217}^{\mathrm{PS}}$	$41 \pm 9$	$n_{\mathrm{s},0.002}$	$0.9760 \pm 0.0074$	$f\sigma_8(0.38)$	$0.471^{+0.014}_{-0.017}$
$A_{217}^{\mathrm{PS}}$	$114.7 \pm 9.8$	$Y_{\mathrm{P}}$	$0.24550^{+0.00011}_{-0.00012}$	$\sigma_8(0.38)$	$0.674^{+0.011}_{-0.023}$
$A^{\mathrm{kSZ}}$	$< 3.16$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24682^{+0.00011}_{-0.00012}$	$f\sigma_8(0.51)$	$0.472^{+0.013}_{-0.017}$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$10^5 \mathrm{D}/\mathrm{H}$	$2.539 \pm 0.053$	$\sigma_8(0.51)$	$0.6315^{+0.0095}_{-0.022}$
$A_{143}^{\mathrm{dust}TT}$	$10.4 \pm 1.8$	$\mathrm{Age}/\mathrm{Gyr}$	$13.738 \pm 0.050$	$f\sigma_8(0.61)$	$0.468^{+0.012}_{-0.016}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$17.9 \pm 3.3$	$z_*$	$1089.26 \pm 0.53$	$\sigma_8(0.61)$	$0.6015^{+0.0088}_{-0.021}$
$A_{217}^{\mathrm{dust}TT}$	$93.7 \pm 7.3$	$r_*$	$145.23 \pm 0.53$	$f\sigma_8(2.33)$	$0.3041^{+0.0041}_{-0.010}$
$c_{100}$	$0.99961 \pm 0.00062$	$100\theta_*$	$1.04159 \pm 0.00051$	$\sigma_8(2.33)$	$0.3145^{+0.0040}_{-0.011}$
$c_{217}$	$0.99818 \pm 0.00062$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.943 \pm 0.048$	$f_{2000}^{143}$	$26 \pm 3$
$H_0$	$69.1 \pm 1.2$	$z_{\mathrm{drag}}$	$1060.26 \pm 0.56$	$f_{2000}^{143 \times 217}$	$29.6 \pm 2.5$
$\Omega_{\Lambda}$	$0.708^{+0.016}_{-0.014}$	$r_{\mathrm{drag}}$	$147.83 \pm 0.51$	$f_{2000}^{217}$	$104.7 \pm 2.2$
$\Omega_{\mathrm{m}}$	$0.292 \pm 0.015$	$k_{\mathrm{D}}$	$0.14028 \pm 0.00052$	$\chi_{\mathrm{lowl}}^2$	$22.6 \pm 1.6$
$\Omega_{\mathrm{m}}h^2$	$0.1394 \pm 0.0023$	$100\theta_{\mathrm{D}}$	$0.16061 \pm 0.00030$	$\chi_{\mathrm{plik}}^2$	$767.1 \pm 5.5$
$\Omega_{\mathrm{m}}h^3$	$0.09636 \pm 0.00050$	$z_{\mathrm{eq}}$	$3317 \pm 56$	$\chi_{\mathrm{prior}}^2$	$7.2 \pm 3.6$
$\sigma_8$	$0.818^{+0.016}_{-0.028}$	$k_{\mathrm{eq}}$	$0.01012 \pm 0.00017$	$\chi_{\mathrm{CMB}}^2$	$789.8 \pm 5.6$
$S_8$	$0.807^{+0.031}_{-0.036}$	$100\theta_{\mathrm{eq}}$	$0.830 \pm 0.011$		

$\bar{\chi}_{\mathrm{eff}}^2 = 796.93$ ;  $R - 1 = 0.00997$



### 3.66 base\_Alens\_plikHM\_TT\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022592	$0.02249 \pm 0.00030$	$S_8$	0.7969	$0.804 \pm 0.032$	$k_{\text{eq}}$	0.010204	$0.01025 \pm 0.00018$
$\Omega_c h^2$	0.11731	$0.1180 \pm 0.0027$	$\sigma_8 \Omega_m^{0.5}$	0.4365	$0.440 \pm 0.018$	$100\theta_{\text{eq}}$	0.8249	$0.822 \pm 0.012$
$100\theta_{\text{MC}}$	1.04127	$1.04120 \pm 0.00055$	$\sigma_8 \Omega_m^{0.25}$	0.5905	$0.593 \pm 0.016$	$100\theta_{\text{s,eq}}$	0.4553	$0.4539 \pm 0.0060$
$\tau$	0.0508	$0.0499^{+0.0085}_{-0.0076}$	$\sigma_8/h^{0.5}$	0.9644	$0.968 \pm 0.022$	$H(0.15)$	73.76	$73.5 \pm 1.1$
$A_L$	1.235	$1.205 \pm 0.099$	$r_{\text{drag}} h$	101.24	$100.7 \pm 2.2$	$D_M(0.15)$	632.8	$636 \pm 11$
$\ln(10^{10} A_s)$	3.0318	$3.030^{+0.018}_{-0.016}$	$\langle d^2 \rangle^{1/2}$	2.650	$2.629 \pm 0.079$	$H(0.38)$	83.65	$83.44 \pm 0.82$
$n_s$	0.9731	$0.9697 \pm 0.0079$	$z_{\text{re}}$	7.23	$7.15^{+0.91}_{-0.73}$	$D_M(0.38)$	1512.2	$1518 \pm 22$
$y_{\text{cal}}$	1.00029	$1.0000 \pm 0.0025$	$10^9 A_s$	2.0734	$2.071^{+0.037}_{-0.034}$	$H(0.51)$	90.24	$90.07 \pm 0.66$
$A_{217}^{\text{CIB}}$	42.7	$46 \pm 7$	$10^9 A_s e^{-2\tau}$	1.8730	$1.874 \pm 0.016$	$D_M(0.51)$	1961.0	$1968 \pm 26$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.995	$> 0.398$	$D_{40}$	1213.0	$1219 \pm 19$	$H(0.61)$	95.76	$95.62^{+0.50}_{-0.55}$
$A_{143}^{\text{tSZ}}$	6.82	$5.4^{+2.1}_{-1.9}$	$D_{220}$	5742.4	$5738 \pm 42$	$D_M(0.61)$	2283.6	$2291 \pm 28$
$A_{100}^{\text{PS}}$	238.6	$254 \pm 30$	$D_{810}$	2531.8	$2529 \pm 14$	$H(2.33)$	235.04	$235.4 \pm 1.6$
$A_{143}^{\text{PS}}$	50.4	$44 \pm 9$	$D_{1420}$	815.8	$813.5 \pm 5.1$	$D_M(2.33)$	5743.1	$5750 \pm 24$
$A_{143 \times 217}^{\text{PS}}$	57.7	$41 \pm 9$	$D_{2000}$	232.77	$231.5 \pm 2.1$	$f\sigma_8(0.15)$	0.4420	$0.445 \pm 0.017$
$A_{217}^{\text{PS}}$	123.8	$115 \pm 10$	$n_{\text{s},0.002}$	0.9731	$0.9697 \pm 0.0079$	$\sigma_8(0.15)$	0.7395	$0.7398 \pm 0.0096$
$A^{\text{kSZ}}$	0.00	$< 3.69$	$Y_{\text{P}}$	0.245477	$0.24544 \pm 0.00012$	$f\sigma_8(0.38)$	0.4630	$0.465 \pm 0.013$
$A_{100}^{\text{dustTT}}$	8.72	$8.9 \pm 1.8$	$Y_{\text{P}}^{\text{BBN}}$	0.246804	$0.24677 \pm 0.00012$	$\sigma_8(0.38)$	0.6569	$0.6567 \pm 0.0073$
$A_{143}^{\text{dustTT}}$	10.61	$10.5 \pm 1.8$	$10^5 D/H$	2.546	$2.564 \pm 0.055$	$f\sigma_8(0.51)$	0.4631	$0.465 \pm 0.011$
$A_{143 \times 217}^{\text{dustTT}}$	20.01	$17.9 \pm 3.3$	$\text{Age/Gyr}$	13.753	$13.768 \pm 0.052$	$\sigma_8(0.51)$	0.6153	$0.6149 \pm 0.0065$
$A_{217}^{\text{dustTT}}$	96.4	$93.4 \pm 7.3$	$z_*$	1089.41	$1089.60 \pm 0.57$	$f\sigma_8(0.61)$	0.4592	$0.461 \pm 0.010$
$c_{100}$	0.99969	$0.99964 \pm 0.00061$	$r_*$	144.96	$144.86 \pm 0.57$	$\sigma_8(0.61)$	0.5859	$0.5854 \pm 0.0059$
$c_{217}$	0.99820	$0.99818 \pm 0.00062$	$100\theta_*$	1.04143	$1.04137 \pm 0.00053$	$f\sigma_8(2.33)$	0.29592	$0.2955 \pm 0.0028$
$H_0$	68.61	$68.3 \pm 1.3$	$D_M(z_*)/\text{Gpc}$	13.919	$13.911 \pm 0.052$	$\sigma_8(2.33)$	0.30567	$0.3050 \pm 0.0028$
$\Omega_\Lambda$	0.7014	$0.697^{+0.018}_{-0.016}$	$z_{\text{drag}}$	1060.24	$1060.07 \pm 0.57$	$\chi_{\text{small}}^2$	395.66	$396.8 \pm 1.6$
$\Omega_m$	0.2986	$0.303^{+0.016}_{-0.018}$	$r_{\text{drag}}$	147.56	$147.49 \pm 0.54$	$\chi_{\text{plik}}^2$	752.6	$767.3 \pm 5.5$
$\Omega_m h^2$	0.14054	$0.1411 \pm 0.0025$	$k_D$	0.14054	$0.14053 \pm 0.00054$	$\chi_{\text{prior}}^2$	1.05	$7.0 \pm 3.5$
$\Omega_m h^3$	0.096428	$0.09632 \pm 0.00050$	$100\theta_D$	0.160595	$0.16071 \pm 0.00031$	$\chi_{\text{CMB}}^2$	1148.2	$1164.1 \pm 5.8$
$\sigma_8$	0.7988	$0.800 \pm 0.012$	$z_{\text{eq}}$	3343	$3357 \pm 60$			

Best-fit  $\chi_{\text{eff}}^2 = 1149.29$ ;  $\bar{\chi}_{\text{eff}}^2 = 1171.08$ ;  $R - 1 = 0.00738$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.66 plik\_rd12\_HM\_v22\_TT: 752.58



### 3.67 base\_Alens\_plikHM\_TTTEEE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022605	$0.02256 \pm 0.00018$ (+0.2 $\sigma$ )	$\Omega_{\Lambda}$	0.6966	$0.6946 \pm 0.0096$ (−0.3 $\sigma$ )	$r_{\mathrm{drag}}$	147.318	$147.30 \pm 0.32$ (−0.5 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11816	$0.1184 \pm 0.0016$ (+0.3 $\sigma$ )	$\Omega_{\mathrm{m}}$	0.3034	$0.3054 \pm 0.0096$ (+0.3 $\sigma$ )	$k_{\mathrm{D}}$	0.140803	$0.14079 \pm 0.00033$ (+0.6 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.041128	$1.04110 \pm 0.00033$ (−0.3 $\sigma$ )	$\Omega_{\mathrm{m}}h^2$	0.14141	$0.1416 \pm 0.0015$ (+0.4 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160530	$0.16058 \pm 0.00019$ (−0.4 $\sigma$ )
$\tau$	0.108	$0.088^{+0.031}_{-0.069}$ (−0.0 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.096539	$0.09649 \pm 0.00031$ (+0.3 $\sigma$ )	$z_{\mathrm{eq}}$	3363.8	$3369 \pm 35$ (+0.4 $\sigma$ )
$A_{\mathrm{L}}$	1.056	$1.09 \pm 0.12$ (−0.3 $\sigma$ )	$\sigma_8$	0.8489	$0.833^{+0.029}_{-0.052}$ (+0.0 $\sigma$ )	$k_{\mathrm{eq}}$	0.010267	$0.01028 \pm 0.00011$ (+0.4 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.147	$3.107^{+0.067}_{-0.13}$ (−0.0 $\sigma$ )	$S_8$	0.8537	$0.840^{+0.037}_{-0.049}$ (+0.2 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8210	$0.8199 \pm 0.0068$ (−0.3 $\sigma$ )
$n_{\mathrm{s}}$	0.9723	$0.9699 \pm 0.0052$ (−0.2 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4676	$0.460^{+0.021}_{-0.027}$ (+0.2 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.45325	$0.4527 \pm 0.0035$ (−0.4 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	42.2	$45 \pm 7$ (−0.1 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6300	$0.619^{+0.025}_{-0.036}$ (+0.1 $\sigma$ )	$H(0.15)$	73.47	$73.35 \pm 0.62$ (−0.2 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.997	$> 0.424$ (+0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	1.0274	$1.009^{+0.039}_{-0.060}$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	635.6	$636.9 \pm 6.1$ (+0.2 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	6.93	$5.7^{+2.1}_{-1.8}$ (+0.1 $\sigma$ )	$r_{\mathrm{drag}}h$	100.57	$100.3 \pm 1.2$ (−0.3 $\sigma$ )	$H(0.38)$	83.452	$83.36 \pm 0.46$ (−0.2 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	237.8	$251 \pm 30$ (−0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.609	$2.597 \pm 0.059$ (−0.4 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1517.8	$1520 \pm 12$ (+0.2 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	49.3	$42 \pm 8$ (−0.1 $\sigma$ )	$z_{\mathrm{re}}$	12.40	$10.3^{+4.9}_{-4.1}$ (−0.0 $\sigma$ )	$H(0.51)$	90.095	$90.02 \pm 0.36$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	57.2	$41 \pm 9$ (+0.0 $\sigma$ )	$10^9 A_{\mathrm{s}}$	2.327	$2.24^{+0.13}_{-0.30}$ (−0.0 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1967.5	$1970 \pm 14$ (+0.2 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	124.0	$115.7 \pm 9.9$ (+0.1 $\sigma$ )	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8747	$1.875 \pm 0.012$ (+0.2 $\sigma$ )	$H(0.61)$	95.658	$95.60 \pm 0.29$ (−0.2 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.00	$< 3.25$ (−0.1 $\sigma$ )	$D_{40}$	1238.2	$1238^{+18}_{-29}$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2290.5	$2294 \pm 16$ (+0.2 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.60	$8.7 \pm 1.8$ (−0.1 $\sigma$ )	$D_{220}$	5735.7	$5738 \pm 39$ (+0.1 $\sigma$ )	$H(2.33)$	235.60	$235.74 \pm 0.92$ (+0.4 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	10.62	$10.5 \pm 1.8$ (+0.0 $\sigma$ )	$D_{810}$	2532.6	$2531 \pm 14$ (+0.2 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5746.5	$5749 \pm 13$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.84	$18.1 \pm 3.3$ (+0.1 $\sigma$ )	$D_{1420}$	816.70	$815.2 \pm 4.7$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4731	$0.466^{+0.020}_{-0.027}$ (+0.1 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	95.8	$93.7 \pm 7.3$ (+0.0 $\sigma$ )	$D_{2000}$	232.82	$232.0 \pm 1.6$ (+0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7853	$0.770^{+0.026}_{-0.049}$ (+0.0 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1113	$0.113 \pm 0.038$	$n_{\mathrm{s},0.002}$	0.9723	$0.9699 \pm 0.0052$ (−0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.4942	$0.486^{+0.020}_{-0.028}$ (+0.1 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1339	$0.134 \pm 0.029$	$Y_{\mathrm{P}}$	0.245482	$0.245465 \pm 0.000067$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6970	$0.684^{+0.022}_{-0.044}$ (+0.0 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.482	$0.480 \pm 0.085$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246808	$0.246792 \pm 0.000067$ (+0.2 $\sigma$ )	$f\sigma_8(0.51)$	0.4937	$0.485^{+0.019}_{-0.029}$ (+0.1 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.223	$0.222 \pm 0.054$	$10^5 \mathrm{D}/\mathrm{H}$	2.5436	$2.552 \pm 0.032$ (−0.2 $\sigma$ )	$\sigma_8(0.51)$	0.6527	$0.640^{+0.021}_{-0.042}$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.660	$0.660 \pm 0.081$	Age/Gyr	13.7596	$13.766 \pm 0.029$ (+0.1 $\sigma$ )	$f\sigma_8(0.61)$	0.4892	$0.481^{+0.018}_{-0.029}$ (+0.1 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.056	$2.06 \pm 0.27$	$z_{*}$	1089.467	$1089.55 \pm 0.33$ (+0.0 $\sigma$ )	$\sigma_8(0.61)$	0.6213	$0.609^{+0.019}_{-0.040}$ (−0.0 $\sigma$ )
$c_{100}$	0.99977	$0.99969 \pm 0.00061$ (+0.1 $\sigma$ )	$r_{*}$	144.729	$144.69 \pm 0.33$ (−0.5 $\sigma$ )	$f\sigma_8(2.33)$	0.3136	$0.3075^{+0.0095}_{-0.020}$ (−0.0 $\sigma$ )
$c_{217}$	0.99813	$0.99814 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_{*}$	1.041295	$1.04127 \pm 0.00032$ (−0.3 $\sigma$ )	$\sigma_8(2.33)$	0.3237	$0.3173^{+0.0096}_{-0.021}$ (−0.0 $\sigma$ )
$y_{\mathrm{cal}}$	0.99985	$0.9999 \pm 0.0025$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	13.8989	$13.896 \pm 0.031$ (−0.4 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2336.5	$2354.1 \pm 5.9$ (+290.2 $\sigma$ )
$H_0$	68.27	$68.13 \pm 0.73$ (−0.3 $\sigma$ )	$z_{\mathrm{drag}}$	1060.352	$1060.26 \pm 0.34$ (+0.3 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.37	$11.3 \pm 4.4$ (+1.2 $\sigma$ )

Best-fit  $\chi_{\mathrm{eff}}^2 = 2337.89$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1584.66$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2365.39$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.13$ ;  $R - 1 = 0.00672$   
 $\chi_{\mathrm{eff}}^2$ : CMB - plik\_rd12\_HM\_v22b\_TTTEEE: 2336.52



### 3.68 base\_Alens\_plikHM\_TTTEE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02256 \pm 0.00018 \quad (+0.1\sigma)$	$\Omega_{\mathrm{m}}$	$0.3051 \pm 0.0096 \quad (+0.3\sigma)$	$100\theta_{\mathrm{D}}$	$0.16058 \pm 0.00019 \quad (-0.4\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1184 \pm 0.0016 \quad (+0.3\sigma)$	$\Omega_{\mathrm{m}}h^2$	$0.1416 \pm 0.0015 \quad (+0.4\sigma)$	$z_{\mathrm{eq}}$	$3368 \pm 35 \quad (+0.4\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04111 \pm 0.00033 \quad (-0.3\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09648 \pm 0.00031 \quad (+0.3\sigma)$	$k_{\mathrm{eq}}$	$0.01028 \pm 0.00011 \quad (+0.4\sigma)$
$\tau$	$0.104^{+0.021}_{-0.057} \quad (-0.1\sigma)$	$\sigma_8$	$0.846^{+0.022}_{-0.044} \quad (+0.0\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8201 \pm 0.0068 \quad (-0.4\sigma)$
$A_{\mathrm{L}}$	$1.054 \pm 0.098 \quad (-0.3\sigma)$	$S_8$	$0.853^{+0.031}_{-0.042} \quad (+0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4528 \pm 0.0035 \quad (-0.4\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.139^{+0.047}_{-0.11} \quad (-0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.467^{+0.017}_{-0.023} \quad (+0.2\sigma)$	$H(0.15)$	$73.36 \pm 0.63 \quad (-0.3\sigma)$
$n_{\mathrm{s}}$	$0.9703 \pm 0.0053 \quad (-0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.629^{+0.020}_{-0.031} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$636.7 \pm 6.1 \quad (+0.3\sigma)$
$A_{217}^{\mathrm{CIB}}$	$45 \pm 7 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$1.025^{+0.031}_{-0.051} \quad (+0.1\sigma)$	$H(0.38)$	$83.37 \pm 0.46 \quad (-0.3\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	$> 0.430 \quad (+0.1\sigma)$	$r_{\mathrm{drag}}h$	$100.4 \pm 1.3 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.38)$	$1520 \pm 12 \quad (+0.3\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.7^{+2.0}_{-1.8} \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.596 \pm 0.060 \quad (-0.4\sigma)$	$H(0.51)$	$90.03 \pm 0.37 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$250 \pm 30 \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$11.9^{+2.5}_{-4.3} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1970 \pm 14 \quad (+0.3\sigma)$
$A_{143}^{\mathrm{PS}}$	$42 \pm 8 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.314^{+0.097}_{-0.25} \quad (-0.1\sigma)$	$H(0.61)$	$95.60 \pm 0.30 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$41 \pm 9 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.875 \pm 0.012 \quad (+0.3\sigma)$	$D_{\mathrm{M}}(0.61)$	$2293 \pm 16 \quad (+0.3\sigma)$
$A_{217}^{\mathrm{PS}}$	$115.8 \pm 9.9 \quad (+0.1\sigma)$	$D_{40}$	$1244^{+18}_{-27} \quad (+0.1\sigma)$	$H(2.33)$	$235.71 \pm 0.92 \quad (+0.4\sigma)$
$A^{\mathrm{kSZ}}$	$< 3.22 \quad (-0.1\sigma)$	$D_{220}$	$5737 \pm 40 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5749 \pm 13 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.7 \pm 1.8 \quad (-0.1\sigma)$	$D_{810}$	$2531 \pm 14 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.473^{+0.017}_{-0.023} \quad (+0.2\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.5 \pm 1.8 \quad (+0.0\sigma)$	$D_{1420}$	$815.3 \pm 4.8 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.783^{+0.020}_{-0.041} \quad (-0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.1 \pm 3.3 \quad (+0.1\sigma)$	$D_{2000}$	$232.1 \pm 1.6 \quad (+0.0\sigma)$	$f\sigma_8(0.38)$	$0.493^{+0.016}_{-0.024} \quad (+0.1\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.6 \pm 7.3 \quad (+0.0\sigma)$	$n_{\mathrm{s},0.002}$	$0.9703 \pm 0.0053 \quad (-0.3\sigma)$	$\sigma_8(0.38)$	$0.695^{+0.017}_{-0.037} \quad (-0.0\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.113 \pm 0.038$	$Y_{\mathrm{P}}$	$0.245465 \pm 0.000067 \quad (+0.1\sigma)$	$f\sigma_8(0.51)$	$0.493^{+0.015}_{-0.024} \quad (+0.1\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.134 \pm 0.030$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246792 \pm 0.000067 \quad (+0.1\sigma)$	$\sigma_8(0.51)$	$0.650^{+0.015}_{-0.035} \quad (-0.0\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.481 \pm 0.085$	$10^5 \mathrm{D}/\mathrm{H}$	$2.552 \pm 0.032 \quad (-0.1\sigma)$	$f\sigma_8(0.61)$	$0.488^{+0.015}_{-0.024} \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.221 \pm 0.054$	$\mathrm{Age}/\mathrm{Gyr}$	$13.766 \pm 0.029 \quad (+0.1\sigma)$	$\sigma_8(0.61)$	$0.619^{+0.014}_{-0.033} \quad (-0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.660 \pm 0.081$	$z_*$	$1089.55 \pm 0.33 \quad (+0.1\sigma)$	$f\sigma_8(2.33)$	$0.3124^{+0.0071}_{-0.017} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.06 \pm 0.27$	$r_*$	$144.70 \pm 0.34 \quad (-0.5\sigma)$	$\sigma_8(2.33)$	$0.3223^{+0.0072}_{-0.018} \quad (-0.1\sigma)$
$c_{100}$	$0.99969 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_*$	$1.04127 \pm 0.00032 \quad (-0.3\sigma)$	$f_{2000}^{143}$	$26.8 \pm 2.9 \quad (-0.1\sigma)$
$c_{217}$	$0.99814 \pm 0.00062 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.897 \pm 0.031 \quad (-0.5\sigma)$	$f_{2000}^{143 \times 217}$	$30.0 \pm 2.0 \quad (-0.1\sigma)$
$y_{\mathrm{cal}}$	$0.9999 \pm 0.0025 \quad (-0.1\sigma)$	$z_{\mathrm{drag}}$	$1060.25 \pm 0.34 \quad (+0.3\sigma)$	$f_{2000}^{217}$	$105.1 \pm 1.9 \quad (-0.1\sigma)$
$H_0$	$68.14 \pm 0.73 \quad (-0.3\sigma)$	$r_{\mathrm{drag}}$	$147.31 \pm 0.32 \quad (-0.5\sigma)$	$\chi_{\mathrm{plik}}^2$	$2354.1 \pm 5.9 \quad (+288.0\sigma)$
$\Omega_{\Lambda}$	$0.6949 \pm 0.0096 \quad (-0.3\sigma)$	$k_{\mathrm{D}}$	$0.14078 \pm 0.00033 \quad (+0.6\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.3 \pm 4.4 \quad (+1.2\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 2365.44; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.13; R - 1 = 0.00596$$



### 3.69 base\_Alens\_plikHM\_TTTEEE\_lowl

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022624	$0.02260 \pm 0.00017$ $(-0.1\sigma)$	$\Omega_m$	0.3028	$0.3026 \pm 0.0092$ $(+0.6\sigma)$	$100\theta_D$	0.160509	$0.16055 \pm 0.00019$ $(-0.2\sigma)$
$\Omega_c h^2$	0.11807	$0.1180 \pm 0.0015$ $(+0.6\sigma)$	$\Omega_m h^2$	0.14134	$0.1412 \pm 0.0014$ $(+0.6\sigma)$	$z_{\text{eq}}$	3362.1	$3359 \pm 34$ $(+0.6\sigma)$
$100\theta_{\text{MC}}$	1.041141	$1.04114 \pm 0.00033$ $(-0.5\sigma)$	$\Omega_m h^3$	0.096564	$0.09649 \pm 0.00031$ $(+0.3\sigma)$	$k_{\text{eq}}$	0.010261	$0.01025 \pm 0.00010$ $(+0.6\sigma)$
$\tau$	0.0101	$< 0.0673$ $(-0.1\sigma)$	$\sigma_8$	0.7693	$0.804^{+0.015}_{-0.034}$ $(+0.1\sigma)$	$100\theta_{\text{eq}}$	0.8214	$0.8219 \pm 0.0066$ $(-0.6\sigma)$
$A_L$	1.289	$1.17^{+0.10}_{-0.092}$ $(-0.5\sigma)$	$S_8$	0.7728	$0.807^{+0.025}_{-0.035}$ $(+0.4\sigma)$	$100\theta_{s,\text{eq}}$	0.45344	$0.4537 \pm 0.0034$ $(-0.6\sigma)$
$\ln(10^{10} A_s)$	2.951	$3.040^{+0.034}_{-0.085}$ $(-0.0\sigma)$	$\sigma_8 \Omega_m^{0.5}$	0.4233	$0.442^{+0.014}_{-0.019}$ $(+0.4\sigma)$	$H(0.15)$	73.52	$73.52 \pm 0.61$ $(-0.5\sigma)$
$n_s$	0.97180	$0.9713 \pm 0.0050$ $(-0.5\sigma)$	$\sigma_8 \Omega_m^{0.25}$	0.5706	$0.596^{+0.015}_{-0.025}$ $(+0.3\sigma)$	$D_M(0.15)$	635.1	$635.1 \pm 5.9$ $(+0.5\sigma)$
$y_{\text{cal}}$	0.99982	$0.99999 \pm 0.0025$ $(-0.0\sigma)$	$\sigma_8/h^{0.5}$	0.9307	$0.973^{+0.022}_{-0.040}$ $(+0.2\sigma)$	$H(0.38)$	83.489	$83.49 \pm 0.45$ $(-0.5\sigma)$
$A_{217}^{\text{CIB}}$	42.4	$45 \pm 7$ $(-0.1\sigma)$	$r_{\text{drag}} h$	100.65	$100.7 \pm 1.2$ $(-0.6\sigma)$	$D_M(0.38)$	1516.9	$1517 \pm 12$ $(+0.5\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.998	$> 0.435$ $(+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	2.612	$2.602 \pm 0.059$ $(-0.5\sigma)$	$H(0.51)$	90.126	$90.12 \pm 0.36$ $(-0.5\sigma)$
$A_{143}^{\text{tSZ}}$	6.87	$5.8^{+2.0}_{-1.8}$ $(+0.1\sigma)$	$z_{\text{re}}$	2.10	$7.3^{+2.1}_{-4.6}$ $(-0.1\sigma)$	$D_M(0.51)$	1966.4	$1966 \pm 14$ $(+0.5\sigma)$
$A_{100}^{\text{PS}}$	238.6	$249 \pm 30$ $(+0.0\sigma)$	$10^9 A_s$	1.913	$2.094^{+0.065}_{-0.18}$ $(-0.0\sigma)$	$H(0.61)$	95.684	$95.68 \pm 0.29$ $(-0.4\sigma)$
$A_{143}^{\text{PS}}$	49.5	$42 \pm 8$ $(+0.0\sigma)$	$10^9 A_s e^{-2\tau}$	1.8749	$1.873 \pm 0.012$ $(+0.5\sigma)$	$D_M(0.61)$	2289.2	$2289 \pm 15$ $(+0.5\sigma)$
$A_{143 \times 217}^{\text{PS}}$	57.5	$42 \pm 9$ $(+0.1\sigma)$	$D_{40}$	1208.3	$1220^{+15}_{-17}$ $(+0.4\sigma)$	$H(2.33)$	235.56	$235.48 \pm 0.90$ $(+0.7\sigma)$
$A_{217}^{\text{PS}}$	124.2	$116.0 \pm 9.8$ $(+0.1\sigma)$	$D_{220}$	5738.8	$5737 \pm 39$ $(+0.0\sigma)$	$D_M(2.33)$	5745.3	$5746 \pm 13$ $(+0.4\sigma)$
$A^{\text{kSZ}}$	0.00	$< 3.05$ $(-0.1\sigma)$	$D_{810}$	2532.6	$2531 \pm 14$ $(+0.3\sigma)$	$f\sigma_8(0.15)$	0.4283	$0.448^{+0.013}_{-0.019}$ $(+0.4\sigma)$
$A_{100}^{\text{dustTT}}$	8.83	$8.8 \pm 1.8$ $(-0.1\sigma)$	$D_{1420}$	816.52	$815.5 \pm 4.7$ $(+0.2\sigma)$	$\sigma_8(0.15)$	0.7117	$0.744^{+0.014}_{-0.031}$ $(+0.1\sigma)$
$A_{143}^{\text{dustTT}}$	10.73	$10.6 \pm 1.8$ $(+0.1\sigma)$	$D_{2000}$	232.68	$232.3 \pm 1.6$ $(-0.1\sigma)$	$f\sigma_8(0.38)$	0.4476	$0.468^{+0.012}_{-0.020}$ $(+0.3\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	19.74	$18.1 \pm 3.3$ $(+0.1\sigma)$	$n_{s,0.002}$	0.97180	$0.9713 \pm 0.0050$ $(-0.5\sigma)$	$\sigma_8(0.38)$	0.6318	$0.660^{+0.012}_{-0.028}$ $(+0.1\sigma)$
$A_{217}^{\text{dustTT}}$	95.6	$93.6 \pm 7.3$ $(-0.0\sigma)$	$Y_P$	0.245488	$0.245480 \pm 0.000066$ $(-0.1\sigma)$	$f\sigma_8(0.51)$	0.4472	$0.467^{+0.011}_{-0.019}$ $(+0.3\sigma)$
$A_{100}^{\text{dustTE}}$	0.1127	$0.114 \pm 0.038$	$Y_P^{\text{BBN}}$	0.246815	$0.246807 \pm 0.000066$ $(-0.1\sigma)$	$\sigma_8(0.51)$	0.5916	$0.618^{+0.011}_{-0.026}$ $(+0.0\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	0.1344	$0.134 \pm 0.030$	$10^5 \text{D/H}$	2.5403	$2.545 \pm 0.031$ $(+0.0\sigma)$	$f\sigma_8(0.61)$	0.4432	$0.463^{+0.010}_{-0.019}$ $(+0.3\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.480 \pm 0.084$	Age/Gyr	13.7569	$13.759 \pm 0.028$ $(+0.3\sigma)$	$\sigma_8(0.61)$	0.5632	$0.5887^{+0.0099}_{-0.025}$ $(+0.0\sigma)$
$A_{143}^{\text{dustTE}}$	0.221	$0.221 \pm 0.054$	$z_*$	1089.436	$1089.46 \pm 0.31$ $(+0.3\sigma)$	$f\sigma_8(2.33)$	0.2843	$0.2972^{+0.0049}_{-0.013}$ $(-0.0\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	0.657	$0.660 \pm 0.079$	$r_*$	144.738	$144.78 \pm 0.33$ $(-0.7\sigma)$	$\sigma_8(2.33)$	0.2935	$0.3068^{+0.0049}_{-0.013}$ $(-0.1\sigma)$
$A_{217}^{\text{dustTE}}$	2.048	$2.05 \pm 0.27$	$100\theta_*$	1.041307	$1.04131 \pm 0.00032$ $(-0.5\sigma)$	$\chi_{\text{lowl}}^2$	21.43	$22.6 \pm 1.4$ $(+0.3\sigma)$
$c_{100}$	0.99976	$0.99969 \pm 0.00061$ $(+0.1\sigma)$	$D_M(z_*)/\text{Gpc}$	13.8997	$13.904 \pm 0.030$ $(-0.7\sigma)$	$\chi_{\text{plik}}^2$	2337.2	$2353.9 \pm 5.8$ $(+291.6\sigma)$
$c_{217}$	0.99815	$0.99812 \pm 0.00062$ $(-0.1\sigma)$	$z_{\text{drag}}$	1060.390	$1060.31 \pm 0.33$ $(+0.1\sigma)$	$\chi_{\text{prior}}^2$	1.37	$11.2 \pm 4.4$ $(+1.1\sigma)$
$H_0$	68.32	$68.33 \pm 0.71$ $(-0.5\sigma)$	$r_{\text{drag}}$	147.321	$147.38 \pm 0.32$ $(-0.8\sigma)$	$\chi_{\text{CMB}}^2$	2358.7	$2376.5 \pm 5.9$ $(+286.3\sigma)$
$\Omega_\Lambda$	0.6972	$0.6974 \pm 0.0092$ $(-0.6\sigma)$	$k_D$	0.140814	$0.14074 \pm 0.00033$ $(+0.8\sigma)$			

Best-fit  $\chi_{\text{eff}}^2 = 2360.02$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.02$ ;  $\bar{\chi}_{\text{eff}}^2 = 2387.73$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.29$ ;  $R - 1 = 0.00854$   
 $\chi_{\text{eff}}^2$ : CMB - commander\_dx12.v3.2.29: 21.43 ( $\Delta$  0.45) plik\_rd12\_HM.v22b\_TTTEEE: 2337.22



### 3.70 base\_Alens\_plikHM\_TTTEE\_lowl\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02260 \pm 0.00017 \quad (-0.1\sigma)$	$\Omega_{\mathrm{m}}h^2$	$0.1411 \pm 0.0014 \quad (+0.7\sigma)$	$k_{\mathrm{eq}}$	$0.01025 \pm 0.00010 \quad (+0.7\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1179 \pm 0.0015 \quad (+0.7\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09649 \pm 0.00031 \quad (+0.3\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8223 \pm 0.0067 \quad (-0.7\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04115 \pm 0.00033 \quad (-0.5\sigma)$	$\sigma_8$	$0.822^{+0.013}_{-0.026} \quad (+0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4539 \pm 0.0034 \quad (-0.7\sigma)$
$\tau$	$0.077^{+0.011}_{-0.033} \quad (-0.1\sigma)$	$S_8$	$0.824^{+0.023}_{-0.029} \quad (+0.5\sigma)$	$H(0.15)$	$73.56 \pm 0.61 \quad (-0.6\sigma)$
$A_{\mathrm{L}}$	$1.123 \pm 0.080 \quad (-0.6\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.452^{+0.012}_{-0.016} \quad (+0.5\sigma)$	$D_{\mathrm{M}}(0.15)$	$634.8 \pm 5.9 \quad (+0.6\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.084^{+0.025}_{-0.064} \quad (-0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.609^{+0.013}_{-0.020} \quad (+0.4\sigma)$	$H(0.38)$	$83.51 \pm 0.45 \quad (-0.6\sigma)$
$n_{\mathrm{s}}$	$0.9719 \pm 0.0050 \quad (-0.6\sigma)$	$\sigma_8/h^{0.5}$	$0.994^{+0.019}_{-0.032} \quad (+0.3\sigma)$	$D_{\mathrm{M}}(0.38)$	$1516 \pm 12 \quad (+0.6\sigma)$
$y_{\mathrm{cal}}$	$0.99999 \pm 0.0025 \quad (-0.0\sigma)$	$r_{\mathrm{drag}}h$	$100.8 \pm 1.2 \quad (-0.7\sigma)$	$H(0.51)$	$90.14 \pm 0.36 \quad (-0.5\sigma)$
$A_{217}^{\mathrm{CIB}}$	$44 \pm 7 \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.601 \pm 0.059 \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.51)$	$1966 \pm 14 \quad (+0.6\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	$> 0.438 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$< 10.6 \quad (-0.1\sigma)$	$H(0.61)$	$95.69 \pm 0.29 \quad (-0.5\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.8^{+2.0}_{-1.8} \quad (+0.1\sigma)$	$10^9 A_{\mathrm{s}}$	$2.188^{+0.051}_{-0.14} \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2288 \pm 15 \quad (+0.6\sigma)$
$A_{100}^{\mathrm{PS}}$	$248 \pm 30 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.873 \pm 0.012 \quad (+0.5\sigma)$	$H(2.33)$	$235.42 \pm 0.90 \quad (+0.7\sigma)$
$A_{143}^{\mathrm{PS}}$	$41 \pm 8 \quad (+0.0\sigma)$	$D_{40}$	$1225^{+15}_{-17} \quad (+0.4\sigma)$	$D_{\mathrm{M}}(2.33)$	$5746 \pm 13 \quad (+0.4\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$41 \pm 9 \quad (+0.1\sigma)$	$D_{220}$	$5736 \pm 39 \quad (+0.0\sigma)$	$f\sigma_8(0.15)$	$0.457^{+0.012}_{-0.016} \quad (+0.5\sigma)$
$A_{217}^{\mathrm{PS}}$	$116.1 \pm 9.8 \quad (+0.1\sigma)$	$D_{810}$	$2530 \pm 14 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.760^{+0.011}_{-0.024} \quad (+0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 2.98 \quad (-0.1\sigma)$	$D_{1420}$	$815.7 \pm 4.7 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.478^{+0.010}_{-0.016} \quad (+0.4\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.8 \pm 1.8 \quad (-0.1\sigma)$	$D_{2000}$	$232.4 \pm 1.6 \quad (-0.1\sigma)$	$\sigma_8(0.38)$	$0.6750^{+0.0092}_{-0.021} \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.5 \pm 1.8 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9719 \pm 0.0050 \quad (-0.6\sigma)$	$f\sigma_8(0.51)$	$0.4774^{+0.0095}_{-0.016} \quad (+0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.0 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245482 \pm 0.000067 \quad (-0.1\sigma)$	$\sigma_8(0.51)$	$0.6321^{+0.0084}_{-0.020} \quad (+0.0\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.6 \pm 7.3 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246808 \pm 0.000067 \quad (-0.1\sigma)$	$f\sigma_8(0.61)$	$0.4731^{+0.0089}_{-0.015} \quad (+0.3\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.113 \pm 0.038$	$10^5 \mathrm{D}/\mathrm{H}$	$2.544 \pm 0.031 \quad (+0.1\sigma)$	$\sigma_8(0.61)$	$0.6018^{+0.0079}_{-0.019} \quad (+0.0\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.134 \pm 0.029$	$\mathrm{Age}/\mathrm{Gyr}$	$13.758 \pm 0.028 \quad (+0.4\sigma)$	$f\sigma_8(2.33)$	$0.3038^{+0.0038}_{-0.0097} \quad (-0.0\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.480 \pm 0.084$	$z_*$	$1089.45 \pm 0.32 \quad (+0.3\sigma)$	$\sigma_8(2.33)$	$0.3137^{+0.0038}_{-0.010} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.221 \pm 0.054$	$r_*$	$144.81 \pm 0.33 \quad (-0.8\sigma)$	$f_{2000}^{143}$	$26.4 \pm 2.9 \quad (+0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.661 \pm 0.079$	$100\theta_*$	$1.04132 \pm 0.00032 \quad (-0.5\sigma)$	$f_{2000}^{143 \times 217}$	$29.7 \pm 2.0 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.05 \pm 0.27$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.906 \pm 0.030 \quad (-0.8\sigma)$	$f_{2000}^{217}$	$104.8 \pm 1.9 \quad (+0.1\sigma)$
$c_{100}$	$0.99969 \pm 0.00061 \quad (+0.1\sigma)$	$z_{\mathrm{drag}}$	$1060.31 \pm 0.34 \quad (+0.1\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.2 \pm 1.5 \quad (+0.4\sigma)$
$c_{217}$	$0.99812 \pm 0.00063 \quad (-0.1\sigma)$	$r_{\mathrm{drag}}$	$147.40 \pm 0.32 \quad (-0.8\sigma)$	$\chi_{\mathrm{plik}}^2$	$2353.8 \pm 5.8 \quad (+288.7\sigma)$
$H_0$	$68.38 \pm 0.71 \quad (-0.6\sigma)$	$k_{\mathrm{D}}$	$0.14071 \pm 0.00033 \quad (+0.8\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.2 \pm 4.4 \quad (+1.1\sigma)$
$\Omega_{\Lambda}$	$0.6980 \pm 0.0092 \quad (-0.6\sigma)$	$100\theta_{\mathrm{D}}$	$0.16055 \pm 0.00019 \quad (-0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2377.1 \pm 6.0 \quad (+283.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3020 \pm 0.0092 \quad (+0.6\sigma)$	$z_{\mathrm{eq}}$	$3357 \pm 34 \quad (+0.7\sigma)$		

$\bar{\chi}_{\mathrm{eff}}^2 = 2388.28$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.36$ ;  $R - 1 = 0.01143$



### 3.71 base\_Alens\_plikHM\_TTTEEE\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022613	$0.02256 \pm 0.00017$ (+0.2 $\sigma$ )	$\Omega_{\text{m}}h^2$	0.14147	$0.1418 \pm 0.0014$ (+0.3 $\sigma$ )	$k_{\text{eq}}$	0.010271	$0.01029 \pm 0.00011$ (+0.3 $\sigma$ )
$\Omega_{\text{c}}h^2$	0.11821	$0.1186 \pm 0.0016$ (+0.2 $\sigma$ )	$\Omega_{\text{m}}h^3$	0.096558	$0.09650 \pm 0.00030$ (+0.4 $\sigma$ )	$100\theta_{\text{eq}}$	0.8208	$0.8193 \pm 0.0067$ (−0.2 $\sigma$ )
$100\theta_{\text{MC}}$	1.041116	$1.04109 \pm 0.00033$ (−0.2 $\sigma$ )	$\sigma_8$	0.8025	$0.8015 \pm 0.0090$ (+0.2 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.45312	$0.4524 \pm 0.0034$ (−0.3 $\sigma$ )
$\tau$	0.0518	$0.0495 \pm 0.0086$ (−0.1 $\sigma$ )	$S_8$	0.8074	$0.810 \pm 0.019$ (+0.2 $\sigma$ )	$H(0.15)$	73.46	$73.30 \pm 0.62$ (−0.2 $\sigma$ )
$A_{\text{L}}$	1.183	$1.168 \pm 0.066$ (−0.4 $\sigma$ )	$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4422	$0.443 \pm 0.011$ (+0.2 $\sigma$ )	$D_{\text{M}}(0.15)$	635.7	$637.3 \pm 6.1$ (+0.1 $\sigma$ )
$\ln(10^{10}A_{\text{s}})$	3.0349	$3.031 \pm 0.018$ (+0.0 $\sigma$ )	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.5957	$0.596 \pm 0.010$ (+0.2 $\sigma$ )	$H(0.38)$	83.446	$83.33 \pm 0.46$ (−0.1 $\sigma$ )
$n_{\text{s}}$	0.9714	$0.9687 \pm 0.0050$ (−0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9714	$0.972 \pm 0.015$ (+0.2 $\sigma$ )	$D_{\text{M}}(0.38)$	1518.0	$1521 \pm 12$ (+0.1 $\sigma$ )
$y_{\text{cal}}$	0.99970	$1.0000 \pm 0.0025$ (−0.0 $\sigma$ )	$r_{\text{drag}}h$	100.54	$100.2 \pm 1.2$ (−0.2 $\sigma$ )	$H(0.51)$	90.092	$90.00 \pm 0.36$ (−0.1 $\sigma$ )
$A_{217}^{\text{CIB}}$	42.4	$45 \pm 7$ (−0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.612	$2.599 \pm 0.059$ (−0.4 $\sigma$ )	$D_{\text{M}}(0.51)$	1967.7	$1972 \pm 14$ (+0.1 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.9998	$> 0.409$ (+0.0 $\sigma$ )	$z_{\text{re}}$	7.35	$7.09^{+0.92}_{-0.75}$ (−0.1 $\sigma$ )	$H(0.61)$	95.657	$95.58 \pm 0.29$ (−0.1 $\sigma$ )
$A_{143}^{\text{tSZ}}$	6.81	$5.6^{+2.1}_{-1.8}$ (+0.1 $\sigma$ )	$10^9 A_{\text{s}}$	2.0800	$2.072 \pm 0.037$ (+0.0 $\sigma$ )	$D_{\text{M}}(0.61)$	2290.7	$2295 \pm 16$ (+0.1 $\sigma$ )
$A_{100}^{\text{PS}}$	240.1	$252 \pm 28$ (−0.1 $\sigma$ )	$10^9 A_{\text{s}}e^{-2\tau}$	1.8752	$1.877 \pm 0.012$ (+0.2 $\sigma$ )	$H(2.33)$	235.64	$235.83 \pm 0.90$ (+0.3 $\sigma$ )
$A_{143}^{\text{PS}}$	49.6	$43 \pm 8$ (−0.1 $\sigma$ )	$D_{40}$	1216.0	$1222 \pm 14$ (+0.1 $\sigma$ )	$D_{\text{M}}(2.33)$	5746.4	$5750 \pm 13$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	57.4	$42 \pm 9$ (+0.0 $\sigma$ )	$D_{220}$	5737.9	$5743 \pm 39$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4474	$0.448 \pm 0.010$ (+0.2 $\sigma$ )
$A_{217}^{\text{PS}}$	124.1	$116 \pm 10$ (+0.1 $\sigma$ )	$D_{810}$	2532.4	$2532 \pm 14$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7423	$0.7412 \pm 0.0078$ (+0.1 $\sigma$ )
$A^{\text{kSZ}}$	0.00	$< 3.33$ (−0.1 $\sigma$ )	$D_{1420}$	816.31	$815.1 \pm 4.7$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4673	$0.4677 \pm 0.0083$ (+0.2 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.69	$8.8 \pm 1.8$ (−0.0 $\sigma$ )	$D_{2000}$	232.62	$231.9 \pm 1.6$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6589	$0.6576 \pm 0.0065$ (+0.1 $\sigma$ )
$A_{143}^{\text{dustTT}}$	10.73	$10.6 \pm 1.8$ (+0.0 $\sigma$ )	$n_{\text{s},0.002}$	0.9714	$0.9687 \pm 0.0050$ (−0.1 $\sigma$ )	$f\sigma_8(0.51)$	0.4668	$0.4670 \pm 0.0074$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	19.71	$18.1 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\text{P}}$	0.245484	$0.245465 \pm 0.000067$ (+0.2 $\sigma$ )	$\sigma_8(0.51)$	0.6170	$0.6156 \pm 0.0059$ (+0.1 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.4	$93.5 \pm 7.4$ (+0.0 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.246811	$0.246791 \pm 0.000067$ (+0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.4625	$0.4625 \pm 0.0067$ (+0.2 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1130	$0.114 \pm 0.038$	$10^5 \text{D/H}$	2.5422	$2.552 \pm 0.031$ (−0.2 $\sigma$ )	$\sigma_8(0.61)$	0.5873	$0.5860 \pm 0.0056$ (+0.1 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1343	$0.134 \pm 0.029$	Age/Gyr	13.7593	$13.767 \pm 0.029$ (−0.0 $\sigma$ )	$f\sigma_8(2.33)$	0.29642	$0.2957 \pm 0.0027$ (+0.1 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.483	$0.480 \pm 0.085$	$z_*$	1089.462	$1089.57 \pm 0.32$ (−0.1 $\sigma$ )	$\sigma_8(2.33)$	0.30594	$0.3051 \pm 0.0028$ (+0.0 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.224	$0.222 \pm 0.054$	$r_*$	144.709	$144.66 \pm 0.33$ (−0.4 $\sigma$ )	$f_{2000}^{143}$	25.64	$27.3 \pm 2.9$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.659	$0.661 \pm 0.080$	$100\theta_*$	1.041284	$1.04126 \pm 0.00032$ (−0.2 $\sigma$ )	$f_{2000}^{143 \times 217}$	29.65	$30.4 \pm 2.0$ (−0.2 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.071	$2.06 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8972	$13.893 \pm 0.030$ (−0.4 $\sigma$ )	$f_{2000}^{217}$	104.32	$105.4 \pm 1.9$ (−0.1 $\sigma$ )
$c_{100}$	0.99976	$0.99971 \pm 0.00061$ (+0.1 $\sigma$ )	$z_{\text{drag}}$	1060.352	$1060.26 \pm 0.34$ (+0.3 $\sigma$ )	$\chi_{\text{small}}^2$	395.71	$396.9 \pm 1.7$ (+0.0 $\sigma$ )
$c_{217}$	0.99810	$0.99813 \pm 0.00062$ (−0.1 $\sigma$ )	$r_{\text{drag}}$	147.297	$147.26 \pm 0.32$ (−0.4 $\sigma$ )	$\chi_{\text{plik}}^2$	2337.0	$2353.9 \pm 5.7$ (+288.1 $\sigma$ )
$H_0$	68.25	$68.07 \pm 0.72$ (−0.2 $\sigma$ )	$k_{\text{D}}$	0.140833	$0.14083 \pm 0.00032$ (+0.6 $\sigma$ )	$\chi_{\text{prior}}^2$	1.35	$11.3 \pm 4.4$ (+1.2 $\sigma$ )
$\Omega_{\Lambda}$	0.6963	$0.6938 \pm 0.0095$ (−0.2 $\sigma$ )	$100\theta_{\text{D}}$	0.160516	$0.16058 \pm 0.00019$ (−0.4 $\sigma$ )	$\chi_{\text{CMB}}^2$	2732.7	$2750.8 \pm 6.0$ (+275.6 $\sigma$ )
$\Omega_{\text{m}}$	0.3037	$0.3062 \pm 0.0095$ (+0.2 $\sigma$ )	$z_{\text{eq}}$	3365.2	$3373 \pm 35$ (+0.3 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 2734.06$ ;  $\Delta\chi_{\text{eff}}^2 = 1584.77$ ;  $\bar{\chi}_{\text{eff}}^2 = 2762.07$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.00$ ;  $R - 1 = 0.00592$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.71 ( $\Delta$  0.05) plik\_rd12\_HM.v22b.TTTEEE: 2337.00



### 3.72 base\_Alens\_CamSpecHM\_TT

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022619	$0.02256 \pm 0.00031$	$S_8$	0.848	$0.834^{+0.048}_{-0.055}$	$100\theta_{\text{eq}}$	0.8273	$0.826 \pm 0.012$
$\Omega_c h^2$	0.11677	$0.1172 \pm 0.0028$	$\sigma_8 \Omega_m^{0.5}$	0.4643	$0.457^{+0.026}_{-0.030}$	$100\theta_{\text{s,eq}}$	0.4565	$0.4556 \pm 0.0062$
$100\theta_{\text{MC}}$	1.04141	$1.04135 \pm 0.00056$	$\sigma_8 \Omega_m^{0.25}$	0.6299	$0.618^{+0.031}_{-0.039}$	$H(0.15)$	73.98	$73.8 \pm 1.1$
$\tau$	0.121	$< 0.124$	$\sigma_8/h^{0.5}$	1.030	$1.010^{+0.049}_{-0.063}$	$D_{\text{M}}(0.15)$	630.6	$633 \pm 11$
$A_{\text{L}}$	1.080	$1.12^{+0.13}_{-0.16}$	$r_{\text{drag}} h$	101.71	$101.3 \pm 2.3$	$H(0.38)$	83.81	$83.68 \pm 0.85$
$\ln(10^{10} A_{\text{s}})$	3.169	$3.121^{+0.076}_{-0.15}$	$\langle d^2 \rangle^{1/2}$	2.642	$2.630 \pm 0.079$	$D_{\text{M}}(0.38)$	1507.8	$1512 \pm 22$
$n_{\text{s}}$	0.9764	$0.9740 \pm 0.0086$	$z_{\text{re}}$	13.40	$11.0^{+5.5}_{-4.3}$	$H(0.51)$	90.37	$90.26 \pm 0.68$
$A_{100}^{\text{PS}}$	219.7	$230 \pm 25$	$10^9 A_{\text{s}}$	2.378	$2.28^{+0.14}_{-0.34}$	$D_{\text{M}}(0.51)$	1955.8	$1961 \pm 26$
$A_{143}^{\text{PS}}$	43.7	$34 \pm 9$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8663	$1.867 \pm 0.016$	$H(0.61)$	95.86	$95.78^{+0.52}_{-0.59}$
$A_{217}^{\text{PS}}$	108.4	$104 \pm 10$	$D_{40}$	1234.5	$1233^{+23}_{-33}$	$D_{\text{M}}(0.61)$	2278.0	$2283 \pm 28$
$A_{217}^{\text{CIB}}$	37.8	$37 \pm 7$	$D_{220}$	5724.4	$5723 \pm 42$	$H(2.33)$	234.73	$235.0 \pm 1.6$
$A_{143}^{\text{tSZ}}$	6.31	$4.2^{+2.0}_{-2.3}$	$D_{810}$	2526.9	$2525 \pm 14$	$D_{\text{M}}(2.33)$	5738.7	$5743 \pm 24$
$r_{143 \times 217}^{\text{PS}}$	0.764	$0.68 \pm 0.14$	$D_{1420}$	815.5	$814.0 \pm 5.2$	$f\sigma_8(0.15)$	0.4705	$0.463^{+0.026}_{-0.030}$
$r_{143 \times 217}^{\text{CIB}}$	0.784	$0.51^{+0.32}_{-0.28}$	$D_{2000}$	232.91	$232.1 \pm 2.2$	$\sigma_8(0.15)$	0.7914	$0.774^{+0.032}_{-0.053}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.89	—	$n_{\text{s},0.002}$	0.9764	$0.9740 \pm 0.0086$	$f\sigma_8(0.38)$	0.4937	$0.484^{+0.025}_{-0.030}$
$A^{\text{kSZ}}$	0.00	$< 5.23$	$Y_{\text{P}}$	0.245487	$0.24547^{+0.00011}_{-0.00013}$	$\sigma_8(0.38)$	0.7034	$0.688^{+0.027}_{-0.048}$
$A_{100}^{\text{dust}}$	0.995	$1.00 \pm 0.19$	$Y_{\text{P}}^{\text{BBN}}$	0.246814	$0.24679^{+0.00011}_{-0.00013}$	$f\sigma_8(0.51)$	0.4942	$0.485^{+0.024}_{-0.030}$
$A_{143}^{\text{dust}}$	0.965	$0.95 \pm 0.18$	$10^5 \text{D}/\text{H}$	2.541	$2.552 \pm 0.056$	$\sigma_8(0.51)$	0.6591	$0.644^{+0.024}_{-0.046}$
$A_{217}^{\text{dust}}$	0.989	$0.98 \pm 0.10$	$\text{Age}/\text{Gyr}$	13.744	$13.753 \pm 0.054$	$f\sigma_8(0.61)$	0.4904	$0.481^{+0.023}_{-0.030}$
$A_{143 \times 217}^{\text{dust}}$	1.007	$1.01 \pm 0.16$	$z_*$	1089.33	$1089.45 \pm 0.58$	$\sigma_8(0.61)$	0.6277	$0.614^{+0.023}_{-0.044}$
$y_{\text{cal}}$	1.00007	$1.0000 \pm 0.0025$	$r_*$	145.08	$145.01 \pm 0.58$	$f\sigma_8(2.33)$	0.3172	$0.310^{+0.011}_{-0.023}$
$c_{100}$	0.99783	$0.9976 \pm 0.0011$	$100\theta_*$	1.04157	$1.04152 \pm 0.00054$	$\sigma_8(2.33)$	0.3278	$0.320^{+0.011}_{-0.025}$
$c_{217}$	1.00083	$1.0008 \pm 0.0016$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.929	$13.923 \pm 0.052$	$f_{2000}^{143}$	25.76	$26 \pm 4$
$H_0$	68.87	$68.7 \pm 1.3$	$z_{\text{drag}}$	1060.28	$1060.17 \pm 0.58$	$f_{2000}^{217}$	103.72	$104.5 \pm 2.5$
$\Omega_{\Lambda}$	0.7048	$0.701 \pm 0.017$	$r_{\text{drag}}$	147.67	$147.62 \pm 0.55$	$f_{2000}^{143 \times 217}$	28.79	$29.4 \pm 2.7$
$\Omega_{\text{m}}$	0.2952	$0.299 \pm 0.017$	$k_{\text{D}}$	0.14044	$0.14045 \pm 0.00054$	$\chi_{\text{CamSpec}}^2$	7045.0	$7059.9 \pm 5.4$
$\Omega_{\text{m}} h^2$	0.14003	$0.1404 \pm 0.0026$	$100\theta_{\text{D}}$	0.160599	$0.16066 \pm 0.00032$	$\chi_{\text{prior}}^2$	1.43	$7.2 \pm 3.3$
$\Omega_{\text{m}} h^3$	0.09645	$0.09639 \pm 0.00051$	$z_{\text{eq}}$	3331	$3341 \pm 61$			
$\sigma_8$	0.8546	$0.836^{+0.036}_{-0.055}$	$k_{\text{eq}}$	0.010167	$0.01020 \pm 0.00019$			

Best-fit  $\chi_{\text{eff}}^2 = 7046.45$ ;  $\bar{\chi}_{\text{eff}}^2 = 7067.10$ ;  $R - 1 = 0.00805$   
 $\chi_{\text{eff}}^2$ : CMB - CamSpec like\_10.7HM: 7045.02



### 3.73 base\_Alens\_CamSpecHM\_TT\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02248 \pm 0.00022$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.461^{+0.021}_{-0.030}$	$H(0.15)$	$73.43 \pm 0.53$
$\Omega_{\mathrm{c}}h^2$	$0.1181 \pm 0.0013$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.621^{+0.027}_{-0.040}$	$D_{\mathrm{M}}(0.15)$	$636.0 \pm 5.2$
$100\theta_{\mathrm{MC}}$	$1.04123 \pm 0.00044$	$\sigma_8/h^{0.5}$	$1.013^{+0.042}_{-0.066}$	$H(0.38)$	$83.40 \pm 0.41$
$\tau$	$0.094^{+0.028}_{-0.080}$	$r_{\mathrm{drag}}h$	$100.6 \pm 1.0$	$D_{\mathrm{M}}(0.38)$	$1519 \pm 11$
$A_{\mathrm{L}}$	$1.11 \pm 0.13$	$\langle d^2 \rangle^{1/2}$	$2.622 \pm 0.076$	$H(0.51)$	$90.04 \pm 0.34$
$\ln(10^{10}A_{\mathrm{s}})$	$3.116^{+0.074}_{-0.14}$	$z_{\mathrm{re}}$	$10.8^{+5.3}_{-4.3}$	$D_{\mathrm{M}}(0.51)$	$1969 \pm 12$
$n_{\mathrm{s}}$	$0.9715 \pm 0.0051$	$10^9 A_{\mathrm{s}}$	$2.27^{+0.14}_{-0.33}$	$H(0.61)$	$95.60 \pm 0.29$
$A_{100}^{\mathrm{PS}}$	$231 \pm 25$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.871 \pm 0.012$	$D_{\mathrm{M}}(0.61)$	$2292 \pm 13$
$A_{143}^{\mathrm{PS}}$	$35 \pm 8$	$D_{40}$	$1236^{+18}_{-32}$	$H(2.33)$	$235.44 \pm 0.81$
$A_{217}^{\mathrm{PS}}$	$104 \pm 10$	$D_{220}$	$5719 \pm 41$	$D_{\mathrm{M}}(2.33)$	$5750 \pm 14$
$A_{217}^{\mathrm{CIB}}$	$37 \pm 7$	$D_{810}$	$2526 \pm 14$	$f\sigma_8(0.15)$	$0.466^{+0.021}_{-0.030}$
$A_{143}^{\mathrm{tSZ}}$	$4.1^{+2.0}_{-2.4}$	$D_{1420}$	$813.6 \pm 5.1$	$\sigma_8(0.15)$	$0.774^{+0.029}_{-0.053}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.68 \pm 0.14$	$D_{2000}$	$231.7 \pm 1.9$	$f\sigma_8(0.38)$	$0.487^{+0.021}_{-0.031}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.51^{+0.34}_{-0.27}$	$n_{\mathrm{s},0.002}$	$0.9715 \pm 0.0051$	$\sigma_8(0.38)$	$0.687^{+0.025}_{-0.048}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.245436 \pm 0.000088$	$f\sigma_8(0.51)$	$0.487^{+0.020}_{-0.032}$
$A^{\mathrm{kSZ}}$	$< 5.38$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246763 \pm 0.000088$	$\sigma_8(0.51)$	$0.644^{+0.023}_{-0.045}$
$A_{100}^{\mathrm{dust}}$	$1.00 \pm 0.19$	$10^5 \mathrm{D}/\mathrm{H}$	$2.566 \pm 0.041$	$f\sigma_8(0.61)$	$0.482^{+0.020}_{-0.032}$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.18$	$\mathrm{Age}/\mathrm{Gyr}$	$13.768 \pm 0.032$	$\sigma_8(0.61)$	$0.613^{+0.021}_{-0.043}$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$z_*$	$1089.61 \pm 0.33$	$f\sigma_8(2.33)$	$0.309^{+0.011}_{-0.022}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$r_*$	$144.84 \pm 0.32$	$\sigma_8(2.33)$	$0.319^{+0.011}_{-0.023}$
$y_{\mathrm{cal}}$	$1.0000 \pm 0.0025$	$100\theta_*$	$1.04141 \pm 0.00043$	$f_{2000}^{143}$	$27 \pm 3$
$c_{100}$	$0.9976 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.908 \pm 0.032$	$f_{2000}^{217}$	$104.9 \pm 2.2$
$c_{217}$	$1.0008 \pm 0.0016$	$z_{\mathrm{drag}}$	$1060.06 \pm 0.49$	$f_{2000}^{143 \times 217}$	$29.9 \pm 2.4$
$H_0$	$68.23 \pm 0.61$	$r_{\mathrm{drag}}$	$147.48 \pm 0.35$	$\chi_{\mathrm{CamSpec}}^2$	$7059.1 \pm 5.3$
$\Omega_{\Lambda}$	$0.6966 \pm 0.0078$	$k_{\mathrm{D}}$	$0.14055 \pm 0.00046$	$\chi_{6\mathrm{DF}}^2$	$0.046 \pm 0.065$
$\Omega_{\mathrm{m}}$	$0.3034 \pm 0.0078$	$100\theta_{\mathrm{D}}$	$0.16072 \pm 0.00028$	$\chi_{\mathrm{MGS}}^2$	$1.86 \pm 0.64$
$\Omega_{\mathrm{m}}h^2$	$0.1412 \pm 0.0012$	$z_{\mathrm{eq}}$	$3359 \pm 30$	$\chi_{\mathrm{DR12BAO}}^2$	$4.1 \pm 1.0$
$\Omega_{\mathrm{m}}h^3$	$0.09635 \pm 0.00050$	$k_{\mathrm{eq}}$	$0.010252 \pm 0.000091$	$\chi_{\mathrm{prior}}^2$	$7.2 \pm 3.3$
$\sigma_8$	$0.837^{+0.032}_{-0.057}$	$100\theta_{\mathrm{eq}}$	$0.8217 \pm 0.0057$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.1$
$S_8$	$0.842^{+0.039}_{-0.054}$	$100\theta_{\mathrm{s,eq}}$	$0.4537 \pm 0.0029$		
$\bar{\chi}_{\mathrm{eff}}^2 = 7072.33; R - 1 = 0.01128$					



### 3.74 base\_Alens\_CamSpecHM\_TT\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02256 \pm 0.00031$	$S_8$	$0.847^{+0.042}_{-0.050}$	$100\theta_{\mathrm{eq}}$	$0.826 \pm 0.012$
$\Omega_{\mathrm{c}}h^2$	$0.1171 \pm 0.0028$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.464^{+0.023}_{-0.027}$	$100\theta_{\mathrm{s,eq}}$	$0.4559 \pm 0.0062$
$100\theta_{\mathrm{MC}}$	$1.04136 \pm 0.00056$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.628^{+0.026}_{-0.034}$	$H(0.15)$	$73.8 \pm 1.1$
$\tau$	$0.114^{+0.026}_{-0.065}$	$\sigma_8/h^{0.5}$	$1.026^{+0.040}_{-0.055}$	$D_{\mathrm{M}}(0.15)$	$632 \pm 11$
$A_{\mathrm{L}}$	$1.08^{+0.11}_{-0.13}$	$r_{\mathrm{drag}}h$	$101.4 \pm 2.3$	$H(0.38)$	$83.71 \pm 0.85$
$\ln(10^{10}A_{\mathrm{s}})$	$3.155^{+0.058}_{-0.12}$	$\langle d^2 \rangle^{1/2}$	$2.630 \pm 0.079$	$D_{\mathrm{M}}(0.38)$	$1511 \pm 22$
$n_{\mathrm{s}}$	$0.9746 \pm 0.0085$	$z_{\mathrm{re}}$	$12.7^{+3.2}_{-4.3}$	$H(0.51)$	$90.29^{+0.64}_{-0.72}$
$A_{100}^{\mathrm{PS}}$	$229 \pm 25$	$10^9 A_{\mathrm{s}}$	$2.35^{+0.12}_{-0.29}$	$D_{\mathrm{M}}(0.51)$	$1959 \pm 26$
$A_{143}^{\mathrm{PS}}$	$34 \pm 9$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.866 \pm 0.016$	$H(0.61)$	$95.80^{+0.51}_{-0.59}$
$A_{217}^{\mathrm{PS}}$	$104 \pm 10$	$D_{40}$	$1238^{+23}_{-33}$	$D_{\mathrm{M}}(0.61)$	$2282 \pm 28$
$A_{217}^{\mathrm{CIB}}$	$37 \pm 7$	$D_{220}$	$5721 \pm 42$	$H(2.33)$	$234.9 \pm 1.6$
$A_{143}^{\mathrm{tSZ}}$	$4.2^{+2.0}_{-2.3}$	$D_{810}$	$2525 \pm 14$	$D_{\mathrm{M}}(2.33)$	$5742 \pm 24$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.68 \pm 0.14$	$D_{1420}$	$814.1 \pm 5.2$	$f\sigma_8(0.15)$	$0.470^{+0.023}_{-0.027}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.51^{+0.32}_{-0.29}$	$D_{2000}$	$232.2 \pm 2.2$	$\sigma_8(0.15)$	$0.787^{+0.025}_{-0.044}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.9746 \pm 0.0085$	$f\sigma_8(0.38)$	$0.492^{+0.021}_{-0.027}$
$A^{\mathrm{kSZ}}$	$< 5.17$	$Y_{\mathrm{P}}$	$0.24547^{+0.00011}_{-0.00013}$	$\sigma_8(0.38)$	$0.699^{+0.021}_{-0.041}$
$A_{100}^{\mathrm{dust}}$	$1.00 \pm 0.20$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24680^{+0.00011}_{-0.00013}$	$f\sigma_8(0.51)$	$0.492^{+0.020}_{-0.027}$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.18$	$10^5 \mathrm{D}/\mathrm{H}$	$2.551 \pm 0.056$	$\sigma_8(0.51)$	$0.655^{+0.019}_{-0.038}$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$\mathrm{Age}/\mathrm{Gyr}$	$13.752 \pm 0.054$	$f\sigma_8(0.61)$	$0.488^{+0.019}_{-0.026}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.01 \pm 0.16$	$z_*$	$1089.43 \pm 0.58$	$\sigma_8(0.61)$	$0.624^{+0.018}_{-0.037}$
$y_{\mathrm{cal}}$	$1.0000 \pm 0.0025$	$r_*$	$145.04 \pm 0.58$	$f\sigma_8(2.33)$	$0.3151^{+0.0088}_{-0.019}$
$c_{100}$	$0.9976 \pm 0.0011$	$100\theta_*$	$1.04153 \pm 0.00054$	$\sigma_8(2.33)$	$0.3255^{+0.0088}_{-0.020}$
$c_{217}$	$1.0008 \pm 0.0016$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.925 \pm 0.052$	$f_{2000}^{143}$	$26 \pm 4$
$H_0$	$68.7 \pm 1.3$	$z_{\mathrm{drag}}$	$1060.17 \pm 0.59$	$f_{2000}^{217}$	$104.4 \pm 2.5$
$\Omega_{\Lambda}$	$0.702 \pm 0.017$	$r_{\mathrm{drag}}$	$147.65 \pm 0.55$	$f_{2000}^{143 \times 217}$	$29.3 \pm 2.7$
$\Omega_{\mathrm{m}}$	$0.298 \pm 0.017$	$k_{\mathrm{D}}$	$0.14042 \pm 0.00054$	$\chi^2_{\mathrm{CamSpec}}$	$7059.9 \pm 5.4$
$\Omega_{\mathrm{m}}h^2$	$0.1403 \pm 0.0026$	$100\theta_{\mathrm{D}}$	$0.16066 \pm 0.00032$	$\chi^2_{\mathrm{prior}}$	$7.2 \pm 3.3$
$\Omega_{\mathrm{m}}h^3$	$0.09638 \pm 0.00051$	$z_{\mathrm{eq}}$	$3338 \pm 61$		
$\sigma_8$	$0.850^{+0.029}_{-0.047}$	$k_{\mathrm{eq}}$	$0.01019 \pm 0.00019$		

$\bar{\chi}^2_{\mathrm{eff}} = 7067.05$ ;  $R - 1 = 0.01053$



### 3.75 base\_Alens\_CamSpecHM\_TT\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02248 \pm 0.00022$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.469^{+0.017}_{-0.026}$	$H(0.15)$	$73.43 \pm 0.53$
$\Omega_{\mathrm{c}}h^2$	$0.1181 \pm 0.0013$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.631^{+0.021}_{-0.035}$	$D_{\mathrm{M}}(0.15)$	$635.9 \pm 5.2$
$100\theta_{\mathrm{MC}}$	$1.04123 \pm 0.00044$	$\sigma_8/h^{0.5}$	$1.030^{+0.032}_{-0.057}$	$H(0.38)$	$83.41 \pm 0.41$
$\tau$	$0.110^{+0.026}_{-0.060}$	$r_{\mathrm{drag}}h$	$100.6 \pm 1.0$	$D_{\mathrm{M}}(0.38)$	$1519 \pm 10$
$A_{\mathrm{L}}$	$1.07 \pm 0.11$	$\langle d^2 \rangle^{1/2}$	$2.621 \pm 0.076$	$H(0.51)$	$90.04 \pm 0.34$
$\ln(10^{10}A_{\mathrm{s}})$	$3.149^{+0.056}_{-0.12}$	$z_{\mathrm{re}}$	$12.4^{+2.9}_{-4.5}$	$D_{\mathrm{M}}(0.51)$	$1969 \pm 12$
$n_{\mathrm{s}}$	$0.9719 \pm 0.0050$	$10^9 A_{\mathrm{s}}$	$2.34^{+0.11}_{-0.27}$	$H(0.61)$	$95.60 \pm 0.29$
$A_{100}^{\mathrm{PS}}$	$231 \pm 25$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.870 \pm 0.012$	$D_{\mathrm{M}}(0.61)$	$2292 \pm 13$
$A_{143}^{\mathrm{PS}}$	$35 \pm 8$	$D_{40}$	$1242^{+19}_{-31}$	$H(2.33)$	$235.42 \pm 0.81$
$A_{217}^{\mathrm{PS}}$	$104 \pm 10$	$D_{220}$	$5717 \pm 41$	$D_{\mathrm{M}}(2.33)$	$5750 \pm 14$
$A_{217}^{\mathrm{CIB}}$	$37 \pm 7$	$D_{810}$	$2526 \pm 14$	$f\sigma_8(0.15)$	$0.474^{+0.017}_{-0.026}$
$A_{143}^{\mathrm{tSZ}}$	$4.1^{+2.0}_{-2.4}$	$D_{1420}$	$813.7 \pm 5.1$	$\sigma_8(0.15)$	$0.787^{+0.022}_{-0.045}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.68 \pm 0.14$	$D_{2000}$	$231.8 \pm 1.9$	$f\sigma_8(0.38)$	$0.495^{+0.017}_{-0.027}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.51^{+0.33}_{-0.28}$	$n_{\mathrm{s},0.002}$	$0.9719 \pm 0.0050$	$\sigma_8(0.38)$	$0.699^{+0.019}_{-0.040}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.245435 \pm 0.000088$	$f\sigma_8(0.51)$	$0.495^{+0.016}_{-0.027}$
$A^{\mathrm{kSZ}}$	$< 5.33$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246762 \pm 0.000088$	$\sigma_8(0.51)$	$0.654^{+0.018}_{-0.038}$
$A_{100}^{\mathrm{dust}}$	$0.999 \pm 0.20$	$10^5 \mathrm{D}/\mathrm{H}$	$2.566 \pm 0.041$	$f\sigma_8(0.61)$	$0.490^{+0.015}_{-0.027}$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.18$	$\mathrm{Age}/\mathrm{Gyr}$	$13.769 \pm 0.032$	$\sigma_8(0.61)$	$0.623^{+0.017}_{-0.036}$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$z_*$	$1089.62 \pm 0.33$	$f\sigma_8(2.33)$	$0.3143^{+0.0083}_{-0.018}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$r_*$	$144.85 \pm 0.33$	$\sigma_8(2.33)$	$0.3245^{+0.0086}_{-0.019}$
$y_{\mathrm{cal}}$	$0.99999 \pm 0.0025$	$100\theta_*$	$1.04141 \pm 0.00043$	$f_{2000}^{143}$	$27 \pm 3$
$c_{100}$	$0.9976 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.909 \pm 0.032$	$f_{2000}^{217}$	$104.8 \pm 2.2$
$c_{217}$	$1.0008 \pm 0.0016$	$z_{\mathrm{drag}}$	$1060.05 \pm 0.49$	$f_{2000}^{143 \times 217}$	$29.8 \pm 2.4$
$H_0$	$68.24 \pm 0.61$	$r_{\mathrm{drag}}$	$147.49 \pm 0.35$	$\chi_{\mathrm{CamSpec}}^2$	$7059.1 \pm 5.3$
$\Omega_{\Lambda}$	$0.6967 \pm 0.0078$	$k_{\mathrm{D}}$	$0.14053 \pm 0.00046$	$\chi_{6\mathrm{DF}}^2$	$0.046 \pm 0.065$
$\Omega_{\mathrm{m}}$	$0.3033 \pm 0.0078$	$100\theta_{\mathrm{D}}$	$0.16072 \pm 0.00028$	$\chi_{\mathrm{MGS}}^2$	$1.87 \pm 0.64$
$\Omega_{\mathrm{m}}h^2$	$0.1412 \pm 0.0013$	$z_{\mathrm{eq}}$	$3358 \pm 30$	$\chi_{\mathrm{DR12BAO}}^2$	$4.1 \pm 1.0$
$\Omega_{\mathrm{m}}h^3$	$0.09634 \pm 0.00050$	$k_{\mathrm{eq}}$	$0.010250 \pm 0.000091$	$\chi_{\mathrm{prior}}^2$	$7.2 \pm 3.3$
$\sigma_8$	$0.851^{+0.024}_{-0.048}$	$100\theta_{\mathrm{eq}}$	$0.8218 \pm 0.0057$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.1$
$S_8$	$0.855^{+0.032}_{-0.047}$	$100\theta_{\mathrm{s,eq}}$	$0.4537 \pm 0.0029$		
$\bar{\chi}_{\mathrm{eff}}^2 = 7072.34; R - 1 = 0.01270$					



### 3.76 base\_Alens\_CamSpecHM\_TT\_lowl

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022672	$0.02266 \pm 0.00030$	$S_8$	0.7557	$0.793^{+0.034}_{-0.040}$	$100\theta_{\text{eq}}$	0.8283	$0.830 \pm 0.011$
$\Omega_c h^2$	0.11654	$0.1162 \pm 0.0026$	$\sigma_8 \Omega_m^{0.5}$	0.4139	$0.434^{+0.019}_{-0.022}$	$100\theta_{\text{s,eq}}$	0.4570	$0.4580 \pm 0.0058$
$100\theta_{\text{MC}}$	1.04148	$1.04150 \pm 0.00053$	$\sigma_8 \Omega_m^{0.25}$	0.5623	$0.591^{+0.020}_{-0.027}$	$H(0.15)$	74.11	$74.2 \pm 1.1$
$\tau$	0.0102	$< 0.0783$	$\sigma_8/h^{0.5}$	0.9195	$0.967^{+0.030}_{-0.043}$	$D_{\text{M}}(0.15)$	629.4	$628 \pm 10$
$A_{\text{L}}$	1.362	$1.22 \pm 0.12$	$r_{\text{drag}} h$	101.93	$102.2 \pm 2.1$	$H(0.38)$	83.92	$84.01 \pm 0.81$
$\ln(10^{10} A_{\text{s}})$	2.947	$3.051^{+0.041}_{-0.097}$	$\langle d^2 \rangle^{1/2}$	2.652	$2.638 \pm 0.077$	$D_{\text{M}}(0.38)$	1505.3	$1503 \pm 21$
$n_{\text{s}}$	0.9760	$0.9768 \pm 0.0077$	$z_{\text{re}}$	2.12	$8.1^{+2.6}_{-4.8}$	$H(0.51)$	90.46	$90.53 \pm 0.65$
$y_{\text{cal}}$	1.00006	$1.0000 \pm 0.0025$	$10^9 A_{\text{s}}$	1.905	$2.120^{+0.079}_{-0.21}$	$D_{\text{M}}(0.51)$	1952.8	$1950 \pm 24$
$A_{100}^{\text{PS}}$	218.4	$228 \pm 30$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8667	$1.863 \pm 0.015$	$H(0.61)$	95.94	$95.99^{+0.50}_{-0.56}$
$A_{143}^{\text{PS}}$	45.1	$33 \pm 9$	$D_{40}$	1197.5	$1209 \pm 20$	$D_{\text{M}}(0.61)$	2274.7	$2272 \pm 26$
$A_{217}^{\text{PS}}$	108.8	$105 \pm 10$	$D_{220}$	5732.1	$5726 \pm 42$	$H(2.33)$	234.64	$234.4 \pm 1.5$
$A_{217}^{\text{CIB}}$	37.6	$36^{+7}_{-7}$	$D_{810}$	2527.5	$2524 \pm 14$	$D_{\text{M}}(2.33)$	5735.1	$5734 \pm 23$
$A_{143}^{\text{tSZ}}$	6.32	$4.2^{+2.0}_{-2.3}$	$D_{1420}$	815.5	$814.5 \pm 5.1$	$f\sigma_8(0.15)$	0.4195	$0.440^{+0.018}_{-0.021}$
$r_{143 \times 217}^{\text{PS}}$	0.793	$0.68 \pm 0.14$	$D_{2000}$	232.95	$232.6 \pm 2.1$	$\sigma_8(0.15)$	0.7076	$0.745^{+0.018}_{-0.034}$
$r_{143 \times 217}^{\text{CIB}}$	0.772	$0.50 \pm 0.27$	$n_{\text{s},0.002}$	0.9760	$0.9768 \pm 0.0077$	$f\sigma_8(0.38)$	0.4406	$0.463^{+0.016}_{-0.021}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.999	—	$Y_{\text{P}}$	0.245506	$0.24551^{+0.00011}_{-0.00013}$	$\sigma_8(0.38)$	0.6291	$0.662^{+0.015}_{-0.031}$
$A^{\text{kSZ}}$	0.00	$< 5.05$	$Y_{\text{P}}^{\text{BBN}}$	0.246833	$0.24684^{+0.00011}_{-0.00013}$	$f\sigma_8(0.51)$	0.4413	$0.464^{+0.015}_{-0.021}$
$A_{100}^{\text{dust}}$	1.008	$1.01 \pm 0.20$	$10^5 \text{D}/\text{H}$	2.532	$2.534 \pm 0.054$	$\sigma_8(0.51)$	0.5895	$0.621^{+0.014}_{-0.029}$
$A_{143}^{\text{dust}}$	0.962	$0.95 \pm 0.18$	$\text{Age}/\text{Gyr}$	13.735	$13.733 \pm 0.051$	$f\sigma_8(0.61)$	0.4380	$0.460^{+0.014}_{-0.021}$
$A_{217}^{\text{dust}}$	0.988	$0.98 \pm 0.10$	$z_*$	1089.24	$1089.23 \pm 0.54$	$\sigma_8(0.61)$	0.5614	$0.591^{+0.013}_{-0.028}$
$A_{143 \times 217}^{\text{dust}}$	1.016	$1.01 \pm 0.16$	$r_*$	145.10	$145.21 \pm 0.54$	$f\sigma_8(2.33)$	0.2838	$0.2990^{+0.0061}_{-0.015}$
$c_{100}$	0.99790	$0.9976 \pm 0.0011$	$100\theta_*$	1.04163	$1.04166 \pm 0.00052$	$\sigma_8(2.33)$	0.2934	$0.3092^{+0.0060}_{-0.015}$
$c_{217}$	1.00088	$1.0007 \pm 0.0016$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9300	$13.940 \pm 0.049$	$f_{2000}^{143}$	25.68	$26 \pm 3$
$H_0$	69.02	$69.2 \pm 1.2$	$z_{\text{drag}}$	1060.39	$1060.33 \pm 0.57$	$f_{2000}^{217}$	103.69	$104.0 \pm 2.4$
$\Omega_{\Lambda}$	0.7064	$0.708^{+0.016}_{-0.014}$	$r_{\text{drag}}$	147.67	$147.79 \pm 0.51$	$f_{2000}^{143 \times 217}$	28.89	$28.8 \pm 2.7$
$\Omega_{\text{m}}$	0.2936	$0.292 \pm 0.015$	$k_{\text{D}}$	0.14048	$0.14034 \pm 0.00052$	$\chi_{\text{lowl}}^2$	20.86	$22.0 \pm 1.5$
$\Omega_{\text{m}} h^2$	0.13986	$0.1395 \pm 0.0024$	$100\theta_{\text{D}}$	0.160545	$0.16059 \pm 0.00031$	$\chi_{\text{CamSpec}}^2$	7046.1	$7060.0 \pm 5.3$
$\Omega_{\text{m}} h^3$	0.09653	$0.09645 \pm 0.00050$	$z_{\text{eq}}$	3327	$3318 \pm 56$	$\chi_{\text{prior}}^2$	1.38	$7.2 \pm 3.3$
$\sigma_8$	0.7639	$0.804^{+0.020}_{-0.037}$	$k_{\text{eq}}$	0.010154	$0.01013 \pm 0.00017$	$\chi_{\text{CMB}}^2$	7066.9	$7082.0 \pm 5.3$

Best-fit  $\chi_{\text{eff}}^2 = 7068.30$ ;  $\bar{\chi}_{\text{eff}}^2 = 7089.14$ ;  $R - 1 = 0.00730$

$\chi_{\text{eff}}^2$ : CMB - commander\_dx12.v3.2.29: 20.86 CamSpec like\_10.7HM: 7046.06



### 3.77 base\_Alens\_CamSpecHM\_TT\_lowl\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02251 \pm 0.00022$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.597^{+0.014}_{-0.026}$	$H(0.38)$	$83.49 \pm 0.40$
$\Omega_{\mathrm{c}}h^2$	$0.1178 \pm 0.0013$	$\sigma_8/h^{0.5}$	$0.974^{+0.022}_{-0.042}$	$D_{\mathrm{M}}(0.38)$	$1516 \pm 10$
$100\theta_{\mathrm{MC}}$	$1.04128 \pm 0.00042$	$r_{\mathrm{drag}}h$	$100.9 \pm 1.0$	$H(0.51)$	$90.12 \pm 0.34$
$\tau$	$< 0.0706$	$\langle d^2 \rangle^{1/2}$	$2.626 \pm 0.076$	$D_{\mathrm{M}}(0.51)$	$1966 \pm 12$
$A_{\mathrm{L}}$	$1.20 \pm 0.11$	$z_{\mathrm{re}}$	$7.6^{+2.3}_{-4.6}$	$H(0.61)$	$95.66 \pm 0.29$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.037}_{-0.087}$	$10^9 A_{\mathrm{s}}$	$2.102^{+0.071}_{-0.18}$	$D_{\mathrm{M}}(0.61)$	$2289 \pm 13$
$n_{\mathrm{s}}$	$0.9723 \pm 0.0048$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.870 \pm 0.012$	$H(2.33)$	$235.30 \pm 0.80$
$y_{\mathrm{cal}}$	$1.0000 \pm 0.0025$	$D_{40}$	$1216^{+14}_{-17}$	$D_{\mathrm{M}}(2.33)$	$5747 \pm 14$
$A_{100}^{\mathrm{PS}}$	$230 \pm 25$	$D_{220}$	$5718 \pm 40$	$f\sigma_8(0.15)$	$0.448^{+0.012}_{-0.019}$
$A_{143}^{\mathrm{PS}}$	$34 \pm 9$	$D_{810}$	$2526 \pm 14$	$\sigma_8(0.15)$	$0.745^{+0.014}_{-0.032}$
$A_{217}^{\mathrm{PS}}$	$104 \pm 10$	$D_{1420}$	$813.8 \pm 5.0$	$f\sigma_8(0.38)$	$0.468^{+0.012}_{-0.020}$
$A_{217}^{\mathrm{CIB}}$	$37 \pm 7$	$D_{2000}$	$231.9 \pm 1.9$	$\sigma_8(0.38)$	$0.662^{+0.012}_{-0.029}$
$A_{143}^{\mathrm{tSZ}}$	$4.1^{+2.0}_{-2.3}$	$n_{\mathrm{s},0.002}$	$0.9723 \pm 0.0048$	$f\sigma_8(0.51)$	$0.468^{+0.011}_{-0.020}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.68 \pm 0.13$	$Y_{\mathrm{P}}$	$0.245448 \pm 0.000088$	$\sigma_8(0.51)$	$0.620^{+0.011}_{-0.027}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.51^{+0.34}_{-0.26}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246775 \pm 0.000089$	$f\sigma_8(0.61)$	$0.464^{+0.010}_{-0.020}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.560 \pm 0.041$	$\sigma_8(0.61)$	$0.590^{+0.011}_{-0.026}$
$A^{\mathrm{kSZ}}$	$< 5.25$	$\mathrm{Age}/\mathrm{Gyr}$	$13.763 \pm 0.032$	$f\sigma_8(2.33)$	$0.2979^{+0.0054}_{-0.013}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$z_{*}$	$1089.55 \pm 0.34$	$\sigma_8(2.33)$	$0.3076^{+0.0055}_{-0.014}$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.18$	$r_{*}$	$144.89 \pm 0.32$	$f_{2000}^{143}$	$27 \pm 3$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$100\theta_{*}$	$1.04145 \pm 0.00042$	$f_{2000}^{217}$	$104.7 \pm 2.2$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.01 \pm 0.16$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.912 \pm 0.031$	$f_{2000}^{143 \times 217}$	$29.6 \pm 2.4$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1060.11 \pm 0.49$	$\chi_{\mathrm{lowl}}^2$	$22.4 \pm 1.4$
$c_{217}$	$1.0009 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.51 \pm 0.35$	$\chi_{\mathrm{CamSpec}}^2$	$7058.9 \pm 5.1$
$H_0$	$68.37 \pm 0.61$	$k_{\mathrm{D}}$	$0.14053 \pm 0.00045$	$\chi_{6\mathrm{DF}}^2$	$0.049 \pm 0.071$
$\Omega_{\Lambda}$	$0.6983 \pm 0.0077$	$100\theta_{\mathrm{D}}$	$0.16069 \pm 0.00028$	$\chi_{\mathrm{MGS}}^2$	$2.00 \pm 0.65$
$\Omega_{\mathrm{m}}$	$0.3017 \pm 0.0077$	$z_{\mathrm{eq}}$	$3353 \pm 29$	$\chi_{\mathrm{DR12BAO}}^2$	$4.05 \pm 0.97$
$\Omega_{\mathrm{m}}h^2$	$0.1410 \pm 0.0012$	$k_{\mathrm{eq}}$	$0.010235 \pm 0.000089$	$\chi_{\mathrm{prior}}^2$	$7.2 \pm 3.3$
$\Omega_{\mathrm{m}}h^3$	$0.09638 \pm 0.00049$	$100\theta_{\mathrm{eq}}$	$0.8229 \pm 0.0056$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.3$
$\sigma_8$	$0.806^{+0.016}_{-0.035}$	$100\theta_{\mathrm{s,eq}}$	$0.4543 \pm 0.0029$	$\chi_{\mathrm{CMB}}^2$	$7081.3 \pm 5.2$
$S_8$	$0.808^{+0.023}_{-0.035}$	$H(0.15)$	$73.55 \pm 0.53$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.442^{+0.013}_{-0.019}$	$D_{\mathrm{M}}(0.15)$	$634.8 \pm 5.1$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7094.64$ ;  $R - 1 = 0.01645$



### 3.78 base\_Alens\_CamSpecHM\_TT\_lowl\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02268 \pm 0.00030$	$S_8$	$0.806^{+0.032}_{-0.037}$	$100\theta_{\mathrm{eq}}$	$0.832 \pm 0.011$
$\Omega_{\mathrm{c}}h^2$	$0.1159 \pm 0.0025$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.441^{+0.018}_{-0.020}$	$100\theta_{\mathrm{s,eq}}$	$0.4587 \pm 0.0058$
$100\theta_{\mathrm{MC}}$	$1.04154 \pm 0.00053$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.601^{+0.018}_{-0.023}$	$H(0.15)$	$74.4 \pm 1.1$
$\tau$	$0.084^{+0.014}_{-0.039}$	$\sigma_8/h^{0.5}$	$0.985^{+0.027}_{-0.037}$	$D_{\mathrm{M}}(0.15)$	$627 \pm 10$
$A_{\mathrm{L}}$	$1.18 \pm 0.11$	$r_{\mathrm{drag}}h$	$102.5 \pm 2.1$	$H(0.38)$	$84.10 \pm 0.81$
$\ln(10^{10}A_{\mathrm{s}})$	$3.093^{+0.031}_{-0.076}$	$\langle d^2 \rangle^{1/2}$	$2.640 \pm 0.078$	$D_{\mathrm{M}}(0.38)$	$1501 \pm 21$
$n_{\mathrm{s}}$	$0.9781 \pm 0.0077$	$z_{\mathrm{re}}$	$< 11.3$	$H(0.51)$	$90.60 \pm 0.66$
$y_{\mathrm{cal}}$	$1.0000 \pm 0.0025$	$10^9 A_{\mathrm{s}}$	$2.207^{+0.063}_{-0.17}$	$D_{\mathrm{M}}(0.51)$	$1947 \pm 24$
$A_{100}^{\mathrm{PS}}$	$227 \pm 30$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.861 \pm 0.015$	$H(0.61)$	$96.05 \pm 0.54$
$A_{143}^{\mathrm{PS}}$	$32 \pm 9$	$D_{40}$	$1213 \pm 20$	$D_{\mathrm{M}}(0.61)$	$2269 \pm 27$
$A_{217}^{\mathrm{PS}}$	$105 \pm 10$	$D_{220}$	$5725 \pm 42$	$H(2.33)$	$234.2 \pm 1.4$
$A_{217}^{\mathrm{CIB}}$	$36^{+7}_{-7}$	$D_{810}$	$2524 \pm 14$	$D_{\mathrm{M}}(2.33)$	$5731 \pm 23$
$A_{143}^{\mathrm{tSZ}}$	$4.2 \pm 2.1$	$D_{1420}$	$814.8 \pm 5.2$	$f\sigma_8(0.15)$	$0.448^{+0.017}_{-0.019}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.69 \pm 0.14$	$D_{2000}$	$232.8 \pm 2.2$	$\sigma_8(0.15)$	$0.760^{+0.015}_{-0.028}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.49 \pm 0.27$	$n_{\mathrm{s},0.002}$	$0.9781 \pm 0.0077$	$f\sigma_8(0.38)$	$0.471^{+0.015}_{-0.018}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24552^{+0.00011}_{-0.00013}$	$\sigma_8(0.38)$	$0.676^{+0.012}_{-0.025}$
$A^{\mathrm{kSZ}}$	$< 4.95$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24684^{+0.00011}_{-0.00013}$	$f\sigma_8(0.51)$	$0.472^{+0.014}_{-0.018}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$10^5 \mathrm{D}/\mathrm{H}$	$2.530 \pm 0.054$	$\sigma_8(0.51)$	$0.634^{+0.011}_{-0.024}$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.18$	$\mathrm{Age}/\mathrm{Gyr}$	$13.728 \pm 0.051$	$f\sigma_8(0.61)$	$0.469^{+0.013}_{-0.017}$
$A_{217}^{\mathrm{dust}}$	$0.99 \pm 0.10$	$z_*$	$1089.18 \pm 0.55$	$\sigma_8(0.61)$	$0.603^{+0.010}_{-0.023}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.01 \pm 0.16$	$r_*$	$145.27 \pm 0.53$	$f\sigma_8(2.33)$	$0.3052^{+0.0047}_{-0.012}$
$c_{100}$	$0.9975 \pm 0.0011$	$100\theta_*$	$1.04170 \pm 0.00052$	$\sigma_8(2.33)$	$0.3157^{+0.0046}_{-0.012}$
$c_{217}$	$1.0007 \pm 0.0016$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.946 \pm 0.048$	$f_{2000}^{143}$	$25 \pm 3$
$H_0$	$69.3 \pm 1.2$	$z_{\mathrm{drag}}$	$1060.36 \pm 0.57$	$f_{2000}^{217}$	$103.8 \pm 2.4$
$\Omega_{\Lambda}$	$0.710 \pm 0.015$	$r_{\mathrm{drag}}$	$147.85 \pm 0.51$	$f_{2000}^{143 \times 217}$	$28.5 \pm 2.6$
$\Omega_{\mathrm{m}}$	$0.290 \pm 0.015$	$k_{\mathrm{D}}$	$0.14030 \pm 0.00051$	$\chi_{\mathrm{lowl}}^2$	$22.4 \pm 1.6$
$\Omega_{\mathrm{m}}h^2$	$0.1392 \pm 0.0023$	$100\theta_{\mathrm{D}}$	$0.16057 \pm 0.00031$	$\chi_{\mathrm{CamSpec}}^2$	$7059.9 \pm 5.4$
$\Omega_{\mathrm{m}}h^3$	$0.09646 \pm 0.00050$	$z_{\mathrm{eq}}$	$3311 \pm 56$	$\chi_{\mathrm{prior}}^2$	$7.2 \pm 3.3$
$\sigma_8$	$0.820^{+0.017}_{-0.030}$	$k_{\mathrm{eq}}$	$0.01011 \pm 0.00017$	$\chi_{\mathrm{CMB}}^2$	$7082.3 \pm 5.4$

$\bar{\chi}_{\mathrm{eff}}^2 = 7089.50$ ;  $R - 1 = 0.00995$



### 3.79 base\_Alens\_CamSpecHM\_TT\_lowl\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02252 \pm 0.00022$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.610^{+0.012}_{-0.021}$	$H(0.38)$	$83.51 \pm 0.40$
$\Omega_{\mathrm{c}}h^2$	$0.1177 \pm 0.0013$	$\sigma_8/h^{0.5}$	$0.995^{+0.019}_{-0.034}$	$D_{\mathrm{M}}(0.38)$	$1516 \pm 10$
$100\theta_{\mathrm{MC}}$	$1.04128 \pm 0.00042$	$r_{\mathrm{drag}}h$	$100.9 \pm 1.0$	$H(0.51)$	$90.13 \pm 0.33$
$\tau$	$0.079^{+0.020}_{-0.035}$	$\langle d^2 \rangle^{1/2}$	$2.627 \pm 0.077$	$D_{\mathrm{M}}(0.51)$	$1965 \pm 12$
$A_{\mathrm{L}}$	$1.146 \pm 0.093$	$z_{\mathrm{re}}$	$< 10.9$	$H(0.61)$	$95.67 \pm 0.28$
$\ln(10^{10}A_{\mathrm{s}})$	$3.086^{+0.028}_{-0.067}$	$10^9 A_{\mathrm{s}}$	$2.193^{+0.060}_{-0.15}$	$D_{\mathrm{M}}(0.61)$	$2288 \pm 13$
$n_{\mathrm{s}}$	$0.9730 \pm 0.0047$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.869 \pm 0.012$	$H(2.33)$	$235.23 \pm 0.78$
$y_{\mathrm{cal}}$	$0.99998 \pm 0.0025$	$D_{40}$	$1221^{+14}_{-17}$	$D_{\mathrm{M}}(2.33)$	$5747 \pm 14$
$A_{100}^{\mathrm{PS}}$	$229 \pm 25$	$D_{220}$	$5715 \pm 41$	$f\sigma_8(0.15)$	$0.457^{+0.011}_{-0.016}$
$A_{143}^{\mathrm{PS}}$	$34 \pm 9$	$D_{810}$	$2526 \pm 14$	$\sigma_8(0.15)$	$0.761^{+0.012}_{-0.025}$
$A_{217}^{\mathrm{PS}}$	$105 \pm 10$	$D_{1420}$	$813.9 \pm 5.0$	$f\sigma_8(0.38)$	$0.4780^{+0.0099}_{-0.016}$
$A_{217}^{\mathrm{CIB}}$	$37 \pm 7$	$D_{2000}$	$232.0 \pm 1.9$	$\sigma_8(0.38)$	$0.6761^{+0.0099}_{-0.023}$
$A_{143}^{\mathrm{tSZ}}$	$4.1^{+2.0}_{-2.3}$	$n_{\mathrm{s},0.002}$	$0.9730 \pm 0.0047$	$f\sigma_8(0.51)$	$0.4778^{+0.0093}_{-0.016}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.68 \pm 0.13$	$Y_{\mathrm{P}}$	$0.245449 \pm 0.000087$	$\sigma_8(0.51)$	$0.6332^{+0.0091}_{-0.021}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.51^{+0.34}_{-0.26}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246776 \pm 0.000088$	$f\sigma_8(0.61)$	$0.4736^{+0.0088}_{-0.016}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.560 \pm 0.040$	$\sigma_8(0.61)$	$0.6028^{+0.0086}_{-0.020}$
$A^{\mathrm{kSZ}}$	$< 5.14$	$\mathrm{Age}/\mathrm{Gyr}$	$13.762 \pm 0.032$	$f\sigma_8(2.33)$	$0.3044^{+0.0042}_{-0.010}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$z_*$	$1089.54 \pm 0.33$	$\sigma_8(2.33)$	$0.3143^{+0.0043}_{-0.011}$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.18$	$r_*$	$144.91 \pm 0.31$	$f_{2000}^{143}$	$26 \pm 3$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$100\theta_*$	$1.04145 \pm 0.00041$	$f_{2000}^{217}$	$104.6 \pm 2.2$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.01 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.915 \pm 0.031$	$f_{2000}^{143 \times 217}$	$29.5 \pm 2.4$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1060.10 \pm 0.49$	$\chi_{\mathrm{lowl}}^2$	$23.0 \pm 1.5$
$c_{217}$	$1.0008 \pm 0.0015$	$r_{\mathrm{drag}}$	$147.54 \pm 0.34$	$\chi_{\mathrm{CamSpec}}^2$	$7058.7 \pm 5.2$
$H_0$	$68.41 \pm 0.60$	$k_{\mathrm{D}}$	$0.14050 \pm 0.00045$	$\chi_{6\mathrm{DF}}^2$	$0.051 \pm 0.073$
$\Omega_{\Lambda}$	$0.6989 \pm 0.0076$	$100\theta_{\mathrm{D}}$	$0.16069 \pm 0.00028$	$\chi_{\mathrm{MGS}}^2$	$2.05 \pm 0.65$
$\Omega_{\mathrm{m}}$	$0.3011 \pm 0.0076$	$z_{\mathrm{eq}}$	$3351 \pm 29$	$\chi_{\mathrm{DR12BAO}}^2$	$4.04 \pm 0.96$
$\Omega_{\mathrm{m}}h^2$	$0.1409 \pm 0.0012$	$k_{\mathrm{eq}}$	$0.010228 \pm 0.000088$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.3$
$\Omega_{\mathrm{m}}h^3$	$0.09636 \pm 0.00048$	$100\theta_{\mathrm{eq}}$	$0.8233 \pm 0.0055$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.3$
$\sigma_8$	$0.823^{+0.013}_{-0.027}$	$100\theta_{\mathrm{s,eq}}$	$0.4545 \pm 0.0028$	$\chi_{\mathrm{CMB}}^2$	$7081.7 \pm 5.3$
$S_8$	$0.824^{+0.020}_{-0.030}$	$H(0.15)$	$73.58 \pm 0.52$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.452^{+0.011}_{-0.016}$	$D_{\mathrm{M}}(0.15)$	$634.5 \pm 5.0$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7095.11$ ;  $R - 1 = 0.02149$



### 3.80 base\_Alens\_CamSpecHM\_TT\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022554	$0.02253 \pm 0.00031$	$S_8$	0.7979	$0.800 \pm 0.032$	$100\theta_{\text{eq}}$	0.8245	$0.823 \pm 0.012$
$\Omega_c h^2$	0.11743	$0.1177 \pm 0.0027$	$\sigma_8 \Omega_m^{0.5}$	0.4370	$0.438 \pm 0.018$	$100\theta_{\text{s,eq}}$	0.4551	$0.4546 \pm 0.0060$
$100\theta_{\text{MC}}$	1.04132	$1.04130 \pm 0.00055$	$\sigma_8 \Omega_m^{0.25}$	0.5909	$0.592 \pm 0.016$	$H(0.15)$	73.71	$73.6 \pm 1.1$
$\tau$	0.0509	$0.0504 \pm 0.0085$	$\sigma_8/h^{0.5}$	0.9649	$0.966 \pm 0.022$	$D_{\text{M}}(0.15)$	633.3	$634 \pm 11$
$A_{\text{L}}$	1.222	$1.213^{+0.091}_{-0.10}$	$r_{\text{drag}} h$	101.16	$101.0 \pm 2.2$	$H(0.38)$	83.61	$83.55 \pm 0.83$
$\ln(10^{10} A_{\text{s}})$	3.0305	$3.030 \pm 0.018$	$\langle d^2 \rangle^{1/2}$	2.638	$2.629 \pm 0.077$	$D_{\text{M}}(0.38)$	1513.2	$1515 \pm 22$
$n_{\text{s}}$	0.9728	$0.9713 \pm 0.0080$	$z_{\text{re}}$	7.25	$7.19^{+0.89}_{-0.75}$	$H(0.51)$	90.20	$90.16^{+0.62}_{-0.70}$
$y_{\text{cal}}$	0.99998	$1.0001 \pm 0.0025$	$10^9 A_{\text{s}}$	2.0707	$2.069 \pm 0.037$	$D_{\text{M}}(0.51)$	1962.2	$1965 \pm 26$
$A_{100}^{\text{PS}}$	221.1	$232 \pm 26$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8702	$1.870 \pm 0.015$	$H(0.61)$	95.73	$95.70^{+0.50}_{-0.58}$
$A_{143}^{\text{PS}}$	47.8	$35 \pm 9$	$D_{40}$	1210.9	$1214 \pm 19$	$D_{\text{M}}(0.61)$	2284.9	$2287 \pm 28$
$A_{217}^{\text{PS}}$	107.6	$103 \pm 10$	$D_{220}$	5729.0	$5729 \pm 42$	$H(2.33)$	235.09	$235.2 \pm 1.6$
$A_{217}^{\text{CIB}}$	38.9	$38 \pm 7$	$D_{810}$	2528.0	$2526 \pm 14$	$D_{\text{M}}(2.33)$	5744.3	$5746 \pm 24$
$A_{143}^{\text{tSZ}}$	6.40	$4.1^{+2.0}_{-2.4}$	$D_{1420}$	814.5	$813.4 \pm 5.2$	$f\sigma_8(0.15)$	0.4425	$0.444 \pm 0.016$
$r_{143 \times 217}^{\text{PS}}$	0.773	$0.67 \pm 0.14$	$D_{2000}$	232.22	$231.7 \pm 2.2$	$\sigma_8(0.15)$	0.7394	$0.7392 \pm 0.0096$
$r_{143 \times 217}^{\text{CIB}}$	0.849	$0.52^{+0.35}_{-0.25}$	$n_{\text{s},0.002}$	0.9728	$0.9713 \pm 0.0080$	$f\sigma_8(0.38)$	0.4633	$0.464 \pm 0.013$
$\xi^{\text{tSZ} \times \text{CIB}}$	1.00	—	$Y_{\text{P}}$	0.245464	$0.24546^{+0.00011}_{-0.00012}$	$\sigma_8(0.38)$	0.6568	$0.6564 \pm 0.0073$
$A^{\text{kSZ}}$	0.01	$< 5.55$	$Y_{\text{P}}^{\text{BBN}}$	0.246791	$0.24678^{+0.00011}_{-0.00012}$	$f\sigma_8(0.51)$	0.4633	$0.464 \pm 0.011$
$A_{100}^{\text{dust}}$	1.003	$1.01 \pm 0.20$	$10^5 \text{D}/\text{H}$	2.552	$2.557 \pm 0.056$	$\sigma_8(0.51)$	0.6152	$0.6147 \pm 0.0064$
$A_{143}^{\text{dust}}$	0.969	$0.96 \pm 0.18$	$\text{Age}/\text{Gyr}$	13.756	$13.759 \pm 0.053$	$f\sigma_8(0.61)$	0.4594	$0.460 \pm 0.010$
$A_{217}^{\text{dust}}$	0.985	$0.98 \pm 0.10$	$z_*$	1089.47	$1089.52 \pm 0.57$	$\sigma_8(0.61)$	0.5857	$0.5852 \pm 0.0059$
$A_{143 \times 217}^{\text{dust}}$	1.003	$1.02 \pm 0.16$	$r_*$	144.96	$144.91 \pm 0.56$	$f\sigma_8(2.33)$	0.29582	$0.2955 \pm 0.0028$
$c_{100}$	0.99793	$0.9976 \pm 0.0010$	$100\theta_*$	1.04149	$1.04147 \pm 0.00054$	$\sigma_8(2.33)$	0.30553	$0.3052 \pm 0.0028$
$c_{217}$	1.00095	$1.0009 \pm 0.0016$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.918	$13.914 \pm 0.051$	$f_{2000}^{143}$	26.96	$27 \pm 4$
$H_0$	68.55	$68.4 \pm 1.3$	$z_{\text{drag}}$	1060.16	$1060.14 \pm 0.58$	$f_{2000}^{217}$	104.33	$105.0 \pm 2.4$
$\Omega_{\Lambda}$	0.7007	$0.699^{+0.017}_{-0.016}$	$r_{\text{drag}}$	147.57	$147.53 \pm 0.53$	$f_{2000}^{143 \times 217}$	29.67	$30.0 \pm 2.7$
$\Omega_{\text{m}}$	0.2993	$0.301^{+0.016}_{-0.017}$	$k_{\text{D}}$	0.14050	$0.14052 \pm 0.00053$	$\chi_{\text{small}}^2$	395.67	$396.8 \pm 1.6$
$\Omega_{\text{m}} h^2$	0.14063	$0.1409 \pm 0.0025$	$100\theta_{\text{D}}$	0.160650	$0.16068 \pm 0.00032$	$\chi_{\text{CamSpec}}^2$	7045.6	$7059.8 \pm 5.3$
$\Omega_{\text{m}} h^3$	0.09641	$0.09639 \pm 0.00050$	$z_{\text{eq}}$	3345	$3351 \pm 60$	$\chi_{\text{prior}}^2$	1.39	$7.2 \pm 3.3$
$\sigma_8$	0.7989	$0.799 \pm 0.012$	$k_{\text{eq}}$	0.010210	$0.01023 \pm 0.00018$	$\chi_{\text{CMB}}^2$	7441.3	$7456.6 \pm 5.6$

Best-fit  $\chi_{\text{eff}}^2 = 7442.68$ ;  $\bar{\chi}_{\text{eff}}^2 = 7463.85$ ;  $R - 1 = 0.00741$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.67 CamSpec like\_10.7HM: 7045.62



### 3.81 base\_Alens\_CamSpecHM\_TTTEEE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022503	$0.02247 \pm 0.00020$ $(-0.3\sigma)$	$\Omega_{\text{m}}h^3$	0.096311	$0.09626 \pm 0.00033$ $(-0.2\sigma)$	$z_{\text{eq}}$	3361.2	$3362 \pm 37$ $(+0.3\sigma)$
$\Omega_{\text{c}}h^2$	0.11815	$0.1182 \pm 0.0017$ $(+0.3\sigma)$	$\sigma_8$	0.843	$0.850 \pm 0.051$ $(+0.3\sigma)$	$k_{\text{eq}}$	0.010259	$0.01026 \pm 0.00011$ $(+0.3\sigma)$
$100\theta_{\text{MC}}$	1.041047	$1.04105 \pm 0.00033$ $(-0.5\sigma)$	$S_8$	0.849	$0.857^{+0.045}_{-0.065}$ $(+0.5\sigma)$	$100\theta_{\text{eq}}$	0.8212	$0.8211 \pm 0.0071$ $(-0.4\sigma)$
$\tau$	0.101	$< 0.141$ $(+0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4649	$0.469^{+0.025}_{-0.036}$ $(+0.5\sigma)$	$100\theta_{\text{s,eq}}$	0.45340	$0.4534 \pm 0.0036$ $(-0.4\sigma)$
$A_{\text{L}}$	1.035	$1.02^{+0.12}_{-0.15}$ $(-0.7\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6260	$0.632^{+0.044}_{-0.052}$ $(+0.4\sigma)$	$H(0.15)$	73.37	$73.33 \pm 0.66$ $(-0.4\sigma)$
$\ln(10^{10}A_{\text{s}})$	3.133	$3.15 \pm 0.12$ $(+0.2\sigma)$	$\sigma_8/h^{0.5}$	1.021	$1.030 \pm 0.061$ $(+0.4\sigma)$	$D_{\text{M}}(0.15)$	636.6	$636.9 \pm 6.5$ $(+0.4\sigma)$
$n_{\text{s}}$	0.9716	$0.9713^{+0.0058}_{-0.0064}$ $(-0.3\sigma)$	$r_{\text{drag}}h$	100.49	$100.5 \pm 1.3$ $(-0.4\sigma)$	$H(0.38)$	83.353	$83.33 \pm 0.49$ $(-0.4\sigma)$
$A_{100}^{\text{PS}}$	222.2	$232 \pm 25$ $(+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	2.566	$2.555 \pm 0.066$ $(-1.0\sigma)$	$D_{\text{M}}(0.38)$	1519.9	$1521 \pm 13$ $(+0.4\sigma)$
$A_{143}^{\text{PS}}$	48.5	$35 \pm 8$ $(+0.2\sigma)$	$z_{\text{re}}$	11.9	$12.0^{+7.6}_{-4.6}$ $(+0.2\sigma)$	$H(0.51)$	89.998	$89.97 \pm 0.39$ $(-0.4\sigma)$
$A_{217}^{\text{PS}}$	108.5	$105 \pm 10$ $(+0.0\sigma)$	$10^9 A_{\text{s}}$	2.294	$2.34 \pm 0.28$ $(+0.3\sigma)$	$D_{\text{M}}(0.51)$	1970.1	$1971 \pm 15$ $(+0.4\sigma)$
$A_{217}^{\text{CIB}}$	38.8	$37 \pm 7$ $(+0.0\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	1.8725	$1.871 \pm 0.013$ $(+0.2\sigma)$	$H(0.61)$	95.563	$95.54 \pm 0.31$ $(-0.4\sigma)$
$A_{143}^{\text{tSZ}}$	6.30	$4.1 \pm 2.0$ $(-0.0\sigma)$	$D_{40}$	1234.0	$1247^{+21}_{-43}$ $(+0.5\sigma)$	$D_{\text{M}}(0.61)$	2293.4	$2294 \pm 17$ $(+0.4\sigma)$
$r_{143 \times 217}^{\text{PS}}$	0.775	$0.68 \pm 0.13$ $(+0.0\sigma)$	$D_{220}$	5724.1	$5720 \pm 41$ $(-0.1\sigma)$	$H(2.33)$	235.49	$235.49 \pm 0.96$ $(+0.3\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	0.839	$0.51^{+0.32}_{-0.28}$ $(+0.0\sigma)$	$D_{810}$	2530.6	$2529 \pm 14$ $(+0.2\sigma)$	$D_{\text{M}}(2.33)$	5751.8	$5753 \pm 14$ $(+0.4\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.996	—	$D_{1420}$	815.66	$814.8 \pm 4.9$ $(+0.2\sigma)$	$f\sigma_8(0.15)$	0.4703	$0.475^{+0.024}_{-0.037}$ $(+0.4\sigma)$
$A^{\text{kSZ}}$	0.00	$< 5.33$ $(+0.0\sigma)$	$D_{2000}$	231.94	$231.6 \pm 1.9$ $(-0.3\sigma)$	$\sigma_8(0.15)$	0.780	$0.787 \pm 0.047$ $(+0.3\sigma)$
$A_{100}^{\text{dust}}$	1.003	$0.998 \pm 0.19$ $(-0.0\sigma)$	$n_{\text{s},0.002}$	0.9716	$0.9713^{+0.0058}_{-0.0064}$ $(-0.3\sigma)$	$f\sigma_8(0.38)$	0.4911	$0.496^{+0.033}_{-0.040}$ $(+0.4\sigma)$
$A_{143}^{\text{dust}}$	0.960	$0.94 \pm 0.18$ $(-0.0\sigma)$	$Y_{\text{P}}$	0.245446	$0.245433 \pm 0.000076$ $(-0.3\sigma)$	$\sigma_8(0.38)$	0.692	$0.698 \pm 0.042$ $(+0.3\sigma)$
$A_{217}^{\text{dust}}$	0.987	$0.98 \pm 0.10$ $(+0.0\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	0.246772	$0.246759 \pm 0.000076$ $(-0.3\sigma)$	$f\sigma_8(0.51)$	0.4905	$0.495^{+0.037}_{-0.041}$ $(+0.4\sigma)$
$A_{143 \times 217}^{\text{dust}}$	1.001	$1.02 \pm 0.16$ $(+0.0\sigma)$	$10^5 \text{D/H}$	2.5614	$2.567 \pm 0.036$ $(+0.3\sigma)$	$\sigma_8(0.51)$	0.648	$0.654 \pm 0.039$ $(+0.3\sigma)$
$y_{\text{cal}}$	1.00001	$1.0001 \pm 0.0025$ $(+0.0\sigma)$	Age/Gyr	13.7722	$13.775 \pm 0.031$ $(+0.4\sigma)$	$f\sigma_8(0.61)$	0.4860	$0.490 \pm 0.029$ $(+0.4\sigma)$
$c_{100}$	0.99791	$0.9976 \pm 0.0011$ $(-0.0\sigma)$	$z_*$	1089.591	$1089.64 \pm 0.36$ $(+0.3\sigma)$	$\sigma_8(0.61)$	0.617	$0.622 \pm 0.037$ $(+0.3\sigma)$
$c_{217}$	1.00098	$1.0009 \pm 0.0016$ $(+0.1\sigma)$	$r_*$	144.809	$144.82 \pm 0.35$ $(-0.3\sigma)$	$f\sigma_8(2.33)$	0.3113	$0.314 \pm 0.019$ $(+0.2\sigma)$
$c_{TE}$	0.9919	$0.9919 \pm 0.0055$	$100\theta_*$	1.041225	$1.04122 \pm 0.00032$ $(-0.6\sigma)$	$\sigma_8(2.33)$	0.3213	$0.324 \pm 0.020$ $(+0.2\sigma)$
$c_{EE}$	0.9905	$0.9900 \pm 0.0051$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9076	$13.909 \pm 0.032$ $(-0.3\sigma)$	$f_{2000}^{143}$	27.20	$27 \pm 3$ $(+0.2\sigma)$
$H_0$	68.16	$68.12 \pm 0.77$ $(-0.4\sigma)$	$z_{\text{drag}}$	1060.123	$1060.04 \pm 0.38$ $(-0.2\sigma)$	$f_{2000}^{217}$	104.59	$105.1 \pm 2.2$ $(+0.2\sigma)$
$\Omega_{\Lambda}$	0.6959	$0.695 \pm 0.010$ $(-0.4\sigma)$	$r_{\text{drag}}$	147.433	$147.46 \pm 0.34$ $(-0.3\sigma)$	$f_{2000}^{143 \times 217}$	29.95	$30.1 \pm 2.4$ $(+0.2\sigma)$
$\Omega_{\text{m}}$	0.3041	$0.305 \pm 0.010$ $(+0.4\sigma)$	$k_{\text{D}}$	0.140605	$0.14056 \pm 0.00035$ $(+0.2\sigma)$	$\chi_{\text{CamSpec}}^2$	11495.7	$11512.3 \pm 5.7$ $(+819.1\sigma)$
$\Omega_{\text{m}}h^2$	0.14130	$0.1413 \pm 0.0015$ $(+0.3\sigma)$	$100\theta_{\text{D}}$	0.160656	$0.16070 \pm 0.00022$ $(+0.1\sigma)$	$\chi_{\text{prior}}^2$	1.80	$7.8 \pm 3.4$ $(+0.2\sigma)$

Best-fit  $\chi_{\text{eff}}^2 = 11497.50$ ;  $\Delta\chi_{\text{eff}}^2 = 4451.05$ ;  $\bar{\chi}_{\text{eff}}^2 = 11520.05$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4452.95$ ;  $R - 1 = 0.00760$   
 $\chi_{\text{eff}}^2$ : CMB - CamSpec like\_10.7HM\_1400\_unified: 11495.71



### 3.82 base\_Alens\_CamSpecHM\_TTTEEE\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02247 \pm 0.00017 \quad (-0.1\sigma)$	$S_8$	$0.857^{+0.053}_{-0.070} \quad (+0.3\sigma)$	$H(0.15)$	$73.33 \pm 0.44 \quad (-0.2\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1182 \pm 0.0011 \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.469^{+0.029}_{-0.038} \quad (+0.3\sigma)$	$D_{\mathrm{M}}(0.15)$	$636.9 \pm 4.3 \quad (+0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04105 \pm 0.00030 \quad (-0.4\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.632 \pm 0.038 \quad (+0.3\sigma)$	$H(0.38)$	$83.32 \pm 0.33 \quad (-0.2\sigma)$
$\tau$	$< 0.140 \quad (+0.3\sigma)$	$\sigma_8/h^{0.5}$	$1.030 \pm 0.062 \quad (+0.3\sigma)$	$D_{\mathrm{M}}(0.38)$	$1520.7 \pm 8.8 \quad (+0.2\sigma)$
$A_{\mathrm{L}}$	$1.02^{+0.12}_{-0.15} \quad (-0.7\sigma)$	$r_{\mathrm{drag}}h$	$100.45 \pm 0.87 \quad (-0.2\sigma)$	$H(0.51)$	$89.97 \pm 0.27 \quad (-0.2\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.15 \pm 0.12 \quad (+0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.554 \pm 0.065 \quad (-0.9\sigma)$	$D_{\mathrm{M}}(0.51)$	$1971 \pm 10 \quad (+0.2\sigma)$
$n_{\mathrm{s}}$	$0.9713^{+0.0047}_{-0.0052} \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$12.0^{+7.5}_{-4.6} \quad (+0.3\sigma)$	$H(0.61)$	$95.54 \pm 0.22 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$232 \pm 25 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.34 \pm 0.28 \quad (+0.3\sigma)$	$D_{\mathrm{M}}(0.61)$	$2294 \pm 11 \quad (+0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$35 \pm 8 \quad (+0.1\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.871 \pm 0.012 \quad (+0.0\sigma)$	$H(2.33)$	$235.49 \pm 0.66 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$105 \pm 10 \quad (+0.1\sigma)$	$D_{40}$	$1247^{+20}_{-43} \quad (+0.4\sigma)$	$D_{\mathrm{M}}(2.33)$	$5753 \pm 11 \quad (+0.2\sigma)$
$A_{217}^{\mathrm{CIB}}$	$37 \pm 7 \quad (-0.0\sigma)$	$D_{220}$	$5721 \pm 40 \quad (+0.0\sigma)$	$f\sigma_8(0.15)$	$0.475^{+0.032}_{-0.039} \quad (+0.3\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$4.1 \pm 2.0 \quad (-0.0\sigma)$	$D_{810}$	$2529 \pm 14 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.786 \pm 0.047 \quad (+0.3\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.68 \pm 0.13 \quad (+0.0\sigma)$	$D_{1420}$	$814.8 \pm 4.9 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.495 \pm 0.030 \quad (+0.3\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.51^{+0.32}_{-0.28} \quad (+0.0\sigma)$	$D_{2000}$	$231.5 \pm 1.8 \quad (-0.1\sigma)$	$\sigma_8(0.38)$	$0.698 \pm 0.042 \quad (+0.3\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.9713^{+0.0047}_{-0.0052} \quad (-0.0\sigma)$	$f\sigma_8(0.51)$	$0.495 \pm 0.030 \quad (+0.3\sigma)$
$A^{\mathrm{kSZ}}$	$< 5.33 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.245432 \pm 0.000064 \quad (-0.0\sigma)$	$\sigma_8(0.51)$	$0.653 \pm 0.039 \quad (+0.3\sigma)$
$A_{100}^{\mathrm{dust}}$	$0.998 \pm 0.20 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246759 \pm 0.000064 \quad (-0.0\sigma)$	$f\sigma_8(0.61)$	$0.490 \pm 0.029 \quad (+0.3\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.94 \pm 0.18 \quad (-0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.568 \pm 0.030 \quad (+0.0\sigma)$	$\sigma_8(0.61)$	$0.622 \pm 0.037 \quad (+0.3\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.776 \pm 0.024 \quad (+0.2\sigma)$	$f\sigma_8(2.33)$	$0.314 \pm 0.019 \quad (+0.3\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.01 \pm 0.16 \quad (-0.0\sigma)$	$z_*$	$1089.64 \pm 0.27 \quad (+0.1\sigma)$	$\sigma_8(2.33)$	$0.324 \pm 0.020 \quad (+0.3\sigma)$
$y_{\mathrm{cal}}$	$1.0001 \pm 0.0025 \quad (+0.0\sigma)$	$r_*$	$144.82 \pm 0.25 \quad (-0.1\sigma)$	$f_{2000}^{143}$	$27 \pm 3 \quad (+0.1\sigma)$
$c_{100}$	$0.9976 \pm 0.0011 \quad (+0.0\sigma)$	$100\theta_*$	$1.04122 \pm 0.00029 \quad (-0.4\sigma)$	$f_{2000}^{217}$	$105.1 \pm 2.1 \quad (+0.1\sigma)$
$c_{217}$	$1.0009 \pm 0.0016 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.909 \pm 0.024 \quad (+0.0\sigma)$	$f_{2000}^{143 \times 217}$	$30.1 \pm 2.3 \quad (+0.1\sigma)$
$c_{TE}$	$0.9920 \pm 0.0054$	$z_{\mathrm{drag}}$	$1060.04 \pm 0.35 \quad (-0.0\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11511.8 \pm 5.6 \quad (+847.9\sigma)$
$c_{EE}$	$0.9901 \pm 0.0051$	$r_{\mathrm{drag}}$	$147.46 \pm 0.26 \quad (-0.1\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.032 \pm 0.045 \quad (-0.2\sigma)$
$H_0$	$68.12 \pm 0.51 \quad (-0.2\sigma)$	$k_{\mathrm{D}}$	$0.14056 \pm 0.00032 \quad (+0.0\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.74 \pm 0.53 \quad (-0.2\sigma)$
$\Omega_{\Lambda}$	$0.6954 \pm 0.0067 \quad (-0.2\sigma)$	$100\theta_{\mathrm{D}}$	$0.16070 \pm 0.00021 \quad (-0.1\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.02 \pm 0.88 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3046 \pm 0.0067 \quad (+0.2\sigma)$	$z_{\mathrm{eq}}$	$3362 \pm 25 \quad (+0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.2\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1413 \pm 0.0010 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010260 \pm 0.000076 \quad (+0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$5.79 \pm 0.80 \quad (-0.2\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09626 \pm 0.00033 \quad (-0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8210 \pm 0.0048 \quad (-0.1\sigma)$		
$\sigma_8$	$0.850 \pm 0.051 \quad (+0.3\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4533 \pm 0.0024 \quad (-0.1\sigma)$		

$\bar{\chi}_{\mathrm{eff}}^2 = 11525.37$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 4453.04$ ;  $R - 1 = 0.00886$



### 3.83 base\_Alens\_CamSpecHM\_TTTEEE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02248 \pm 0.00019 \quad (-0.3\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09626 \pm 0.00033 \quad (-0.2\sigma)$	$z_{\mathrm{eq}}$	$3360 \pm 37 \quad (+0.4\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1181 \pm 0.0017 \quad (+0.4\sigma)$	$\sigma_8$	$0.864 \pm 0.044 \quad (+0.4\sigma)$	$k_{\mathrm{eq}}$	$0.01025 \pm 0.00011 \quad (+0.4\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04105 \pm 0.00033 \quad (-0.6\sigma)$	$S_8$	$0.870^{+0.042}_{-0.056} \quad (+0.5\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8214 \pm 0.0072 \quad (-0.4\sigma)$
$\tau$	$0.126 \pm 0.052 \quad (+0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.477^{+0.023}_{-0.031} \quad (+0.5\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4535 \pm 0.0037 \quad (-0.4\sigma)$
$A_{\mathrm{L}}$	$0.98^{+0.11}_{-0.12} \quad (-0.8\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.642^{+0.037}_{-0.043} \quad (+0.5\sigma)$	$H(0.15)$	$73.36 \pm 0.66 \quad (-0.4\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.18 \pm 0.10 \quad (+0.3\sigma)$	$\sigma_8/h^{0.5}$	$1.047 \pm 0.054 \quad (+0.5\sigma)$	$D_{\mathrm{M}}(0.15)$	$636.7 \pm 6.5 \quad (+0.4\sigma)$
$n_{\mathrm{s}}$	$0.9719 \pm 0.0061 \quad (-0.3\sigma)$	$r_{\mathrm{drag}}h$	$100.5 \pm 1.3 \quad (-0.4\sigma)$	$H(0.38)$	$83.35 \pm 0.49 \quad (-0.4\sigma)$
$A_{100}^{\mathrm{PS}}$	$231 \pm 25 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.555 \pm 0.066 \quad (-0.9\sigma)$	$D_{\mathrm{M}}(0.38)$	$1520 \pm 13 \quad (+0.4\sigma)$
$A_{143}^{\mathrm{PS}}$	$35 \pm 8 \quad (+0.2\sigma)$	$z_{\mathrm{re}}$	$13.6^{+5.9}_{-5.3} \quad (+0.3\sigma)$	$H(0.51)$	$89.99 \pm 0.39 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{PS}}$	$105 \pm 10 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.42 \pm 0.25 \quad (+0.3\sigma)$	$D_{\mathrm{M}}(0.51)$	$1970 \pm 15 \quad (+0.4\sigma)$
$A_{217}^{\mathrm{CIB}}$	$37 \pm 7 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.870 \pm 0.013 \quad (+0.2\sigma)$	$H(0.61)$	$95.55 \pm 0.32 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$4.1 \pm 2.0 \quad (-0.0\sigma)$	$D_{40}$	$1253^{+23}_{-41} \quad (+0.5\sigma)$	$D_{\mathrm{M}}(0.61)$	$2294 \pm 17 \quad (+0.4\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.68 \pm 0.13 \quad (+0.0\sigma)$	$D_{220}$	$5718 \pm 40 \quad (-0.1\sigma)$	$H(2.33)$	$235.44 \pm 0.96 \quad (+0.3\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.50^{+0.32}_{-0.28} \quad (-0.0\sigma)$	$D_{810}$	$2528 \pm 14 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5753 \pm 14 \quad (+0.4\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$814.9 \pm 4.9 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.482^{+0.023}_{-0.031} \quad (+0.5\sigma)$
$A^{\mathrm{kSZ}}$	$< 5.28 \quad (+0.0\sigma)$	$D_{2000}$	$231.7 \pm 1.8 \quad (-0.3\sigma)$	$\sigma_8(0.15)$	$0.799 \pm 0.041 \quad (+0.4\sigma)$
$A_{100}^{\mathrm{dust}}$	$0.995 \pm 0.19 \quad (-0.0\sigma)$	$n_{\mathrm{s},0.002}$	$0.9719 \pm 0.0061 \quad (-0.3\sigma)$	$f\sigma_8(0.38)$	$0.503^{+0.027}_{-0.034} \quad (+0.5\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.94 \pm 0.18 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.245435 \pm 0.000075 \quad (-0.3\sigma)$	$\sigma_8(0.38)$	$0.709 \pm 0.037 \quad (+0.3\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246761 \pm 0.000076 \quad (-0.3\sigma)$	$f\sigma_8(0.51)$	$0.503 \pm 0.026 \quad (+0.5\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.01 \pm 0.16 \quad (+0.0\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.566 \pm 0.035 \quad (+0.3\sigma)$	$\sigma_8(0.51)$	$0.664 \pm 0.034 \quad (+0.3\sigma)$
$y_{\mathrm{cal}}$	$1.0001 \pm 0.0025 \quad (+0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.774 \pm 0.031 \quad (+0.4\sigma)$	$f\sigma_8(0.61)$	$0.498 \pm 0.025 \quad (+0.4\sigma)$
$c_{100}$	$0.9976 \pm 0.0011 \quad (-0.0\sigma)$	$z_*$	$1089.62 \pm 0.36 \quad (+0.3\sigma)$	$\sigma_8(0.61)$	$0.632 \pm 0.033 \quad (+0.3\sigma)$
$c_{217}$	$1.0009 \pm 0.0016 \quad (+0.1\sigma)$	$r_*$	$144.84 \pm 0.35 \quad (-0.3\sigma)$	$f\sigma_8(2.33)$	$0.319 \pm 0.017 \quad (+0.3\sigma)$
$c_{TE}$	$0.9917 \pm 0.0055$	$100\theta_*$	$1.04123 \pm 0.00032 \quad (-0.6\sigma)$	$\sigma_8(2.33)$	$0.329 \pm 0.017 \quad (+0.3\sigma)$
$c_{EE}$	$0.9898 \pm 0.0051$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.910 \pm 0.032 \quad (-0.3\sigma)$	$f_{2000}^{143}$	$27 \pm 3 \quad (+0.2\sigma)$
$H_0$	$68.16 \pm 0.77 \quad (-0.4\sigma)$	$z_{\mathrm{drag}}$	$1060.05 \pm 0.38 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$104.9 \pm 2.2 \quad (+0.2\sigma)$
$\Omega_{\Lambda}$	$0.696 \pm 0.010 \quad (-0.4\sigma)$	$r_{\mathrm{drag}}$	$147.47 \pm 0.34 \quad (-0.3\sigma)$	$f_{2000}^{143 \times 217}$	$29.9 \pm 2.4 \quad (+0.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.304 \pm 0.010 \quad (+0.4\sigma)$	$k_{\mathrm{D}}$	$0.14055 \pm 0.00035 \quad (+0.2\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11512.2 \pm 5.7 \quad (+817.7\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1412 \pm 0.0015 \quad (+0.4\sigma)$	$100\theta_{\mathrm{D}}$	$0.16069 \pm 0.00022 \quad (+0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.2\sigma)$

$\bar{\chi}_{\mathrm{eff}}^2 = 11520.01$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 4452.96$ ;  $R - 1 = 0.00786$



### 3.84 base\_Alens\_CamSpecHM\_TTTEEE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02247 \pm 0.00017 \quad (-0.0\sigma)$	$S_8$	$0.870^{+0.046}_{-0.059} \quad (+0.4\sigma)$	$H(0.15)$	$73.34 \pm 0.44 \quad (-0.2\sigma)$
$\Omega_{\text{c}}h^2$	$0.1182 \pm 0.0011 \quad (+0.1\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.477^{+0.025}_{-0.032} \quad (+0.4\sigma)$	$D_{\text{M}}(0.15)$	$636.8 \pm 4.3 \quad (+0.2\sigma)$
$100\theta_{\text{MC}}$	$1.04105 \pm 0.00030 \quad (-0.4\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.642 \pm 0.033 \quad (+0.4\sigma)$	$H(0.38)$	$83.33 \pm 0.33 \quad (-0.2\sigma)$
$\tau$	$0.125 \pm 0.051 \quad (+0.3\sigma)$	$\sigma_8/h^{0.5}$	$1.047 \pm 0.054 \quad (+0.4\sigma)$	$D_{\text{M}}(0.38)$	$1520.5 \pm 8.7 \quad (+0.2\sigma)$
$A_{\text{L}}$	$0.98 \pm 0.11 \quad (-0.8\sigma)$	$r_{\text{drag}}h$	$100.47 \pm 0.87 \quad (-0.2\sigma)$	$H(0.51)$	$89.98 \pm 0.27 \quad (-0.2\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.18 \pm 0.10 \quad (+0.4\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.554 \pm 0.065 \quad (-0.9\sigma)$	$D_{\text{M}}(0.51)$	$1971 \pm 10 \quad (+0.2\sigma)$
$n_{\text{s}}$	$0.9718 \pm 0.0049 \quad (-0.0\sigma)$	$z_{\text{re}}$	$13.5 \pm 4.0 \quad (+0.3\sigma)$	$H(0.61)$	$95.54 \pm 0.22 \quad (-0.2\sigma)$
$A_{100}^{\text{PS}}$	$232 \pm 25 \quad (+0.0\sigma)$	$10^9 A_{\text{s}}$	$2.41 \pm 0.25 \quad (+0.4\sigma)$	$D_{\text{M}}(0.61)$	$2294 \pm 11 \quad (+0.2\sigma)$
$A_{143}^{\text{PS}}$	$35 \pm 8 \quad (+0.1\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.870 \pm 0.011 \quad (+0.0\sigma)$	$H(2.33)$	$235.47 \pm 0.66 \quad (+0.1\sigma)$
$A_{217}^{\text{PS}}$	$105 \pm 10 \quad (+0.1\sigma)$	$D_{40}$	$1253^{+22}_{-42} \quad (+0.4\sigma)$	$D_{\text{M}}(2.33)$	$5753 \pm 11 \quad (+0.2\sigma)$
$A_{217}^{\text{CIB}}$	$37 \pm 7 \quad (-0.0\sigma)$	$D_{220}$	$5719 \pm 40 \quad (+0.0\sigma)$	$f\sigma_8(0.15)$	$0.482^{+0.027}_{-0.033} \quad (+0.4\sigma)$
$A_{143}^{\text{tSZ}}$	$4.1 \pm 2.0 \quad (-0.0\sigma)$	$D_{810}$	$2528 \pm 14 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.799 \pm 0.041 \quad (+0.4\sigma)$
$r_{143 \times 217}^{\text{PS}}$	$0.68 \pm 0.13 \quad (+0.0\sigma)$	$D_{1420}$	$814.9 \pm 4.9 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.503 \pm 0.026 \quad (+0.4\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	$0.51 \pm 0.26 \quad (-0.0\sigma)$	$D_{2000}$	$231.6 \pm 1.8 \quad (-0.1\sigma)$	$\sigma_8(0.38)$	$0.709 \pm 0.037 \quad (+0.4\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$n_{\text{s},0.002}$	$0.9718 \pm 0.0049 \quad (-0.0\sigma)$	$f\sigma_8(0.51)$	$0.503 \pm 0.026 \quad (+0.4\sigma)$
$A^{\text{kSZ}}$	$< 5.30 \quad (-0.0\sigma)$	$Y_{\text{P}}$	$0.245433^{+0.000065}_{-0.000058} \quad (-0.0\sigma)$	$\sigma_8(0.51)$	$0.664 \pm 0.034 \quad (+0.4\sigma)$
$A_{100}^{\text{dust}}$	$0.995 \pm 0.20 \quad (-0.0\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246759^{+0.000066}_{-0.000059} \quad (-0.0\sigma)$	$f\sigma_8(0.61)$	$0.498 \pm 0.026 \quad (+0.4\sigma)$
$A_{143}^{\text{dust}}$	$0.94 \pm 0.18 \quad (-0.1\sigma)$	$10^5 \text{D}/\text{H}$	$2.567 \pm 0.030 \quad (+0.0\sigma)$	$\sigma_8(0.61)$	$0.632 \pm 0.033 \quad (+0.4\sigma)$
$A_{217}^{\text{dust}}$	$0.98 \pm 0.10 \quad (+0.0\sigma)$	$\text{Age}/\text{Gyr}$	$13.775 \pm 0.024 \quad (+0.2\sigma)$	$f\sigma_8(2.33)$	$0.319 \pm 0.017 \quad (+0.3\sigma)$
$A_{143 \times 217}^{\text{dust}}$	$1.01 \pm 0.16 \quad (-0.0\sigma)$	$z_*$	$1089.63 \pm 0.27 \quad (+0.0\sigma)$	$\sigma_8(2.33)$	$0.329 \pm 0.017 \quad (+0.3\sigma)$
$y_{\text{cal}}$	$1.0001 \pm 0.0025 \quad (+0.0\sigma)$	$r_*$	$144.83 \pm 0.25 \quad (-0.1\sigma)$	$f_{2000}^{143}$	$27 \pm 3 \quad (+0.0\sigma)$
$c_{100}$	$0.9976 \pm 0.0011 \quad (+0.0\sigma)$	$100\theta_*$	$1.04123 \pm 0.00029 \quad (-0.4\sigma)$	$f_{2000}^{217}$	$105.0 \pm 2.1 \quad (+0.1\sigma)$
$c_{217}$	$1.0009 \pm 0.0016 \quad (+0.0\sigma)$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.909 \pm 0.024 \quad (+0.0\sigma)$	$f_{2000}^{143 \times 217}$	$30.0 \pm 2.3 \quad (+0.1\sigma)$
$c_{TE}$	$0.9918 \pm 0.0054$	$z_{\text{drag}}$	$1060.04 \pm 0.35 \quad (-0.0\sigma)$	$\chi_{\text{CamSpec}}^2$	$11511.7 \pm 5.6 \quad (+844.5\sigma)$
$c_{EE}$	$0.9899 \pm 0.0051$	$r_{\text{drag}}$	$147.46 \pm 0.26 \quad (-0.1\sigma)$	$\chi_{6\text{DF}}^2$	$0.032 \pm 0.045 \quad (-0.2\sigma)$
$H_0$	$68.13 \pm 0.51 \quad (-0.2\sigma)$	$k_{\text{D}}$	$0.14055 \pm 0.00032 \quad (+0.0\sigma)$	$\chi_{\text{MGS}}^2$	$1.75 \pm 0.53 \quad (-0.2\sigma)$
$\Omega_{\Lambda}$	$0.6956 \pm 0.0067 \quad (-0.1\sigma)$	$100\theta_{\text{D}}$	$0.16070 \pm 0.00021 \quad (-0.1\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.00 \pm 0.87 \quad (-0.1\sigma)$
$\Omega_{\text{m}}$	$0.3044 \pm 0.0067 \quad (+0.1\sigma)$	$z_{\text{eq}}$	$3361 \pm 25 \quad (+0.1\sigma)$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.4 \quad (+0.2\sigma)$
$\Omega_{\text{m}}h^2$	$0.1413 \pm 0.0010 \quad (+0.1\sigma)$	$k_{\text{eq}}$	$0.010258 \pm 0.000076 \quad (+0.1\sigma)$	$\chi_{\text{BAO}}^2$	$5.79 \pm 0.80 \quad (-0.2\sigma)$
$\Omega_{\text{m}}h^3$	$0.09626 \pm 0.00032 \quad (-0.2\sigma)$	$100\theta_{\text{eq}}$	$0.8212 \pm 0.0048 \quad (-0.1\sigma)$		
$\sigma_8$	$0.864 \pm 0.045 \quad (+0.4\sigma)$	$100\theta_{\text{s,eq}}$	$0.4534 \pm 0.0024 \quad (-0.1\sigma)$		

$\bar{\chi}_{\text{eff}}^2 = 11525.31$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4452.97$ ;  $R - 1 = 0.00906$



### 3.85 base\_Alens\_CamSpecHM\_TTTEEE\_lowl

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022524	$0.02251 \pm 0.00019$ $(-0.5\sigma)$	$\sigma_8$	0.7686	$0.805^{+0.016}_{-0.035}$ $(+0.0\sigma)$	$100\theta_{\text{eq}}$	0.8220	$0.8226 \pm 0.0069$ $(-0.7\sigma)$
$\Omega_c h^2$	0.11795	$0.1179 \pm 0.0016$ $(+0.7\sigma)$	$S_8$	0.7723	$0.808^{+0.025}_{-0.036}$ $(+0.4\sigma)$	$100\theta_{\text{s,eq}}$	0.45384	$0.4541 \pm 0.0035$ $(-0.7\sigma)$
$100\theta_{\text{MC}}$	1.041083	$1.04108 \pm 0.00033$ $(-0.8\sigma)$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4230	$0.443^{+0.014}_{-0.020}$ $(+0.4\sigma)$	$H(0.15)$	73.45	$73.48 \pm 0.64$ $(-0.7\sigma)$
$\tau$	0.0101	$< 0.0694$ $(-0.2\sigma)$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5702	$0.597^{+0.015}_{-0.026}$ $(+0.2\sigma)$	$D_{\text{M}}(0.15)$	635.7	$635.5 \pm 6.2$ $(+0.7\sigma)$
$A_{\text{L}}$	1.248	$1.136 \pm 0.096$ $(-0.7\sigma)$	$\sigma_8/h^{0.5}$	0.9303	$0.974^{+0.023}_{-0.042}$ $(+0.2\sigma)$	$H(0.38)$	83.415	$83.43 \pm 0.47$ $(-0.7\sigma)$
$\ln(10^{10} A_{\text{s}})$	2.950	$3.041^{+0.035}_{-0.088}$ $(-0.1\sigma)$	$r_{\text{drag}} h$	100.66	$100.7 \pm 1.3$ $(-0.7\sigma)$	$D_{\text{M}}(0.38)$	1518.2	$1518 \pm 13$ $(+0.7\sigma)$
$n_{\text{s}}$	0.9717	$0.9716 \pm 0.0053$ $(-0.7\sigma)$	$\langle d^2 \rangle^{1/2}$	2.568	$2.560 \pm 0.065$ $(-1.0\sigma)$	$H(0.51)$	90.048	$90.06 \pm 0.38$ $(-0.7\sigma)$
$y_{\text{cal}}$	0.99998	$1.0001 \pm 0.0025$ $(+0.0\sigma)$	$z_{\text{re}}$	2.11	$7.5^{+2.2}_{-4.7}$ $(-0.2\sigma)$	$D_{\text{M}}(0.51)$	1968.1	$1968 \pm 15$ $(+0.7\sigma)$
$A_{100}^{\text{PS}}$	222.3	$232 \pm 25$ $(+0.1\sigma)$	$10^9 A_{\text{s}}$	1.910	$2.098^{+0.067}_{-0.18}$ $(-0.1\sigma)$	$H(0.61)$	95.602	$95.61 \pm 0.31$ $(-0.7\sigma)$
$A_{143}^{\text{PS}}$	48.5	$35 \pm 8$ $(+0.3\sigma)$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8720	$1.870 \pm 0.012$ $(+0.5\sigma)$	$D_{\text{M}}(0.61)$	2291.3	$2291 \pm 16$ $(+0.7\sigma)$
$A_{217}^{\text{PS}}$	108.5	$105 \pm 10$ $(+0.0\sigma)$	$D_{40}$	1206.1	$1217^{+14}_{-18}$ $(+0.4\sigma)$	$H(2.33)$	235.38	$235.30 \pm 0.92$ $(+0.6\sigma)$
$A_{217}^{\text{CIB}}$	38.7	$37 \pm 7$ $(+0.1\sigma)$	$D_{220}$	5725.1	$5722 \pm 39$ $(-0.1\sigma)$	$D_{\text{M}}(2.33)$	5750.1	$5750 \pm 14$ $(+0.7\sigma)$
$A_{143}^{\text{tSZ}}$	6.30	$4.1^{+2.0}_{-2.4}$ $(-0.0\sigma)$	$D_{810}$	2530.4	$2528 \pm 14$ $(+0.3\sigma)$	$f\sigma_8(0.15)$	0.4280	$0.448^{+0.013}_{-0.020}$ $(+0.4\sigma)$
$r_{143 \times 217}^{\text{PS}}$	0.779	$0.68 \pm 0.13$ $(-0.0\sigma)$	$D_{1420}$	815.63	$814.8 \pm 4.8$ $(+0.1\sigma)$	$\sigma_8(0.15)$	0.7111	$0.744^{+0.015}_{-0.032}$ $(-0.0\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	0.826	$0.51^{+0.32}_{-0.28}$ $(+0.0\sigma)$	$D_{2000}$	231.89	$231.6 \pm 1.7$ $(-0.5\sigma)$	$f\sigma_8(0.38)$	0.4472	$0.468^{+0.012}_{-0.020}$ $(+0.3\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.998	—	$n_{\text{s},0.002}$	0.9717	$0.9716 \pm 0.0053$ $(-0.7\sigma)$	$\sigma_8(0.38)$	0.6312	$0.661^{+0.012}_{-0.029}$ $(-0.1\sigma)$
$A^{\text{kSZ}}$	0.01	$< 5.25$ $(+0.1\sigma)$	$Y_{\text{P}}$	0.245453	$0.245447 \pm 0.000073$ $(-0.5\sigma)$	$f\sigma_8(0.51)$	0.4469	$0.468^{+0.012}_{-0.020}$ $(+0.2\sigma)$
$A_{100}^{\text{dust}}$	1.010	$1.01 \pm 0.19$ $(-0.0\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	0.246780	$0.246774 \pm 0.000073$ $(-0.5\sigma)$	$\sigma_8(0.51)$	0.5911	$0.619^{+0.011}_{-0.027}$ $(-0.1\sigma)$
$A_{143}^{\text{dust}}$	0.971	$0.95 \pm 0.17$ $(-0.0\sigma)$	$10^5 \text{D}/\text{H}$	2.5578	$2.561 \pm 0.034$ $(+0.5\sigma)$	$f\sigma_8(0.61)$	0.4428	$0.463^{+0.011}_{-0.020}$ $(+0.2\sigma)$
$A_{217}^{\text{dust}}$	0.993	$0.98 \pm 0.10$ $(-0.0\sigma)$	Age/Gyr	13.7685	$13.769 \pm 0.030$ $(+0.7\sigma)$	$\sigma_8(0.61)$	0.5627	$0.589^{+0.010}_{-0.026}$ $(-0.1\sigma)$
$A_{143 \times 217}^{\text{dust}}$	1.016	$1.01 \pm 0.16$ $(+0.0\sigma)$	$z_*$	1089.548	$1089.56 \pm 0.34$ $(+0.6\sigma)$	$f\sigma_8(2.33)$	0.2840	$0.2974^{+0.0051}_{-0.013}$ $(-0.1\sigma)$
$c_{100}$	0.99788	$0.9975 \pm 0.0010$ $(-0.0\sigma)$	$r_*$	144.846	$144.88 \pm 0.34$ $(-0.6\sigma)$	$\sigma_8(2.33)$	0.2932	$0.3070^{+0.0052}_{-0.014}$ $(-0.2\sigma)$
$c_{217}$	1.00107	$1.0009 \pm 0.0016$ $(+0.1\sigma)$	$100\theta_*$	1.041249	$1.04125 \pm 0.00033$ $(-0.8\sigma)$	$f_{2000}^{143}$	27.23	$27 \pm 3$ $(+0.4\sigma)$
$c_{TE}$	0.9922	$0.9924 \pm 0.0053$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9108	$13.914 \pm 0.031$ $(-0.5\sigma)$	$f_{2000}^{217}$	104.66	$105.0 \pm 2.1$ $(+0.4\sigma)$
$c_{EE}$	0.99045	$0.9903 \pm 0.0050$	$z_{\text{drag}}$	1060.162	$1060.10 \pm 0.37$ $(-0.4\sigma)$	$f_{2000}^{143 \times 217}$	30.03	$30.0 \pm 2.2$ $(+0.4\sigma)$
$H_0$	68.26	$68.29 \pm 0.74$ $(-0.7\sigma)$	$r_{\text{drag}}$	147.463	$147.51 \pm 0.33$ $(-0.6\sigma)$	$\chi_{\text{lowl}}^2$	21.34	$22.5 \pm 1.4$ $(+0.3\sigma)$
$\Omega_{\Lambda}$	0.6971	$0.6975 \pm 0.0096$ $(-0.7\sigma)$	$k_{\text{D}}$	0.140588	$0.14053 \pm 0.00035$ $(+0.4\sigma)$	$\chi_{\text{CamSpec}}^2$	11496.5	$11512.4 \pm 5.7$ $(+836.3\sigma)$
$\Omega_{\text{m}}$	0.3029	$0.3025 \pm 0.0096$ $(+0.7\sigma)$	$100\theta_{\text{D}}$	0.160639	$0.16066 \pm 0.00021$ $(+0.3\sigma)$	$\chi_{\text{prior}}^2$	1.87	$7.7 \pm 3.3$ $(+0.2\sigma)$
$\Omega_{\text{m}} h^2$	0.14112	$0.1410 \pm 0.0015$ $(+0.6\sigma)$	$z_{\text{eq}}$	3356.8	$3354 \pm 35$ $(+0.6\sigma)$	$\chi_{\text{CMB}}^2$	11517.8	$11534.9 \pm 5.8$ $(+835.6\sigma)$
$\Omega_{\text{m}} h^3$	0.096325	$0.09628 \pm 0.00033$ $(-0.3\sigma)$	$k_{\text{eq}}$	0.010245	$0.01024 \pm 0.00011$ $(+0.6\sigma)$			

Best-fit  $\chi_{\text{eff}}^2 = 11519.71$ ;  $\Delta\chi_{\text{eff}}^2 = 4451.41$ ;  $\bar{\chi}_{\text{eff}}^2 = 11542.67$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4453.53$ ;  $R - 1 = 0.01017$   
 $\chi_{\text{eff}}^2$ : CMB - commander\_dx12.v3.2.29: 21.34 ( $\Delta$  0.48) CamSpec like\_10.7HM\_1400\_unified: 11496.50



### 3.86 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02249 \pm 0.00016 \quad (-0.1\sigma)$	$S_8$	$0.809^{+0.021}_{-0.035} \quad (+0.0\sigma)$	$H(0.15)$	$73.40 \pm 0.44 \quad (-0.3\sigma)$
$\Omega_c h^2$	$0.1180 \pm 0.0011 \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.443^{+0.012}_{-0.019} \quad (+0.0\sigma)$	$D_M(0.15)$	$636.3 \pm 4.2 \quad (+0.3\sigma)$
$100\theta_{MC}$	$1.04106 \pm 0.00030 \quad (-0.5\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.597^{+0.013}_{-0.025} \quad (-0.0\sigma)$	$H(0.38)$	$83.37 \pm 0.33 \quad (-0.3\sigma)$
$\tau$	$< 0.0679 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.974^{+0.020}_{-0.042} \quad (-0.0\sigma)$	$D_M(0.38)$	$1519.4 \pm 8.6 \quad (+0.3\sigma)$
$A_L$	$1.133^{+0.098}_{-0.087} \quad (-0.6\sigma)$	$r_{\text{drag}} h$	$100.58 \pm 0.85 \quad (-0.3\sigma)$	$H(0.51)$	$90.01 \pm 0.27 \quad (-0.3\sigma)$
$\ln(10^{10} A_s)$	$3.039^{+0.034}_{-0.086} \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.558 \pm 0.064 \quad (-0.9\sigma)$	$D_M(0.51)$	$1969 \pm 10 \quad (+0.3\sigma)$
$n_s$	$0.9711 \pm 0.0043 \quad (-0.3\sigma)$	$z_{\text{re}}$	$7.4^{+2.2}_{-4.6} \quad (-0.1\sigma)$	$H(0.61)$	$95.57 \pm 0.22 \quad (-0.3\sigma)$
$y_{\text{cal}}$	$1.0000 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_s$	$2.093^{+0.065}_{-0.18} \quad (-0.1\sigma)$	$D_M(0.61)$	$2293 \pm 11 \quad (+0.3\sigma)$
$A_{100}^{\text{PS}}$	$232 \pm 25 \quad (+0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.871 \pm 0.011 \quad (+0.1\sigma)$	$H(2.33)$	$235.40 \pm 0.65 \quad (+0.1\sigma)$
$A_{143}^{\text{PS}}$	$35 \pm 8 \quad (+0.1\sigma)$	$D_{40}$	$1218^{+13}_{-17} \quad (+0.1\sigma)$	$D_M(2.33)$	$5752 \pm 10 \quad (+0.3\sigma)$
$A_{217}^{\text{PS}}$	$105 \pm 10 \quad (+0.1\sigma)$	$D_{220}$	$5721 \pm 39 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.448^{+0.011}_{-0.019} \quad (+0.0\sigma)$
$A_{217}^{\text{CIB}}$	$37 \pm 7 \quad (+0.0\sigma)$	$D_{810}$	$2528 \pm 14 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.744^{+0.013}_{-0.032} \quad (-0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$4.1^{+2.0}_{-2.4} \quad (-0.0\sigma)$	$D_{1420}$	$814.7 \pm 4.8 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.468^{+0.011}_{-0.020} \quad (+0.0\sigma)$
$r_{143 \times 217}^{\text{PS}}$	$0.68 \pm 0.13 \quad (+0.0\sigma)$	$D_{2000}$	$231.5 \pm 1.7 \quad (-0.2\sigma)$	$\sigma_8(0.38)$	$0.660^{+0.012}_{-0.028} \quad (-0.1\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	$0.51^{+0.33}_{-0.28} \quad (-0.0\sigma)$	$n_{s,0.002}$	$0.9711 \pm 0.0043 \quad (-0.3\sigma)$	$f\sigma_8(0.51)$	$0.468^{+0.010}_{-0.020} \quad (-0.0\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.245440 \pm 0.000062 \quad (-0.1\sigma)$	$\sigma_8(0.51)$	$0.618^{+0.011}_{-0.027} \quad (-0.1\sigma)$
$A^{\text{kSZ}}$	$< 5.24 \quad (-0.0\sigma)$	$Y_P^{\text{BBN}}$	$0.246767 \pm 0.000062 \quad (-0.1\sigma)$	$f\sigma_8(0.61)$	$0.4635^{+0.0096}_{-0.020} \quad (-0.0\sigma)$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.19 \quad (+0.0\sigma)$	$10^5 \text{D/H}$	$2.564 \pm 0.029 \quad (+0.1\sigma)$	$\sigma_8(0.61)$	$0.589^{+0.010}_{-0.025} \quad (-0.1\sigma)$
$A_{143}^{\text{dust}}$	$0.95 \pm 0.18 \quad (-0.0\sigma)$	$\text{Age/Gyr}$	$13.773 \pm 0.024 \quad (+0.3\sigma)$	$f\sigma_8(2.33)$	$0.2971^{+0.0050}_{-0.013} \quad (-0.1\sigma)$
$A_{217}^{\text{dust}}$	$0.98 \pm 0.10 \quad (+0.0\sigma)$	$z_*$	$1089.60 \pm 0.26 \quad (+0.1\sigma)$	$\sigma_8(2.33)$	$0.3067^{+0.0051}_{-0.013} \quad (-0.1\sigma)$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.16 \quad (+0.0\sigma)$	$r_*$	$144.85 \pm 0.25 \quad (-0.1\sigma)$	$f_{2000}^{143}$	$27.1 \pm 3.0 \quad (+0.1\sigma)$
$c_{100}$	$0.9976 \pm 0.0010 \quad (+0.0\sigma)$	$100\theta_*$	$1.04123 \pm 0.00030 \quad (-0.5\sigma)$	$f_{2000}^{217}$	$105.1 \pm 2.0 \quad (+0.2\sigma)$
$c_{217}$	$1.0009 \pm 0.0016 \quad (+0.0\sigma)$	$D_M(z_*)/\text{Gpc}$	$13.911 \pm 0.024 \quad (-0.0\sigma)$	$f_{2000}^{143 \times 217}$	$30.1 \pm 2.1 \quad (+0.2\sigma)$
$c_{TE}$	$0.9925 \pm 0.0053$	$z_{\text{drag}}$	$1060.08 \pm 0.35 \quad (-0.1\sigma)$	$\chi_{\text{lowl}}^2$	$22.5 \pm 1.4 \quad (+0.1\sigma)$
$c_{EE}$	$0.9903 \pm 0.0049$	$r_{\text{drag}}$	$147.48 \pm 0.26 \quad (-0.1\sigma)$	$\chi_{\text{CamSpec}}^2$	$11511.8 \pm 5.5 \quad (+871.9\sigma)$
$H_0$	$68.20 \pm 0.50 \quad (-0.3\sigma)$	$k_D$	$0.14055 \pm 0.00032 \quad (+0.0\sigma)$	$\chi_{6\text{DF}}^2$	$0.031 \pm 0.044 \quad (-0.3\sigma)$
$\Omega_\Lambda$	$0.6964 \pm 0.0065 \quad (-0.3\sigma)$	$100\theta_D$	$0.16068 \pm 0.00020 \quad (-0.1\sigma)$	$\chi_{\text{MGS}}^2$	$1.82 \pm 0.53 \quad (-0.3\sigma)$
$\Omega_m$	$0.3036 \pm 0.0065 \quad (+0.3\sigma)$	$z_{\text{eq}}$	$3358 \pm 24 \quad (+0.2\sigma)$	$\chi_{\text{DR12BAO}}^2$	$3.94 \pm 0.78 \quad (-0.1\sigma)$
$\Omega_m h^2$	$0.1412 \pm 0.0010 \quad (+0.2\sigma)$	$k_{\text{eq}}$	$0.010250 \pm 0.000074 \quad (+0.2\sigma)$	$\chi_{\text{prior}}^2$	$7.7 \pm 3.3 \quad (+0.2\sigma)$
$\Omega_m h^3$	$0.09627 \pm 0.00033 \quad (-0.2\sigma)$	$100\theta_{\text{eq}}$	$0.8217 \pm 0.0047 \quad (-0.2\sigma)$	$\chi_{\text{BAO}}^2$	$5.78 \pm 0.79 \quad (-0.3\sigma)$
$\sigma_8$	$0.804^{+0.015}_{-0.034} \quad (-0.0\sigma)$	$100\theta_{s,\text{eq}}$	$0.4537 \pm 0.0024 \quad (-0.2\sigma)$	$\chi_{\text{CMB}}^2$	$11534.3 \pm 5.6 \quad (+856.6\sigma)$

$\bar{\chi}_{\text{eff}}^2 = 11547.85$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4453.21$ ;  $R - 1 = 0.01201$



### 3.87 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02252 \pm 0.00019 \quad (-0.5\sigma)$	$\sigma_8$	$0.823^{+0.013}_{-0.027} \quad (+0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8231 \pm 0.0070 \quad (-0.7\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1177 \pm 0.0016 \quad (+0.7\sigma)$	$S_8$	$0.825^{+0.023}_{-0.030} \quad (+0.5\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4544 \pm 0.0036 \quad (-0.7\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04110 \pm 0.00033 \quad (-0.8\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.452^{+0.012}_{-0.017} \quad (+0.5\sigma)$	$H(0.15)$	$73.52 \pm 0.65 \quad (-0.8\sigma)$
$\tau$	$0.079^{+0.011}_{-0.035} \quad (-0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.610^{+0.013}_{-0.021} \quad (+0.4\sigma)$	$D_{\mathrm{M}}(0.15)$	$635.1 \pm 6.3 \quad (+0.8\sigma)$
$A_{\mathrm{L}}$	$1.088 \pm 0.083 \quad (-0.9\sigma)$	$\sigma_8/h^{0.5}$	$0.995^{+0.019}_{-0.033} \quad (+0.3\sigma)$	$H(0.38)$	$83.47 \pm 0.48 \quad (-0.8\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.087^{+0.027}_{-0.067} \quad (-0.1\sigma)$	$r_{\mathrm{drag}}h$	$100.8 \pm 1.3 \quad (-0.8\sigma)$	$D_{\mathrm{M}}(0.38)$	$1517 \pm 13 \quad (+0.8\sigma)$
$n_{\mathrm{s}}$	$0.9724 \pm 0.0053 \quad (-0.7\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.561 \pm 0.066 \quad (-1.0\sigma)$	$H(0.51)$	$90.09 \pm 0.38 \quad (-0.8\sigma)$
$y_{\mathrm{cal}}$	$1.0001 \pm 0.0025 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$< 10.8 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1967 \pm 15 \quad (+0.8\sigma)$
$A_{100}^{\mathrm{PS}}$	$231 \pm 25 \quad (+0.1\sigma)$	$10^9 A_{\mathrm{s}}$	$2.193^{+0.054}_{-0.15} \quad (-0.1\sigma)$	$H(0.61)$	$95.63 \pm 0.31 \quad (-0.8\sigma)$
$A_{143}^{\mathrm{PS}}$	$35 \pm 8 \quad (+0.3\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.869 \pm 0.012 \quad (+0.6\sigma)$	$D_{\mathrm{M}}(0.61)$	$2290 \pm 16 \quad (+0.8\sigma)$
$A_{217}^{\mathrm{PS}}$	$105 \pm 10 \quad (+0.0\sigma)$	$D_{40}$	$1222^{+14}_{-18} \quad (+0.5\sigma)$	$H(2.33)$	$235.23 \pm 0.94 \quad (+0.7\sigma)$
$A_{217}^{\mathrm{CIB}}$	$37 \pm 7 \quad (+0.1\sigma)$	$D_{220}$	$5720 \pm 39 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5749 \pm 14 \quad (+0.8\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$4.1^{+2.0}_{-2.4} \quad (-0.0\sigma)$	$D_{810}$	$2528 \pm 14 \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.457^{+0.012}_{-0.016} \quad (+0.5\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.68 \pm 0.13 \quad (-0.0\sigma)$	$D_{1420}$	$815.1 \pm 4.8 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.761^{+0.012}_{-0.025} \quad (+0.1\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.50 \pm 0.27 \quad (+0.0\sigma)$	$D_{2000}$	$231.8 \pm 1.7 \quad (-0.5\sigma)$	$f\sigma_8(0.38)$	$0.478^{+0.011}_{-0.016} \quad (+0.4\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.9724 \pm 0.0053 \quad (-0.7\sigma)$	$\sigma_8(0.38)$	$0.6758^{+0.0096}_{-0.022} \quad (-0.0\sigma)$
$A^{\mathrm{kSZ}}$	$< 5.09 \quad (+0.0\sigma)$	$Y_{\mathrm{P}}$	$0.245451 \pm 0.000073 \quad (-0.5\sigma)$	$f\sigma_8(0.51)$	$0.4779^{+0.0097}_{-0.016} \quad (+0.4\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246777 \pm 0.000074 \quad (-0.5\sigma)$	$\sigma_8(0.51)$	$0.6329^{+0.0088}_{-0.021} \quad (-0.0\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.17 \quad (-0.0\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.559 \pm 0.034 \quad (+0.5\sigma)$	$f\sigma_8(0.61)$	$0.4736^{+0.0091}_{-0.016} \quad (+0.3\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (-0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.767 \pm 0.031 \quad (+0.8\sigma)$	$\sigma_8(0.61)$	$0.6025^{+0.0082}_{-0.020} \quad (-0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16 \quad (+0.0\sigma)$	$z_*$	$1089.54 \pm 0.34 \quad (+0.7\sigma)$	$f\sigma_8(2.33)$	$0.3042^{+0.0040}_{-0.010} \quad (-0.1\sigma)$
$c_{100}$	$0.9975 \pm 0.0010 \quad (-0.0\sigma)$	$r_*$	$144.91 \pm 0.34 \quad (-0.7\sigma)$	$\sigma_8(2.33)$	$0.3141^{+0.0040}_{-0.011} \quad (-0.2\sigma)$
$c_{217}$	$1.0008 \pm 0.0016 \quad (+0.1\sigma)$	$100\theta_*$	$1.04127 \pm 0.00033 \quad (-0.8\sigma)$	$f_{2000}^{143}$	$27 \pm 3 \quad (+0.4\sigma)$
$c_{TE}$	$0.9922 \pm 0.0053$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.916 \pm 0.032 \quad (-0.6\sigma)$	$f_{2000}^{217}$	$104.8 \pm 2.1 \quad (+0.4\sigma)$
$c_{EE}$	$0.9901 \pm 0.0049$	$z_{\mathrm{drag}}$	$1060.12 \pm 0.37 \quad (-0.4\sigma)$	$f_{2000}^{143 \times 217}$	$29.7 \pm 2.2 \quad (+0.5\sigma)$
$H_0$	$68.35 \pm 0.75 \quad (-0.8\sigma)$	$r_{\mathrm{drag}}$	$147.53 \pm 0.33 \quad (-0.6\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.1 \pm 1.6 \quad (+0.4\sigma)$
$\Omega_{\Lambda}$	$0.6982 \pm 0.0097 \quad (-0.8\sigma)$	$k_{\mathrm{D}}$	$0.14052 \pm 0.00035 \quad (+0.4\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11512.4 \pm 5.8 \quad (+828.9\sigma)$
$\Omega_{\mathrm{m}}$	$0.3018 \pm 0.0097 \quad (+0.8\sigma)$	$100\theta_{\mathrm{D}}$	$0.16066 \pm 0.00021 \quad (+0.3\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.3 \quad (+0.2\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1409 \pm 0.0015 \quad (+0.7\sigma)$	$z_{\mathrm{eq}}$	$3351 \pm 36 \quad (+0.7\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11535.5 \pm 5.9 \quad (+829.2\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09628 \pm 0.00033 \quad (-0.3\sigma)$	$k_{\mathrm{eq}}$	$0.01023 \pm 0.00011 \quad (+0.7\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11543.27; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4453.76; R - 1 = 0.01232$$



### 3.88 base\_Alens\_CamSpecHM\_TTTEEE\_lowl\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02250 \pm 0.00016 \quad (-0.1\sigma)$	$S_8$	$0.827^{+0.018}_{-0.028} \quad (+0.1\sigma)$	$H(0.15)$	$73.41 \pm 0.44 \quad (-0.3\sigma)$
$\Omega_c h^2$	$0.1180 \pm 0.0011 \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.453^{+0.010}_{-0.015} \quad (+0.1\sigma)$	$D_M(0.15)$	$636.1 \pm 4.3 \quad (+0.3\sigma)$
$100\theta_{MC}$	$1.04106 \pm 0.00030 \quad (-0.5\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.611^{+0.011}_{-0.020} \quad (+0.1\sigma)$	$H(0.38)$	$83.38 \pm 0.33 \quad (-0.3\sigma)$
$\tau$	$0.078^{+0.011}_{-0.033} \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.996^{+0.017}_{-0.032} \quad (+0.0\sigma)$	$D_M(0.38)$	$1519.1 \pm 8.7 \quad (+0.3\sigma)$
$A_L$	$1.084 \pm 0.080 \quad (-0.7\sigma)$	$r_{\text{drag}} h$	$100.61 \pm 0.87 \quad (-0.3\sigma)$	$H(0.51)$	$90.02 \pm 0.27 \quad (-0.3\sigma)$
$\ln(10^{10} A_s)$	$3.085^{+0.027}_{-0.065} \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.559 \pm 0.065 \quad (-0.9\sigma)$	$D_M(0.51)$	$1969 \pm 10 \quad (+0.3\sigma)$
$n_s$	$0.9717 \pm 0.0043 \quad (-0.3\sigma)$	$z_{\text{re}}$	$< 10.7 \quad (-0.0\sigma)$	$H(0.61)$	$95.58 \pm 0.23 \quad (-0.3\sigma)$
$y_{\text{cal}}$	$1.0001 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_s$	$2.189^{+0.054}_{-0.14} \quad (-0.0\sigma)$	$D_M(0.61)$	$2292 \pm 11 \quad (+0.3\sigma)$
$A_{100}^{\text{PS}}$	$231 \pm 25 \quad (+0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.870 \pm 0.011 \quad (+0.1\sigma)$	$H(2.33)$	$235.38 \pm 0.66 \quad (+0.2\sigma)$
$A_{143}^{\text{PS}}$	$35 \pm 8 \quad (+0.1\sigma)$	$D_{40}$	$1223^{+14}_{-17} \quad (+0.2\sigma)$	$D_M(2.33)$	$5752 \pm 11 \quad (+0.3\sigma)$
$A_{217}^{\text{PS}}$	$105 \pm 10 \quad (+0.0\sigma)$	$D_{220}$	$5719 \pm 39 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4584^{+0.0096}_{-0.015} \quad (+0.1\sigma)$
$A_{217}^{\text{CIB}}$	$37^{+6}_{-7} \quad (+0.0\sigma)$	$D_{810}$	$2528 \pm 14 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.761^{+0.011}_{-0.025} \quad (-0.0\sigma)$
$A_{143}^{\text{tSZ}}$	$4.1^{+1.9}_{-2.5} \quad (-0.0\sigma)$	$D_{1420}$	$814.9 \pm 4.9 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4789^{+0.0089}_{-0.016} \quad (+0.1\sigma)$
$r_{143 \times 217}^{\text{PS}}$	$0.68 \pm 0.13 \quad (+0.0\sigma)$	$D_{2000}$	$231.6 \pm 1.7 \quad (-0.2\sigma)$	$\sigma_8(0.38)$	$0.6755^{+0.0092}_{-0.022} \quad (-0.0\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	$0.50 \pm 0.27 \quad (-0.0\sigma)$	$n_{s,0.002}$	$0.9717 \pm 0.0043 \quad (-0.3\sigma)$	$f\sigma_8(0.51)$	$0.4784^{+0.0084}_{-0.015} \quad (+0.0\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.245442 \pm 0.000062 \quad (-0.1\sigma)$	$\sigma_8(0.51)$	$0.6325^{+0.0085}_{-0.021} \quad (-0.0\sigma)$
$A^{\text{kSZ}}$	$< 5.12 \quad (+0.0\sigma)$	$Y_P^{\text{BBN}}$	$0.246768 \pm 0.000063 \quad (-0.1\sigma)$	$f\sigma_8(0.61)$	$0.4741^{+0.0079}_{-0.015} \quad (+0.0\sigma)$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$10^5 D/H$	$2.563 \pm 0.030 \quad (+0.1\sigma)$	$\sigma_8(0.61)$	$0.6021^{+0.0080}_{-0.020} \quad (-0.0\sigma)$
$A_{143}^{\text{dust}}$	$0.94 \pm 0.17 \quad (-0.0\sigma)$	$\text{Age}/\text{Gyr}$	$13.772 \pm 0.024 \quad (+0.3\sigma)$	$f\sigma_8(2.33)$	$0.3039^{+0.0040}_{-0.0099} \quad (-0.1\sigma)$
$A_{217}^{\text{dust}}$	$0.98 \pm 0.10 \quad (-0.0\sigma)$	$z_*$	$1089.59 \pm 0.26 \quad (+0.1\sigma)$	$\sigma_8(2.33)$	$0.3137^{+0.0041}_{-0.010} \quad (-0.1\sigma)$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.16 \quad (+0.0\sigma)$	$r_*$	$144.86 \pm 0.25 \quad (-0.2\sigma)$	$f_{2000}^{143}$	$27 \pm 3 \quad (+0.1\sigma)$
$c_{100}$	$0.9975 \pm 0.0010 \quad (+0.0\sigma)$	$100\theta_*$	$1.04124 \pm 0.00030 \quad (-0.5\sigma)$	$f_{2000}^{217}$	$105.0 \pm 2.1 \quad (+0.2\sigma)$
$c_{217}$	$1.0009 \pm 0.0016 \quad (+0.0\sigma)$	$D_M(z_*)/\text{Gpc}$	$13.912 \pm 0.024 \quad (-0.1\sigma)$	$f_{2000}^{143 \times 217}$	$29.9 \pm 2.1 \quad (+0.2\sigma)$
$c_{TE}$	$0.9923 \pm 0.0053$	$z_{\text{drag}}$	$1060.08 \pm 0.35 \quad (-0.0\sigma)$	$\chi_{\text{lowl}}^2$	$23.2 \pm 1.5 \quad (+0.1\sigma)$
$c_{EE}$	$0.9901 \pm 0.0049$	$r_{\text{drag}}$	$147.48 \pm 0.26 \quad (-0.2\sigma)$	$\chi_{\text{CamSpec}}^2$	$11511.7 \pm 5.5 \quad (+864.6\sigma)$
$H_0$	$68.22 \pm 0.51 \quad (-0.3\sigma)$	$k_D$	$0.14055 \pm 0.00032 \quad (+0.1\sigma)$	$\chi_{6\text{DF}}^2$	$0.032 \pm 0.046 \quad (-0.3\sigma)$
$\Omega_\Lambda$	$0.6966 \pm 0.0066 \quad (-0.3\sigma)$	$100\theta_D$	$0.16067 \pm 0.00020 \quad (-0.1\sigma)$	$\chi_{\text{MGS}}^2$	$1.84 \pm 0.54 \quad (-0.3\sigma)$
$\Omega_m$	$0.3034 \pm 0.0066 \quad (+0.3\sigma)$	$z_{\text{eq}}$	$3357 \pm 25 \quad (+0.2\sigma)$	$\chi_{\text{DR12BAO}}^2$	$3.93 \pm 0.77 \quad (-0.1\sigma)$
$\Omega_m h^2$	$0.1411 \pm 0.0010 \quad (+0.2\sigma)$	$k_{\text{eq}}$	$0.010247 \pm 0.000075 \quad (+0.2\sigma)$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.3 \quad (+0.2\sigma)$
$\Omega_m h^3$	$0.09627 \pm 0.00033 \quad (-0.2\sigma)$	$100\theta_{\text{eq}}$	$0.8219 \pm 0.0047 \quad (-0.3\sigma)$	$\chi_{\text{BAO}}^2$	$5.80 \pm 0.81 \quad (-0.3\sigma)$
$\sigma_8$	$0.823^{+0.012}_{-0.027} \quad (-0.0\sigma)$	$100\theta_{s,\text{eq}}$	$0.4538 \pm 0.0024 \quad (-0.3\sigma)$	$\chi_{\text{CMB}}^2$	$11534.9 \pm 5.7 \quad (+846.6\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 11548.48; \Delta\bar{\chi}_{\text{eff}}^2 = 4453.38; R - 1 = 0.01389$$



### 3.89 base\_Alens\_CamSpecHM\_TTTEEE\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022483	$0.02246 \pm 0.00019$ $(-0.2\sigma)$	$\sigma_8$	0.8015	$0.8012 \pm 0.0090$ $(+0.2\sigma)$	$100\theta_{\text{eq}}$	0.8203	$0.8199 \pm 0.0070$ $(-0.3\sigma)$
$\Omega_c h^2$	0.11835	$0.1185 \pm 0.0016$ $(+0.3\sigma)$	$S_8$	0.8086	$0.810 \pm 0.020$ $(+0.3\sigma)$	$100\theta_{s,\text{eq}}$	0.45297	$0.4528 \pm 0.0036$ $(-0.3\sigma)$
$100\theta_{\text{MC}}$	1.041013	$1.04102 \pm 0.00033$ $(-0.5\sigma)$	$\sigma_8 \Omega_m^{0.5}$	0.4429	$0.443 \pm 0.011$ $(+0.3\sigma)$	$H(0.15)$	73.28	$73.23 \pm 0.65$ $(-0.3\sigma)$
$\tau$	0.0505	$0.0498^{+0.0083}_{-0.0073}$ $(-0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	0.5958	$0.596 \pm 0.010$ $(+0.3\sigma)$	$D_{\text{M}}(0.15)$	637.4	$637.9 \pm 6.4$ $(+0.3\sigma)$
$A_{\text{L}}$	1.137	$1.130 \pm 0.071$ $(-0.8\sigma)$	$\sigma_8/h^{0.5}$	0.9714	$0.972 \pm 0.015$ $(+0.3\sigma)$	$H(0.38)$	83.291	$83.26 \pm 0.48$ $(-0.4\sigma)$
$\ln(10^{10} A_{\text{s}})$	3.0311	$3.030^{+0.017}_{-0.016}$ $(+0.0\sigma)$	$r_{\text{drag}} h$	100.33	$100.2 \pm 1.3$ $(-0.3\sigma)$	$D_{\text{M}}(0.38)$	1521.6	$1523 \pm 13$ $(+0.3\sigma)$
$n_{\text{s}}$	0.9699	$0.9689 \pm 0.0053$ $(-0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	2.562	$2.554 \pm 0.064$ $(-1.0\sigma)$	$H(0.51)$	89.949	$89.92 \pm 0.38$ $(-0.4\sigma)$
$y_{\text{cal}}$	0.99982	$1.0001 \pm 0.0025$ $(+0.0\sigma)$	$z_{\text{re}}$	7.23	$7.15^{+0.90}_{-0.71}$ $(-0.0\sigma)$	$D_{\text{M}}(0.51)$	1972.0	$1973 \pm 15$ $(+0.3\sigma)$
$A_{100}^{\text{PS}}$	224.2	$234 \pm 25$ $(+0.1\sigma)$	$10^9 A_{\text{s}}$	2.0720	$2.070 \pm 0.036$ $(+0.0\sigma)$	$H(0.61)$	95.522	$95.50 \pm 0.31$ $(-0.4\sigma)$
$A_{143}^{\text{PS}}$	49.0	$36 \pm 8$ $(+0.2\sigma)$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8732	$1.874 \pm 0.013$ $(+0.2\sigma)$	$D_{\text{M}}(0.61)$	2295.5	$2297 \pm 16$ $(+0.3\sigma)$
$A_{217}^{\text{PS}}$	107.3	$104 \pm 10$ $(+0.0\sigma)$	$D_{40}$	1216.5	$1219 \pm 15$ $(+0.3\sigma)$	$H(2.33)$	235.59	$235.65 \pm 0.95$ $(+0.3\sigma)$
$A_{217}^{\text{CIB}}$	39.7	$38^{+7}_{-7}$ $(+0.0\sigma)$	$D_{220}$	5725.7	$5728 \pm 39$ $(-0.0\sigma)$	$D_{\text{M}}(2.33)$	5753.6	$5755 \pm 14$ $(+0.4\sigma)$
$A_{143}^{\text{tSZ}}$	6.41	$4.0^{+2.0}_{-2.4}$ $(-0.0\sigma)$	$D_{810}$	2529.8	$2530 \pm 14$ $(+0.2\sigma)$	$f\sigma_8(0.15)$	0.4479	$0.448 \pm 0.010$ $(+0.3\sigma)$
$r_{143 \times 217}^{\text{PS}}$	0.758	$0.67 \pm 0.13$ $(+0.0\sigma)$	$D_{1420}$	814.82	$814.3 \pm 4.9$ $(+0.2\sigma)$	$\sigma_8(0.15)$	0.7412	$0.7409 \pm 0.0077$ $(+0.2\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	0.874	$0.52^{+0.35}_{-0.26}$ $(+0.0\sigma)$	$D_{2000}$	231.47	$231.1 \pm 1.7$ $(-0.3\sigma)$	$f\sigma_8(0.38)$	0.4674	$0.4676 \pm 0.0085$ $(+0.3\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.95	—	$n_{\text{s},0.002}$	0.9699	$0.9689 \pm 0.0053$ $(-0.3\sigma)$	$\sigma_8(0.38)$	0.6577	$0.6573 \pm 0.0064$ $(+0.1\sigma)$
$A^{\text{kSZ}}$	0.01	$< 5.55$ $(+0.0\sigma)$	$Y_{\text{P}}$	0.245438	$0.245428^{+0.000075}_{-0.000068}$ $(-0.2\sigma)$	$f\sigma_8(0.51)$	0.4667	$0.4668 \pm 0.0075$ $(+0.3\sigma)$
$A_{100}^{\text{dust}}$	1.003	$1.01 \pm 0.20$ $(-0.0\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	0.246765	$0.246754^{+0.000075}_{-0.000068}$ $(-0.2\sigma)$	$\sigma_8(0.51)$	0.6157	$0.6154 \pm 0.0058$ $(+0.1\sigma)$
$A_{143}^{\text{dust}}$	0.968	$0.95 \pm 0.18$ $(-0.0\sigma)$	$10^5 \text{D}/\text{H}$	2.5649	$2.570 \pm 0.035$ $(+0.2\sigma)$	$f\sigma_8(0.61)$	0.4623	$0.4623 \pm 0.0068$ $(+0.3\sigma)$
$A_{217}^{\text{dust}}$	0.986	$0.98 \pm 0.10$ $(-0.0\sigma)$	Age/Gyr	13.7760	$13.779 \pm 0.031$ $(+0.4\sigma)$	$\sigma_8(0.61)$	0.5861	$0.5857 \pm 0.0054$ $(+0.1\sigma)$
$A_{143 \times 217}^{\text{dust}}$	0.996	$1.02 \pm 0.16$ $(+0.0\sigma)$	$z_*$	1089.634	$1089.68 \pm 0.35$ $(+0.3\sigma)$	$f\sigma_8(2.33)$	0.29574	$0.2955 \pm 0.0027$ $(+0.0\sigma)$
$c_{100}$	0.99790	$0.9976 \pm 0.0010$ $(+0.0\sigma)$	$r_*$	144.773	$144.76 \pm 0.34$ $(-0.3\sigma)$	$\sigma_8(2.33)$	0.30517	$0.3049 \pm 0.0027$ $(-0.1\sigma)$
$c_{217}$	1.00108	$1.0009 \pm 0.0016$ $(+0.1\sigma)$	$100\theta_*$	1.041194	$1.04120 \pm 0.00033$ $(-0.5\sigma)$	$f_{2000}^{143}$	27.85	$28 \pm 3$ $(+0.2\sigma)$
$c_{TE}$	0.9926	$0.9929 \pm 0.0053$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9045	$13.903 \pm 0.032$ $(-0.2\sigma)$	$f_{2000}^{217}$	104.96	$105.5 \pm 2.1$ $(+0.2\sigma)$
$c_{EE}$	0.9908	$0.9908 \pm 0.0050$	$z_{\text{drag}}$	1060.085	$1060.03 \pm 0.38$ $(-0.2\sigma)$	$f_{2000}^{143 \times 217}$	30.36	$30.6 \pm 2.3$ $(+0.2\sigma)$
$H_0$	68.06	$68.01 \pm 0.75$ $(-0.3\sigma)$	$r_{\text{drag}}$	147.403	$147.40 \pm 0.33$ $(-0.2\sigma)$	$\chi_{\text{small}}^2$	395.68	$396.8 \pm 1.6$ $(-0.0\sigma)$
$\Omega_{\Lambda}$	0.6946	$0.694 \pm 0.010$ $(-0.3\sigma)$	$k_{\text{D}}$	0.140623	$0.14061 \pm 0.00035$ $(+0.2\sigma)$	$\chi_{\text{CamSpec}}^2$	11496.2	$11512.2 \pm 5.6$ $(+835.1\sigma)$
$\Omega_{\text{m}}$	0.3054	$0.306 \pm 0.010$ $(+0.3\sigma)$	$100\theta_{\text{D}}$	0.160671	$0.16070 \pm 0.00021$ $(+0.1\sigma)$	$\chi_{\text{prior}}^2$	1.84	$7.8 \pm 3.4$ $(+0.2\sigma)$
$\Omega_{\text{m}} h^2$	0.14148	$0.1416 \pm 0.0015$ $(+0.3\sigma)$	$z_{\text{eq}}$	3365.4	$3368 \pm 36$ $(+0.3\sigma)$	$\chi_{\text{CMB}}^2$	11891.9	$11909.0 \pm 5.8$ $(+800.5\sigma)$
$\Omega_{\text{m}} h^3$	0.096294	$0.09627 \pm 0.00033$ $(-0.2\sigma)$	$k_{\text{eq}}$	0.010272	$0.01028 \pm 0.00011$ $(+0.3\sigma)$			

Best-fit  $\chi_{\text{eff}}^2 = 11893.69$ ;  $\Delta\chi_{\text{eff}}^2 = 4451.02$ ;  $\bar{\chi}_{\text{eff}}^2 = 11916.80$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4452.95$ ;  $R - 1 = 0.00486$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.68 ( $\Delta$  0.01) CamSpec like\_10.7HM\_1400\_unified: 11496.17



## 4 AphiPhi

### 4.1 base\_AphiPhi\_plikHM\_TT\_lowl\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022161	$0.02214 \pm 0.00022$	$\sigma_8 \Omega_m^{0.25}$	0.6089	$0.608 \pm 0.011$	$D_M(0.15)$	646.0	$645.9 \pm 7.8$
$\Omega_c h^2$	0.12020	$0.1201 \pm 0.0020$	$\sigma_8/h^{0.5}$	0.9902	$0.989 \pm 0.016$	$H(0.38)$	82.63	$82.64 \pm 0.55$
$100\theta_{MC}$	1.040781	$1.04082 \pm 0.00048$	$r_{drag}h$	98.77	$98.8 \pm 1.6$	$D_M(0.38)$	1539.0	$1539 \pm 15$
$\tau$	0.0525	$0.0519 \pm 0.0080$	$\langle d^2 \rangle^{1/2}$	2.4460	$2.445 \pm 0.037$	$H(0.51)$	89.405	$89.42 \pm 0.43$
$\ln(10^{10} A_s)$	3.0406	$3.039 \pm 0.016$	$z_{re}$	7.55	$7.46^{+0.83}_{-0.75}$	$D_M(0.51)$	1992.6	$1992 \pm 18$
$n_s$	0.9644	$0.9635 \pm 0.0057$	$10^9 A_s$	2.0917	$2.088 \pm 0.034$	$H(0.61)$	95.070	$95.08 \pm 0.35$
$A_L^{\phi\phi}$	0.9996	$1.001 \pm 0.036$	$10^9 A_s e^{-2\tau}$	1.8831	$1.882 \pm 0.014$	$D_M(0.61)$	2317.9	$2318 \pm 19$
$y_{cal}$	1.00046	$1.0005 \pm 0.0025$	$D_{40}$	1229.8	$1232 \pm 15$	$H(2.33)$	236.47	$236.4 \pm 1.2$
$A_{217}^{CIB}$	49.2	$48 \pm 7$	$D_{220}$	5713.8	$5716 \pm 41$	$D_M(2.33)$	5774.8	$5775 \pm 16$
$\xi^{tSZ \times CIB}$	0.28	—	$D_{810}$	2537.7	$2536 \pm 14$	$f\sigma_8(0.15)$	0.4613	$0.460 \pm 0.012$
$A_{143}^{tSZ}$	7.14	$5.1 \pm 2.0$	$D_{1420}$	815.6	$814.5 \pm 5.2$	$\sigma_8(0.15)$	0.7487	$0.7476 \pm 0.0075$
$A_{100}^{PS}$	254.9	$264 \pm 28$	$D_{2000}$	230.00	$229.6 \pm 1.8$	$f\sigma_8(0.38)$	0.4782	$0.4774 \pm 0.0094$
$A_{143}^{PS}$	48.7	$49 \pm 8$	$n_{s,0.002}$	0.9644	$0.9635 \pm 0.0057$	$\sigma_8(0.38)$	0.6630	$0.6620 \pm 0.0060$
$A_{143 \times 217}^{PS}$	45.8	$43 \pm 9$	$Y_P$	0.245310	$0.24530^{+0.00010}_{-0.000083}$	$f\sigma_8(0.51)$	0.4761	$0.4752 \pm 0.0081$
$A_{217}^{PS}$	118.5	$115 \pm 10$	$Y_P^{BBN}$	0.246636	$0.24662^{+0.00010}_{-0.000083}$	$\sigma_8(0.51)$	0.6201	$0.6193 \pm 0.0055$
$A^{kSZ}$	0.01	$< 4.95$	$10^5 D/H$	2.6254	$2.630 \pm 0.041$	$f\sigma_8(0.61)$	0.4706	$0.4698 \pm 0.0072$
$A_{100}^{dustTT}$	8.85	$8.9 \pm 1.8$	Age/Gyr	13.8235	$13.824 \pm 0.036$	$\sigma_8(0.61)$	0.58990	$0.5891 \pm 0.0051$
$A_{143}^{dustTT}$	10.80	$10.7 \pm 1.8$	$z_*$	1090.203	$1090.23 \pm 0.39$	$f\sigma_8(2.33)$	0.29718	$0.2968 \pm 0.0025$
$A_{143 \times 217}^{dustTT}$	19.43	$18.3 \pm 3.3$	$r_*$	144.538	$144.57 \pm 0.47$	$\sigma_8(2.33)$	0.30610	$0.3057 \pm 0.0027$
$A_{217}^{dustTT}$	94.5	$93.4 \pm 7.4$	$100\theta_*$	1.040990	$1.04102 \pm 0.00047$	$f_{2000}^{143}$	30.43	$31.3 \pm 2.9$
$c_{100}$	0.99965	$0.99961 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	13.8847	$13.887 \pm 0.044$	$f_{2000}^{143 \times 217}$	33.28	$33.6 \pm 2.0$
$c_{217}$	0.99826	$0.99826 \pm 0.00062$	$z_{drag}$	1059.475	$1059.41 \pm 0.45$	$f_{2000}^{217}$	107.69	$108.2 \pm 1.9$
$H_0$	67.06	$67.09 \pm 0.90$	$r_{drag}$	147.270	$147.31 \pm 0.48$	$\chi_{lensing}^2$	8.89	$9.9 \pm 1.4$
$\Omega_\Lambda$	0.6820	$0.682^{+0.013}_{-0.012}$	$k_D$	0.14052	$0.14046 \pm 0.00052$	$\chi_{small}^2$	395.87	$396.9 \pm 1.6$
$\Omega_m$	0.3180	$0.318 \pm 0.013$	$100\theta_D$	0.161023	$0.16106 \pm 0.00026$	$\chi_{lowl}^2$	23.41	$23.7 \pm 1.3$
$\Omega_m h^2$	0.14301	$0.1429 \pm 0.0020$	$z_{eq}$	3402.1	$3400 \pm 47$	$\chi_{plik}^2$	758.9	$771.7 \pm 5.6$
$\Omega_m h^3$	0.095910	$0.09587 \pm 0.00045$	$k_{eq}$	0.010384	$0.01038 \pm 0.00014$	$\chi_{prior}^2$	1.44	$7.3 \pm 3.7$
$\sigma_8$	0.8109	$0.8097 \pm 0.0089$	$100\theta_{eq}$	0.8126	$0.8131 \pm 0.0087$	$\chi_{CMB}^2$	1187.1	$1202.1 \pm 5.7$
$S_8$	0.8349	$0.833 \pm 0.023$	$100\theta_{s,eq}$	0.44919	$0.4494 \pm 0.0045$			
$\sigma_8 \Omega_m^{0.5}$	0.4573	$0.456 \pm 0.013$	$H(0.15)$	72.41	$72.43 \pm 0.77$			

Best-fit  $\chi_{eff}^2 = 1188.51$ ;  $\bar{\chi}_{eff}^2 = 1209.46$ ;  $R - 1 = 0.00514$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.89 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 commander\_dx12\_v3.2\_29: 23.41 plik\_rd12\_HM.v22\_TT: 758.90



## 4.2 base\_Aphiphi\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02215 \pm 0.00021$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.608 \pm 0.011$	$D_{\text{M}}(0.15)$	$645.5 \pm 7.7$
$\Omega_{\text{c}}h^2$	$0.1201 \pm 0.0020$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.015$	$H(0.38)$	$82.67 \pm 0.55$
$100\theta_{\text{MC}}$	$1.04083 \pm 0.00047$	$r_{\text{drag}}h$	$98.9 \pm 1.6$	$D_{\text{M}}(0.38)$	$1538 \pm 15$
$\tau$	$0.0536^{+0.0045}_{-0.0083}$	$\langle d^2 \rangle^{1/2}$	$2.448 \pm 0.037$	$H(0.51)$	$89.44 \pm 0.43$
$\ln(10^{10}A_{\text{s}})$	$3.042^{+0.012}_{-0.015}$	$z_{\text{re}}$	$7.65^{+0.52}_{-0.82}$	$D_{\text{M}}(0.51)$	$1992 \pm 18$
$n_{\text{s}}$	$0.9637 \pm 0.0057$	$10^9 A_{\text{s}}$	$2.095^{+0.024}_{-0.032}$	$H(0.61)$	$95.09 \pm 0.35$
$A_{\text{L}}^{\phi\phi}$	$0.999 \pm 0.036$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.882 \pm 0.014$	$D_{\text{M}}(0.61)$	$2317 \pm 19$
$y_{\text{cal}}$	$1.0005 \pm 0.0025$	$D_{40}$	$1232 \pm 15$	$H(2.33)$	$236.4 \pm 1.2$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{220}$	$5717 \pm 41$	$D_{\text{M}}(2.33)$	$5774 \pm 16$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{810}$	$2536 \pm 14$	$f\sigma_8(0.15)$	$0.461 \pm 0.012$
$A_{143}^{\text{tSZ}}$	$5.1 \pm 2.0$	$D_{1420}$	$814.6 \pm 5.2$	$\sigma_8(0.15)$	$0.7487 \pm 0.0069$
$A_{100}^{\text{PS}}$	$264 \pm 28$	$D_{2000}$	$229.6 \pm 1.8$	$f\sigma_8(0.38)$	$0.4778 \pm 0.0093$
$A_{143}^{\text{PS}}$	$49 \pm 8$	$n_{\text{s},0.002}$	$0.9637 \pm 0.0057$	$\sigma_8(0.38)$	$0.6630 \pm 0.0054$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9$	$Y_{\text{P}}$	$0.24530^{+0.00010}_{-0.000083}$	$f\sigma_8(0.51)$	$0.4757 \pm 0.0080$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$Y_{\text{P}}^{\text{BBN}}$	$0.24663^{+0.00010}_{-0.000083}$	$\sigma_8(0.51)$	$0.6202^{+0.0045}_{-0.0051}$
$A^{\text{kSZ}}$	$< 4.92$	$10^5 D/H$	$2.628 \pm 0.041$	$f\sigma_8(0.61)$	$0.4703 \pm 0.0070$
$A_{100}^{\text{dust}TT}$	$8.9 \pm 1.8$	Age/Gyr	$13.822 \pm 0.036$	$\sigma_8(0.61)$	$0.5900^{+0.0041}_{-0.0048}$
$A_{143}^{\text{dust}TT}$	$10.7 \pm 1.8$	$z_*$	$1090.21 \pm 0.39$	$f\sigma_8(2.33)$	$0.2973^{+0.0019}_{-0.0024}$
$A_{143 \times 217}^{\text{dust}TT}$	$18.3 \pm 3.3$	$r_*$	$144.59 \pm 0.47$	$\sigma_8(2.33)$	$0.3063^{+0.0019}_{-0.0026}$
$A_{217}^{\text{dust}TT}$	$93.3 \pm 7.4$	$100\theta_*$	$1.04104 \pm 0.00047$	$f_{2000}^{143}$	$31.2 \pm 2.9$
$c_{100}$	$0.99961 \pm 0.00062$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.889 \pm 0.044$	$f_{2000}^{143 \times 217}$	$33.6 \pm 2.0$
$c_{217}$	$0.99826 \pm 0.00062$	$z_{\text{drag}}$	$1059.43 \pm 0.45$	$f_{2000}^{217}$	$108.2 \pm 1.9$
$H_0$	$67.13 \pm 0.90$	$r_{\text{drag}}$	$147.32 \pm 0.47$	$\chi_{\text{lensing}}^2$	$9.8 \pm 1.4$
$\Omega_{\Lambda}$	$0.683 \pm 0.013$	$k_{\text{D}}$	$0.14045 \pm 0.00052$	$\chi_{\text{simall}}^2$	$396.8 \pm 1.6$
$\Omega_{\text{m}}$	$0.317 \pm 0.013$	$100\theta_{\text{D}}$	$0.16105 \pm 0.00026$	$\chi_{\text{lowl}}^2$	$23.7 \pm 1.3$
$\Omega_{\text{m}}h^2$	$0.1429 \pm 0.0019$	$z_{\text{eq}}$	$3398 \pm 46$	$\chi_{\text{plik}}^2$	$771.5 \pm 5.5$
$\Omega_{\text{m}}h^3$	$0.09588 \pm 0.00045$	$k_{\text{eq}}$	$0.01037 \pm 0.00014$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8$	$0.8108 \pm 0.0084$	$100\theta_{\text{eq}}$	$0.8134 \pm 0.0087$	$\chi_{\text{CMB}}^2$	$1201.8 \pm 5.6$
$S_8$	$0.834 \pm 0.023$	$100\theta_{\text{s,eq}}$	$0.4496 \pm 0.0045$		
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.457 \pm 0.013$	$H(0.15)$	$72.47 \pm 0.76$		

$\bar{\chi}_{\text{eff}}^2 = 1209.13$ ;  $R - 1 = 0.00594$



### 4.3 base\_Aphiphi\_plikHM\_TTTEEE\_lowl\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022385	$0.02237 \pm 0.00015$ (+1.1 $\sigma$ )	$\Omega_m h^3$	0.096362	$0.09633 \pm 0.00030$ (+1.0 $\sigma$ )	$100\theta_{s,eq}$	0.44924	$0.4493 \pm 0.0029$ (-0.0 $\sigma$ )
$\Omega_c h^2$	0.12005	$0.1201 \pm 0.0013$ (-0.0 $\sigma$ )	$\sigma_8$	0.8118	$0.8114 \pm 0.0073$ (+0.2 $\sigma$ )	$H(0.15)$	72.67	$72.66 \pm 0.51$ (+0.3 $\sigma$ )
$100\theta_{MC}$	1.040915	$1.04092 \pm 0.00031$ (+0.2 $\sigma$ )	$S_8$	0.8325	$0.832 \pm 0.016$ (-0.0 $\sigma$ )	$D_M(0.15)$	643.4	$643.6 \pm 5.1$ (-0.3 $\sigma$ )
$\tau$	0.0543	$0.0543 \pm 0.0077$ (+0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4560	$0.4559 \pm 0.0086$ (-0.0 $\sigma$ )	$H(0.38)$	82.864	$82.85 \pm 0.37$ (+0.4 $\sigma$ )
$\ln(10^{10} A_s)$	3.0448	$3.044 \pm 0.016$ (+0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6084	$0.6082 \pm 0.0081$ (+0.0 $\sigma$ )	$D_M(0.38)$	1533.6	$1534 \pm 10$ (-0.3 $\sigma$ )
$n_s$	0.96604	$0.9650 \pm 0.0043$ (+0.3 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9893	$0.989 \pm 0.011$ (+0.0 $\sigma$ )	$H(0.51)$	89.627	$89.62 \pm 0.29$ (+0.5 $\sigma$ )
$A_L^{\phi\phi}$	0.9990	$0.998 \pm 0.031$ (-0.1 $\sigma$ )	$r_{drag} h$	99.04	$99.0 \pm 1.0$ (+0.1 $\sigma$ )	$D_M(0.51)$	1986.0	$1986 \pm 12$ (-0.3 $\sigma$ )
$y_{cal}$	1.00060	$1.0006 \pm 0.0025$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4444	$2.446 \pm 0.028$ (+0.0 $\sigma$ )	$H(0.61)$	95.281	$95.27 \pm 0.23$ (+0.6 $\sigma$ )
$A_{217}^{CIB}$	46.9	$47 \pm 7$ (-0.2 $\sigma$ )	$z_{re}$	7.68	$7.66 \pm 0.78$ (+0.2 $\sigma$ )	$D_M(0.61)$	2310.5	$2311 \pm 13$ (-0.3 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.48	—	$10^9 A_s$	2.1006	$2.100 \pm 0.033$ (+0.3 $\sigma$ )	$H(2.33)$	236.61	$236.60 \pm 0.81$ (+0.1 $\sigma$ )
$A_{143}^{tSZ}$	7.15	$5.4_{-1.9}^{+2.1}$ (+0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8843	$1.884 \pm 0.012$ (+0.1 $\sigma$ )	$D_M(2.33)$	5763.2	$5764 \pm 11$ (-0.7 $\sigma$ )
$A_{100}^{PS}$	249.6	$259 \pm 28$ (-0.2 $\sigma$ )	$D_{40}$	1229.2	$1232 \pm 13$ (-0.0 $\sigma$ )	$f\sigma_8(0.15)$	0.4602	$0.4602 \pm 0.0081$ (-0.0 $\sigma$ )
$A_{143}^{PS}$	48.2	$46 \pm 8$ (-0.4 $\sigma$ )	$D_{220}$	5731.8	$5734 \pm 39$ (+0.4 $\sigma$ )	$\sigma_8(0.15)$	0.7498	$0.7494 \pm 0.0064$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{PS}$	48.8	$42 \pm 9$ (-0.1 $\sigma$ )	$D_{810}$	2541.4	$2540 \pm 14$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4777	$0.4776 \pm 0.0066$ (+0.0 $\sigma$ )
$A_{217}^{PS}$	120.3	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{1420}$	818.47	$817.4 \pm 4.8$ (+0.5 $\sigma$ )	$\sigma_8(0.38)$	0.6642	$0.6638 \pm 0.0054$ (+0.3 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.26$ (-0.2 $\sigma$ )	$D_{2000}$	231.33	$230.9 \pm 1.6$ (+0.7 $\sigma$ )	$f\sigma_8(0.51)$	0.4759	$0.4756 \pm 0.0058$ (+0.1 $\sigma$ )
$A_{100}^{dustTT}$	8.83	$8.9 \pm 1.8$ (+0.0 $\sigma$ )	$n_{s,0.002}$	0.96604	$0.9650 \pm 0.0043$ (+0.3 $\sigma$ )	$\sigma_8(0.51)$	0.62140	$0.6210 \pm 0.0050$ (+0.3 $\sigma$ )
$A_{143}^{dustTT}$	11.04	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P$	0.245402	$0.245392_{-0.000055}^{+0.000062}$ (+1.0 $\sigma$ )	$f\sigma_8(0.61)$	0.4706	$0.4703 \pm 0.0053$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.90	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246728	$0.246719_{-0.000055}^{+0.000062}$ (+1.0 $\sigma$ )	$\sigma_8(0.61)$	0.59116	$0.5908 \pm 0.0048$ (+0.3 $\sigma$ )
$A_{217}^{dustTT}$	95.2	$93.7 \pm 7.4$ (+0.0 $\sigma$ )	$10^5 D/H$	2.5826	$2.587 \pm 0.028$ (-1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.29791	$0.2977 \pm 0.0024$ (+0.4 $\sigma$ )
$A_{100}^{dustTE}$	0.1137	$0.114 \pm 0.038$	Age/Gyr	13.7962	$13.798 \pm 0.024$ (-0.7 $\sigma$ )	$\sigma_8(2.33)$	0.30696	$0.3068 \pm 0.0025$ (+0.4 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1347	$0.135 \pm 0.029$	$z_*$	1089.905	$1089.93 \pm 0.27$ (-0.8 $\sigma$ )	$f_{2000}^{143}$	28.75	$29.5 \pm 2.7$ (-0.6 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.484	$0.480 \pm 0.084$	$r_*$	144.406	$144.42 \pm 0.30$ (-0.3 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.97	$32.2 \pm 1.9$ (-0.7 $\sigma$ )
$A_{143}^{dustTE}$	0.226	$0.226 \pm 0.054$	$100\theta_*$	1.041098	$1.04110 \pm 0.00031$ (+0.2 $\sigma$ )	$f_{2000}^{217}$	106.60	$107.0 \pm 1.8$ (-0.6 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.666	$0.667 \pm 0.081$	$D_M(z_*)/\text{Gpc}$	13.8705	$13.872 \pm 0.028$ (-0.4 $\sigma$ )	$\chi_{lensing}^2$	8.83	$9.8 \pm 1.4$ (-0.0 $\sigma$ )
$A_{217}^{dustTE}$	2.083	$2.08 \pm 0.27$	$z_{drag}$	1059.971	$1059.93 \pm 0.30$ (+1.2 $\sigma$ )	$\chi_{simall}^2$	396.05	$397.1 \pm 1.8$ (+0.1 $\sigma$ )
$c_{100}$	0.99971	$0.99966 \pm 0.00061$ (+0.1 $\sigma$ )	$r_{drag}$	147.061	$147.08 \pm 0.30$ (-0.5 $\sigma$ )	$\chi_{lowl}^2$	23.24	$23.52 \pm 0.96$ (-0.1 $\sigma$ )
$c_{217}$	0.99820	$0.99819 \pm 0.00062$ (-0.1 $\sigma$ )	$k_D$	0.140912	$0.14088 \pm 0.00032$ (+0.8 $\sigma$ )	$\chi_{plik}^2$	2344.7	$2359.7 \pm 5.8$ (+285.2 $\sigma$ )
$H_0$	67.35	$67.33 \pm 0.60$ (+0.3 $\sigma$ )	$100\theta_D$	0.160735	$0.16076 \pm 0.00017$ (-1.1 $\sigma$ )	$\chi_{prior}^2$	1.75	$11.6 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_\Lambda$	0.6845	$0.6843 \pm 0.0083$ (+0.2 $\sigma$ )	$z_{eq}$	3403.8	$3404 \pm 30$ (+0.1 $\sigma$ )	$\chi_{CMB}^2$	2772.8	$2790.1 \pm 6.0$ (+278.7 $\sigma$ )
$\Omega_m$	0.3155	$0.3157 \pm 0.0083$ (-0.2 $\sigma$ )	$k_{eq}$	0.010389	$0.010389 \pm 0.000093$ (+0.1 $\sigma$ )			
$\Omega_m h^2$	0.14308	$0.1431 \pm 0.0013$ (+0.1 $\sigma$ )	$100\theta_{eq}$	0.8130	$0.8131 \pm 0.0057$ (+0.0 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2774.59$ ;  $\Delta\chi_{eff}^2 = 1586.08$ ;  $\bar{\chi}_{eff}^2 = 2801.64$ ;  $\Delta\bar{\chi}_{eff}^2 = 1592.18$ ;  $R - 1 = 0.01120$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8: 8.83 ( $\Delta$  -0.06) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.05 ( $\Delta$  0.18) commander\_dx12\_v3.2.29: 23.24 ( $\Delta$  -0.17) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.72



#### 4.4 base\_Aphiphi\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02237 \pm 0.00015 \quad (+1.0\sigma)$	$\Omega_m h^3$	$0.09633 \pm 0.00029 \quad (+1.0\sigma)$	$100\theta_{s,eq}$	$0.4493 \pm 0.0029 \quad (-0.1\sigma)$
$\Omega_c h^2$	$0.1200 \pm 0.0013 \quad (-0.0\sigma)$	$\sigma_8$	$0.8121 \pm 0.0069 \quad (+0.2\sigma)$	$H(0.15)$	$72.67 \pm 0.51 \quad (+0.3\sigma)$
$100\theta_{MC}$	$1.04092 \pm 0.00031 \quad (+0.2\sigma)$	$S_8$	$0.833 \pm 0.016 \quad (-0.0\sigma)$	$D_M(0.15)$	$643.5 \pm 5.1 \quad (-0.3\sigma)$
$\tau$	$0.0553^{+0.0053}_{-0.0081} \quad (+0.3\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4562 \pm 0.0086 \quad (-0.0\sigma)$	$H(0.38)$	$82.86 \pm 0.37 \quad (+0.3\sigma)$
$\ln(10^{10} A_s)$	$3.046^{+0.012}_{-0.016} \quad (+0.3\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6087 \pm 0.0079 \quad (+0.0\sigma)$	$D_M(0.38)$	$1534 \pm 10 \quad (-0.3\sigma)$
$n_s$	$0.9651 \pm 0.0043 \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.011 \quad (-0.0\sigma)$	$H(0.51)$	$89.62 \pm 0.29 \quad (+0.4\sigma)$
$A_L^{\phi\phi}$	$0.997 \pm 0.031 \quad (-0.1\sigma)$	$r_{drag} h$	$99.1 \pm 1.0 \quad (+0.1\sigma)$	$D_M(0.51)$	$1986 \pm 12 \quad (-0.3\sigma)$
$y_{cal}$	$1.0006 \pm 0.0025 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.448 \pm 0.027 \quad (+0.0\sigma)$	$H(0.61)$	$95.27 \pm 0.23 \quad (+0.5\sigma)$
$A_{217}^{CIB}$	$47 \pm 7 \quad (-0.2\sigma)$	$z_{re}$	$7.77^{+0.58}_{-0.81} \quad (+0.2\sigma)$	$D_M(0.61)$	$2311 \pm 13 \quad (-0.3\sigma)$
$\xi^{tSZ \times CIB}$	—	$10^9 A_s$	$2.104^{+0.025}_{-0.034} \quad (+0.3\sigma)$	$H(2.33)$	$236.58 \pm 0.80 \quad (+0.2\sigma)$
$A_{143}^{tSZ}$	$5.4^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$10^9 A_s e^{-2\tau}$	$1.884 \pm 0.012 \quad (+0.1\sigma)$	$D_M(2.33)$	$5764 \pm 11 \quad (-0.7\sigma)$
$A_{100}^{PS}$	$258 \pm 28 \quad (-0.2\sigma)$	$D_{40}$	$1232 \pm 13 \quad (+0.0\sigma)$	$f\sigma_8(0.15)$	$0.4605 \pm 0.0080 \quad (-0.0\sigma)$
$A_{143}^{PS}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{220}$	$5734 \pm 39 \quad (+0.4\sigma)$	$\sigma_8(0.15)$	$0.7501^{+0.0055}_{-0.0063} \quad (+0.2\sigma)$
$A_{143 \times 217}^{PS}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{810}$	$2540 \pm 14 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4779 \pm 0.0065 \quad (+0.0\sigma)$
$A_{217}^{PS}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{1420}$	$817.3 \pm 4.8 \quad (+0.5\sigma)$	$\sigma_8(0.38)$	$0.6644^{+0.0045}_{-0.0054} \quad (+0.3\sigma)$
$A^{kSZ}$	$< 4.25 \quad (-0.2\sigma)$	$D_{2000}$	$230.9 \pm 1.6 \quad (+0.7\sigma)$	$f\sigma_8(0.51)$	$0.4760 \pm 0.0057 \quad (+0.0\sigma)$
$A_{100}^{dustTT}$	$8.9 \pm 1.8 \quad (+0.0\sigma)$	$n_{s,0.002}$	$0.9651 \pm 0.0043 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6216^{+0.0040}_{-0.0050} \quad (+0.3\sigma)$
$A_{143}^{dustTT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_P$	$0.245393^{+0.000061}_{-0.000055} \quad (+1.0\sigma)$	$f\sigma_8(0.61)$	$0.4707 \pm 0.0051 \quad (+0.1\sigma)$
$A_{143 \times 217}^{dustTT}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$Y_P^{BBN}$	$0.246720^{+0.000061}_{-0.000055} \quad (+1.0\sigma)$	$\sigma_8(0.61)$	$0.5914^{+0.0038}_{-0.0048} \quad (+0.3\sigma)$
$A_{217}^{dustTT}$	$93.6 \pm 7.4 \quad (+0.0\sigma)$	$10^5 D/H$	$2.586 \pm 0.028 \quad (-1.0\sigma)$	$f\sigma_8(2.33)$	$0.2980^{+0.0018}_{-0.0024} \quad (+0.3\sigma)$
$A_{100}^{dustTE}$	$0.114 \pm 0.038$	Age/Gyr	$13.798 \pm 0.024 \quad (-0.7\sigma)$	$\sigma_8(2.33)$	$0.3071^{+0.0019}_{-0.0025} \quad (+0.4\sigma)$
$A_{100 \times 143}^{dustTE}$	$0.135 \pm 0.029$	$z_*$	$1089.92 \pm 0.27 \quad (-0.7\sigma)$	$f_{2000}^{143}$	$29.5 \pm 2.7 \quad (-0.6\sigma)$
$A_{100 \times 217}^{dustTE}$	$0.481 \pm 0.084$	$r_*$	$144.42 \pm 0.30 \quad (-0.3\sigma)$	$f_{2000}^{143 \times 217}$	$32.2 \pm 1.9 \quad (-0.7\sigma)$
$A_{143}^{dustTE}$	$0.226 \pm 0.054$	$100\theta_*$	$1.04110 \pm 0.00031 \quad (+0.1\sigma)$	$f_{2000}^{217}$	$107.0 \pm 1.8 \quad (-0.6\sigma)$
$A_{143 \times 217}^{dustTE}$	$0.667 \pm 0.081$	$D_M(z_*)/\text{Gpc}$	$13.872 \pm 0.028 \quad (-0.4\sigma)$	$\chi_{lensing}^2$	$9.8 \pm 1.4 \quad (-0.0\sigma)$
$A_{217}^{dustTE}$	$2.08 \pm 0.27$	$z_{drag}$	$1059.94 \pm 0.30 \quad (+1.1\sigma)$	$\chi_{small}^2$	$397.1 \pm 1.9 \quad (+0.2\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$r_{drag}$	$147.08 \pm 0.29 \quad (-0.5\sigma)$	$\chi_{lowl}^2$	$23.53 \pm 0.96 \quad (-0.1\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$k_D$	$0.14088 \pm 0.00032 \quad (+0.8\sigma)$	$\chi_{plik}^2$	$2359.5 \pm 5.8 \quad (+286.3\sigma)$
$H_0$	$67.34 \pm 0.59 \quad (+0.2\sigma)$	$100\theta_D$	$0.16076 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{prior}^2$	$11.6 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_\Lambda$	$0.6844 \pm 0.0083 \quad (+0.1\sigma)$	$z_{eq}$	$3403 \pm 30 \quad (+0.1\sigma)$	$\chi_{CMB}^2$	$2789.8 \pm 5.9 \quad (+283.8\sigma)$
$\Omega_m$	$0.3156 \pm 0.0083 \quad (-0.1\sigma)$	$k_{eq}$	$0.010387 \pm 0.000092 \quad (+0.1\sigma)$		
$\Omega_m h^2$	$0.1431 \pm 0.0013 \quad (+0.1\sigma)$	$100\theta_{eq}$	$0.8132 \pm 0.0057 \quad (-0.0\sigma)$		

$$\bar{\chi}_{eff}^2 = 2801.40; \Delta\bar{\chi}_{eff}^2 = 1592.27; R - 1 = 0.01121$$



## 5 alpha1

### 5.1 base\_alpha1\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022181	$0.02219 \pm 0.00023$	$\sigma_8 \Omega_m^{0.5}$	0.4622	$0.464 \pm 0.014$	$100\theta_{s,eq}$	0.44706	$0.4464 \pm 0.0049$
$\Omega_c h^2$	0.12112	$0.1214 \pm 0.0022$	$\sigma_8 \Omega_m^{0.25}$	0.6128	$0.614 \pm 0.012$	$H(0.15)$	72.11	$72.01 \pm 0.82$
$100\theta_{MC}$	1.04062	$1.04048 \pm 0.00055$	$\sigma_8/h^{0.5}$	0.9949	$0.996 \pm 0.016$	$D_M(0.15)$	649.0	$650.3 \pm 8.4$
$\tau$	0.0526	$0.0537 \pm 0.0083$	$r_{drag}h$	98.06	$97.8 \pm 1.7$	$H(0.38)$	82.43	$82.36 \pm 0.58$
$\alpha_{-1}$	$-30 \cdot 10^{-5}$	$-0.0015^{+0.0017}_{-0.0010}$	$\langle d^2 \rangle^{1/2}$	2.4583	$2.465 \pm 0.040$	$D_M(0.38)$	1545.0	$1547 \pm 17$
$\ln(10^{10} A_s)$	3.0442	$3.047 \pm 0.018$	$z_{re}$	7.57	$7.66 \pm 0.84$	$H(0.51)$	89.265	$89.22 \pm 0.45$
$n_s$	0.9607	$0.9575^{+0.0067}_{-0.0079}$	$10^9 A_s$	2.0994	$2.106 \pm 0.038$	$D_M(0.51)$	1999.5	$2002 \pm 19$
$y_{cal}$	1.00050	$1.0005 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8895	$1.892 \pm 0.015$	$H(0.61)$	94.974	$94.94 \pm 0.36$
$A_{217}^{CIB}$	49.1	$48 \pm 7$	$D_{40}$	1222.0	$1218^{+18}_{-22}$	$D_M(0.61)$	2325.2	$2328 \pm 21$
$\xi^{tSZ \times CIB}$	0.28	—	$D_{220}$	5714.5	$5719 \pm 42$	$H(2.33)$	237.08	$237.3 \pm 1.4$
$A_{143}^{tSZ}$	7.02	$5.0 \pm 2.0$	$D_{810}$	2540.2	$2539 \pm 14$	$D_M(2.33)$	5778.1	$5780 \pm 16$
$A_{100}^{PS}$	255.4	$265 \pm 28$	$D_{1420}$	815.6	$814.1 \pm 5.2$	$f\sigma_8(0.15)$	0.4657	$0.467 \pm 0.013$
$A_{143}^{PS}$	49.1	$49 \pm 8$	$D_{2000}$	229.95	$229.4 \pm 1.8$	$\sigma_8(0.15)$	0.7497	$0.7493 \pm 0.0076$
$A_{143 \times 217}^{PS}$	46.1	$43 \pm 9$	$n_{s,0.002}$	0.9607	$0.9575^{+0.0067}_{-0.0079}$	$f\sigma_8(0.38)$	0.4814	$0.4821 \pm 0.0099$
$A_{217}^{PS}$	118.8	$115 \pm 10$	$Y_P$	0.245318	$0.24532^{+0.00011}_{-0.000085}$	$\sigma_8(0.38)$	0.6632	$0.6627 \pm 0.0061$
$A^{kSZ}$	0.01	$< 5.17$	$Y_P^{BBN}$	0.246644	$0.24664^{+0.00011}_{-0.000086}$	$f\sigma_8(0.51)$	0.4786	$0.4791 \pm 0.0084$
$A_{100}^{dustTT}$	8.90	$9.0 \pm 1.8$	$10^5 D/H$	2.6215	$2.620 \pm 0.043$	$\sigma_8(0.51)$	0.6201	$0.6196 \pm 0.0056$
$A_{143}^{dustTT}$	10.83	$10.7 \pm 1.8$	Age/Gyr	13.8302	$13.834 \pm 0.037$	$f\sigma_8(0.61)$	0.4727	$0.4729 \pm 0.0074$
$A_{143 \times 217}^{dustTT}$	19.29	$18.3 \pm 3.3$	$z_*$	1090.260	$1090.27 \pm 0.41$	$\sigma_8(0.61)$	0.5898	$0.5891 \pm 0.0052$
$A_{217}^{dustTT}$	94.4	$93.3 \pm 7.3$	$r_*$	144.29	$144.21 \pm 0.54$	$f\sigma_8(2.33)$	0.29689	$0.2965 \pm 0.0026$
$c_{100}$	0.99964	$0.99961 \pm 0.00062$	$100\theta_*$	1.04082	$1.04068 \pm 0.00055$	$\sigma_8(2.33)$	0.30558	$0.3051 \pm 0.0028$
$c_{217}$	0.99827	$0.99827 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	13.8628	$13.857 \pm 0.048$	$f_{2000}^{143}$	30.47	$31.4 \pm 2.9$
$H_0$	66.71	$66.58 \pm 0.97$	$z_{drag}$	1059.589	$1059.62 \pm 0.50$	$f_{2000}^{143 \times 217}$	33.36	$33.7 \pm 2.0$
$\Omega_\Lambda$	0.6765	$0.674 \pm 0.014$	$r_{drag}$	147.01	$146.92 \pm 0.55$	$f_{2000}^{217}$	107.77	$108.3 \pm 1.9$
$\Omega_m$	0.3235	$0.326 \pm 0.014$	$k_D$	0.14081	$0.14091 \pm 0.00062$	$\chi_{simall}^2$	395.88	$397.1 \pm 1.7$
$\Omega_m h^2$	0.14395	$0.1443 \pm 0.0022$	$100\theta_D$	0.160939	$0.16090 \pm 0.00031$	$\chi_{lowl}^2$	22.18	$22.1 \pm 2.1$
$\Omega_m h^3$	0.096023	$0.09602 \pm 0.00047$	$z_{eq}$	3425	$3432 \pm 52$	$\chi_{plik}^2$	759.7	$774.0 \pm 5.8$
$\sigma_8$	0.8126	$0.8124 \pm 0.0090$	$k_{eq}$	0.010452	$0.01047 \pm 0.00016$	$\chi_{prior}^2$	1.43	$7.3 \pm 3.7$
$S_8$	0.8438	$0.847 \pm 0.025$	$100\theta_{eq}$	0.8086	$0.8074 \pm 0.0095$	$\chi_{CMB}^2$	1177.7	$1193.2 \pm 5.8$

Best-fit  $\chi_{eff}^2 = 1179.15$ ;  $\bar{\chi}_{eff}^2 = 1200.56$ ;  $R - 1 = 0.00658$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.88 commander\_dx12.v3.2.29: 22.18 plik\_rd12\_HM.v22\_TT: 759.66



## 5.2 base\_alpha1\_plikHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022252	$0.02228 \pm 0.00023$	$\sigma_8/h^{0.5}$	0.9814	$0.981 \pm 0.012$	$D_M(0.38)$	1529.4	$1529.9 \pm 9.4$
$\Omega_c h^2$	0.11894	$0.1191 \pm 0.0012$	$r_{\text{drag}} h$	99.76	$99.66 \pm 0.96$	$H(0.51)$	89.669	$89.67 \pm 0.29$
$100\theta_{\text{MC}}$	1.040919	$1.04087 \pm 0.00047$	$\langle d^2 \rangle^{1/2}$	2.4269	$2.429 \pm 0.028$	$D_M(0.51)$	1981.4	$1982 \pm 11$
$\tau$	0.0547	$0.0552 \pm 0.0084$	$z_{\text{re}}$	7.73	$7.75 \pm 0.84$	$H(0.61)$	95.273	$95.28 \pm 0.24$
$\alpha_{-1}$	-0.00005	$-0.0008^{+0.0015}_{-0.0011}$	$10^9 A_s$	2.0951	$2.100 \pm 0.038$	$D_M(0.61)$	2305.8	$2306 \pm 12$
$\ln(10^{10} A_s)$	3.0422	$3.044 \pm 0.018$	$10^9 A_s e^{-2\tau}$	1.8781	$1.880 \pm 0.013$	$H(2.33)$	235.74	$235.85 \pm 0.81$
$n_s$	0.9664	$0.9642^{+0.0053}_{-0.0061}$	$D_{40}$	1218.9	$1215^{+19}_{-26}$	$D_M(2.33)$	5766.2	$5766 \pm 12$
$y_{\text{cal}}$	1.00039	$1.0006 \pm 0.0026$	$D_{220}$	5719.2	$5725 \pm 41$	$f\sigma_8(0.15)$	0.4541	$0.4543 \pm 0.0077$
$A_{217}^{\text{CIB}}$	48.7	$48 \pm 7$	$D_{810}$	2536.6	$2537 \pm 14$	$\sigma_8(0.15)$	0.7460	$0.7453 \pm 0.0069$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.34	—	$D_{1420}$	816.0	$815.3 \pm 5.1$	$f\sigma_8(0.38)$	0.4727	$0.4727 \pm 0.0065$
$A_{143}^{\text{tSZ}}$	6.85	$5.0^{+2.2}_{-2.0}$	$D_{2000}$	230.14	$229.9 \pm 1.8$	$\sigma_8(0.38)$	0.6614	$0.6608 \pm 0.0059$
$A_{100}^{\text{PS}}$	255.5	$264 \pm 28$	$n_{s,0.002}$	0.9664	$0.9642^{+0.0053}_{-0.0061}$	$f\sigma_8(0.51)$	0.4715	$0.4713 \pm 0.0058$
$A_{143}^{\text{PS}}$	49.9	$48 \pm 8$	$Y_{\text{P}}$	0.245347	$0.245355^{+0.000099}_{-0.000083}$	$\sigma_8(0.51)$	0.6190	$0.6184 \pm 0.0055$
$A_{143 \times 217}^{\text{PS}}$	47.0	$43^{+9}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	0.246674	$0.246682^{+0.000099}_{-0.000083}$	$f\sigma_8(0.61)$	0.4666	$0.4664 \pm 0.0054$
$A_{217}^{\text{PS}}$	119.0	$114 \pm 10$	$10^5 \text{D}/\text{H}$	2.6079	$2.603 \pm 0.042$	$\sigma_8(0.61)$	0.5890	$0.5884 \pm 0.0052$
$A^{\text{kSZ}}$	0.20	$< 5.05$	Age/Gyr	13.8050	$13.804 \pm 0.028$	$f\sigma_8(2.33)$	0.29705	$0.2967 \pm 0.0026$
$A_{100}^{\text{dustTT}}$	8.89	$9.0 \pm 1.8$	$z_*$	1089.976	$1089.95 \pm 0.32$	$\sigma_8(2.33)$	0.30631	$0.3059 \pm 0.0027$
$A_{143}^{\text{dustTT}}$	10.74	$10.8 \pm 1.8$	$r_*$	144.796	$144.74 \pm 0.34$	$f_{2000}^{143}$	30.40	$31.0 \pm 3.0$
$A_{143 \times 217}^{\text{dustTT}}$	19.38	$18.3 \pm 3.4$	$100\theta_*$	1.041114	$1.04107 \pm 0.00047$	$f_{2000}^{143 \times 217}$	33.18	$33.4 \pm 2.0$
$A_{217}^{\text{dustTT}}$	94.5	$93.5 \pm 7.5$	$D_M(z_*)/\text{Gpc}$	13.9078	$13.903 \pm 0.032$	$f_{2000}^{217}$	107.58	$108.0 \pm 1.9$
$c_{100}$	0.99970	$0.99963 \pm 0.00061$	$z_{\text{drag}}$	1059.59	$1059.66 \pm 0.52$	$\chi_{\text{small}}^2$	396.06	$397.2 \pm 1.8$
$c_{217}$	0.99823	$0.99829 \pm 0.00061$	$r_{\text{drag}}$	147.504	$147.44 \pm 0.39$	$\chi_{\text{lowl}}^2$	22.26	$22 \pm 2$
$H_0$	67.63	$67.60 \pm 0.54$	$k_{\text{D}}$	0.14034	$0.14043 \pm 0.00052$	$\chi_{\text{plik}}^2$	760.7	$774.1 \pm 5.8$
$\Omega_{\Lambda}$	0.6899	$0.6891 \pm 0.0074$	$100\theta_{\text{D}}$	0.160955	$0.16091 \pm 0.00033$	$\chi_{6\text{DF}}^2$	0.0222	$0.067 \pm 0.086$
$\Omega_{\text{m}}$	0.3101	$0.3109 \pm 0.0074$	$z_{\text{eq}}$	3374.0	$3378 \pm 29$	$\chi_{\text{MGS}}^2$	1.28	$1.30 \pm 0.52$
$\Omega_{\text{m}} h^2$	0.14183	$0.1420 \pm 0.0012$	$k_{\text{eq}}$	0.010298	$0.010309 \pm 0.000090$	$\chi_{\text{DR12BAO}}^2$	4.22	$5.0 \pm 1.8$
$\Omega_{\text{m}} h^3$	0.095922	$0.09598 \pm 0.00047$	$100\theta_{\text{eq}}$	0.8180	$0.8174 \pm 0.0054$	$\chi_{\text{prior}}^2$	1.20	$7.3 \pm 3.7$
$\sigma_8$	0.8071	$0.8065 \pm 0.0078$	$100\theta_{\text{s,eq}}$	0.45195	$0.4516 \pm 0.0028$	$\chi_{\text{BAO}}^2$	5.52	$6.4 \pm 1.5$
$S_8$	0.8206	$0.821 \pm 0.015$	$H(0.15)$	72.891	$72.87 \pm 0.47$	$\chi_{\text{CMB}}^2$	1179.0	$1193.6 \pm 5.7$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4495	$0.4497 \pm 0.0082$	$D_M(0.15)$	641.13	$641.4 \pm 4.7$			
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6023	$0.6022 \pm 0.0080$	$H(0.38)$	82.971	$82.96 \pm 0.35$			

Best-fit  $\chi_{\text{eff}}^2 = 1185.69$ ;  $\bar{\chi}_{\text{eff}}^2 = 1207.24$ ;  $R - 1 = 0.02382$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.28 DR12BAO: 4.22 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.06 commander\_dx12\_v3.2.29: 22.26 plik\_rd12\_HM\_v22\_TT: 760.65



### 5.3 base\_alpha1\_plikHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022207	$0.02223 \pm 0.00022$	$\sigma_8 \Omega_m^{0.25}$	0.6095	$0.6094 \pm 0.0077$	$D_M(0.15)$	646.8	$647.5 \pm 6.4$
$\Omega_c h^2$	0.12051	$0.1207 \pm 0.0016$	$\sigma_8/h^{0.5}$	0.9905	$0.990 \pm 0.010$	$H(0.38)$	82.579	$82.54 \pm 0.46$
$100\theta_{MC}$	1.04069	$1.04057 \pm 0.00051$	$r_{drag}h$	98.53	$98.4 \pm 1.3$	$D_M(0.38)$	1540.7	$1542 \pm 13$
$\tau$	0.0528	$0.0536 \pm 0.0081$	$\langle d^2 \rangle^{1/2}$	2.4491	$2.452 \pm 0.025$	$H(0.51)$	89.377	$89.35 \pm 0.36$
$\alpha_{-1}$	$-18 \cdot 10^{-5}$	$-0.0013^{+0.0017}_{-0.0010}$	$z_{re}$	7.58	$7.62^{+0.84}_{-0.75}$	$D_M(0.51)$	1994.5	$1996 \pm 15$
$\ln(10^{10} A_s)$	3.0425	$3.045 \pm 0.016$	$10^9 A_s$	2.0957	$2.101 \pm 0.033$	$H(0.61)$	95.057	$95.04 \pm 0.30$
$n_s$	0.9621	$0.9592^{+0.0057}_{-0.0069}$	$10^9 A_s e^{-2\tau}$	1.8855	$1.888 \pm 0.013$	$D_M(0.61)$	2319.8	$2321 \pm 16$
$y_{cal}$	1.00018	$1.0004 \pm 0.0025$	$D_{40}$	1222.2	$1216^{+16}_{-23}$	$H(2.33)$	236.72	$236.8 \pm 1.0$
$A_{217}^{CIB}$	49.4	$48 \pm 7$	$D_{220}$	5715.9	$5721 \pm 42$	$D_M(2.33)$	5774.8	$5776 \pm 14$
$\xi^{tSZ \times CIB}$	0.26	—	$D_{810}$	2537.9	$2538 \pm 14$	$f\sigma_8(0.15)$	0.4622	$0.4624 \pm 0.0083$
$A_{143}^{tSZ}$	6.99	$5.0 \pm 2.0$	$D_{1420}$	815.2	$814.2 \pm 5.2$	$\sigma_8(0.15)$	0.7482	$0.7473 \pm 0.0056$
$A_{100}^{PS}$	256.6	$265 \pm 28$	$D_{2000}$	229.84	$229.4 \pm 1.8$	$f\sigma_8(0.38)$	0.4787	$0.4786 \pm 0.0063$
$A_{143}^{PS}$	48.9	$49 \pm 8$	$n_{s,0.002}$	0.9621	$0.9592^{+0.0057}_{-0.0069}$	$\sigma_8(0.38)$	0.66233	$0.6614 \pm 0.0050$
$A_{143 \times 217}^{PS}$	45.3	$43^{+9}_{-10}$	$Y_P$	0.245329	$0.24533^{+0.00010}_{-0.000083}$	$f\sigma_8(0.51)$	0.4764	$0.4761^{+0.0056}_{-0.0050}$
$A_{217}^{PS}$	118.1	$114 \pm 10$	$Y_P^{BBN}$	0.246655	$0.24666^{+0.00010}_{-0.000083}$	$\sigma_8(0.51)$	0.61946	$0.6185 \pm 0.0047$
$A^{kSZ}$	0.00	$< 5.26$	$10^5 D/H$	2.6166	$2.613 \pm 0.042$	$f\sigma_8(0.61)$	0.47073	$0.4704^{+0.0050}_{-0.0045}$
$A_{100}^{dustTT}$	8.88	$8.9 \pm 1.8$	Age/Gyr	13.8230	$13.825 \pm 0.032$	$\sigma_8(0.61)$	0.58921	$0.5883 \pm 0.0046$
$A_{143}^{dustTT}$	10.80	$10.8 \pm 1.8$	$z_*$	1090.171	$1090.16 \pm 0.35$	$f\sigma_8(2.33)$	0.29676	$0.2963 \pm 0.0024$
$A_{143 \times 217}^{dustTT}$	19.27	$18.4 \pm 3.3$	$r_*$	144.423	$144.37 \pm 0.41$	$\sigma_8(2.33)$	0.30560	$0.3051 \pm 0.0027$
$A_{217}^{dustTT}$	94.2	$93.4 \pm 7.4$	$100\theta_*$	1.04089	$1.04076 \pm 0.00051$	$f_{2000}^{143}$	30.53	$31.4 \pm 3.0$
$c_{100}$	0.99968	$0.99962 \pm 0.00061$	$D_M(z_*)/\text{Gpc}$	13.8750	$13.872 \pm 0.037$	$f_{2000}^{143 \times 217}$	33.29	$33.6 \pm 2.0$
$c_{217}$	0.99827	$0.99828 \pm 0.00061$	$z_{drag}$	1059.589	$1059.65 \pm 0.50$	$f_{2000}^{217}$	107.62	$108.2 \pm 1.9$
$H_0$	66.96	$66.89 \pm 0.74$	$r_{drag}$	147.138	$147.08 \pm 0.43$	$\chi_{lensing}^2$	8.93	$9.52 \pm 0.98$
$\Omega_\Lambda$	0.6803	$0.679 \pm 0.010$	$k_D$	0.14069	$0.14077 \pm 0.00053$	$\chi_{simall}^2$	395.89	$397.0 \pm 1.5$
$\Omega_m$	0.3197	$0.321 \pm 0.010$	$100\theta_D$	0.160934	$0.16089 \pm 0.00031$	$\chi_{lowl}^2$	22.35	$22.1 \pm 2.2$
$\Omega_m h^2$	0.14337	$0.1435 \pm 0.0016$	$z_{eq}$	3410.6	$3415 \pm 38$	$\chi_{plik}^2$	759.7	$773.7 \pm 5.7$
$\Omega_m h^3$	0.096001	$0.09600 \pm 0.00046$	$k_{eq}$	0.010409	$0.01042 \pm 0.00012$	$\chi_{prior}^2$	1.27	$7.3 \pm 3.7$
$\sigma_8$	0.8106	$0.8097 \pm 0.0063$	$100\theta_{eq}$	0.8112	$0.8105 \pm 0.0071$	$\chi_{CMB}^2$	1186.9	$1202.2 \pm 5.7$
$S_8$	0.8368	$0.837 \pm 0.017$	$100\theta_{s,eq}$	0.44839	$0.4480 \pm 0.0037$			
$\sigma_8 \Omega_m^{0.5}$	0.4583	$0.4587 \pm 0.0091$	$H(0.15)$	72.33	$72.27 \pm 0.63$			

Best-fit  $\chi_{eff}^2 = 1188.17$ ;  $\bar{\chi}_{eff}^2 = 1209.53$ ;  $R - 1 = 0.01166$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.93 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.89 commander\_dx12\_v3.2.29: 22.35 plik\_rd12\_HM.v22.TT: 759.73



#### 5.4 base\_alpha1\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022281	$0.02229 \pm 0.00022$	$\sigma_8/h^{0.5}$	0.9842	$0.9834 \pm 0.0090$	$D_M(0.38)$	1529.9	$1530.8 \pm 8.7$
$\Omega_c h^2$	0.11911	$0.1192 \pm 0.0011$	$r_{\text{drag}} h$	99.65	$99.56 \pm 0.87$	$H(0.51)$	89.669	$89.65 \pm 0.27$
$100\theta_{\text{MC}}$	1.040919	$1.04085 \pm 0.00047$	$\langle d^2 \rangle^{1/2}$	2.4356	$2.436 \pm 0.021$	$D_M(0.51)$	1982.0	$1983 \pm 10$
$\tau$	0.0565	$0.0566 \pm 0.0078$	$z_{\text{re}}$	7.91	$7.90 \pm 0.77$	$H(0.61)$	95.281	$95.26 \pm 0.24$
$\alpha_{-1}$	-0.00008	$-0.0009^{+0.0015}_{-0.0011}$	$10^9 A_s$	2.1057	$2.107 \pm 0.034$	$D_M(0.61)$	2306.4	$2307 \pm 11$
$\ln(10^{10} A_s)$	3.0472	$3.048 \pm 0.016$	$10^9 A_s e^{-2\tau}$	1.8806	$1.881 \pm 0.012$	$H(2.33)$	235.89	$235.95 \pm 0.73$
$n_s$	0.9654	$0.9637^{+0.0051}_{-0.0060}$	$D_{40}$	1221.4	$1216^{+17}_{-26}$	$D_M(2.33)$	5765.4	$5766 \pm 12$
$y_{\text{cal}}$	1.00074	$1.0007 \pm 0.0025$	$D_{220}$	5728.5	$5728 \pm 41$	$f\sigma_8(0.15)$	0.4558	$0.4557 \pm 0.0061$
$A_{217}^{\text{CIB}}$	50.3	$48 \pm 7$	$D_{810}$	2538.5	$2538 \pm 14$	$\sigma_8(0.15)$	0.7478	$0.7468 \pm 0.0057$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.099	—	$D_{1420}$	816.35	$815.5 \pm 5.0$	$f\sigma_8(0.38)$	0.4743	$0.4740 \pm 0.0051$
$A_{143}^{\text{tSZ}}$	7.14	$5.0^{+2.2}_{-2.0}$	$D_{2000}$	230.31	$230.0 \pm 1.7$	$\sigma_8(0.38)$	0.6629	$0.6620 \pm 0.0050$
$A_{100}^{\text{PS}}$	256.9	$264 \pm 28$	$n_{s,0.002}$	0.9654	$0.9637^{+0.0051}_{-0.0060}$	$f\sigma_8(0.51)$	0.47293	$0.4725 \pm 0.0046$
$A_{143}^{\text{PS}}$	45.7	$48 \pm 8$	$Y_P$	0.245360	$0.245359^{+0.000097}_{-0.000083}$	$\sigma_8(0.51)$	0.62040	$0.6195 \pm 0.0047$
$A_{143 \times 217}^{\text{PS}}$	40.6	$43^{+9}_{-10}$	$Y_P^{\text{BBN}}$	0.246686	$0.246685^{+0.000097}_{-0.000083}$	$f\sigma_8(0.61)$	0.46801	$0.4676 \pm 0.0042$
$A_{217}^{\text{PS}}$	116.4	$115 \pm 10$	$10^5 \text{D}/\text{H}$	2.6023	$2.602 \pm 0.042$	$\sigma_8(0.61)$	0.59034	$0.5895 \pm 0.0045$
$A^{\text{kSZ}}$	0.01	$< 4.96$	Age/Gyr	13.8027	$13.804 \pm 0.028$	$f\sigma_8(2.33)$	0.29768	$0.2972 \pm 0.0023$
$A_{100}^{\text{dustTT}}$	8.89	$8.9 \pm 1.8$	$z_*$	1089.954	$1089.96 \pm 0.31$	$\sigma_8(2.33)$	0.30692	$0.3064 \pm 0.0025$
$A_{143}^{\text{dustTT}}$	10.75	$10.7 \pm 1.7$	$r_*$	144.728	$144.70 \pm 0.31$	$f_{2000}^{143}$	30.38	$31.0 \pm 2.9$
$A_{143 \times 217}^{\text{dustTT}}$	18.93	$18.3 \pm 3.3$	$100\theta_*$	1.041115	$1.04104 \pm 0.00047$	$f_{2000}^{143 \times 217}$	33.10	$33.3 \pm 2.0$
$A_{217}^{\text{dustTT}}$	93.9	$93.6 \pm 7.5$	$D_M(z_*)/\text{Gpc}$	13.9013	$13.899 \pm 0.030$	$f_{2000}^{217}$	107.70	$108.0 \pm 1.9$
$c_{100}$	0.99965	$0.99963 \pm 0.00061$	$z_{\text{drag}}$	1059.67	$1059.69 \pm 0.51$	$\chi_{\text{lensing}}^2$	8.783	$9.25 \pm 0.72$
$c_{217}$	0.99827	$0.99829 \pm 0.00061$	$r_{\text{drag}}$	147.425	$147.39 \pm 0.36$	$\chi_{\text{small}}^2$	396.43	$397.3 \pm 1.8$
$H_0$	67.592	$67.54 \pm 0.50$	$k_D$	0.140447	$0.14048 \pm 0.00050$	$\chi_{\text{lowl}}^2$	22.31	$22 \pm 3$
$\Omega_\Lambda$	0.6891	$0.6884 \pm 0.0067$	$100\theta_D$	0.160910	$0.16089 \pm 0.00032$	$\chi_{\text{plik}}^2$	759.8	$773.6 \pm 5.7$
$\Omega_m$	0.3109	$0.3116 \pm 0.0067$	$z_{\text{eq}}$	3378.9	$3381 \pm 26$	$\chi_{6\text{DF}}^2$	0.0294	$0.068 \pm 0.080$
$\Omega_m h^2$	0.14204	$0.1421 \pm 0.0011$	$k_{\text{eq}}$	0.010313	$0.010320 \pm 0.000081$	$\chi_{\text{MGS}}^2$	1.217	$1.23 \pm 0.47$
$\Omega_m h^3$	0.096008	$0.09600 \pm 0.00046$	$100\theta_{\text{eq}}$	0.81723	$0.8168 \pm 0.0048$	$\chi_{\text{DR12BAO}}^2$	4.40	$5.1 \pm 1.7$
$\sigma_8$	0.8092	$0.8082 \pm 0.0063$	$100\theta_{s,\text{eq}}$	0.45150	$0.4513 \pm 0.0025$	$\chi_{\text{prior}}^2$	1.57	$7.2 \pm 3.7$
$S_8$	0.8237	$0.824 \pm 0.012$	$H(0.15)$	72.864	$72.82 \pm 0.43$	$\chi_{\text{CMB}}^2$	1187.3	$1202.5 \pm 5.7$
$\sigma_8 \Omega_m^{0.5}$	0.4512	$0.4511 \pm 0.0066$	$D_M(0.15)$	641.43	$641.9 \pm 4.3$	$\chi_{\text{BAO}}^2$	5.64	$6.4 \pm 1.4$
$\sigma_8 \Omega_m^{0.25}$	0.6042	$0.6038 \pm 0.0063$	$H(0.38)$	82.961	$82.93 \pm 0.33$			

Best-fit  $\chi_{\text{eff}}^2 = 1194.56$ ;  $\bar{\chi}_{\text{eff}}^2 = 1216.09$ ;  $R - 1 = 0.02745$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.03 MGS: 1.22 DR12BAO: 4.40 CMB - smicadx12\_Dec5.ftl\_mv2.ndclpp\_p.teb\_consext8: 8.78 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.43 commander\_dx12.v3.2.29: 22.31 plik\_rd12\_HM.v22\_TT: 759.82



## 5.5 base\_alpha1\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02220 \pm 0.00023$	$\sigma_8 \Omega_m^{0.5}$	$0.464 \pm 0.014$	$100\theta_{s,eq}$	$0.4465 \pm 0.0049$
$\Omega_c h^2$	$0.1214 \pm 0.0022$	$\sigma_8 \Omega_m^{0.25}$	$0.614 \pm 0.012$	$H(0.15)$	$72.03 \pm 0.81$
$100\theta_{MC}$	$1.04048 \pm 0.00055$	$\sigma_8/h^{0.5}$	$0.997 \pm 0.016$	$D_M(0.15)$	$650.1 \pm 8.4$
$\tau$	$0.0551^{+0.0054}_{-0.0086}$	$r_{drag}h$	$97.9 \pm 1.7$	$H(0.38)$	$82.37 \pm 0.58$
$\alpha_{-1}$	$-0.0015^{+0.0017}_{-0.0010}$	$\langle d^2 \rangle^{1/2}$	$2.468 \pm 0.039$	$D_M(0.38)$	$1547 \pm 17$
$\ln(10^{10} A_s)$	$3.050^{+0.014}_{-0.017}$	$z_{re}$	$7.81^{+0.61}_{-0.84}$	$H(0.51)$	$89.23 \pm 0.45$
$n_s$	$0.9576^{+0.0067}_{-0.0078}$	$10^9 A_s$	$2.112^{+0.029}_{-0.037}$	$D_M(0.51)$	$2002 \pm 19$
$y_{cal}$	$1.0005 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.892 \pm 0.015$	$H(0.61)$	$94.95^{+0.33}_{-0.37}$
$A_{217}^{CIB}$	$48 \pm 7$	$D_{40}$	$1217^{+18}_{-22}$	$D_M(0.61)$	$2328 \pm 21$
$\xi^{tSZ \times CIB}$	—	$D_{220}$	$5719 \pm 42$	$H(2.33)$	$237.3 \pm 1.4$
$A_{143}^{tSZ}$	$5.0 \pm 2.0$	$D_{810}$	$2539 \pm 14$	$D_M(2.33)$	$5779 \pm 16$
$A_{100}^{PS}$	$264 \pm 28$	$D_{1420}$	$814.2 \pm 5.2$	$f\sigma_8(0.15)$	$0.467 \pm 0.013$
$A_{143}^{PS}$	$49 \pm 8$	$D_{2000}$	$229.4 \pm 1.8$	$\sigma_8(0.15)$	$0.7502 \pm 0.0071$
$A_{143 \times 217}^{PS}$	$43 \pm 9$	$n_{s,0.002}$	$0.9576^{+0.0067}_{-0.0078}$	$f\sigma_8(0.38)$	$0.4825 \pm 0.0098$
$A_{217}^{PS}$	$115 \pm 10$	$Y_P$	$0.24532^{+0.00010}_{-0.000085}$	$\sigma_8(0.38)$	$0.6635 \pm 0.0056$
$A^{kSZ}$	$< 5.14$	$Y_P^{BBN}$	$0.24665^{+0.00011}_{-0.000085}$	$f\sigma_8(0.51)$	$0.4795 \pm 0.0082$
$A_{100}^{dustTT}$	$9.0 \pm 1.8$	$10^5 D/H$	$2.618 \pm 0.043$	$\sigma_8(0.51)$	$0.6203^{+0.0047}_{-0.0053}$
$A_{143}^{dustTT}$	$10.7 \pm 1.8$	Age/Gyr	$13.833 \pm 0.037$	$f\sigma_8(0.61)$	$0.4734 \pm 0.0072$
$A_{143 \times 217}^{dustTT}$	$18.3 \pm 3.3$	$z_*$	$1090.26 \pm 0.40$	$\sigma_8(0.61)$	$0.5899^{+0.0044}_{-0.0050}$
$A_{217}^{dustTT}$	$93.4 \pm 7.3$	$r_*$	$144.21 \pm 0.53$	$f\sigma_8(2.33)$	$0.2969^{+0.0021}_{-0.0025}$
$c_{100}$	$0.99961 \pm 0.00062$	$100\theta_*$	$1.04068 \pm 0.00055$	$\sigma_8(2.33)$	$0.3055^{+0.0022}_{-0.0027}$
$c_{217}$	$0.99827 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	$13.857 \pm 0.048$	$f_{2000}^{143}$	$31.4 \pm 2.9$
$H_0$	$66.60 \pm 0.96$	$z_{drag}$	$1059.64 \pm 0.49$	$f_{2000}^{143 \times 217}$	$33.7 \pm 2.0$
$\Omega_\Lambda$	$0.675 \pm 0.014$	$r_{drag}$	$146.92 \pm 0.54$	$f_{2000}^{217}$	$108.2 \pm 1.9$
$\Omega_m$	$0.325 \pm 0.014$	$k_D$	$0.14092 \pm 0.00061$	$\chi_{simall}^2$	$397.0 \pm 1.7$
$\Omega_m h^2$	$0.1442 \pm 0.0022$	$100\theta_D$	$0.16089 \pm 0.00030$	$\chi_{lowl}^2$	$22.1 \pm 2.1$
$\Omega_m h^3$	$0.09603 \pm 0.00047$	$z_{eq}$	$3431 \pm 51$	$\chi_{plik}^2$	$773.9 \pm 5.8$
$\sigma_8$	$0.8133 \pm 0.0086$	$k_{eq}$	$0.01047 \pm 0.00016$	$\chi_{prior}^2$	$7.3 \pm 3.7$
$S_8$	$0.847 \pm 0.025$	$100\theta_{eq}$	$0.8075 \pm 0.0094$	$\chi_{CMB}^2$	$1193.0 \pm 5.7$

$$\bar{\chi}_{eff}^2 = 1200.29; R - 1 = 0.00693$$



## 5.6 base\_alpha1\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02229 \pm 0.00022$	$\sigma_8/h^{0.5}$	$0.982 \pm 0.011$	$D_M(0.38)$	$1529.8 \pm 9.3$
$\Omega_c h^2$	$0.1191 \pm 0.0012$	$r_{\text{drag}} h$	$99.67 \pm 0.96$	$H(0.51)$	$89.67 \pm 0.29$
$100\theta_{\text{MC}}$	$1.04087 \pm 0.00047$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.026$	$D_M(0.51)$	$1982 \pm 11$
$\tau$	$0.0563^{+0.0061}_{-0.0087}$	$z_{\text{re}}$	$7.87^{+0.65}_{-0.86}$	$H(0.61)$	$95.28 \pm 0.24$
$\alpha_{-1}$	$-0.0009^{+0.0015}_{-0.0011}$	$10^9 A_s$	$2.104^{+0.030}_{-0.038}$	$D_M(0.61)$	$2306 \pm 12$
$\ln(10^{10} A_s)$	$3.046^{+0.015}_{-0.018}$	$10^9 A_s e^{-2\tau}$	$1.880 \pm 0.012$	$H(2.33)$	$235.85 \pm 0.81$
$n_s$	$0.9642^{+0.0053}_{-0.0061}$	$D_{40}$	$1214^{+18}_{-26}$	$D_M(2.33)$	$5766 \pm 12$
$y_{\text{cal}}$	$1.0006 \pm 0.0025$	$D_{220}$	$5725 \pm 41$	$f\sigma_8(0.15)$	$0.4547 \pm 0.0075$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{810}$	$2537 \pm 14$	$\sigma_8(0.15)$	$0.7461 \pm 0.0064$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$815.3 \pm 5.0$	$f\sigma_8(0.38)$	$0.4731 \pm 0.0063$
$A_{143}^{\text{tSZ}}$	$5.0 \pm 2.0$	$D_{2000}$	$229.9 \pm 1.8$	$\sigma_8(0.38)$	$0.6614 \pm 0.0055$
$A_{100}^{\text{PS}}$	$264 \pm 28$	$n_{s,0.002}$	$0.9642^{+0.0053}_{-0.0061}$	$f\sigma_8(0.51)$	$0.4718 \pm 0.0056$
$A_{143}^{\text{PS}}$	$48 \pm 8$	$Y_{\text{P}}$	$0.245358^{+0.000097}_{-0.000083}$	$\sigma_8(0.51)$	$0.6190 \pm 0.0051$
$A_{143 \times 217}^{\text{PS}}$	$43^{+9}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	$0.246685^{+0.000098}_{-0.000083}$	$f\sigma_8(0.61)$	$0.4669 \pm 0.0052$
$A_{217}^{\text{PS}}$	$114 \pm 10$	$10^5 D/H$	$2.602 \pm 0.042$	$\sigma_8(0.61)$	$0.5890^{+0.0046}_{-0.0051}$
$A^{\text{kSZ}}$	$< 5.03$	Age/Gyr	$13.803 \pm 0.028$	$f\sigma_8(2.33)$	$0.2970^{+0.0023}_{-0.0026}$
$A_{100}^{\text{dustTT}}$	$9.0 \pm 1.8$	$z_*$	$1089.94 \pm 0.32$	$\sigma_8(2.33)$	$0.3063^{+0.0023}_{-0.0027}$
$A_{143}^{\text{dustTT}}$	$10.8 \pm 1.8$	$r_*$	$144.74 \pm 0.34$	$f_{2000}^{143}$	$31.0 \pm 3.0$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3 \pm 3.4$	$100\theta_*$	$1.04106 \pm 0.00048$	$f_{2000}^{143 \times 217}$	$33.3 \pm 2.0$
$A_{217}^{\text{dustTT}}$	$93.5 \pm 7.5$	$D_M(z_*)/\text{Gpc}$	$13.903 \pm 0.032$	$f_{2000}^{217}$	$107.9 \pm 1.9$
$c_{100}$	$0.99962 \pm 0.00061$	$z_{\text{drag}}$	$1059.68 \pm 0.52$	$\chi_{\text{small}}^2$	$397.1 \pm 1.9$
$c_{217}$	$0.99829 \pm 0.00061$	$r_{\text{drag}}$	$147.43 \pm 0.39$	$\chi_{\text{lowl}}^2$	$22 \pm 2$
$H_0$	$67.60 \pm 0.54$	$k_{\text{D}}$	$0.14044 \pm 0.00052$	$\chi_{\text{plik}}^2$	$774.0 \pm 5.8$
$\Omega_{\Lambda}$	$0.6892 \pm 0.0074$	$100\theta_{\text{D}}$	$0.16090 \pm 0.00032$	$\chi_{6\text{DF}}^2$	$0.066 \pm 0.085$
$\Omega_{\text{m}}$	$0.3108 \pm 0.0074$	$z_{\text{eq}}$	$3378 \pm 29$	$\chi_{\text{MGS}}^2$	$1.30 \pm 0.52$
$\Omega_{\text{m}} h^2$	$0.1420 \pm 0.0012$	$k_{\text{eq}}$	$0.010309 \pm 0.000090$	$\chi_{\text{DR12BAO}}^2$	$5.0 \pm 1.8$
$\Omega_{\text{m}} h^3$	$0.09599 \pm 0.00047$	$100\theta_{\text{eq}}$	$0.8175 \pm 0.0054$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8$	$0.8073 \pm 0.0073$	$100\theta_{\text{s,eq}}$	$0.4516 \pm 0.0028$	$\chi_{\text{BAO}}^2$	$6.4 \pm 1.5$
$S_8$	$0.822 \pm 0.015$	$H(0.15)$	$72.87 \pm 0.47$	$\chi_{\text{CMB}}^2$	$1193.4 \pm 5.6$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4500 \pm 0.0080$	$D_M(0.15)$	$641.4 \pm 4.6$		
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.6028 \pm 0.0077$	$H(0.38)$	$82.97 \pm 0.35$		

$$\bar{\chi}_{\text{eff}}^2 = 1207.05; R - 1 = 0.02346$$



## 5.7 base\_alpha1\_plikHM\_TT\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02224 \pm 0.00022$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6095 \pm 0.0077$	$D_{\text{M}}(0.15)$	$647.0 \pm 6.2$
$\Omega_{\text{c}}h^2$	$0.1205 \pm 0.0016$	$\sigma_8/h^{0.5}$	$0.990^{+0.011}_{-0.0099}$	$H(0.38)$	$82.57 \pm 0.45$
$100\theta_{\text{MC}}$	$1.04058 \pm 0.00051$	$r_{\text{drag}}h$	$98.5 \pm 1.3$	$D_{\text{M}}(0.38)$	$1541 \pm 12$
$\tau$	$0.0549^{+0.0055}_{-0.0084}$	$\langle d^2 \rangle^{1/2}$	$2.453 \pm 0.025$	$H(0.51)$	$89.37 \pm 0.36$
$\alpha_{-1}$	$-0.0014^{+0.0017}_{-0.0010}$	$z_{\text{re}}$	$7.77^{+0.61}_{-0.80}$	$D_{\text{M}}(0.51)$	$1995 \pm 15$
$\ln(10^{10}A_{\text{s}})$	$3.047^{+0.013}_{-0.015}$	$10^9 A_{\text{s}}$	$2.106^{+0.026}_{-0.033}$	$H(0.61)$	$95.06 \pm 0.29$
$n_{\text{s}}$	$0.9595^{+0.0056}_{-0.0069}$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.887 \pm 0.013$	$D_{\text{M}}(0.61)$	$2320 \pm 16$
$y_{\text{cal}}$	$1.0004 \pm 0.0025$	$D_{40}$	$1215^{+16}_{-22}$	$H(2.33)$	$236.8 \pm 1.0$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{220}$	$5721 \pm 41$	$D_{\text{M}}(2.33)$	$5775 \pm 14$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{810}$	$2538 \pm 14$	$f\sigma_8(0.15)$	$0.4623 \pm 0.0083$
$A_{143}^{\text{tSZ}}$	$5.0 \pm 2.0$	$D_{1420}$	$814.2 \pm 5.2$	$\sigma_8(0.15)$	$0.7479 \pm 0.0053$
$A_{100}^{\text{PS}}$	$265 \pm 28$	$D_{2000}$	$229.5 \pm 1.8$	$f\sigma_8(0.38)$	$0.4787^{+0.0066}_{-0.0060}$
$A_{143}^{\text{PS}}$	$49 \pm 8$	$n_{\text{s},0.002}$	$0.9595^{+0.0056}_{-0.0069}$	$\sigma_8(0.38)$	$0.6620 \pm 0.0046$
$A_{143 \times 217}^{\text{PS}}$	$43^{+9}_{-10}$	$Y_{\text{P}}$	$0.245337^{+0.000099}_{-0.000082}$	$f\sigma_8(0.51)$	$0.4763^{+0.0056}_{-0.0050}$
$A_{217}^{\text{PS}}$	$114 \pm 10$	$Y_{\text{P}}^{\text{BBN}}$	$0.246664^{+0.000099}_{-0.000082}$	$\sigma_8(0.51)$	$0.6192^{+0.0041}_{-0.0046}$
$A^{\text{kSZ}}$	$< 5.25$	$10^5 D/H$	$2.611 \pm 0.042$	$f\sigma_8(0.61)$	$0.4706^{+0.0050}_{-0.0044}$
$A_{100}^{\text{dustTT}}$	$9.0 \pm 1.8$	Age/Gyr	$13.823 \pm 0.032$	$\sigma_8(0.61)$	$0.5889^{+0.0039}_{-0.0044}$
$A_{143}^{\text{dustTT}}$	$10.8 \pm 1.8$	$z_*$	$1090.14 \pm 0.35$	$f\sigma_8(2.33)$	$0.2966^{+0.0021}_{-0.0024}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.4 \pm 3.3$	$r_*$	$144.39 \pm 0.40$	$\sigma_8(2.33)$	$0.3054^{+0.0023}_{-0.0027}$
$A_{217}^{\text{dustTT}}$	$93.4 \pm 7.4$	$100\theta_*$	$1.04078 \pm 0.00051$	$f_{2000}^{143}$	$31.4 \pm 3.0$
$c_{100}$	$0.99962 \pm 0.00061$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.874 \pm 0.036$	$f_{2000}^{143 \times 217}$	$33.6 \pm 2.0$
$c_{217}$	$0.99828 \pm 0.00061$	$z_{\text{drag}}$	$1059.67 \pm 0.49$	$f_{2000}^{217}$	$108.2 \pm 1.9$
$H_0$	$66.95 \pm 0.72$	$r_{\text{drag}}$	$147.10 \pm 0.43$	$\chi_{\text{lensing}}^2$	$9.50 \pm 0.98$
$\Omega_{\Lambda}$	$0.680 \pm 0.010$	$k_{\text{D}}$	$0.14076 \pm 0.00053$	$\chi_{\text{simall}}^2$	$396.9 \pm 1.5$
$\Omega_{\text{m}}$	$0.320 \pm 0.010$	$100\theta_{\text{D}}$	$0.16088 \pm 0.00030$	$\chi_{\text{lowl}}^2$	$22.0 \pm 2.2$
$\Omega_{\text{m}}h^2$	$0.1434 \pm 0.0016$	$z_{\text{eq}}$	$3412 \pm 37$	$\chi_{\text{plik}}^2$	$773.6 \pm 5.7$
$\Omega_{\text{m}}h^3$	$0.09601 \pm 0.00046$	$k_{\text{eq}}$	$0.01041 \pm 0.00011$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.6$
$\sigma_8$	$0.8103 \pm 0.0060$	$100\theta_{\text{eq}}$	$0.8110 \pm 0.0069$	$\chi_{\text{CMB}}^2$	$1202.0 \pm 5.6$
$S_8$	$0.837 \pm 0.017$	$100\theta_{\text{s,eq}}$	$0.4483 \pm 0.0036$		
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4585 \pm 0.0090$	$H(0.15)$	$72.32 \pm 0.61$		

$$\bar{\chi}_{\text{eff}}^2 = 1209.29; R - 1 = 0.01342$$



## 5.8 base\_alpha1\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02229 \pm 0.00022$	$\sigma_8/h^{0.5}$	$0.9837 \pm 0.0089$	$D_M(0.38)$	$1530.6 \pm 8.6$
$\Omega_c h^2$	$0.1192 \pm 0.0011$	$r_{\text{drag}} h$	$99.58 \pm 0.86$	$H(0.51)$	$89.65 \pm 0.27$
$100\theta_{\text{MC}}$	$1.04085 \pm 0.00047$	$\langle d^2 \rangle^{1/2}$	$2.436 \pm 0.021$	$D_M(0.51)$	$1983 \pm 10$
$\tau$	$0.0572^{+0.0066}_{-0.0080}$	$z_{\text{re}}$	$7.97 \pm 0.70$	$H(0.61)$	$95.27 \pm 0.23$
$\alpha_{-1}$	$-0.0009^{+0.0015}_{-0.0011}$	$10^9 A_s$	$2.110^{+0.029}_{-0.034}$	$D_M(0.61)$	$2307 \pm 11$
$\ln(10^{10} A_s)$	$3.049^{+0.014}_{-0.016}$	$10^9 A_s e^{-2\tau}$	$1.881 \pm 0.012$	$H(2.33)$	$235.94 \pm 0.73$
$n_s$	$0.9637^{+0.0051}_{-0.0060}$	$D_{40}$	$1216^{+17}_{-26}$	$D_M(2.33)$	$5766 \pm 12$
$y_{\text{cal}}$	$1.0007 \pm 0.0025$	$D_{220}$	$5728 \pm 40$	$f\sigma_8(0.15)$	$0.4558 \pm 0.0061$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{810}$	$2538 \pm 14$	$\sigma_8(0.15)$	$0.7471 \pm 0.0055$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$815.5 \pm 5.0$	$f\sigma_8(0.38)$	$0.4741 \pm 0.0051$
$A_{143}^{\text{tSZ}}$	$5.0 \pm 2.0$	$D_{2000}$	$230.0 \pm 1.7$	$\sigma_8(0.38)$	$0.6623 \pm 0.0048$
$A_{100}^{\text{PS}}$	$264 \pm 28$	$n_{s,0.002}$	$0.9637^{+0.0051}_{-0.0060}$	$f\sigma_8(0.51)$	$0.4727 \pm 0.0045$
$A_{143}^{\text{PS}}$	$48 \pm 8$	$Y_{\text{P}}$	$0.245361^{+0.000095}_{-0.000083}$	$\sigma_8(0.51)$	$0.6198 \pm 0.0045$
$A_{143 \times 217}^{\text{PS}}$	$43^{+9}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	$0.246687^{+0.000096}_{-0.000083}$	$f\sigma_8(0.61)$	$0.4677 \pm 0.0041$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$10^5 \text{D}/\text{H}$	$2.601 \pm 0.042$	$\sigma_8(0.61)$	$0.5897 \pm 0.0043$
$A^{\text{kSZ}}$	$< 4.97$	$\text{Age}/\text{Gyr}$	$13.804 \pm 0.027$	$f\sigma_8(2.33)$	$0.2973 \pm 0.0022$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$z_*$	$1089.95 \pm 0.31$	$\sigma_8(2.33)$	$0.3066 \pm 0.0024$
$A_{143}^{\text{dustTT}}$	$10.7 \pm 1.7$	$r_*$	$144.70 \pm 0.31$	$f_{2000}^{143}$	$30.9 \pm 2.9$
$A_{143 \times 217}^{\text{dustTT}}$	$18.4 \pm 3.3$	$100\theta_*$	$1.04104 \pm 0.00047$	$f_{2000}^{143 \times 217}$	$33.3 \pm 2.0$
$A_{217}^{\text{dustTT}}$	$93.6 \pm 7.5$	$D_M(z_*)/\text{Gpc}$	$13.900 \pm 0.030$	$f_{2000}^{217}$	$107.9 \pm 1.9$
$c_{100}$	$0.99963 \pm 0.00061$	$z_{\text{drag}}$	$1059.70 \pm 0.51$	$\chi_{\text{lensing}}^2$	$9.21 \pm 0.67$
$c_{217}$	$0.99829 \pm 0.00061$	$r_{\text{drag}}$	$147.39 \pm 0.36$	$\chi_{\text{simall}}^2$	$397.3 \pm 1.8$
$H_0$	$67.56 \pm 0.50$	$k_{\text{D}}$	$0.14049 \pm 0.00050$	$\chi_{\text{lowl}}^2$	$22 \pm 2$
$\Omega_{\Lambda}$	$0.6885 \pm 0.0067$	$100\theta_{\text{D}}$	$0.16088 \pm 0.00032$	$\chi_{\text{plik}}^2$	$773.6 \pm 5.7$
$\Omega_{\text{m}}$	$0.3115 \pm 0.0067$	$z_{\text{eq}}$	$3381 \pm 26$	$\chi_{6\text{DF}}^2$	$0.066 \pm 0.079$
$\Omega_{\text{m}} h^2$	$0.1421 \pm 0.0011$	$k_{\text{eq}}$	$0.010319 \pm 0.000080$	$\chi_{\text{MGS}}^2$	$1.24 \pm 0.47$
$\Omega_{\text{m}} h^3$	$0.09601 \pm 0.00046$	$100\theta_{\text{eq}}$	$0.8169 \pm 0.0048$	$\chi_{\text{DR12BAO}}^2$	$5.0 \pm 1.7$
$\sigma_8$	$0.8085 \pm 0.0061$	$100\theta_{\text{s,eq}}$	$0.4513 \pm 0.0025$	$\chi_{\text{prior}}^2$	$7.2 \pm 3.7$
$S_8$	$0.824 \pm 0.012$	$H(0.15)$	$72.83 \pm 0.43$	$\chi_{\text{CMB}}^2$	$1202.4 \pm 5.6$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4512 \pm 0.0066$	$D_M(0.15)$	$641.8 \pm 4.3$	$\chi_{\text{BAO}}^2$	$6.3 \pm 1.4$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.6040 \pm 0.0062$	$H(0.38)$	$82.94 \pm 0.33$		

$$\bar{\chi}_{\text{eff}}^2 = 1215.96; R - 1 = 0.02803$$



## 5.9 base\_alpha1\_plikHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022381	$0.02236 \pm 0.00015$ (+0.7 $\sigma$ )	$\Omega_{\text{m}}h^2$	0.14328	$0.1435 \pm 0.0018$ (−0.4 $\sigma$ )	$k_{\text{eq}}$	0.010403	$0.01042 \pm 0.00013$ (−0.4 $\sigma$ )
$\Omega_{\text{c}}h^2$	0.12025	$0.1205 \pm 0.0018$ (−0.4 $\sigma$ )	$\Omega_{\text{m}}h^3$	0.096366	$0.09634 \pm 0.00030$ (+0.7 $\sigma$ )	$100\theta_{\text{eq}}$	0.8122	$0.8113 \pm 0.0079$ (+0.4 $\sigma$ )
$100\theta_{\text{MC}}$	1.040863	$1.04082 \pm 0.00046$ (+0.6 $\sigma$ )	$\sigma_8$	0.8123	$0.8126 \pm 0.0077$ (+0.0 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.44879	$0.4483 \pm 0.0041$ (+0.4 $\sigma$ )
$\tau$	0.0543	$0.0546 \pm 0.0077$ (+0.1 $\sigma$ )	$S_8$	0.8347	$0.837 \pm 0.020$ (−0.4 $\sigma$ )	$H(0.15)$	72.60	$72.51 \pm 0.68$ (+0.6 $\sigma$ )
$\alpha_{-1}$	$-0.6 \cdot 10^{-5}$	$-0.00012 \pm 0.00055$ (+0.8 $\sigma$ )	$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4572	$0.459 \pm 0.011$ (−0.4 $\sigma$ )	$D_{\text{M}}(0.15)$	644.2	$645.2 \pm 6.9$ (−0.6 $\sigma$ )
$\ln(10^{10}A_{\text{s}})$	3.0459	$3.046 \pm 0.016$ (−0.1 $\sigma$ )	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6094	$0.6104 \pm 0.0098$ (−0.3 $\sigma$ )	$H(0.38)$	82.811	$82.75 \pm 0.48$ (+0.7 $\sigma$ )
$n_{\text{s}}$	0.9649	$0.9635^{+0.0066}_{-0.0075}$ (+0.8 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9905	$0.992 \pm 0.013$ (−0.2 $\sigma$ )	$D_{\text{M}}(0.38)$	1535.1	$1537 \pm 14$ (−0.6 $\sigma$ )
$y_{\text{cal}}$	1.00076	$1.0006 \pm 0.0025$ (+0.0 $\sigma$ )	$r_{\text{drag}}h$	98.88	$98.7 \pm 1.4$ (+0.5 $\sigma$ )	$H(0.51)$	89.587	$89.54 \pm 0.37$ (+0.7 $\sigma$ )
$A_{217}^{\text{CIB}}$	46.8	$47 \pm 7$ (−0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4490	$2.454 \pm 0.034$ (−0.3 $\sigma$ )	$D_{\text{M}}(0.51)$	1987.8	$1990 \pm 16$ (−0.6 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.51	—	$z_{\text{re}}$	7.68	$7.70 \pm 0.78$ (+0.1 $\sigma$ )	$H(0.61)$	95.251	$95.21 \pm 0.29$ (+0.8 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.20	$5.4^{+2.2}_{-1.9}$ (+0.2 $\sigma$ )	$10^9 A_{\text{s}}$	2.1029	$2.104 \pm 0.034$ (−0.1 $\sigma$ )	$D_{\text{M}}(0.61)$	2312.4	$2315 \pm 17$ (−0.6 $\sigma$ )
$A_{100}^{\text{PS}}$	249.6	$259 \pm 28$ (−0.2 $\sigma$ )	$10^9 A_{\text{s}}e^{-2\tau}$	1.8866	$1.886 \pm 0.014$ (−0.4 $\sigma$ )	$H(2.33)$	236.73	$236.9 \pm 1.1$ (−0.3 $\sigma$ )
$A_{143}^{\text{PS}}$	49.1	$46 \pm 8$ (−0.4 $\sigma$ )	$D_{40}$	1230.5	$1231 \pm 14$ (+0.6 $\sigma$ )	$D_{\text{M}}(2.33)$	5764.4	$5766 \pm 13$ (−0.8 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	50.0	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{220}$	5737.2	$5733 \pm 39$ (+0.3 $\sigma$ )	$f\sigma_8(0.15)$	0.4613	$0.463 \pm 0.010$ (−0.4 $\sigma$ )
$A_{217}^{\text{PS}}$	120.7	$115 \pm 10$ (+0.1 $\sigma$ )	$D_{810}$	2542.8	$2540 \pm 13$ (+0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7501	$0.7502 \pm 0.0066$ (+0.1 $\sigma$ )
$A^{\text{kSZ}}$	0.00	$< 4.26$ (−0.2 $\sigma$ )	$D_{1420}$	818.49	$817.1 \pm 4.8$ (+0.6 $\sigma$ )	$f\sigma_8(0.38)$	0.4785	$0.4793 \pm 0.0080$ (−0.3 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.78	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$D_{2000}$	231.29	$230.8 \pm 1.6$ (+0.8 $\sigma$ )	$\sigma_8(0.38)$	0.6644	$0.6643 \pm 0.0055$ (+0.3 $\sigma$ )
$A_{143}^{\text{dustTT}}$	11.01	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$n_{\text{s},0.002}$	0.9649	$0.9635^{+0.0066}_{-0.0075}$ (+0.8 $\sigma$ )	$f\sigma_8(0.51)$	0.4765	$0.4771 \pm 0.0068$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	20.02	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\text{P}}$	0.245400	$0.245389^{+0.000062}_{-0.000055}$ (+0.7 $\sigma$ )	$\sigma_8(0.51)$	0.62150	$0.6214 \pm 0.0051$ (+0.3 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.3	$93.7 \pm 7.4$ (+0.1 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.246726	$0.246716^{+0.000063}_{-0.000055}$ (+0.7 $\sigma$ )	$f\sigma_8(0.61)$	0.4711	$0.4716 \pm 0.0061$ (−0.2 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1141	$0.115 \pm 0.038$	$10^5 \text{D/H}$	2.5834	$2.588 \pm 0.028$ (−0.7 $\sigma$ )	$\sigma_8(0.61)$	0.59123	$0.5910 \pm 0.0048$ (+0.4 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1356	$0.135 \pm 0.030$	Age/Gyr	13.7989	$13.803 \pm 0.028$ (−0.8 $\sigma$ )	$f\sigma_8(2.33)$	0.29789	$0.2977 \pm 0.0025$ (+0.5 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.480 \pm 0.085$	$z_*$	1089.929	$1089.98 \pm 0.29$ (−0.7 $\sigma$ )	$\sigma_8(2.33)$	0.30689	$0.3067 \pm 0.0027$ (+0.6 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.226	$0.227 \pm 0.054$	$r_*$	144.358	$144.32 \pm 0.43$ (+0.2 $\sigma$ )	$f_{2000}^{143}$	28.92	$29.6 \pm 2.8$ (−0.6 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.666	$0.666 \pm 0.079$	$100\theta_*$	1.041050	$1.04100 \pm 0.00046$ (+0.6 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.11	$32.2 \pm 1.9$ (−0.7 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.077	$2.09 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8666	$13.863 \pm 0.038$ (+0.1 $\sigma$ )	$f_{2000}^{217}$	106.71	$107.1 \pm 1.8$ (−0.6 $\sigma$ )
$c_{100}$	0.99974	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$z_{\text{drag}}$	1059.971	$1059.95 \pm 0.32$ (+0.7 $\sigma$ )	$\chi_{\text{small}}^2$	396.06	$397.1 \pm 1.9$ (+0.0 $\sigma$ )
$c_{217}$	0.99820	$0.99819 \pm 0.00062$ (−0.1 $\sigma$ )	$r_{\text{drag}}$	147.014	$146.98 \pm 0.44$ (+0.1 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.22	$23.4 \pm 1.6$ (+0.6 $\sigma$ )
$H_0$	67.26	$67.15 \pm 0.80$ (+0.6 $\sigma$ )	$k_{\text{D}}$	0.140959	$0.14098 \pm 0.00047$ (+0.1 $\sigma$ )	$\chi_{\text{plik}}^2$	2344.8	$2361.5 \pm 6.1$ (+271.7 $\sigma$ )
$\Omega_{\Lambda}$	0.6833	$0.682 \pm 0.011$ (+0.5 $\sigma$ )	$100\theta_{\text{D}}$	0.160726	$0.16074 \pm 0.00020$ (−0.5 $\sigma$ )	$\chi_{\text{prior}}^2$	1.72	$11.5 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_{\text{m}}$	0.3167	$0.318 \pm 0.011$ (−0.5 $\sigma$ )	$z_{\text{eq}}$	3408.5	$3414 \pm 42$ (−0.4 $\sigma$ )	$\chi_{\text{CMB}}^2$	2764.1	$2782.1 \pm 6.0$ (+275.2 $\sigma$ )

Best-fit  $\chi_{\text{eff}}^2 = 2765.78$ ;  $\Delta\chi_{\text{eff}}^2 = 1586.63$ ;  $\bar{\chi}_{\text{eff}}^2 = 2793.61$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1593.05$ ;  $R - 1 = 0.01294$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.06 ( $\Delta$  0.17) commander\_dx12\_v3.2.29: 23.22 ( $\Delta$  1.04) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.78



## 5.10 base\_alpha1\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022431	$0.02240 \pm 0.00014$ (+0.5 $\sigma$ )	$\sigma_8$	0.8109	$0.8097 \pm 0.0071$ (+0.4 $\sigma$ )	$D_M(0.15)$	640.04	$640.0 \pm 4.4$ (−0.3 $\sigma$ )
$\Omega_c h^2$	0.11917	$0.1191 \pm 0.0012$ (+0.0 $\sigma$ )	$S_8$	0.8242	$0.823 \pm 0.014$ (+0.1 $\sigma$ )	$H(0.38)$	83.107	$83.10 \pm 0.32$ (+0.4 $\sigma$ )
$100\theta_{MC}$	1.041066	$1.04109 \pm 0.00038$ (+0.5 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4515	$0.4506 \pm 0.0075$ (+0.1 $\sigma$ )	$D_M(0.38)$	1526.8	$1526.9 \pm 8.7$ (−0.3 $\sigma$ )
$\tau$	0.0561	$0.0555^{+0.0071}_{-0.0079}$ (+0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6051	$0.6040 \pm 0.0073$ (+0.2 $\sigma$ )	$H(0.51)$	89.813	$89.81^{+0.24}_{-0.27}$ (+0.5 $\sigma$ )
$\alpha_{-1}$	$2.2 \cdot 10^{-5}$	$0.00015^{+0.00035}_{-0.00041}$ (+0.6 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9852	$0.984 \pm 0.011$ (+0.2 $\sigma$ )	$D_M(0.51)$	1978.1	$1978 \pm 10$ (−0.3 $\sigma$ )
$\ln(10^{10} A_s)$	3.0466	$3.044 \pm 0.016$ (+0.0 $\sigma$ )	$r_{drag} h$	99.75	$99.79 \pm 0.92$ (+0.1 $\sigma$ )	$H(0.61)$	95.424	$95.41^{+0.19}_{-0.22}$ (+0.6 $\sigma$ )
$n_s$	0.9693	$0.9681 \pm 0.0052$ (+0.7 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4330	$2.433 \pm 0.026$ (+0.1 $\sigma$ )	$D_M(0.61)$	2302.0	$2302 \pm 11$ (−0.4 $\sigma$ )
$y_{cal}$	1.00082	$1.0007 \pm 0.0024$ (+0.1 $\sigma$ )	$z_{re}$	7.83	$7.76 \pm 0.77$ (+0.0 $\sigma$ )	$H(2.33)$	236.09	$236.03 \pm 0.73$ (+0.2 $\sigma$ )
$A_{217}^{CIB}$	45.1	$47 \pm 7$ (−0.2 $\sigma$ )	$10^9 A_s$	2.1043	$2.100 \pm 0.034$ (−0.0 $\sigma$ )	$D_M(2.33)$	5757.2	$5758.0 \pm 9.4$ (−0.6 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.76	—	$10^9 A_s e^{-2\tau}$	1.8811	$1.879 \pm 0.012$ (−0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4562	$0.4554 \pm 0.0071$ (+0.1 $\sigma$ )
$A_{143}^{tSZ}$	7.05	$5.5^{+2.3}_{-1.9}$ (+0.3 $\sigma$ )	$D_{40}$	1227.3	$1230 \pm 14$ (+0.7 $\sigma$ )	$\sigma_8(0.15)$	0.7495	$0.7483 \pm 0.0063$ (+0.4 $\sigma$ )
$A_{100}^{PS}$	246.4	$258 \pm 28$ (−0.2 $\sigma$ )	$D_{220}$	5734.5	$5734 \pm 38$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.4749	$0.4740 \pm 0.0059$ (+0.2 $\sigma$ )
$A_{143}^{PS}$	51.3	$45 \pm 8$ (−0.4 $\sigma$ )	$D_{810}$	2542.5	$2539 \pm 13$ (+0.1 $\sigma$ )	$\sigma_8(0.38)$	0.6645	$0.6635 \pm 0.0055$ (+0.5 $\sigma$ )
$A_{143 \times 217}^{PS}$	55.4	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{1420}$	819.89	$818.0 \pm 4.6$ (+0.5 $\sigma$ )	$f\sigma_8(0.51)$	0.4737	$0.4728 \pm 0.0053$ (+0.3 $\sigma$ )
$A_{217}^{PS}$	122.9	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	231.90	$231.2 \pm 1.5$ (+0.8 $\sigma$ )	$\sigma_8(0.51)$	0.6220	$0.6210 \pm 0.0051$ (+0.5 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.16$ (−0.2 $\sigma$ )	$n_{s,0.002}$	0.9693	$0.9681 \pm 0.0052$ (+0.7 $\sigma$ )	$f\sigma_8(0.61)$	0.46881	$0.4680 \pm 0.0049$ (+0.3 $\sigma$ )
$A_{100}^{dustTT}$	8.87	$9.0 \pm 1.8$ (+0.0 $\sigma$ )	$Y_P$	0.245419	$0.245406^{+0.000058}_{-0.000053}$ (+0.5 $\sigma$ )	$\sigma_8(0.61)$	0.59187	$0.5910 \pm 0.0048$ (+0.5 $\sigma$ )
$A_{143}^{dustTT}$	11.03	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246746	$0.246733^{+0.000058}_{-0.000053}$ (+0.5 $\sigma$ )	$f\sigma_8(2.33)$	0.29849	$0.2980 \pm 0.0024$ (+0.5 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.24	$18.7 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5742	$2.580 \pm 0.026$ (−0.5 $\sigma$ )	$\sigma_8(2.33)$	0.30779	$0.3074 \pm 0.0026$ (+0.5 $\sigma$ )
$A_{217}^{dustTT}$	95.8	$93.9 \pm 7.3$ (+0.0 $\sigma$ )	Age/Gyr	13.7834	$13.785 \pm 0.021$ (−0.7 $\sigma$ )	$f_{2000}^{143}$	28.14	$29.2 \pm 2.7$ (−0.6 $\sigma$ )
$A_{100}^{dustTE}$	0.1136	$0.115 \pm 0.038$	$z_*$	1089.771	$1089.80 \pm 0.23$ (−0.5 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.63	$32.0 \pm 1.9$ (−0.7 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1344	$0.136 \pm 0.030$	$r_*$	144.600	$144.64 \pm 0.30$ (−0.3 $\sigma$ )	$f_{2000}^{217}$	106.17	$106.9 \pm 1.8$ (−0.6 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.481	$0.480 \pm 0.085$	$100\theta_*$	1.041248	$1.04127 \pm 0.00039$ (+0.4 $\sigma$ )	$\chi_{small}^2$	396.37	$397.2 \pm 2.0$ (+0.0 $\sigma$ )
$A_{143}^{dustTE}$	0.225	$0.227 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	13.8872	$13.890 \pm 0.027$ (−0.4 $\sigma$ )	$\chi_{lowl}^2$	23.20	$23.8 \pm 1.7$ (+0.6 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.664	$0.666 \pm 0.079$	$z_{drag}$	1060.009	$1059.95 \pm 0.32$ (+0.6 $\sigma$ )	$\chi_{plik}^2$	2345.2	$2360.9 \pm 6.0$ (+272.0 $\sigma$ )
$A_{217}^{dustTE}$	2.080	$2.08 \pm 0.27$	$r_{drag}$	147.245	$147.29 \pm 0.31$ (−0.4 $\sigma$ )	$\chi_{6DF}^2$	0.0225	$0.056 \pm 0.072$ (−0.1 $\sigma$ )
$c_{100}$	0.99974	$0.99965 \pm 0.00061$ (+0.0 $\sigma$ )	$k_D$	0.140752	$0.14068 \pm 0.00038$ (+0.5 $\sigma$ )	$\chi_{MGS}^2$	1.28	$1.36 \pm 0.52$ (+0.1 $\sigma$ )
$c_{217}$	0.99815	$0.99820 \pm 0.00062$ (−0.2 $\sigma$ )	$100\theta_D$	0.160724	$0.16077 \pm 0.00021$ (−0.4 $\sigma$ )	$\chi_{DR12BAO}^2$	4.25	$4.8 \pm 1.6$ (−0.1 $\sigma$ )
$H_0$	67.75	$67.75 \pm 0.51$ (+0.3 $\sigma$ )	$z_{eq}$	3383.8	$3382 \pm 27$ (+0.1 $\sigma$ )	$\chi_{prior}^2$	1.60	$11.7 \pm 4.4$ (+1.2 $\sigma$ )
$\Omega_\Lambda$	0.6901	$0.6902 \pm 0.0070$ (+0.1 $\sigma$ )	$k_{eq}$	0.010328	$0.010322 \pm 0.000083$ (+0.1 $\sigma$ )	$\chi_{BAO}^2$	5.55	$6.2 \pm 1.3$ (−0.1 $\sigma$ )
$\Omega_m$	0.3099	$0.3098 \pm 0.0070$ (−0.1 $\sigma$ )	$100\theta_{eq}$	0.8169	$0.8172 \pm 0.0051$ (−0.0 $\sigma$ )	$\chi_{CMB}^2$	2764.7	$2781.9 \pm 5.9$ (+278.5 $\sigma$ )
$\Omega_m h^2$	0.14224	$0.1422 \pm 0.0011$ (+0.1 $\sigma$ )	$100\theta_{s,eq}$	0.45122	$0.4514 \pm 0.0026$ (−0.1 $\sigma$ )			
$\Omega_m h^3$	0.096365	$0.09631 \pm 0.00030$ (+0.7 $\sigma$ )	$H(0.15)$	73.015	$73.02 \pm 0.44$ (+0.3 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2771.88$ ;  $\Delta\chi_{eff}^2 = 1586.19$ ;  $\bar{\chi}_{eff}^2 = 2799.77$ ;  $\Delta\bar{\chi}_{eff}^2 = 1592.53$ ;  $R - 1 = 0.02417$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.02 ( $\Delta$  0.00) MGS: 1.28 ( $\Delta$  0.00) DR12BAO: 4.25 ( $\Delta$  0.04) CMB - small\_100x143.offlike5\_EE\_Aplanck\_B: 396.37 ( $\Delta$  0.31) commander\_dx12\_v3\_2\_29: 23.20 ( $\Delta$  0.94) plik\_rd12\_HM\_v22b\_TTTEEE: 2345.16



### 5.11 base\_alpha1\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022410	$0.02238 \pm 0.00015$ (+0.7 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.096407	$0.09633 \pm 0.00030$ (+0.7 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.44914	$0.4491 \pm 0.0034$ (+0.3 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.12008	$0.1201 \pm 0.0015$ (−0.3 $\sigma$ )	$\sigma_8$	0.8115	$0.8113 \pm 0.0059$ (+0.2 $\sigma$ )	$H(0.15)$	72.68	$72.64 \pm 0.57$ (+0.6 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.040904	$1.04087 \pm 0.00043$ (+0.6 $\sigma$ )	$S_8$	0.8322	$0.833 \pm 0.015$ (−0.3 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	643.4	$643.9 \pm 5.7$ (−0.6 $\sigma$ )
$\tau$	0.0543	$0.0544 \pm 0.0075$ (+0.1 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4558	$0.4561 \pm 0.0081$ (−0.3 $\sigma$ )	$H(0.38)$	82.875	$82.84 \pm 0.41$ (+0.6 $\sigma$ )
$\alpha_{-1}$	$-0.3 \cdot 10^{-5}$	$-0.00006 \pm 0.00051$ (+0.8 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6082	$0.6083 \pm 0.0070$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1533.4	$1534 \pm 11$ (−0.6 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0446	$3.045 \pm 0.014$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9888	$0.9889 \pm 0.0095$ (−0.1 $\sigma$ )	$H(0.51)$	89.639	$89.60 \pm 0.32$ (+0.7 $\sigma$ )
$n_{\mathrm{s}}$	0.9657	$0.9645 \pm 0.0061$ (+0.8 $\sigma$ )	$r_{\mathrm{drag}}h$	99.03	$99.0 \pm 1.2$ (+0.5 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1985.8	$1987 \pm 13$ (−0.6 $\sigma$ )
$y_{\mathrm{cal}}$	1.00022	$1.0006 \pm 0.0024$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4441	$2.447 \pm 0.024$ (−0.2 $\sigma$ )	$H(0.61)$	95.295	$95.26 \pm 0.25$ (+0.8 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	46.1	$47 \pm 7$ (−0.2 $\sigma$ )	$z_{\mathrm{re}}$	7.68	$7.67 \pm 0.75$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2310.2	$2312 \pm 14$ (−0.6 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.60	—	$10^9 A_{\mathrm{s}}$	2.1002	$2.101 \pm 0.030$ (−0.0 $\sigma$ )	$H(2.33)$	236.65	$236.64 \pm 0.92$ (−0.2 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	7.11	$5.5_{-1.9}^{+2.2}$ (+0.2 $\sigma$ )	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8840	$1.884 \pm 0.012$ (−0.3 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5762.3	$5764 \pm 11$ (−0.8 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	248.0	$259 \pm 28$ (−0.2 $\sigma$ )	$D_{40}$	1228.1	$1230 \pm 14$ (+0.7 $\sigma$ )	$f\sigma_8(0.15)$	0.4601	$0.4603 \pm 0.0074$ (−0.3 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	49.7	$46_{-7}^{+8}$ (−0.4 $\sigma$ )	$D_{220}$	5732.0	$5734 \pm 38$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7495	$0.7492 \pm 0.0053$ (+0.3 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	51.7	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{810}$	2540.6	$2540 \pm 13$ (+0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.4776	$0.4776 \pm 0.0057$ (−0.2 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	121.3	$115 \pm 10$ (+0.1 $\sigma$ )	$D_{1420}$	818.21	$817.2 \pm 4.8$ (+0.6 $\sigma$ )	$\sigma_8(0.38)$	0.66392	$0.6636 \pm 0.0048$ (+0.4 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.00	$< 4.28$ (−0.3 $\sigma$ )	$D_{2000}$	231.28	$230.8 \pm 1.6$ (+0.8 $\sigma$ )	$f\sigma_8(0.51)$	0.47568	$0.4757 \pm 0.0049$ (−0.1 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.79	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.9657	$0.9645 \pm 0.0061$ (+0.8 $\sigma$ )	$\sigma_8(0.51)$	0.62114	$0.6208 \pm 0.0045$ (+0.5 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	11.00	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}$	0.245411	$0.245396_{-0.000054}^{+0.000061}$ (+0.7 $\sigma$ )	$f\sigma_8(0.61)$	0.47037	$0.4703 \pm 0.0043$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	20.14	$18.7 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246738	$0.246722_{-0.000054}^{+0.000061}$ (+0.7 $\sigma$ )	$\sigma_8(0.61)$	0.59092	$0.5906 \pm 0.0044$ (+0.5 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	95.5	$93.8 \pm 7.3$ (+0.1 $\sigma$ )	$10^5 \mathrm{D}/\mathrm{H}$	2.5781	$2.585 \pm 0.027$ (−0.7 $\sigma$ )	$f\sigma_8(2.33)$	0.29778	$0.2976 \pm 0.0024$ (+0.5 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1139	$0.116 \pm 0.038$	Age/Gyr	13.7942	$13.799 \pm 0.025$ (−0.8 $\sigma$ )	$\sigma_8(2.33)$	0.30683	$0.3066 \pm 0.0026$ (+0.6 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1354	$0.136 \pm 0.030$	$z_*$	1089.877	$1089.92 \pm 0.26$ (−0.7 $\sigma$ )	$f_{2000}^{143}$	28.56	$29.6 \pm 2.8$ (−0.6 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.482	$0.481 \pm 0.086$	$r_*$	144.380	$144.40 \pm 0.36$ (+0.1 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.86	$32.2_{-2.0}^{+1.7}$ (−0.7 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.226	$0.226 \pm 0.055$	$100\theta_*$	1.041087	$1.04105 \pm 0.00043$ (+0.6 $\sigma$ )	$f_{2000}^{217}$	106.36	$107.0 \pm 1.8$ (−0.6 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.667	$0.666 \pm 0.079$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8682	$13.870 \pm 0.032$ (−0.0 $\sigma$ )	$\chi_{\mathrm{lensing}}^2$	8.835	$9.35 \pm 0.81$ (−0.2 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.081	$2.08 \pm 0.27$	$z_{\mathrm{drag}}$	1060.047	$1059.96 \pm 0.32$ (+0.6 $\sigma$ )	$\chi_{\mathrm{simall}}^2$	396.04	$397.0 \pm 1.8$ (+0.1 $\sigma$ )
$c_{100}$	0.99972	$0.99966 \pm 0.00061$ (+0.1 $\sigma$ )	$r_{\mathrm{drag}}$	147.025	$147.06 \pm 0.37$ (−0.1 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	23.15	$23.4 \pm 1.7$ (+0.6 $\sigma$ )
$c_{217}$	0.99817	$0.99820 \pm 0.00063$ (−0.1 $\sigma$ )	$k_{\mathrm{D}}$	0.140966	$0.14091 \pm 0.00041$ (+0.3 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2345.1	$2361.2 \pm 6.0$ (+280.1 $\sigma$ )
$H_0$	67.35	$67.30 \pm 0.67$ (+0.6 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160699	$0.16074 \pm 0.00020$ (−0.5 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.58	$11.6 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_{\Lambda}$	0.6845	$0.6838 \pm 0.0093$ (+0.5 $\sigma$ )	$z_{\mathrm{eq}}$	3405.1	$3405 \pm 35$ (−0.2 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	2773.1	$2791.0 \pm 6.1$ (+277.8 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3155	$0.3162 \pm 0.0093$ (−0.5 $\sigma$ )	$k_{\mathrm{eq}}$	0.010393	$0.01039 \pm 0.00011$ (−0.2 $\sigma$ )			
$\Omega_{\mathrm{m}}h^2$	0.14314	$0.1431 \pm 0.0014$ (−0.2 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8129	$0.8128 \pm 0.0065$ (+0.3 $\sigma$ )			

Best-fit  $\chi_{\mathrm{eff}}^2 = 2774.65$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1586.48$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2802.58$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1593.04$ ;  $R - 1 = 0.01462$   
 $\chi_{\mathrm{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8: 8.84 ( $\Delta$  -0.10) simall\_100x143\_offlike5\_EE\_Aplanck.B: 396.04 ( $\Delta$  0.15) commander\_dx12.v3.2.29: 23.15 ( $\Delta$  0.80) plik\_rd12\_HM\_v22b\_TTTEEE: 2345.06



## 5.12 base\_alpha1\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022420	$0.02241 \pm 0.00014$ (+0.5 $\sigma$ )	$\sigma_8$	0.8109	$0.8105 \pm 0.0059$ (+0.4 $\sigma$ )	$D_M(0.15)$	640.55	$640.2 \pm 4.0$ (−0.4 $\sigma$ )
$\Omega_c h^2$	0.11927	$0.1192 \pm 0.0011$ (−0.0 $\sigma$ )	$S_8$	0.8252	$0.824 \pm 0.011$ (+0.0 $\sigma$ )	$H(0.38)$	83.067	$83.09^{+0.27}_{-0.31}$ (+0.5 $\sigma$ )
$100\theta_{MC}$	1.041024	$1.04107 \pm 0.00038$ (+0.5 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4520	$0.4513 \pm 0.0062$ (+0.0 $\sigma$ )	$D_M(0.38)$	1527.9	$1527.2^{+8.4}_{-7.6}$ (−0.4 $\sigma$ )
$\tau$	0.0560	$0.0563^{+0.0066}_{-0.0075}$ (−0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6054	$0.6048 \pm 0.0058$ (+0.2 $\sigma$ )	$H(0.51)$	89.781	$89.80^{+0.22}_{-0.25}$ (+0.5 $\sigma$ )
$\alpha_{-1}$	$1.3 \cdot 10^{-5}$	$0.00013^{+0.00035}_{-0.00039}$ (+0.6 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9857	$0.9848 \pm 0.0084$ (+0.2 $\sigma$ )	$D_M(0.51)$	1979.3	$1978.6^{+9.9}_{-8.9}$ (−0.4 $\sigma$ )
$\ln(10^{10} A_s)$	3.0467	$3.046 \pm 0.014$ (−0.1 $\sigma$ )	$r_{\text{drag}} h$	99.66	$99.74 \pm 0.84$ (+0.2 $\sigma$ )	$H(0.61)$	95.397	$95.41^{+0.18}_{-0.20}$ (+0.6 $\sigma$ )
$n_s$	0.9684	$0.9678 \pm 0.0050$ (+0.7 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4355	$2.436 \pm 0.021$ (+0.0 $\sigma$ )	$D_M(0.61)$	2303.3	$2303^{+11}_{-9.6}$ (−0.4 $\sigma$ )
$y_{\text{cal}}$	1.00086	$1.0008 \pm 0.0024$ (+0.0 $\sigma$ )	$z_{\text{re}}$	7.83	$7.84 \pm 0.72$ (−0.1 $\sigma$ )	$H(2.33)$	236.14	$236.07 \pm 0.67$ (+0.2 $\sigma$ )
$A_{217}^{\text{CIB}}$	46.4	$47 \pm 7$ (−0.1 $\sigma$ )	$10^9 A_s$	2.1045	$2.104^{+0.028}_{-0.031}$ (−0.1 $\sigma$ )	$D_M(2.33)$	5758.5	$5758.2 \pm 9.1$ (−0.7 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.54	—	$10^9 A_s e^{-2\tau}$	1.8815	$1.880 \pm 0.011$ (−0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4567	$0.4560 \pm 0.0058$ (+0.1 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.12	$5.5^{+2.2}_{-1.9}$ (+0.3 $\sigma$ )	$D_{40}$	1228.3	$1231 \pm 14$ (+0.7 $\sigma$ )	$\sigma_8(0.15)$	0.7494	$0.7491 \pm 0.0054$ (+0.4 $\sigma$ )
$A_{100}^{\text{PS}}$	249.0	$258 \pm 28$ (−0.2 $\sigma$ )	$D_{220}$	5736.3	$5737 \pm 38$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.47520	$0.4747 \pm 0.0048$ (+0.1 $\sigma$ )
$A_{143}^{\text{PS}}$	48.6	$45 \pm 8$ (−0.4 $\sigma$ )	$D_{810}$	2542.0	$2539 \pm 13$ (+0.1 $\sigma$ )	$\sigma_8(0.38)$	0.66441	$0.6641 \pm 0.0048$ (+0.4 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	49.9	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{1420}$	819.36	$818.1 \pm 4.6$ (+0.5 $\sigma$ )	$f\sigma_8(0.51)$	0.47389	$0.4734 \pm 0.0043$ (+0.2 $\sigma$ )
$A_{217}^{\text{PS}}$	120.7	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	231.68	$231.2 \pm 1.5$ (+0.7 $\sigma$ )	$\sigma_8(0.51)$	0.62181	$0.6216 \pm 0.0045$ (+0.4 $\sigma$ )
$A^{\text{kSZ}}$	0.00	$< 4.08$ (−0.2 $\sigma$ )	$n_{s,0.002}$	0.9684	$0.9678 \pm 0.0050$ (+0.7 $\sigma$ )	$f\sigma_8(0.61)$	0.46898	$0.4686 \pm 0.0039$ (+0.2 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.92	$8.9 \pm 1.8$ (+0.0 $\sigma$ )	$Y_P$	0.245415	$0.245408^{+0.000058}_{-0.000052}$ (+0.5 $\sigma$ )	$\sigma_8(0.61)$	0.59169	$0.5915 \pm 0.0043$ (+0.5 $\sigma$ )
$A_{143}^{\text{dustTT}}$	11.07	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{\text{BBN}}$	0.246742	$0.246734^{+0.000058}_{-0.000052}$ (+0.5 $\sigma$ )	$f\sigma_8(2.33)$	0.29837	$0.2983 \pm 0.0022$ (+0.5 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	19.99	$18.7 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5762	$2.579 \pm 0.026$ (−0.5 $\sigma$ )	$\sigma_8(2.33)$	0.30764	$0.3076 \pm 0.0024$ (+0.5 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.4	$93.9 \pm 7.4$ (+0.0 $\sigma$ )	Age/Gyr	13.7862	$13.786 \pm 0.020$ (−0.7 $\sigma$ )	$f_{2000}^{143}$	28.49	$29.2 \pm 2.7$ (−0.6 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1142	$0.115 \pm 0.038$	$z_*$	1089.792	$1089.80 \pm 0.22$ (−0.5 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.78	$32.0 \pm 1.9$ (−0.7 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1341	$0.136 \pm 0.030$	$r_*$	144.582	$144.62 \pm 0.27$ (−0.3 $\sigma$ )	$f_{2000}^{217}$	106.43	$106.9 \pm 1.8$ (−0.6 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.480 \pm 0.085$	$100\theta_*$	1.041204	$1.04125 \pm 0.00038$ (+0.4 $\sigma$ )	$\chi_{\text{lensing}}^2$	8.742	$9.14 \pm 0.62$ (−0.1 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.225	$0.226 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	13.8861	$13.889 \pm 0.024$ (−0.4 $\sigma$ )	$\chi_{\text{small}}^2$	396.38	$397.3 \pm 2.0$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.667	$0.665 \pm 0.078$	$z_{\text{drag}}$	1060.009	$1059.96 \pm 0.32$ (+0.5 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.24	$23.8 \pm 1.7$ (+0.6 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.086	$2.08 \pm 0.27$	$r_{\text{drag}}$	147.229	$147.27 \pm 0.29$ (−0.3 $\sigma$ )	$\chi_{\text{plik}}^2$	2344.9	$2360.6 \pm 5.9$ (+279.8 $\sigma$ )
$c_{100}$	0.99974	$0.99965 \pm 0.00061$ (+0.0 $\sigma$ )	$k_D$	0.140759	$0.14071 \pm 0.00036$ (+0.4 $\sigma$ )	$\chi_{6\text{DF}}^2$	0.0290	$0.053 \pm 0.065$ (−0.2 $\sigma$ )
$c_{217}$	0.99817	$0.99820 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_D$	0.160729	$0.16076 \pm 0.00021$ (−0.4 $\sigma$ )	$\chi_{\text{MGS}}^2$	1.217	$1.33 \pm 0.47$ (+0.2 $\sigma$ )
$H_0$	67.687	$67.73^{+0.44}_{-0.50}$ (+0.4 $\sigma$ )	$z_{\text{eq}}$	3385.9	$3383 \pm 25$ (+0.1 $\sigma$ )	$\chi_{\text{DR12BAO}}^2$	4.41	$4.7 \pm 1.5$ (−0.2 $\sigma$ )
$\Omega_\Lambda$	0.6893	$0.6899 \pm 0.0064$ (+0.2 $\sigma$ )	$k_{\text{eq}}$	0.010334	$0.010326 \pm 0.000075$ (+0.1 $\sigma$ )	$\chi_{\text{prior}}^2$	1.69	$11.6 \pm 4.4$ (+1.2 $\sigma$ )
$\Omega_m$	0.3107	$0.3101 \pm 0.0064$ (−0.2 $\sigma$ )	$100\theta_{\text{eq}}$	0.81644	$0.8169 \pm 0.0046$ (+0.0 $\sigma$ )	$\chi_{\text{CMB}}^2$	2773.3	$2790.9 \pm 6.0$ (+280.3 $\sigma$ )
$\Omega_m h^2$	0.14233	$0.1422 \pm 0.0010$ (+0.1 $\sigma$ )	$100\theta_{s,\text{eq}}$	0.45099	$0.4513 \pm 0.0024$ (−0.0 $\sigma$ )	$\chi_{\text{BAO}}^2$	5.66	$6.1 \pm 1.2$ (−0.2 $\sigma$ )
$\Omega_m h^3$	0.096341	$0.09632 \pm 0.00030$ (+0.7 $\sigma$ )	$H(0.15)$	72.963	$73.00^{+0.38}_{-0.43}$ (+0.4 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 2780.63$ ;  $\Delta\chi_{\text{eff}}^2 = 1586.07$ ;  $\bar{\chi}_{\text{eff}}^2 = 2808.59$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1592.50$ ;  $R - 1 = 0.02748$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.03 ( $\Delta$  0.00) MGS: 1.22 ( $\Delta$  0.00) DR12BAO: 4.41 ( $\Delta$  0.02) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb\_consext8: 8.74 ( $\Delta$  -0.04) small\_100x143\_offlike5\_EE\_Aplanck: 396.38 ( $\Delta$  -0.05) commander\_dx12\_v3.2\_29: 23.24 ( $\Delta$  0.93) plik\_rd12\_HM\_v22b.TTTEEE: 2344.91



### 5.13 base\_alpha1\_plikHM\_TTTEEE\_lowl\_lowE\_post\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022493	$0.02247^{+0.00015}_{-0.00014}$	$\Omega_m h^3$	0.096396	$0.09633 \pm 0.00029$	$100\theta_{s,eq}$	0.45328	$0.4543^{+0.0038}_{-0.0034}$
$\Omega_c h^2$	0.11824	$0.1178^{+0.0015}_{-0.0017}$	$\sigma_8$	0.8078	$0.8068 \pm 0.0076$	$H(0.15)$	73.39	$73.53^{+0.64}_{-0.57}$
$100\theta_{MC}$	1.041238	$1.04134^{+0.00046}_{-0.00038}$	$S_8$	0.8133	$0.809^{+0.016}_{-0.018}$	$D_M(0.15)$	636.4	$635.0^{+5.5}_{-6.3}$
$\tau$	0.0564	$0.0568^{+0.0073}_{-0.0084}$	$\sigma_8 \Omega_m^{0.5}$	0.4455	$0.4432^{+0.0088}_{-0.010}$	$H(0.38)$	83.377	$83.48 \pm 0.44$
$\alpha_{-1}$	0.000061	$0.00041^{+0.00035}_{-0.00063}$	$\sigma_8 \Omega_m^{0.25}$	0.5999	$0.5980 \pm 0.0089$	$D_M(0.38)$	1519.5	$1517^{+11}_{-13}$
$\ln(10^{10} A_s)$	3.0446	$3.043 \pm 0.017$	$\sigma_8/h^{0.5}$	0.9783	$0.976 \pm 0.012$	$H(0.51)$	90.025	$90.10 \pm 0.34$
$n_s$	0.9714	$0.9723^{+0.0067}_{-0.0055}$	$r_{drag} h$	100.51	$100.9^{+1.3}_{-1.2}$	$D_M(0.51)$	1969.5	$1966^{+13}_{-15}$
$y_{cal}$	1.00075	$1.0007 \pm 0.0024$	$\langle d^2 \rangle^{1/2}$	2.4179	$2.414 \pm 0.030$	$H(0.61)$	95.591	$95.64 \pm 0.27$
$A_{217}^{CIB}$	46.3	$47 \pm 6$	$z_{re}$	7.83	$7.86 \pm 0.80$	$D_M(0.61)$	2292.7	$2289^{+14}_{-16}$
$\xi^{tSZ \times CIB}$	0.59	—	$10^9 A_s$	2.1002	$2.098 \pm 0.035$	$H(2.33)$	235.56	$235.27^{+0.90}_{-1.0}$
$A_{143}^{tSZ}$	7.14	$5.7^{+2.3}_{-2.0}$	$10^9 A_s e^{-2\tau}$	1.8763	$1.872 \pm 0.013$	$D_M(2.33)$	5750.1	$5748 \pm 12$
$A_{100}^{PS}$	248.0	$255^{+26}_{-30}$	$D_{40}$	1225.4	$1229 \pm 14$	$f\sigma_8(0.15)$	0.4506	$0.4485^{+0.0083}_{-0.0092}$
$A_{143}^{PS}$	48.5	$44 \pm 8$	$D_{220}$	5739.6	$5738 \pm 38$	$\sigma_8(0.15)$	0.7472	$0.7465 \pm 0.0067$
$A_{143 \times 217}^{PS}$	50.7	$41 \pm 9$	$D_{810}$	2540.8	$2537 \pm 13$	$f\sigma_8(0.38)$	0.4706	$0.4689 \pm 0.0073$
$A_{217}^{PS}$	120.6	$114.7 \pm 9.8$	$D_{1420}$	820.04	$818.9 \pm 4.7$	$\sigma_8(0.38)$	0.6631	$0.6628 \pm 0.0056$
$A^{kSZ}$	0.00	$< 4.03$	$D_{2000}$	232.00	$231.6 \pm 1.5$	$f\sigma_8(0.51)$	0.4700	$0.4687 \pm 0.0064$
$A_{100}^{dustTT}$	8.86	$8.9 \pm 1.9$	$n_{s,0.002}$	0.9714	$0.9723^{+0.0067}_{-0.0055}$	$\sigma_8(0.51)$	0.6209	$0.6207 \pm 0.0052$
$A_{143}^{dustTT}$	11.05	$11.1 \pm 1.8$	$Y_P$	0.245442	$0.245433^{+0.000059}_{-0.000048}$	$f\sigma_8(0.61)$	0.4657	$0.4645 \pm 0.0058$
$A_{143 \times 217}^{dustTT}$	20.00	$18.8 \pm 3.4$	$Y_P^{BBN}$	0.246769	$0.246760^{+0.000059}_{-0.000048}$	$\sigma_8(0.61)$	0.59101	$0.5909 \pm 0.0049$
$A_{217}^{dustTT}$	95.3	$93.9 \pm 7.4$	$10^5 D/H$	2.5631	$2.567^{+0.024}_{-0.028}$	$f\sigma_8(2.33)$	0.29829	$0.2983 \pm 0.0025$
$A_{100}^{dustTE}$	0.1129	$0.115 \pm 0.037$	Age/Gyr	13.7682	$13.765 \pm 0.026$	$\sigma_8(2.33)$	0.30785	$0.3080 \pm 0.0027$
$A_{100 \times 143}^{dustTE}$	0.1330	$0.134 \pm 0.029$	$z_*$	1089.612	$1089.60^{+0.25}_{-0.28}$	$f_{2000}^{143}$	28.12	$28.7 \pm 2.8$
$A_{100 \times 217}^{dustTE}$	0.480	$0.481 \pm 0.082$	$r_*$	144.792	$144.92^{+0.41}_{-0.36}$	$f_{2000}^{143 \times 217}$	31.51	$31.6 \pm 1.9$
$A_{143}^{dustTE}$	0.222	$0.223 \pm 0.055$	$100\theta_*$	1.041410	$1.04151^{+0.00046}_{-0.00038}$	$f_{2000}^{217}$	106.13	$106.6 \pm 1.8$
$A_{143 \times 217}^{dustTE}$	0.663	$0.666 \pm 0.077$	$D_M(z_*)/\text{Gpc}$	13.9035	$13.914^{+0.036}_{-0.032}$	$\chi_{small}^2$	396.35	$397.5 \pm 2.5$
$A_{217}^{dustTE}$	2.068	$2.08 \pm 0.26$	$z_{drag}$	1060.085	$1060.02 \pm 0.31$	$\chi_{lowl}^2$	23.14	$23.9 \pm 1.6$
$c_{100}$	0.99972	$0.99964 \pm 0.00062$	$r_{drag}$	147.421	$147.55^{+0.42}_{-0.36}$	$\chi_{plik}^2$	2346.3	$2362.6 \pm 6.3$
$c_{217}$	0.99817	$0.99817 \pm 0.00063$	$k_D$	0.140613	$0.14046^{+0.00040}_{-0.00047}$	$\chi_{H073p45}^2$	10.07	$9.6 \pm 2.6$
$H_0$	68.18	$68.35^{+0.75}_{-0.67}$	$100\theta_D$	0.160695	$0.16075 \pm 0.00019$	$\chi_{prior}^2$	1.69	$11.7 \pm 4.4$
$\Omega_\Lambda$	0.6959	$0.698^{+0.010}_{-0.0085}$	$z_{eq}$	3363.2	$3353^{+34}_{-39}$	$\chi_{CMB}^2$	2765.8	$2784.0 \pm 6.5$
$\Omega_m$	0.3041	$0.3018^{+0.0085}_{-0.010}$	$k_{eq}$	0.010265	$0.01023^{+0.00010}_{-0.00012}$			
$\Omega_m h^2$	0.14138	$0.1409^{+0.0014}_{-0.0016}$	$100\theta_{eq}$	0.8209	$0.8229^{+0.0074}_{-0.0066}$			

Best-fit  $\chi_{eff}^2 = 2777.60$ ;  $\bar{\chi}_{eff}^2 = 2805.32$ ;  $R - 1 = 0.05553$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.36 commander\_dx12\_v3.2.29: 23.14 plik\_rd12\_HM\_v22b\_TTTEEE: 2346.34 Hubble - H073p45: 10.07



### 5.14 base\_alpha1\_plikHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02236 \pm 0.00015 \quad (+0.7\sigma)$	$\Omega_{\text{m}}h^2$	$0.1435 \pm 0.0018 \quad (-0.4\sigma)$	$k_{\text{eq}}$	$0.01042 \pm 0.00013 \quad (-0.4\sigma)$
$\Omega_{\text{c}}h^2$	$0.1205 \pm 0.0018 \quad (-0.4\sigma)$	$\Omega_{\text{m}}h^3$	$0.09634 \pm 0.00030 \quad (+0.7\sigma)$	$100\theta_{\text{eq}}$	$0.8114 \pm 0.0078 \quad (+0.4\sigma)$
$100\theta_{\text{MC}}$	$1.04082 \pm 0.00046 \quad (+0.6\sigma)$	$\sigma_8$	$0.8133 \pm 0.0073 \quad (+0.0\sigma)$	$100\theta_{\text{s,eq}}$	$0.4484 \pm 0.0041 \quad (+0.4\sigma)$
$\tau$	$0.0556^{+0.0054}_{-0.0080} \quad (+0.1\sigma)$	$S_8$	$0.838 \pm 0.020 \quad (-0.4\sigma)$	$H(0.15)$	$72.52 \pm 0.68 \quad (+0.6\sigma)$
$\alpha_{-1}$	$-0.00012 \pm 0.00055 \quad (+0.8\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.459 \pm 0.011 \quad (-0.4\sigma)$	$D_{\text{M}}(0.15)$	$645.1 \pm 6.8 \quad (-0.6\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.048^{+0.013}_{-0.016} \quad (-0.1\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6108 \pm 0.0096 \quad (-0.3\sigma)$	$H(0.38)$	$82.75 \pm 0.48 \quad (+0.7\sigma)$
$n_{\text{s}}$	$0.9636^{+0.0066}_{-0.0074} \quad (+0.8\sigma)$	$\sigma_8/h^{0.5}$	$0.992 \pm 0.013 \quad (-0.3\sigma)$	$D_{\text{M}}(0.38)$	$1537 \pm 14 \quad (-0.6\sigma)$
$y_{\text{cal}}$	$1.0006 \pm 0.0025 \quad (+0.0\sigma)$	$r_{\text{drag}}h$	$98.7 \pm 1.4 \quad (+0.5\sigma)$	$H(0.51)$	$89.54 \pm 0.37 \quad (+0.7\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.455 \pm 0.033 \quad (-0.3\sigma)$	$D_{\text{M}}(0.51)$	$1990 \pm 16 \quad (-0.6\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$z_{\text{re}}$	$7.81^{+0.59}_{-0.79} \quad (+0.0\sigma)$	$H(0.61)$	$95.22 \pm 0.29 \quad (+0.8\sigma)$
$A_{143}^{\text{tSZ}}$	$5.4^{+2.2}_{-1.9} \quad (+0.2\sigma)$	$10^9 A_{\text{s}}$	$2.108^{+0.026}_{-0.035} \quad (-0.1\sigma)$	$D_{\text{M}}(0.61)$	$2315 \pm 17 \quad (-0.6\sigma)$
$A_{100}^{\text{PS}}$	$259 \pm 28 \quad (-0.2\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.886 \pm 0.014 \quad (-0.4\sigma)$	$H(2.33)$	$236.8 \pm 1.1 \quad (-0.3\sigma)$
$A_{143}^{\text{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{40}$	$1231 \pm 14 \quad (+0.6\sigma)$	$D_{\text{M}}(2.33)$	$5766 \pm 13 \quad (-0.8\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{220}$	$5733 \pm 39 \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.463 \pm 0.010 \quad (-0.4\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2540 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7509^{+0.0057}_{-0.0065} \quad (+0.1\sigma)$
$A^{\text{kSZ}}$	$< 4.23 \quad (-0.2\sigma)$	$D_{1420}$	$817.1 \pm 4.8 \quad (+0.6\sigma)$	$f\sigma_8(0.38)$	$0.4797 \pm 0.0079 \quad (-0.3\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$D_{2000}$	$230.8 \pm 1.6 \quad (+0.8\sigma)$	$\sigma_8(0.38)$	$0.6649^{+0.0045}_{-0.0054} \quad (+0.2\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$n_{\text{s},0.002}$	$0.9636^{+0.0066}_{-0.0074} \quad (+0.8\sigma)$	$f\sigma_8(0.51)$	$0.4775 \pm 0.0067 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.245390^{+0.000062}_{-0.000055} \quad (+0.7\sigma)$	$\sigma_8(0.51)$	$0.6219^{+0.0041}_{-0.0051} \quad (+0.3\sigma)$
$A_{217}^{\text{dustTT}}$	$93.7 \pm 7.3 \quad (+0.1\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246717^{+0.000062}_{-0.000055} \quad (+0.7\sigma)$	$f\sigma_8(0.61)$	$0.4719 \pm 0.0059 \quad (-0.2\sigma)$
$A_{100}^{\text{dustTE}}$	$0.115 \pm 0.038$	$10^5 \text{D/H}$	$2.587 \pm 0.028 \quad (-0.7\sigma)$	$\sigma_8(0.61)$	$0.5916^{+0.0039}_{-0.0048} \quad (+0.4\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	Age/Gyr	$13.803 \pm 0.028 \quad (-0.8\sigma)$	$f\sigma_8(2.33)$	$0.2980^{+0.0020}_{-0.0024} \quad (+0.5\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.480 \pm 0.085$	$z_*$	$1089.97 \pm 0.29 \quad (-0.7\sigma)$	$\sigma_8(2.33)$	$0.3070^{+0.0022}_{-0.0026} \quad (+0.6\sigma)$
$A_{143}^{\text{dustTE}}$	$0.227 \pm 0.054$	$r_*$	$144.32 \pm 0.43 \quad (+0.2\sigma)$	$f_{2000}^{143}$	$29.5 \pm 2.8 \quad (-0.6\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.666 \pm 0.079$	$100\theta_*$	$1.04101 \pm 0.00046 \quad (+0.6\sigma)$	$f_{2000}^{143 \times 217}$	$32.2 \pm 1.9 \quad (-0.7\sigma)$
$A_{217}^{\text{dustTE}}$	$2.09 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.864 \pm 0.038 \quad (+0.1\sigma)$	$f_{2000}^{217}$	$107.0 \pm 1.8 \quad (-0.6\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$z_{\text{drag}}$	$1059.95 \pm 0.32 \quad (+0.6\sigma)$	$\chi_{\text{simall}}^2$	$397.1 \pm 1.9 \quad (+0.1\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$r_{\text{drag}}$	$146.98 \pm 0.44 \quad (+0.1\sigma)$	$\chi_{\text{lowl}}^2$	$23.4 \pm 1.6 \quad (+0.6\sigma)$
$H_0$	$67.16 \pm 0.80 \quad (+0.6\sigma)$	$k_{\text{D}}$	$0.14098^{+0.00050}_{-0.00045} \quad (+0.1\sigma)$	$\chi_{\text{plik}}^2$	$2361.4 \pm 6.1 \quad (+273.2\sigma)$
$\Omega_{\Lambda}$	$0.682 \pm 0.011 \quad (+0.5\sigma)$	$100\theta_{\text{D}}$	$0.16074 \pm 0.00020 \quad (-0.5\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.5 \quad (+1.1\sigma)$
$\Omega_{\text{m}}$	$0.318 \pm 0.011 \quad (-0.5\sigma)$	$z_{\text{eq}}$	$3413 \pm 42 \quad (-0.4\sigma)$	$\chi_{\text{CMB}}^2$	$2781.9 \pm 6.0 \quad (+280.0\sigma)$

$\bar{\chi}_{\text{eff}}^2 = 2793.42$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1593.12$ ;  $R - 1 = 0.01296$



### 5.15 base\_alpha1\_plikHM\_TTTEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02240 \pm 0.00014 \quad (+0.5\sigma)$	$\sigma_8$	$0.8103^{+0.0063}_{-0.0071} \quad (+0.4\sigma)$	$D_{\mathrm{M}}(0.15)$	$640.0 \pm 4.4 \quad (-0.3\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1191 \pm 0.0012 \quad (+0.0\sigma)$	$S_8$	$0.823 \pm 0.014 \quad (+0.1\sigma)$	$H(0.38)$	$83.11^{+0.30}_{-0.34} \quad (+0.4\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04109 \pm 0.00039 \quad (+0.5\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4509 \pm 0.0074 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1526.8 \pm 8.7 \quad (-0.3\sigma)$
$\tau$	$0.0563^{+0.0056}_{-0.0080} \quad (-0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6045 \pm 0.0071 \quad (+0.2\sigma)$	$H(0.51)$	$89.81^{+0.24}_{-0.27} \quad (+0.5\sigma)$
$\alpha_{-1}$	$0.00015^{+0.00035}_{-0.00040} \quad (+0.6\sigma)$	$\sigma_8/h^{0.5}$	$0.984 \pm 0.010 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1978 \pm 10 \quad (-0.3\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046^{+0.013}_{-0.016} \quad (-0.0\sigma)$	$r_{\mathrm{drag}}h$	$99.80 \pm 0.92 \quad (+0.1\sigma)$	$H(0.61)$	$95.42^{+0.19}_{-0.22} \quad (+0.6\sigma)$
$n_{\mathrm{s}}$	$0.9682 \pm 0.0052 \quad (+0.7\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.434 \pm 0.025 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2302 \pm 11 \quad (-0.4\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0024 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.85^{+0.60}_{-0.80} \quad (-0.0\sigma)$	$H(2.33)$	$236.02 \pm 0.73 \quad (+0.2\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.103^{+0.026}_{-0.035} \quad (-0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	$5757.9 \pm 9.4 \quad (-0.6\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.879 \pm 0.012 \quad (-0.1\sigma)$	$f\sigma_8(0.15)$	$0.4557 \pm 0.0070 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.3}_{-1.9} \quad (+0.3\sigma)$	$D_{40}$	$1230 \pm 14 \quad (+0.7\sigma)$	$\sigma_8(0.15)$	$0.7489^{+0.0055}_{-0.0063} \quad (+0.4\sigma)$
$A_{100}^{\mathrm{PS}}$	$258 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5734 \pm 38 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4744 \pm 0.0058 \quad (+0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.6641^{+0.0047}_{-0.0055} \quad (+0.5\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$818.0 \pm 4.6 \quad (+0.5\sigma)$	$f\sigma_8(0.51)$	$0.4732 \pm 0.0051 \quad (+0.3\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$231.2 \pm 1.5 \quad (+0.7\sigma)$	$\sigma_8(0.51)$	$0.6215^{+0.0043}_{-0.0051} \quad (+0.5\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.14 \quad (-0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.9682 \pm 0.0052 \quad (+0.7\sigma)$	$f\sigma_8(0.61)$	$0.4684 \pm 0.0047 \quad (+0.3\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$9.0 \pm 1.9 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.245407^{+0.000058}_{-0.000052} \quad (+0.5\sigma)$	$\sigma_8(0.61)$	$0.5914^{+0.0041}_{-0.0048} \quad (+0.5\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246733^{+0.000058}_{-0.000052} \quad (+0.5\sigma)$	$f\sigma_8(2.33)$	$0.2983^{+0.0020}_{-0.0024} \quad (+0.5\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.7 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.580 \pm 0.026 \quad (-0.5\sigma)$	$\sigma_8(2.33)$	$0.3076^{+0.0022}_{-0.0026} \quad (+0.5\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.9 \pm 7.3 \quad (+0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.785 \pm 0.021 \quad (-0.6\sigma)$	$f_{2000}^{143}$	$29.2 \pm 2.7 \quad (-0.6\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.115 \pm 0.038$	$z_*$	$1089.80 \pm 0.23 \quad (-0.5\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 1.9 \quad (-0.7\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.136 \pm 0.030$	$r_*$	$144.64 \pm 0.30 \quad (-0.3\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.8 \quad (-0.6\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.479 \pm 0.085$	$100\theta_*$	$1.04127 \pm 0.00039 \quad (+0.4\sigma)$	$\chi_{\mathrm{small}}^2$	$397.2 \pm 2.1 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.226 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.890 \pm 0.027 \quad (-0.4\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.8 \pm 1.7 \quad (+0.6\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.666 \pm 0.079$	$z_{\mathrm{drag}}$	$1059.95 \pm 0.32 \quad (+0.5\sigma)$	$\chi_{\mathrm{plik}}^2$	$2360.8 \pm 6.0 \quad (+274.2\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.27$	$r_{\mathrm{drag}}$	$147.29 \pm 0.31 \quad (-0.4\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.056 \pm 0.071 \quad (-0.1\sigma)$
$c_{100}$	$0.99965 \pm 0.00061 \quad (+0.0\sigma)$	$k_{\mathrm{D}}$	$0.14068 \pm 0.00038 \quad (+0.5\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.36 \pm 0.52 \quad (+0.1\sigma)$
$c_{217}$	$0.99820 \pm 0.00062 \quad (-0.2\sigma)$	$100\theta_{\mathrm{D}}$	$0.16077 \pm 0.00021 \quad (-0.4\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.6 \quad (-0.1\sigma)$
$H_0$	$67.75 \pm 0.51 \quad (+0.3\sigma)$	$z_{\mathrm{eq}}$	$3382 \pm 27 \quad (+0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.7 \pm 4.4 \quad (+1.2\sigma)$
$\Omega_{\Lambda}$	$0.6903 \pm 0.0070 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010321 \pm 0.000083 \quad (+0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.3 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3097 \pm 0.0070 \quad (-0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8172 \pm 0.0051 \quad (-0.0\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2781.8 \pm 5.9 \quad (+283.4\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1422 \pm 0.0011 \quad (+0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4514 \pm 0.0026 \quad (-0.1\sigma)$		
$\Omega_{\mathrm{m}}h^3$	$0.09631 \pm 0.00030 \quad (+0.7\sigma)$	$H(0.15)$	$73.02 \pm 0.44 \quad (+0.3\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2799.63; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.58; R - 1 = 0.02644$$



## 5.16 base\_alpha1\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02238 \pm 0.00015 \quad (+0.6\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09633 \pm 0.00030 \quad (+0.7\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4493 \pm 0.0033 \quad (+0.3\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1200 \pm 0.0015 \quad (-0.3\sigma)$	$\sigma_8$	$0.8118 \pm 0.0056 \quad (+0.2\sigma)$	$H(0.15)$	$72.67 \pm 0.56 \quad (+0.6\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04088 \pm 0.00043 \quad (+0.6\sigma)$	$S_8$	$0.833 \pm 0.015 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.15)$	$643.6 \pm 5.6 \quad (-0.6\sigma)$
$\tau$	$0.0553^{+0.0052}_{-0.0077} \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4561 \pm 0.0081 \quad (-0.3\sigma)$	$H(0.38)$	$82.86 \pm 0.40 \quad (+0.6\sigma)$
$\alpha_{-1}$	$-0.00006 \pm 0.00051 \quad (+0.8\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6084 \pm 0.0069 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1534 \pm 11 \quad (-0.6\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046^{+0.011}_{-0.014} \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9893 \pm 0.0094 \quad (-0.1\sigma)$	$H(0.51)$	$89.62 \pm 0.31 \quad (+0.7\sigma)$
$n_{\mathrm{s}}$	$0.9647 \pm 0.0060 \quad (+0.8\sigma)$	$r_{\mathrm{drag}}h$	$99.0 \pm 1.2 \quad (+0.4\sigma)$	$D_{\mathrm{M}}(0.51)$	$1986 \pm 13 \quad (-0.6\sigma)$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0024 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.448 \pm 0.024 \quad (-0.2\sigma)$	$H(0.61)$	$95.27 \pm 0.25 \quad (+0.7\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$z_{\mathrm{re}}$	$7.77^{+0.57}_{-0.75} \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2311 \pm 14 \quad (-0.6\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}}$	$2.104^{+0.023}_{-0.030} \quad (-0.1\sigma)$	$H(2.33)$	$236.59 \pm 0.90 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.2}_{-1.9} \quad (+0.2\sigma)$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.884 \pm 0.012 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(2.33)$	$5764 \pm 11 \quad (-0.8\sigma)$
$A_{100}^{\mathrm{PS}}$	$259 \pm 28 \quad (-0.2\sigma)$	$D_{40}$	$1230 \pm 14 \quad (+0.7\sigma)$	$f\sigma_8(0.15)$	$0.4603 \pm 0.0074 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{220}$	$5734 \pm 38 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7497^{+0.0047}_{-0.0052} \quad (+0.3\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4777 \pm 0.0057 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.1\sigma)$	$D_{1420}$	$817.2 \pm 4.7 \quad (+0.6\sigma)$	$\sigma_8(0.38)$	$0.6641^{+0.0040}_{-0.0048} \quad (+0.5\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.28 \quad (-0.3\sigma)$	$D_{2000}$	$230.9 \pm 1.6 \quad (+0.8\sigma)$	$f\sigma_8(0.51)$	$0.4758 \pm 0.0048 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$n_{\mathrm{s},0.002}$	$0.9647 \pm 0.0060 \quad (+0.8\sigma)$	$\sigma_8(0.51)$	$0.6213^{+0.0038}_{-0.0045} \quad (+0.5\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245397^{+0.000060}_{-0.000053} \quad (+0.6\sigma)$	$f\sigma_8(0.61)$	$0.4705 \pm 0.0043 \quad (-0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.7 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246724^{+0.000060}_{-0.000053} \quad (+0.6\sigma)$	$\sigma_8(0.61)$	$0.5911^{+0.0036}_{-0.0044} \quad (+0.5\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.8 \pm 7.3 \quad (+0.0\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.584 \pm 0.027 \quad (-0.7\sigma)$	$f\sigma_8(2.33)$	$0.2979^{+0.0019}_{-0.0023} \quad (+0.6\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.115 \pm 0.038$	$\mathrm{Age}/\mathrm{Gyr}$	$13.798 \pm 0.025 \quad (-0.8\sigma)$	$\sigma_8(2.33)$	$0.3069^{+0.0022}_{-0.0026} \quad (+0.6\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.030$	$z_*$	$1089.91 \pm 0.26 \quad (-0.7\sigma)$	$f_{2000}^{143}$	$29.5 \pm 2.7 \quad (-0.6\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.481 \pm 0.086$	$r_*$	$144.41 \pm 0.35 \quad (+0.1\sigma)$	$f_{2000}^{143 \times 217}$	$32.2^{+1.7}_{-2.0} \quad (-0.7\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.226 \pm 0.054$	$100\theta_*$	$1.04106 \pm 0.00043 \quad (+0.6\sigma)$	$f_{2000}^{217}$	$107.0 \pm 1.8 \quad (-0.6\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.666 \pm 0.079$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.872 \pm 0.031 \quad (-0.0\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.34 \pm 0.82 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.27$	$z_{\mathrm{drag}}$	$1059.96 \pm 0.32 \quad (+0.6\sigma)$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.8 \quad (+0.1\sigma)$
$c_{100}$	$0.99966 \pm 0.00060 \quad (+0.1\sigma)$	$r_{\mathrm{drag}}$	$147.07 \pm 0.36 \quad (-0.1\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.4 \pm 1.7 \quad (+0.7\sigma)$
$c_{217}$	$0.99820 \pm 0.00063 \quad (-0.1\sigma)$	$k_{\mathrm{D}}$	$0.14090 \pm 0.00041 \quad (+0.3\sigma)$	$\chi_{\mathrm{plik}}^2$	$2361.0 \pm 6.0 \quad (+280.8\sigma)$
$H_0$	$67.34 \pm 0.65 \quad (+0.5\sigma)$	$100\theta_{\mathrm{D}}$	$0.16074 \pm 0.00020 \quad (-0.5\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.6 \pm 4.4 \quad (+1.2\sigma)$
$\Omega_{\Lambda}$	$0.6843 \pm 0.0091 \quad (+0.4\sigma)$	$z_{\mathrm{eq}}$	$3403 \pm 34 \quad (-0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2790.8 \pm 6.0 \quad (+281.8\sigma)$
$\Omega_{\mathrm{m}}$	$0.3157 \pm 0.0091 \quad (-0.4\sigma)$	$k_{\mathrm{eq}}$	$0.01039 \pm 0.00010 \quad (-0.2\sigma)$		
$\Omega_{\mathrm{m}}h^2$	$0.1431 \pm 0.0014 \quad (-0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8131 \pm 0.0064 \quad (+0.3\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2802.36; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1593.07; R - 1 = 0.01801$$



### 5.17 base\_alpha1\_plikHM\_TTTEE\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02241 \pm 0.00014 \quad (+0.5\sigma)$	$\sigma_8$	$0.8108 \pm 0.0057 \quad (+0.4\sigma)$	$D_M(0.15)$	$640.2^{+4.2}_{-3.8} \quad (-0.4\sigma)$
$\Omega_c h^2$	$0.1192 \pm 0.0011 \quad (-0.0\sigma)$	$S_8$	$0.824 \pm 0.011 \quad (+0.0\sigma)$	$H(0.38)$	$83.10^{+0.27}_{-0.31} \quad (+0.5\sigma)$
$100\theta_{MC}$	$1.04107 \pm 0.00038 \quad (+0.5\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4514 \pm 0.0062 \quad (+0.0\sigma)$	$D_M(0.38)$	$1527.1^{+8.4}_{-7.6} \quad (-0.4\sigma)$
$\tau$	$0.0568^{+0.0056}_{-0.0077} \quad (-0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6050 \pm 0.0058 \quad (+0.2\sigma)$	$H(0.51)$	$89.80^{+0.22}_{-0.25} \quad (+0.5\sigma)$
$\alpha_{-1}$	$0.00013^{+0.00035}_{-0.00039} \quad (+0.6\sigma)$	$\sigma_8/h^{0.5}$	$0.9852 \pm 0.0083 \quad (+0.2\sigma)$	$D_M(0.51)$	$1978.4^{+9.9}_{-8.8} \quad (-0.4\sigma)$
$\ln(10^{10} A_s)$	$3.047^{+0.012}_{-0.015} \quad (-0.1\sigma)$	$r_{drag} h$	$99.76 \pm 0.84 \quad (+0.2\sigma)$	$H(0.61)$	$95.41^{+0.18}_{-0.21} \quad (+0.6\sigma)$
$n_s$	$0.9679 \pm 0.0050 \quad (+0.8\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.437 \pm 0.021 \quad (+0.0\sigma)$	$D_M(0.61)$	$2302^{+11}_{-9.5} \quad (-0.4\sigma)$
$y_{cal}$	$1.0008 \pm 0.0024 \quad (+0.0\sigma)$	$z_{re}$	$7.89^{+0.60}_{-0.75} \quad (-0.1\sigma)$	$H(2.33)$	$236.05 \pm 0.66 \quad (+0.2\sigma)$
$A_{217}^{CIB}$	$47 \pm 7 \quad (-0.1\sigma)$	$10^9 A_s$	$2.106^{+0.025}_{-0.031} \quad (-0.1\sigma)$	$D_M(2.33)$	$5758.0 \pm 9.1 \quad (-0.7\sigma)$
$\xi^{tSZ \times CIB}$	—	$10^9 A_s e^{-2\tau}$	$1.879 \pm 0.011 \quad (-0.2\sigma)$	$f\sigma_8(0.15)$	$0.4561 \pm 0.0057 \quad (+0.1\sigma)$
$A_{143}^{tSZ}$	$5.5^{+2.2}_{-1.9} \quad (+0.3\sigma)$	$D_{40}$	$1231 \pm 14 \quad (+0.7\sigma)$	$\sigma_8(0.15)$	$0.7494 \pm 0.0051 \quad (+0.4\sigma)$
$A_{100}^{PS}$	$258 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5737 \pm 38 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4748 \pm 0.0047 \quad (+0.1\sigma)$
$A_{143}^{PS}$	$45 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.6644 \pm 0.0045 \quad (+0.4\sigma)$
$A_{143 \times 217}^{PS}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$818.0 \pm 4.6 \quad (+0.5\sigma)$	$f\sigma_8(0.51)$	$0.4736 \pm 0.0042 \quad (+0.2\sigma)$
$A_{217}^{PS}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$231.2 \pm 1.5 \quad (+0.7\sigma)$	$\sigma_8(0.51)$	$0.6219 \pm 0.0043 \quad (+0.5\sigma)$
$A^{kSZ}$	$< 4.08 \quad (-0.2\sigma)$	$n_{s,0.002}$	$0.9679 \pm 0.0050 \quad (+0.8\sigma)$	$f\sigma_8(0.61)$	$0.4687 \pm 0.0039 \quad (+0.2\sigma)$
$A_{100}^{dustTT}$	$8.9 \pm 1.8 \quad (+0.0\sigma)$	$Y_P$	$0.245408^{+0.000058}_{-0.000051} \quad (+0.5\sigma)$	$\sigma_8(0.61)$	$0.5918 \pm 0.0041 \quad (+0.5\sigma)$
$A_{143}^{dustTT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_P^{BBN}$	$0.246735^{+0.000058}_{-0.000052} \quad (+0.5\sigma)$	$f\sigma_8(2.33)$	$0.2984^{+0.0020}_{-0.0023} \quad (+0.5\sigma)$
$A_{143 \times 217}^{dustTT}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$10^5 D/H$	$2.579 \pm 0.026 \quad (-0.5\sigma)$	$\sigma_8(2.33)$	$0.3077^{+0.0021}_{-0.0024} \quad (+0.5\sigma)$
$A_{217}^{dustTT}$	$93.8 \pm 7.3 \quad (+0.0\sigma)$	Age/Gyr	$13.785 \pm 0.020 \quad (-0.7\sigma)$	$f_{2000}^{143}$	$29.2 \pm 2.7 \quad (-0.6\sigma)$
$A_{100}^{dustTE}$	$0.115 \pm 0.038$	$z_*$	$1089.80 \pm 0.22 \quad (-0.5\sigma)$	$f_{2000}^{143 \times 217}$	$31.9 \pm 1.9 \quad (-0.7\sigma)$
$A_{100 \times 143}^{dustTE}$	$0.136 \pm 0.030$	$r_*$	$144.62 \pm 0.27 \quad (-0.3\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.8 \quad (-0.6\sigma)$
$A_{100 \times 217}^{dustTE}$	$0.479 \pm 0.085$	$100\theta_*$	$1.04125 \pm 0.00038 \quad (+0.5\sigma)$	$\chi_{lensing}^2$	$9.12 \pm 0.58 \quad (-0.1\sigma)$
$A_{143}^{dustTE}$	$0.226 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	$13.889 \pm 0.024 \quad (-0.4\sigma)$	$\chi_{small}^2$	$397.3 \pm 2.0 \quad (+0.0\sigma)$
$A_{143 \times 217}^{dustTE}$	$0.665 \pm 0.078$	$z_{drag}$	$1059.96 \pm 0.32 \quad (+0.5\sigma)$	$\chi_{lowl}^2$	$23.8 \pm 1.7 \quad (+0.6\sigma)$
$A_{217}^{dustTE}$	$2.08 \pm 0.27$	$r_{drag}$	$147.27 \pm 0.29 \quad (-0.3\sigma)$	$\chi_{plik}^2$	$2360.6 \pm 5.9 \quad (+280.3\sigma)$
$c_{100}$	$0.99965 \pm 0.00061 \quad (+0.0\sigma)$	$k_D$	$0.14070 \pm 0.00036 \quad (+0.4\sigma)$	$\chi_{6DF}^2$	$0.052 \pm 0.064 \quad (-0.2\sigma)$
$c_{217}$	$0.99820 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_D$	$0.16076 \pm 0.00021 \quad (-0.4\sigma)$	$\chi_{MGS}^2$	$1.34 \pm 0.47 \quad (+0.2\sigma)$
$H_0$	$67.74^{+0.44}_{-0.50} \quad (+0.4\sigma)$	$z_{eq}$	$3383 \pm 25 \quad (+0.1\sigma)$	$\chi_{DR12BAO}^2$	$4.7 \pm 1.4 \quad (-0.2\sigma)$
$\Omega_\Lambda$	$0.6900 \pm 0.0064 \quad (+0.2\sigma)$	$k_{eq}$	$0.010325 \pm 0.000075 \quad (+0.1\sigma)$	$\chi_{prior}^2$	$11.6 \pm 4.4 \quad (+1.2\sigma)$
$\Omega_m$	$0.3100 \pm 0.0064 \quad (-0.2\sigma)$	$100\theta_{eq}$	$0.8170 \pm 0.0046 \quad (+0.0\sigma)$	$\chi_{CMB}^2$	$2790.8 \pm 6.0 \quad (+282.2\sigma)$
$\Omega_m h^2$	$0.1422 \pm 0.0010 \quad (+0.1\sigma)$	$100\theta_{s,eq}$	$0.4513 \pm 0.0024 \quad (-0.0\sigma)$	$\chi_{BAO}^2$	$6.1 \pm 1.1 \quad (-0.2\sigma)$
$\Omega_m h^3$	$0.09632 \pm 0.00030 \quad (+0.7\sigma)$	$H(0.15)$	$73.00^{+0.38}_{-0.43} \quad (+0.4\sigma)$		

$\bar{\chi}_{eff}^2 = 2808.47$ ;  $\Delta\bar{\chi}_{eff}^2 = 1592.51$ ;  $R - 1 = 0.02935$



# 5.18 base\_alpha1\_plikHM\_TTTEEE\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02247^{+0.00015}_{-0.00014}$	$\Omega_{\mathrm{m}}h^3$	$0.09633 \pm 0.00029$	$100\theta_{\mathrm{s,eq}}$	$0.4543^{+0.0038}_{-0.0033}$
$\Omega_{\mathrm{c}}h^2$	$0.1178^{+0.0014}_{-0.0017}$	$\sigma_8$	$0.8074^{+0.0066}_{-0.0074}$	$H(0.15)$	$73.53^{+0.63}_{-0.56}$
$100\theta_{\mathrm{MC}}$	$1.04133^{+0.00046}_{-0.00037}$	$S_8$	$0.810^{+0.015}_{-0.018}$	$D_{\mathrm{M}}(0.15)$	$635.0^{+5.3}_{-6.3}$
$\tau$	$0.0576^{+0.0059}_{-0.0084}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4436^{+0.0083}_{-0.010}$	$H(0.38)$	$83.48^{+0.46}_{-0.41}$
$\alpha_{-1}$	$0.00040^{+0.00034}_{-0.00061}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5985^{+0.0077}_{-0.0090}$	$D_{\mathrm{M}}(0.38)$	$1517^{+11}_{-13}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.013}_{-0.016}$	$\sigma_8/h^{0.5}$	$0.977^{+0.011}_{-0.012}$	$H(0.51)$	$90.10 \pm 0.34$
$n_{\mathrm{s}}$	$0.9723^{+0.0067}_{-0.0053}$	$r_{\mathrm{drag}}h$	$100.9^{+1.3}_{-1.2}$	$D_{\mathrm{M}}(0.51)$	$1966^{+13}_{-15}$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0024$	$\langle d^2 \rangle^{1/2}$	$2.416^{+0.026}_{-0.031}$	$H(0.61)$	$95.64 \pm 0.27$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 6$	$z_{\mathrm{re}}$	$7.94^{+0.61}_{-0.84}$	$D_{\mathrm{M}}(0.61)$	$2289^{+14}_{-16}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}}$	$2.101^{+0.028}_{-0.035}$	$H(2.33)$	$235.28^{+0.86}_{-1.0}$
$A_{143}^{\mathrm{tSZ}}$	$5.7^{+2.3}_{-2.0}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.872 \pm 0.013$	$D_{\mathrm{M}}(2.33)$	$5749 \pm 12$
$A_{100}^{\mathrm{PS}}$	$255^{+26}_{-30}$	$D_{40}$	$1229 \pm 14$	$f\sigma_8(0.15)$	$0.4489^{+0.0078}_{-0.0093}$
$A_{143}^{\mathrm{PS}}$	$44 \pm 8$	$D_{220}$	$5738 \pm 38$	$\sigma_8(0.15)$	$0.7471^{+0.0056}_{-0.0065}$
$A_{143 \times 217}^{\mathrm{PS}}$	$41 \pm 9$	$D_{810}$	$2537 \pm 13$	$f\sigma_8(0.38)$	$0.4693^{+0.0064}_{-0.0074}$
$A_{217}^{\mathrm{PS}}$	$114.7 \pm 9.8$	$D_{1420}$	$818.9 \pm 4.7$	$\sigma_8(0.38)$	$0.6633^{+0.0047}_{-0.0055}$
$A^{\mathrm{kSZ}}$	$< 3.97$	$D_{2000}$	$231.6 \pm 1.5$	$f\sigma_8(0.51)$	$0.4691^{+0.0056}_{-0.0064}$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.9$	$n_{\mathrm{s},0.002}$	$0.9723^{+0.0067}_{-0.0053}$	$\sigma_8(0.51)$	$0.6212^{+0.0042}_{-0.0051}$
$A_{143}^{\mathrm{dustTT}}$	$11.1 \pm 1.8$	$Y_{\mathrm{P}}$	$0.245434^{+0.000058}_{-0.000048}$	$f\sigma_8(0.61)$	$0.4649^{+0.0051}_{-0.0057}$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.8 \pm 3.4$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246760^{+0.000058}_{-0.000048}$	$\sigma_8(0.61)$	$0.5913^{+0.0040}_{-0.0049}$
$A_{217}^{\mathrm{dustTT}}$	$94.0 \pm 7.3$	$10^5 \mathrm{D}/\mathrm{H}$	$2.567^{+0.024}_{-0.028}$	$f\sigma_8(2.33)$	$0.2986^{+0.0021}_{-0.0024}$
$A_{100}^{\mathrm{dustTE}}$	$0.114 \pm 0.038$	$\mathrm{Age}/\mathrm{Gyr}$	$13.765 \pm 0.025$	$\sigma_8(2.33)$	$0.3082^{+0.0022}_{-0.0026}$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.134 \pm 0.029$	$z_*$	$1089.60^{+0.24}_{-0.28}$	$f_{2000}^{143}$	$28.6 \pm 2.8$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.481 \pm 0.082$	$r_*$	$144.91^{+0.41}_{-0.34}$	$f_{2000}^{143 \times 217}$	$31.6 \pm 1.9$
$A_{143}^{\mathrm{dustTE}}$	$0.223 \pm 0.055$	$100\theta_*$	$1.04151^{+0.00046}_{-0.00037}$	$f_{2000}^{217}$	$106.6 \pm 1.8$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.667 \pm 0.077$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.914^{+0.036}_{-0.031}$	$\chi_{\mathrm{simall}}^2$	$397.6 \pm 2.5$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.26$	$z_{\mathrm{drag}}$	$1060.02 \pm 0.30$	$\chi_{\mathrm{lowl}}^2$	$23.9 \pm 1.6$
$c_{100}$	$0.99964 \pm 0.00062$	$r_{\mathrm{drag}}$	$147.55^{+0.42}_{-0.35}$	$\chi_{\mathrm{plik}}^2$	$2362.3 \pm 6.2$
$c_{217}$	$0.99818 \pm 0.00062$	$k_{\mathrm{D}}$	$0.14046^{+0.00039}_{-0.00046}$	$\chi_{\mathrm{H073p45}}^2$	$9.6 \pm 2.6$
$H_0$	$68.35^{+0.74}_{-0.65}$	$100\theta_{\mathrm{D}}$	$0.16075 \pm 0.00019$	$\chi_{\mathrm{prior}}^2$	$11.7 \pm 4.4$
$\Omega_{\Lambda}$	$0.698^{+0.010}_{-0.0082}$	$z_{\mathrm{eq}}$	$3353^{+32}_{-39}$	$\chi_{\mathrm{CMB}}^2$	$2783.8 \pm 6.4$
$\Omega_{\mathrm{m}}$	$0.3019^{+0.0082}_{-0.010}$	$k_{\mathrm{eq}}$	$0.010234^{+0.000099}_{-0.00012}$		
$\Omega_{\mathrm{m}}h^2$	$0.1410^{+0.0014}_{-0.0016}$	$100\theta_{\mathrm{eq}}$	$0.8229^{+0.0074}_{-0.0064}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2805.11; R - 1 = 0.05749$$



### 5.19 base\_alpha1\_CamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022139	$0.02220 \pm 0.00023$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4615	$0.461 \pm 0.013$	$H(0.15)$	72.11	$72.16 \pm 0.81$
$\Omega_{\mathrm{c}}h^2$	0.12106	$0.1210 \pm 0.0022$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6120	$0.612 \pm 0.012$	$D_{\mathrm{M}}(0.15)$	649.1	$648.7 \pm 8.3$
$100\theta_{\mathrm{MC}}$	1.04066	$1.04059 \pm 0.00056$	$\sigma_8/h^{0.5}$	0.9938	$0.993 \pm 0.016$	$H(0.38)$	82.42	$82.47 \pm 0.58$
$\tau$	0.0526	$0.0537 \pm 0.0084$	$r_{\mathrm{drag}}h$	98.11	$98.2 \pm 1.7$	$D_{\mathrm{M}}(0.38)$	1545.1	$1544 \pm 16$
$\alpha_{-1}$	$-22 \cdot 10^{-5}$	$-0.0012^{+0.0017}_{-0.0012}$	$\langle d^2 \rangle^{1/2}$	2.4559	$2.457 \pm 0.039$	$H(0.51)$	89.250	$89.29 \pm 0.45$
$\ln(10^{10}A_{\mathrm{s}})$	3.0417	$3.045 \pm 0.018$	$z_{\mathrm{re}}$	7.57	$7.65 \pm 0.85$	$D_{\mathrm{M}}(0.51)$	1999.7	$1999 \pm 19$
$n_{\mathrm{s}}$	0.9607	$0.9596^{+0.0071}_{-0.0083}$	$10^9A_{\mathrm{s}}$	2.0940	$2.101 \pm 0.038$	$H(0.61)$	94.956	$95.00^{+0.33}_{-0.37}$
$y_{\mathrm{cal}}$	1.00035	$1.0005 \pm 0.0025$	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8850	$1.887 \pm 0.015$	$D_{\mathrm{M}}(0.61)$	2325.4	$2324 \pm 21$
$A_{100}^{\mathrm{PS}}$	240.1	$244 \pm 25$	$D_{40}$	1221.5	$1216^{+18}_{-24}$	$H(2.33)$	237.00	$237.0 \pm 1.4$
$A_{143}^{\mathrm{PS}}$	39.3	$41 \pm 8$	$D_{220}$	5701.3	$5709 \pm 42$	$D_{\mathrm{M}}(2.33)$	5779.3	$5777 \pm 16$
$A_{217}^{\mathrm{PS}}$	99.2	$100 \pm 10$	$D_{810}$	2534.4	$2536 \pm 14$	$f\sigma_8(0.15)$	0.4651	$0.465 \pm 0.012$
$A_{217}^{\mathrm{CIB}}$	45.6	$41 \pm 7$	$D_{1420}$	813.5	$813.8 \pm 5.3$	$\sigma_8(0.15)$	0.7489	$0.7485 \pm 0.0075$
$A_{143}^{\mathrm{tSZ}}$	5.89	$3.7^{+1.7}_{-2.6}$	$D_{2000}$	229.24	$229.4 \pm 1.9$	$f\sigma_8(0.38)$	0.4808	$0.4804 \pm 0.0096$
$r_{143 \times 217}^{\mathrm{PS}}$	0.560	$0.64 \pm 0.13$	$n_{\mathrm{s},0.002}$	0.9607	$0.9596^{+0.0071}_{-0.0083}$	$\sigma_8(0.38)$	0.6626	$0.6623 \pm 0.0061$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.762	$0.59^{+0.40}_{-0.12}$	$Y_{\mathrm{P}}$	0.245301	$0.24532^{+0.00011}_{-0.000085}$	$f\sigma_8(0.51)$	0.4780	$0.4776 \pm 0.0082$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.02	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246627	$0.24665^{+0.00011}_{-0.000085}$	$\sigma_8(0.51)$	0.6195	$0.6193 \pm 0.0055$
$A^{\mathrm{kSZ}}$	1.5	—	$10^5\mathrm{D}/\mathrm{H}$	2.6295	$2.619 \pm 0.044$	$f\sigma_8(0.61)$	0.4721	$0.4717 \pm 0.0072$
$A_{100}^{\mathrm{dust}}$	1.017	$1.02 \pm 0.19$	Age/Gyr	13.8331	$13.829 \pm 0.037$	$\sigma_8(0.61)$	0.5892	$0.5889 \pm 0.0052$
$A_{143}^{\mathrm{dust}}$	0.993	$0.98 \pm 0.18$	$z_*$	1090.306	$1090.23 \pm 0.40$	$f\sigma_8(2.33)$	0.29662	$0.2965 \pm 0.0026$
$A_{217}^{\mathrm{dust}}$	0.962	$0.97 \pm 0.10$	$r_*$	144.34	$144.31 \pm 0.53$	$\sigma_8(2.33)$	0.30531	$0.3052 \pm 0.0028$
$A_{143 \times 217}^{\mathrm{dust}}$	1.005	$1.03 \pm 0.16$	$100\theta_*$	1.04086	$1.04079 \pm 0.00056$	$f_{2000}^{143}$	31.32	$31.1 \pm 3.0$
$c_{100}$	0.99750	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8670	$13.865 \pm 0.048$	$f_{2000}^{217}$	107.80	$107.7 \pm 2.0$
$c_{217}$	1.00144	$1.0012 \pm 0.0016$	$z_{\mathrm{drag}}$	1059.47	$1059.60 \pm 0.51$	$f_{2000}^{143 \times 217}$	33.15	$33.2 \pm 2.1$
$H_0$	66.71	$66.76 \pm 0.95$	$r_{\mathrm{drag}}$	147.07	$147.02 \pm 0.55$	$\chi_{\mathrm{simall}}^2$	395.89	$397.1 \pm 1.8$
$\Omega_{\Lambda}$	0.6767	$0.677 \pm 0.014$	$k_{\mathrm{D}}$	0.14071	$0.14080^{+0.00065}_{-0.00059}$	$\chi_{\mathrm{lowl}}^2$	22.30	$22.2 \pm 2.4$
$\Omega_{\mathrm{m}}$	0.3233	$0.323 \pm 0.014$	$100\theta_{\mathrm{D}}$	0.161006	$0.16092^{+0.00029}_{-0.00034}$	$\chi_{\mathrm{CamSpec}}^2$	7050.8	$7065.8 \pm 5.8$
$\Omega_{\mathrm{m}}h^2$	0.14384	$0.1438 \pm 0.0021$	$z_{\mathrm{eq}}$	3422	$3422 \pm 51$	$\chi_{\mathrm{prior}}^2$	2.35	$7.6 \pm 3.5$
$\Omega_{\mathrm{m}}h^3$	0.095951	$0.09601 \pm 0.00047$	$k_{\mathrm{eq}}$	0.010444	$0.01044 \pm 0.00016$	$\chi_{\mathrm{CMB}}^2$	7469.0	$7485.1 \pm 5.8$
$\sigma_8$	0.8117	$0.8112 \pm 0.0089$	$100\theta_{\mathrm{eq}}$	0.8090	$0.8092 \pm 0.0094$			
$S_8$	0.8426	$0.842 \pm 0.025$	$100\theta_{\mathrm{s,eq}}$	0.44728	$0.4473 \pm 0.0049$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 7471.39$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 7492.71$ ;  $R - 1 = 0.00444$

$\chi_{\mathrm{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.89 commander\_dx12\_v3.2\_29: 22.30 CamSpec like\_10.7HM: 7050.85



## 5.20 base\_alpha1\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02228 \pm 0.00023$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6017 \pm 0.0080$	$H(0.38)$	$82.99 \pm 0.35$
$\Omega_{\mathrm{c}}h^2$	$0.1190 \pm 0.0012$	$\sigma_8/h^{0.5}$	$0.980 \pm 0.011$	$D_{\mathrm{M}}(0.38)$	$1529.1 \pm 9.4$
$100\theta_{\mathrm{MC}}$	$1.04094 \pm 0.00048$	$r_{\mathrm{drag}}h$	$99.76 \pm 0.96$	$H(0.51)$	$89.69 \pm 0.29$
$\tau$	$0.0550 \pm 0.0084$	$\langle d^2 \rangle^{1/2}$	$2.425 \pm 0.028$	$D_{\mathrm{M}}(0.51)$	$1981 \pm 11$
$\alpha_{-1}$	$-0.0007^{+0.0015}_{-0.0012}$	$z_{\mathrm{re}}$	$7.73 \pm 0.83$	$H(0.61)$	$95.30 \pm 0.25$
$\ln(10^{10}A_{\mathrm{s}})$	$3.042 \pm 0.018$	$10^9 A_{\mathrm{s}}$	$2.096^{+0.035}_{-0.039}$	$D_{\mathrm{M}}(0.61)$	$2305 \pm 12$
$n_{\mathrm{s}}$	$0.9656^{+0.0057}_{-0.0065}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.013$	$H(2.33)$	$235.79 \pm 0.81$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025$	$D_{40}$	$1214^{+21}_{-27}$	$D_{\mathrm{M}}(2.33)$	$5765 \pm 12$
$A_{100}^{\mathrm{PS}}$	$243 \pm 25$	$D_{220}$	$5716 \pm 42$	$f\sigma_8(0.15)$	$0.4537 \pm 0.0076$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8$	$D_{810}$	$2535 \pm 14$	$\sigma_8(0.15)$	$0.7452 \pm 0.0069$
$A_{217}^{\mathrm{PS}}$	$100 \pm 10$	$D_{1420}$	$815.1 \pm 5.2$	$f\sigma_8(0.38)$	$0.4723 \pm 0.0065$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{2000}$	$229.9 \pm 1.8$	$\sigma_8(0.38)$	$0.6607 \pm 0.0059$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.7}$	$n_{\mathrm{s},0.002}$	$0.9656^{+0.0057}_{-0.0065}$	$f\sigma_8(0.51)$	$0.4710 \pm 0.0058$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.64 \pm 0.13$	$Y_{\mathrm{P}}$	$0.24535^{+0.00010}_{-0.000081}$	$\sigma_8(0.51)$	$0.6184 \pm 0.0055$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.465$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24668^{+0.00011}_{-0.000082}$	$f\sigma_8(0.61)$	$0.4662 \pm 0.0054$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.604^{+0.040}_{-0.046}$	$\sigma_8(0.61)$	$0.5885 \pm 0.0052$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.802 \pm 0.028$	$f\sigma_8(2.33)$	$0.2968 \pm 0.0026$
$A_{100}^{\mathrm{dust}}$	$1.02 \pm 0.20$	$z_{*}$	$1089.95 \pm 0.32$	$\sigma_8(2.33)$	$0.3060 \pm 0.0027$
$A_{143}^{\mathrm{dust}}$	$0.99 \pm 0.18$	$r_{*}$	$144.77 \pm 0.35$	$f_{2000}^{143}$	$30.6 \pm 3.0$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_{*}$	$1.04113 \pm 0.00048$	$f_{2000}^{217}$	$107.4 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.905 \pm 0.032$	$f_{2000}^{143 \times 217}$	$32.8 \pm 2.1$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.64^{+0.56}_{-0.50}$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.9$
$c_{217}$	$1.0012 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.47 \pm 0.39$	$\chi_{\mathrm{lowl}}^2$	$22 \pm 3$
$H_0$	$67.65 \pm 0.55$	$k_{\mathrm{D}}$	$0.14039^{+0.00056}_{-0.00050}$	$\chi_{\mathrm{CamSpec}}^2$	$7065.8 \pm 5.9$
$\Omega_{\Lambda}$	$0.6898 \pm 0.0074$	$100\theta_{\mathrm{D}}$	$0.16093^{+0.00031}_{-0.00036}$	$\chi_{6\mathrm{DF}}^2$	$0.061 \pm 0.079$
$\Omega_{\mathrm{m}}$	$0.3102 \pm 0.0074$	$z_{\mathrm{eq}}$	$3375 \pm 29$	$\chi_{\mathrm{MGS}}^2$	$1.35 \pm 0.53$
$\Omega_{\mathrm{m}}h^2$	$0.1419 \pm 0.0012$	$k_{\mathrm{eq}}$	$0.010302 \pm 0.000090$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.7$
$\Omega_{\mathrm{m}}h^3$	$0.09598 \pm 0.00048$	$100\theta_{\mathrm{eq}}$	$0.8179 \pm 0.0054$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.5$
$\sigma_8$	$0.8063 \pm 0.0078$	$100\theta_{\mathrm{s,eq}}$	$0.4519 \pm 0.0028$	$\chi_{\mathrm{BAO}}^2$	$6.3 \pm 1.4$
$S_8$	$0.820 \pm 0.015$	$H(0.15)$	$72.91 \pm 0.47$	$\chi_{\mathrm{CMB}}^2$	$7485.4 \pm 5.8$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4491 \pm 0.0081$	$D_{\mathrm{M}}(0.15)$	$641.0 \pm 4.7$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7499.33$ ;  $R - 1 = 0.01534$



## 5.21 base\_alpha1\_CamSpecHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02222 \pm 0.00023$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4583 \pm 0.0091$	$H(0.15)$	$72.31 \pm 0.63$
$\Omega_{\mathrm{c}} h^2$	$0.1206 \pm 0.0016$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.6093 \pm 0.0077$	$D_{\mathrm{M}}(0.15)$	$647.1 \pm 6.4$
$100\theta_{\mathrm{MC}}$	$1.04063 \pm 0.00052$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.010$	$H(0.38)$	$82.57 \pm 0.46$
$\tau$	$0.0539 \pm 0.0081$	$r_{\mathrm{drag}} h$	$98.5 \pm 1.3$	$D_{\mathrm{M}}(0.38)$	$1541 \pm 13$
$\alpha_{-1}$	$-0.0012^{+0.0017}_{-0.0011}$	$\langle d^2 \rangle^{1/2}$	$2.450 \pm 0.026$	$H(0.51)$	$89.37 \pm 0.37$
$\ln(10^{10} A_{\mathrm{s}})$	$3.044 \pm 0.016$	$z_{\mathrm{re}}$	$7.66 \pm 0.81$	$D_{\mathrm{M}}(0.51)$	$1995 \pm 15$
$n_{\mathrm{s}}$	$0.9604^{+0.0061}_{-0.0071}$	$10^9 A_{\mathrm{s}}$	$2.100^{+0.031}_{-0.035}$	$H(0.61)$	$95.05 \pm 0.30$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.885 \pm 0.013$	$D_{\mathrm{M}}(0.61)$	$2320 \pm 16$
$A_{100}^{\mathrm{PS}}$	$244 \pm 25$	$D_{40}$	$1216^{+17}_{-25}$	$H(2.33)$	$236.8 \pm 1.0$
$A_{143}^{\mathrm{PS}}$	$41 \pm 8$	$D_{220}$	$5712 \pm 42$	$D_{\mathrm{M}}(2.33)$	$5775 \pm 15$
$A_{217}^{\mathrm{PS}}$	$100 \pm 10$	$D_{810}$	$2536 \pm 14$	$f\sigma_8(0.15)$	$0.4622 \pm 0.0083$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{1420}$	$814.0 \pm 5.3$	$\sigma_8(0.15)$	$0.7475 \pm 0.0056$
$A_{143}^{\mathrm{tSZ}}$	$3.6^{+1.7}_{-2.6}$	$D_{2000}$	$229.4 \pm 1.9$	$f\sigma_8(0.38)$	$0.4785 \pm 0.0063$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.64 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9604^{+0.0061}_{-0.0071}$	$\sigma_8(0.38)$	$0.6617 \pm 0.0050$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.59^{+0.40}_{-0.13}$	$Y_{\mathrm{P}}$	$0.24533^{+0.00011}_{-0.000083}$	$f\sigma_8(0.51)$	$0.4761 \pm 0.0054$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24666^{+0.00011}_{-0.000083}$	$\sigma_8(0.51)$	$0.6189 \pm 0.0048$
$A^{\mathrm{kSZ}}$	$5.2^{+3.8}_{-2.4}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.615 \pm 0.043$	$f\sigma_8(0.61)$	$0.4704 \pm 0.0047$
$A_{100}^{\mathrm{dust}}$	$1.02 \pm 0.19$	$\mathrm{Age}/\mathrm{Gyr}$	$13.823 \pm 0.033$	$\sigma_8(0.61)$	$0.5886 \pm 0.0046$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.18$	$z_*$	$1090.16 \pm 0.36$	$f\sigma_8(2.33)$	$0.2965 \pm 0.0025$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$r_*$	$144.40 \pm 0.41$	$\sigma_8(2.33)$	$0.3053 \pm 0.0027$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04083 \pm 0.00052$	$f_{2000}^{143}$	$31.1 \pm 3.0$
$c_{100}$	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.873 \pm 0.037$	$f_{2000}^{217}$	$107.7 \pm 2.0$
$c_{217}$	$1.0012 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.63 \pm 0.51$	$f_{2000}^{143 \times 217}$	$33.1 \pm 2.1$
$H_0$	$66.94 \pm 0.74$	$r_{\mathrm{drag}}$	$147.11 \pm 0.44$	$\chi_{\mathrm{lensing}}^2$	$9.52 \pm 0.91$
$\Omega_{\Lambda}$	$0.680 \pm 0.010$	$k_{\mathrm{D}}$	$0.14073 \pm 0.00054$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.7$
$\Omega_{\mathrm{m}}$	$0.320 \pm 0.010$	$100\theta_{\mathrm{D}}$	$0.16091^{+0.00030}_{-0.00033}$	$\chi_{\mathrm{lowl}}^2$	$22.2 \pm 2.4$
$\Omega_{\mathrm{m}} h^2$	$0.1434 \pm 0.0016$	$z_{\mathrm{eq}}$	$3412 \pm 38$	$\chi_{\mathrm{CamSpec}}^2$	$7065.3 \pm 5.8$
$\Omega_{\mathrm{m}} h^3$	$0.09601 \pm 0.00047$	$k_{\mathrm{eq}}$	$0.01042 \pm 0.00012$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.4$
$\sigma_8$	$0.8099 \pm 0.0063$	$100\theta_{\mathrm{eq}}$	$0.8109 \pm 0.0071$	$\chi_{\mathrm{CMB}}^2$	$7494.0 \pm 5.9$
$S_8$	$0.837 \pm 0.017$	$100\theta_{\mathrm{s,eq}}$	$0.4482 \pm 0.0037$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7501.64; R - 1 = 0.00636$$



## 5.22 base\_alpha1\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02228 \pm 0.00023$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6040 \pm 0.0062$	$H(0.38)$	$82.95 \pm 0.33$
$\Omega_{\mathrm{c}}h^2$	$0.1192 \pm 0.0011$	$\sigma_8/h^{0.5}$	$0.9836 \pm 0.0090$	$D_{\mathrm{M}}(0.38)$	$1530.4 \pm 8.7$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00047$	$r_{\mathrm{drag}}h$	$99.59 \pm 0.86$	$H(0.51)$	$89.66 \pm 0.27$
$\tau$	$0.0566^{+0.0072}_{-0.0081}$	$\langle d^2 \rangle^{1/2}$	$2.434 \pm 0.022$	$D_{\mathrm{M}}(0.51)$	$1983 \pm 10$
$\alpha_{-1}$	$-0.0007^{+0.0015}_{-0.0012}$	$z_{\mathrm{re}}$	$7.90 \pm 0.77$	$H(0.61)$	$95.28 \pm 0.24$
$\ln(10^{10}A_{\mathrm{s}})$	$3.047 \pm 0.016$	$10^9 A_{\mathrm{s}}$	$2.105^{+0.032}_{-0.036}$	$D_{\mathrm{M}}(0.61)$	$2307 \pm 11$
$n_{\mathrm{s}}$	$0.9648^{+0.0054}_{-0.0064}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.880 \pm 0.012$	$H(2.33)$	$235.94 \pm 0.72$
$y_{\mathrm{cal}}$	$1.0009 \pm 0.0025$	$D_{40}$	$1216^{+19}_{-27}$	$D_{\mathrm{M}}(2.33)$	$5766 \pm 12$
$A_{100}^{\mathrm{PS}}$	$243 \pm 25$	$D_{220}$	$5721 \pm 42$	$f\sigma_8(0.15)$	$0.4557 \pm 0.0061$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8$	$D_{810}$	$2536 \pm 14$	$\sigma_8(0.15)$	$0.7471 \pm 0.0057$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{1420}$	$815.5 \pm 5.1$	$f\sigma_8(0.38)$	$0.4741 \pm 0.0051$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{2000}$	$230.0 \pm 1.8$	$\sigma_8(0.38)$	$0.6623 \pm 0.0051$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.7}$	$n_{\mathrm{s},0.002}$	$0.9648^{+0.0054}_{-0.0064}$	$f\sigma_8(0.51)$	$0.4727 \pm 0.0045$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.64 \pm 0.13$	$Y_{\mathrm{P}}$	$0.24536^{+0.00010}_{-0.000082}$	$\sigma_8(0.51)$	$0.6198 \pm 0.0048$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.58^{+0.41}_{-0.13}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24668^{+0.00010}_{-0.000082}$	$f\sigma_8(0.61)$	$0.4677 \pm 0.0042$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.603^{+0.041}_{-0.046}$	$\sigma_8(0.61)$	$0.5897 \pm 0.0045$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.803 \pm 0.028$	$f\sigma_8(2.33)$	$0.2974 \pm 0.0024$
$A_{100}^{\mathrm{dust}}$	$1.02 \pm 0.20$	$z_*$	$1089.96 \pm 0.32$	$\sigma_8(2.33)$	$0.3066 \pm 0.0025$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.18$	$r_*$	$144.71 \pm 0.31$	$f_{2000}^{143}$	$30.5 \pm 3.0$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04110 \pm 0.00047$	$f_{2000}^{217}$	$107.4 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.899 \pm 0.029$	$f_{2000}^{143 \times 217}$	$32.7 \pm 2.1$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.67 \pm 0.53$	$\chi_{\mathrm{lensing}}^2$	$9.35 \pm 0.80$
$c_{217}$	$1.0012 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.40 \pm 0.36$	$\chi_{\mathrm{simall}}^2$	$397.3 \pm 2.0$
$H_0$	$67.56 \pm 0.50$	$k_{\mathrm{D}}$	$0.14047^{+0.00053}_{-0.00048}$	$\chi_{\mathrm{lowl}}^2$	$23 \pm 3$
$\Omega_{\Lambda}$	$0.6886 \pm 0.0067$	$100\theta_{\mathrm{D}}$	$0.16091^{+0.00031}_{-0.00035}$	$\chi_{\mathrm{CamSpec}}^2$	$7065.2 \pm 5.7$
$\Omega_{\mathrm{m}}$	$0.3114 \pm 0.0067$	$z_{\mathrm{eq}}$	$3381 \pm 26$	$\chi_{6\mathrm{DF}}^2$	$0.065 \pm 0.077$
$\Omega_{\mathrm{m}}h^2$	$0.1421 \pm 0.0011$	$k_{\mathrm{eq}}$	$0.010319 \pm 0.000080$	$\chi_{\mathrm{MGS}}^2$	$1.25 \pm 0.47$
$\Omega_{\mathrm{m}}h^3$	$0.09602 \pm 0.00047$	$100\theta_{\mathrm{eq}}$	$0.8169 \pm 0.0048$	$\chi_{\mathrm{DR12BAO}}^2$	$5.0 \pm 1.7$
$\sigma_8$	$0.8085 \pm 0.0063$	$100\theta_{\mathrm{s,eq}}$	$0.4513 \pm 0.0025$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.4$
$S_8$	$0.824 \pm 0.012$	$H(0.15)$	$72.84 \pm 0.43$	$\chi_{\mathrm{CMB}}^2$	$7494.3 \pm 5.9$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4512 \pm 0.0065$	$D_{\mathrm{M}}(0.15)$	$641.7 \pm 4.3$	$\chi_{\mathrm{BAO}}^2$	$6.3 \pm 1.4$

$$\bar{\chi}_{\mathrm{eff}}^2 = 7508.28; R - 1 = 0.01595$$



### 5.23 base\_alpha1\_CamSpecHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02221 \pm 0.00023$	$\sigma_8 \Omega_m^{0.5}$	$0.461 \pm 0.013$	$H(0.15)$	$72.18 \pm 0.81$
$\Omega_c h^2$	$0.1210 \pm 0.0022$	$\sigma_8 \Omega_m^{0.25}$	$0.612 \pm 0.012$	$D_M(0.15)$	$648.5 \pm 8.2$
$100\theta_{MC}$	$1.04059 \pm 0.00056$	$\sigma_8/h^{0.5}$	$0.994 \pm 0.016$	$H(0.38)$	$82.48 \pm 0.58$
$\tau$	$0.0551^{+0.0052}_{-0.0087}$	$r_{\text{drag}} h$	$98.2 \pm 1.7$	$D_M(0.38)$	$1544 \pm 16$
$\alpha_{-1}$	$-0.0013^{+0.0017}_{-0.0011}$	$\langle d^2 \rangle^{1/2}$	$2.459 \pm 0.039$	$H(0.51)$	$89.31^{+0.42}_{-0.47}$
$\ln(10^{10} A_s)$	$3.048^{+0.014}_{-0.018}$	$z_{\text{re}}$	$7.80^{+0.58}_{-0.85}$	$D_M(0.51)$	$1998 \pm 19$
$n_s$	$0.9596^{+0.0070}_{-0.0083}$	$10^9 A_s$	$2.107^{+0.028}_{-0.038}$	$H(0.61)$	$95.01^{+0.33}_{-0.37}$
$y_{\text{cal}}$	$1.0005 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.887 \pm 0.015$	$D_M(0.61)$	$2324 \pm 20$
$A_{100}^{\text{PS}}$	$244 \pm 25$	$D_{40}$	$1216^{+18}_{-24}$	$H(2.33)$	$237.0 \pm 1.4$
$A_{143}^{\text{PS}}$	$41 \pm 8$	$D_{220}$	$5710 \pm 42$	$D_M(2.33)$	$5777 \pm 16$
$A_{217}^{\text{PS}}$	$100 \pm 10$	$D_{810}$	$2536 \pm 14$	$f\sigma_8(0.15)$	$0.465 \pm 0.012$
$A_{217}^{\text{CIB}}$	$41 \pm 7$	$D_{1420}$	$813.8 \pm 5.2$	$\sigma_8(0.15)$	$0.7493 \pm 0.0071$
$A_{143}^{\text{tSZ}}$	$3.7^{+1.7}_{-2.6}$	$D_{2000}$	$229.4 \pm 1.8$	$f\sigma_8(0.38)$	$0.4807 \pm 0.0096$
$r_{143 \times 217}^{\text{PS}}$	$0.64 \pm 0.13$	$n_{s,0.002}$	$0.9596^{+0.0070}_{-0.0083}$	$\sigma_8(0.38)$	$0.6630^{+0.0052}_{-0.0059}$
$r_{143 \times 217}^{\text{CIB}}$	$0.59^{+0.41}_{-0.12}$	$Y_P$	$0.24532^{+0.00011}_{-0.000084}$	$f\sigma_8(0.51)$	$0.4780 \pm 0.0081$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24665^{+0.00011}_{-0.000084}$	$\sigma_8(0.51)$	$0.6200^{+0.0047}_{-0.0054}$
$A^{\text{kSZ}}$	—	$10^5 \text{D/H}$	$2.617 \pm 0.043$	$f\sigma_8(0.61)$	$0.4721 \pm 0.0071$
$A_{100}^{\text{dust}}$	$1.02 \pm 0.19$	$\text{Age/Gyr}$	$13.827 \pm 0.036$	$\sigma_8(0.61)$	$0.5896^{+0.0043}_{-0.0051}$
$A_{143}^{\text{dust}}$	$0.98 \pm 0.18$	$z_*$	$1090.21 \pm 0.40$	$f\sigma_8(2.33)$	$0.2969^{+0.0021}_{-0.0026}$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$r_*$	$144.31 \pm 0.53$	$\sigma_8(2.33)$	$0.3056^{+0.0023}_{-0.0028}$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04079 \pm 0.00055$	$f_{2000}^{143}$	$31.0 \pm 3.0$
$c_{100}$	$0.9975 \pm 0.0011$	$D_M(z_*)/\text{Gpc}$	$13.865 \pm 0.048$	$f_{2000}^{217}$	$107.7 \pm 2.0$
$c_{217}$	$1.0012 \pm 0.0016$	$z_{\text{drag}}$	$1059.62 \pm 0.50$	$f_{2000}^{143 \times 217}$	$33.1 \pm 2.1$
$H_0$	$66.78 \pm 0.95$	$r_{\text{drag}}$	$147.02 \pm 0.55$	$\chi_{\text{simall}}^2$	$397.0 \pm 1.8$
$\Omega_\Lambda$	$0.677 \pm 0.014$	$k_D$	$0.14081^{+0.00065}_{-0.00059}$	$\chi_{\text{lowl}}^2$	$22.2 \pm 2.3$
$\Omega_m$	$0.323 \pm 0.014$	$100\theta_D$	$0.16091^{+0.00029}_{-0.00033}$	$\chi_{\text{CamSpec}}^2$	$7065.7 \pm 5.8$
$\Omega_m h^2$	$0.1438 \pm 0.0021$	$z_{\text{eq}}$	$3421 \pm 51$	$\chi_{\text{prior}}^2$	$7.6 \pm 3.5$
$\Omega_m h^3$	$0.09603 \pm 0.00047$	$k_{\text{eq}}$	$0.01044 \pm 0.00016$	$\chi_{\text{CMB}}^2$	$7484.8 \pm 5.7$
$\sigma_8$	$0.8121 \pm 0.0085$	$100\theta_{\text{eq}}$	$0.8093 \pm 0.0094$		
$S_8$	$0.842 \pm 0.025$	$100\theta_{s,\text{eq}}$	$0.4474 \pm 0.0049$		

$$\bar{\chi}_{\text{eff}}^2 = 7492.46; R - 1 = 0.00453$$



## 5.24 base\_alpha1\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02228 \pm 0.00023$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6022 \pm 0.0078$	$H(0.38)$	$83.00 \pm 0.35$
$\Omega_{\mathrm{c}}h^2$	$0.1190 \pm 0.0012$	$\sigma_8/h^{0.5}$	$0.981 \pm 0.011$	$D_{\mathrm{M}}(0.38)$	$1528.9 \pm 9.4$
$100\theta_{\mathrm{MC}}$	$1.04093 \pm 0.00047$	$r_{\mathrm{drag}}h$	$99.77 \pm 0.96$	$H(0.51)$	$89.70 \pm 0.29$
$\tau$	$0.0562^{+0.0055}_{-0.0086}$	$\langle d^2 \rangle^{1/2}$	$2.428 \pm 0.027$	$D_{\mathrm{M}}(0.51)$	$1981 \pm 11$
$\alpha_{-1}$	$-0.0007^{+0.0015}_{-0.0012}$	$z_{\mathrm{re}}$	$7.86^{+0.59}_{-0.85}$	$H(0.61)$	$95.30 \pm 0.25$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.013}_{-0.018}$	$10^9 A_{\mathrm{s}}$	$2.101^{+0.027}_{-0.039}$	$D_{\mathrm{M}}(0.61)$	$2305 \pm 12$
$n_{\mathrm{s}}$	$0.9655^{+0.0056}_{-0.0065}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.013$	$H(2.33)$	$235.79 \pm 0.81$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{40}$	$1214^{+20}_{-27}$	$D_{\mathrm{M}}(2.33)$	$5765 \pm 12$
$A_{100}^{\mathrm{PS}}$	$243 \pm 25$	$D_{220}$	$5716 \pm 42$	$f\sigma_8(0.15)$	$0.4541 \pm 0.0076$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8$	$D_{810}$	$2535 \pm 14$	$\sigma_8(0.15)$	$0.7459^{+0.0061}_{-0.0068}$
$A_{217}^{\mathrm{PS}}$	$100 \pm 10$	$D_{1420}$	$815.1 \pm 5.1$	$f\sigma_8(0.38)$	$0.4727 \pm 0.0064$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{2000}$	$229.9 \pm 1.8$	$\sigma_8(0.38)$	$0.6614^{+0.0051}_{-0.0058}$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.7}$	$n_{\mathrm{s},0.002}$	$0.9655^{+0.0056}_{-0.0065}$	$f\sigma_8(0.51)$	$0.4714 \pm 0.0057$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.64 \pm 0.13$	$Y_{\mathrm{P}}$	$0.24536^{+0.00010}_{-0.000080}$	$\sigma_8(0.51)$	$0.6190^{+0.0047}_{-0.0054}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.59^{+0.41}_{-0.12}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24668^{+0.00010}_{-0.000081}$	$f\sigma_8(0.61)$	$0.4666 \pm 0.0052$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.602^{+0.040}_{-0.046}$	$\sigma_8(0.61)$	$0.5890^{+0.0044}_{-0.0051}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.801 \pm 0.028$	$f\sigma_8(2.33)$	$0.2971^{+0.0022}_{-0.0026}$
$A_{100}^{\mathrm{dust}}$	$1.02 \pm 0.20$	$z_*$	$1089.94 \pm 0.32$	$\sigma_8(2.33)$	$0.3063^{+0.0023}_{-0.0027}$
$A_{143}^{\mathrm{dust}}$	$0.99 \pm 0.18$	$r_*$	$144.77 \pm 0.35$	$f_{2000}^{143}$	$30.5 \pm 3.0$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04112 \pm 0.00048$	$f_{2000}^{217}$	$107.4 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.905 \pm 0.032$	$f_{2000}^{143 \times 217}$	$32.7 \pm 2.1$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.66^{+0.55}_{-0.50}$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 2.0$
$c_{217}$	$1.0012 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.46 \pm 0.39$	$\chi_{\mathrm{lowl}}^2$	$22 \pm 3$
$H_0$	$67.66 \pm 0.55$	$k_{\mathrm{D}}$	$0.14041^{+0.00056}_{-0.00050}$	$\chi_{\mathrm{CamSpec}}^2$	$7065.7 \pm 5.9$
$\Omega_{\Lambda}$	$0.6899 \pm 0.0074$	$100\theta_{\mathrm{D}}$	$0.16092^{+0.00031}_{-0.00035}$	$\chi_{6\mathrm{DF}}^2$	$0.060 \pm 0.079$
$\Omega_{\mathrm{m}}$	$0.3101 \pm 0.0074$	$z_{\mathrm{eq}}$	$3375 \pm 29$	$\chi_{\mathrm{MGS}}^2$	$1.35 \pm 0.53$
$\Omega_{\mathrm{m}}h^2$	$0.1419 \pm 0.0012$	$k_{\mathrm{eq}}$	$0.010302 \pm 0.000090$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.7$
$\Omega_{\mathrm{m}}h^3$	$0.09599 \pm 0.00048$	$100\theta_{\mathrm{eq}}$	$0.8179 \pm 0.0054$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.5$
$\sigma_8$	$0.8071 \pm 0.0074$	$100\theta_{\mathrm{s,eq}}$	$0.4519 \pm 0.0028$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.4$
$S_8$	$0.820 \pm 0.015$	$H(0.15)$	$72.92 \pm 0.47$	$\chi_{\mathrm{CMB}}^2$	$7485.2 \pm 5.7$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4494 \pm 0.0081$	$D_{\mathrm{M}}(0.15)$	$640.9 \pm 4.7$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7499.10; R - 1 = 0.01710$$



## 5.25 base\_alpha1\_CamSpecHM\_TT\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02223 \pm 0.00023$	$\sigma_8 \Omega_m^{0.5}$	$0.4582 \pm 0.0091$	$H(0.15)$	$72.35 \pm 0.62$
$\Omega_c h^2$	$0.1205 \pm 0.0016$	$\sigma_8 \Omega_m^{0.25}$	$0.6094 \pm 0.0077$	$D_M(0.15)$	$646.7 \pm 6.3$
$100\theta_{MC}$	$1.04064 \pm 0.00052$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.010$	$H(0.38)$	$82.60 \pm 0.45$
$\tau$	$0.0551^{+0.0052}_{-0.0086}$	$r_{\text{drag}} h$	$98.5 \pm 1.3$	$D_M(0.38)$	$1540 \pm 13$
$\alpha_{-1}$	$-0.0012^{+0.0017}_{-0.0011}$	$\langle d^2 \rangle^{1/2}$	$2.451 \pm 0.025$	$H(0.51)$	$89.39 \pm 0.36$
$\ln(10^{10} A_s)$	$3.047^{+0.012}_{-0.016}$	$z_{\text{re}}$	$7.78^{+0.58}_{-0.83}$	$D_M(0.51)$	$1994 \pm 15$
$n_s$	$0.9606^{+0.0060}_{-0.0071}$	$10^9 A_s$	$2.104^{+0.025}_{-0.035}$	$H(0.61)$	$95.07 \pm 0.30$
$y_{\text{cal}}$	$1.0005 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.885 \pm 0.012$	$D_M(0.61)$	$2319 \pm 16$
$A_{100}^{\text{PS}}$	$244 \pm 25$	$D_{40}$	$1215^{+16}_{-24}$	$H(2.33)$	$236.7 \pm 1.0$
$A_{143}^{\text{PS}}$	$41 \pm 8$	$D_{220}$	$5713 \pm 42$	$D_M(2.33)$	$5774 \pm 14$
$A_{217}^{\text{PS}}$	$100 \pm 10$	$D_{810}$	$2536 \pm 14$	$f\sigma_8(0.15)$	$0.4621 \pm 0.0083$
$A_{217}^{\text{CIB}}$	$41 \pm 7$	$D_{1420}$	$814.0 \pm 5.2$	$\sigma_8(0.15)$	$0.7481 \pm 0.0053$
$A_{143}^{\text{tSZ}}$	$3.7^{+1.7}_{-2.6}$	$D_{2000}$	$229.4 \pm 1.8$	$f\sigma_8(0.38)$	$0.4786 \pm 0.0063$
$r_{143 \times 217}^{\text{PS}}$	$0.64 \pm 0.13$	$n_{s,0.002}$	$0.9606^{+0.0060}_{-0.0071}$	$\sigma_8(0.38)$	$0.6623^{+0.0043}_{-0.0049}$
$r_{143 \times 217}^{\text{CIB}}$	$0.59^{+0.40}_{-0.12}$	$Y_P$	$0.24533^{+0.00010}_{-0.000082}$	$f\sigma_8(0.51)$	$0.4762 \pm 0.0053$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24666^{+0.00010}_{-0.000082}$	$\sigma_8(0.51)$	$0.6194^{+0.0040}_{-0.0047}$
$A^{\text{kSZ}}$	$5.2^{+3.8}_{-2.4}$	$10^5 D/H$	$2.613 \pm 0.043$	$f\sigma_8(0.61)$	$0.4706 \pm 0.0047$
$A_{100}^{\text{dust}}$	$1.02 \pm 0.20$	Age/Gyr	$13.822 \pm 0.032$	$\sigma_8(0.61)$	$0.5892^{+0.0039}_{-0.0045}$
$A_{143}^{\text{dust}}$	$0.98 \pm 0.17$	$z_*$	$1090.14 \pm 0.35$	$f\sigma_8(2.33)$	$0.2967^{+0.0020}_{-0.0024}$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$r_*$	$144.41 \pm 0.40$	$\sigma_8(2.33)$	$0.3056^{+0.0023}_{-0.0027}$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04084 \pm 0.00052$	$f_{2000}^{143}$	$31.0 \pm 3.0$
$c_{100}$	$0.9975 \pm 0.0011$	$D_M(z_*)/\text{Gpc}$	$13.875 \pm 0.037$	$f_{2000}^{217}$	$107.6 \pm 2.0$
$c_{217}$	$1.0012 \pm 0.0016$	$z_{\text{drag}}$	$1059.65 \pm 0.51$	$f_{2000}^{143 \times 217}$	$33.1 \pm 2.1$
$H_0$	$66.98 \pm 0.73$	$r_{\text{drag}}$	$147.12 \pm 0.43$	$\chi_{\text{lensing}}^2$	$9.50 \pm 0.91$
$\Omega_\Lambda$	$0.680 \pm 0.010$	$k_D$	$0.14073^{+0.00056}_{-0.00051}$	$\chi_{\text{simall}}^2$	$396.9 \pm 1.7$
$\Omega_m$	$0.320 \pm 0.010$	$100\theta_D$	$0.16090^{+0.00029}_{-0.00033}$	$\chi_{\text{lowl}}^2$	$22.1 \pm 2.3$
$\Omega_m h^2$	$0.1434 \pm 0.0016$	$z_{\text{eq}}$	$3410 \pm 37$	$\chi_{\text{CamSpec}}^2$	$7065.2 \pm 5.7$
$\Omega_m h^3$	$0.09601 \pm 0.00046$	$k_{\text{eq}}$	$0.01041 \pm 0.00011$	$\chi_{\text{prior}}^2$	$7.6 \pm 3.4$
$\sigma_8$	$0.8105 \pm 0.0061$	$100\theta_{\text{eq}}$	$0.8113 \pm 0.0069$	$\chi_{\text{CMB}}^2$	$7493.7 \pm 5.8$
$S_8$	$0.837 \pm 0.017$	$100\theta_{s,\text{eq}}$	$0.4484 \pm 0.0036$		
$\bar{\chi}_{\text{eff}}^2 = 7501.39; R - 1 = 0.00867$					



## 5.26 base\_alpha1\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02229 \pm 0.00023$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6041 \pm 0.0062$	$H(0.38)$	$82.95 \pm 0.33$
$\Omega_{\mathrm{c}}h^2$	$0.1192 \pm 0.0011$	$\sigma_8/h^{0.5}$	$0.9840 \pm 0.0089$	$D_{\mathrm{M}}(0.38)$	$1530.2 \pm 8.6$
$100\theta_{\mathrm{MC}}$	$1.04090 \pm 0.00047$	$r_{\mathrm{drag}}h$	$99.61 \pm 0.86$	$H(0.51)$	$89.67 \pm 0.27$
$\tau$	$0.0573^{+0.0060}_{-0.0083}$	$\langle d^2 \rangle^{1/2}$	$2.435 \pm 0.021$	$D_{\mathrm{M}}(0.51)$	$1982 \pm 10$
$\alpha_{-1}$	$-0.0008^{+0.0015}_{-0.0011}$	$z_{\mathrm{re}}$	$7.97^{+0.63}_{-0.80}$	$H(0.61)$	$95.28 \pm 0.24$
$\ln(10^{10}A_{\mathrm{s}})$	$3.048^{+0.013}_{-0.017}$	$10^9 A_{\mathrm{s}}$	$2.108^{+0.028}_{-0.036}$	$D_{\mathrm{M}}(0.61)$	$2307 \pm 11$
$n_{\mathrm{s}}$	$0.9647^{+0.0054}_{-0.0064}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.880 \pm 0.012$	$H(2.33)$	$235.93 \pm 0.72$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0025$	$D_{40}$	$1216^{+19}_{-27}$	$D_{\mathrm{M}}(2.33)$	$5765 \pm 12$
$A_{100}^{\mathrm{PS}}$	$243 \pm 25$	$D_{220}$	$5721 \pm 42$	$f\sigma_8(0.15)$	$0.4558 \pm 0.0061$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8$	$D_{810}$	$2536 \pm 14$	$\sigma_8(0.15)$	$0.7474 \pm 0.0055$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{1420}$	$815.4 \pm 5.1$	$f\sigma_8(0.38)$	$0.4742 \pm 0.0050$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{2000}$	$230.0 \pm 1.8$	$\sigma_8(0.38)$	$0.6626 \pm 0.0049$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.7}$	$n_{\mathrm{s},0.002}$	$0.9647^{+0.0054}_{-0.0064}$	$f\sigma_8(0.51)$	$0.4728 \pm 0.0045$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.64 \pm 0.13$	$Y_{\mathrm{P}}$	$0.24536^{+0.00010}_{-0.000081}$	$\sigma_8(0.51)$	$0.6201 \pm 0.0046$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.58^{+0.41}_{-0.13}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24668^{+0.00010}_{-0.000082}$	$f\sigma_8(0.61)$	$0.4679 \pm 0.0041$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.602^{+0.040}_{-0.045}$	$\sigma_8(0.61)$	$0.5900 \pm 0.0044$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.803 \pm 0.028$	$f\sigma_8(2.33)$	$0.2975 \pm 0.0023$
$A_{100}^{\mathrm{dust}}$	$1.02 \pm 0.20$	$z_{*}$	$1089.95 \pm 0.31$	$\sigma_8(2.33)$	$0.3067^{+0.0022}_{-0.0025}$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.18$	$r_{*}$	$144.71 \pm 0.31$	$f_{2000}^{143}$	$30.5 \pm 3.0$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_{*}$	$1.04110 \pm 0.00047$	$f_{2000}^{217}$	$107.4 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.900 \pm 0.029$	$f_{2000}^{143 \times 217}$	$32.7 \pm 2.1$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.68 \pm 0.52$	$\chi_{\mathrm{lensing}}^2$	$9.32 \pm 0.76$
$c_{217}$	$1.0012 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.40 \pm 0.36$	$\chi_{\mathrm{simall}}^2$	$397.3 \pm 2.0$
$H_0$	$67.57 \pm 0.50$	$k_{\mathrm{D}}$	$0.14047^{+0.00053}_{-0.00048}$	$\chi_{\mathrm{lowl}}^2$	$22 \pm 3$
$\Omega_{\Lambda}$	$0.6887 \pm 0.0066$	$100\theta_{\mathrm{D}}$	$0.16090^{+0.00031}_{-0.00035}$	$\chi_{\mathrm{CamSpec}}^2$	$7065.2 \pm 5.7$
$\Omega_{\mathrm{m}}$	$0.3113 \pm 0.0066$	$z_{\mathrm{eq}}$	$3380 \pm 26$	$\chi_{6\mathrm{DF}}^2$	$0.063 \pm 0.076$
$\Omega_{\mathrm{m}}h^2$	$0.1421 \pm 0.0011$	$k_{\mathrm{eq}}$	$0.010317 \pm 0.000080$	$\chi_{\mathrm{MGS}}^2$	$1.26 \pm 0.47$
$\Omega_{\mathrm{m}}h^3$	$0.09602 \pm 0.00047$	$100\theta_{\mathrm{eq}}$	$0.8170 \pm 0.0048$	$\chi_{\mathrm{DR12BAO}}^2$	$5.0 \pm 1.6$
$\sigma_8$	$0.8088 \pm 0.0061$	$100\theta_{\mathrm{s,eq}}$	$0.4514 \pm 0.0025$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.4$
$S_8$	$0.824 \pm 0.012$	$H(0.15)$	$72.85 \pm 0.43$	$\chi_{\mathrm{CMB}}^2$	$7494.2 \pm 5.8$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4512 \pm 0.0065$	$D_{\mathrm{M}}(0.15)$	$641.6 \pm 4.3$	$\chi_{\mathrm{BAO}}^2$	$6.3 \pm 1.3$

$\bar{\chi}_{\mathrm{eff}}^2 = 7508.12$ ;  $R - 1 = 0.01736$



## 6 mnu

### 6.1 base\_mnu\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022161	$0.02205 \pm 0.00024$	$\sigma_8 \Omega_m^{0.5}$	0.4615	$0.457 \pm 0.014$	$H(0.15)$	72.80	$71.2^{+2.0}_{-0.91}$
$\Omega_c h^2$	0.12044	$0.1210 \pm 0.0022$	$\sigma_8 \Omega_m^{0.25}$	0.6170	$0.600^{+0.022}_{-0.012}$	$D_M(0.15)$	642.2	$658.5^{+8.6}_{-21}$
$100\theta_{MC}$	1.04081	$1.04064 \pm 0.00051$	$\sigma_8/h^{0.5}$	1.0040	$0.973^{+0.039}_{-0.017}$	$H(0.38)$	82.94	$81.7^{+1.5}_{-0.68}$
$\tau$	0.0525	$0.0517 \pm 0.0079$	$r_{drag}h$	99.37	$96.7^{+3.6}_{-1.8}$	$D_M(0.38)$	1531.2	$1564^{+17}_{-43}$
$\Sigma m_\nu$ [eV]	0.001	$< 0.195$	$\langle d^2 \rangle^{1/2}$	2.4593	$2.448 \pm 0.038$	$H(0.51)$	89.68	$88.7^{+1.3}_{-0.55}$
$\ln(10^{10} A_s)$	3.0413	$3.040 \pm 0.016$	$z_{re}$	7.55	$7.49 \pm 0.82$	$D_M(0.51)$	1983.3	$2022^{+21}_{-50}$
$n_s$	0.9640	$0.9613 \pm 0.0062$	$10^9 A_s$	2.0933	$2.091 \pm 0.034$	$H(0.61)$	95.31	$94.5^{+1.1}_{-0.45}$
$y_{cal}$	1.00038	$1.0005 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8845	$1.886 \pm 0.014$	$D_M(0.61)$	2307.6	$2350^{+22}_{-55}$
$A_{217}^{CIB}$	48.6	$48 \pm 7$	$D_{40}$	1231.4	$1234 \pm 15$	$H(2.33)$	236.30	$237.6^{+1.3}_{-2.0}$
$\xi^{tSZ \times CIB}$	0.35	—	$D_{220}$	5713.3	$5712 \pm 41$	$D_M(2.33)$	5762.6	$5806^{+19}_{-54}$
$A_{143}^{tSZ}$	6.96	$5.0 \pm 2.0$	$D_{810}$	2537.6	$2537 \pm 14$	$f\sigma_8(0.15)$	0.4653	$0.460 \pm 0.013$
$A_{100}^{PS}$	253.9	$265 \pm 29$	$D_{1420}$	815.4	$814.4 \pm 5.1$	$\sigma_8(0.15)$	0.7619	$0.727^{+0.039}_{-0.010}$
$A_{143}^{PS}$	49.8	$50 \pm 8$	$D_{2000}$	230.08	$229.2 \pm 1.9$	$f\sigma_8(0.38)$	0.4834	$0.473^{+0.016}_{-0.0096}$
$A_{143 \times 217}^{PS}$	47.7	$44 \pm 9$	$n_{s,0.002}$	0.9640	$0.9613 \pm 0.0062$	$\sigma_8(0.38)$	0.6750	$0.642^{+0.036}_{-0.0089}$
$A_{217}^{PS}$	119.6	$115 \pm 10$	$Y_P$	0.245310	$0.24525^{+0.00012}_{-0.000093}$	$f\sigma_8(0.51)$	0.4817	$0.469^{+0.017}_{-0.0081}$
$A^{kSZ}$	0.01	$< 5.10$	$Y_P^{BBN}$	0.246636	$0.24658^{+0.00012}_{-0.000093}$	$\sigma_8(0.51)$	0.6315	$0.600^{+0.034}_{-0.0083}$
$A_{100}^{dustTT}$	8.88	$8.9 \pm 1.8$	$10^5 D/H$	2.6254	$2.648 \pm 0.047$	$f\sigma_8(0.61)$	0.4765	$0.463^{+0.018}_{-0.0071}$
$A_{143}^{dustTT}$	10.82	$10.7 \pm 1.8$	Age/Gyr	13.795	$13.896^{+0.043}_{-0.12}$	$\sigma_8(0.61)$	0.6008	$0.571^{+0.033}_{-0.0079}$
$A_{143 \times 217}^{dustTT}$	19.45	$18.3 \pm 3.3$	$z_*$	1090.219	$1090.45^{+0.42}_{-0.50}$	$f\sigma_8(2.33)$	0.3019	$0.288^{+0.015}_{-0.0034}$
$A_{217}^{dustTT}$	94.7	$93.4 \pm 7.3$	$r_*$	144.484	$144.38 \pm 0.50$	$\sigma_8(2.33)$	0.3116	$0.296^{+0.018}_{-0.0041}$
$c_{100}$	0.99965	$0.99961 \pm 0.00062$	$100\theta_*$	1.040989	$1.04091 \pm 0.00047$	$f_{2000}^{143}$	30.23	$31.8 \pm 3.0$
$c_{217}$	0.99826	$0.99827 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	13.8795	$13.871 \pm 0.046$	$f_{2000}^{143 \times 217}$	33.18	$34.1 \pm 2.1$
$H_0$	67.50	$65.7^{+2.3}_{-1.1}$	$z_{drag}$	1059.475	$1059.28 \pm 0.48$	$f_{2000}^{217}$	107.60	$108.6 \pm 2.0$
$\Omega_\Lambda$	0.6870	$0.663^{+0.033}_{-0.013}$	$r_{drag}$	147.216	$147.15 \pm 0.49$	$\chi_{small}^2$	395.87	$396.9 \pm 1.7$
$\Omega_m$	0.3130	$0.337^{+0.013}_{-0.033}$	$k_D$	0.14057	$0.14057 \pm 0.00052$	$\chi_{lowl}^2$	23.66	$23.9 \pm 1.3$
$\Omega_m h^2$	0.14261	$0.1450^{+0.0021}_{-0.0035}$	$100\theta_D$	0.161022	$0.16112 \pm 0.00027$	$\chi_{plik}^2$	758.1	$772.5 \pm 5.7$
$\Omega_\nu h^2$	0.00001	$< 0.00210$	$z_{eq}$	3407.7	$3419 \pm 50$	$\chi_{prior}^2$	1.33	$7.3 \pm 3.7$
$\Omega_m h^3$	0.09626	$0.0952^{+0.0014}_{-0.00050}$	$k_{eq}$	0.010401	$0.01044 \pm 0.00015$	$\chi_{CMB}^2$	1177.6	$1193.4 \pm 5.8$
$\sigma_8$	0.8249	$0.789^{+0.041}_{-0.011}$	$100\theta_{eq}$	0.8116	$0.8095 \pm 0.0092$			
$S_8$	0.8426	$0.834 \pm 0.025$	$100\theta_{s,eq}$	0.44865	$0.4476 \pm 0.0047$			

Best-fit  $\chi_{eff}^2 = 1178.95$ ;  $\bar{\chi}_{eff}^2 = 1200.74$ ;  $R - 1 = 0.00818$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 commander\_dx12\_v3.2\_29: 23.66 plik\_rd12\_HM\_v22\_TT: 758.09



## 6.2 base\_mnu\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02206 \pm 0.00024$	$\sigma_8 \Omega_m^{0.5}$	$0.457 \pm 0.014$	$H(0.15)$	$71.3^{+2.0}_{-0.92}$
$\Omega_c h^2$	$0.1209 \pm 0.0022$	$\sigma_8 \Omega_m^{0.25}$	$0.601^{+0.022}_{-0.012}$	$D_M(0.15)$	$658.1^{+8.6}_{-21}$
$100\theta_{MC}$	$1.04065 \pm 0.00051$	$\sigma_8/h^{0.5}$	$0.974^{+0.039}_{-0.017}$	$H(0.38)$	$81.8^{+1.5}_{-0.68}$
$\tau$	$0.0533^{+0.0047}_{-0.0080}$	$r_{\text{drag}} h$	$96.8^{+3.6}_{-1.8}$	$D_M(0.38)$	$1563^{+18}_{-43}$
$\Sigma m_\nu [\text{eV}]$	$< 0.196$	$\langle d^2 \rangle^{1/2}$	$2.451 \pm 0.037$	$H(0.51)$	$88.7^{+1.3}_{-0.55}$
$\ln(10^{10} A_s)$	$3.043^{+0.012}_{-0.016}$	$z_{\text{re}}$	$7.67^{+0.52}_{-0.82}$	$D_M(0.51)$	$2021^{+21}_{-50}$
$n_s$	$0.9615 \pm 0.0062$	$10^9 A_s$	$2.098^{+0.024}_{-0.033}$	$H(0.61)$	$94.5^{+1.1}_{-0.45}$
$y_{\text{cal}}$	$1.0005 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.885 \pm 0.014$	$D_M(0.61)$	$2349^{+22}_{-55}$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{40}$	$1234 \pm 15$	$H(2.33)$	$237.5^{+1.3}_{-2.0}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{220}$	$5712 \pm 41$	$D_M(2.33)$	$5805^{+20}_{-54}$
$A_{143}^{\text{tSZ}}$	$5.0 \pm 2.0$	$D_{810}$	$2537 \pm 14$	$f\sigma_8(0.15)$	$0.461 \pm 0.013$
$A_{100}^{\text{PS}}$	$265 \pm 29$	$D_{1420}$	$814.4 \pm 5.1$	$\sigma_8(0.15)$	$0.728^{+0.039}_{-0.010}$
$A_{143}^{\text{PS}}$	$50 \pm 8$	$D_{2000}$	$229.2 \pm 1.9$	$f\sigma_8(0.38)$	$0.473^{+0.016}_{-0.0097}$
$A_{143 \times 217}^{\text{PS}}$	$44 \pm 9$	$n_{s,0.002}$	$0.9615 \pm 0.0062$	$\sigma_8(0.38)$	$0.643^{+0.036}_{-0.0088}$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$Y_P$	$0.24526^{+0.00012}_{-0.000092}$	$f\sigma_8(0.51)$	$0.470^{+0.017}_{-0.0081}$
$A^{\text{kSZ}}$	$< 5.06$	$Y_P^{\text{BBN}}$	$0.24658^{+0.00012}_{-0.000092}$	$\sigma_8(0.51)$	$0.601^{+0.034}_{-0.0082}$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$10^5 \text{D/H}$	$2.646 \pm 0.047$	$f\sigma_8(0.61)$	$0.463^{+0.018}_{-0.0071}$
$A_{143}^{\text{dustTT}}$	$10.7 \pm 1.8$	$\text{Age/Gyr}$	$13.894^{+0.043}_{-0.12}$	$\sigma_8(0.61)$	$0.571^{+0.033}_{-0.0079}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3 \pm 3.3$	$z_*$	$1090.43^{+0.42}_{-0.50}$	$f\sigma_8(2.33)$	$0.289^{+0.015}_{-0.0034}$
$A_{217}^{\text{dustTT}}$	$93.4 \pm 7.3$	$r_*$	$144.40 \pm 0.50$	$\sigma_8(2.33)$	$0.296^{+0.017}_{-0.0041}$
$c_{100}$	$0.99961 \pm 0.00062$	$100\theta_*$	$1.04092 \pm 0.00047$	$f_{2000}^{143}$	$31.7 \pm 3.0$
$c_{217}$	$0.99827 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	$13.872 \pm 0.046$	$f_{2000}^{143 \times 217}$	$34.0 \pm 2.1$
$H_0$	$65.8^{+2.3}_{-1.1}$	$z_{\text{drag}}$	$1059.29 \pm 0.48$	$f_{2000}^{217}$	$108.5 \pm 2.0$
$\Omega_\Lambda$	$0.663^{+0.033}_{-0.013}$	$r_{\text{drag}}$	$147.17 \pm 0.49$	$\chi_{\text{simall}}^2$	$396.8 \pm 1.7$
$\Omega_m$	$0.337^{+0.013}_{-0.033}$	$k_D$	$0.14056 \pm 0.00052$	$\chi_{\text{lowl}}^2$	$23.9 \pm 1.3$
$\Omega_m h^2$	$0.1449^{+0.0021}_{-0.0035}$	$100\theta_D$	$0.16112 \pm 0.00027$	$\chi_{\text{plik}}^2$	$772.4 \pm 5.7$
$\Omega_\nu h^2$	$< 0.00211$	$z_{\text{eq}}$	$3417 \pm 50$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.7$
$\Omega_m h^3$	$0.0952^{+0.0014}_{-0.00051}$	$k_{\text{eq}}$	$0.01043 \pm 0.00015$	$\chi_{\text{CMB}}^2$	$1193.1 \pm 5.7$
$\sigma_8$	$0.790^{+0.040}_{-0.011}$	$100\theta_{\text{eq}}$	$0.8099 \pm 0.0092$		
$S_8$	$0.835 \pm 0.025$	$100\theta_{s,\text{eq}}$	$0.4478 \pm 0.0047$		

$\bar{\chi}_{\text{eff}}^2 = 1200.49$ ;  $R - 1 = 0.01089$



### 6.3 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022395	$0.02235 \pm 0.00015$ (+1.2 $\sigma$ )	$\Omega_\nu h^2$	0.00001	$< 0.00115$ (−0.5 $\sigma$ )	$100\theta_{\text{eq}}$	0.8131	$0.8123 \pm 0.0059$ (+0.3 $\sigma$ )
$\Omega_c h^2$	0.12003	$0.1202 \pm 0.0014$ (−0.4 $\sigma$ )	$\Omega_m h^3$	0.09669	$0.09622^{+0.00067}_{-0.00034}$ (+0.8 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.44925	$0.4489 \pm 0.0030$ (+0.3 $\sigma$ )
$100\theta_{\text{MC}}$	1.040945	$1.04089 \pm 0.00032$ (+0.5 $\sigma$ )	$\sigma_8$	0.8258	$0.807^{+0.021}_{-0.0092}$ (+0.5 $\sigma$ )	$H(0.15)$	73.14	$72.4^{+1.0}_{-0.62}$ (+0.6 $\sigma$ )
$\tau$	0.0552	$0.0545 \pm 0.0079$ (+0.4 $\sigma$ )	$S_8$	0.8383	$0.833 \pm 0.017$ (−0.1 $\sigma$ )	$D_{\text{M}}(0.15)$	638.9	$646.3^{+6.0}_{-10}$ (−0.6 $\sigma$ )
$\Sigma m_\nu$ [eV]	0.001	$< 0.107$ (−0.5 $\sigma$ )	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4592	$0.4561 \pm 0.0091$ (−0.1 $\sigma$ )	$H(0.38)$	83.23	$82.66^{+0.78}_{-0.46}$ (+0.7 $\sigma$ )
$\ln(10^{10} A_{\text{s}})$	3.0469	$3.045 \pm 0.016$ (+0.3 $\sigma$ )	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6158	$0.607^{+0.012}_{-0.0089}$ (+0.3 $\sigma$ )	$D_{\text{M}}(0.38)$	1524.2	$1539^{+12}_{-21}$ (−0.6 $\sigma$ )
$n_{\text{s}}$	0.96684	$0.9646 \pm 0.0044$ (+0.5 $\sigma$ )	$\sigma_8/h^{0.5}$	1.0024	$0.986^{+0.021}_{-0.013}$ (+0.4 $\sigma$ )	$H(0.51)$	89.94	$89.46^{+0.65}_{-0.37}$ (+0.7 $\sigma$ )
$y_{\text{cal}}$	1.00064	$1.0006 \pm 0.0025$ (+0.0 $\sigma$ )	$r_{\text{drag}} h$	99.82	$98.6^{+1.9}_{-1.2}$ (+0.6 $\sigma$ )	$D_{\text{M}}(0.51)$	1974.8	$1993^{+14}_{-25}$ (−0.6 $\sigma$ )
$A_{217}^{\text{CIB}}$	44.8	$47 \pm 7$ (−0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4543	$2.446 \pm 0.029$ (−0.1 $\sigma$ )	$H(0.61)$	95.551	$95.14^{+0.54}_{-0.30}$ (+0.7 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.79	—	$z_{\text{re}}$	7.76	$7.69 \pm 0.80$ (+0.3 $\sigma$ )	$D_{\text{M}}(0.61)$	2298.3	$2318^{+15}_{-27}$ (−0.6 $\sigma$ )
$A_{143}^{\text{tSZ}}$	6.98	$5.5^{+2.1}_{-1.9}$ (+0.3 $\sigma$ )	$10^9 A_{\text{s}}$	2.1050	$2.102 \pm 0.034$ (+0.3 $\sigma$ )	$H(2.33)$	236.28	$236.87^{+0.88}_{-1.1}$ (−0.4 $\sigma$ )
$A_{100}^{\text{PS}}$	246.4	$259 \pm 28$ (−0.2 $\sigma$ )	$10^9 A_{\text{s}} e^{-2\tau}$	1.8851	$1.884 \pm 0.012$ (−0.1 $\sigma$ )	$D_{\text{M}}(2.33)$	5749.9	$5770^{+13}_{-27}$ (−0.7 $\sigma$ )
$A_{143}^{\text{PS}}$	51.9	$46 \pm 8$ (−0.5 $\sigma$ )	$D_{40}$	1228.3	$1232 \pm 13$ (−0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4633	$0.4604 \pm 0.0085$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	56.3	$43 \pm 9$ (−0.2 $\sigma$ )	$D_{220}$	5729.6	$5732 \pm 39$ (+0.5 $\sigma$ )	$\sigma_8(0.15)$	0.7632	$0.745^{+0.021}_{-0.0083}$ (+0.5 $\sigma$ )
$A_{217}^{\text{PS}}$	123.6	$115 \pm 10$ (−0.0 $\sigma$ )	$D_{810}$	2542.2	$2540 \pm 13$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.4823	$0.4769^{+0.0086}_{-0.0071}$ (+0.3 $\sigma$ )
$A^{\text{kSZ}}$	0.01	$< 4.23$ (−0.2 $\sigma$ )	$D_{1420}$	818.92	$817.4 \pm 4.7$ (+0.6 $\sigma$ )	$\sigma_8(0.38)$	0.6766	$0.660^{+0.019}_{-0.0073}$ (+0.5 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.82	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$D_{2000}$	231.68	$230.9 \pm 1.6$ (+0.9 $\sigma$ )	$f\sigma_8(0.51)$	0.4811	$0.4746^{+0.0089}_{-0.0063}$ (+0.3 $\sigma$ )
$A_{143}^{\text{dustTT}}$	11.02	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$n_{\text{s},0.002}$	0.96684	$0.9646 \pm 0.0044$ (+0.5 $\sigma$ )	$\sigma_8(0.51)$	0.6332	$0.617^{+0.018}_{-0.0068}$ (+0.5 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	20.19	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\text{P}}$	0.245405	$0.245385^{+0.000064}_{-0.000056}$ (+1.2 $\sigma$ )	$f\sigma_8(0.61)$	0.4761	$0.4691^{+0.0092}_{-0.0058}$ (+0.4 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.7	$93.7 \pm 7.4$ (+0.0 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.246732	$0.246712^{+0.000065}_{-0.000056}$ (+1.2 $\sigma$ )	$\sigma_8(0.61)$	0.6025	$0.587^{+0.017}_{-0.0065}$ (+0.5 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1140	$0.114 \pm 0.038$	$10^5 \text{D/H}$	2.5809	$2.590 \pm 0.028$ (−1.2 $\sigma$ )	$f\sigma_8(2.33)$	0.3029	$0.2961^{+0.0078}_{-0.0030}$ (+0.5 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1348	$0.135 \pm 0.029$	Age/Gyr	13.7660	$13.813^{+0.030}_{-0.061}$ (−0.7 $\sigma$ )	$\sigma_8(2.33)$	0.3128	$0.3046^{+0.0092}_{-0.0034}$ (+0.5 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.480	$0.481 \pm 0.085$	$z_*$	1089.887	$1089.97 \pm 0.29$ (−1.0 $\sigma$ )	$f_{2000}^{143}$	28.17	$29.6 \pm 2.7$ (−0.7 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.225	$0.226 \pm 0.054$	$r_*$	144.411	$144.38 \pm 0.31$ (−0.0 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.68	$32.3 \pm 1.8$ (−0.8 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.666	$0.667 \pm 0.080$	$100\theta_*$	1.041097	$1.04110 \pm 0.00031$ (+0.4 $\sigma$ )	$f_{2000}^{217}$	106.25	$107.1 \pm 1.8$ (−0.8 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.085	$2.09 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8710	$13.868 \pm 0.029$ (−0.1 $\sigma$ )	$\chi_{\text{simall}}^2$	396.20	$397.2 \pm 2.0$ (+0.1 $\sigma$ )
$c_{100}$	0.99975	$0.99968 \pm 0.00061$ (+0.1 $\sigma$ )	$z_{\text{drag}}$	1060.009	$1059.91 \pm 0.30$ (+1.3 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.24	$23.56 \pm 0.97$ (−0.3 $\sigma$ )
$c_{217}$	0.99817	$0.99820 \pm 0.00062$ (−0.1 $\sigma$ )	$r_{\text{drag}}$	147.061	$147.05 \pm 0.31$ (−0.2 $\sigma$ )	$\chi_{\text{plik}}^2$	2343.8	$2360.2 \pm 6.0$ (+278.3 $\sigma$ )
$H_0$	67.88	$67.0^{+1.2}_{-0.72}$ (+0.6 $\sigma$ )	$k_{\text{D}}$	0.140911	$0.14090 \pm 0.00033$ (+0.6 $\sigma$ )	$\chi_{\text{prior}}^2$	1.49	$11.5 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_\Lambda$	0.6909	$0.680^{+0.016}_{-0.0093}$ (+0.6 $\sigma$ )	$100\theta_{\text{D}}$	0.160729	$0.16078 \pm 0.00017$ (−1.3 $\sigma$ )	$\chi_{\text{CMB}}^2$	2763.2	$2780.9 \pm 6.1$ (+273.2 $\sigma$ )
$\Omega_{\text{m}}$	0.3091	$0.3199^{+0.0093}_{-0.016}$ (−0.6 $\sigma$ )	$z_{\text{eq}}$	3403.6	$3408 \pm 32$ (−0.2 $\sigma$ )			
$\Omega_{\text{m}} h^2$	0.14244	$0.1436^{+0.0014}_{-0.0018}$ (−0.4 $\sigma$ )	$k_{\text{eq}}$	0.010388	$0.010400 \pm 0.000097$ (−0.2 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 2764.74$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.79$ ;  $\bar{\chi}_{\text{eff}}^2 = 2792.41$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.67$ ;  $R - 1 = 0.01278$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.20 ( $\Delta$  0.33) commander\_dx12\_v3.2.29: 23.24 ( $\Delta$  -0.42) plik\_rd12\_HM\_v22b\_TTTEEE: 2343.80



## 6.4 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_post\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022502	$0.02250 \pm 0.00014$	$\Omega_\nu h^2$	$0.9 \cdot 10^{-5}$	$< 0.000423$	$100\theta_{\text{eq}}$	0.8194	$0.8193^{+0.0056}_{-0.0049}$
$\Omega_c h^2$	0.11856	$0.1186^{+0.0011}_{-0.0013}$	$\Omega_m h^3$	0.096708	$0.09662^{+0.00036}_{-0.00031}$	$100\theta_{\text{s,eq}}$	0.45247	$0.4524^{+0.0029}_{-0.0025}$
$100\theta_{\text{MC}}$	1.041120	$1.04114 \pm 0.00030$	$\sigma_8$	0.8207	$0.8154^{+0.0098}_{-0.0080}$	$H(0.15)$	73.72	$73.50^{+0.58}_{-0.47}$
$\tau$	0.0561	$0.0571 \pm 0.0079$	$S_8$	0.8209	$0.820 \pm 0.014$	$D_{\text{M}}(0.15)$	633.2	$635.4^{+4.5}_{-5.7}$
$\Sigma m_\nu [\text{eV}]$	0.0009	$< 0.0394$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4496	$0.4491 \pm 0.0079$	$H(0.38)$	83.651	$83.48^{+0.44}_{-0.35}$
$\ln(10^{10} A_{\text{s}})$	3.0451	$3.047^{+0.015}_{-0.017}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6075	$0.6051 \pm 0.0082$	$D_{\text{M}}(0.38)$	1512.9	$1517.2^{+9.1}_{-12}$
$n_{\text{s}}$	0.96955	$0.9686 \pm 0.0040$	$\sigma_8/h^{0.5}$	0.9912	$0.987 \pm 0.012$	$H(0.51)$	90.264	$90.13^{+0.35}_{-0.28}$
$y_{\text{cal}}$	1.00057	$1.0006 \pm 0.0024$	$r_{\text{drag}} h$	101.00	$100.6^{+1.1}_{-0.94}$	$D_{\text{M}}(0.51)$	1961.6	$1967^{+11}_{-14}$
$A_{217}^{\text{CIB}}$	45.7	$47 \pm 7$	$\langle d^2 \rangle^{1/2}$	2.4309	$2.431 \pm 0.027$	$H(0.61)$	95.805	$95.69^{+0.29}_{-0.23}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.654	$> 0.389$	$z_{\text{re}}$	7.80	$7.89 \pm 0.78$	$D_{\text{M}}(0.61)$	2284.0	$2290^{+12}_{-15}$
$A_{143}^{\text{tSZ}}$	7.17	$5.5 \pm 2.0$	$10^9 A_{\text{s}}$	2.1012	$2.105^{+0.031}_{-0.036}$	$H(2.33)$	235.43	$235.63^{+0.71}_{-0.80}$
$A_{100}^{\text{PS}}$	247.1	$257 \pm 27$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8782	$1.878 \pm 0.011$	$D_{\text{M}}(2.33)$	5739.4	$5745^{+10}_{-14}$
$A_{143}^{\text{PS}}$	49.5	$45 \pm 8$	$D_{40}$	1222.5	$1225 \pm 12$	$f\sigma_8(0.15)$	0.4544	$0.4540 \pm 0.0075$
$A_{143 \times 217}^{\text{PS}}$	52.6	$42 \pm 9$	$D_{220}$	5739.5	$5742 \pm 38$	$\sigma_8(0.15)$	0.7593	$0.7542^{+0.0092}_{-0.0071}$
$A_{217}^{\text{PS}}$	121.7	$115 \pm 10$	$D_{810}$	2540.1	$2539 \pm 13$	$f\sigma_8(0.38)$	0.4754	$0.4742 \pm 0.0065$
$A^{\text{kSZ}}$	0.00	$< 4.09$	$D_{1420}$	819.12	$818.3 \pm 4.7$	$\sigma_8(0.38)$	0.6741	$0.6694^{+0.0082}_{-0.0061}$
$A_{100}^{\text{dustTT}}$	8.84	$8.9 \pm 1.8$	$D_{2000}$	231.79	$231.5 \pm 1.6$	$f\sigma_8(0.51)$	0.4752	$0.4737 \pm 0.0060$
$A_{143}^{\text{dustTT}}$	11.08	$10.9 \pm 1.7$	$n_{\text{s},0.002}$	0.96955	$0.9686 \pm 0.0040$	$\sigma_8(0.51)$	0.6313	$0.6268^{+0.0078}_{-0.0057}$
$A_{143 \times 217}^{\text{dustTT}}$	20.16	$18.4 \pm 3.4$	$Y_{\text{P}}$	0.245445	$0.245442^{+0.000056}_{-0.000050}$	$f\sigma_8(0.61)$	0.4711	$0.4694 \pm 0.0056$
$A_{217}^{\text{dustTT}}$	95.6	$93.3 \pm 7.6$	$Y_{\text{P}}^{\text{BBN}}$	0.246772	$0.246768^{+0.000056}_{-0.000050}$	$\sigma_8(0.61)$	0.6010	$0.5966^{+0.0074}_{-0.0054}$
$A_{100}^{\text{dustTE}}$	0.1134	$0.114 \pm 0.036$	$10^5 \text{D}/\text{H}$	2.5615	$2.563 \pm 0.026$	$f\sigma_8(2.33)$	0.30248	$0.3008^{+0.0034}_{-0.0027}$
$A_{100 \times 143}^{\text{dustTE}}$	0.1343	$0.134 \pm 0.029$	Age/Gyr	13.7433	$13.756^{+0.023}_{-0.030}$	$\sigma_8(2.33)$	0.31282	$0.3106^{+0.0039}_{-0.0028}$
$A_{100 \times 217}^{\text{dustTE}}$	0.484	$0.483 \pm 0.087$	$z_*$	1089.624	$1089.64^{+0.23}_{-0.27}$	$f_{2000}^{143}$	28.15	$28.9 \pm 2.6$
$A_{143}^{\text{dustTE}}$	0.223	$0.224 \pm 0.055$	$r_*$	144.710	$144.70 \pm 0.28$	$f_{2000}^{143 \times 217}$	31.58	$31.7^{+1.6}_{-1.8}$
$A_{143 \times 217}^{\text{dustTE}}$	0.664	$0.666 \pm 0.079$	$100\theta_*$	1.041267	$1.04130 \pm 0.00029$	$f_{2000}^{217}$	106.14	$106.6 \pm 1.7$
$A_{217}^{\text{dustTE}}$	2.071	$2.08 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8975	$13.896 \pm 0.026$	$\chi_{\text{simall}}^2$	396.23	$397.5 \pm 2.2$
$c_{100}$	0.99974	$0.99969 \pm 0.00061$	$z_{\text{drag}}$	1060.123	$1060.12 \pm 0.29$	$\chi_{\text{lowl}}^2$	22.73	$22.98 \pm 0.85$
$c_{217}$	0.99817	$0.99819 \pm 0.00060$	$r_{\text{drag}}$	147.334	$147.33 \pm 0.28$	$\chi_{\text{plik}}^2$	2345.3	$2360.3 \pm 5.9$
$H_0$	68.55	$68.30^{+0.67}_{-0.55}$	$k_{\text{D}}$	0.140707	$0.14071 \pm 0.00031$	$\chi_{\text{H073p45}}^2$	8.71	$9.8 \pm 2.4$
$\Omega_\Lambda$	0.6998	$0.6966^{+0.0088}_{-0.0069}$	$100\theta_{\text{D}}$	0.160656	$0.16067 \pm 0.00017$	$\chi_{\text{prior}}^2$	1.65	$11.3 \pm 4.5$
$\Omega_{\text{m}}$	0.3002	$0.3034^{+0.0069}_{-0.0088}$	$z_{\text{eq}}$	3371.0	$3372^{+26}_{-30}$	$\chi_{\text{CMB}}^2$	2764.2	$2780.7 \pm 5.9$
$\Omega_{\text{m}} h^2$	0.14107	$0.1415^{+0.0011}_{-0.0013}$	$k_{\text{eq}}$	0.010288	$0.010291^{+0.000078}_{-0.000090}$			

Best-fit  $\chi_{\text{eff}}^2 = 2774.59$ ;  $\bar{\chi}_{\text{eff}}^2 = 2801.83$ ;  $R - 1 = 0.06998$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.23 commander\_dx12\_v3.2.29: 22.73 plik\_rd12\_HM\_v22b\_TTTEEE: 2345.26 Hubble - H073p45: 8.71



## 6.5 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02235 \pm 0.00015 \quad (+1.2\sigma)$	$\Omega_\nu h^2$	$< 0.00116 \quad (-0.5\sigma)$	$100\theta_{\text{eq}}$	$0.8125 \pm 0.0059 \quad (+0.3\sigma)$
$\Omega_c h^2$	$0.1202 \pm 0.0014 \quad (-0.3\sigma)$	$\Omega_m h^3$	$0.09622^{+0.00067}_{-0.00035} \quad (+0.8\sigma)$	$100\theta_{\text{s,eq}}$	$0.4490 \pm 0.0030 \quad (+0.2\sigma)$
$100\theta_{\text{MC}}$	$1.04090 \pm 0.00032 \quad (+0.5\sigma)$	$\sigma_8$	$0.808^{+0.021}_{-0.0089} \quad (+0.5\sigma)$	$H(0.15)$	$72.4^{+1.0}_{-0.62} \quad (+0.6\sigma)$
$\tau$	$0.0556^{+0.0055}_{-0.0082} \quad (+0.3\sigma)$	$S_8$	$0.833 \pm 0.017 \quad (-0.1\sigma)$	$D_{\text{M}}(0.15)$	$646.2^{+6.0}_{-10} \quad (-0.6\sigma)$
$\Sigma m_\nu [\text{eV}]$	$< 0.108 \quad (-0.5\sigma)$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4564 \pm 0.0091 \quad (-0.1\sigma)$	$H(0.38)$	$82.67^{+0.79}_{-0.46} \quad (+0.7\sigma)$
$\ln(10^{10} A_{\text{s}})$	$3.047^{+0.012}_{-0.016} \quad (+0.3\sigma)$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.607^{+0.012}_{-0.0089} \quad (+0.3\sigma)$	$D_{\text{M}}(0.38)$	$1539^{+12}_{-21} \quad (-0.6\sigma)$
$n_{\text{s}}$	$0.9647 \pm 0.0044 \quad (+0.5\sigma)$	$\sigma_8/h^{0.5}$	$0.986^{+0.021}_{-0.013} \quad (+0.4\sigma)$	$H(0.51)$	$89.46^{+0.65}_{-0.37} \quad (+0.7\sigma)$
$y_{\text{cal}}$	$1.0006 \pm 0.0025 \quad (+0.0\sigma)$	$r_{\text{drag}} h$	$98.6^{+1.9}_{-1.2} \quad (+0.6\sigma)$	$D_{\text{M}}(0.51)$	$1993^{+14}_{-25} \quad (-0.6\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.448 \pm 0.028 \quad (-0.1\sigma)$	$H(0.61)$	$95.15^{+0.55}_{-0.30} \quad (+0.7\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$z_{\text{re}}$	$7.81^{+0.59}_{-0.81} \quad (+0.2\sigma)$	$D_{\text{M}}(0.61)$	$2318^{+15}_{-27} \quad (-0.6\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.3\sigma)$	$10^9 A_{\text{s}}$	$2.106^{+0.025}_{-0.035} \quad (+0.3\sigma)$	$H(2.33)$	$236.85^{+0.88}_{-1.1} \quad (-0.3\sigma)$
$A_{100}^{\text{PS}}$	$258 \pm 27 \quad (-0.2\sigma)$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.884 \pm 0.012 \quad (-0.1\sigma)$	$D_{\text{M}}(2.33)$	$5770^{+14}_{-27} \quad (-0.7\sigma)$
$A_{143}^{\text{PS}}$	$46 \pm 8 \quad (-0.5\sigma)$	$D_{40}$	$1232 \pm 13 \quad (-0.1\sigma)$	$f\sigma_8(0.15)$	$0.4607 \pm 0.0085 \quad (-0.0\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9 \quad (-0.2\sigma)$	$D_{220}$	$5732 \pm 39 \quad (+0.5\sigma)$	$\sigma_8(0.15)$	$0.746^{+0.020}_{-0.0080} \quad (+0.5\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (-0.0\sigma)$	$D_{810}$	$2540 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4772^{+0.0085}_{-0.0070} \quad (+0.3\sigma)$
$A^{\text{kSZ}}$	$< 4.21 \quad (-0.2\sigma)$	$D_{1420}$	$817.3 \pm 4.7 \quad (+0.6\sigma)$	$\sigma_8(0.38)$	$0.660^{+0.019}_{-0.0071} \quad (+0.5\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$D_{2000}$	$230.9 \pm 1.6 \quad (+0.9\sigma)$	$f\sigma_8(0.51)$	$0.4750^{+0.0089}_{-0.0062} \quad (+0.3\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$n_{\text{s},0.002}$	$0.9647 \pm 0.0044 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.617^{+0.018}_{-0.0066} \quad (+0.5\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.245387^{+0.000064}_{-0.000056} \quad (+1.2\sigma)$	$f\sigma_8(0.61)$	$0.4694^{+0.0091}_{-0.0057} \quad (+0.4\sigma)$
$A_{217}^{\text{dustTT}}$	$93.8 \pm 7.3 \quad (+0.1\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246713^{+0.000065}_{-0.000056} \quad (+1.2\sigma)$	$\sigma_8(0.61)$	$0.587^{+0.017}_{-0.0063} \quad (+0.5\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$10^5 \text{D/H}$	$2.589 \pm 0.028 \quad (-1.2\sigma)$	$f\sigma_8(2.33)$	$0.2964^{+0.0077}_{-0.0029} \quad (+0.5\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.029$	$\text{Age/Gyr}$	$13.812^{+0.030}_{-0.061} \quad (-0.7\sigma)$	$\sigma_8(2.33)$	$0.3049^{+0.0091}_{-0.0033} \quad (+0.5\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.481 \pm 0.085$	$z_*$	$1089.96 \pm 0.29 \quad (-1.0\sigma)$	$f_{2000}^{143}$	$29.5 \pm 2.7 \quad (-0.7\sigma)$
$A_{143}^{\text{dustTE}}$	$0.226 \pm 0.054$	$r_*$	$144.39 \pm 0.31 \quad (-0.0\sigma)$	$f_{2000}^{143 \times 217}$	$32.2 \pm 1.8 \quad (-0.8\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.666 \pm 0.079$	$100\theta_*$	$1.04110 \pm 0.00031 \quad (+0.4\sigma)$	$f_{2000}^{217}$	$107.1 \pm 1.8 \quad (-0.7\sigma)$
$A_{217}^{\text{dustTE}}$	$2.09 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.869 \pm 0.029 \quad (-0.1\sigma)$	$\chi_{\text{small}}^2$	$397.2 \pm 2.0 \quad (+0.2\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$z_{\text{drag}}$	$1059.91 \pm 0.30 \quad (+1.3\sigma)$	$\chi_{\text{lowl}}^2$	$23.57 \pm 0.97 \quad (-0.2\sigma)$
$c_{217}$	$0.99820 \pm 0.00062 \quad (-0.1\sigma)$	$r_{\text{drag}}$	$147.05 \pm 0.31 \quad (-0.2\sigma)$	$\chi_{\text{plik}}^2$	$2360.0 \pm 6.0 \quad (+278.8\sigma)$
$H_0$	$67.0^{+1.2}_{-0.72} \quad (+0.6\sigma)$	$k_{\text{D}}$	$0.14090 \pm 0.00032 \quad (+0.6\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.5 \quad (+1.1\sigma)$
$\Omega_\Lambda$	$0.680^{+0.016}_{-0.0092} \quad (+0.5\sigma)$	$100\theta_{\text{D}}$	$0.16077 \pm 0.00017 \quad (-1.3\sigma)$	$\chi_{\text{CMB}}^2$	$2780.7 \pm 6.0 \quad (+276.2\sigma)$
$\Omega_{\text{m}}$	$0.3197^{+0.0092}_{-0.016} \quad (-0.5\sigma)$	$z_{\text{eq}}$	$3407 \pm 32 \quad (-0.2\sigma)$		
$\Omega_{\text{m}} h^2$	$0.1435^{+0.0014}_{-0.0019} \quad (-0.4\sigma)$	$k_{\text{eq}}$	$0.010398 \pm 0.000097 \quad (-0.2\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2792.20; \Delta \bar{\chi}_{\text{eff}}^2 = 1591.71; R - 1 = 0.01347$$



## 6.6 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02250 \pm 0.00014$	$\Omega_\nu h^2$	$< 0.000424$	$100\theta_{\text{eq}}$	$0.8194^{+0.0056}_{-0.0048}$
$\Omega_c h^2$	$0.1186^{+0.0011}_{-0.0013}$	$\Omega_m h^3$	$0.09662^{+0.00036}_{-0.00030}$	$100\theta_{\text{s,eq}}$	$0.4525^{+0.0028}_{-0.0025}$
$100\theta_{\text{MC}}$	$1.04114 \pm 0.00029$	$\sigma_8$	$0.8158^{+0.0095}_{-0.0078}$	$H(0.15)$	$73.51^{+0.58}_{-0.47}$
$\tau$	$0.0579^{+0.0063}_{-0.0080}$	$S_8$	$0.820^{+0.014}_{-0.015}$	$D_{\text{M}}(0.15)$	$635.2^{+4.4}_{-5.7}$
$\Sigma m_\nu$ [eV]	$< 0.0394$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4492^{+0.0074}_{-0.0083}$	$H(0.38)$	$83.49^{+0.43}_{-0.35}$
$\ln(10^{10} A_{\text{s}})$	$3.048^{+0.013}_{-0.017}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.6053 \pm 0.0081$	$D_{\text{M}}(0.38)$	$1517.0^{+9.0}_{-11}$
$n_{\text{s}}$	$0.9687 \pm 0.0040$	$\sigma_8/h^{0.5}$	$0.987 \pm 0.012$	$H(0.51)$	$90.13^{+0.35}_{-0.28}$
$y_{\text{cal}}$	$1.0006 \pm 0.0024$	$r_{\text{drag}} h$	$100.7^{+1.1}_{-0.93}$	$D_{\text{M}}(0.51)$	$1966^{+11}_{-14}$
$A_{217}^{\text{CIB}}$	$47 \pm 7$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.026$	$H(0.61)$	$95.69^{+0.29}_{-0.23}$
$\xi^{\text{tSZ} \times \text{CIB}}$	$> 0.389$	$z_{\text{re}}$	$7.97^{+0.64}_{-0.79}$	$D_{\text{M}}(0.61)$	$2289^{+11}_{-15}$
$A_{143}^{\text{tSZ}}$	$5.5 \pm 1.9$	$10^9 A_{\text{s}}$	$2.108^{+0.027}_{-0.036}$	$H(2.33)$	$235.62^{+0.70}_{-0.80}$
$A_{100}^{\text{PS}}$	$257 \pm 27$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.878 \pm 0.011$	$D_{\text{M}}(2.33)$	$5745^{+10}_{-13}$
$A_{143}^{\text{PS}}$	$45 \pm 8$	$D_{40}$	$1225 \pm 12$	$f\sigma_8(0.15)$	$0.4541 \pm 0.0074$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9$	$D_{220}$	$5742 \pm 38$	$\sigma_8(0.15)$	$0.7547^{+0.0088}_{-0.0069}$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$D_{810}$	$2539 \pm 13$	$f\sigma_8(0.38)$	$0.4744 \pm 0.0064$
$A^{\text{kSZ}}$	$< 4.06$	$D_{1420}$	$818.3 \pm 4.7$	$\sigma_8(0.38)$	$0.6698^{+0.0079}_{-0.0059}$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$D_{2000}$	$231.5 \pm 1.6$	$f\sigma_8(0.51)$	$0.4740 \pm 0.0059$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.7$	$n_{\text{s},0.002}$	$0.9687 \pm 0.0040$	$\sigma_8(0.51)$	$0.6272^{+0.0074}_{-0.0055}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.4 \pm 3.4$	$Y_{\text{P}}$	$0.245443^{+0.000056}_{-0.000050}$	$f\sigma_8(0.61)$	$0.4696 \pm 0.0055$
$A_{217}^{\text{dustTT}}$	$93.4 \pm 7.5$	$Y_{\text{P}}^{\text{BBN}}$	$0.246770^{+0.000056}_{-0.000050}$	$\sigma_8(0.61)$	$0.5970^{+0.0071}_{-0.0052}$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.036$	$10^5 \text{D/H}$	$2.562 \pm 0.025$	$f\sigma_8(2.33)$	$0.3009^{+0.0032}_{-0.0026}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134 \pm 0.029$	Age/Gyr	$13.756^{+0.023}_{-0.030}$	$\sigma_8(2.33)$	$0.3108^{+0.0037}_{-0.0027}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.483 \pm 0.087$	$z_*$	$1089.63^{+0.23}_{-0.27}$	$f_{2000}^{143}$	$28.8 \pm 2.5$
$A_{143}^{\text{dustTE}}$	$0.224 \pm 0.055$	$r_*$	$144.71 \pm 0.28$	$f_{2000}^{143 \times 217}$	$31.7 \pm 1.7$
$A_{143 \times 217}^{\text{dustTE}}$	$0.665 \pm 0.079$	$100\theta_*$	$1.04130 \pm 0.00029$	$f_{2000}^{217}$	$106.5 \pm 1.7$
$A_{217}^{\text{dustTE}}$	$2.07 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.897 \pm 0.026$	$\chi_{\text{simall}}^2$	$397.5 \pm 2.2$
$c_{100}$	$0.99969 \pm 0.00060$	$z_{\text{drag}}$	$1060.13 \pm 0.29$	$\chi_{\text{lowl}}^2$	$22.98 \pm 0.85$
$c_{217}$	$0.99819 \pm 0.00060$	$r_{\text{drag}}$	$147.33 \pm 0.28$	$\chi_{\text{plik}}^2$	$2360.1 \pm 5.9$
$H_0$	$68.31^{+0.67}_{-0.54}$	$k_{\text{D}}$	$0.14071 \pm 0.00031$	$\chi_{\text{H073p45}}^2$	$9.7 \pm 2.3$
$\Omega_\Lambda$	$0.6968^{+0.0088}_{-0.0068}$	$100\theta_{\text{D}}$	$0.16067 \pm 0.00017$	$\chi_{\text{prior}}^2$	$11.3 \pm 4.5$
$\Omega_{\text{m}}$	$0.3032^{+0.0068}_{-0.0088}$	$z_{\text{eq}}$	$3371^{+25}_{-29}$	$\chi_{\text{CMB}}^2$	$2780.6 \pm 5.9$
$\Omega_{\text{m}} h^2$	$0.1414^{+0.0011}_{-0.0013}$	$k_{\text{eq}}$	$0.010289^{+0.000077}_{-0.000089}$		

$$\bar{\chi}_{\text{eff}}^2 = 2801.63; R - 1 = 0.07310$$



## 6.7 base\_mnu\_CamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022145	$0.02205 \pm 0.00025$	$S_8$	0.8412	$0.833 \pm 0.025$	$100\theta_{s,eq}$	0.44852	$0.4477 \pm 0.0047$
$\Omega_c h^2$	0.12051	$0.1210 \pm 0.0022$	$\sigma_8 \Omega_m^{0.5}$	0.4607	$0.456 \pm 0.014$	$H(0.15)$	72.77	$71.2^{+2.1}_{-0.88}$
$100\theta_{MC}$	1.04085	$1.04070 \pm 0.00051$	$\sigma_8 \Omega_m^{0.25}$	0.6158	$0.599^{+0.024}_{-0.012}$	$D_M(0.15)$	642.4	$658.6^{+8.2}_{-23}$
$\tau$	0.0507	$0.0517 \pm 0.0081$	$\sigma_8/h^{0.5}$	1.0019	$0.971^{+0.041}_{-0.017}$	$H(0.38)$	82.92	$81.7^{+1.6}_{-0.66}$
$\Sigma m_\nu$ [eV]	0.001	$< 0.201$	$r_{drag}h$	99.32	$96.7^{+3.8}_{-1.8}$	$D_M(0.38)$	1531.7	$1564^{+17}_{-45}$
$\ln(10^{10} A_s)$	3.0361	$3.039 \pm 0.016$	$\langle d^2 \rangle^{1/2}$	2.4542	$2.444 \pm 0.038$	$H(0.51)$	89.66	$88.7^{+1.3}_{-0.53}$
$n_s$	0.9637	$0.9621 \pm 0.0063$	$z_{re}$	7.36	$7.49 \pm 0.83$	$D_M(0.51)$	1983.9	$2022^{+20}_{-53}$
$y_{cal}$	1.00034	$1.0005 \pm 0.0025$	$10^9 A_s$	2.0825	$2.088 \pm 0.034$	$H(0.61)$	95.30	$94.5^{+1.1}_{-0.44}$
$A_{100}^{PS}$	239.3	$244 \pm 25$	$10^9 A_s e^{-2\tau}$	1.8816	$1.883 \pm 0.014$	$D_M(0.61)$	2308.2	$2350^{+21}_{-58}$
$A_{143}^{PS}$	38.7	$42 \pm 9$	$D_{40}$	1229.4	$1230 \pm 15$	$H(2.33)$	236.34	$237.6^{+1.3}_{-2.1}$
$A_{217}^{PS}$	99.7	$101 \pm 10$	$D_{220}$	5702.9	$5701 \pm 42$	$D_M(2.33)$	5763.1	$5806^{+19}_{-57}$
$A_{217}^{CIB}$	44.5	$41 \pm 7$	$D_{810}$	2533.4	$2535 \pm 14$	$f\sigma_8(0.15)$	0.4644	$0.460 \pm 0.013$
$A_{143}^{tSZ}$	5.47	$3.7^{+1.7}_{-2.6}$	$D_{1420}$	813.9	$814.0 \pm 5.3$	$\sigma_8(0.15)$	0.7601	$0.725^{+0.041}_{-0.010}$
$r_{143 \times 217}^{PS}$	0.578	$0.65 \pm 0.13$	$D_{2000}$	229.58	$229.1 \pm 2.0$	$f\sigma_8(0.38)$	0.4824	$0.472^{+0.016}_{-0.0096}$
$r_{143 \times 217}^{CIB}$	0.713	$> 0.474$	$n_{s,0.002}$	0.9637	$0.9621 \pm 0.0063$	$\sigma_8(0.38)$	0.6734	$0.641^{+0.037}_{-0.0089}$
$\xi^{tSZ \times CIB}$	0.04	—	$Y_P$	0.245303	$0.24526^{+0.00013}_{-0.000095}$	$f\sigma_8(0.51)$	0.4807	$0.468^{+0.018}_{-0.0082}$
$A^{kSZ}$	1.8	—	$Y_P^{BBN}$	0.246629	$0.24658^{+0.00013}_{-0.000096}$	$\sigma_8(0.51)$	0.6300	$0.599^{+0.036}_{-0.0084}$
$A_{100}^{dust}$	1.014	$1.01 \pm 0.19$	$10^5 D/H$	2.6285	$2.646^{+0.045}_{-0.051}$	$f\sigma_8(0.61)$	0.4755	$0.462^{+0.019}_{-0.0073}$
$A_{143}^{dust}$	0.980	$0.98 \pm 0.18$	Age/Gyr	13.796	$13.896^{+0.042}_{-0.13}$	$\sigma_8(0.61)$	0.5993	$0.569^{+0.034}_{-0.0080}$
$A_{217}^{dust}$	0.965	$0.97 \pm 0.10$	$z_*$	1090.247	$1090.44^{+0.43}_{-0.52}$	$f\sigma_8(2.33)$	0.3011	$0.288^{+0.016}_{-0.0034}$
$A_{143 \times 217}^{dust}$	1.011	$1.03 \pm 0.16$	$r_*$	144.478	$144.39 \pm 0.50$	$\sigma_8(2.33)$	0.3108	$0.295^{+0.018}_{-0.0042}$
$c_{100}$	0.99748	$0.9975 \pm 0.0010$	$100\theta_*$	1.041019	$1.04097 \pm 0.00047$	$f_{2000}^{143}$	30.78	$31.5 \pm 3.2$
$c_{217}$	1.00139	$1.0013 \pm 0.0016$	$D_M(z_*)/\text{Gpc}$	13.8785	$13.871 \pm 0.046$	$f_{2000}^{217}$	107.44	$108.0 \pm 2.2$
$H_0$	67.47	$65.7^{+2.5}_{-1.0}$	$z_{drag}$	1059.437	$1059.29 \pm 0.49$	$f_{2000}^{143 \times 217}$	32.87	$33.5 \pm 2.3$
$\Omega_\Lambda$	0.6866	$0.662^{+0.034}_{-0.012}$	$r_{drag}$	147.215	$147.15 \pm 0.49$	$\chi_{small}^2$	395.71	$397.0 \pm 1.8$
$\Omega_m$	0.3134	$0.338^{+0.012}_{-0.034}$	$k_D$	0.14056	$0.14057 \pm 0.00053$	$\chi_{lowl}^2$	23.54	$23.6 \pm 1.3$
$\Omega_m h^2$	0.14267	$0.1450^{+0.0021}_{-0.0036}$	$100\theta_D$	0.161047	$0.16112 \pm 0.00028$	$\chi_{CamSpec}^2$	7049.7	$7064.5 \pm 5.7$
$\Omega_\nu h^2$	0.00001	$< 0.00216$	$z_{eq}$	3409.1	$3418 \pm 50$	$\chi_{prior}^2$	2.27	$7.7 \pm 3.5$
$\Omega_m h^3$	0.09626	$0.0952^{+0.0014}_{-0.00050}$	$k_{eq}$	0.010405	$0.01043 \pm 0.00015$	$\chi_{CMB}^2$	7469.0	$7485.1 \pm 5.8$
$\sigma_8$	0.8230	$0.787^{+0.042}_{-0.011}$	$100\theta_{eq}$	0.8113	$0.8097 \pm 0.0092$			

Best-fit  $\chi_{eff}^2 = 7471.23$ ;  $\bar{\chi}_{eff}^2 = 7492.77$ ;  $R - 1 = 0.00611$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.71 commander\_dx12.v3.2\_29: 23.54 CamSpec like\_10.7HM: 7049.70



## 6.8 base\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02206 \pm 0.00025$	$S_8$	$0.833 \pm 0.025$	$100\theta_{s,eq}$	$0.4479 \pm 0.0047$
$\Omega_c h^2$	$0.1209 \pm 0.0022$	$\sigma_8 \Omega_m^{0.5}$	$0.456 \pm 0.014$	$H(0.15)$	$71.3^{+2.1}_{-0.89}$
$100\theta_{MC}$	$1.04071 \pm 0.00051$	$\sigma_8 \Omega_m^{0.25}$	$0.599^{+0.024}_{-0.012}$	$D_M(0.15)$	$658.3^{+8.2}_{-23}$
$\tau$	$0.0534^{+0.0046}_{-0.0082}$	$\sigma_8/h^{0.5}$	$0.972^{+0.041}_{-0.017}$	$H(0.38)$	$81.8^{+1.6}_{-0.66}$
$\Sigma m_\nu$ [eV]	$< 0.202$	$r_{drag}h$	$96.7^{+3.9}_{-1.8}$	$D_M(0.38)$	$1564^{+17}_{-46}$
$\ln(10^{10} A_s)$	$3.042^{+0.011}_{-0.016}$	$\langle d^2 \rangle^{1/2}$	$2.446 \pm 0.037$	$H(0.51)$	$88.7^{+1.3}_{-0.53}$
$n_s$	$0.9624 \pm 0.0063$	$z_{re}$	$7.67^{+0.51}_{-0.85}$	$D_M(0.51)$	$2022^{+20}_{-54}$
$y_{cal}$	$1.0005 \pm 0.0025$	$10^9 A_s$	$2.095^{+0.023}_{-0.034}$	$H(0.61)$	$94.5^{+1.1}_{-0.44}$
$A_{100}^{PS}$	$244 \pm 25$	$10^9 A_s e^{-2\tau}$	$1.882 \pm 0.014$	$D_M(0.61)$	$2349^{+21}_{-58}$
$A_{143}^{PS}$	$42 \pm 9$	$D_{40}$	$1230 \pm 15$	$H(2.33)$	$237.5^{+1.3}_{-2.1}$
$A_{217}^{PS}$	$101 \pm 10$	$D_{220}$	$5701 \pm 42$	$D_M(2.33)$	$5806^{+19}_{-57}$
$A_{217}^{CIB}$	$41 \pm 7$	$D_{810}$	$2535 \pm 14$	$f\sigma_8(0.15)$	$0.460 \pm 0.013$
$A_{143}^{tSZ}$	$3.7^{+1.7}_{-2.6}$	$D_{1420}$	$814.0 \pm 5.3$	$\sigma_8(0.15)$	$0.726^{+0.041}_{-0.010}$
$r_{143 \times 217}^{PS}$	$0.65 \pm 0.13$	$D_{2000}$	$229.2 \pm 2.0$	$f\sigma_8(0.38)$	$0.473^{+0.016}_{-0.0097}$
$r_{143 \times 217}^{CIB}$	$> 0.473$	$n_{s,0.002}$	$0.9624 \pm 0.0063$	$\sigma_8(0.38)$	$0.642^{+0.037}_{-0.0088}$
$\xi^{tSZ \times CIB}$	—	$Y_P$	$0.24526^{+0.00013}_{-0.000095}$	$f\sigma_8(0.51)$	$0.469^{+0.018}_{-0.0082}$
$A^{kSZ}$	—	$Y_P^{BBN}$	$0.24659^{+0.00013}_{-0.000095}$	$\sigma_8(0.51)$	$0.600^{+0.035}_{-0.0082}$
$A_{100}^{dust}$	$1.01 \pm 0.19$	$10^5 D/H$	$2.645^{+0.045}_{-0.051}$	$f\sigma_8(0.61)$	$0.462^{+0.019}_{-0.0072}$
$A_{143}^{dust}$	$0.98 \pm 0.18$	Age/Gyr	$13.895^{+0.042}_{-0.13}$	$\sigma_8(0.61)$	$0.570^{+0.034}_{-0.0078}$
$A_{217}^{dust}$	$0.97 \pm 0.10$	$z_*$	$1090.42^{+0.43}_{-0.53}$	$f\sigma_8(2.33)$	$0.288^{+0.016}_{-0.0033}$
$A_{143 \times 217}^{dust}$	$1.03 \pm 0.16$	$r_*$	$144.40 \pm 0.50$	$\sigma_8(2.33)$	$0.295^{+0.018}_{-0.0041}$
$c_{100}$	$0.9974 \pm 0.0010$	$100\theta_*$	$1.04098 \pm 0.00047$	$f_{2000}^{143}$	$31.4 \pm 3.2$
$c_{217}$	$1.0013 \pm 0.0016$	$D_M(z_*)/\text{Gpc}$	$13.872 \pm 0.046$	$f_{2000}^{217}$	$108.0 \pm 2.2$
$H_0$	$65.7^{+2.5}_{-1.0}$	$z_{drag}$	$1059.30 \pm 0.50$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.3$
$\Omega_\Lambda$	$0.663^{+0.035}_{-0.012}$	$r_{drag}$	$147.17 \pm 0.49$	$\chi_{simall}^2$	$396.9 \pm 1.8$
$\Omega_m$	$0.337^{+0.012}_{-0.035}$	$k_D$	$0.14056 \pm 0.00053$	$\chi_{lowl}^2$	$23.6 \pm 1.3$
$\Omega_m h^2$	$0.1449^{+0.0021}_{-0.0037}$	$100\theta_D$	$0.16112 \pm 0.00028$	$\chi_{CamSpec}^2$	$7064.4 \pm 5.7$
$\Omega_\nu h^2$	$< 0.00217$	$z_{eq}$	$3416 \pm 50$	$\chi_{prior}^2$	$7.7 \pm 3.5$
$\Omega_m h^3$	$0.0952^{+0.0014}_{-0.00050}$	$k_{eq}$	$0.01043 \pm 0.00015$	$\chi_{CMB}^2$	$7484.8 \pm 5.7$
$\sigma_8$	$0.788^{+0.042}_{-0.011}$	$100\theta_{eq}$	$0.8101 \pm 0.0092$		

$\bar{\chi}_{eff}^2 = 7492.51$ ;  $R - 1 = 0.00841$



## 6.9 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022312	$0.02227 \pm 0.00017$ (+0.8 $\sigma$ )	$\sigma_8$	0.8205	$0.795^{+0.030}_{-0.010}$ (+0.2 $\sigma$ )	$100\theta_{s,eq}$	0.45053	$0.4502 \pm 0.0030$ (+0.5 $\sigma$ )
$\Omega_c h^2$	0.11951	$0.1197 \pm 0.0014$ (-0.6 $\sigma$ )	$S_8$	0.8298	$0.822 \pm 0.018$ (-0.4 $\sigma$ )	$H(0.15)$	73.22	$72.2^{+1.4}_{-0.62}$ (+0.5 $\sigma$ )
$100\theta_{MC}$	1.040926	$1.04082 \pm 0.00034$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4545	$0.4504 \pm 0.0096$ (-0.4 $\sigma$ )	$D_M(0.15)$	638.0	$648.7^{+5.8}_{-14}$ (-0.5 $\sigma$ )
$\tau$	0.0522	$0.0528 \pm 0.0079$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6107	$0.598^{+0.017}_{-0.0092}$ (-0.0 $\sigma$ )	$H(0.38)$	83.26	$82.4^{+1.1}_{-0.46}$ (+0.5 $\sigma$ )
$\Sigma m_\nu$ [eV]	0.001	$< 0.149$ (-0.3 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9951	$0.972^{+0.029}_{-0.013}$ (+0.0 $\sigma$ )	$D_M(0.38)$	1522.7	$1544^{+12}_{-28}$ (-0.5 $\sigma$ )
$\ln(10^{10} A_s)$	3.0374	$3.039 \pm 0.016$ (+0.0 $\sigma$ )	$r_{drag} h$	100.14	$98.4^{+2.4}_{-1.2}$ (+0.5 $\sigma$ )	$H(0.51)$	89.94	$89.25^{+0.88}_{-0.37}$ (+0.5 $\sigma$ )
$n_s$	0.96667	$0.9652 \pm 0.0047$ (+0.5 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4385	$2.428 \pm 0.029$ (-0.4 $\sigma$ )	$D_M(0.51)$	1973.3	$1999^{+14}_{-34}$ (-0.5 $\sigma$ )
$y_{cal}$	1.00034	$1.0006 \pm 0.0024$ (+0.0 $\sigma$ )	$z_{re}$	7.46	$7.53 \pm 0.81$ (+0.0 $\sigma$ )	$H(0.61)$	95.53	$94.94^{+0.75}_{-0.31}$ (+0.5 $\sigma$ )
$A_{100}^{PS}$	231.3	$241 \pm 25$ (-0.1 $\sigma$ )	$10^9 A_s$	2.0851	$2.088 \pm 0.034$ (+0.0 $\sigma$ )	$D_M(0.61)$	2296.8	$2325^{+15}_{-37}$ (-0.5 $\sigma$ )
$A_{143}^{PS}$	45.8	$40 \pm 8$ (-0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8786	$1.879 \pm 0.011$ (-0.3 $\sigma$ )	$H(2.33)$	235.85	$236.65^{+0.89}_{-1.3}$ (-0.5 $\sigma$ )
$A_{217}^{PS}$	103.5	$102 \pm 10$ (+0.1 $\sigma$ )	$D_{40}$	1224.5	$1227 \pm 13$ (-0.2 $\sigma$ )	$D_M(2.33)$	5752.6	$5782^{+14}_{-37}$ (-0.5 $\sigma$ )
$A_{217}^{CIB}$	43.3	$40 \pm 7$ (-0.2 $\sigma$ )	$D_{220}$	5716.5	$5720 \pm 38$ (+0.4 $\sigma$ )	$f\sigma_8(0.15)$	0.4587	$0.4549^{+0.0094}_{-0.0085}$ (-0.4 $\sigma$ )
$A_{143}^{tSZ}$	6.55	$3.8^{+1.8}_{-2.6}$ (+0.1 $\sigma$ )	$D_{810}$	2535.3	$2536 \pm 13$ (+0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7585	$0.733^{+0.029}_{-0.0091}$ (+0.2 $\sigma$ )
$r_{143 \times 217}^{PS}$	0.674	$0.65 \pm 0.13$ (+0.1 $\sigma$ )	$D_{1420}$	816.03	$815.7 \pm 4.8$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4782	$0.471^{+0.011}_{-0.0071}$ (-0.1 $\sigma$ )
$r_{143 \times 217}^{CIB}$	0.848	$0.57^{+0.40}_{-0.16}$ (-0.1 $\sigma$ )	$D_{2000}$	230.50	$230.1 \pm 1.7$ (+0.5 $\sigma$ )	$\sigma_8(0.38)$	0.6727	$0.649^{+0.027}_{-0.0081}$ (+0.2 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.49	—	$n_{s,0.002}$	0.96667	$0.9652 \pm 0.0047$ (+0.5 $\sigma$ )	$f\sigma_8(0.51)$	0.4772	$0.468^{+0.012}_{-0.0063}$ (+0.0 $\sigma$ )
$A^{kSZ}$	0.04	$4.8^{+2.6}_{-3.7}$ (-0.1 $\sigma$ )	$Y_P$	0.245372	$0.245351^{+0.000072}_{-0.000063}$ (+0.8 $\sigma$ )	$\sigma_8(0.51)$	0.6296	$0.607^{+0.026}_{-0.0076}$ (+0.2 $\sigma$ )
$A_{100}^{dust}$	1.006	$1.01 \pm 0.20$ (+0.0 $\sigma$ )	$Y_P^{BBN}$	0.246698	$0.246677^{+0.000072}_{-0.000063}$ (+0.8 $\sigma$ )	$f\sigma_8(0.61)$	0.4725	$0.463^{+0.013}_{-0.0058}$ (+0.1 $\sigma$ )
$A_{143}^{dust}$	0.981	$0.97 \pm 0.18$ (-0.1 $\sigma$ )	$10^5 D/H$	2.5965	$2.606 \pm 0.032$ (-0.8 $\sigma$ )	$\sigma_8(0.61)$	0.5991	$0.578^{+0.025}_{-0.0072}$ (+0.3 $\sigma$ )
$A_{217}^{dust}$	0.976	$0.97 \pm 0.10$ (+0.1 $\sigma$ )	Age/Gyr	13.773	$13.841^{+0.031}_{-0.085}$ (-0.5 $\sigma$ )	$f\sigma_8(2.33)$	0.3013	$0.292^{+0.011}_{-0.0032}$ (+0.3 $\sigma$ )
$A_{143 \times 217}^{dust}$	1.005	$1.03 \pm 0.16$ (-0.0 $\sigma$ )	$z_*$	1089.946	$1090.04 \pm 0.31$ (-0.8 $\sigma$ )	$\sigma_8(2.33)$	0.3113	$0.300^{+0.013}_{-0.0038}$ (+0.3 $\sigma$ )
$c_{100}$	0.99774	$0.9975 \pm 0.0011$ (+0.1 $\sigma$ )	$r_*$	144.609	$144.57 \pm 0.32$ (+0.4 $\sigma$ )	$f_{2000}^{143}$	29.84	$30.2 \pm 2.9$ (-0.4 $\sigma$ )
$c_{217}$	1.00133	$1.0011 \pm 0.0016$ (-0.1 $\sigma$ )	$100\theta_*$	1.041078	$1.04105 \pm 0.00032$ (+0.2 $\sigma$ )	$f_{2000}^{217}$	106.52	$107.2 \pm 2.0$ (-0.4 $\sigma$ )
$c_{TE}$	0.99645	$0.9971 \pm 0.0050$	$D_M(z_*)/\text{Gpc}$	13.8903	$13.887 \pm 0.029$ (+0.4 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.94	$32.5 \pm 2.1$ (-0.5 $\sigma$ )
$c_{EE}$	0.99230	$0.9924 \pm 0.0049$	$z_{drag}$	1059.780	$1059.68 \pm 0.34$ (+0.8 $\sigma$ )	$\chi_{simall}^2$	395.78	$396.9 \pm 1.7$ (-0.0 $\sigma$ )
$H_0$	67.99	$66.8^{+1.6}_{-0.71}$ (+0.5 $\sigma$ )	$r_{drag}$	147.291	$147.27 \pm 0.32$ (+0.2 $\sigma$ )	$\chi_{lowl}^2$	23.03	$23.13 \pm 0.94$ (-0.4 $\sigma$ )
$\Omega_\Lambda$	0.6931	$0.678^{+0.021}_{-0.0087}$ (+0.5 $\sigma$ )	$k_D$	0.140605	$0.14061 \pm 0.00035$ (+0.1 $\sigma$ )	$\chi_{CamSpec}^2$	11499.2	$11515.5 \pm 6.0$ (+779.7 $\sigma$ )
$\Omega_m$	0.3069	$0.3221^{+0.0087}_{-0.021}$ (-0.5 $\sigma$ )	$100\theta_D$	0.160856	$0.16089 \pm 0.00020$ (-0.8 $\sigma$ )	$\chi_{prior}^2$	2.06	$7.8 \pm 3.4$ (+0.0 $\sigma$ )
$\Omega_m h^2$	0.14183	$0.1434^{+0.0014}_{-0.0023}$ (-0.5 $\sigma$ )	$z_{eq}$	3389.1	$3393 \pm 31$ (-0.5 $\sigma$ )	$\chi_{CMB}^2$	11918.0	$11935.6 \pm 6.1$ (+765.6 $\sigma$ )
$\Omega_\nu h^2$	0.00001	$< 0.00160$ (-0.3 $\sigma$ )	$k_{eq}$	0.010344	$0.010356 \pm 0.000096$ (-0.5 $\sigma$ )			
$\Omega_m h^3$	0.09642	$0.09572^{+0.00094}_{-0.00037}$ (+0.4 $\sigma$ )	$100\theta_{eq}$	0.8154	$0.8147 \pm 0.0059$ (+0.5 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 11920.07$ ;  $\Delta\chi_{eff}^2 = 4448.84$ ;  $\bar{\chi}_{eff}^2 = 11943.39$ ;  $\Delta\bar{\chi}_{eff}^2 = 4450.62$ ;  $R - 1 = 0.01661$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.78 ( $\Delta$  0.06) commander\_dx12\_v3.2.29: 23.03 ( $\Delta$  -0.50) CamSpec like\_10.7HM\_1400\_unified: 11499.19



## 6.10 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Riess18

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02243^{+0.00015}_{-0.00017}$	$\sigma_8$	$0.810^{+0.011}_{-0.0085}$	$100\theta_{s,eq}$	$0.4539 \pm 0.0028$
$\Omega_c h^2$	$0.1180 \pm 0.0013$	$S_8$	$0.811 \pm 0.015$	$H(0.15)$	$73.59^{+0.61}_{-0.55}$
$100\theta_{MC}$	$1.04110 \pm 0.00032$	$\sigma_8 \Omega_m^{0.5}$	$0.4444 \pm 0.0084$	$D_M(0.15)$	$634.4^{+5.2}_{-6.0}$
$\tau$	$0.0549 \pm 0.0080$	$\sigma_8 \Omega_m^{0.25}$	$0.6000 \pm 0.0087$	$H(0.38)$	$83.52^{+0.46}_{-0.41}$
$\Sigma m_\nu$ [eV]	$< 0.0450$	$\sigma_8/h^{0.5}$	$0.979 \pm 0.013$	$D_M(0.38)$	$1516^{+11}_{-12}$
$\ln(10^{10} A_s)$	$3.040 \pm 0.016$	$r_{drag} h$	$101.0 \pm 1.1$	$H(0.51)$	$90.13^{+0.37}_{-0.33}$
$n_s$	$0.9697 \pm 0.0044$	$\langle d^2 \rangle^{1/2}$	$2.414 \pm 0.028$	$D_M(0.51)$	$1965^{+12}_{-14}$
$y_{cal}$	$1.0007 \pm 0.0024$	$z_{re}$	$7.68 \pm 0.81$	$H(0.61)$	$95.67^{+0.31}_{-0.27}$
$A_{100}^{PS}$	$239 \pm 24$	$10^9 A_s$	$2.091 \pm 0.034$	$D_M(0.61)$	$2288^{+13}_{-15}$
$A_{143}^{PS}$	$38 \pm 8$	$10^9 A_s e^{-2\tau}$	$1.873 \pm 0.011$	$H(2.33)$	$235.18 \pm 0.80$
$A_{217}^{PS}$	$102 \pm 10$	$D_{40}$	$1220 \pm 13$	$D_M(2.33)$	$5747^{+12}_{-14}$
$A_{217}^{CIB}$	$39 \pm 7$	$D_{220}$	$5730 \pm 40$	$f\sigma_8(0.15)$	$0.4495 \pm 0.0079$
$A_{143}^{tSZ}$	$3.9^{+1.9}_{-2.4}$	$D_{810}$	$2535 \pm 13$	$\sigma_8(0.15)$	$0.750^{+0.010}_{-0.0076}$
$r_{143 \times 217}^{PS}$	$0.66 \pm 0.13$	$D_{1420}$	$817.0 \pm 4.9$	$f\sigma_8(0.38)$	$0.4701 \pm 0.0068$
$r_{143 \times 217}^{CIB}$	$0.56^{+0.43}_{-0.15}$	$D_{2000}$	$230.9 \pm 1.7$	$\sigma_8(0.38)$	$0.6656^{+0.0092}_{-0.0064}$
$\xi^{tSZ \times CIB}$	$0.48^{+0.36}_{-0.44}$	$n_{s,0.002}$	$0.9697 \pm 0.0044$	$f\sigma_8(0.51)$	$0.4700 \pm 0.0063$
$A^{kSZ}$	$4.7^{+1.7}_{-4.5}$	$Y_P$	$0.245417 \pm 0.000061$	$\sigma_8(0.51)$	$0.6233^{+0.0087}_{-0.0060}$
$A_{100}^{dust}$	$1.01 \pm 0.19$	$Y_P^{BBN}$	$0.246743 \pm 0.000062$	$f\sigma_8(0.61)$	$0.4658 \pm 0.0060$
$A_{143}^{dust}$	$0.97 \pm 0.18$	$10^5 D/H$	$2.575 \pm 0.029$	$\sigma_8(0.61)$	$0.5934^{+0.0083}_{-0.0056}$
$A_{217}^{dust}$	$0.977^{+0.093}_{-0.10}$	Age/Gyr	$13.763^{+0.028}_{-0.032}$	$f\sigma_8(2.33)$	$0.2993^{+0.0038}_{-0.0028}$
$A_{143 \times 217}^{dust}$	$1.02 \pm 0.15$	$z_*$	$1089.67 \pm 0.27$	$\sigma_8(2.33)$	$0.3092^{+0.0044}_{-0.0030}$
$c_{100}$	$0.9976 \pm 0.0010$	$r_*$	$144.91 \pm 0.29$	$f_{2000}^{143}$	$29.2 \pm 2.9$
$c_{217}$	$1.0011 \pm 0.0015$	$100\theta_*$	$1.04127 \pm 0.00032$	$f_{2000}^{217}$	$106.5 \pm 1.9$
$c_{TE}$	$0.9966 \pm 0.0049$	$D_M(z_*)/\text{Gpc}$	$13.917 \pm 0.028$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.1$
$c_{EE}$	$0.9923 \pm 0.0049$	$z_{drag}$	$1059.93^{+0.31}_{-0.36}$	$\chi_{small}^2$	$397.1 \pm 1.8$
$H_0$	$68.42^{+0.71}_{-0.63}$	$r_{drag}$	$147.57 \pm 0.30$	$\chi_{lowl}^2$	$22.56 \pm 0.85$
$\Omega_\Lambda$	$0.6991^{+0.0091}_{-0.0078}$	$k_D$	$0.14041 \pm 0.00034$	$\chi_{CamSpec}^2$	$11516.2 \pm 6.0$
$\Omega_m$	$0.3009^{+0.0078}_{-0.0091}$	$100\theta_D$	$0.16077 \pm 0.00019$	$\chi_{H073p45}^2$	$9.3 \pm 2.5$
$\Omega_m h^2$	$0.1408 \pm 0.0013$	$z_{eq}$	$3355 \pm 29$	$\chi_{prior}^2$	$7.5 \pm 3.3$
$\Omega_\nu h^2$	$< 0.000484$	$k_{eq}$	$0.010241 \pm 0.000088$	$\chi_{CMB}^2$	$11935.8 \pm 6.0$
$\Omega_m h^3$	$0.09635 \pm 0.00038$	$100\theta_{eq}$	$0.8221 \pm 0.0056$		

$$\bar{\chi}_{\text{eff}}^2 = 11952.66; R - 1 = 0.05737$$



### 6.11 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02227 \pm 0.00017 \quad (+0.8\sigma)$	$\sigma_8$	$0.795^{+0.030}_{-0.0097} \quad (+0.2\sigma)$	$100\theta_{s,eq}$	$0.4503 \pm 0.0030 \quad (+0.5\sigma)$
$\Omega_c h^2$	$0.1197 \pm 0.0014 \quad (-0.6\sigma)$	$S_8$	$0.823 \pm 0.018 \quad (-0.4\sigma)$	$H(0.15)$	$72.2^{+1.4}_{-0.62} \quad (+0.5\sigma)$
$100\theta_{MC}$	$1.04083 \pm 0.00034 \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4507 \pm 0.0096 \quad (-0.4\sigma)$	$D_M(0.15)$	$648.5^{+5.8}_{-14} \quad (-0.5\sigma)$
$\tau$	$0.0543^{+0.0047}_{-0.0081} \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.599^{+0.016}_{-0.0091} \quad (-0.0\sigma)$	$H(0.38)$	$82.4^{+1.1}_{-0.46} \quad (+0.5\sigma)$
$\Sigma m_\nu [\text{eV}]$	$< 0.150 \quad (-0.3\sigma)$	$\sigma_8/h^{0.5}$	$0.973^{+0.029}_{-0.013} \quad (+0.0\sigma)$	$D_M(0.38)$	$1544^{+12}_{-29} \quad (-0.5\sigma)$
$\ln(10^{10} A_s)$	$3.042^{+0.012}_{-0.016} \quad (-0.0\sigma)$	$r_{drag} h$	$98.4^{+2.4}_{-1.2} \quad (+0.5\sigma)$	$H(0.51)$	$89.26^{+0.89}_{-0.38} \quad (+0.5\sigma)$
$n_s$	$0.9654 \pm 0.0046 \quad (+0.5\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.431 \pm 0.028 \quad (-0.4\sigma)$	$D_M(0.51)$	$1999^{+14}_{-34} \quad (-0.5\sigma)$
$y_{cal}$	$1.0006 \pm 0.0024 \quad (+0.0\sigma)$	$z_{re}$	$7.69^{+0.53}_{-0.80} \quad (+0.0\sigma)$	$H(0.61)$	$94.94^{+0.75}_{-0.31} \quad (+0.5\sigma)$
$A_{100}^{PS}$	$241 \pm 25 \quad (-0.1\sigma)$	$10^9 A_s$	$2.094^{+0.024}_{-0.033} \quad (-0.0\sigma)$	$D_M(0.61)$	$2324^{+15}_{-37} \quad (-0.5\sigma)$
$A_{143}^{PS}$	$40 \pm 8 \quad (-0.2\sigma)$	$10^9 A_s e^{-2\tau}$	$1.879 \pm 0.011 \quad (-0.3\sigma)$	$H(2.33)$	$236.63^{+0.89}_{-1.3} \quad (-0.5\sigma)$
$A_{217}^{PS}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{40}$	$1227 \pm 13 \quad (-0.2\sigma)$	$D_M(2.33)$	$5782^{+14}_{-37} \quad (-0.5\sigma)$
$A_{217}^{CIB}$	$40 \pm 7 \quad (-0.2\sigma)$	$D_{220}$	$5719 \pm 38 \quad (+0.4\sigma)$	$f\sigma_8(0.15)$	$0.4552^{+0.0094}_{-0.0084} \quad (-0.3\sigma)$
$A_{143}^{tSZ}$	$3.8^{+1.8}_{-2.6} \quad (+0.1\sigma)$	$D_{810}$	$2535 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.734^{+0.029}_{-0.0088} \quad (+0.2\sigma)$
$r_{143 \times 217}^{PS}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$D_{1420}$	$815.7 \pm 4.8 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.471^{+0.011}_{-0.0071} \quad (-0.1\sigma)$
$r_{143 \times 217}^{CIB}$	$0.57^{+0.41}_{-0.16} \quad (-0.1\sigma)$	$D_{2000}$	$230.1 \pm 1.7 \quad (+0.5\sigma)$	$\sigma_8(0.38)$	$0.650^{+0.027}_{-0.0078} \quad (+0.2\sigma)$
$\xi^{tSZ \times CIB}$	—	$n_{s,0.002}$	$0.9654 \pm 0.0046 \quad (+0.5\sigma)$	$f\sigma_8(0.51)$	$0.469^{+0.012}_{-0.0062} \quad (+0.0\sigma)$
$A^{kSZ}$	$4.8^{+2.6}_{-3.8} \quad (-0.1\sigma)$	$Y_P$	$0.245353^{+0.000072}_{-0.000063} \quad (+0.8\sigma)$	$\sigma_8(0.51)$	$0.608^{+0.025}_{-0.0072} \quad (+0.2\sigma)$
$A_{100}^{dust}$	$1.01 \pm 0.19 \quad (+0.0\sigma)$	$Y_P^{BBN}$	$0.246679^{+0.000072}_{-0.000063} \quad (+0.8\sigma)$	$f\sigma_8(0.61)$	$0.463^{+0.013}_{-0.0057} \quad (+0.1\sigma)$
$A_{143}^{dust}$	$0.97 \pm 0.18 \quad (-0.1\sigma)$	$10^5 D/H$	$2.605 \pm 0.032 \quad (-0.8\sigma)$	$\sigma_8(0.61)$	$0.578^{+0.024}_{-0.0069} \quad (+0.3\sigma)$
$A_{217}^{dust}$	$0.97 \pm 0.10 \quad (+0.1\sigma)$	Age/Gyr	$13.840^{+0.031}_{-0.086} \quad (-0.5\sigma)$	$f\sigma_8(2.33)$	$0.292^{+0.011}_{-0.0031} \quad (+0.3\sigma)$
$A_{143 \times 217}^{dust}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$z_*$	$1090.03 \pm 0.31 \quad (-0.8\sigma)$	$\sigma_8(2.33)$	$0.300^{+0.013}_{-0.0036} \quad (+0.3\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.1\sigma)$	$r_*$	$144.58 \pm 0.31 \quad (+0.3\sigma)$	$f_{2000}^{143}$	$30.1 \pm 2.9 \quad (-0.4\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$100\theta_*$	$1.04106 \pm 0.00032 \quad (+0.2\sigma)$	$f_{2000}^{217}$	$107.1 \pm 2.0 \quad (-0.4\sigma)$
$c_{TE}$	$0.9970 \pm 0.0050$	$D_M(z_*)/\text{Gpc}$	$13.888 \pm 0.029 \quad (+0.3\sigma)$	$f_{2000}^{143 \times 217}$	$32.4 \pm 2.0 \quad (-0.4\sigma)$
$c_{EE}$	$0.9923 \pm 0.0049$	$z_{drag}$	$1059.69 \pm 0.34 \quad (+0.8\sigma)$	$\chi_{small}^2$	$396.9 \pm 1.7 \quad (-0.0\sigma)$
$H_0$	$66.8^{+1.6}_{-0.71} \quad (+0.5\sigma)$	$r_{drag}$	$147.28 \pm 0.31 \quad (+0.2\sigma)$	$\chi_{lowl}^2$	$23.14 \pm 0.94 \quad (-0.4\sigma)$
$\Omega_\Lambda$	$0.678^{+0.021}_{-0.0087} \quad (+0.5\sigma)$	$k_D$	$0.14060 \pm 0.00035 \quad (+0.1\sigma)$	$\chi_{CamSpec}^2$	$11515.4 \pm 6.0 \quad (+785.6\sigma)$
$\Omega_m$	$0.3219^{+0.0087}_{-0.021} \quad (-0.5\sigma)$	$100\theta_D$	$0.16089 \pm 0.00019 \quad (-0.8\sigma)$	$\chi_{prior}^2$	$7.8 \pm 3.4 \quad (+0.0\sigma)$
$\Omega_m h^2$	$0.1433^{+0.0014}_{-0.0023} \quad (-0.5\sigma)$	$z_{eq}$	$3392 \pm 31 \quad (-0.5\sigma)$	$\chi_{CMB}^2$	$11935.4 \pm 6.1 \quad (+777.2\sigma)$
$\Omega_\nu h^2$	$< 0.00161 \quad (-0.3\sigma)$	$k_{eq}$	$0.010353 \pm 0.000095 \quad (-0.5\sigma)$		
$\Omega_m h^3$	$0.09572^{+0.00095}_{-0.00037} \quad (+0.4\sigma)$	$100\theta_{eq}$	$0.8149 \pm 0.0059 \quad (+0.5\sigma)$		

$\bar{\chi}_{eff}^2 = 11943.12$ ;  $\Delta\bar{\chi}_{eff}^2 = 4450.61$ ;  $R - 1 = 0.01799$



## 6.12 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02243^{+0.00015}_{-0.00017}$	$\sigma_8$	$0.811^{+0.010}_{-0.0083}$	$100\theta_{s,eq}$	$0.4540 \pm 0.0028$
$\Omega_c h^2$	$0.1180 \pm 0.0013$	$S_8$	$0.812 \pm 0.015$	$H(0.15)$	$73.60^{+0.61}_{-0.55}$
$100\theta_{MC}$	$1.04111 \pm 0.00032$	$\sigma_8 \Omega_m^{0.5}$	$0.4446 \pm 0.0083$	$D_M(0.15)$	$634.3^{+5.2}_{-6.0}$
$\tau$	$0.0561^{+0.0059}_{-0.0079}$	$\sigma_8 \Omega_m^{0.25}$	$0.6004 \pm 0.0085$	$H(0.38)$	$83.53^{+0.46}_{-0.41}$
$\Sigma m_\nu$ [eV]	$< 0.0453$	$\sigma_8/h^{0.5}$	$0.980 \pm 0.013$	$D_M(0.38)$	$1515^{+11}_{-12}$
$\ln(10^{10} A_s)$	$3.042^{+0.013}_{-0.016}$	$r_{drag} h$	$101.0 \pm 1.1$	$H(0.51)$	$90.14^{+0.37}_{-0.33}$
$n_s$	$0.9698 \pm 0.0044$	$\langle d^2 \rangle^{1/2}$	$2.416 \pm 0.027$	$D_M(0.51)$	$1965^{+13}_{-14}$
$y_{cal}$	$1.0007 \pm 0.0024$	$z_{re}$	$7.80^{+0.60}_{-0.81}$	$H(0.61)$	$95.68^{+0.31}_{-0.28}$
$A_{100}^{PS}$	$239 \pm 24$	$10^9 A_s$	$2.095^{+0.027}_{-0.034}$	$D_M(0.61)$	$2288^{+14}_{-15}$
$A_{143}^{PS}$	$38 \pm 8$	$10^9 A_s e^{-2\tau}$	$1.873 \pm 0.011$	$H(2.33)$	$235.16 \pm 0.80$
$A_{217}^{PS}$	$102 \pm 10$	$D_{40}$	$1220 \pm 13$	$D_M(2.33)$	$5747^{+13}_{-14}$
$A_{217}^{CIB}$	$39 \pm 7$	$D_{220}$	$5730 \pm 41$	$f\sigma_8(0.15)$	$0.4498 \pm 0.0078$
$A_{143}^{tSZ}$	$3.9^{+1.9}_{-2.4}$	$D_{810}$	$2535 \pm 13$	$\sigma_8(0.15)$	$0.7503^{+0.0097}_{-0.0073}$
$r_{143 \times 217}^{PS}$	$0.66 \pm 0.13$	$D_{1420}$	$816.9 \pm 4.9$	$f\sigma_8(0.38)$	$0.4705 \pm 0.0067$
$r_{143 \times 217}^{CIB}$	$0.55^{+0.43}_{-0.16}$	$D_{2000}$	$230.9 \pm 1.7$	$\sigma_8(0.38)$	$0.6662^{+0.0087}_{-0.0061}$
$\xi^{tSZ \times CIB}$	$0.48^{+0.34}_{-0.44}$	$n_{s,0.002}$	$0.9698 \pm 0.0044$	$f\sigma_8(0.51)$	$0.4704 \pm 0.0061$
$A^{kSZ}$	$4.7^{+1.6}_{-4.6}$	$Y_P$	$0.245418 \pm 0.000061$	$\sigma_8(0.51)$	$0.6239^{+0.0082}_{-0.0056}$
$A_{100}^{dust}$	$1.02 \pm 0.19$	$Y_P^{BBN}$	$0.246745 \pm 0.000061$	$f\sigma_8(0.61)$	$0.4663 \pm 0.0058$
$A_{143}^{dust}$	$0.97 \pm 0.18$	$10^5 D/H$	$2.574 \pm 0.029$	$\sigma_8(0.61)$	$0.5940^{+0.0079}_{-0.0053}$
$A_{217}^{dust}$	$0.977^{+0.091}_{-0.10}$	$Age/Gyr$	$13.762^{+0.028}_{-0.032}$	$f\sigma_8(2.33)$	$0.2996^{+0.0035}_{-0.0026}$
$A_{143 \times 217}^{dust}$	$1.02 \pm 0.15$	$z_*$	$1089.66 \pm 0.27$	$\sigma_8(2.33)$	$0.3095^{+0.0041}_{-0.0028}$
$c_{100}$	$0.9976 \pm 0.0010$	$r_*$	$144.92 \pm 0.29$	$f_{2000}^{143}$	$29.1 \pm 2.9$
$c_{217}$	$1.0011 \pm 0.0015$	$100\theta_*$	$1.04128 \pm 0.00032$	$f_{2000}^{217}$	$106.5 \pm 1.9$
$c_{TE}$	$0.9966 \pm 0.0049$	$D_M(z_*)/Gpc$	$13.917 \pm 0.028$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.1$
$c_{EE}$	$0.9923 \pm 0.0049$	$z_{drag}$	$1059.93^{+0.32}_{-0.36}$	$\chi_{small}^2$	$397.0 \pm 1.8$
$H_0$	$68.44 \pm 0.67$	$r_{drag}$	$147.57 \pm 0.30$	$\chi_{lowl}^2$	$22.57 \pm 0.86$
$\Omega_\Lambda$	$0.6992^{+0.0091}_{-0.0078}$	$k_D$	$0.14041 \pm 0.00034$	$\chi_{CamSpec}^2$	$11516.1 \pm 6.0$
$\Omega_m$	$0.3008^{+0.0078}_{-0.0091}$	$100\theta_D$	$0.16077 \pm 0.00019$	$\chi_{H073p45}^2$	$9.3 \pm 2.5$
$\Omega_m h^2$	$0.1408 \pm 0.0013$	$z_{eq}$	$3355 \pm 29$	$\chi_{prior}^2$	$7.5 \pm 3.2$
$\Omega_\nu h^2$	$< 0.000487$	$k_{eq}$	$0.010239 \pm 0.000088$	$\chi_{CMB}^2$	$11935.7 \pm 6.0$
$\Omega_m h^3$	$0.09635^{+0.00038}_{-0.00034}$	$100\theta_{eq}$	$0.8222 \pm 0.0055$		

$$\bar{\chi}_{eff}^2 = 11952.44; R - 1 = 0.06967$$



### 6.13 base\_mnu\_plikHM\_TE\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022386	$0.02232 \pm 0.00028$	$\sigma_8/h^{0.5}$	0.907	$0.861^{+0.090}_{-0.056}$	$100\theta_{\text{eq}}$	0.8228	$0.8231 \pm 0.0090$
$\Omega_c h^2$	0.11793	$0.1181 \pm 0.0021$	$r_{\text{drag}} h$	97.4	$94.0^{+6.5}_{-4.0}$	$100\theta_{\text{s,eq}}$	0.45436	$0.4546 \pm 0.0046$
$100\theta_{\text{MC}}$	1.04122	$1.04113 \pm 0.00053$	$\langle d^2 \rangle^{1/2}$	2.3618	$2.364 \pm 0.045$	$H(0.15)$	71.44	$69.5^{+3.7}_{-2.3}$
$\tau$	0.0493	$0.0481 \pm 0.0085$	$z_{\text{re}}$	7.16	$7.06^{+0.92}_{-0.75}$	$D_{\text{M}}(0.15)$	655.6	$678^{+22}_{-43}$
$\Sigma m_\nu [\text{eV}]$	0.312	$< 0.717$	$10^9 A_{\text{s}}$	2.0371	$2.028 \pm 0.042$	$H(0.38)$	81.82	$80.4^{+2.8}_{-1.8}$
$\ln(10^{10} A_{\text{s}})$	3.0141	$3.009 \pm 0.021$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8458	$1.841 \pm 0.020$	$D_{\text{M}}(0.38)$	1559	$1603^{+45}_{-85}$
$n_{\text{s}}$	0.9623	$0.958 \pm 0.013$	$D_{40}$	1215.0	$1210 \pm 27$	$H(0.51)$	88.69	$87.5^{+2.3}_{-1.6}$
$A_{100}^{\text{dustTE}}$	0.1132	$0.113 \pm 0.038$	$D_{220}$	5694	$5705 \pm 59$	$D_{\text{M}}(0.51)$	2017	$2068^{+54}_{-99}$
$A_{100 \times 143}^{\text{dustTE}}$	0.1350	$0.135 \pm 0.029$	$D_{810}$	2498.4	$2494 \pm 26$	$H(0.61)$	94.42	$93.4^{+1.9}_{-1.4}$
$A_{100 \times 217}^{\text{dustTE}}$	0.477	$0.478 \pm 0.085$	$D_{1420}$	802.9	$801 \pm 12$	$D_{\text{M}}(0.61)$	2344	$2399^{+59}_{-110}$
$A_{143}^{\text{dustTE}}$	0.219	$0.219 \pm 0.055$	$D_{2000}$	225.52	$224.4 \pm 4.7$	$H(2.33)$	236.64	$238.3^{+1.9}_{-3.2}$
$A_{143 \times 217}^{\text{dustTE}}$	0.654	$0.658 \pm 0.080$	$n_{\text{s},0.002}$	0.9623	$0.958 \pm 0.013$	$D_{\text{M}}(2.33)$	5809	$5864^{+64}_{-110}$
$A_{217}^{\text{dustTE}}$	2.016	$2.04 \pm 0.27$	$Y_{\text{P}}$	0.245402	$0.24537^{+0.00012}_{-0.000099}$	$f\sigma_8(0.15)$	0.4289	$0.416^{+0.026}_{-0.019}$
$c_{100}$	1.00018	$1.00017 \pm 0.00070$	$Y_{\text{P}}^{\text{BBN}}$	0.246729	$0.24670^{+0.00012}_{-0.00010}$	$\sigma_8(0.15)$	0.680	$0.633^{+0.094}_{-0.052}$
$c_{217}$	0.99800	$0.99800 \pm 0.00065$	$10^5 \text{D}/\text{H}$	2.582	$2.596^{+0.049}_{-0.055}$	$f\sigma_8(0.38)$	0.4425	$0.423^{+0.037}_{-0.023}$
$y_{\text{cal}}$	1.00001	$1.0000 \pm 0.0025$	Age/Gyr	13.904	$14.03^{+0.14}_{-0.26}$	$\sigma_8(0.38)$	0.601	$0.558^{+0.088}_{-0.048}$
$H_0$	65.99	$63.8^{+4.3}_{-2.6}$	$z_*$	1089.76	$1089.99^{+0.48}_{-0.61}$	$f\sigma_8(0.51)$	0.4395	$0.418^{+0.042}_{-0.024}$
$\Omega_{\Lambda}$	0.6701	$0.635^{+0.066}_{-0.029}$	$r_*$	144.90	$144.71^{+0.56}_{-0.50}$	$\sigma_8(0.51)$	0.562	$0.521^{+0.084}_{-0.045}$
$\Omega_{\text{m}}$	0.3299	$0.365^{+0.029}_{-0.066}$	$100\theta_*$	1.041533	$1.04152 \pm 0.00049$	$f\sigma_8(0.61)$	0.4339	$0.411^{+0.045}_{-0.025}$
$\Omega_{\text{m}} h^2$	0.14366	$0.1466^{+0.0035}_{-0.0057}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9125	$13.894^{+0.052}_{-0.047}$	$\sigma_8(0.61)$	0.535	$0.495^{+0.081}_{-0.044}$
$\Omega_{\nu} h^2$	0.00335	$< 0.00771$	$z_{\text{drag}}$	1059.86	$1059.82 \pm 0.56$	$f\sigma_8(2.33)$	0.2727	$0.253^{+0.040}_{-0.019}$
$\Omega_{\text{m}} h^3$	0.09481	$0.0934^{+0.0029}_{-0.0017}$	$r_{\text{drag}}$	147.57	$147.39^{+0.55}_{-0.50}$	$\sigma_8(2.33)$	0.2785	$0.257^{+0.044}_{-0.023}$
$\sigma_8$	0.737	$0.689^{+0.097}_{-0.055}$	$k_{\text{D}}$	0.14041	$0.14066^{+0.00058}_{-0.00067}$	$\chi_{\text{small}}^2$	395.65	$396.9 \pm 1.6$
$S_8$	0.7728	$0.753^{+0.041}_{-0.036}$	$100\theta_{\text{D}}$	0.160819	$0.16075 \pm 0.00032$	$\chi_{\text{plikTE}}^2$	852.62	$860.3 \pm 3.9$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4233	$0.412^{+0.023}_{-0.020}$	$z_{\text{eq}}$	3353.0	$3356 \pm 47$	$\chi_{\text{prior}}^2$	0.43	$7.4 \pm 3.7$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5585	$0.533^{+0.050}_{-0.034}$	$k_{\text{eq}}$	0.010236	$0.01025 \pm 0.00014$	$\chi_{\text{CMB}}^2$	1248.27	$1257.2 \pm 4.2$

Best-fit  $\chi_{\text{eff}}^2 = 1248.70$ ;  $\bar{\chi}_{\text{eff}}^2 = 1264.56$ ;  $R - 1 = 0.00834$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.65 plik\_rd12\_HM\_v22\_TE: 852.62



## 6.14 base\_mnu\_plikHM\_TE\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02233 \pm 0.00028$	$\sigma_8/h^{0.5}$	$0.865^{+0.089}_{-0.055}$	$100\theta_{\text{eq}}$	$0.8234 \pm 0.0089$
$\Omega_c h^2$	$0.1180 \pm 0.0020$	$r_{\text{drag}} h$	$94.2^{+6.4}_{-4.0}$	$100\theta_{\text{s,eq}}$	$0.4547 \pm 0.0046$
$100\theta_{\text{MC}}$	$1.04114 \pm 0.00053$	$\langle d^2 \rangle^{1/2}$	$2.370 \pm 0.043$	$H(0.15)$	$69.6^{+3.7}_{-2.3}$
$\tau$	$0.0516^{+0.0035}_{-0.0076}$	$z_{\text{re}}$	$7.43^{+0.29}_{-0.86}$	$D_{\text{M}}(0.15)$	$677^{+22}_{-42}$
$\Sigma m_\nu [\text{eV}]$	$< 0.708$	$10^9 A_{\text{s}}$	$2.042^{+0.030}_{-0.036}$	$H(0.38)$	$80.5^{+2.8}_{-1.8}$
$\ln(10^{10} A_{\text{s}})$	$3.016^{+0.015}_{-0.017}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.842 \pm 0.020$	$D_{\text{M}}(0.38)$	$1601^{+45}_{-83}$
$n_{\text{s}}$	$0.959 \pm 0.013$	$D_{40}$	$1210 \pm 27$	$H(0.51)$	$87.6^{+2.3}_{-1.6}$
$A_{100}^{\text{dustTE}}$	$0.113 \pm 0.038$	$D_{220}$	$5704 \pm 58$	$D_{\text{M}}(0.51)$	$2065^{+54}_{-98}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$D_{810}$	$2496 \pm 26$	$H(0.61)$	$93.5^{+1.9}_{-1.4}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.478 \pm 0.084$	$D_{1420}$	$802 \pm 12$	$D_{\text{M}}(0.61)$	$2397^{+59}_{-110}$
$A_{143}^{\text{dustTE}}$	$0.219 \pm 0.055$	$D_{2000}$	$224.7 \pm 4.7$	$H(2.33)$	$238.2^{+1.9}_{-3.2}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.658 \pm 0.080$	$n_{\text{s},0.002}$	$0.959 \pm 0.013$	$D_{\text{M}}(2.33)$	$5861^{+64}_{-110}$
$A_{217}^{\text{dustTE}}$	$2.04 \pm 0.27$	$Y_{\text{P}}$	$0.24537^{+0.00012}_{-0.00010}$	$f\sigma_8(0.15)$	$0.417^{+0.025}_{-0.019}$
$c_{100}$	$1.00017 \pm 0.00070$	$Y_{\text{P}}^{\text{BBN}}$	$0.24670^{+0.00012}_{-0.00010}$	$\sigma_8(0.15)$	$0.637^{+0.094}_{-0.051}$
$c_{217}$	$0.99799 \pm 0.00065$	$10^5 \text{D}/\text{H}$	$2.594^{+0.050}_{-0.055}$	$f\sigma_8(0.38)$	$0.425^{+0.037}_{-0.022}$
$y_{\text{cal}}$	$1.0000 \pm 0.0025$	$\text{Age}/\text{Gyr}$	$14.03^{+0.14}_{-0.25}$	$\sigma_8(0.38)$	$0.562^{+0.088}_{-0.047}$
$H_0$	$63.9^{+4.2}_{-2.6}$	$z_*$	$1089.96^{+0.48}_{-0.60}$	$f\sigma_8(0.51)$	$0.419^{+0.042}_{-0.023}$
$\Omega_{\Lambda}$	$0.637^{+0.065}_{-0.029}$	$r_*$	$144.72^{+0.56}_{-0.49}$	$\sigma_8(0.51)$	$0.524^{+0.084}_{-0.045}$
$\Omega_{\text{m}}$	$0.363^{+0.029}_{-0.065}$	$100\theta_*$	$1.04153 \pm 0.00049$	$f\sigma_8(0.61)$	$0.413^{+0.045}_{-0.024}$
$\Omega_{\text{m}} h^2$	$0.1465^{+0.0034}_{-0.0056}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.895^{+0.052}_{-0.046}$	$\sigma_8(0.61)$	$0.498^{+0.081}_{-0.043}$
$\Omega_{\nu} h^2$	$< 0.00761$	$z_{\text{drag}}$	$1059.84 \pm 0.56$	$f\sigma_8(2.33)$	$0.255^{+0.040}_{-0.019}$
$\Omega_{\text{m}} h^3$	$0.0934^{+0.0029}_{-0.0016}$	$r_{\text{drag}}$	$147.40^{+0.55}_{-0.50}$	$\sigma_8(2.33)$	$0.259^{+0.044}_{-0.022}$
$\sigma_8$	$0.693^{+0.096}_{-0.054}$	$k_{\text{D}}$	$0.14066^{+0.00058}_{-0.00067}$	$\chi_{\text{simall}}^2$	$396.5 \pm 1.3$
$S_8$	$0.755^{+0.041}_{-0.035}$	$100\theta_{\text{D}}$	$0.16074 \pm 0.00032$	$\chi_{\text{plikTE}}^2$	$860.3 \pm 3.9$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.414^{+0.022}_{-0.019}$	$z_{\text{eq}}$	$3354 \pm 46$	$\chi_{\text{prior}}^2$	$7.4 \pm 3.7$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.535^{+0.050}_{-0.033}$	$k_{\text{eq}}$	$0.01025 \pm 0.00014$	$\chi_{\text{CMB}}^2$	$1256.8 \pm 4.1$

$\bar{\chi}_{\text{eff}}^2 = 1264.17$ ;  $R - 1 = 0.01053$



## 6.15 base\_mnu\_plikHM\_EE\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02046	$0.0218^{+0.0015}_{-0.0019}$	$D_{40}$	1166.8	$1186 \pm 37$	$H(0.38)$	69.59	$73.6^{+1.1}_{-5.2}$
$\Omega_c h^2$	0.1181	$0.1191 \pm 0.0059$	$D_{220}$	5357	$5638 \pm 310$	$D_M(0.38)$	2079	$1889^{+300}_{-100}$
$100\theta_{MC}$	1.04062	$1.0401 \pm 0.0010$	$D_{810}$	2544.6	$2569^{+47}_{-42}$	$H(0.51)$	79.66	$82.56^{+0.54}_{-3.6}$
$\tau$	0.0411	$0.0444^{+0.0078}_{-0.0090}$	$D_{1420}$	820.4	$832^{+24}_{-21}$	$D_M(0.51)$	2602	$2390^{+300}_{-100}$
$\Sigma m_\nu$ [eV]	4.27	—	$D_{2000}$	226.3	$232^{+10}_{-8.9}$	$H(0.61)$	87.72	$89.80^{+0.20}_{-2.6}$
$\ln(10^{10} A_s)$	3.0118	$3.027 \pm 0.025$	$n_{s,0.002}$	0.9279	$0.947^{+0.018}_{-0.026}$	$D_M(0.61)$	2961	$2739^{+300}_{-100}$
$n_s$	0.9279	$0.947^{+0.018}_{-0.026}$	$Y_P$	0.24454	$0.24510 \pm 0.00072$	$H(2.33)$	261.1	$252^{+12}_{-15}$
$y_{cal}$	1.00002	$1.0001 \pm 0.0025$	$Y_P^{BBN}$	0.24586	$0.24643 \pm 0.00073$	$D_M(2.33)$	6313	$6134^{+240}_{-73}$
$H_0$	42.9	$50.9^{+3.8}_{-11}$	$10^5 D/H$	2.981	$2.73^{+0.31}_{-0.37}$	$f\sigma_8(0.15)$	0.3475	$0.374^{+0.032}_{-0.043}$
$\Omega_\Lambda$	-0.004	$0.27^{+0.34}_{-0.29}$	Age/Gyr	15.183	$14.72^{+0.64}_{-0.22}$	$\sigma_8(0.15)$	0.344	$0.447^{+0.029}_{-0.14}$
$\Omega_m$	1.004	$0.73^{+0.29}_{-0.34}$	$z_*$	1095.35	$1092.5 \pm 3.4$	$f\sigma_8(0.38)$	0.290	$0.340^{+0.028}_{-0.073}$
$\Omega_m h^2$	0.1845	$0.170^{+0.021}_{-0.0096}$	$r_*$	140.72	$141.9^{+1.2}_{-1.9}$	$\sigma_8(0.38)$	0.287	$0.384^{+0.024}_{-0.12}$
$\Omega_\nu h^2$	0.0459	$< 0.0398$	$100\theta_*$	1.04154	$1.0408 \pm 0.0011$	$f\sigma_8(0.51)$	0.265	$0.322^{+0.026}_{-0.080}$
$\Omega_m h^3$	0.0791	$0.0853^{+0.0037}_{-0.0085}$	$D_M(z_*)/\text{Gpc}$	13.511	$13.64 \pm 0.15$	$\sigma_8(0.51)$	0.263	$0.355^{+0.022}_{-0.12}$
$\sigma_8$	0.395	$0.500^{+0.031}_{-0.14}$	$z_{drag}$	1057.64	$1059.8 \pm 3.0$	$f\sigma_8(0.61)$	0.249	$0.309^{+0.025}_{-0.083}$
$S_8$	0.723	$0.731^{+0.060}_{-0.068}$	$r_{drag}$	143.89	$144.73^{+0.93}_{-1.4}$	$\sigma_8(0.61)$	0.246	$0.335^{+0.021}_{-0.11}$
$\sigma_8 \Omega_m^{0.5}$	0.3962	$0.401^{+0.033}_{-0.037}$	$k_D$	0.14437	$0.1439 \pm 0.0015$	$f\sigma_8(2.33)$	0.1221	$0.169^{+0.012}_{-0.060}$
$\sigma_8 \Omega_m^{0.25}$	0.396	$0.445^{+0.031}_{-0.077}$	$100\theta_D$	0.16105	$0.1601^{+0.0015}_{-0.0020}$	$\sigma_8(2.33)$	0.1202	$0.169^{+0.010}_{-0.061}$
$\sigma_8/h^{0.5}$	0.604	$0.695^{+0.046}_{-0.14}$	$z_{eq}$	3312	$3366^{+130}_{-110}$	$\chi^2_{simall}$	396.30	$397.2 \pm 1.6$
$r_{drag} h$	61.7	$73.8^{+5.7}_{-17}$	$k_{eq}$	0.010443	$0.01046^{+0.00033}_{-0.00036}$	$\chi^2_{plikEE}$	738.00	$743.7 \pm 3.2$
$\langle d^2 \rangle^{1/2}$	2.623	$2.51 \pm 0.13$	$100\theta_{eq}$	0.8467	$0.831^{+0.022}_{-0.031}$	$\chi^2_{prior}$	0.000	$0.98 \pm 1.4$
$z_{re}$	7.16	$7.03^{+0.90}_{-0.79}$	$100\theta_{s,eq}$	0.4691	$0.460^{+0.011}_{-0.017}$	$\chi^2_{CMB}$	1134.30	$1140.9 \pm 3.6$
$10^9 A_s$	2.032	$2.065^{+0.048}_{-0.053}$	$H(0.15)$	52.9	$59.2^{+2.6}_{-8.5}$			
$10^9 A_s e^{-2\tau}$	1.8719	$1.889 \pm 0.027$	$D_M(0.15)$	944	$836^{+200}_{-200}$			

Best-fit  $\chi^2_{eff} = 1134.30$ ;  $\bar{\chi}^2_{eff} = 1141.86$ ;  $R - 1 = 0.00789$   
 $\chi^2_{eff}$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.30 plik\_rd12\_HM\_v22\_EE: 738.00



## 6.16 base\_mnu\_plikHM\_EE\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.0218^{+0.0015}_{-0.0019}$	$D_{40}$	$1186 \pm 37$	$H(0.38)$	$73.7^{+1.2}_{-5.3}$
$\Omega_{\mathrm{c}}h^2$	$0.1192 \pm 0.0059$	$D_{220}$	$5634 \pm 310$	$D_{\mathrm{M}}(0.38)$	$1886^{+300}_{-100}$
$100\theta_{\mathrm{MC}}$	$1.0401 \pm 0.0010$	$D_{810}$	$2568 \pm 45$	$H(0.51)$	$82.63^{+0.60}_{-3.7}$
$\tau$	$0.0476^{+0.0050}_{-0.0085}$	$D_{1420}$	$832^{+24}_{-21}$	$D_{\mathrm{M}}(0.51)$	$2387^{+300}_{-100}$
$\Sigma m_{\nu}$ [eV]	—	$D_{2000}$	$232^{+10}_{-9.1}$	$H(0.61)$	$89.86^{+0.24}_{-2.7}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.033^{+0.021}_{-0.024}$	$n_{\mathrm{s},0.002}$	$0.948^{+0.019}_{-0.027}$	$D_{\mathrm{M}}(0.61)$	$2735^{+300}_{-100}$
$n_{\mathrm{s}}$	$0.948^{+0.019}_{-0.027}$	$Y_{\mathrm{P}}$	$0.24510 \pm 0.00073$	$H(2.33)$	$252^{+12}_{-15}$
$y_{\mathrm{cal}}$	$1.0001 \pm 0.0025$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24642 \pm 0.00074$	$D_{\mathrm{M}}(2.33)$	$6131^{+250}_{-77}$
$H_0$	$51.1^{+4.1}_{-11}$	$10^5\mathrm{D}/\mathrm{H}$	$2.73^{+0.32}_{-0.37}$	$f\sigma_8(0.15)$	$0.376^{+0.031}_{-0.043}$
$\Omega_{\Lambda}$	$0.27^{+0.34}_{-0.30}$	Age/Gyr	$14.71^{+0.65}_{-0.23}$	$\sigma_8(0.15)$	$0.452^{+0.031}_{-0.14}$
$\Omega_{\mathrm{m}}$	$0.73^{+0.30}_{-0.34}$	$z_*$	$1092.5 \pm 3.4$	$f\sigma_8(0.38)$	$0.343^{+0.029}_{-0.074}$
$\Omega_{\mathrm{m}}h^2$	$0.170^{+0.021}_{-0.025}$	$r_*$	$142.0^{+1.7}_{-1.9}$	$\sigma_8(0.38)$	$0.388^{+0.026}_{-0.13}$
$\Omega_{\nu}h^2$	$< 0.0397$	$100\theta_*$	$1.0408 \pm 0.0011$	$f\sigma_8(0.51)$	$0.325^{+0.027}_{-0.081}$
$\Omega_{\mathrm{m}}h^3$	$0.0853^{+0.0038}_{-0.0087}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.64 \pm 0.15$	$\sigma_8(0.51)$	$0.358^{+0.024}_{-0.12}$
$\sigma_8$	$0.505^{+0.033}_{-0.14}$	$z_{\mathrm{drag}}$	$1059.8 \pm 3.0$	$f\sigma_8(0.61)$	$0.312^{+0.026}_{-0.084}$
$S_8$	$0.735^{+0.060}_{-0.068}$	$r_{\mathrm{drag}}$	$144.76^{+0.97}_{-1.5}$	$\sigma_8(0.61)$	$0.338^{+0.023}_{-0.12}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.403^{+0.033}_{-0.037}$	$k_{\mathrm{D}}$	$0.1438 \pm 0.0015$	$f\sigma_8(2.33)$	$0.171^{+0.013}_{-0.061}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.448^{+0.031}_{-0.079}$	$100\theta_{\mathrm{D}}$	$0.1601^{+0.0015}_{-0.0021}$	$\sigma_8(2.33)$	$0.170^{+0.011}_{-0.062}$
$\sigma_8/h^{0.5}$	$0.701^{+0.046}_{-0.14}$	$z_{\mathrm{eq}}$	$3368 \pm 120$	$\chi_{\mathrm{small}}^2$	$396.9 \pm 1.4$
$r_{\mathrm{drag}}h$	$74.0^{+6.1}_{-17}$	$k_{\mathrm{eq}}$	$0.01046^{+0.00032}_{-0.00037}$	$\chi_{\mathrm{plikEE}}^2$	$743.6 \pm 3.2$
$\langle d^2 \rangle^{1/2}$	$2.52^{+0.14}_{-0.13}$	$100\theta_{\mathrm{eq}}$	$0.831^{+0.022}_{-0.030}$	$\chi_{\mathrm{prior}}^2$	$0.98 \pm 1.4$
$z_{\mathrm{re}}$	$7.42^{+0.23}_{-0.91}$	$100\theta_{\mathrm{s,eq}}$	$0.459^{+0.011}_{-0.016}$	$\chi_{\mathrm{CMB}}^2$	$1140.5 \pm 3.4$
$10^9A_{\mathrm{s}}$	$2.077^{+0.043}_{-0.051}$	$H(0.15)$	$59.4^{+2.7}_{-8.7}$		
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.889 \pm 0.027$	$D_{\mathrm{M}}(0.15)$	$834^{+200}_{-200}$		
$\bar{\chi}_{\mathrm{eff}}^2 = 1141.50$ ; $R - 1 = 0.01065$					



## 6.17 base\_mnu\_plikHM\_TE\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022461	$0.02249 \pm 0.00023$	$\langle d^2 \rangle^{1/2}$	2.3776	$2.363 \pm 0.043$	$H(0.38)$	83.18	$83.07^{+0.54}_{-0.47}$
$\Omega_c h^2$	0.11756	$0.1171 \pm 0.0016$	$z_{\text{re}}$	7.25	$7.07^{+0.91}_{-0.75}$	$D_M(0.38)$	1523.8	$1527^{+11}_{-13}$
$100\theta_{\text{MC}}$	1.041331	$1.04142 \pm 0.00046$	$10^9 A_s$	2.0466	$2.038 \pm 0.041$	$H(0.51)$	89.842	$89.73^{+0.48}_{-0.40}$
$\tau$	0.0506	$0.0492 \pm 0.0085$	$10^9 A_s e^{-2\tau}$	1.8495	$1.846 \pm 0.019$	$D_M(0.51)$	1974.8	$1978^{+14}_{-16}$
$\Sigma m_\nu$ [eV]	0.120	$0.158^{+0.051}_{-0.15}$	$D_{40}$	1214.5	$1211 \pm 25$	$H(0.61)$	95.415	$95.31^{+0.44}_{-0.36}$
$\ln(10^{10} A_s)$	3.0188	$3.014 \pm 0.020$	$D_{220}$	5694	$5695 \pm 58$	$D_M(0.61)$	2298.6	$2302^{+15}_{-17}$
$n_s$	0.9659	$0.967 \pm 0.010$	$D_{810}$	2504.1	$2502 \pm 26$	$H(2.33)$	235.41	$235.37 \pm 0.82$
$y_{\text{cal}}$	1.00003	$0.99999 \pm 0.0025$	$D_{1420}$	805.7	$806 \pm 12$	$D_M(2.33)$	5759.8	$5766^{+19}_{-24}$
$A_{100}^{\text{dustTE}}$	0.1120	$0.113 \pm 0.038$	$D_{2000}$	227.02	$226.9 \pm 4.2$	$f\sigma_8(0.15)$	0.4381	$0.433^{+0.016}_{-0.012}$
$A_{100 \times 143}^{\text{dustTE}}$	0.1333	$0.136 \pm 0.030$	$n_{s,0.002}$	0.9659	$0.967 \pm 0.010$	$\sigma_8(0.15)$	0.7229	$0.712^{+0.032}_{-0.020}$
$A_{100 \times 217}^{\text{dustTE}}$	0.477	$0.477 \pm 0.085$	$Y_{\text{P}}$	0.245430	$0.245438 \pm 0.000091$	$f\sigma_8(0.38)$	0.4572	$0.451^{+0.017}_{-0.012}$
$A_{143}^{\text{dustTE}}$	0.216	$0.220 \pm 0.054$	$Y_{\text{P}}^{\text{BBN}}$	0.246757	$0.246765 \pm 0.000092$	$\sigma_8(0.38)$	0.6416	$0.632^{+0.029}_{-0.018}$
$A_{143 \times 217}^{\text{dustTE}}$	0.658	$0.655 \pm 0.080$	$10^5 \text{D/H}$	2.5689	$2.565 \pm 0.042$	$f\sigma_8(0.51)$	0.4565	$0.450^{+0.017}_{-0.012}$
$A_{217}^{\text{dustTE}}$	2.046	$2.03 \pm 0.27$	Age/Gyr	13.7913	$13.805^{+0.043}_{-0.055}$	$\sigma_8(0.51)$	0.6008	$0.592^{+0.027}_{-0.017}$
$c_{100}$	1.00017	$1.00019 \pm 0.00070$	$z_*$	1089.595	$1089.53 \pm 0.35$	$f\sigma_8(0.61)$	0.4522	$0.446^{+0.017}_{-0.012}$
$c_{217}$	0.99800	$0.99800 \pm 0.00064$	$r_*$	144.993	$145.07 \pm 0.41$	$\sigma_8(0.61)$	0.5719	$0.563^{+0.026}_{-0.016}$
$H_0$	67.96	$67.81^{+0.73}_{-0.66}$	$100\theta_*$	1.041549	$1.04165 \pm 0.00047$	$f\sigma_8(2.33)$	0.2896	$0.286^{+0.011}_{-0.0070}$
$\Omega_\Lambda$	0.6940	$0.6925^{+0.0087}_{-0.0077}$	$D_M(z_*)/\text{Gpc}$	13.9209	$13.927 \pm 0.039$	$\sigma_8(2.33)$	0.2982	$0.294^{+0.013}_{-0.0079}$
$\Omega_{\text{m}}$	0.3060	$0.3075^{+0.0077}_{-0.0087}$	$z_{\text{drag}}$	1059.97	$1060.01 \pm 0.52$	$\chi^2_{\text{small}}$	395.67	$396.8 \pm 1.6$
$\Omega_{\text{m}} h^2$	0.14132	$0.1413 \pm 0.0012$	$r_{\text{drag}}$	147.636	$147.71 \pm 0.44$	$\chi^2_{\text{plikTE}}$	852.84	$859.6 \pm 3.6$
$\Omega_\nu h^2$	0.00129	$0.00170^{+0.00055}_{-0.0016}$	$k_{\text{D}}$	0.14036	$0.14031 \pm 0.00054$	$\chi^2_{6\text{DF}}$	0.00099	$0.052 \pm 0.074$
$\Omega_{\text{m}} h^3$	0.09603	$0.09582^{+0.00088}_{-0.00072}$	$100\theta_{\text{D}}$	0.160780	$0.16076 \pm 0.00030$	$\chi^2_{\text{MGS}}$	1.61	$1.59 \pm 0.62$
$\sigma_8$	0.7816	$0.770^{+0.035}_{-0.022}$	$z_{\text{eq}}$	3346.1	$3336 \pm 38$	$\chi^2_{\text{DR12BAO}}$	3.54	$4.4 \pm 1.5$
$S_8$	0.7894	$0.779^{+0.030}_{-0.024}$	$k_{\text{eq}}$	0.010213	$0.01018 \pm 0.00012$	$\chi^2_{\text{prior}}$	0.42	$7.5 \pm 3.7$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4324	$0.427^{+0.017}_{-0.013}$	$100\theta_{\text{eq}}$	0.8241	$0.8262^{+0.0068}_{-0.0079}$	$\chi^2_{\text{BAO}}$	5.15	$6.1 \pm 1.3$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5813	$0.573^{+0.024}_{-0.017}$	$100\theta_{\text{s,eq}}$	0.45495	$0.4560^{+0.0035}_{-0.0041}$	$\chi^2_{\text{CMB}}$	1248.51	$1256.4 \pm 4.0$
$\sigma_8/h^{0.5}$	0.9481	$0.935^{+0.038}_{-0.026}$	$H(0.15)$	73.18	$73.04^{+0.65}_{-0.58}$			
$r_{\text{drag}} h$	100.33	$100.2 \pm 1.1$	$D_M(0.15)$	638.3	$639.7^{+5.5}_{-6.4}$			

Best-fit  $\chi^2_{\text{eff}} = 1254.08$ ;  $\bar{\chi}^2_{\text{eff}} = 1269.93$ ;  $R - 1 = 0.00751$

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.00 MGS: 1.61 DR12BAO: 3.54 CMB - small\_100x143.offlike5\_EE\_Aplanck\_B: 395.67 plik\_rd12\_HM\_v22\_TE: 852.84



## 6.18 base\_mnu\_plikHM\_TE\_lowE\_BAO\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02250 \pm 0.00022$	$\langle d^2 \rangle^{1/2}$	$2.420 \pm 0.030$	$H(0.38)$	$83.30 \pm 0.41$
$\Omega_{\mathrm{c}} h^2$	$0.1189 \pm 0.0012$	$z_{\mathrm{re}}$	$7.60 \pm 0.76$	$D_{\mathrm{M}}(0.38)$	$1522 \pm 10$
$100\theta_{\mathrm{MC}}$	$1.04129 \pm 0.00046$	$10^9 A_{\mathrm{s}}$	$2.085 \pm 0.032$	$H(0.51)$	$89.99 \pm 0.34$
$\tau$	$0.0542 \pm 0.0076$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.871 \pm 0.014$	$D_{\mathrm{M}}(0.51)$	$1972 \pm 12$
$\Sigma m_{\nu} [\mathrm{eV}]$	$< 0.0765$	$D_{40}$	$1222 \pm 24$	$H(0.61)$	$95.58 \pm 0.30$
$\ln(10^{10} A_{\mathrm{s}})$	$3.037 \pm 0.015$	$D_{220}$	$5722 \pm 58$	$D_{\mathrm{M}}(0.61)$	$2296 \pm 13$
$n_{\mathrm{s}}$	$0.9674^{+0.0096}_{-0.011}$	$D_{810}$	$2529 \pm 22$	$H(2.33)$	$236.00 \pm 0.75$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0027$	$D_{1420}$	$815 \pm 10$	$D_{\mathrm{M}}(2.33)$	$5749 \pm 15$
$A_{100}^{\mathrm{dustTE}}$	$0.114 \pm 0.038$	$D_{2000}$	$230.4 \pm 3.8$	$f\sigma_8(0.15)$	$0.4518 \pm 0.0068$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.136 \pm 0.030$	$n_{\mathrm{s},0.002}$	$0.9674^{+0.0096}_{-0.011}$	$\sigma_8(0.15)$	$0.745^{+0.012}_{-0.0079}$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.474 \pm 0.088$	$Y_{\mathrm{P}}$	$0.245443 \pm 0.000084$	$f\sigma_8(0.38)$	$0.4710 \pm 0.0062$
$A_{143}^{\mathrm{dustTE}}$	$0.220 \pm 0.052$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246770 \pm 0.000085$	$\sigma_8(0.38)$	$0.661^{+0.011}_{-0.0071}$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.659 \pm 0.077$	$10^5 \mathrm{D}/\mathrm{H}$	$2.563 \pm 0.039$	$f\sigma_8(0.51)$	$0.4702 \pm 0.0060$
$A_{217}^{\mathrm{dustTE}}$	$2.05 \pm 0.27$	$\mathrm{Age}/\mathrm{Gyr}$	$13.766 \pm 0.035$	$\sigma_8(0.51)$	$0.619^{+0.010}_{-0.0067}$
$c_{100}$	$1.00021 \pm 0.00070$	$z_*$	$1089.66 \pm 0.32$	$f\sigma_8(0.61)$	$0.4656^{+0.0062}_{-0.0051}$
$c_{217}$	$0.99799 \pm 0.00062$	$r_*$	$144.62 \pm 0.30$	$\sigma_8(0.61)$	$0.589^{+0.010}_{-0.0064}$
$H_0$	$68.01 \pm 0.60$	$100\theta_*$	$1.04147 \pm 0.00045$	$f\sigma_8(2.33)$	$0.2973^{+0.0044}_{-0.0031}$
$\Omega_{\Lambda}$	$0.6927 \pm 0.0076$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.886 \pm 0.030$	$\sigma_8(2.33)$	$0.3066^{+0.0051}_{-0.0035}$
$\Omega_{\mathrm{m}}$	$0.3073 \pm 0.0076$	$z_{\mathrm{drag}}$	$1060.15 \pm 0.48$	$\chi_{\mathrm{lensing}}^2$	$10.6 \pm 2.0$
$\Omega_{\mathrm{m}} h^2$	$0.1421 \pm 0.0012$	$r_{\mathrm{drag}}$	$147.24 \pm 0.33$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.6$
$\Omega_{\nu} h^2$	$< 0.000823$	$k_{\mathrm{D}}$	$0.14080 \pm 0.00044$	$\chi_{\mathrm{plikTE}}^2$	$860.0 \pm 3.6$
$\Omega_{\mathrm{m}} h^3$	$0.09661 \pm 0.00054$	$100\theta_{\mathrm{D}}$	$0.16068 \pm 0.00028$	$\chi_{6\mathrm{DF}}^2$	$0.045 \pm 0.062$
$\sigma_8$	$0.806^{+0.013}_{-0.0085}$	$z_{\mathrm{eq}}$	$3379 \pm 28$	$\chi_{\mathrm{MGS}}^2$	$1.56 \pm 0.57$
$S_8$	$0.816 \pm 0.013$	$k_{\mathrm{eq}}$	$0.010312 \pm 0.000085$	$\chi_{\mathrm{DR12BAO}}^2$	$4.4 \pm 1.3$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4468 \pm 0.0073$	$100\theta_{\mathrm{eq}}$	$0.8182 \pm 0.0052$	$\chi_{\mathrm{prior}}^2$	$7.5 \pm 4.0$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.6002^{+0.0089}_{-0.0076}$	$100\theta_{\mathrm{s,eq}}$	$0.4518 \pm 0.0027$	$\chi_{\mathrm{CMB}}^2$	$1267.5 \pm 3.9$
$\sigma_8/h^{0.5}$	$0.978^{+0.014}_{-0.011}$	$H(0.15)$	$73.25 \pm 0.53$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.1$
$r_{\mathrm{drag}} h$	$100.14 \pm 0.97$	$D_{\mathrm{M}}(0.15)$	$637.8 \pm 5.1$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1280.97; R - 1 = 0.04268$$



## 6.19 base\_mnu\_plikHM\_TE\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02250 \pm 0.00023$	$\langle d^2 \rangle^{1/2}$	$2.367 \pm 0.043$	$H(0.38)$	$83.07^{+0.54}_{-0.48}$
$\Omega_{\mathrm{c}} h^2$	$0.1171 \pm 0.0017$	$z_{\mathrm{re}}$	$7.43^{+0.26}_{-0.91}$	$D_{\mathrm{M}}(0.38)$	$1527^{+12}_{-13}$
$100\theta_{\mathrm{MC}}$	$1.04143 \pm 0.00046$	$10^9 A_{\mathrm{s}}$	$2.051^{+0.029}_{-0.037}$	$H(0.51)$	$89.73^{+0.48}_{-0.41}$
$\tau$	$0.0526^{+0.0035}_{-0.0078}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.846 \pm 0.019$	$D_{\mathrm{M}}(0.51)$	$1978^{+14}_{-16}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$0.162^{+0.060}_{-0.14}$	$D_{40}$	$1209 \pm 24$	$H(0.61)$	$95.31^{+0.44}_{-0.37}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.021^{+0.014}_{-0.018}$	$D_{220}$	$5693 \pm 57$	$D_{\mathrm{M}}(0.61)$	$2302^{+15}_{-18}$
$n_{\mathrm{s}}$	$0.968 \pm 0.010$	$D_{810}$	$2504 \pm 26$	$H(2.33)$	$235.36 \pm 0.82$
$y_{\mathrm{cal}}$	$0.9999 \pm 0.0025$	$D_{1420}$	$806 \pm 12$	$D_{\mathrm{M}}(2.33)$	$5766^{+19}_{-24}$
$A_{100}^{\mathrm{dustTE}}$	$0.113 \pm 0.038$	$D_{2000}$	$227.3 \pm 4.2$	$f\sigma_8(0.15)$	$0.434^{+0.016}_{-0.012}$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.030$	$n_{\mathrm{s},0.002}$	$0.968 \pm 0.010$	$\sigma_8(0.15)$	$0.714^{+0.033}_{-0.020}$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.476 \pm 0.085$	$Y_{\mathrm{P}}$	$0.245443 \pm 0.000091$	$f\sigma_8(0.38)$	$0.452^{+0.017}_{-0.012}$
$A_{143}^{\mathrm{dustTE}}$	$0.220 \pm 0.054$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246770 \pm 0.000091$	$\sigma_8(0.38)$	$0.633^{+0.029}_{-0.017}$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.655 \pm 0.081$	$10^5 \mathrm{D}/\mathrm{H}$	$2.563 \pm 0.042$	$f\sigma_8(0.51)$	$0.452^{+0.017}_{-0.012}$
$A_{217}^{\mathrm{dustTE}}$	$2.03 \pm 0.27$	$\mathrm{Age}/\mathrm{Gyr}$	$13.805^{+0.044}_{-0.055}$	$\sigma_8(0.51)$	$0.593^{+0.027}_{-0.016}$
$c_{100}$	$1.00019 \pm 0.00070$	$z_{*}$	$1089.51 \pm 0.34$	$f\sigma_8(0.61)$	$0.447^{+0.017}_{-0.011}$
$c_{217}$	$0.99800 \pm 0.00064$	$r_{*}$	$145.08 \pm 0.41$	$\sigma_8(0.61)$	$0.564^{+0.026}_{-0.015}$
$H_0$	$67.81 \pm 0.71$	$100\theta_{*}$	$1.04166 \pm 0.00047$	$f\sigma_8(2.33)$	$0.286^{+0.011}_{-0.0068}$
$\Omega_{\Lambda}$	$0.6926^{+0.0087}_{-0.0078}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.928 \pm 0.039$	$\sigma_8(2.33)$	$0.295^{+0.013}_{-0.0077}$
$\Omega_{\mathrm{m}}$	$0.3074^{+0.0078}_{-0.0087}$	$z_{\mathrm{drag}}$	$1060.03 \pm 0.52$	$\chi_{\mathrm{small}}^2$	$396.4 \pm 1.1$
$\Omega_{\mathrm{m}} h^2$	$0.1413 \pm 0.0012$	$r_{\mathrm{drag}}$	$147.72 \pm 0.44$	$\chi_{\mathrm{plikTE}}^2$	$859.6 \pm 3.6$
$\Omega_{\nu} h^2$	$0.00174^{+0.00064}_{-0.0015}$	$k_{\mathrm{D}}$	$0.14032 \pm 0.00054$	$\chi_{6\mathrm{DF}}^2$	$0.052 \pm 0.075$
$\Omega_{\mathrm{m}} h^3$	$0.09581^{+0.00089}_{-0.00072}$	$100\theta_{\mathrm{D}}$	$0.16075 \pm 0.00030$	$\chi_{\mathrm{MGS}}^2$	$1.59 \pm 0.63$
$\sigma_8$	$0.772^{+0.035}_{-0.021}$	$z_{\mathrm{eq}}$	$3335 \pm 38$	$\chi_{\mathrm{DR12BAO}}^2$	$4.4 \pm 1.5$
$S_8$	$0.781^{+0.030}_{-0.024}$	$k_{\mathrm{eq}}$	$0.01018 \pm 0.00012$	$\chi_{\mathrm{prior}}^2$	$7.5 \pm 3.7$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.428^{+0.017}_{-0.013}$	$100\theta_{\mathrm{eq}}$	$0.8265^{+0.0069}_{-0.0079}$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.3$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.574^{+0.024}_{-0.016}$	$100\theta_{\mathrm{s,eq}}$	$0.4562^{+0.0036}_{-0.0041}$	$\chi_{\mathrm{CMB}}^2$	$1256.0 \pm 3.8$
$\sigma_8/h^{0.5}$	$0.937^{+0.039}_{-0.026}$	$H(0.15)$	$73.04 \pm 0.63$		
$r_{\mathrm{drag}} h$	$100.2 \pm 1.1$	$D_{\mathrm{M}}(0.15)$	$639.7^{+5.7}_{-6.4}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1269.50$ ;  $R - 1 = 0.00760$



## 6.20 base\_mnu\_plikHM\_TE\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02251 \pm 0.00022$	$\langle d^2 \rangle^{1/2}$	$2.421 \pm 0.030$	$H(0.38)$	$83.31 \pm 0.41$
$\Omega_{\mathrm{c}} h^2$	$0.1188 \pm 0.0012$	$z_{\mathrm{re}}$	$7.72^{+0.55}_{-0.82}$	$D_{\mathrm{M}}(0.38)$	$1522 \pm 11$
$100\theta_{\mathrm{MC}}$	$1.04130 \pm 0.00045$	$10^9 A_{\mathrm{s}}$	$2.090^{+0.026}_{-0.032}$	$H(0.51)$	$89.99 \pm 0.35$
$\tau$	$0.0553^{+0.0056}_{-0.0078}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.871 \pm 0.014$	$D_{\mathrm{M}}(0.51)$	$1972 \pm 13$
$\Sigma m_{\nu} [\mathrm{eV}]$	$< 0.0794$	$D_{40}$	$1222 \pm 24$	$H(0.61)$	$95.58 \pm 0.31$
$\ln(10^{10} A_{\mathrm{s}})$	$3.040^{+0.012}_{-0.015}$	$D_{220}$	$5721 \pm 58$	$D_{\mathrm{M}}(0.61)$	$2296 \pm 14$
$n_{\mathrm{s}}$	$0.968 \pm 0.010$	$D_{810}$	$2529 \pm 22$	$H(2.33)$	$235.98 \pm 0.75$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0027$	$D_{1420}$	$815 \pm 11$	$D_{\mathrm{M}}(2.33)$	$5749 \pm 15$
$A_{100}^{\mathrm{dustTE}}$	$0.114 \pm 0.038$	$D_{2000}$	$230.4 \pm 3.8$	$f\sigma_8(0.15)$	$0.4520 \pm 0.0067$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.136 \pm 0.030$	$n_{\mathrm{s},0.002}$	$0.968 \pm 0.010$	$\sigma_8(0.15)$	$0.746^{+0.012}_{-0.0078}$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.473 \pm 0.087$	$Y_{\mathrm{P}}$	$0.245445 \pm 0.000084$	$f\sigma_8(0.38)$	$0.4712 \pm 0.0061$
$A_{143}^{\mathrm{dustTE}}$	$0.220 \pm 0.053$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246772 \pm 0.000085$	$\sigma_8(0.38)$	$0.662^{+0.011}_{-0.0070}$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.659 \pm 0.078$	$10^5 \mathrm{D}/\mathrm{H}$	$2.561 \pm 0.039$	$f\sigma_8(0.51)$	$0.4704^{+0.0062}_{-0.0053}$
$A_{217}^{\mathrm{dustTE}}$	$2.04 \pm 0.27$	$\mathrm{Age}/\mathrm{Gyr}$	$13.766^{+0.033}_{-0.037}$	$\sigma_8(0.51)$	$0.619^{+0.011}_{-0.0066}$
$c_{100}$	$1.00022 \pm 0.00070$	$z_{*}$	$1089.65 \pm 0.31$	$f\sigma_8(0.61)$	$0.4658^{+0.0062}_{-0.0050}$
$c_{217}$	$0.99800 \pm 0.00061$	$r_{*}$	$144.63 \pm 0.30$	$\sigma_8(0.61)$	$0.590^{+0.010}_{-0.0063}$
$H_0$	$68.02 \pm 0.61$	$100\theta_{*}$	$1.04147 \pm 0.00045$	$f\sigma_8(2.33)$	$0.2975^{+0.0044}_{-0.0031}$
$\Omega_{\Lambda}$	$0.6929 \pm 0.0077$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.887 \pm 0.030$	$\sigma_8(2.33)$	$0.3069^{+0.0052}_{-0.0035}$
$\Omega_{\mathrm{m}}$	$0.3071 \pm 0.0077$	$z_{\mathrm{drag}}$	$1060.16 \pm 0.48$	$\chi_{\mathrm{lensing}}^2$	$10.5 \pm 1.9$
$\Omega_{\mathrm{m}} h^2$	$0.1420 \pm 0.0012$	$r_{\mathrm{drag}}$	$147.25 \pm 0.33$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.6$
$\Omega_{\nu} h^2$	$< 0.000854$	$k_{\mathrm{D}}$	$0.14080 \pm 0.00045$	$\chi_{\mathrm{plikTE}}^2$	$860.0 \pm 3.5$
$\Omega_{\mathrm{m}} h^3$	$0.09661 \pm 0.00054$	$100\theta_{\mathrm{D}}$	$0.16067^{+0.00025}_{-0.00028}$	$\chi_{6\mathrm{DF}}^2$	$0.045 \pm 0.063$
$\sigma_8$	$0.807^{+0.013}_{-0.0084}$	$z_{\mathrm{eq}}$	$3378 \pm 28$	$\chi_{\mathrm{MGS}}^2$	$1.58 \pm 0.57$
$S_8$	$0.816 \pm 0.013$	$k_{\mathrm{eq}}$	$0.010309 \pm 0.000084$	$\chi_{\mathrm{DR12BAO}}^2$	$4.4 \pm 1.3$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4470 \pm 0.0072$	$100\theta_{\mathrm{eq}}$	$0.8184 \pm 0.0051$	$\chi_{\mathrm{prior}}^2$	$7.5 \pm 3.9$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.6004^{+0.0088}_{-0.0075}$	$100\theta_{\mathrm{s,eq}}$	$0.4519 \pm 0.0026$	$\chi_{\mathrm{CMB}}^2$	$1267.3 \pm 3.8$
$\sigma_8/h^{0.5}$	$0.978^{+0.014}_{-0.011}$	$H(0.15)$	$73.26 \pm 0.53$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.1$
$r_{\mathrm{drag}} h$	$100.16 \pm 0.98$	$D_{\mathrm{M}}(0.15)$	$637.7 \pm 5.2$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1280.75; R - 1 = 0.05310$$



## 6.21 base\_mnu\_plikHM\_EE\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02346	$0.02412^{+0.00081}_{-0.0010}$	$D_{220}$	5888	$5988 \pm 170$	$H(0.51)$	90.50	$90.42 \pm 0.62$
$\Omega_c h^2$	0.11759	$0.1150^{+0.0036}_{-0.0023}$	$D_{810}$	2579.1	$2595 \pm 37$	$D_M(0.51)$	1956.4	$1959 \pm 19$
$100\theta_{MC}$	1.03983	$1.04008 \pm 0.00080$	$D_{1420}$	837.7	$847 \pm 17$	$H(0.61)$	96.05	$95.98 \pm 0.58$
$\tau$	0.0519	$0.0529 \pm 0.0085$	$D_{2000}$	238.8	$241.9 \pm 6.1$	$D_M(0.61)$	2278.0	$2281 \pm 21$
$\Sigma m_\nu$ [eV]	0.069	$< 0.315$	$n_{s,0.002}$	0.9751	$0.981 \pm 0.011$	$H(2.33)$	236.00	$236.0 \pm 1.0$
$\ln(10^{10} A_s)$	3.0490	$3.051 \pm 0.022$	$Y_P$	0.245852	$0.24609^{+0.00032}_{-0.00038}$	$D_M(2.33)$	5724.7	$5729 \pm 31$
$n_s$	0.9751	$0.981 \pm 0.011$	$Y_P^{BBN}$	0.247180	$0.24742^{+0.00032}_{-0.00038}$	$f\sigma_8(0.15)$	0.4452	$0.420^{+0.033}_{-0.018}$
$y_{cal}$	0.99986	$0.9999 \pm 0.0025$	$10^5 D/H$	2.394	$2.30 \pm 0.14$	$\sigma_8(0.15)$	0.7426	$0.697^{+0.058}_{-0.028}$
$H_0$	68.74	$68.63 \pm 0.88$	Age/Gyr	13.709	$13.719 \pm 0.072$	$f\sigma_8(0.38)$	0.4659	$0.440^{+0.034}_{-0.018}$
$\Omega_\Lambda$	0.6999	$0.6987^{+0.0097}_{-0.0088}$	$z_*$	1088.40	$1087.5^{+1.2}_{-1.1}$	$\sigma_8(0.38)$	0.6595	$0.619^{+0.051}_{-0.024}$
$\Omega_m$	0.3001	$0.3013 \pm 0.0093$	$r_*$	144.22	$144.34 \pm 0.55$	$f\sigma_8(0.51)$	0.4659	$0.440^{+0.034}_{-0.017}$
$\Omega_m h^2$	0.14180	$0.1418 \pm 0.0014$	$100\theta_*$	1.03991	$1.04017 \pm 0.00082$	$\sigma_8(0.51)$	0.6178	$0.580^{+0.048}_{-0.022}$
$\Omega_\nu h^2$	0.00074	$< 0.00339$	$D_M(z_*)/\text{Gpc}$	13.869	$13.877 \pm 0.053$	$f\sigma_8(0.61)$	0.4619	$0.436^{+0.033}_{-0.017}$
$\Omega_m h^3$	0.09747	$0.0973 \pm 0.0013$	$z_{drag}$	1062.26	$1063.5^{+1.8}_{-2.0}$	$\sigma_8(0.61)$	0.5881	$0.552^{+0.045}_{-0.021}$
$\sigma_8$	0.8023	$0.753^{+0.063}_{-0.030}$	$r_{drag}$	146.53	$146.46 \pm 0.71$	$f\sigma_8(2.33)$	0.2972	$0.281^{+0.020}_{-0.0093}$
$S_8$	0.8025	$0.754^{+0.062}_{-0.036}$	$k_D$	0.14225	$0.1428 \pm 0.0012$	$\sigma_8(2.33)$	0.3068	$0.289^{+0.022}_{-0.010}$
$\sigma_8 \Omega_m^{0.5}$	0.4395	$0.413^{+0.034}_{-0.020}$	$100\theta_D$	0.15924	$0.1586 \pm 0.0010$	$\chi^2_{small}$	395.62	$396.7 \pm 1.5$
$\sigma_8 \Omega_m^{0.25}$	0.5939	$0.557^{+0.046}_{-0.024}$	$z_{eq}$	3371	$3324^{+67}_{-49}$	$\chi^2_{plikEE}$	739.05	$744.0 \pm 3.2$
$\sigma_8/h^{0.5}$	0.968	$0.908^{+0.075}_{-0.038}$	$k_{eq}$	0.010287	$0.01015^{+0.00020}_{-0.00015}$	$\chi^2_{6DF}$	0.0017	$0.058 \pm 0.081$
$r_{drag} h$	100.72	$100.5 \pm 1.2$	$100\theta_{eq}$	0.8212	$0.8323^{+0.0093}_{-0.015}$	$\chi^2_{MGS}$	1.82	$1.77 \pm 0.71$
$\langle d^2 \rangle^{1/2}$	2.401	$2.342^{+0.075}_{-0.056}$	$100\theta_{s,eq}$	0.4526	$0.4579^{+0.0047}_{-0.0074}$	$\chi^2_{DR12BAO}$	3.62	$4.7 \pm 1.6$
$z_{re}$	7.17	$7.11^{+0.86}_{-0.72}$	$H(0.15)$	73.92	$73.82 \pm 0.80$	$\chi^2_{prior}$	0.003	$0.99 \pm 1.4$
$10^9 A_s$	2.1093	$2.115 \pm 0.046$	$D_M(0.15)$	631.5	$632.5 \pm 7.5$	$\chi^2_{BAO}$	5.44	$6.5 \pm 1.4$
$10^9 A_s e^{-2\tau}$	1.9015	$1.902 \pm 0.025$	$H(0.38)$	83.87	$83.79 \pm 0.68$	$\chi^2_{CMB}$	1134.66	$1140.7 \pm 3.5$
$D_{40}$	1231.6	$1226 \pm 31$	$D_M(0.38)$	1508.8	$1511 \pm 16$			

Best-fit  $\chi^2_{eff} = 1140.11$ ;  $\bar{\chi}^2_{eff} = 1148.18$ ;  $R - 1 = 0.00933$

$\chi^2_{eff}$ : BAO - 6DF: 0.00 MGS: 1.82 DR12BAO: 3.62 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.62 plik\_rd12\_HM\_v22\_EE: 739.05



## 6.22 base\_mnu\_plikHM\_EE\_lowE\_BAO\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02390^{+0.00067}_{-0.00076}$	$D_{220}$	$5959 \pm 140$	$H(0.51)$	$90.52 \pm 0.57$
$\Omega_{\mathrm{c}}h^2$	$0.1164 \pm 0.0017$	$D_{810}$	$2593 \pm 31$	$D_{\mathrm{M}}(0.51)$	$1957 \pm 18$
$100\theta_{\mathrm{MC}}$	$1.03995 \pm 0.00077$	$D_{1420}$	$845 \pm 15$	$H(0.61)$	$96.08 \pm 0.53$
$\tau$	$0.0532 \pm 0.0081$	$D_{2000}$	$241.3 \pm 5.3$	$D_{\mathrm{M}}(0.61)$	$2278 \pm 20$
$\Sigma m_{\nu} [\mathrm{eV}]$	$0.162^{+0.068}_{-0.13}$	$n_{\mathrm{s},0.002}$	$0.978 \pm 0.010$	$H(2.33)$	$236.19 \pm 0.87$
$\ln(10^{10}A_{\mathrm{s}})$	$3.054 \pm 0.018$	$Y_{\mathrm{P}}$	$0.24600 \pm 0.00028$	$D_{\mathrm{M}}(2.33)$	$5723 \pm 27$
$n_{\mathrm{s}}$	$0.978 \pm 0.010$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24733 \pm 0.00028$	$f\sigma_8(0.15)$	$0.433^{+0.014}_{-0.012}$
$y_{\mathrm{cal}}$	$0.99999 \pm 0.0024$	$10^5 D/H$	$2.33 \pm 0.11$	$\sigma_8(0.15)$	$0.720^{+0.026}_{-0.017}$
$H_0$	$68.71 \pm 0.86$	Age/Gyr	$13.705 \pm 0.063$	$f\sigma_8(0.38)$	$0.454^{+0.014}_{-0.011}$
$\Omega_{\Lambda}$	$0.6990 \pm 0.0093$	$z_{*}$	$1087.85 \pm 0.89$	$\sigma_8(0.38)$	$0.640^{+0.023}_{-0.015}$
$\Omega_{\mathrm{m}}$	$0.3010 \pm 0.0093$	$r_{*}$	$144.18 \pm 0.41$	$f\sigma_8(0.51)$	$0.454^{+0.014}_{-0.010}$
$\Omega_{\mathrm{m}}h^2$	$0.1420 \pm 0.0013$	$100\theta_{*}$	$1.04003 \pm 0.00078$	$\sigma_8(0.51)$	$0.600^{+0.021}_{-0.014}$
$\Omega_{\nu}h^2$	$0.00174^{+0.00073}_{-0.0014}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.863 \pm 0.042$	$f\sigma_8(0.61)$	$0.450^{+0.014}_{-0.010}$
$\Omega_{\mathrm{m}}h^3$	$0.0976 \pm 0.0010$	$z_{\mathrm{drag}}$	$1063.1 \pm 1.5$	$\sigma_8(0.61)$	$0.571^{+0.020}_{-0.014}$
$\sigma_8$	$0.778^{+0.028}_{-0.019}$	$r_{\mathrm{drag}}$	$146.35 \pm 0.58$	$f\sigma_8(2.33)$	$0.2899^{+0.0087}_{-0.0058}$
$S_8$	$0.779^{+0.028}_{-0.023}$	$k_{\mathrm{D}}$	$0.1427 \pm 0.0011$	$\sigma_8(2.33)$	$0.298^{+0.010}_{-0.0067}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.427^{+0.015}_{-0.013}$	$100\theta_{\mathrm{D}}$	$0.15880 \pm 0.00083$	$\chi_{\mathrm{lensing}}^2$	$9.2 \pm 1.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.576^{+0.020}_{-0.015}$	$z_{\mathrm{eq}}$	$3353 \pm 31$	$\chi_{\mathrm{simall}}^2$	$396.7 \pm 1.4$
$\sigma_8/h^{0.5}$	$0.939^{+0.033}_{-0.024}$	$k_{\mathrm{eq}}$	$0.010234 \pm 0.000096$	$\chi_{\mathrm{plikEE}}^2$	$742.9 \pm 2.6$
$r_{\mathrm{drag}}h$	$100.6 \pm 1.2$	$100\theta_{\mathrm{eq}}$	$0.8259^{+0.0063}_{-0.0071}$	$\chi_{6\mathrm{DF}}^2$	$0.059 \pm 0.084$
$\langle d^2 \rangle^{1/2}$	$2.375 \pm 0.037$	$100\theta_{\mathrm{s,eq}}$	$0.4548 \pm 0.0032$	$\chi_{\mathrm{MGS}}^2$	$1.80 \pm 0.72$
$z_{\mathrm{re}}$	$7.19^{+0.82}_{-0.75}$	$H(0.15)$	$73.91 \pm 0.77$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.5$
$10^9 A_{\mathrm{s}}$	$2.121 \pm 0.038$	$D_{\mathrm{M}}(0.15)$	$631.8 \pm 7.2$	$\chi_{\mathrm{prior}}^2$	$0.96 \pm 1.4$
$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.907 \pm 0.019$	$H(0.38)$	$83.88 \pm 0.64$	$\chi_{\mathrm{CMB}}^2$	$1148.8 \pm 3.4$
$D_{40}$	$1233 \pm 28$	$D_{\mathrm{M}}(0.38)$	$1509 \pm 15$	$\chi_{\mathrm{BAO}}^2$	$6.5 \pm 1.5$

$\bar{\chi}_{\mathrm{eff}}^2 = 1156.24$ ;  $R - 1 = 0.01129$



### 6.23 base\_mnu\_plikHM\_EE\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02409^{+0.00081}_{-0.0010}$	$D_{220}$	$5981 \pm 170$	$H(0.51)$	$90.40 \pm 0.62$
$\Omega_{\mathrm{c}}h^2$	$0.1150^{+0.0035}_{-0.0023}$	$D_{810}$	$2594 \pm 36$	$D_{\mathrm{M}}(0.51)$	$1960 \pm 19$
$100\theta_{\mathrm{MC}}$	$1.04008 \pm 0.00080$	$D_{1420}$	$846 \pm 17$	$H(0.61)$	$95.96 \pm 0.58$
$\tau$	$0.0560^{+0.0045}_{-0.0076}$	$D_{2000}$	$241.8 \pm 6.1$	$D_{\mathrm{M}}(0.61)$	$2282 \pm 21$
$\Sigma m_{\nu} [\mathrm{eV}]$	$< 0.312$	$n_{\mathrm{s},0.002}$	$0.981 \pm 0.011$	$H(2.33)$	$236.0 \pm 1.0$
$\ln(10^{10}A_{\mathrm{s}})$	$3.057 \pm 0.019$	$Y_{\mathrm{P}}$	$0.24608^{+0.00031}_{-0.00039}$	$D_{\mathrm{M}}(2.33)$	$5730 \pm 31$
$n_{\mathrm{s}}$	$0.981 \pm 0.011$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24740^{+0.00031}_{-0.00039}$	$f\sigma_8(0.15)$	$0.422^{+0.032}_{-0.018}$
$y_{\mathrm{cal}}$	$0.9999 \pm 0.0025$	$10^5\mathrm{D}/\mathrm{H}$	$2.30 \pm 0.14$	$\sigma_8(0.15)$	$0.699^{+0.058}_{-0.027}$
$H_0$	$68.60 \pm 0.88$	Age/Gyr	$13.721 \pm 0.072$	$f\sigma_8(0.38)$	$0.441^{+0.033}_{-0.017}$
$\Omega_{\Lambda}$	$0.6985^{+0.0097}_{-0.0088}$	$z_*$	$1087.6^{+1.2}_{-1.1}$	$\sigma_8(0.38)$	$0.621^{+0.051}_{-0.023}$
$\Omega_{\mathrm{m}}$	$0.3015 \pm 0.0093$	$r_*$	$144.36 \pm 0.55$	$f\sigma_8(0.51)$	$0.441^{+0.033}_{-0.017}$
$\Omega_{\mathrm{m}}h^2$	$0.1418 \pm 0.0014$	$100\theta_*$	$1.04017 \pm 0.00082$	$\sigma_8(0.51)$	$0.582^{+0.048}_{-0.021}$
$\Omega_{\nu}h^2$	$< 0.00335$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.878 \pm 0.054$	$f\sigma_8(0.61)$	$0.438^{+0.033}_{-0.016}$
$\Omega_{\mathrm{m}}h^3$	$0.0973 \pm 0.0013$	$z_{\mathrm{drag}}$	$1063.5^{+1.7}_{-2.0}$	$\sigma_8(0.61)$	$0.554^{+0.045}_{-0.020}$
$\sigma_8$	$0.755^{+0.063}_{-0.029}$	$r_{\mathrm{drag}}$	$146.48 \pm 0.72$	$f\sigma_8(2.33)$	$0.283^{+0.020}_{-0.0089}$
$S_8$	$0.757^{+0.061}_{-0.036}$	$k_{\mathrm{D}}$	$0.1427 \pm 0.0012$	$\sigma_8(2.33)$	$0.290^{+0.022}_{-0.010}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.415^{+0.034}_{-0.020}$	$100\theta_{\mathrm{D}}$	$0.1586 \pm 0.0010$	$\chi_{\mathrm{simall}}^2$	$396.4 \pm 1.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.560^{+0.046}_{-0.024}$	$z_{\mathrm{eq}}$	$3324^{+65}_{-49}$	$\chi_{\mathrm{plikEE}}^2$	$743.9 \pm 3.1$
$\sigma_8/h^{0.5}$	$0.912^{+0.074}_{-0.037}$	$k_{\mathrm{eq}}$	$0.01015^{+0.00020}_{-0.00015}$	$\chi_{6\mathrm{DF}}^2$	$0.057 \pm 0.080$
$r_{\mathrm{drag}}h$	$100.5 \pm 1.2$	$100\theta_{\mathrm{eq}}$	$0.8322^{+0.0094}_{-0.015}$	$\chi_{\mathrm{MGS}}^2$	$1.75 \pm 0.71$
$\langle d^2 \rangle^{1/2}$	$2.349^{+0.073}_{-0.054}$	$100\theta_{\mathrm{s,eq}}$	$0.4579^{+0.0047}_{-0.0073}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.6$
$z_{\mathrm{re}}$	$7.43^{+0.34}_{-0.81}$	$H(0.15)$	$73.79 \pm 0.80$	$\chi_{\mathrm{prior}}^2$	$0.99 \pm 1.4$
$10^9A_{\mathrm{s}}$	$2.127^{+0.038}_{-0.042}$	$D_{\mathrm{M}}(0.15)$	$632.8 \pm 7.5$	$\chi_{\mathrm{BAO}}^2$	$6.5 \pm 1.4$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.901 \pm 0.024$	$H(0.38)$	$83.76 \pm 0.68$	$\chi_{\mathrm{CMB}}^2$	$1140.3 \pm 3.4$
$D_{40}$	$1226 \pm 31$	$D_{\mathrm{M}}(0.38)$	$1511 \pm 16$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1147.83$ ;  $R - 1 = 0.01081$



## 6.24 base\_mnu\_plikHM\_EE\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02387^{+0.00067}_{-0.00076}$	$D_{220}$	$5954 \pm 140$	$H(0.51)$	$90.48 \pm 0.57$
$\Omega_{\text{c}}h^2$	$0.1163 \pm 0.0017$	$D_{810}$	$2592 \pm 31$	$D_{\text{M}}(0.51)$	$1958 \pm 18$
$100\theta_{\text{MC}}$	$1.03996 \pm 0.00078$	$D_{1420}$	$844^{+14}_{-15}$	$H(0.61)$	$96.04 \pm 0.52$
$\tau$	$0.0559^{+0.0047}_{-0.0075}$	$D_{2000}$	$241.1 \pm 5.3$	$D_{\text{M}}(0.61)$	$2279 \pm 20$
$\Sigma m_{\nu} [\text{eV}]$	$0.168^{+0.075}_{-0.12}$	$n_{\text{s},0.002}$	$0.978 \pm 0.011$	$H(2.33)$	$236.14 \pm 0.86$
$\ln(10^{10}A_{\text{s}})$	$3.059^{+0.015}_{-0.017}$	$Y_{\text{P}}$	$0.24599 \pm 0.00028$	$D_{\text{M}}(2.33)$	$5725 \pm 27$
$n_{\text{s}}$	$0.978 \pm 0.011$	$Y_{\text{P}}^{\text{BBN}}$	$0.24732 \pm 0.00028$	$f\sigma_8(0.15)$	$0.434^{+0.015}_{-0.012}$
$y_{\text{cal}}$	$0.99999 \pm 0.0025$	$10^5 D/\text{H}$	$2.33 \pm 0.11$	$\sigma_8(0.15)$	$0.721^{+0.026}_{-0.018}$
$H_0$	$68.67 \pm 0.85$	Age/Gyr	$13.710 \pm 0.063$	$f\sigma_8(0.38)$	$0.454^{+0.015}_{-0.011}$
$\Omega_{\Lambda}$	$0.6987 \pm 0.0093$	$z_*$	$1087.87 \pm 0.89$	$\sigma_8(0.38)$	$0.640^{+0.023}_{-0.016}$
$\Omega_{\text{m}}$	$0.3013 \pm 0.0093$	$r_*$	$144.22 \pm 0.40$	$f\sigma_8(0.51)$	$0.454^{+0.014}_{-0.011}$
$\Omega_{\text{m}}h^2$	$0.1420 \pm 0.0013$	$100\theta_*$	$1.04005 \pm 0.00079$	$\sigma_8(0.51)$	$0.600^{+0.022}_{-0.015}$
$\Omega_{\nu}h^2$	$0.00181^{+0.00081}_{-0.0013}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.867 \pm 0.041$	$f\sigma_8(0.61)$	$0.450^{+0.014}_{-0.010}$
$\Omega_{\text{m}}h^3$	$0.0975 \pm 0.0010$	$z_{\text{drag}}$	$1063.1 \pm 1.5$	$\sigma_8(0.61)$	$0.571^{+0.020}_{-0.014}$
$\sigma_8$	$0.779^{+0.028}_{-0.020}$	$r_{\text{drag}}$	$146.40 \pm 0.57$	$f\sigma_8(2.33)$	$0.2900^{+0.0089}_{-0.0060}$
$S_8$	$0.780^{+0.028}_{-0.023}$	$k_{\text{D}}$	$0.1426 \pm 0.0010$	$\sigma_8(2.33)$	$0.299^{+0.010}_{-0.0070}$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.427^{+0.016}_{-0.013}$	$100\theta_{\text{D}}$	$0.15883 \pm 0.00083$	$\chi^2_{\text{lensing}}$	$9.2 \pm 1.3$
$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.577^{+0.020}_{-0.015}$	$z_{\text{eq}}$	$3350 \pm 31$	$\chi^2_{\text{simall}}$	$396.5 \pm 1.4$
$\sigma_8/h^{0.5}$	$0.940^{+0.034}_{-0.025}$	$k_{\text{eq}}$	$0.010226 \pm 0.000095$	$\chi^2_{\text{plikEE}}$	$742.8 \pm 2.6$
$r_{\text{drag}}h$	$100.5 \pm 1.2$	$100\theta_{\text{eq}}$	$0.8264 \pm 0.0068$	$\chi^2_{6\text{DF}}$	$0.058 \pm 0.083$
$\langle d^2 \rangle^{1/2}$	$2.378 \pm 0.037$	$100\theta_{\text{s,eq}}$	$0.4550 \pm 0.0032$	$\chi^2_{\text{MGS}}$	$1.79 \pm 0.71$
$z_{\text{re}}$	$7.46^{+0.36}_{-0.84}$	$H(0.15)$	$73.86 \pm 0.77$	$\chi^2_{\text{DR12BAO}}$	$4.7 \pm 1.6$
$10^9 A_{\text{s}}$	$2.131^{+0.031}_{-0.036}$	$D_{\text{M}}(0.15)$	$632.1 \pm 7.2$	$\chi^2_{\text{prior}}$	$0.97 \pm 1.4$
$10^9 A_{\text{s}}e^{-2\tau}$	$1.905 \pm 0.019$	$H(0.38)$	$83.84 \pm 0.64$	$\chi^2_{\text{CMB}}$	$1148.5 \pm 3.3$
$D_{40}$	$1233 \pm 28$	$D_{\text{M}}(0.38)$	$1510 \pm 15$	$\chi^2_{\text{BAO}}$	$6.5 \pm 1.5$

$\bar{\chi}^2_{\text{eff}} = 1155.99$ ;  $R - 1 = 0.01388$



## 6.25 base\_mnu\_plikHM\_TT\_lowl\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022295	$0.02218 \pm 0.00028$	$S_8$	0.8262	$0.827 \pm 0.017$	$100\theta_{\text{eq}}$	0.8235	$0.820 \pm 0.011$
$\Omega_c h^2$	0.11779	$0.1186 \pm 0.0025$	$\sigma_8 \Omega_m^{0.5}$	0.4525	$0.4530 \pm 0.0092$	$100\theta_{\text{s,eq}}$	0.4548	$0.4532 \pm 0.0055$
$100\theta_{\text{MC}}$	1.04092	$1.04081 \pm 0.00054$	$\sigma_8 \Omega_m^{0.25}$	0.5933	$0.590^{+0.020}_{-0.015}$	$H(0.15)$	70.80	$70.3^{+2.6}_{-2.3}$
$\tau$	0.1141	$0.107 \pm 0.029$	$\sigma_8/h^{0.5}$	0.9629	$0.956^{+0.039}_{-0.028}$	$D_{\text{M}}(0.15)$	662.2	$669^{+22}_{-30}$
$\Sigma m_\nu [\text{eV}]$	0.378	$0.41^{+0.18}_{-0.34}$	$r_{\text{drag}} h$	96.39	$95.4^{+4.6}_{-4.0}$	$H(0.38)$	81.29	$80.9 \pm 1.8$
$\ln(10^{10} A_s)$	3.156	$3.143 \pm 0.053$	$\langle d^2 \rangle^{1/2}$	2.5092	$2.515^{+0.043}_{-0.050}$	$D_{\text{M}}(0.38)$	1573	$1585^{+45}_{-59}$
$n_s$	0.9724	$0.9681 \pm 0.0077$	$z_{\text{re}}$	13.08	$12.4^{+2.6}_{-2.1}$	$H(0.51)$	88.22	$88.0 \pm 1.4$
$y_{\text{cal}}$	1.00018	$1.0002 \pm 0.0025$	$10^9 A_s$	2.348	$2.32 \pm 0.12$	$D_{\text{M}}(0.51)$	2033	$2047^{+53}_{-69}$
$A_{217}^{\text{CIB}}$	44.9	$47 \pm 7$	$10^9 A_s e^{-2\tau}$	1.8687	$1.871 \pm 0.015$	$H(0.61)$	94.00	$93.8 \pm 1.2$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.83	—	$D_{40}$	1228.8	$1233 \pm 13$	$D_{\text{M}}(0.61)$	2362	$2378^{+58}_{-74}$
$A_{143}^{\text{tSZ}}$	6.94	$5.3^{+2.2}_{-2.0}$	$D_{220}$	5711.4	$5714 \pm 41$	$H(2.33)$	236.81	$237.5^{+2.1}_{-2.5}$
$A_{100}^{\text{PS}}$	245.1	$260 \pm 28$	$D_{810}$	2533.1	$2531 \pm 14$	$D_{\text{M}}(2.33)$	5832	$5844^{+60}_{-73}$
$A_{143}^{\text{PS}}$	53.4	$47 \pm 8$	$D_{1420}$	816.9	$814.8 \pm 5.0$	$f\sigma_8(0.15)$	0.4584	$0.4576 \pm 0.0084$
$A_{143 \times 217}^{\text{PS}}$	58.1	$43 \pm 9$	$D_{2000}$	231.16	$230.1 \pm 1.9$	$\sigma_8(0.15)$	0.7170	$0.708^{+0.048}_{-0.035}$
$A_{217}^{\text{PS}}$	123.9	$115 \pm 10$	$n_{\text{s},0.002}$	0.9724	$0.9681 \pm 0.0077$	$f\sigma_8(0.38)$	0.4710	$0.468^{+0.014}_{-0.0090}$
$A^{\text{kSZ}}$	0.00	$< 4.36$	$Y_{\text{P}}$	0.245365	$0.24531^{+0.00014}_{-0.00010}$	$\sigma_8(0.38)$	0.6337	$0.625^{+0.046}_{-0.034}$
$A_{100}^{\text{dustTT}}$	8.88	$8.9 \pm 1.8$	$Y_{\text{P}}^{\text{BBN}}$	0.246692	$0.24664^{+0.00014}_{-0.00010}$	$f\sigma_8(0.51)$	0.4670	$0.463^{+0.017}_{-0.011}$
$A_{143}^{\text{dustTT}}$	10.85	$10.7 \pm 1.8$	$10^5 D/H$	2.600	$2.622 \pm 0.053$	$\sigma_8(0.51)$	0.5923	$0.584^{+0.044}_{-0.033}$
$A_{143 \times 217}^{\text{dustTT}}$	20.11	$18.2 \pm 3.3$	Age/Gyr	13.957	$13.99^{+0.14}_{-0.17}$	$f\sigma_8(0.61)$	0.4605	$0.456^{+0.020}_{-0.012}$
$A_{217}^{\text{dustTT}}$	95.9	$93.5 \pm 7.3$	$z_*$	1089.88	$1090.12^{+0.54}_{-0.61}$	$\sigma_8(0.61)$	0.5632	$0.555^{+0.043}_{-0.032}$
$c_{100}$	0.99968	$0.99959 \pm 0.00062$	$r_*$	144.98	$144.81 \pm 0.57$	$f\sigma_8(2.33)$	0.2876	$0.283^{+0.021}_{-0.015}$
$c_{217}$	0.99821	$0.99825 \pm 0.00062$	$100\theta_*$	1.041259	$1.04117 \pm 0.00050$	$\sigma_8(2.33)$	0.2929	$0.288^{+0.024}_{-0.018}$
$H_0$	65.27	$64.7^{+3.0}_{-2.6}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.924	$13.908 \pm 0.052$	$\chi^2_{\text{lensing}}$	8.04	$9.1 \pm 1.6$
$\Omega_\Lambda$	0.6617	$0.650^{+0.047}_{-0.030}$	$z_{\text{drag}}$	1059.67	$1059.47 \pm 0.52$	$\chi^2_{\text{lowl}}$	23.65	$24.4 \pm 1.3$
$\Omega_{\text{m}}$	0.3383	$0.350^{+0.030}_{-0.047}$	$r_{\text{drag}}$	147.68	$147.54 \pm 0.55$	$\chi^2_{\text{plik}}$	757.8	$770.2 \pm 5.5$
$\Omega_{\text{m}} h^2$	0.14415	$0.1452^{+0.0036}_{-0.0044}$	$k_{\text{D}}$	0.14024	$0.14033 \pm 0.00055$	$\chi^2_{\text{prior}}$	1.15	$7.3 \pm 3.7$
$\Omega_\nu h^2$	0.00407	$0.0045^{+0.0019}_{-0.0036}$	$100\theta_{\text{D}}$	0.160883	$0.16097 \pm 0.00028$	$\chi^2_{\text{CMB}}$	789.5	$803.7 \pm 5.5$
$\Omega_{\text{m}} h^3$	0.09409	$0.0938^{+0.0019}_{-0.0014}$	$z_{\text{eq}}$	3347	$3365 \pm 56$			
$\sigma_8$	0.7780	$0.769^{+0.049}_{-0.036}$	$k_{\text{eq}}$	0.010220	$0.01027 \pm 0.00017$			

Best-fit  $\chi^2_{\text{eff}} = 790.68$ ;  $\bar{\chi}^2_{\text{eff}} = 811.02$ ;  $R - 1 = 0.01418$

$\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.04 commander\_dx12\_v3\_2\_29: 23.65 plik\_rd12\_HM\_v22\_TT: 757.84



## 6.26 base\_mnu\_plikHM\_TT\_lowl\_lensing\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02237 \pm 0.00021$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.605^{+0.011}_{-0.0096}$	$H(0.38)$	$82.95^{+0.53}_{-0.46}$
$\Omega_{\mathrm{c}}h^2$	$0.1169 \pm 0.0017$	$\sigma_8/h^{0.5}$	$0.987^{+0.018}_{-0.016}$	$D_{\mathrm{M}}(0.38)$	$1529^{+11}_{-13}$
$100\theta_{\mathrm{MC}}$	$1.04116 \pm 0.00044$	$r_{\mathrm{drag}}h$	$100.1 \pm 1.1$	$H(0.51)$	$89.61^{+0.47}_{-0.40}$
$\tau$	$0.097^{+0.025}_{-0.029}$	$\langle d^2 \rangle^{1/2}$	$2.479 \pm 0.031$	$D_{\mathrm{M}}(0.51)$	$1981^{+14}_{-16}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$< 0.203$	$z_{\mathrm{re}}$	$11.5 \pm 2.2$	$H(0.61)$	$95.18^{+0.43}_{-0.35}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.121^{+0.046}_{-0.052}$	$10^9 A_{\mathrm{s}}$	$2.269^{+0.099}_{-0.12}$	$D_{\mathrm{M}}(0.61)$	$2306^{+15}_{-17}$
$n_{\mathrm{s}}$	$0.9726^{+0.0056}_{-0.0063}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.865 \pm 0.013$	$H(2.33)$	$235.07 \pm 0.79$
$y_{\mathrm{cal}}$	$1.0001^{+0.0026}_{-0.0023}$	$D_{40}$	$1228 \pm 11$	$D_{\mathrm{M}}(2.33)$	$5773^{+18}_{-23}$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$D_{220}$	$5720 \pm 39$	$f\sigma_8(0.15)$	$0.4567 \pm 0.0071$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2529 \pm 14$	$\sigma_8(0.15)$	$0.751^{+0.017}_{-0.014}$
$A_{143}^{\mathrm{tSZ}}$	$5.3^{+2.3}_{-2.0}$	$D_{1420}$	$815.1 \pm 5.0$	$f\sigma_8(0.38)$	$0.4763 \pm 0.0073$
$A_{100}^{\mathrm{PS}}$	$258 \pm 28$	$D_{2000}$	$230.7 \pm 1.8$	$\sigma_8(0.38)$	$0.667^{+0.015}_{-0.012}$
$A_{143}^{\mathrm{PS}}$	$46 \pm 8$	$n_{\mathrm{s},0.002}$	$0.9726^{+0.0056}_{-0.0063}$	$f\sigma_8(0.51)$	$0.4754 \pm 0.0073$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 10$	$Y_{\mathrm{P}}$	$0.245392^{+0.000089}_{-0.000078}$	$\sigma_8(0.51)$	$0.624^{+0.014}_{-0.012}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246719^{+0.000089}_{-0.000078}$	$f\sigma_8(0.61)$	$0.4709^{+0.0077}_{-0.0069}$
$A^{\mathrm{kSZ}}$	$< 4.29$	$10^5 \mathrm{D}/\mathrm{H}$	$2.586 \pm 0.040$	$\sigma_8(0.61)$	$0.594^{+0.014}_{-0.011}$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.9$	$\mathrm{Age}/\mathrm{Gyr}$	$13.824^{+0.041}_{-0.054}$	$f\sigma_8(2.33)$	$0.3014^{+0.0058}_{-0.0053}$
$A_{143}^{\mathrm{dust}TT}$	$10.6 \pm 1.8$	$z_*$	$1089.66 \pm 0.35$	$\sigma_8(2.33)$	$0.3100^{+0.0069}_{-0.0060}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.2 \pm 3.3$	$r_*$	$145.23 \pm 0.40$	$f_{2000}^{143}$	$29.3 \pm 3.0$
$A_{217}^{\mathrm{dust}TT}$	$93.6 \pm 7.3$	$100\theta_*$	$1.04140 \pm 0.00045$	$f_{2000}^{143 \times 217}$	$32.1 \pm 2.1$
$c_{100}$	$0.99961 \pm 0.00063$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.945 \pm 0.037$	$f_{2000}^{217}$	$106.8 \pm 2.0$
$c_{217}$	$0.99821 \pm 0.00061$	$z_{\mathrm{drag}}$	$1059.72 \pm 0.46$	$\chi_{\mathrm{lensing}}^2$	$9.3 \pm 1.6$
$H_0$	$67.71^{+0.73}_{-0.65}$	$r_{\mathrm{drag}}$	$147.91 \pm 0.41$	$\chi_{\mathrm{lowl}}^2$	$23.54 \pm 0.92$
$\Omega_{\Lambda}$	$0.6924^{+0.0088}_{-0.0077}$	$k_{\mathrm{D}}$	$0.14002 \pm 0.00047$	$\chi_{\mathrm{plik}}^2$	$770.4 \pm 5.5$
$\Omega_{\mathrm{m}}$	$0.3076^{+0.0077}_{-0.0088}$	$100\theta_{\mathrm{D}}$	$0.16089 \pm 0.00026$	$\chi_{6\mathrm{DF}}^2$	$0.053 \pm 0.077$
$\Omega_{\mathrm{m}}h^2$	$0.1410 \pm 0.0012$	$z_{\mathrm{eq}}$	$3328 \pm 40$	$\chi_{\mathrm{MGS}}^2$	$1.58 \pm 0.62$
$\Omega_{\nu}h^2$	$< 0.00218$	$k_{\mathrm{eq}}$	$0.01016 \pm 0.00012$	$\chi_{\mathrm{DR12BAO}}^2$	$4.5 \pm 1.5$
$\Omega_{\mathrm{m}}h^3$	$0.09544^{+0.00084}_{-0.00067}$	$100\theta_{\mathrm{eq}}$	$0.8272^{+0.0073}_{-0.0082}$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.6$
$\sigma_8$	$0.812^{+0.018}_{-0.014}$	$100\theta_{\mathrm{s,eq}}$	$0.4567^{+0.0037}_{-0.0042}$	$\chi_{\mathrm{CMB}}^2$	$803.2 \pm 5.4$
$S_8$	$0.822 \pm 0.014$	$H(0.15)$	$72.93^{+0.65}_{-0.58}$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4504 \pm 0.0078$	$D_{\mathrm{M}}(0.15)$	$640.7^{+5.5}_{-6.4}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 816.62$ ;  $R - 1 = 0.05945$



## 6.27 base\_mnu\_plikHM\_TT\_lowl\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02219 \pm 0.00028$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4529 \pm 0.0092$	$H(0.15)$	$70.3^{+2.6}_{-2.3}$
$\Omega_{\mathrm{c}} h^2$	$0.1186 \pm 0.0025$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.590^{+0.020}_{-0.015}$	$D_{\mathrm{M}}(0.15)$	$669^{+22}_{-30}$
$100\theta_{\mathrm{MC}}$	$1.04082 \pm 0.00054$	$\sigma_8/h^{0.5}$	$0.956^{+0.039}_{-0.028}$	$H(0.38)$	$80.9 \pm 1.8$
$\tau$	$0.108 \pm 0.027$	$r_{\mathrm{drag}} h$	$95.4^{+4.7}_{-4.0}$	$D_{\mathrm{M}}(0.38)$	$1585^{+45}_{-59}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$0.42^{+0.19}_{-0.33}$	$\langle d^2 \rangle^{1/2}$	$2.516^{+0.041}_{-0.050}$	$H(0.51)$	$87.9 \pm 1.4$
$\ln(10^{10} A_{\mathrm{s}})$	$3.144 \pm 0.051$	$z_{\mathrm{re}}$	$12.5^{+2.5}_{-2.1}$	$D_{\mathrm{M}}(0.51)$	$2048^{+54}_{-69}$
$n_{\mathrm{s}}$	$0.9682 \pm 0.0076$	$10^9 A_{\mathrm{s}}$	$2.32 \pm 0.12$	$H(0.61)$	$93.8 \pm 1.2$
$y_{\mathrm{cal}}$	$1.0002 \pm 0.0025$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.871 \pm 0.015$	$D_{\mathrm{M}}(0.61)$	$2378^{+58}_{-74}$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$D_{40}$	$1233 \pm 13$	$H(2.33)$	$237.5^{+2.1}_{-2.5}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{220}$	$5714 \pm 41$	$D_{\mathrm{M}}(2.33)$	$5845^{+61}_{-72}$
$A_{143}^{\mathrm{tSZ}}$	$5.3^{+2.2}_{-2.0}$	$D_{810}$	$2531 \pm 14$	$f\sigma_8(0.15)$	$0.4575 \pm 0.0084$
$A_{100}^{\mathrm{PS}}$	$260 \pm 28$	$D_{1420}$	$814.8 \pm 5.0$	$\sigma_8(0.15)$	$0.708^{+0.048}_{-0.036}$
$A_{143}^{\mathrm{PS}}$	$47 \pm 8$	$D_{2000}$	$230.1 \pm 1.9$	$f\sigma_8(0.38)$	$0.468^{+0.014}_{-0.0090}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$n_{\mathrm{s},0.002}$	$0.9682 \pm 0.0076$	$\sigma_8(0.38)$	$0.625^{+0.046}_{-0.034}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}$	$0.24531^{+0.00014}_{-0.00010}$	$f\sigma_8(0.51)$	$0.463^{+0.017}_{-0.011}$
$A^{\mathrm{kSZ}}$	$< 4.34$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00014}_{-0.00010}$	$\sigma_8(0.51)$	$0.584^{+0.044}_{-0.033}$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$10^5 \mathrm{D}/\mathrm{H}$	$2.621 \pm 0.053$	$f\sigma_8(0.61)$	$0.456^{+0.020}_{-0.012}$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$\mathrm{Age}/\mathrm{Gyr}$	$13.99^{+0.14}_{-0.17}$	$\sigma_8(0.61)$	$0.555^{+0.043}_{-0.032}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.2 \pm 3.3$	$z_*$	$1090.12^{+0.54}_{-0.61}$	$f\sigma_8(2.33)$	$0.283^{+0.021}_{-0.015}$
$A_{217}^{\mathrm{dust}TT}$	$93.5 \pm 7.3$	$r_*$	$144.82 \pm 0.57$	$\sigma_8(2.33)$	$0.288^{+0.024}_{-0.018}$
$c_{100}$	$0.99959 \pm 0.00062$	$100\theta_*$	$1.04118 \pm 0.00049$	$f_{2000}^{143}$	$30.1 \pm 3.2$
$c_{217}$	$0.99825 \pm 0.00062$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.909 \pm 0.052$	$f_{2000}^{143 \times 217}$	$32.8 \pm 2.3$
$H_0$	$64.7^{+3.0}_{-2.6}$	$z_{\mathrm{drag}}$	$1059.48 \pm 0.52$	$f_{2000}^{217}$	$107.4 \pm 2.1$
$\Omega_{\Lambda}$	$0.650^{+0.047}_{-0.030}$	$r_{\mathrm{drag}}$	$147.55 \pm 0.54$	$\chi_{\mathrm{lensing}}^2$	$9.1 \pm 1.6$
$\Omega_{\mathrm{m}}$	$0.350^{+0.030}_{-0.047}$	$k_{\mathrm{D}}$	$0.14032 \pm 0.00055$	$\chi_{\mathrm{lowl}}^2$	$24.4 \pm 1.3$
$\Omega_{\mathrm{m}} h^2$	$0.1452^{+0.0036}_{-0.0044}$	$100\theta_{\mathrm{D}}$	$0.16096 \pm 0.00028$	$\chi_{\mathrm{plik}}^2$	$770.2 \pm 5.4$
$\Omega_{\nu} h^2$	$0.0045^{+0.0021}_{-0.0035}$	$z_{\mathrm{eq}}$	$3363 \pm 56$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\Omega_{\mathrm{m}} h^3$	$0.0938^{+0.0019}_{-0.0014}$	$k_{\mathrm{eq}}$	$0.01027 \pm 0.00017$	$\chi_{\mathrm{CMB}}^2$	$803.7 \pm 5.5$
$\sigma_8$	$0.769^{+0.049}_{-0.036}$	$100\theta_{\mathrm{eq}}$	$0.821 \pm 0.011$		
$S_8$	$0.827 \pm 0.017$	$100\theta_{\mathrm{s,eq}}$	$0.4533 \pm 0.0055$		

$\bar{\chi}_{\mathrm{eff}}^2 = 810.97$ ;  $R - 1 = 0.01413$



## 6.28 base\_mnu\_plikHM\_TT\_lowl\_lensing\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02237 \pm 0.00021$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.605^{+0.011}_{-0.0096}$	$H(0.38)$	$82.95^{+0.54}_{-0.46}$
$\Omega_{\mathrm{c}}h^2$	$0.1168^{+0.0018}_{-0.0016}$	$\sigma_8/h^{0.5}$	$0.987^{+0.018}_{-0.015}$	$D_{\mathrm{M}}(0.38)$	$1529^{+11}_{-13}$
$100\theta_{\mathrm{MC}}$	$1.04117 \pm 0.00044$	$r_{\mathrm{drag}}h$	$100.1 \pm 1.1$	$H(0.51)$	$89.61^{+0.47}_{-0.40}$
$\tau$	$0.098^{+0.024}_{-0.029}$	$\langle d^2 \rangle^{1/2}$	$2.480 \pm 0.031$	$D_{\mathrm{M}}(0.51)$	$1981^{+14}_{-16}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$< 0.204$	$z_{\mathrm{re}}$	$11.5 \pm 2.1$	$H(0.61)$	$95.18^{+0.43}_{-0.36}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.122^{+0.043}_{-0.053}$	$10^9 A_{\mathrm{s}}$	$2.272^{+0.093}_{-0.12}$	$D_{\mathrm{M}}(0.61)$	$2306^{+15}_{-18}$
$n_{\mathrm{s}}$	$0.9727^{+0.0056}_{-0.0062}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.865 \pm 0.013$	$H(2.33)$	$235.06 \pm 0.78$
$y_{\mathrm{cal}}$	$1.0001^{+0.0026}_{-0.0023}$	$D_{40}$	$1228 \pm 11$	$D_{\mathrm{M}}(2.33)$	$5774^{+18}_{-23}$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$D_{220}$	$5720 \pm 39$	$f\sigma_8(0.15)$	$0.4567 \pm 0.0071$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2529 \pm 14$	$\sigma_8(0.15)$	$0.751^{+0.017}_{-0.013}$
$A_{143}^{\mathrm{tSZ}}$	$5.3^{+2.3}_{-2.0}$	$D_{1420}$	$815.0 \pm 5.0$	$f\sigma_8(0.38)$	$0.4763 \pm 0.0073$
$A_{100}^{\mathrm{PS}}$	$258 \pm 28$	$D_{2000}$	$230.7 \pm 1.8$	$\sigma_8(0.38)$	$0.667^{+0.015}_{-0.012}$
$A_{143}^{\mathrm{PS}}$	$46 \pm 8$	$n_{\mathrm{s},0.002}$	$0.9727^{+0.0056}_{-0.0062}$	$f\sigma_8(0.51)$	$0.4755^{+0.0076}_{-0.0069}$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 10$	$Y_{\mathrm{P}}$	$0.245393^{+0.000088}_{-0.000078}$	$\sigma_8(0.51)$	$0.624^{+0.014}_{-0.012}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246720^{+0.000088}_{-0.000078}$	$f\sigma_8(0.61)$	$0.4709^{+0.0077}_{-0.0069}$
$A^{\mathrm{kSZ}}$	$< 4.28$	$10^5 \mathrm{D}/\mathrm{H}$	$2.586 \pm 0.039$	$\sigma_8(0.61)$	$0.594^{+0.014}_{-0.011}$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.9$	$\mathrm{Age}/\mathrm{Gyr}$	$13.824^{+0.042}_{-0.054}$	$f\sigma_8(2.33)$	$0.3015^{+0.0058}_{-0.0052}$
$A_{143}^{\mathrm{dust}TT}$	$10.6 \pm 1.8$	$z_*$	$1089.65 \pm 0.35$	$\sigma_8(2.33)$	$0.3101^{+0.0070}_{-0.0059}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.2 \pm 3.3$	$r_*$	$145.23 \pm 0.39$	$f_{2000}^{143}$	$29.3 \pm 2.9$
$A_{217}^{\mathrm{dust}TT}$	$93.6 \pm 7.3$	$100\theta_*$	$1.04141 \pm 0.00045$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.1$
$c_{100}$	$0.99960 \pm 0.00063$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.946 \pm 0.037$	$f_{2000}^{217}$	$106.8 \pm 2.0$
$c_{217}$	$0.99821 \pm 0.00061$	$z_{\mathrm{drag}}$	$1059.73 \pm 0.46$	$\chi_{\mathrm{lensing}}^2$	$9.3 \pm 1.6$
$H_0$	$67.71^{+0.74}_{-0.65}$	$r_{\mathrm{drag}}$	$147.91 \pm 0.40$	$\chi_{\mathrm{lowl}}^2$	$23.54 \pm 0.92$
$\Omega_{\Lambda}$	$0.6924^{+0.0087}_{-0.0077}$	$k_{\mathrm{D}}$	$0.14002 \pm 0.00047$	$\chi_{\mathrm{plik}}^2$	$770.3 \pm 5.5$
$\Omega_{\mathrm{m}}$	$0.3076^{+0.0077}_{-0.0087}$	$100\theta_{\mathrm{D}}$	$0.16089 \pm 0.00026$	$\chi_{6\mathrm{DF}}^2$	$0.053 \pm 0.076$
$\Omega_{\mathrm{m}}h^2$	$0.1409 \pm 0.0012$	$z_{\mathrm{eq}}$	$3327 \pm 39$	$\chi_{\mathrm{MGS}}^2$	$1.58 \pm 0.62$
$\Omega_{\nu}h^2$	$< 0.00219$	$k_{\mathrm{eq}}$	$0.01015 \pm 0.00012$	$\chi_{\mathrm{DR12BAO}}^2$	$4.4 \pm 1.5$
$\Omega_{\mathrm{m}}h^3$	$0.09543^{+0.00084}_{-0.00066}$	$100\theta_{\mathrm{eq}}$	$0.8274^{+0.0071}_{-0.0082}$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8$	$0.812^{+0.018}_{-0.014}$	$100\theta_{\mathrm{s,eq}}$	$0.4567^{+0.0036}_{-0.0042}$	$\chi_{\mathrm{CMB}}^2$	$803.2 \pm 5.4$
$S_8$	$0.822 \pm 0.014$	$H(0.15)$	$72.93^{+0.66}_{-0.58}$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4505 \pm 0.0078$	$D_{\mathrm{M}}(0.15)$	$640.6^{+5.5}_{-6.4}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 816.56; R - 1 = 0.05884$



## 6.29 base\_mnu\_plikHM\_TTTEEE\_lowl\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022505	$0.02241 \pm 0.00018$ (+0.8 $\sigma$ )	$\Omega_{\mathrm{m}}h^2$	0.14100	$0.1448^{+0.0024}_{-0.0033}$ (−0.1 $\sigma$ )	$z_{\mathrm{eq}}$	3369.1	$3376 \pm 36$ (+0.2 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11848	$0.1189 \pm 0.0016$ (+0.1 $\sigma$ )	$\Omega_{\nu}h^2$	0.00001	$< 0.00451$ (−0.3 $\sigma$ )	$k_{\mathrm{eq}}$	0.010282	$0.01031 \pm 0.00011$ (+0.2 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.041120	$1.04091 \pm 0.00035$ (+0.2 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.09670	$0.0948^{+0.0017}_{-0.00096}$ (+0.6 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8197	$0.8187 \pm 0.0069$ (−0.2 $\sigma$ )
$\tau$	0.0725	$0.101 \pm 0.025$ (−0.2 $\sigma$ )	$\sigma_8$	0.8335	$0.783^{+0.043}_{-0.027}$ (+0.3 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.45265	$0.4522 \pm 0.0035$ (−0.2 $\sigma$ )
$\Sigma m_{\nu}$ [eV]	0.001	$< 0.420$ (−0.3 $\sigma$ )	$S_8$	0.8332	$0.831 \pm 0.014$ (+0.2 $\sigma$ )	$H(0.15)$	73.75	$71.0^{+2.2}_{-1.5}$ (+0.3 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0764	$3.132 \pm 0.047$ (−0.2 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4564	$0.4550 \pm 0.0074$ (+0.2 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	633.0	$661^{+15}_{-24}$ (−0.3 $\sigma$ )
$n_{\mathrm{s}}$	0.9702	$0.9685 \pm 0.0054$ (+0.1 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6167	$0.597^{+0.019}_{-0.012}$ (+0.4 $\sigma$ )	$H(0.38)$	83.67	$81.5^{+1.7}_{-1.2}$ (+0.3 $\sigma$ )
$y_{\mathrm{cal}}$	1.00015	$1.0002 \pm 0.0025$ (+0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	1.0065	$0.968^{+0.035}_{-0.023}$ (+0.4 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1512.4	$1569^{+30}_{-48}$ (−0.3 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	46.8	$46 \pm 7$ (−0.1 $\sigma$ )	$r_{\mathrm{drag}}h$	101.06	$96.4^{+3.8}_{-2.7}$ (+0.2 $\sigma$ )	$H(0.51)$	90.28	$88.5^{+1.4}_{-0.99}$ (+0.4 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.40	—	$\langle d^2 \rangle^{1/2}$	2.4672	$2.507^{+0.037}_{-0.045}$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1961.0	$2028^{+36}_{-57}$ (−0.3 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	7.31	$5.6^{+2.1}_{-1.8}$ (+0.2 $\sigma$ )	$z_{\mathrm{re}}$	9.37	$11.9^{+2.3}_{-2.0}$ (−0.2 $\sigma$ )	$H(0.61)$	95.81	$94.3^{+1.2}_{-0.85}$ (+0.4 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	247.7	$256 \pm 28$ (−0.1 $\sigma$ )	$10^9 A_{\mathrm{s}}$	2.168	$2.30^{+0.10}_{-0.12}$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2283	$2356^{+39}_{-62}$ (−0.3 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	44.7	$45 \pm 8$ (−0.3 $\sigma$ )	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8753	$1.874 \pm 0.012$ (+0.2 $\sigma$ )	$H(2.33)$	235.38	$237.4^{+1.4}_{-1.8}$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	45.3	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{40}$	1225.2	$1235 \pm 12$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5739	$5817^{+40}_{-65}$ (−0.4 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	118.8	$115 \pm 10$ (−0.0 $\sigma$ )	$D_{220}$	5729.6	$5731 \pm 39$ (+0.4 $\sigma$ )	$f\sigma_8(0.15)$	0.4612	$0.4600 \pm 0.0072$ (+0.3 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.00	$< 3.87$ (−0.1 $\sigma$ )	$D_{810}$	2535.6	$2534 \pm 14$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7713	$0.722^{+0.042}_{-0.026}$ (+0.3 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.81	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$D_{1420}$	817.61	$816.9 \pm 4.8$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4826	$0.472^{+0.012}_{-0.0076}$ (+0.4 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	10.96	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	$D_{2000}$	231.70	$231.2 \pm 1.6$ (+0.6 $\sigma$ )	$\sigma_8(0.38)$	0.6848	$0.638^{+0.040}_{-0.025}$ (+0.3 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.54	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.9702	$0.9685 \pm 0.0054$ (+0.1 $\sigma$ )	$f\sigma_8(0.51)$	0.4825	$0.468^{+0.015}_{-0.0087}$ (+0.4 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	94.8	$93.6 \pm 7.2$ (+0.0 $\sigma$ )	$Y_{\mathrm{P}}$	0.245446	$0.245409^{+0.000073}_{-0.000063}$ (+0.8 $\sigma$ )	$\sigma_8(0.51)$	0.6413	$0.596^{+0.038}_{-0.024}$ (+0.3 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1136	$0.113 \pm 0.038$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246773	$0.246735^{+0.000073}_{-0.000063}$ (+0.8 $\sigma$ )	$f\sigma_8(0.61)$	0.4783	$0.462^{+0.016}_{-0.0095}$ (+0.4 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1342	$0.134 \pm 0.029$	$10^5 \mathrm{D}/\mathrm{H}$	2.5610	$2.579 \pm 0.033$ (−0.8 $\sigma$ )	$\sigma_8(0.61)$	0.6105	$0.567^{+0.037}_{-0.023}$ (+0.3 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.483	$0.482 \pm 0.086$	Age/Gyr	13.743	$13.921^{+0.089}_{-0.15}$ (−0.4 $\sigma$ )	$f\sigma_8(2.33)$	0.3073	$0.288^{+0.017}_{-0.010}$ (+0.3 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.222	$0.222 \pm 0.054$	$z_{*}$	1089.613	$1089.83 \pm 0.36$ (−0.5 $\sigma$ )	$\sigma_8(2.33)$	0.3178	$0.294^{+0.020}_{-0.013}$ (+0.3 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.661	$0.663 \pm 0.081$	$r_{*}$	144.729	$144.61 \pm 0.36$ (−0.3 $\sigma$ )	$\chi^2_{\mathrm{lensing}}$	9.71	$9.4 \pm 1.7$ (+0.2 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.066	$2.08 \pm 0.27$	$100\theta_{*}$	1.041259	$1.04121 \pm 0.00032$ (+0.1 $\sigma$ )	$\chi^2_{\mathrm{lowl}}$	23.17	$24.2 \pm 1.2$ (−0.1 $\sigma$ )
$c_{100}$	0.99970	$0.99966 \pm 0.00062$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	13.8994	$13.889 \pm 0.033$ (−0.4 $\sigma$ )	$\chi^2_{\mathrm{plik}}$	2342.0	$2358.3 \pm 6.0$ (+291.0 $\sigma$ )
$c_{217}$	0.99815	$0.99817 \pm 0.00062$ (−0.1 $\sigma$ )	$z_{\mathrm{drag}}$	1060.123	$1060.00 \pm 0.33$ (+1.0 $\sigma$ )	$\chi^2_{\mathrm{prior}}$	1.79	$11.5 \pm 4.5$ (+1.2 $\sigma$ )
$H_0$	68.58	$65.5^{+2.5}_{-1.7}$ (+0.3 $\sigma$ )	$r_{\mathrm{drag}}$	147.352	$147.26 \pm 0.34$ (−0.5 $\sigma$ )	$\chi^2_{\mathrm{CMB}}$	2374.8	$2391.9 \pm 5.9$ (+286.4 $\sigma$ )
$\Omega_{\Lambda}$	0.7002	$0.661^{+0.036}_{-0.020}$ (+0.3 $\sigma$ )	$k_{\mathrm{D}}$	0.140690	$0.14077 \pm 0.00035$ (+0.8 $\sigma$ )			
$\Omega_{\mathrm{m}}$	0.2998	$0.339^{+0.020}_{-0.036}$ (−0.3 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160654	$0.16068 \pm 0.00019$ (−1.0 $\sigma$ )			

Best-fit  $\chi^2_{\mathrm{eff}} = 2376.63$ ;  $\Delta\chi^2_{\mathrm{eff}} = 1585.95$ ;  $\bar{\chi}^2_{\mathrm{eff}} = 2403.40$ ;  $\Delta\bar{\chi}^2_{\mathrm{eff}} = 1592.37$ ;  $R - 1 = 0.01886$

$\chi^2_{\mathrm{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 9.71 ( $\Delta$  1.66) commander\_dx12\_v3.2\_29: 23.17 ( $\Delta$  -0.49) plik\_rd12\_HM\_v22b\_TTTEEE: 2341.97



### 6.30 base\_mnu\_plikHM\_TTTEEE\_lowl\_lensing\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02251 \pm 0.00015 \quad (+0.7\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09610^{+0.00064}_{-0.00041} \quad (+0.9\sigma)$	$H(0.15)$	$73.04^{+0.60}_{-0.54} \quad (+0.2\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1180 \pm 0.0013 \quad (+0.6\sigma)$	$\sigma_8$	$0.819^{+0.015}_{-0.012} \quad (+0.4\sigma)$	$D_{\mathrm{M}}(0.15)$	$639.8^{+5.1}_{-5.9} \quad (-0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04110 \pm 0.00031 \quad (-0.1\sigma)$	$S_8$	$0.830 \pm 0.012 \quad (+0.6\sigma)$	$H(0.38)$	$83.10^{+0.48}_{-0.41} \quad (+0.3\sigma)$
$\tau$	$0.088^{+0.019}_{-0.024} \quad (-0.4\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4548 \pm 0.0067 \quad (+0.6\sigma)$	$D_{\mathrm{M}}(0.38)$	$1527^{+11}_{-12} \quad (-0.2\sigma)$
$\Sigma m_{\nu} [\mathrm{eV}]$	$< 0.144 \quad (-0.4\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6102^{+0.0094}_{-0.0080} \quad (+0.5\sigma)$	$H(0.51)$	$89.78^{+0.42}_{-0.34} \quad (+0.4\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.105^{+0.036}_{-0.045} \quad (-0.3\sigma)$	$\sigma_8/h^{0.5}$	$0.994^{+0.015}_{-0.013} \quad (+0.4\sigma)$	$D_{\mathrm{M}}(0.51)$	$1978^{+12}_{-14} \quad (-0.2\sigma)$
$n_{\mathrm{s}}$	$0.9710^{+0.0045}_{-0.0051} \quad (-0.3\sigma)$	$r_{\mathrm{drag}}h$	$99.96 \pm 1.0 \quad (-0.2\sigma)$	$H(0.61)$	$95.38^{+0.37}_{-0.29} \quad (+0.5\sigma)$
$y_{\mathrm{cal}}$	$1.0002 \pm 0.0025 \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.478 \pm 0.031 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2302^{+14}_{-16} \quad (-0.2\sigma)$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7 \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$10.6^{+1.8}_{-2.0} \quad (-0.4\sigma)$	$H(2.33)$	$235.71^{+0.72}_{-0.61} \quad (+0.8\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	$> 0.370 \quad (+0.1\sigma)$	$10^9 A_{\mathrm{s}}$	$2.232^{+0.076}_{-0.10} \quad (-0.3\sigma)$	$D_{\mathrm{M}}(2.33)$	$5761^{+14}_{-19} \quad (-0.6\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.7^{+2.1}_{-1.8} \quad (+0.2\sigma)$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.872 \pm 0.012 \quad (+0.5\sigma)$	$f\sigma_8(0.15)$	$0.4605 \pm 0.0063 \quad (+0.5\sigma)$
$A_{100}^{\mathrm{PS}}$	$255 \pm 27 \quad (-0.1\sigma)$	$D_{40}$	$1230 \pm 11 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.757^{+0.014}_{-0.012} \quad (+0.4\sigma)$
$A_{143}^{\mathrm{PS}}$	$44 \pm 8 \quad (-0.2\sigma)$	$D_{220}$	$5731 \pm 39 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4799 \pm 0.0064 \quad (+0.5\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.0\sigma)$	$D_{810}$	$2533 \pm 14 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.672^{+0.013}_{-0.011} \quad (+0.4\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (-0.0\sigma)$	$D_{1420}$	$817.0 \pm 4.9 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4789^{+0.0067}_{-0.0059} \quad (+0.5\sigma)$
$A^{\mathrm{kSZ}}$	$< 3.61 \quad (-0.2\sigma)$	$D_{2000}$	$231.6 \pm 1.7 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.629^{+0.012}_{-0.010} \quad (+0.3\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$n_{\mathrm{s},0.002}$	$0.9710^{+0.0045}_{-0.0051} \quad (-0.3\sigma)$	$f\sigma_8(0.61)$	$0.4741^{+0.0067}_{-0.0060} \quad (+0.4\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.8 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245449^{+0.000060}_{-0.000052} \quad (+0.7\sigma)$	$\sigma_8(0.61)$	$0.598^{+0.012}_{-0.0098} \quad (+0.3\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.4 \pm 3.2 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246775^{+0.000060}_{-0.000052} \quad (+0.7\sigma)$	$f\sigma_8(2.33)$	$0.3029 \pm 0.0050 \quad (+0.3\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.4 \pm 7.0 \quad (-0.0\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.560^{+0.025}_{-0.029} \quad (-0.7\sigma)$	$\sigma_8(2.33)$	$0.3118^{+0.0061}_{-0.0053} \quad (+0.3\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.113 \pm 0.038$	$\mathrm{Age}/\mathrm{Gyr}$	$13.794^{+0.031}_{-0.045} \quad (-0.6\sigma)$	$f_{2000}^{143}$	$28.1 \pm 2.9 \quad (-0.4\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.134 \pm 0.030$	$z_*$	$1089.57 \pm 0.26 \quad (-0.2\sigma)$	$f_{2000}^{143 \times 217}$	$31.1 \pm 2.0 \quad (-0.4\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.476 \pm 0.087$	$r_*$	$144.83^{+0.26}_{-0.31} \quad (-1.0\sigma)$	$f_{2000}^{217}$	$105.9 \pm 1.9 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.223 \pm 0.052$	$100\theta_*$	$1.04131 \pm 0.00031 \quad (-0.2\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.99 \pm 1.9 \quad (+0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.661 \pm 0.079$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.909^{+0.025}_{-0.029} \quad (-1.0\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.55 \pm 0.87 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.07 \pm 0.26$	$z_{\mathrm{drag}}$	$1060.13 \pm 0.31 \quad (+0.9\sigma)$	$\chi_{\mathrm{plik}}^2$	$2357.9 \pm 6.2 \quad (+288.1\sigma)$
$c_{100}$	$0.99967 \pm 0.00062 \quad (+0.1\sigma)$	$r_{\mathrm{drag}}$	$147.46^{+0.26}_{-0.31} \quad (-1.1\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.053 \pm 0.074 \quad (+0.0\sigma)$
$c_{217}$	$0.99817 \pm 0.00061 \quad (-0.1\sigma)$	$k_{\mathrm{D}}$	$0.14059^{+0.00033}_{-0.00030} \quad (+1.2\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.46 \pm 0.57 \quad (-0.2\sigma)$
$H_0$	$67.79^{+0.67}_{-0.61} \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16065 \pm 0.00018 \quad (-0.9\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.6 \quad (+0.1\sigma)$
$\Omega_{\Lambda}$	$0.6914 \pm 0.0078 \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3358^{+32}_{-27} \quad (+0.8\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.4 \quad (+1.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3086 \pm 0.0078 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010249^{+0.000097}_{-0.000082} \quad (+0.8\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2391.4 \pm 5.9 \quad (+294.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1418^{+0.0011}_{-0.00096} \quad (+0.7\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8220^{+0.0051}_{-0.0062} \quad (-0.7\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.3 \quad (+0.0\sigma)$
$\Omega_{\nu}h^2$	$< 0.00154 \quad (-0.4\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4538^{+0.0026}_{-0.0032} \quad (-0.7\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2409.01; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.39; R - 1 = 0.06296$$



### 6.31 base\_mnu\_plikHM\_TTTEEE\_lowl\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02241 \pm 0.00018 \quad (+0.8\sigma)$	$\Omega_{\nu}h^2$	$< 0.00452 \quad (-0.3\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8188 \pm 0.0068 \quad (-0.2\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1188 \pm 0.0016 \quad (+0.1\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.0948^{+0.0017}_{-0.00097} \quad (+0.6\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4522 \pm 0.0035 \quad (-0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00035 \quad (+0.2\sigma)$	$\sigma_8$	$0.783^{+0.043}_{-0.027} \quad (+0.4\sigma)$	$H(0.15)$	$71.0^{+2.2}_{-1.5} \quad (+0.3\sigma)$
$\tau$	$0.101 \pm 0.024 \quad (-0.2\sigma)$	$S_8$	$0.831 \pm 0.014 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$661^{+15}_{-24} \quad (-0.3\sigma)$
$\Sigma m_{\nu} [\mathrm{eV}]$	$< 0.420 \quad (-0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4550 \pm 0.0074 \quad (+0.2\sigma)$	$H(0.38)$	$81.5^{+1.7}_{-1.2} \quad (+0.3\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.133 \pm 0.046 \quad (-0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.597^{+0.019}_{-0.012} \quad (+0.4\sigma)$	$D_{\mathrm{M}}(0.38)$	$1569^{+30}_{-48} \quad (-0.3\sigma)$
$n_{\mathrm{s}}$	$0.9686 \pm 0.0053 \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.968^{+0.035}_{-0.023} \quad (+0.4\sigma)$	$H(0.51)$	$88.5^{+1.4}_{-1.0} \quad (+0.4\sigma)$
$y_{\mathrm{cal}}$	$1.0002 \pm 0.0025 \quad (+0.0\sigma)$	$r_{\mathrm{drag}}h$	$96.4^{+3.9}_{-2.7} \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$2028^{+36}_{-57} \quad (-0.3\sigma)$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7 \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.507^{+0.036}_{-0.045} \quad (-0.2\sigma)$	$H(0.61)$	$94.3^{+1.2}_{-0.85} \quad (+0.4\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$z_{\mathrm{re}}$	$11.9 \pm 2.1 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.61)$	$2357^{+39}_{-62} \quad (-0.3\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.6^{+2.1}_{-1.8} \quad (+0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.30^{+0.10}_{-0.12} \quad (-0.2\sigma)$	$H(2.33)$	$237.4^{+1.4}_{-1.8} \quad (-0.0\sigma)$
$A_{100}^{\mathrm{PS}}$	$256 \pm 28 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.874 \pm 0.012 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5817^{+40}_{-65} \quad (-0.4\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.3\sigma)$	$D_{40}$	$1235 \pm 12 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4600 \pm 0.0072 \quad (+0.3\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{220}$	$5731 \pm 39 \quad (+0.4\sigma)$	$\sigma_8(0.15)$	$0.722^{+0.042}_{-0.026} \quad (+0.3\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (-0.0\sigma)$	$D_{810}$	$2534 \pm 14 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.472^{+0.012}_{-0.0077} \quad (+0.4\sigma)$
$A^{\mathrm{kSZ}}$	$< 3.86 \quad (-0.1\sigma)$	$D_{1420}$	$816.9 \pm 4.8 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.638^{+0.040}_{-0.025} \quad (+0.3\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$D_{2000}$	$231.2 \pm 1.6 \quad (+0.6\sigma)$	$f\sigma_8(0.51)$	$0.468^{+0.015}_{-0.0088} \quad (+0.4\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.8 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9686 \pm 0.0053 \quad (+0.0\sigma)$	$\sigma_8(0.51)$	$0.596^{+0.039}_{-0.024} \quad (+0.3\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245409^{+0.000073}_{-0.000063} \quad (+0.8\sigma)$	$f\sigma_8(0.61)$	$0.462^{+0.017}_{-0.0096} \quad (+0.4\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.6 \pm 7.2 \quad (+0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246736^{+0.000073}_{-0.000063} \quad (+0.8\sigma)$	$\sigma_8(0.61)$	$0.567^{+0.037}_{-0.023} \quad (+0.3\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.113 \pm 0.038$	$10^5 \mathrm{D}/\mathrm{H}$	$2.578^{+0.031}_{-0.034} \quad (-0.8\sigma)$	$f\sigma_8(2.33)$	$0.288^{+0.017}_{-0.010} \quad (+0.3\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.134 \pm 0.029$	$\mathrm{Age}/\mathrm{Gyr}$	$13.922^{+0.090}_{-0.15} \quad (-0.4\sigma)$	$\sigma_8(2.33)$	$0.294^{+0.020}_{-0.013} \quad (+0.3\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.482 \pm 0.086$	$z_*$	$1089.83 \pm 0.36 \quad (-0.5\sigma)$	$f_{2000}^{143}$	$28.7 \pm 2.9 \quad (-0.5\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.222 \pm 0.054$	$r_*$	$144.62 \pm 0.36 \quad (-0.4\sigma)$	$f_{2000}^{143 \times 217}$	$31.6 \pm 2.0 \quad (-0.5\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.663 \pm 0.081$	$100\theta_*$	$1.04121 \pm 0.00032 \quad (+0.1\sigma)$	$f_{2000}^{217}$	$106.4 \pm 1.9 \quad (-0.5\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.08 \pm 0.27$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.889 \pm 0.033 \quad (-0.4\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.4 \pm 1.7 \quad (+0.2\sigma)$
$c_{100}$	$0.99966 \pm 0.00062 \quad (+0.1\sigma)$	$z_{\mathrm{drag}}$	$1060.00 \pm 0.33 \quad (+1.0\sigma)$	$\chi_{\mathrm{lowl}}^2$	$24.2 \pm 1.2 \quad (-0.1\sigma)$
$c_{217}$	$0.99817 \pm 0.00061 \quad (-0.1\sigma)$	$r_{\mathrm{drag}}$	$147.26 \pm 0.34 \quad (-0.5\sigma)$	$\chi_{\mathrm{plik}}^2$	$2358.2 \pm 6.0 \quad (+292.0\sigma)$
$H_0$	$65.5^{+2.6}_{-1.7} \quad (+0.3\sigma)$	$k_{\mathrm{D}}$	$0.14077 \pm 0.00035 \quad (+0.8\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\Lambda}$	$0.661^{+0.036}_{-0.020} \quad (+0.3\sigma)$	$100\theta_{\mathrm{D}}$	$0.16068 \pm 0.00019 \quad (-1.0\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2391.9 \pm 5.9 \quad (+288.0\sigma)$
$\Omega_{\mathrm{m}}$	$0.339^{+0.020}_{-0.036} \quad (-0.3\sigma)$	$z_{\mathrm{eq}}$	$3375 \pm 36 \quad (+0.2\sigma)$		
$\Omega_{\mathrm{m}}h^2$	$0.1448^{+0.0024}_{-0.0033} \quad (-0.1\sigma)$	$k_{\mathrm{eq}}$	$0.01031 \pm 0.00011 \quad (+0.2\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2403.37; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.40; R - 1 = 0.01980$$



### 6.32 base\_mnu\_plikHM\_TTTEEE\_lowl\_lensing\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02252 \pm 0.00015 \quad (+0.7\sigma)$	$\Omega_m h^3$	$0.09610^{+0.00064}_{-0.00041} \quad (+0.9\sigma)$	$H(0.15)$	$73.04^{+0.60}_{-0.53} \quad (+0.2\sigma)$
$\Omega_c h^2$	$0.1180 \pm 0.0013 \quad (+0.7\sigma)$	$\sigma_8$	$0.819^{+0.015}_{-0.012} \quad (+0.4\sigma)$	$D_M(0.15)$	$639.8^{+5.1}_{-5.9} \quad (-0.1\sigma)$
$100\theta_{MC}$	$1.04110 \pm 0.00031 \quad (-0.1\sigma)$	$S_8$	$0.830 \pm 0.012 \quad (+0.6\sigma)$	$H(0.38)$	$83.10^{+0.48}_{-0.41} \quad (+0.3\sigma)$
$\tau$	$0.088^{+0.018}_{-0.024} \quad (-0.4\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4548 \pm 0.0067 \quad (+0.6\sigma)$	$D_M(0.38)$	$1526^{+10}_{-12} \quad (-0.2\sigma)$
$\Sigma m_\nu [\text{eV}]$	$< 0.144 \quad (-0.4\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6103^{+0.0094}_{-0.0080} \quad (+0.5\sigma)$	$H(0.51)$	$89.78^{+0.42}_{-0.34} \quad (+0.4\sigma)$
$\ln(10^{10} A_s)$	$3.105^{+0.035}_{-0.045} \quad (-0.4\sigma)$	$\sigma_8/h^{0.5}$	$0.995^{+0.015}_{-0.013} \quad (+0.4\sigma)$	$D_M(0.51)$	$1978^{+12}_{-14} \quad (-0.2\sigma)$
$n_s$	$0.9711^{+0.0044}_{-0.0051} \quad (-0.3\sigma)$	$r_{\text{drag}} h$	$99.97 \pm 1.0 \quad (-0.2\sigma)$	$H(0.61)$	$95.38^{+0.37}_{-0.29} \quad (+0.5\sigma)$
$y_{\text{cal}}$	$1.0002 \pm 0.0025 \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.479 \pm 0.030 \quad (-0.0\sigma)$	$D_M(0.61)$	$2302^{+14}_{-16} \quad (-0.2\sigma)$
$A_{217}^{\text{CIB}}$	$46 \pm 7 \quad (-0.0\sigma)$	$z_{\text{re}}$	$10.7^{+1.7}_{-2.0} \quad (-0.4\sigma)$	$H(2.33)$	$235.71^{+0.72}_{-0.60} \quad (+0.8\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	$> 0.370 \quad (+0.1\sigma)$	$10^9 A_s$	$2.233^{+0.074}_{-0.10} \quad (-0.4\sigma)$	$D_M(2.33)$	$5761^{+14}_{-19} \quad (-0.6\sigma)$
$A_{143}^{\text{tSZ}}$	$5.7^{+2.1}_{-1.7} \quad (+0.2\sigma)$	$10^9 A_s e^{-2\tau}$	$1.872 \pm 0.012 \quad (+0.5\sigma)$	$f\sigma_8(0.15)$	$0.4605 \pm 0.0063 \quad (+0.5\sigma)$
$A_{100}^{\text{PS}}$	$255 \pm 27 \quad (-0.1\sigma)$	$D_{40}$	$1230 \pm 11 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.757^{+0.014}_{-0.012} \quad (+0.4\sigma)$
$A_{143}^{\text{PS}}$	$44 \pm 8 \quad (-0.2\sigma)$	$D_{220}$	$5731 \pm 39 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4799 \pm 0.0064 \quad (+0.5\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.0\sigma)$	$D_{810}$	$2533 \pm 14 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.672^{+0.013}_{-0.011} \quad (+0.4\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (-0.0\sigma)$	$D_{1420}$	$817.0 \pm 4.9 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4789^{+0.0066}_{-0.0059} \quad (+0.5\sigma)$
$A^{\text{kSZ}}$	$< 3.59 \quad (-0.2\sigma)$	$D_{2000}$	$231.6 \pm 1.7 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.629^{+0.012}_{-0.010} \quad (+0.3\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$n_{s,0.002}$	$0.9711^{+0.0044}_{-0.0051} \quad (-0.3\sigma)$	$f\sigma_8(0.61)$	$0.4742^{+0.0067}_{-0.0059} \quad (+0.4\sigma)$
$A_{143}^{\text{dustTT}}$	$10.8 \pm 1.8 \quad (+0.1\sigma)$	$Y_P$	$0.245449^{+0.000059}_{-0.000052} \quad (+0.7\sigma)$	$\sigma_8(0.61)$	$0.598^{+0.012}_{-0.0097} \quad (+0.3\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.4 \pm 3.2 \quad (+0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.246776^{+0.000059}_{-0.000052} \quad (+0.7\sigma)$	$f\sigma_8(2.33)$	$0.3029 \pm 0.0050 \quad (+0.3\sigma)$
$A_{217}^{\text{dustTT}}$	$93.4 \pm 7.0 \quad (-0.0\sigma)$	$10^5 \text{D/H}$	$2.560^{+0.025}_{-0.029} \quad (-0.7\sigma)$	$\sigma_8(2.33)$	$0.3118^{+0.0061}_{-0.0053} \quad (+0.3\sigma)$
$A_{100}^{\text{dustTE}}$	$0.113 \pm 0.038$	$\text{Age/Gyr}$	$13.794^{+0.031}_{-0.044} \quad (-0.6\sigma)$	$f_{2000}^{143}$	$28.1 \pm 2.9 \quad (-0.4\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134 \pm 0.030$	$z_*$	$1089.57 \pm 0.26 \quad (-0.2\sigma)$	$f_{2000}^{143 \times 217}$	$31.1 \pm 2.0 \quad (-0.4\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.476 \pm 0.087$	$r_*$	$144.84^{+0.26}_{-0.31} \quad (-1.0\sigma)$	$f_{2000}^{217}$	$105.9 \pm 1.9 \quad (-0.4\sigma)$
$A_{143}^{\text{dustTE}}$	$0.223 \pm 0.053$	$100\theta_*$	$1.04131 \pm 0.00031 \quad (-0.2\sigma)$	$\chi_{\text{lensing}}^2$	$9.99 \pm 1.9 \quad (+0.4\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.661 \pm 0.079$	$D_M(z_*)/\text{Gpc}$	$13.909^{+0.024}_{-0.029} \quad (-1.0\sigma)$	$\chi_{\text{lowl}}^2$	$23.55 \pm 0.87 \quad (+0.0\sigma)$
$A_{217}^{\text{dustTE}}$	$2.07 \pm 0.26$	$z_{\text{drag}}$	$1060.13 \pm 0.31 \quad (+0.9\sigma)$	$\chi_{\text{plik}}^2$	$2357.8 \pm 6.2 \quad (+288.9\sigma)$
$c_{100}$	$0.99967 \pm 0.00062 \quad (+0.1\sigma)$	$r_{\text{drag}}$	$147.46^{+0.26}_{-0.31} \quad (-1.1\sigma)$	$\chi_{6\text{DF}}^2$	$0.053 \pm 0.074 \quad (+0.0\sigma)$
$c_{217}$	$0.99817 \pm 0.00061 \quad (-0.1\sigma)$	$k_D$	$0.14059^{+0.00033}_{-0.00030} \quad (+1.2\sigma)$	$\chi_{\text{MGS}}^2$	$1.47 \pm 0.57 \quad (-0.2\sigma)$
$H_0$	$67.79^{+0.67}_{-0.61} \quad (+0.1\sigma)$	$100\theta_D$	$0.16065 \pm 0.00018 \quad (-0.9\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.6 \pm 1.6 \quad (+0.1\sigma)$
$\Omega_\Lambda$	$0.6914 \pm 0.0078 \quad (-0.1\sigma)$	$z_{\text{eq}}$	$3358^{+32}_{-27} \quad (+0.8\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.4 \quad (+1.1\sigma)$
$\Omega_m$	$0.3086 \pm 0.0078 \quad (+0.1\sigma)$	$k_{\text{eq}}$	$0.010248^{+0.000096}_{-0.000081} \quad (+0.8\sigma)$	$\chi_{\text{CMB}}^2$	$2391.4 \pm 5.9 \quad (+295.2\sigma)$
$\Omega_m h^2$	$0.1418^{+0.0011}_{-0.00096} \quad (+0.7\sigma)$	$100\theta_{\text{eq}}$	$0.8220^{+0.0051}_{-0.0062} \quad (-0.7\sigma)$	$\chi_{\text{BAO}}^2$	$6.1 \pm 1.3 \quad (+0.0\sigma)$
$\Omega_\nu h^2$	$< 0.00155 \quad (-0.4\sigma)$	$100\theta_{s,\text{eq}}$	$0.4538^{+0.0026}_{-0.0032} \quad (-0.7\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2408.99; \Delta \bar{\chi}_{\text{eff}}^2 = 1592.43; R - 1 = 0.06301$$



### 6.33 base\_mnu\_plikHM\_TT\_lowl\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022207	$0.02206^{+0.00025}_{-0.00022}$	$\sigma_8 \Omega_m^{0.5}$	0.4564	$0.4581 \pm 0.0090$	$H(0.15)$	73.09	$71.4^{+1.9}_{-0.84}$
$\Omega_c h^2$	0.11967	$0.1210^{+0.0017}_{-0.0022}$	$\sigma_8 \Omega_m^{0.25}$	0.6125	$0.603^{+0.013}_{-0.0083}$	$D_M(0.15)$	639.3	$656.5^{+7.9}_{-20}$
$100\theta_{MC}$	1.04091	$1.04066 \pm 0.00051$	$\sigma_8/h^{0.5}$	0.9981	$0.978^{+0.024}_{-0.012}$	$H(0.38)$	83.15	$81.9^{+1.5}_{-0.64}$
$\tau$	0.0529	$0.0525 \pm 0.0077$	$r_{\text{drag}} h$	99.98	$97.0^{+3.5}_{-1.6}$	$D_M(0.38)$	1525.4	$1560^{+16}_{-41}$
$\Sigma m_\nu$ [eV]	0.000	$< 0.180$	$\langle d^2 \rangle^{1/2}$	2.4453	$2.451 \pm 0.027$	$H(0.51)$	89.84	$88.8^{+1.2}_{-0.53}$
$\ln(10^{10} A_s)$	3.0395	$3.042 \pm 0.015$	$z_{\text{re}}$	7.56	$7.57 \pm 0.79$	$D_M(0.51)$	1976.5	$2017^{+19}_{-48}$
$n_s$	0.9657	$0.9613^{+0.0062}_{-0.0052}$	$10^9 A_s$	2.0894	$2.095 \pm 0.032$	$H(0.61)$	95.43	$94.57^{+0.99}_{-0.44}$
$y_{\text{cal}}$	1.00016	$1.0006 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8797	$1.886 \pm 0.013$	$D_M(0.61)$	2300.3	$2345^{+21}_{-52}$
$A_{217}^{\text{CIB}}$	49.3	$48 \pm 7$	$D_{40}$	1226.5	$1235 \pm 14$	$H(2.33)$	235.85	$237.4^{+1.1}_{-2.0}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.22	—	$D_{220}$	5712.0	$5714 \pm 41$	$D_M(2.33)$	5757.5	$5800^{+20}_{-50}$
$A_{143}^{\text{tSZ}}$	7.16	$5.0 \pm 2.0$	$D_{810}$	2535.2	$2538 \pm 14$	$f\sigma_8(0.15)$	0.4606	$0.4618 \pm 0.0081$
$A_{100}^{\text{PS}}$	254.2	$265 \pm 28$	$D_{1420}$	815.2	$814.5 \pm 5.1$	$\sigma_8(0.15)$	0.7598	$0.732^{+0.030}_{-0.0096}$
$A_{143}^{\text{PS}}$	47.3	$50 \pm 8$	$D_{2000}$	230.06	$229.3 \pm 1.9$	$f\sigma_8(0.38)$	0.4797	$0.4751^{+0.0085}_{-0.0063}$
$A_{143 \times 217}^{\text{PS}}$	44.0	$44 \pm 9$	$n_{s,0.002}$	0.9657	$0.9613^{+0.0062}_{-0.0052}$	$\sigma_8(0.38)$	0.6736	$0.647^{+0.029}_{-0.0090}$
$A_{217}^{\text{PS}}$	117.8	$115 \pm 10$	$Y_{\text{P}}$	0.245329	$0.24526^{+0.00013}_{-0.000087}$	$f\sigma_8(0.51)$	0.4786	$0.471^{+0.010}_{-0.0055}$
$A^{\text{kSZ}}$	0.00	$< 5.03$	$Y_{\text{P}}^{\text{BBN}}$	0.246655	$0.24659^{+0.00013}_{-0.000088}$	$\sigma_8(0.51)$	0.6305	$0.605^{+0.028}_{-0.0086}$
$A_{100}^{\text{dustTT}}$	8.90	$8.9 \pm 1.8$	$10^5 D/H$	2.6167	$2.645^{+0.042}_{-0.050}$	$f\sigma_8(0.61)$	0.4738	$0.465^{+0.011}_{-0.0050}$
$A_{143}^{\text{dustTT}}$	10.79	$10.7 \pm 1.8$	Age/Gyr	13.784	$13.883^{+0.045}_{-0.11}$	$\sigma_8(0.61)$	0.5999	$0.575^{+0.027}_{-0.0083}$
$A_{143 \times 217}^{\text{dustTT}}$	19.24	$18.3 \pm 3.3$	$z_*$	1090.093	$1090.42^{+0.37}_{-0.51}$	$f\sigma_8(2.33)$	0.3016	$0.290^{+0.012}_{-0.0038}$
$A_{217}^{\text{dustTT}}$	94.3	$93.3 \pm 7.3$	$r_*$	144.648	$144.39^{+0.48}_{-0.40}$	$\sigma_8(2.33)$	0.3116	$0.298^{+0.015}_{-0.0047}$
$c_{100}$	0.99964	$0.99961 \pm 0.00061$	$100\theta_*$	1.041085	$1.04092 \pm 0.00048$	$f_{2000}^{143}$	30.16	$31.7 \pm 3.0$
$c_{217}$	0.99826	$0.99827 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	13.8940	$13.871^{+0.044}_{-0.038}$	$f_{2000}^{143 \times 217}$	33.04	$34.0 \pm 2.1$
$H_0$	67.84	$65.9^{+2.2}_{-0.97}$	$z_{\text{drag}}$	1059.513	$1059.30 \pm 0.48$	$f_{2000}^{217}$	107.50	$108.5 \pm 2.0$
$\Omega_\Lambda$	0.6917	$0.666^{+0.031}_{-0.012}$	$r_{\text{drag}}$	147.369	$147.15^{+0.46}_{-0.41}$	$\chi_{\text{lensing}}^2$	9.04	$9.43 \pm 0.99$
$\Omega_m$	0.3083	$0.334^{+0.012}_{-0.031}$	$k_D$	0.140444	$0.14057 \pm 0.00049$	$\chi_{\text{simall}}^2$	395.86	$397.0 \pm 1.7$
$\Omega_m h^2$	0.14188	$0.1447^{+0.0018}_{-0.0035}$	$100\theta_D$	0.160997	$0.16111 \pm 0.00027$	$\chi_{\text{lowl}}^2$	23.26	$24.0 \pm 1.2$
$\Omega_\nu h^2$	0.00000	$< 0.00194$	$z_{\text{eq}}$	3390.4	$3419^{+39}_{-48}$	$\chi_{\text{plik}}^2$	758.5	$771.9 \pm 5.4$
$\Omega_m h^3$	0.09625	$0.0953^{+0.0012}_{-0.00054}$	$k_{\text{eq}}$	0.010348	$0.01044^{+0.00012}_{-0.00015}$	$\chi_{\text{prior}}^2$	1.48	$7.3 \pm 3.7$
$\sigma_8$	0.8221	$0.794^{+0.030}_{-0.010}$	$100\theta_{\text{eq}}$	0.8149	$0.8095^{+0.0089}_{-0.0074}$	$\chi_{\text{CMB}}^2$	1186.6	$1202.3 \pm 5.8$
$S_8$	0.8333	$0.836 \pm 0.016$	$100\theta_{s,\text{eq}}$	0.45034	$0.4476^{+0.0045}_{-0.0038}$			

Best-fit  $\chi_{\text{eff}}^2 = 1188.10$ ;  $\bar{\chi}_{\text{eff}}^2 = 1209.58$ ;  $R - 1 = 0.00659$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 9.04 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.86 commander\_dx12\_v3.2.29: 23.26 plik\_rd12\_HM.v22.TT: 758.46



### 6.34 base\_mnu\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}} h^2$	$0.02207^{+0.00026}_{-0.00022}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4580 \pm 0.0090$	$H(0.15)$	$71.4^{+2.0}_{-0.85}$
$\Omega_{\text{c}} h^2$	$0.1209^{+0.0017}_{-0.0022}$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.603^{+0.013}_{-0.0083}$	$D_{\text{M}}(0.15)$	$656.3^{+8.0}_{-20}$
$100\theta_{\text{MC}}$	$1.04067 \pm 0.00051$	$\sigma_8/h^{0.5}$	$0.978^{+0.025}_{-0.012}$	$H(0.38)$	$81.9^{+1.5}_{-0.64}$
$\tau$	$0.0538^{+0.0049}_{-0.0081}$	$r_{\text{drag}} h$	$97.1^{+3.6}_{-1.6}$	$D_{\text{M}}(0.38)$	$1560^{+16}_{-41}$
$\Sigma m_{\nu} [\text{eV}]$	$< 0.184$	$\langle d^2 \rangle^{1/2}$	$2.452 \pm 0.027$	$H(0.51)$	$88.8^{+1.2}_{-0.53}$
$\ln(10^{10} A_{\text{s}})$	$3.044^{+0.011}_{-0.015}$	$z_{\text{re}}$	$7.71^{+0.54}_{-0.82}$	$D_{\text{M}}(0.51)$	$2017^{+19}_{-48}$
$n_{\text{s}}$	$0.9616^{+0.0062}_{-0.0051}$	$10^9 A_{\text{s}}$	$2.100^{+0.023}_{-0.033}$	$H(0.61)$	$94.6^{+1.0}_{-0.45}$
$y_{\text{cal}}$	$1.0005 \pm 0.0025$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.886 \pm 0.012$	$D_{\text{M}}(0.61)$	$2344^{+21}_{-52}$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{40}$	$1235 \pm 14$	$H(2.33)$	$237.4^{+1.1}_{-2.0}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{220}$	$5714 \pm 41$	$D_{\text{M}}(2.33)$	$5800^{+20}_{-50}$
$A_{143}^{\text{tSZ}}$	$5.0 \pm 2.0$	$D_{810}$	$2537 \pm 14$	$f\sigma_8(0.15)$	$0.4617 \pm 0.0081$
$A_{100}^{\text{PS}}$	$265 \pm 28$	$D_{1420}$	$814.5 \pm 5.1$	$\sigma_8(0.15)$	$0.732^{+0.030}_{-0.0097}$
$A_{143}^{\text{PS}}$	$50 \pm 8$	$D_{2000}$	$229.3 \pm 1.9$	$f\sigma_8(0.38)$	$0.4751^{+0.0086}_{-0.0063}$
$A_{143 \times 217}^{\text{PS}}$	$44 \pm 9$	$n_{\text{s},0.002}$	$0.9616^{+0.0062}_{-0.0051}$	$\sigma_8(0.38)$	$0.647^{+0.029}_{-0.0090}$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$Y_{\text{P}}$	$0.24526^{+0.00013}_{-0.000086}$	$f\sigma_8(0.51)$	$0.471^{+0.010}_{-0.0055}$
$A^{\text{kSZ}}$	$< 5.02$	$Y_{\text{P}}^{\text{BBN}}$	$0.24659^{+0.00013}_{-0.000087}$	$\sigma_8(0.51)$	$0.605^{+0.028}_{-0.0086}$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$10^5 \text{D}/\text{H}$	$2.643^{+0.042}_{-0.050}$	$f\sigma_8(0.61)$	$0.465^{+0.011}_{-0.0050}$
$A_{143}^{\text{dustTT}}$	$10.7 \pm 1.8$	$\text{Age}/\text{Gyr}$	$13.883^{+0.046}_{-0.12}$	$\sigma_8(0.61)$	$0.575^{+0.027}_{-0.0084}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3 \pm 3.3$	$z_*$	$1090.40^{+0.36}_{-0.51}$	$f\sigma_8(2.33)$	$0.291^{+0.012}_{-0.0038}$
$A_{217}^{\text{dustTT}}$	$93.3 \pm 7.3$	$r_*$	$144.41^{+0.48}_{-0.40}$	$\sigma_8(2.33)$	$0.298^{+0.015}_{-0.0047}$
$c_{100}$	$0.99961 \pm 0.00061$	$100\theta_*$	$1.04093 \pm 0.00048$	$f_{2000}^{143}$	$31.7 \pm 3.0$
$c_{217}$	$0.99827 \pm 0.00062$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.873^{+0.044}_{-0.037}$	$f_{2000}^{143 \times 217}$	$34.0 \pm 2.1$
$H_0$	$65.9^{+2.3}_{-0.97}$	$z_{\text{drag}}$	$1059.31 \pm 0.48$	$f_{2000}^{217}$	$108.5 \pm 2.0$
$\Omega_{\Lambda}$	$0.666^{+0.031}_{-0.012}$	$r_{\text{drag}}$	$147.17^{+0.47}_{-0.41}$	$\chi_{\text{lensing}}^2$	$9.40 \pm 0.99$
$\Omega_{\text{m}}$	$0.334^{+0.012}_{-0.031}$	$k_{\text{D}}$	$0.14056 \pm 0.00049$	$\chi_{\text{simall}}^2$	$396.9 \pm 1.8$
$\Omega_{\text{m}} h^2$	$0.1447^{+0.0018}_{-0.0035}$	$100\theta_{\text{D}}$	$0.16111 \pm 0.00027$	$\chi_{\text{lowl}}^2$	$23.9 \pm 1.2$
$\Omega_{\nu} h^2$	$< 0.00197$	$z_{\text{eq}}$	$3417^{+38}_{-48}$	$\chi_{\text{plik}}^2$	$771.8 \pm 5.4$
$\Omega_{\text{m}} h^3$	$0.0953^{+0.0012}_{-0.00054}$	$k_{\text{eq}}$	$0.01043^{+0.00012}_{-0.00015}$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8$	$0.794^{+0.031}_{-0.010}$	$100\theta_{\text{eq}}$	$0.8099^{+0.0089}_{-0.0073}$	$\chi_{\text{CMB}}^2$	$1202.1 \pm 5.8$
$S_8$	$0.836 \pm 0.016$	$100\theta_{\text{s,eq}}$	$0.4478^{+0.0045}_{-0.0037}$		

$$\bar{\chi}_{\text{eff}}^2 = 1209.38; R - 1 = 0.00698$$



### 6.35 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022421	$0.02236 \pm 0.00015$ (+1.2 $\sigma$ )	$\Omega_\nu h^2$	0.00000	$< 0.00116$ (−0.5 $\sigma$ )	$100\theta_{\text{eq}}$	0.8145	$0.8128 \pm 0.0054$ (+0.4 $\sigma$ )
$\Omega_c h^2$	0.11969	$0.1201 \pm 0.0013$ (−0.4 $\sigma$ )	$\Omega_m h^3$	0.096681	$0.09623^{+0.00064}_{-0.00033}$ (+0.9 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.44999	$0.4491 \pm 0.0027$ (+0.3 $\sigma$ )
$100\theta_{\text{MC}}$	1.040979	$1.04088 \pm 0.00032$ (+0.4 $\sigma$ )	$\sigma_8$	0.8224	$0.807^{+0.018}_{-0.0079}$ (+0.5 $\sigma$ )	$H(0.15)$	73.28	$72.4^{+1.1}_{-0.58}$ (+0.6 $\sigma$ )
$\tau$	0.0532	$0.0547 \pm 0.0075$ (+0.3 $\sigma$ )	$S_8$	0.8320	$0.832 \pm 0.013$ (−0.3 $\sigma$ )	$D_{\text{M}}(0.15)$	637.6	$645.8^{+5.6}_{-11}$ (−0.6 $\sigma$ )
$\Sigma m_\nu$ [eV]	0.000	$< 0.108$ (−0.5 $\sigma$ )	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4557	$0.4556 \pm 0.0069$ (−0.3 $\sigma$ )	$H(0.38)$	83.33	$82.69^{+0.80}_{-0.43}$ (+0.6 $\sigma$ )
$\ln(10^{10} A_{\text{s}})$	3.0417	$3.046 \pm 0.015$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6122	$0.6063^{+0.0092}_{-0.0068}$ (+0.3 $\sigma$ )	$D_{\text{M}}(0.38)$	1521.6	$1538^{+11}_{-22}$ (−0.6 $\sigma$ )
$n_{\text{s}}$	0.96641	$0.9647 \pm 0.0043$ (+0.6 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9970	$0.985^{+0.016}_{-0.010}$ (+0.3 $\sigma$ )	$H(0.51)$	90.01	$89.48^{+0.66}_{-0.35}$ (+0.7 $\sigma$ )
$y_{\text{cal}}$	1.00050	$1.0007 \pm 0.0025$ (+0.1 $\sigma$ )	$r_{\text{drag}} h$	100.09	$98.7^{+1.9}_{-1.1}$ (+0.5 $\sigma$ )	$D_{\text{M}}(0.51)$	1971.8	$1992^{+13}_{-25}$ (−0.6 $\sigma$ )
$A_{217}^{\text{CIB}}$	47.0	$47 \pm 7$ (−0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4451	$2.445 \pm 0.021$ (−0.2 $\sigma$ )	$H(0.61)$	95.607	$95.16^{+0.55}_{-0.29}$ (+0.7 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.48	—	$z_{\text{re}}$	7.54	$7.71 \pm 0.75$ (+0.2 $\sigma$ )	$D_{\text{M}}(0.61)$	2295.0	$2317^{+14}_{-28}$ (−0.6 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.15	$5.5^{+2.2}_{-1.9}$ (+0.2 $\sigma$ )	$10^9 A_{\text{s}}$	2.0941	$2.103^{+0.029}_{-0.032}$ (+0.2 $\sigma$ )	$H(2.33)$	236.08	$236.80^{+0.79}_{-1.1}$ (−0.3 $\sigma$ )
$A_{100}^{\text{PS}}$	250.1	$259 \pm 28$ (−0.2 $\sigma$ )	$10^9 A_{\text{s}} e^{-2\tau}$	1.8828	$1.884 \pm 0.011$ (−0.1 $\sigma$ )	$D_{\text{M}}(2.33)$	5747.6	$5769^{+13}_{-27}$ (−0.7 $\sigma$ )
$A_{143}^{\text{PS}}$	48.2	$46 \pm 8$ (−0.5 $\sigma$ )	$D_{40}$	1228.6	$1233 \pm 12$ (−0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4599	$0.4599 \pm 0.0064$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	48.6	$42 \pm 9$ (−0.2 $\sigma$ )	$D_{220}$	5735.7	$5736 \pm 39$ (+0.5 $\sigma$ )	$\sigma_8(0.15)$	0.7602	$0.745^{+0.018}_{-0.0074}$ (+0.5 $\sigma$ )
$A_{217}^{\text{PS}}$	119.9	$115 \pm 10$ (−0.0 $\sigma$ )	$D_{810}$	2540.2	$2540 \pm 13$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.4794	$0.4766^{+0.0062}_{-0.0053}$ (+0.2 $\sigma$ )
$A^{\text{kSZ}}$	0.00	$< 4.27$ (−0.2 $\sigma$ )	$D_{1420}$	818.07	$817.5 \pm 4.7$ (+0.6 $\sigma$ )	$\sigma_8(0.38)$	0.6741	$0.660^{+0.017}_{-0.0067}$ (+0.5 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.76	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$D_{2000}$	231.33	$230.9 \pm 1.6$ (+0.9 $\sigma$ )	$f\sigma_8(0.51)$	0.4784	$0.4744^{+0.0066}_{-0.0048}$ (+0.3 $\sigma$ )
$A_{143}^{\text{dustTT}}$	10.99	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$n_{\text{s},0.002}$	0.96641	$0.9647 \pm 0.0043$ (+0.6 $\sigma$ )	$\sigma_8(0.51)$	0.6310	$0.617^{+0.016}_{-0.0064}$ (+0.5 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	19.91	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\text{P}}$	0.245415	$0.245391^{+0.000064}_{-0.000056}$ (+1.2 $\sigma$ )	$f\sigma_8(0.61)$	0.4736	$0.4689^{+0.0070}_{-0.0045}$ (+0.4 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.2	$93.7 \pm 7.3$ (+0.1 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.246742	$0.246717^{+0.000064}_{-0.000056}$ (+1.2 $\sigma$ )	$\sigma_8(0.61)$	0.6004	$0.587^{+0.016}_{-0.0062}$ (+0.5 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1136	$0.114 \pm 0.038$	$10^5 \text{D/H}$	2.5760	$2.587 \pm 0.029$ (−1.2 $\sigma$ )	$f\sigma_8(2.33)$	0.30194	$0.2962^{+0.0070}_{-0.0029}$ (+0.5 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1349	$0.135 \pm 0.029$	Age/Gyr	13.7610	$13.811^{+0.029}_{-0.062}$ (−0.7 $\sigma$ )	$\sigma_8(2.33)$	0.3119	$0.3048^{+0.0085}_{-0.0034}$ (+0.5 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.483	$0.481 \pm 0.085$	$z_*$	1089.823	$1089.94 \pm 0.28$ (−1.0 $\sigma$ )	$f_{2000}^{143}$	28.74	$29.6 \pm 2.7$ (−0.7 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.225	$0.226 \pm 0.054$	$r_*$	144.480	$144.40^{+0.29}_{-0.26}$ (+0.0 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.89	$32.2 \pm 1.9$ (−0.8 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.664	$0.666 \pm 0.080$	$100\theta_*$	1.041123	$1.04108 \pm 0.00030$ (+0.3 $\sigma$ )	$f_{2000}^{217}$	106.51	$107.1 \pm 1.8$ (−0.7 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.080	$2.09 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8773	$13.870 \pm 0.026$ (−0.0 $\sigma$ )	$\chi_{\text{lensing}}^2$	9.022	$9.29 \pm 0.73$ (−0.1 $\sigma$ )
$c_{100}$	0.99972	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$z_{\text{drag}}$	1060.009	$1059.93 \pm 0.31$ (+1.3 $\sigma$ )	$\chi_{\text{small}}^2$	395.85	$397.1 \pm 1.8$ (+0.1 $\sigma$ )
$c_{217}$	0.99820	$0.99820 \pm 0.00062$ (−0.1 $\sigma$ )	$r_{\text{drag}}$	147.126	$147.06^{+0.29}_{-0.26}$ (−0.2 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.26	$23.55 \pm 0.88$ (−0.4 $\sigma$ )
$H_0$	68.03	$67.1^{+1.2}_{-0.67}$ (+0.6 $\sigma$ )	$k_{\text{D}}$	0.140866	$0.14089 \pm 0.00030$ (+0.7 $\sigma$ )	$\chi_{\text{plik}}^2$	2344.0	$2359.8 \pm 5.9$ (+295.6 $\sigma$ )
$\Omega_\Lambda$	0.6929	$0.681^{+0.016}_{-0.0085}$ (+0.5 $\sigma$ )	$100\theta_{\text{D}}$	0.160709	$0.16076 \pm 0.00018$ (−1.3 $\sigma$ )	$\chi_{\text{prior}}^2$	1.68	$11.5 \pm 4.6$ (+1.1 $\sigma$ )
$\Omega_{\text{m}}$	0.3071	$0.3191^{+0.0085}_{-0.016}$ (−0.5 $\sigma$ )	$z_{\text{eq}}$	3396.0	$3405 \pm 29$ (−0.3 $\sigma$ )	$\chi_{\text{CMB}}^2$	2772.2	$2789.8 \pm 6.1$ (+275.2 $\sigma$ )
$\Omega_{\text{m}} h^2$	0.14211	$0.1435^{+0.0013}_{-0.0019}$ (−0.4 $\sigma$ )	$k_{\text{eq}}$	0.010365	$0.010393 \pm 0.000087$ (−0.3 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 2773.86$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.76$ ;  $\bar{\chi}_{\text{eff}}^2 = 2801.35$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.77$ ;  $R - 1 = 0.01138$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8: 9.02 ( $\Delta$  -0.02) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.85 ( $\Delta$  -0.01) commander\_dx12\_v3\_2\_29: 23.26 ( $\Delta$  0.00) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.04



### 6.36 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02237 \pm 0.00015 \quad (+1.2\sigma)$	$\Omega_{\nu}h^2$	$< 0.00117 \quad (-0.5\sigma)$	$100\theta_{\text{eq}}$	$0.8130 \pm 0.0053 \quad (+0.4\sigma)$
$\Omega_{\text{c}}h^2$	$0.1201 \pm 0.0013 \quad (-0.4\sigma)$	$\Omega_{\text{m}}h^3$	$0.09622^{+0.00064}_{-0.00033} \quad (+0.9\sigma)$	$100\theta_{\text{s,eq}}$	$0.4492 \pm 0.0027 \quad (+0.3\sigma)$
$100\theta_{\text{MC}}$	$1.04089 \pm 0.00032 \quad (+0.4\sigma)$	$\sigma_8$	$0.807^{+0.018}_{-0.0078} \quad (+0.5\sigma)$	$H(0.15)$	$72.5^{+1.1}_{-0.58} \quad (+0.6\sigma)$
$\tau$	$0.0556^{+0.0057}_{-0.0079} \quad (+0.3\sigma)$	$S_8$	$0.832 \pm 0.013 \quad (-0.3\sigma)$	$D_{\text{M}}(0.15)$	$645.7^{+5.5}_{-11} \quad (-0.6\sigma)$
$\Sigma m_{\nu} [\text{eV}]$	$< 0.109 \quad (-0.5\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4556 \pm 0.0069 \quad (-0.3\sigma)$	$H(0.38)$	$82.70^{+0.81}_{-0.43} \quad (+0.6\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.047^{+0.012}_{-0.015} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6063^{+0.0092}_{-0.0068} \quad (+0.3\sigma)$	$D_{\text{M}}(0.38)$	$1538^{+11}_{-22} \quad (-0.6\sigma)$
$n_{\text{s}}$	$0.9649 \pm 0.0042 \quad (+0.6\sigma)$	$\sigma_8/h^{0.5}$	$0.985^{+0.016}_{-0.010} \quad (+0.3\sigma)$	$H(0.51)$	$89.49^{+0.67}_{-0.35} \quad (+0.7\sigma)$
$y_{\text{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$r_{\text{drag}}h$	$98.7^{+1.9}_{-1.1} \quad (+0.5\sigma)$	$D_{\text{M}}(0.51)$	$1991^{+13}_{-26} \quad (-0.6\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.446 \pm 0.021 \quad (-0.2\sigma)$	$H(0.61)$	$95.16^{+0.56}_{-0.29} \quad (+0.7\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$z_{\text{re}}$	$7.80^{+0.62}_{-0.77} \quad (+0.1\sigma)$	$D_{\text{M}}(0.61)$	$2316^{+14}_{-28} \quad (-0.6\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.2}_{-1.9} \quad (+0.2\sigma)$	$10^9 A_{\text{s}}$	$2.106^{+0.024}_{-0.032} \quad (+0.2\sigma)$	$H(2.33)$	$236.78^{+0.78}_{-1.1} \quad (-0.3\sigma)$
$A_{100}^{\text{PS}}$	$259 \pm 28 \quad (-0.2\sigma)$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.884 \pm 0.011 \quad (-0.1\sigma)$	$D_{\text{M}}(2.33)$	$5769^{+13}_{-27} \quad (-0.7\sigma)$
$A_{143}^{\text{PS}}$	$46 \pm 8 \quad (-0.5\sigma)$	$D_{40}$	$1232 \pm 12 \quad (-0.2\sigma)$	$f\sigma_8(0.15)$	$0.4599 \pm 0.0064 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.2\sigma)$	$D_{220}$	$5736 \pm 39 \quad (+0.5\sigma)$	$\sigma_8(0.15)$	$0.745^{+0.018}_{-0.0073} \quad (+0.5\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (-0.0\sigma)$	$D_{810}$	$2540 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4767^{+0.0063}_{-0.0053} \quad (+0.2\sigma)$
$A^{\text{kSZ}}$	$< 4.25 \quad (-0.2\sigma)$	$D_{1420}$	$817.5 \pm 4.7 \quad (+0.6\sigma)$	$\sigma_8(0.38)$	$0.660^{+0.017}_{-0.0067} \quad (+0.5\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$D_{2000}$	$230.9 \pm 1.5 \quad (+0.9\sigma)$	$f\sigma_8(0.51)$	$0.4745^{+0.0067}_{-0.0048} \quad (+0.3\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$n_{\text{s},0.002}$	$0.9649 \pm 0.0042 \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.617^{+0.016}_{-0.0063} \quad (+0.5\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.245392^{+0.000064}_{-0.000055} \quad (+1.2\sigma)$	$f\sigma_8(0.61)$	$0.4690^{+0.0071}_{-0.0044} \quad (+0.4\sigma)$
$A_{217}^{\text{dustTT}}$	$93.7 \pm 7.3 \quad (+0.1\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246719^{+0.000064}_{-0.000055} \quad (+1.2\sigma)$	$\sigma_8(0.61)$	$0.587^{+0.016}_{-0.0061} \quad (+0.5\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$10^5 \text{D}/\text{H}$	$2.587 \pm 0.029 \quad (-1.2\sigma)$	$f\sigma_8(2.33)$	$0.2963^{+0.0070}_{-0.0029} \quad (+0.5\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.029$	$\text{Age}/\text{Gyr}$	$13.811^{+0.029}_{-0.062} \quad (-0.7\sigma)$	$\sigma_8(2.33)$	$0.3049^{+0.0085}_{-0.0034} \quad (+0.5\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.481 \pm 0.085$	$z_*$	$1089.93 \pm 0.28 \quad (-1.0\sigma)$	$f_{2000}^{143}$	$29.6 \pm 2.7 \quad (-0.7\sigma)$
$A_{143}^{\text{dustTE}}$	$0.225 \pm 0.053$	$r_*$	$144.41^{+0.29}_{-0.26} \quad (+0.0\sigma)$	$f_{2000}^{143 \times 217}$	$32.2 \pm 1.9 \quad (-0.8\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.666 \pm 0.080$	$100\theta_*$	$1.04109 \pm 0.00030 \quad (+0.3\sigma)$	$f_{2000}^{217}$	$107.1 \pm 1.8 \quad (-0.7\sigma)$
$A_{217}^{\text{dustTE}}$	$2.09 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.871 \pm 0.026 \quad (-0.0\sigma)$	$\chi_{\text{lensing}}^2$	$9.28 \pm 0.73 \quad (-0.1\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$z_{\text{drag}}$	$1059.93 \pm 0.31 \quad (+1.3\sigma)$	$\chi_{\text{simall}}^2$	$397.1 \pm 1.9 \quad (+0.1\sigma)$
$c_{217}$	$0.99820 \pm 0.00063 \quad (-0.1\sigma)$	$r_{\text{drag}}$	$147.07^{+0.28}_{-0.26} \quad (-0.2\sigma)$	$\chi_{\text{lowl}}^2$	$23.54 \pm 0.87 \quad (-0.3\sigma)$
$H_0$	$67.1^{+1.2}_{-0.66} \quad (+0.6\sigma)$	$k_{\text{D}}$	$0.14088 \pm 0.00030 \quad (+0.7\sigma)$	$\chi_{\text{plik}}^2$	$2359.7 \pm 5.9 \quad (+295.0\sigma)$
$\Omega_{\Lambda}$	$0.681^{+0.016}_{-0.0083} \quad (+0.5\sigma)$	$100\theta_{\text{D}}$	$0.16076 \pm 0.00018 \quad (-1.3\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.6 \quad (+1.1\sigma)$
$\Omega_{\text{m}}$	$0.3189^{+0.0083}_{-0.016} \quad (-0.5\sigma)$	$z_{\text{eq}}$	$3404 \pm 28 \quad (-0.3\sigma)$	$\chi_{\text{CMB}}^2$	$2789.7 \pm 6.1 \quad (+275.8\sigma)$
$\Omega_{\text{m}}h^2$	$0.1434^{+0.0013}_{-0.0019} \quad (-0.4\sigma)$	$k_{\text{eq}}$	$0.010390 \pm 0.000086 \quad (-0.3\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2801.19; \Delta\bar{\chi}_{\text{eff}}^2 = 1591.80; R - 1 = 0.01124$$



### 6.37 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022343	$0.02227 \pm 0.00016$	$\sigma_8$	0.8210	$0.802^{+0.021}_{-0.0089}$	$100\theta_{s,eq}$	0.45078	$0.4499 \pm 0.0029$
$\Omega_c h^2$	0.11938	$0.1199 \pm 0.0013$	$S_8$	0.8292	$0.827 \pm 0.013$	$H(0.15)$	73.29	$72.3^{+1.2}_{-0.64}$
$100\theta_{MC}$	1.040913	$1.04083 \pm 0.00033$	$\sigma_8 \Omega_m^{0.5}$	0.4541	$0.4532 \pm 0.0070$	$D_M(0.15)$	637.4	$646.9^{+6.1}_{-12}$
$\tau$	0.0532	$0.0541 \pm 0.0078$	$\sigma_8 \Omega_m^{0.25}$	0.6106	$0.6028^{+0.0099}_{-0.0071}$	$H(0.38)$	83.31	$82.58^{+0.89}_{-0.48}$
$\Sigma m_\nu$ [eV]	0.000	$< 0.127$	$\sigma_8/h^{0.5}$	0.9952	$0.980^{+0.018}_{-0.011}$	$D_M(0.38)$	1521.5	$1541^{+12}_{-24}$
$\ln(10^{10} A_s)$	3.0396	$3.042 \pm 0.015$	$r_{drag} h$	100.24	$98.6^{+2.1}_{-1.2}$	$H(0.51)$	89.98	$89.37^{+0.74}_{-0.39}$
$n_s$	0.96734	$0.9650 \pm 0.0044$	$\langle d^2 \rangle^{1/2}$	2.4383	$2.437 \pm 0.022$	$D_M(0.51)$	1971.8	$1995^{+15}_{-28}$
$y_{cal}$	1.00052	$1.0006 \pm 0.0025$	$z_{re}$	7.56	$7.66 \pm 0.79$	$H(0.61)$	95.560	$95.04^{+0.62}_{-0.33}$
$A_{100}^{PS}$	232.8	$241 \pm 25$	$10^9 A_s$	2.0896	$2.095 \pm 0.032$	$D_M(0.61)$	2295.2	$2320^{+16}_{-31}$
$A_{143}^{PS}$	42.3	$40 \pm 8$	$10^9 A_s e^{-2\tau}$	1.8786	$1.880 \pm 0.011$	$H(2.33)$	235.79	$236.59^{+0.89}_{-1.2}$
$A_{217}^{PS}$	103.7	$103 \pm 10$	$D_{40}$	1223.7	$1229 \pm 12$	$D_M(2.33)$	5751.0	$5776^{+15}_{-30}$
$A_{217}^{CIB}$	42.7	$40 \pm 7$	$D_{220}$	5718.6	$5721 \pm 39$	$f\sigma_8(0.15)$	0.4585	$0.4576 \pm 0.0065$
$A_{143}^{tSZ}$	6.19	$3.8^{+1.9}_{-2.5}$	$D_{810}$	2536.0	$2536 \pm 13$	$\sigma_8(0.15)$	0.7591	$0.740^{+0.020}_{-0.0084}$
$r_{143 \times 217}^{PS}$	0.665	$0.66 \pm 0.13$	$D_{1420}$	816.63	$815.9 \pm 4.9$	$f\sigma_8(0.38)$	0.4781	$0.4741^{+0.0065}_{-0.0054}$
$r_{143 \times 217}^{CIB}$	0.753	$0.56^{+0.39}_{-0.17}$	$D_{2000}$	230.77	$230.2 \pm 1.7$	$\sigma_8(0.38)$	0.6733	$0.656^{+0.019}_{-0.0077}$
$\xi^{tSZ \times CIB}$	0.36	—	$n_{s,0.002}$	0.96734	$0.9650 \pm 0.0044$	$f\sigma_8(0.51)$	0.4773	$0.4719^{+0.0071}_{-0.0050}$
$A^{kSZ}$	0.47	$4.8^{+2.4}_{-3.8}$	$Y_P$	0.245385	$0.245354 \pm 0.000066$	$\sigma_8(0.51)$	0.6302	$0.613^{+0.018}_{-0.0073}$
$A_{100}^{dust}$	1.009	$1.01 \pm 0.19$	$Y_P^{BBN}$	0.246711	$0.246680 \pm 0.000066$	$f\sigma_8(0.61)$	0.4726	$0.4664^{+0.0077}_{-0.0047}$
$A_{143}^{dust}$	0.972	$0.96 \pm 0.18$	$10^5 D/H$	2.5905	$2.604 \pm 0.030$	$\sigma_8(0.61)$	0.5997	$0.583^{+0.018}_{-0.0071}$
$A_{217}^{dust}$	0.973	$0.97 \pm 0.10$	Age/Gyr	13.769	$13.827^{+0.033}_{-0.069}$	$f\sigma_8(2.33)$	0.3016	$0.2946^{+0.0080}_{-0.0033}$
$A_{143 \times 217}^{dust}$	1.018	$1.02 \pm 0.16$	$z_*$	1089.893	$1090.04 \pm 0.29$	$\sigma_8(2.33)$	0.3117	$0.3030^{+0.0097}_{-0.0039}$
$c_{100}$	0.99772	$0.9976 \pm 0.0011$	$r_*$	144.619	$144.54 \pm 0.31$	$f_{2000}^{143}$	29.32	$29.9 \pm 2.9$
$c_{217}$	1.00120	$1.0011 \pm 0.0016$	$100\theta_*$	1.041069	$1.04104 \pm 0.00031$	$f_{2000}^{217}$	106.32	$107.0 \pm 2.0$
$c_{TE}$	0.99612	$0.9968 \pm 0.0049$	$D_M(z_*)/\text{Gpc}$	13.8914	$13.884 \pm 0.029$	$f_{2000}^{143 \times 217}$	31.71	$32.3 \pm 2.0$
$c_{EE}$	0.99172	$0.9921 \pm 0.0049$	$z_{drag}$	1059.818	$1059.70 \pm 0.33$	$\chi^2_{lensing}$	8.92	$9.44 \pm 0.87$
$H_0$	68.06	$67.0^{+1.3}_{-0.74}$	$r_{drag}$	147.293	$147.24 \pm 0.31$	$\chi^2_{small}$	395.86	$397.1 \pm 1.9$
$\Omega_\Lambda$	0.6940	$0.680^{+0.018}_{-0.0092}$	$k_D$	0.140629	$0.14064 \pm 0.00035$	$\chi^2_{lowl}$	22.92	$23.30 \pm 0.87$
$\Omega_m$	0.3060	$0.3198^{+0.0092}_{-0.018}$	$100\theta_D$	0.160816	$0.16089 \pm 0.00019$	$\chi^2_{CamSpec}$	11499.3	$11514.7 \pm 5.6$
$\Omega_m h^2$	0.14172	$0.1432^{+0.0014}_{-0.0021}$	$z_{eq}$	3386.7	$3396 \pm 30$	$\chi^2_{prior}$	2.05	$7.8 \pm 3.5$
$\Omega_\nu h^2$	0.00000	$< 0.00136$	$k_{eq}$	0.010336	$0.010366 \pm 0.000092$	$\chi^2_{CMB}$	11927.0	$11944.5 \pm 6.0$
$\Omega_m h^3$	0.09645	$0.09591^{+0.00071}_{-0.00039}$	$100\theta_{eq}$	0.8159	$0.8141 \pm 0.0057$			

Best-fit  $\chi^2_{eff} = 11929.03$ ;  $\bar{\chi}^2_{eff} = 11952.30$ ;  $R - 1 = 0.01307$   
 $\chi^2_{eff}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.92 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.86 commander\_dx12\_v3.2\_29: 22.93 CamSpec like\_10.7HM\_1400\_unified: 11499.28



### 6.38 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02228 \pm 0.00016$	$\sigma_8$	$0.802^{+0.021}_{-0.0090}$	$100\theta_{s,eq}$	$0.4500 \pm 0.0029$
$\Omega_c h^2$	$0.1198 \pm 0.0013$	$S_8$	$0.827 \pm 0.013$	$H(0.15)$	$72.3^{+1.2}_{-0.64}$
$100\theta_{MC}$	$1.04083 \pm 0.00033$	$\sigma_8 \Omega_m^{0.5}$	$0.4532 \pm 0.0070$	$D_M(0.15)$	$646.9^{+6.1}_{-12}$
$\tau$	$0.0552^{+0.0052}_{-0.0080}$	$\sigma_8 \Omega_m^{0.25}$	$0.6029^{+0.0099}_{-0.0072}$	$H(0.38)$	$82.58^{+0.91}_{-0.48}$
$\Sigma m_\nu$ [eV]	$< 0.129$	$\sigma_8/h^{0.5}$	$0.980^{+0.018}_{-0.011}$	$D_M(0.38)$	$1541^{+12}_{-24}$
$\ln(10^{10} A_s)$	$3.044^{+0.011}_{-0.015}$	$r_{drag} h$	$98.6^{+2.2}_{-1.2}$	$H(0.51)$	$89.37^{+0.75}_{-0.39}$
$n_s$	$0.9652 \pm 0.0044$	$\langle d^2 \rangle^{1/2}$	$2.438 \pm 0.022$	$D_M(0.51)$	$1995^{+15}_{-29}$
$y_{cal}$	$1.0006 \pm 0.0025$	$z_{re}$	$7.78^{+0.57}_{-0.79}$	$H(0.61)$	$95.04^{+0.63}_{-0.33}$
$A_{100}^{PS}$	$241 \pm 25$	$10^9 A_s$	$2.100^{+0.024}_{-0.033}$	$D_M(0.61)$	$2320^{+16}_{-31}$
$A_{143}^{PS}$	$40 \pm 8$	$10^9 A_s e^{-2\tau}$	$1.880 \pm 0.011$	$H(2.33)$	$236.57^{+0.88}_{-1.2}$
$A_{217}^{PS}$	$103 \pm 10$	$D_{40}$	$1229 \pm 12$	$D_M(2.33)$	$5776^{+15}_{-31}$
$A_{217}^{CIB}$	$40 \pm 7$	$D_{220}$	$5721 \pm 39$	$f\sigma_8(0.15)$	$0.4577 \pm 0.0065$
$A_{143}^{tSZ}$	$3.8^{+1.9}_{-2.5}$	$D_{810}$	$2536 \pm 13$	$\sigma_8(0.15)$	$0.741^{+0.020}_{-0.0084}$
$r_{143 \times 217}^{PS}$	$0.66 \pm 0.13$	$D_{1420}$	$815.9 \pm 4.9$	$f\sigma_8(0.38)$	$0.4742^{+0.0066}_{-0.0054}$
$r_{143 \times 217}^{CIB}$	$0.56^{+0.39}_{-0.17}$	$D_{2000}$	$230.2 \pm 1.7$	$\sigma_8(0.38)$	$0.656^{+0.019}_{-0.0077}$
$\xi^{tSZ \times CIB}$	—	$n_{s,0.002}$	$0.9652 \pm 0.0044$	$f\sigma_8(0.51)$	$0.4720^{+0.0072}_{-0.0050}$
$A^{kSZ}$	$4.7^{+2.4}_{-3.8}$	$Y_P$	$0.245355 \pm 0.000065$	$\sigma_8(0.51)$	$0.614^{+0.019}_{-0.0073}$
$A_{100}^{dust}$	$1.01 \pm 0.19$	$Y_P^{BBN}$	$0.246682 \pm 0.000066$	$f\sigma_8(0.61)$	$0.4665^{+0.0078}_{-0.0047}$
$A_{143}^{dust}$	$0.96 \pm 0.18$	$10^5 D/H$	$2.604 \pm 0.030$	$\sigma_8(0.61)$	$0.584^{+0.018}_{-0.0070}$
$A_{217}^{dust}$	$0.97 \pm 0.10$	Age/Gyr	$13.828^{+0.033}_{-0.070}$	$f\sigma_8(2.33)$	$0.2947^{+0.0081}_{-0.0032}$
$A_{143 \times 217}^{dust}$	$1.02 \pm 0.16$	$z_*$	$1090.03 \pm 0.29$	$\sigma_8(2.33)$	$0.3031^{+0.0098}_{-0.0038}$
$c_{100}$	$0.9976 \pm 0.0011$	$r_*$	$144.55 \pm 0.31$	$f_{2000}^{143}$	$29.9 \pm 2.9$
$c_{217}$	$1.0011 \pm 0.0016$	$100\theta_*$	$1.04105 \pm 0.00031$	$f_{2000}^{217}$	$107.0 \pm 2.0$
$c_{TE}$	$0.9968 \pm 0.0049$	$D_M(z_*)/\text{Gpc}$	$13.885 \pm 0.029$	$f_{2000}^{143 \times 217}$	$32.3 \pm 2.0$
$c_{EE}$	$0.9921 \pm 0.0049$	$z_{drag}$	$1059.71 \pm 0.33$	$\chi_{lensing}^2$	$9.39 \pm 0.83$
$H_0$	$67.0^{+1.4}_{-0.74}$	$r_{drag}$	$147.25 \pm 0.31$	$\chi_{small}^2$	$397.0 \pm 1.9$
$\Omega_\Lambda$	$0.680^{+0.018}_{-0.0092}$	$k_D$	$0.14063 \pm 0.00035$	$\chi_{lowl}^2$	$23.29 \pm 0.87$
$\Omega_m$	$0.3197^{+0.0092}_{-0.018}$	$100\theta_D$	$0.16088 \pm 0.00019$	$\chi_{CamSpec}^2$	$11514.6 \pm 5.6$
$\Omega_m h^2$	$0.1432^{+0.0014}_{-0.0021}$	$z_{eq}$	$3395 \pm 30$	$\chi_{prior}^2$	$7.8 \pm 3.5$
$\Omega_\nu h^2$	$< 0.00139$	$k_{eq}$	$0.010362 \pm 0.000092$	$\chi_{CMB}^2$	$11944.4 \pm 6.0$
$\Omega_m h^3$	$0.09590^{+0.00071}_{-0.00039}$	$100\theta_{eq}$	$0.8143 \pm 0.0056$		

$$\bar{\chi}_{eff}^2 = 11952.13; R - 1 = 0.01210$$



### 6.39 base\_mnu\_plikHM\_TT\_lowl\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022202	$0.02222 \pm 0.00019$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6127	$0.603^{+0.012}_{-0.0089}$	$H(0.38)$	83.155	$83.00 \pm 0.40$
$\Omega_{\mathrm{c}}h^2$	0.11966	$0.1190 \pm 0.0013$	$\sigma_8/h^{0.5}$	0.9983	$0.983^{+0.019}_{-0.013}$	$D_{\mathrm{M}}(0.38)$	1525.2	$1529 \pm 10$
$100\theta_{\mathrm{MC}}$	1.040943	$1.04100 \pm 0.00042$	$r_{\mathrm{drag}}h$	99.99	$99.82 \pm 0.98$	$H(0.51)$	89.841	$89.70 \pm 0.33$
$\tau$	0.0529	$0.0534 \pm 0.0080$	$\langle d^2 \rangle^{1/2}$	2.4459	$2.428 \pm 0.030$	$D_{\mathrm{M}}(0.51)$	1976.3	$1981 \pm 12$
$\Sigma m_{\nu}$ [eV]	0.0026	$< 0.0720$	$z_{\mathrm{re}}$	7.56	$7.59 \pm 0.82$	$H(0.61)$	95.437	$95.30^{+0.30}_{-0.27}$
$\ln(10^{10}A_{\mathrm{s}})$	3.0404	$3.039 \pm 0.017$	$10^9A_{\mathrm{s}}$	2.0913	$2.090 \pm 0.035$	$D_{\mathrm{M}}(0.61)$	2300.1	$2305 \pm 13$
$n_{\mathrm{s}}$	0.96587	$0.9665 \pm 0.0043$	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8812	$1.878 \pm 0.012$	$H(2.33)$	235.84	$235.76 \pm 0.78$
$y_{\mathrm{cal}}$	1.00046	$1.0005 \pm 0.0025$	$D_{40}$	1227.2	$1226 \pm 13$	$D_{\mathrm{M}}(2.33)$	5757.3	$5765^{+13}_{-15}$
$A_{217}^{\mathrm{CIB}}$	48.7	$48 \pm 7$	$D_{220}$	5715.9	$5720 \pm 40$	$f\sigma_8(0.15)$	0.4607	$0.4550 \pm 0.0088$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.30	—	$D_{810}$	2537.4	$2536 \pm 14$	$\sigma_8(0.15)$	0.7601	$0.748^{+0.015}_{-0.0082}$
$A_{143}^{\mathrm{tSZ}}$	7.02	$5.1 \pm 2.0$	$D_{1420}$	815.9	$815.4 \pm 5.1$	$f\sigma_8(0.38)$	0.4799	$0.4736^{+0.0087}_{-0.0071}$
$A_{100}^{\mathrm{PS}}$	254.4	$262 \pm 28$	$D_{2000}$	230.27	$230.0 \pm 1.8$	$\sigma_8(0.38)$	0.6739	$0.663^{+0.013}_{-0.0070}$
$A_{143}^{\mathrm{PS}}$	48.7	$48 \pm 8$	$n_{\mathrm{s},0.002}$	0.96587	$0.9665 \pm 0.0043$	$f\sigma_8(0.51)$	0.4788	$0.4724^{+0.0084}_{-0.0064}$
$A_{143 \times 217}^{\mathrm{PS}}$	46.0	$43^{+9}_{-10}$	$Y_{\mathrm{P}}$	0.245327	$0.245332^{+0.000084}_{-0.000073}$	$\sigma_8(0.51)$	0.6307	$0.620^{+0.012}_{-0.0065}$
$A_{217}^{\mathrm{PS}}$	118.9	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246653	$0.246658^{+0.000085}_{-0.000073}$	$f\sigma_8(0.61)$	0.4739	$0.4676^{+0.0082}_{-0.0059}$
$A^{\mathrm{kSZ}}$	0.00	$< 4.85$	$10^5\mathrm{D}/\mathrm{H}$	2.6176	$2.614 \pm 0.036$	$\sigma_8(0.61)$	0.6002	$0.590^{+0.012}_{-0.0062}$
$A_{100}^{\mathrm{dustTT}}$	8.85	$9.0 \pm 1.8$	Age/Gyr	13.7838	$13.802^{+0.030}_{-0.035}$	$f\sigma_8(2.33)$	0.30178	$0.2977^{+0.0051}_{-0.0030}$
$A_{143}^{\mathrm{dustTT}}$	10.83	$10.7 \pm 1.8$	$z_*$	1090.098	$1090.02 \pm 0.29$	$\sigma_8(2.33)$	0.31171	$0.3070^{+0.0058}_{-0.0032}$
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.40	$18.3 \pm 3.3$	$r_*$	144.655	$144.80 \pm 0.33$	$f_{2000}^{143}$	30.13	$30.8 \pm 2.9$
$A_{217}^{\mathrm{dustTT}}$	94.6	$93.4 \pm 7.3$	$100\theta_*$	1.041120	$1.04120 \pm 0.00042$	$f_{2000}^{143 \times 217}$	33.01	$33.2 \pm 2.0$
$c_{100}$	0.99966	$0.99962 \pm 0.00061$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8942	$13.907 \pm 0.032$	$f_{2000}^{217}$	107.49	$107.8 \pm 1.9$
$c_{217}$	0.99825	$0.99825 \pm 0.00063$	$z_{\mathrm{drag}}$	1059.513	$1059.52 \pm 0.43$	$\chi_{\mathrm{small}}^2$	395.87	$397.0 \pm 1.8$
$H_0$	67.85	$67.66 \pm 0.59$	$r_{\mathrm{drag}}$	147.377	$147.52 \pm 0.35$	$\chi_{\mathrm{lowl}}^2$	23.25	$23.11 \pm 0.94$
$\Omega_{\Lambda}$	0.6918	$0.6900^{+0.0081}_{-0.0073}$	$k_{\mathrm{D}}$	0.140431	$0.14030 \pm 0.00045$	$\chi_{\mathrm{plik}}^2$	758.6	$772.0 \pm 5.5$
$\Omega_{\mathrm{m}}$	0.3082	$0.3100^{+0.0073}_{-0.0081}$	$100\theta_{\mathrm{D}}$	0.161010	$0.16101 \pm 0.00025$	$\chi_{6\mathrm{DF}}^2$	0.0101	$0.059 \pm 0.081$
$\Omega_{\mathrm{m}}h^2$	0.14189	$0.1419 \pm 0.0012$	$z_{\mathrm{eq}}$	3390.0	$3375 \pm 30$	$\chi_{\mathrm{MGS}}^2$	1.41	$1.39 \pm 0.55$
$\Omega_{\nu}h^2$	0.000028	$< 0.000774$	$k_{\mathrm{eq}}$	0.010346	$0.010301 \pm 0.000092$	$\chi_{\mathrm{DR12BAO}}^2$	3.90	$4.7 \pm 1.7$
$\Omega_{\mathrm{m}}h^3$	0.09627	$0.09599^{+0.00056}_{-0.00047}$	$100\theta_{\mathrm{eq}}$	0.8150	$0.8178 \pm 0.0056$	$\chi_{\mathrm{prior}}^2$	1.33	$7.3 \pm 3.7$
$\sigma_8$	0.8223	$0.809^{+0.016}_{-0.0091}$	$100\theta_{\mathrm{s,eq}}$	0.45039	$0.4519 \pm 0.0029$	$\chi_{\mathrm{BAO}}^2$	5.32	$6.2 \pm 1.4$
$S_8$	0.8335	$0.822 \pm 0.017$	$H(0.15)$	73.10	$72.92 \pm 0.52$	$\chi_{\mathrm{CMB}}^2$	1177.7	$1192.1 \pm 5.6$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4565	$0.4503 \pm 0.0094$	$D_{\mathrm{M}}(0.15)$	639.2	$640.9 \pm 5.1$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 1184.39$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1205.62$ ;  $R - 1 = 0.00712$

$\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.90 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 commander\_dx12\_v3.2.29: 23.25 plik\_rd12\_HM\_v22\_TT: 758.61



## 6.40 base\_mnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}} h^2$	0.022194	$0.02223 \pm 0.00019$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	0.6118	$0.603^{+0.011}_{-0.0086}$	$H(0.38)$	83.182	$83.06 \pm 0.37$
$\Omega_{\mathrm{c}} h^2$	0.11950	$0.1189 \pm 0.0012$	$\sigma_8/h^{0.5}$	0.9971	$0.983^{+0.018}_{-0.013}$	$D_{\mathrm{M}}(0.38)$	1524.4	$1527.2 \pm 9.7$
$100\theta_{\mathrm{MC}}$	1.040962	$1.04102 \pm 0.00042$	$r_{\mathrm{drag}} h$	100.11	$99.98 \pm 0.93$	$H(0.51)$	89.859	$89.75 \pm 0.32$
$\tau$	0.0529	$0.0536 \pm 0.0080$	$\langle d^2 \rangle^{1/2}$	2.4431	$2.426 \pm 0.030$	$D_{\mathrm{M}}(0.51)$	1975.3	$1979 \pm 11$
$\Sigma m_{\nu}$ [eV]	0.0011	$< 0.0684$	$z_{\mathrm{re}}$	7.56	$7.60 \pm 0.81$	$H(0.61)$	95.447	$95.34 \pm 0.28$
$\ln(10^{10} A_{\mathrm{s}})$	3.0395	$3.039 \pm 0.017$	$10^9 A_{\mathrm{s}}$	2.0895	$2.090 \pm 0.035$	$D_{\mathrm{M}}(0.61)$	2299.1	$2303 \pm 12$
$n_{\mathrm{s}}$	0.96602	$0.9668 \pm 0.0042$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8797	$1.877 \pm 0.012$	$H(2.33)$	235.73	$235.66 \pm 0.75$
$y_{\mathrm{cal}}$	1.00027	$1.0005 \pm 0.0025$	$D_{40}$	1226.2	$1225 \pm 13$	$D_{\mathrm{M}}(2.33)$	5757.1	$5763^{+13}_{-14}$
$A_{217}^{\mathrm{CIB}}$	49.0	$48 \pm 7$	$D_{220}$	5713.4	$5720 \pm 40$	$f\sigma_8(0.15)$	0.4597	$0.4543 \pm 0.0086$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.28	—	$D_{810}$	2535.9	$2535 \pm 14$	$\sigma_8(0.15)$	0.7595	$0.748^{+0.014}_{-0.0083}$
$A_{143}^{\mathrm{tSZ}}$	7.02	$5.1 \pm 2.0$	$D_{1420}$	815.4	$815.5 \pm 5.1$	$f\sigma_8(0.38)$	0.4791	$0.4732^{+0.0084}_{-0.0068}$
$A_{100}^{\mathrm{PS}}$	255.6	$262 \pm 28$	$D_{2000}$	230.08	$230.0 \pm 1.8$	$\sigma_8(0.38)$	0.6735	$0.663^{+0.012}_{-0.0072}$
$A_{143}^{\mathrm{PS}}$	48.6	$48 \pm 8$	$n_{\mathrm{s},0.002}$	0.96602	$0.9668 \pm 0.0042$	$f\sigma_8(0.51)$	0.4781	$0.4721^{+0.0082}_{-0.0062}$
$A_{143 \times 217}^{\mathrm{PS}}$	45.5	$43^{+9}_{-10}$	$Y_{\mathrm{P}}$	0.245323	$0.245336^{+0.000083}_{-0.000072}$	$\sigma_8(0.51)$	0.6304	$0.621^{+0.012}_{-0.0067}$
$A_{217}^{\mathrm{PS}}$	118.5	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246650	$0.246663^{+0.000084}_{-0.000073}$	$f\sigma_8(0.61)$	0.4733	$0.4674^{+0.0080}_{-0.0058}$
$A^{\mathrm{kSZ}}$	0.01	$< 4.90$	$10^5 \mathrm{D}/\mathrm{H}$	2.6190	$2.612 \pm 0.036$	$\sigma_8(0.61)$	0.5999	$0.591^{+0.011}_{-0.0063}$
$A_{100}^{\mathrm{dustTT}}$	8.87	$9.0 \pm 1.8$	Age/Gyr	13.7836	$13.798^{+0.030}_{-0.034}$	$f\sigma_8(2.33)$	0.30165	$0.2980^{+0.0048}_{-0.0030}$
$A_{143}^{\mathrm{dustTT}}$	10.81	$10.7 \pm 1.8$	$z_*$	1090.094	$1089.99 \pm 0.28$	$\sigma_8(2.33)$	0.31162	$0.3073^{+0.0055}_{-0.0032}$
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.37	$18.3 \pm 3.3$	$r_*$	144.700	$144.84 \pm 0.32$	$f_{2000}^{143}$	30.27	$30.8 \pm 2.9$
$A_{217}^{\mathrm{dustTT}}$	94.5	$93.5 \pm 7.3$	$100\theta_*$	1.041126	$1.04122 \pm 0.00042$	$f_{2000}^{143 \times 217}$	33.13	$33.2 \pm 2.0$
$c_{100}$	0.99964	$0.99962 \pm 0.00061$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8985	$13.910 \pm 0.031$	$f_{2000}^{217}$	107.54	$107.8 \pm 1.9$
$c_{217}$	0.99825	$0.99826 \pm 0.00063$	$z_{\mathrm{drag}}$	1059.475	$1059.53 \pm 0.43$	$\chi_{\mathrm{small}}^2$	395.88	$397.0 \pm 1.8$
$H_0$	67.90	$67.76 \pm 0.56$	$r_{\mathrm{drag}}$	147.427	$147.55 \pm 0.35$	$\chi_{\mathrm{lowl}}^2$	23.21	$23.05 \pm 0.92$
$\Omega_{\Lambda}$	0.6927	$0.6913 \pm 0.0072$	$k_{\mathrm{D}}$	0.140375	$0.14027 \pm 0.00044$	$\chi_{\mathrm{plik}}^2$	758.7	$772.1 \pm 5.5$
$\Omega_{\mathrm{m}}$	0.3073	$0.3087 \pm 0.0072$	$100\theta_{\mathrm{D}}$	0.161026	$0.16101 \pm 0.00025$	$\chi_{\mathrm{JLA}}^2$	1034.880	$1035.03 \pm 0.33$
$\Omega_{\mathrm{m}} h^2$	0.14171	$0.1417 \pm 0.0011$	$z_{\mathrm{eq}}$	3386.2	$3372 \pm 29$	$\chi_{6\mathrm{DF}}^2$	0.0060	$0.047 \pm 0.065$
$\Omega_{\nu} h^2$	$1.1 \cdot 10^{-5}$	$< 0.000736$	$k_{\mathrm{eq}}$	0.010335	$0.010291 \pm 0.000089$	$\chi_{\mathrm{MGS}}^2$	1.47	$1.47 \pm 0.53$
$\Omega_{\mathrm{m}} h^3$	0.09623	$0.09601^{+0.00055}_{-0.00047}$	$100\theta_{\mathrm{eq}}$	0.8157	$0.8185 \pm 0.0054$	$\chi_{\mathrm{DR12BAO}}^2$	3.77	$4.5 \pm 1.4$
$\sigma_8$	0.8217	$0.809^{+0.015}_{-0.0092}$	$100\theta_{\mathrm{s,eq}}$	0.45074	$0.4522 \pm 0.0028$	$\chi_{\mathrm{prior}}^2$	1.37	$7.4 \pm 3.7$
$S_8$	0.8317	$0.821 \pm 0.017$	$H(0.15)$	73.141	$73.00 \pm 0.49$	$\chi_{\mathrm{BAO}}^2$	5.25	$6.0 \pm 1.1$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	0.4555	$0.4495 \pm 0.0091$	$D_{\mathrm{M}}(0.15)$	638.75	$640.1 \pm 4.8$	$\chi_{\mathrm{CMB}}^2$	1177.8	$1192.2 \pm 5.5$

Best-fit  $\chi_{\mathrm{eff}}^2 = 2219.29$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2240.54$ ;  $R - 1 = 0.00739$

$\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.01 MGS: 1.47 DR12BAO: 3.77 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.88 commander\_dx12\_v3.2.29: 23.21 plik\_rd12\_HM\_v22.TT: 758.69  
SN - JLA Pantheon18: 1034.88



# 6.41 base\_mnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02222 \pm 0.00019$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.604^{+0.012}_{-0.0086}$	$H(0.38)$	$83.01 \pm 0.40$
$\Omega_{\mathrm{c}} h^2$	$0.1190 \pm 0.0013$	$\sigma_8 / h^{0.5}$	$0.984^{+0.018}_{-0.012}$	$D_{\mathrm{M}}(0.38)$	$1529 \pm 10$
$100\theta_{\mathrm{MC}}$	$1.04100 \pm 0.00042$	$r_{\mathrm{drag}} h$	$99.83 \pm 0.98$	$H(0.51)$	$89.70 \pm 0.33$
$\tau$	$0.0548^{+0.0050}_{-0.0081}$	$\langle d^2 \rangle^{1/2}$	$2.431 \pm 0.029$	$D_{\mathrm{M}}(0.51)$	$1981 \pm 12$
$\Sigma m_{\nu} [\mathrm{eV}]$	$< 0.0732$	$z_{\mathrm{re}}$	$7.73^{+0.56}_{-0.81}$	$H(0.61)$	$95.30 \pm 0.29$
$\ln(10^{10} A_{\mathrm{s}})$	$3.042^{+0.012}_{-0.016}$	$10^9 A_{\mathrm{s}}$	$2.095^{+0.025}_{-0.035}$	$D_{\mathrm{M}}(0.61)$	$2305 \pm 13$
$n_{\mathrm{s}}$	$0.9666 \pm 0.0042$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.877 \pm 0.012$	$H(2.33)$	$235.75 \pm 0.78$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{40}$	$1226 \pm 13$	$D_{\mathrm{M}}(2.33)$	$5765^{+13}_{-15}$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{220}$	$5719 \pm 40$	$f\sigma_8(0.15)$	$0.4554 \pm 0.0087$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2535 \pm 14$	$\sigma_8(0.15)$	$0.748^{+0.015}_{-0.0077}$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{1420}$	$815.4 \pm 5.1$	$f\sigma_8(0.38)$	$0.4741^{+0.0086}_{-0.0069}$
$A_{100}^{\mathrm{PS}}$	$262 \pm 28$	$D_{2000}$	$230.0 \pm 1.8$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.0066}$
$A_{143}^{\mathrm{PS}}$	$48 \pm 8$	$n_{\mathrm{s},0.002}$	$0.9666 \pm 0.0042$	$f\sigma_8(0.51)$	$0.4729^{+0.0083}_{-0.0062}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}$	$0.245333^{+0.000085}_{-0.000073}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.0061}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246659^{+0.000085}_{-0.000073}$	$f\sigma_8(0.61)$	$0.4681^{+0.0081}_{-0.0057}$
$A^{\mathrm{kSZ}}$	$< 4.83$	$10^5 \mathrm{D}/\mathrm{H}$	$2.614 \pm 0.036$	$\sigma_8(0.61)$	$0.591^{+0.011}_{-0.0058}$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	$\mathrm{Age}/\mathrm{Gyr}$	$13.802^{+0.030}_{-0.035}$	$f\sigma_8(2.33)$	$0.2981^{+0.0050}_{-0.0027}$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$z_*$	$1090.02 \pm 0.29$	$\sigma_8(2.33)$	$0.3073^{+0.0057}_{-0.0030}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$r_*$	$144.81 \pm 0.33$	$f_{2000}^{143}$	$30.8 \pm 2.9$
$A_{217}^{\mathrm{dust}TT}$	$93.5 \pm 7.3$	$100\theta_*$	$1.04120 \pm 0.00042$	$f_{2000}^{143 \times 217}$	$33.2 \pm 2.0$
$c_{100}$	$0.99962 \pm 0.00061$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.908 \pm 0.032$	$f_{2000}^{217}$	$107.8 \pm 1.9$
$c_{217}$	$0.99825 \pm 0.00063$	$z_{\mathrm{drag}}$	$1059.52 \pm 0.43$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.9$
$H_0$	$67.67 \pm 0.59$	$r_{\mathrm{drag}}$	$147.53 \pm 0.35$	$\chi_{\mathrm{lowl}}^2$	$23.13 \pm 0.93$
$\Omega_{\Lambda}$	$0.6901^{+0.0081}_{-0.0073}$	$k_{\mathrm{D}}$	$0.14029 \pm 0.00045$	$\chi_{\mathrm{plik}}^2$	$771.8 \pm 5.5$
$\Omega_{\mathrm{m}}$	$0.3099 \pm 0.0077$	$100\theta_{\mathrm{D}}$	$0.16101 \pm 0.00025$	$\chi_{6\mathrm{DF}}^2$	$0.058 \pm 0.079$
$\Omega_{\mathrm{m}} h^2$	$0.1419 \pm 0.0012$	$z_{\mathrm{eq}}$	$3375 \pm 30$	$\chi_{\mathrm{MGS}}^2$	$1.39 \pm 0.55$
$\Omega_{\nu} h^2$	$< 0.000787$	$k_{\mathrm{eq}}$	$0.010300 \pm 0.000091$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.7$
$\Omega_{\mathrm{m}} h^3$	$0.09599^{+0.00056}_{-0.00047}$	$100\theta_{\mathrm{eq}}$	$0.8179 \pm 0.0056$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8$	$0.810^{+0.016}_{-0.0086}$	$100\theta_{\mathrm{s,eq}}$	$0.4519 \pm 0.0029$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.4$
$S_8$	$0.823 \pm 0.017$	$H(0.15)$	$72.93 \pm 0.52$	$\chi_{\mathrm{CMB}}^2$	$1191.9 \pm 5.5$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4507 \pm 0.0093$	$D_{\mathrm{M}}(0.15)$	$640.8 \pm 5.1$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1205.36$ ;  $R - 1 = 0.00940$



## 6.42 base\_mnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}} h^2$	$0.02223 \pm 0.00019$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.604^{+0.011}_{-0.0083}$	$H(0.38)$	$83.06 \pm 0.38$
$\Omega_{\text{c}} h^2$	$0.1188 \pm 0.0012$	$\sigma_8 / h^{0.5}$	$0.984^{+0.018}_{-0.012}$	$D_{\text{M}}(0.38)$	$1527.1 \pm 9.7$
$100\theta_{\text{MC}}$	$1.04102 \pm 0.00042$	$r_{\text{drag}} h$	$99.99 \pm 0.93$	$H(0.51)$	$89.75 \pm 0.32$
$\tau$	$0.0549^{+0.0051}_{-0.0081}$	$\langle d^2 \rangle^{1/2}$	$2.429 \pm 0.029$	$D_{\text{M}}(0.51)$	$1979 \pm 12$
$\Sigma m_{\nu} [\text{eV}]$	$< 0.0694$	$z_{\text{re}}$	$7.74^{+0.57}_{-0.80}$	$H(0.61)$	$95.34 \pm 0.28$
$\ln(10^{10} A_{\text{s}})$	$3.042^{+0.012}_{-0.016}$	$10^9 A_{\text{s}}$	$2.095^{+0.025}_{-0.034}$	$D_{\text{M}}(0.61)$	$2303 \pm 13$
$n_{\text{s}}$	$0.9669 \pm 0.0042$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.877 \pm 0.012$	$H(2.33)$	$235.65 \pm 0.75$
$y_{\text{cal}}$	$1.0005 \pm 0.0025$	$D_{40}$	$1225 \pm 13$	$D_{\text{M}}(2.33)$	$5763^{+13}_{-15}$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{220}$	$5720 \pm 40$	$f\sigma_8(0.15)$	$0.4547^{+0.0086}_{-0.0078}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{810}$	$2535 \pm 14$	$\sigma_8(0.15)$	$0.749^{+0.014}_{-0.0077}$
$A_{143}^{\text{tSZ}}$	$5.1 \pm 2.0$	$D_{1420}$	$815.5 \pm 5.1$	$f\sigma_8(0.38)$	$0.4736^{+0.0083}_{-0.0066}$
$A_{100}^{\text{PS}}$	$262 \pm 28$	$D_{2000}$	$230.0 \pm 1.8$	$\sigma_8(0.38)$	$0.664^{+0.012}_{-0.0067}$
$A_{143}^{\text{PS}}$	$48 \pm 8$	$n_{\text{s},0.002}$	$0.9669 \pm 0.0042$	$f\sigma_8(0.51)$	$0.4726^{+0.0081}_{-0.0060}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+9}_{-10}$	$Y_{\text{P}}$	$0.245337^{+0.000084}_{-0.000072}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.0062}$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$Y_{\text{P}}^{\text{BBN}}$	$0.246664^{+0.000084}_{-0.000072}$	$f\sigma_8(0.61)$	$0.4678^{+0.0079}_{-0.0056}$
$A^{\text{kSZ}}$	$< 4.84$	$10^5 \text{D}/\text{H}$	$2.612 \pm 0.036$	$\sigma_8(0.61)$	$0.591^{+0.011}_{-0.0059}$
$A_{100}^{\text{dustTT}}$	$9.0 \pm 1.8$	$\text{Age}/\text{Gyr}$	$13.798^{+0.030}_{-0.034}$	$f\sigma_8(2.33)$	$0.2983^{+0.0047}_{-0.0028}$
$A_{143}^{\text{dustTT}}$	$10.7 \pm 1.8$	$z_*$	$1089.99 \pm 0.28$	$\sigma_8(2.33)$	$0.3076^{+0.0054}_{-0.0030}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.4 \pm 3.3$	$r_*$	$144.84 \pm 0.32$	$f_{2000}^{143}$	$30.7 \pm 2.9$
$A_{217}^{\text{dustTT}}$	$93.6 \pm 7.3$	$100\theta_*$	$1.04122 \pm 0.00042$	$f_{2000}^{143 \times 217}$	$33.2 \pm 2.0$
$c_{100}$	$0.99962 \pm 0.00061$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.911 \pm 0.031$	$f_{2000}^{217}$	$107.8 \pm 1.9$
$c_{217}$	$0.99826 \pm 0.00063$	$z_{\text{drag}}$	$1059.53 \pm 0.43$	$\chi_{\text{simall}}^2$	$396.9 \pm 1.9$
$H_0$	$67.76 \pm 0.56$	$r_{\text{drag}}$	$147.56 \pm 0.35$	$\chi_{\text{lowl}}^2$	$23.06 \pm 0.92$
$\Omega_{\Lambda}$	$0.6913 \pm 0.0072$	$k_{\text{D}}$	$0.14027 \pm 0.00044$	$\chi_{\text{plik}}^2$	$771.9 \pm 5.5$
$\Omega_{\text{m}}$	$0.3087 \pm 0.0072$	$100\theta_{\text{D}}$	$0.16101 \pm 0.00025$	$\chi_{\text{JLA}}^2$	$1035.03 \pm 0.33$
$\Omega_{\text{m}} h^2$	$0.1417 \pm 0.0011$	$z_{\text{eq}}$	$3371 \pm 29$	$\chi_{6\text{DF}}^2$	$0.046 \pm 0.064$
$\Omega_{\nu} h^2$	$< 0.000746$	$k_{\text{eq}}$	$0.010289 \pm 0.000088$	$\chi_{\text{MGS}}^2$	$1.48 \pm 0.53$
$\Omega_{\text{m}} h^3$	$0.09601^{+0.00055}_{-0.00047}$	$100\theta_{\text{eq}}$	$0.8186 \pm 0.0054$	$\chi_{\text{DR12BAO}}^2$	$4.4 \pm 1.4$
$\sigma_8$	$0.810^{+0.015}_{-0.0086}$	$100\theta_{\text{s,eq}}$	$0.4523 \pm 0.0028$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.7$
$S_8$	$0.821^{+0.017}_{-0.015}$	$H(0.15)$	$73.01 \pm 0.49$	$\chi_{\text{BAO}}^2$	$6.0 \pm 1.1$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4498^{+0.0092}_{-0.0083}$	$D_{\text{M}}(0.15)$	$640.0 \pm 4.8$	$\chi_{\text{CMB}}^2$	$1191.9 \pm 5.5$

$$\bar{\chi}_{\text{eff}}^2 = 2240.29; R - 1 = 0.00886$$



### 6.43 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022420	$0.02241 \pm 0.00013$ (+1.0 $\sigma$ )	$\Omega_m h^3$	0.096697	$0.09648^{+0.00038}_{-0.00031}$ (+0.9 $\sigma$ )	$H(0.15)$	73.286	$73.04^{+0.45}_{-0.40}$ (+0.2 $\sigma$ )
$\Omega_c h^2$	0.11968	$0.1195 \pm 0.0010$ (+0.3 $\sigma$ )	$\sigma_8$	0.8236	$0.814^{+0.013}_{-0.0084}$ (+0.4 $\sigma$ )	$D_M(0.15)$	637.45	$639.9^{+3.9}_{-4.4}$ (-0.2 $\sigma$ )
$100\theta_{MC}$	1.041003	$1.04100 \pm 0.00029$ (+0.0 $\sigma$ )	$S_8$	0.8331	$0.828 \pm 0.014$ (+0.3 $\sigma$ )	$H(0.38)$	83.337	$83.13^{+0.34}_{-0.30}$ (+0.3 $\sigma$ )
$\tau$	0.0546	$0.0550 \pm 0.0077$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4563	$0.4533 \pm 0.0074$ (+0.3 $\sigma$ )	$D_M(0.38)$	1521.4	$1526.4^{+7.9}_{-8.9}$ (-0.2 $\sigma$ )
$\Sigma m_\nu$ [eV]	0.0008	$< 0.0581$ (-0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6130	$0.6075^{+0.0092}_{-0.0077}$ (+0.4 $\sigma$ )	$H(0.51)$	90.020	$89.84^{+0.28}_{-0.25}$ (+0.4 $\sigma$ )
$\ln(10^{10} A_s)$	3.0444	$3.045 \pm 0.016$ (+0.3 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9985	$0.989^{+0.015}_{-0.012}$ (+0.3 $\sigma$ )	$D_M(0.51)$	1971.5	$1977.6^{+9.3}_{-11}$ (-0.3 $\sigma$ )
$n_s$	0.96690	$0.9666 \pm 0.0038$ (+0.0 $\sigma$ )	$r_{drag} h$	100.11	$99.75 \pm 0.83$ (-0.1 $\sigma$ )	$H(0.61)$	95.614	$95.46^{+0.24}_{-0.21}$ (+0.5 $\sigma$ )
$y_{cal}$	1.00044	$1.0008 \pm 0.0025$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4473	$2.439 \pm 0.026$ (+0.4 $\sigma$ )	$D_M(0.61)$	2294.7	$2301^{+10}_{-11}$ (-0.3 $\sigma$ )
$A_{217}^{CIB}$	46.5	$47 \pm 7$ (-0.2 $\sigma$ )	$z_{re}$	7.69	$7.71 \pm 0.78$ (+0.1 $\sigma$ )	$H(2.33)$	236.08	$236.17 \pm 0.61$ (+0.5 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.57	—	$10^9 A_s$	2.0998	$2.101 \pm 0.034$ (+0.3 $\sigma$ )	$D_M(2.33)$	5747.2	$5755.3^{+9.7}_{-12}$ (-0.7 $\sigma$ )
$A_{143}^{tSZ}$	7.12	$5.5^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8826	$1.882 \pm 0.011$ (+0.4 $\sigma$ )	$f\sigma_8(0.15)$	0.4605	$0.4579 \pm 0.0070$ (+0.3 $\sigma$ )
$A_{100}^{PS}$	248.4	$258 \pm 28$ (-0.2 $\sigma$ )	$D_{40}$	1227.6	$1229 \pm 12$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7614	$0.752^{+0.012}_{-0.0076}$ (+0.4 $\sigma$ )
$A_{143}^{PS}$	49.1	$46 \pm 8$ (-0.3 $\sigma$ )	$D_{220}$	5732.5	$5737 \pm 38$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4800	$0.4766^{+0.0068}_{-0.0061}$ (+0.4 $\sigma$ )
$A_{143 \times 217}^{PS}$	50.7	$42 \pm 9$ (-0.1 $\sigma$ )	$D_{810}$	2540.2	$2540 \pm 13$ (+0.3 $\sigma$ )	$\sigma_8(0.38)$	0.6752	$0.667^{+0.011}_{-0.0066}$ (+0.4 $\sigma$ )
$A_{217}^{PS}$	120.9	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{1420}$	818.24	$817.9 \pm 4.8$ (+0.5 $\sigma$ )	$f\sigma_8(0.51)$	0.4791	$0.4754^{+0.0066}_{-0.0056}$ (+0.4 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.07$ (-0.2 $\sigma$ )	$D_{2000}$	231.43	$231.2 \pm 1.6$ (+0.7 $\sigma$ )	$\sigma_8(0.51)$	0.6320	$0.6243^{+0.0099}_{-0.0062}$ (+0.4 $\sigma$ )
$A_{100}^{dustTT}$	8.78	$8.9 \pm 1.8$ (-0.0 $\sigma$ )	$n_{s,0.002}$	0.96690	$0.9666 \pm 0.0038$ (+0.0 $\sigma$ )	$f\sigma_8(0.61)$	0.4743	$0.4705^{+0.0065}_{-0.0053}$ (+0.4 $\sigma$ )
$A_{143}^{dustTT}$	11.02	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P$	0.245415	$0.245409^{+0.000054}_{-0.000048}$ (+1.0 $\sigma$ )	$\sigma_8(0.61)$	0.6014	$0.5941^{+0.0094}_{-0.0058}$ (+0.4 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.91	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246742	$0.246736^{+0.000054}_{-0.000048}$ (+1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.30243	$0.2994^{+0.0041}_{-0.0029}$ (+0.4 $\sigma$ )
$A_{217}^{dustTT}$	95.1	$93.8 \pm 7.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5763	$2.579 \pm 0.025$ (-1.0 $\sigma$ )	$\sigma_8(2.33)$	0.31244	$0.3088^{+0.0048}_{-0.0030}$ (+0.4 $\sigma$ )
$A_{100}^{dustTE}$	0.1137	$0.114 \pm 0.038$	Age/Gyr	13.7601	$13.779^{+0.022}_{-0.028}$ (-0.7 $\sigma$ )	$f_{2000}^{143}$	28.51	$29.3 \pm 2.7$ (-0.5 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1342	$0.135 \pm 0.029$	$z_*$	1089.824	$1089.82 \pm 0.22$ (-0.7 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.83	$32.0 \pm 1.8$ (-0.6 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.481	$0.481 \pm 0.085$	$r_*$	144.483	$144.55 \pm 0.24$ (-0.8 $\sigma$ )	$f_{2000}^{217}$	106.42	$106.9 \pm 1.8$ (-0.5 $\sigma$ )
$A_{143}^{dustTE}$	0.226	$0.225 \pm 0.054$	$100\theta_*$	1.041157	$1.04118 \pm 0.00029$ (-0.1 $\sigma$ )	$\chi_{small}^2$	396.08	$397.1 \pm 1.9$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.667	$0.664 \pm 0.079$	$D_M(z_*)/\text{Gpc}$	13.8771	$13.883 \pm 0.023$ (-0.8 $\sigma$ )	$\chi_{lowl}^2$	23.21	$23.25 \pm 0.85$ (+0.1 $\sigma$ )
$A_{217}^{dustTE}$	2.082	$2.08 \pm 0.27$	$z_{drag}$	1060.009	$1059.99 \pm 0.29$ (+1.1 $\sigma$ )	$\chi_{plik}^2$	2343.8	$2359.3 \pm 5.9$ (+286.2 $\sigma$ )
$c_{100}$	0.99970	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$r_{drag}$	147.129	$147.20 \pm 0.24$ (-0.9 $\sigma$ )	$\chi_{6DF}^2$	0.0059	$0.051 \pm 0.070$ (-0.1 $\sigma$ )
$c_{217}$	0.99819	$0.99819 \pm 0.00062$ (-0.1 $\sigma$ )	$k_D$	0.140861	$0.14078 \pm 0.00029$ (+1.1 $\sigma$ )	$\chi_{MGS}^2$	1.473	$1.33 \pm 0.45$ (-0.1 $\sigma$ )
$H_0$	68.044	$67.76^{+0.51}_{-0.46}$ (+0.2 $\sigma$ )	$100\theta_D$	0.160716	$0.16074 \pm 0.00017$ (-1.1 $\sigma$ )	$\chi_{DR12BAO}^2$	3.82	$4.7 \pm 1.5$ (-0.0 $\sigma$ )
$\Omega_\Lambda$	0.6931	$0.6899^{+0.0067}_{-0.0060}$ (-0.0 $\sigma$ )	$z_{eq}$	3395.8	$3390 \pm 23$ (+0.5 $\sigma$ )	$\chi_{prior}^2$	1.67	$11.6 \pm 4.6$ (+1.1 $\sigma$ )
$\Omega_m$	0.3069	$0.3101^{+0.0060}_{-0.0067}$ (+0.0 $\sigma$ )	$k_{eq}$	0.010364	$0.010347 \pm 0.000070$ (+0.5 $\sigma$ )	$\chi_{BAO}^2$	5.30	$6.1 \pm 1.2$ (-0.1 $\sigma$ )
$\Omega_m h^2$	0.14211	$0.14238 \pm 0.00096$ (+0.4 $\sigma$ )	$100\theta_{eq}$	0.81460	$0.8156 \pm 0.0043$ (-0.4 $\sigma$ )	$\chi_{CMB}^2$	2763.1	$2779.7 \pm 5.8$ (+285.7 $\sigma$ )
$\Omega_\nu h^2$	$0.8 \cdot 10^{-5}$	$< 0.000625$ (-0.2 $\sigma$ )	$100\theta_{s,eq}$	0.45003	$0.4506 \pm 0.0022$ (-0.4 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2770.08$ ;  $\Delta\chi_{eff}^2 = 1585.70$ ;  $\bar{\chi}_{eff}^2 = 2797.32$ ;  $\Delta\bar{\chi}_{eff}^2 = 1591.70$ ;  $R - 1 = 0.00869$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.01 ( $\Delta$  -0.00) MGS: 1.47 ( $\Delta$  0.07) DR12BAO: 3.82 ( $\Delta$  -0.09) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.08 ( $\Delta$  0.21) commander\_dx12\_v3\_2\_29: 23.21 ( $\Delta$  -0.05) plik\_rd12\_HM\_v22b\_TTTEEE: 2343.84



## 6.44 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022432	$0.02242 \pm 0.00013$ (+1.0 $\sigma$ )	$\Omega_m h^3$	0.096700	$0.09649^{+0.00037}_{-0.00031}$ (+0.9 $\sigma$ )	$H(0.15)$	73.341	$73.10 \pm 0.41$ (+0.2 $\sigma$ )
$\Omega_c h^2$	0.11954	$0.11935 \pm 0.00097$ (+0.4 $\sigma$ )	$\sigma_8$	0.8238	$0.814^{+0.012}_{-0.0084}$ (+0.4 $\sigma$ )	$D_M(0.15)$	636.92	$639.3 \pm 4.1$ (-0.2 $\sigma$ )
$100\theta_{MC}$	1.041009	$1.04102 \pm 0.00029$ (-0.0 $\sigma$ )	$S_8$	0.8321	$0.827 \pm 0.013$ (+0.4 $\sigma$ )	$H(0.38)$	83.376	$83.18 \pm 0.31$ (+0.3 $\sigma$ )
$\tau$	0.0554	$0.0551 \pm 0.0077$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4558	$0.4528 \pm 0.0072$ (+0.4 $\sigma$ )	$D_M(0.38)$	1520.3	$1525.2 \pm 8.2$ (-0.2 $\sigma$ )
$\Sigma m_\nu$ [eV]	0.0011	$< 0.0554$ (-0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6128	$0.6072^{+0.0089}_{-0.0076}$ (+0.4 $\sigma$ )	$H(0.51)$	90.050	$89.88^{+0.27}_{-0.24}$ (+0.4 $\sigma$ )
$\ln(10^{10} A_s)$	3.0457	$3.045 \pm 0.016$ (+0.3 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9982	$0.989^{+0.014}_{-0.011}$ (+0.4 $\sigma$ )	$D_M(0.51)$	1970.3	$1976.2 \pm 9.7$ (-0.2 $\sigma$ )
$n_s$	0.96763	$0.9668 \pm 0.0037$ (+0.0 $\sigma$ )	$r_{drag} h$	100.22	$99.86 \pm 0.78$ (-0.1 $\sigma$ )	$H(0.61)$	95.638	$95.49^{+0.23}_{-0.20}$ (+0.5 $\sigma$ )
$y_{cal}$	1.00044	$1.0008 \pm 0.0025$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4458	$2.438 \pm 0.026$ (+0.4 $\sigma$ )	$D_M(0.61)$	2293.4	$2300 \pm 11$ (-0.2 $\sigma$ )
$A_{217}^{CIB}$	45.6	$47 \pm 7$ (-0.1 $\sigma$ )	$z_{re}$	7.76	$7.72 \pm 0.78$ (+0.1 $\sigma$ )	$H(2.33)$	236.00	$236.10 \pm 0.58$ (+0.6 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.66	—	$10^9 A_s$	2.1024	$2.101 \pm 0.034$ (+0.3 $\sigma$ )	$D_M(2.33)$	5746.3	$5754.0^{+9.4}_{-12}$ (-0.7 $\sigma$ )
$A_{143}^{tSZ}$	7.09	$5.5 \pm 1.9$ (+0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8819	$1.881 \pm 0.011$ (+0.4 $\sigma$ )	$f\sigma_8(0.15)$	0.4601	$0.4575 \pm 0.0068$ (+0.4 $\sigma$ )
$A_{100}^{PS}$	247.2	$257 \pm 28$ (-0.2 $\sigma$ )	$D_{40}$	1226.1	$1228 \pm 12$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7616	$0.753^{+0.011}_{-0.0076}$ (+0.4 $\sigma$ )
$A_{143}^{PS}$	50.1	$45 \pm 8$ (-0.3 $\sigma$ )	$D_{220}$	5731.1	$5737 \pm 38$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4798	$0.4764 \pm 0.0064$ (+0.4 $\sigma$ )
$A_{143 \times 217}^{PS}$	52.8	$42 \pm 9$ (-0.1 $\sigma$ )	$D_{810}$	2540.3	$2540 \pm 14$ (+0.3 $\sigma$ )	$\sigma_8(0.38)$	0.6755	$0.667^{+0.010}_{-0.0066}$ (+0.4 $\sigma$ )
$A_{217}^{PS}$	122.0	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{1420}$	818.55	$817.9 \pm 4.8$ (+0.5 $\sigma$ )	$f\sigma_8(0.51)$	0.4789	$0.4752^{+0.0064}_{-0.0056}$ (+0.4 $\sigma$ )
$A^{kSZ}$	0.01	$< 4.13$ (-0.2 $\sigma$ )	$D_{2000}$	231.58	$231.2 \pm 1.6$ (+0.7 $\sigma$ )	$\sigma_8(0.51)$	0.6323	$0.6247^{+0.0095}_{-0.0062}$ (+0.4 $\sigma$ )
$A_{100}^{dustTT}$	8.81	$8.9 \pm 1.8$ (-0.0 $\sigma$ )	$n_{s,0.002}$	0.96763	$0.9668 \pm 0.0037$ (+0.0 $\sigma$ )	$f\sigma_8(0.61)$	0.4743	$0.4704^{+0.0062}_{-0.0053}$ (+0.4 $\sigma$ )
$A_{143}^{dustTT}$	11.05	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P$	0.245420	$0.245412^{+0.000054}_{-0.000048}$ (+1.0 $\sigma$ )	$\sigma_8(0.61)$	0.6017	$0.5945^{+0.0090}_{-0.0058}$ (+0.4 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.16	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246746	$0.246739^{+0.000054}_{-0.000048}$ (+1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.30265	$0.2996^{+0.0040}_{-0.0029}$ (+0.4 $\sigma$ )
$A_{217}^{dustTT}$	95.5	$93.8 \pm 7.3$ (+0.0 $\sigma$ )	$10^5 D/H$	2.5740	$2.577 \pm 0.025$ (-1.0 $\sigma$ )	$\sigma_8(2.33)$	0.31271	$0.3091^{+0.0045}_{-0.0030}$ (+0.4 $\sigma$ )
$A_{100}^{dustTE}$	0.1145	$0.115 \pm 0.038$	Age/Gyr	13.7580	$13.776^{+0.021}_{-0.026}$ (-0.7 $\sigma$ )	$f_{2000}^{143}$	28.28	$29.2 \pm 2.7$ (-0.5 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1340	$0.135 \pm 0.029$	$z_*$	1089.795	$1089.80 \pm 0.22$ (-0.7 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.63	$32.0 \pm 1.8$ (-0.6 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.482	$0.481 \pm 0.085$	$r_*$	144.510	$144.57 \pm 0.23$ (-0.8 $\sigma$ )	$f_{2000}^{217}$	106.22	$106.8 \pm 1.8$ (-0.5 $\sigma$ )
$A_{143}^{dustTE}$	0.224	$0.224 \pm 0.054$	$100\theta_*$	1.041161	$1.04119 \pm 0.00029$ (-0.1 $\sigma$ )	$\chi_{small}^2$	396.22	$397.2 \pm 1.9$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.665	$0.664 \pm 0.079$	$D_M(z_*)/\text{Gpc}$	13.8797	$13.885 \pm 0.022$ (-0.8 $\sigma$ )	$\chi_{lowl}^2$	23.08	$23.20 \pm 0.84$ (+0.2 $\sigma$ )
$A_{217}^{dustTE}$	2.080	$2.08 \pm 0.27$	$z_{drag}$	1060.047	$1060.00 \pm 0.29$ (+1.1 $\sigma$ )	$\chi_{plik}^2$	2344.0	$2359.3 \pm 5.9$ (+286.3 $\sigma$ )
$c_{100}$	0.99973	$0.99967 \pm 0.00060$ (+0.1 $\sigma$ )	$r_{drag}$	147.151	$147.22 \pm 0.24$ (-1.0 $\sigma$ )	$\chi_{JLA}^2$	1034.839	$1035.02 \pm 0.29$ (-0.0 $\sigma$ )
$c_{217}$	0.99817	$0.99819 \pm 0.00062$ (-0.1 $\sigma$ )	$k_D$	0.140845	$0.14077 \pm 0.00029$ (+1.1 $\sigma$ )	$\chi_{6DF}^2$	0.0030	$0.042 \pm 0.057$ (-0.1 $\sigma$ )
$H_0$	68.108	$67.83 \pm 0.47$ (+0.1 $\sigma$ )	$100\theta_D$	0.160704	$0.16073 \pm 0.00017$ (-1.1 $\sigma$ )	$\chi_{MGS}^2$	1.540	$1.39 \pm 0.44$ (-0.1 $\sigma$ )
$\Omega_\Lambda$	0.6939	$0.6908 \pm 0.0061$ (-0.1 $\sigma$ )	$z_{eq}$	3392.6	$3388 \pm 22$ (+0.5 $\sigma$ )	$\chi_{DR12BAO}^2$	3.71	$4.5 \pm 1.3$ (+0.0 $\sigma$ )
$\Omega_m$	0.3061	$0.3092 \pm 0.0061$ (+0.1 $\sigma$ )	$k_{eq}$	0.010354	$0.010340 \pm 0.000068$ (+0.5 $\sigma$ )	$\chi_{prior}^2$	1.56	$11.5 \pm 4.6$ (+1.1 $\sigma$ )
$\Omega_m h^2$	0.14198	$0.14225 \pm 0.00092$ (+0.5 $\sigma$ )	$100\theta_{eq}$	0.81521	$0.8161 \pm 0.0042$ (-0.4 $\sigma$ )	$\chi_{BAO}^2$	5.254	$5.93 \pm 0.99$ (-0.0 $\sigma$ )
$\Omega_\nu h^2$	$1.2 \cdot 10^{-5}$	$< 0.000596$ (-0.2 $\sigma$ )	$100\theta_{s,eq}$	0.45033	$0.4508 \pm 0.0021$ (-0.5 $\sigma$ )	$\chi_{CMB}^2$	2763.3	$2779.7 \pm 5.8$ (+286.6 $\sigma$ )

Best-fit  $\chi_{eff}^2 = 3804.95$ ;  $\Delta\chi_{eff}^2 = 1585.66$ ;  $\bar{\chi}_{eff}^2 = 3832.15$ ;  $\Delta\bar{\chi}_{eff}^2 = 1591.61$ ;  $R - 1 = 0.01154$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.00 ( $\Delta$  -0.00) MGS: 1.54 ( $\Delta$  0.07) DR12BAO: 3.71 ( $\Delta$  -0.06) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.22 ( $\Delta$  0.34) commander\_dx12\_v3\_2\_29: 23.08 ( $\Delta$  -0.13) plik\_rd12\_HM\_v22b\_TTTEEE: 2343.99 SN - JLA Pantheon18: 1034.84 ( $\Delta$  -0.04)



# 6.45 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02241 \pm 0.00013 \quad (+1.0\sigma)$	$\Omega_{\text{m}}h^3$	$0.09648^{+0.00038}_{-0.00031} \quad (+0.9\sigma)$	$H(0.15)$	$73.04^{+0.45}_{-0.41} \quad (+0.2\sigma)$
$\Omega_{\text{c}}h^2$	$0.1194 \pm 0.0010 \quad (+0.3\sigma)$	$\sigma_8$	$0.815^{+0.013}_{-0.0080} \quad (+0.4\sigma)$	$D_{\text{M}}(0.15)$	$639.8^{+3.9}_{-4.4} \quad (-0.2\sigma)$
$100\theta_{\text{MC}}$	$1.04101 \pm 0.00029 \quad (+0.0\sigma)$	$S_8$	$0.828 \pm 0.014 \quad (+0.3\sigma)$	$H(0.38)$	$83.14^{+0.34}_{-0.30} \quad (+0.3\sigma)$
$\tau$	$0.0559^{+0.0054}_{-0.0081} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4536 \pm 0.0074 \quad (+0.3\sigma)$	$D_{\text{M}}(0.38)$	$1526.3^{+8.0}_{-9.0} \quad (-0.2\sigma)$
$\Sigma m_{\nu} [\text{eV}]$	$< 0.0586 \quad (-0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6079^{+0.0092}_{-0.0075} \quad (+0.4\sigma)$	$H(0.51)$	$89.85^{+0.28}_{-0.25} \quad (+0.4\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.047^{+0.013}_{-0.016} \quad (+0.3\sigma)$	$\sigma_8/h^{0.5}$	$0.990^{+0.015}_{-0.011} \quad (+0.3\sigma)$	$D_{\text{M}}(0.51)$	$1977.4^{+9.4}_{-11} \quad (-0.3\sigma)$
$n_{\text{s}}$	$0.9667 \pm 0.0038 \quad (+0.0\sigma)$	$r_{\text{drag}}h$	$99.76 \pm 0.83 \quad (-0.1\sigma)$	$H(0.61)$	$95.46^{+0.24}_{-0.21} \quad (+0.5\sigma)$
$y_{\text{cal}}$	$1.0008 \pm 0.0025 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.441 \pm 0.026 \quad (+0.3\sigma)$	$D_{\text{M}}(0.61)$	$2301^{+10}_{-11} \quad (-0.3\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$z_{\text{re}}$	$7.81^{+0.59}_{-0.80} \quad (+0.1\sigma)$	$H(2.33)$	$236.16 \pm 0.61 \quad (+0.5\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_{\text{s}}$	$2.104^{+0.026}_{-0.035} \quad (+0.3\sigma)$	$D_{\text{M}}(2.33)$	$5755.2^{+9.8}_{-12} \quad (-0.7\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.882 \pm 0.011 \quad (+0.4\sigma)$	$f\sigma_8(0.15)$	$0.4582 \pm 0.0070 \quad (+0.3\sigma)$
$A_{100}^{\text{PS}}$	$258 \pm 28 \quad (-0.2\sigma)$	$D_{40}$	$1229 \pm 12 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.753^{+0.012}_{-0.0072} \quad (+0.4\sigma)$
$A_{143}^{\text{PS}}$	$46 \pm 8 \quad (-0.3\sigma)$	$D_{220}$	$5737 \pm 38 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4770^{+0.0067}_{-0.0060} \quad (+0.4\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{810}$	$2540 \pm 13 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.668^{+0.010}_{-0.0062} \quad (+0.4\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{1420}$	$817.9 \pm 4.8 \quad (+0.5\sigma)$	$f\sigma_8(0.51)$	$0.4757^{+0.0065}_{-0.0055} \quad (+0.4\sigma)$
$A^{\text{kSZ}}$	$< 4.05 \quad (-0.2\sigma)$	$D_{2000}$	$231.2 \pm 1.6 \quad (+0.7\sigma)$	$\sigma_8(0.51)$	$0.6248^{+0.0098}_{-0.0058} \quad (+0.4\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$n_{\text{s},0.002}$	$0.9667 \pm 0.0038 \quad (+0.0\sigma)$	$f\sigma_8(0.61)$	$0.4708^{+0.0064}_{-0.0051} \quad (+0.4\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.245410^{+0.000054}_{-0.000048} \quad (+1.0\sigma)$	$\sigma_8(0.61)$	$0.5945^{+0.0093}_{-0.0055} \quad (+0.4\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246737^{+0.000054}_{-0.000048} \quad (+1.0\sigma)$	$f\sigma_8(2.33)$	$0.2997^{+0.0040}_{-0.0027} \quad (+0.4\sigma)$
$A_{217}^{\text{dustTT}}$	$93.8 \pm 7.3 \quad (+0.0\sigma)$	$10^5 \text{D}/\text{H}$	$2.578 \pm 0.025 \quad (-1.0\sigma)$	$\sigma_8(2.33)$	$0.3091^{+0.0047}_{-0.0028} \quad (+0.4\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$\text{Age}/\text{Gyr}$	$13.779^{+0.022}_{-0.028} \quad (-0.7\sigma)$	$f_{2000}^{143}$	$29.2 \pm 2.7 \quad (-0.5\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.029$	$z_*$	$1089.82 \pm 0.22 \quad (-0.7\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 1.8 \quad (-0.6\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.480 \pm 0.084$	$r_*$	$144.55 \pm 0.24 \quad (-0.8\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.8 \quad (-0.5\sigma)$
$A_{143}^{\text{dustTE}}$	$0.225 \pm 0.054$	$100\theta_*$	$1.04118 \pm 0.00029 \quad (-0.1\sigma)$	$\chi_{\text{simall}}^2$	$397.1 \pm 2.0 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.664 \pm 0.080$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.883 \pm 0.023 \quad (-0.8\sigma)$	$\chi_{\text{lowl}}^2$	$23.25 \pm 0.85 \quad (+0.1\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.27$	$z_{\text{drag}}$	$1059.99 \pm 0.29 \quad (+1.1\sigma)$	$\chi_{\text{plik}}^2$	$2359.1 \pm 5.9 \quad (+288.6\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$r_{\text{drag}}$	$147.20 \pm 0.24 \quad (-0.9\sigma)$	$\chi_{6\text{DF}}^2$	$0.051 \pm 0.069 \quad (-0.1\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$k_{\text{D}}$	$0.14078 \pm 0.00029 \quad (+1.1\sigma)$	$\chi_{\text{MGS}}^2$	$1.34 \pm 0.46 \quad (-0.1\sigma)$
$H_0$	$67.77 \pm 0.50 \quad (+0.2\sigma)$	$100\theta_{\text{D}}$	$0.16074 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.7 \pm 1.5 \quad (-0.0\sigma)$
$\Omega_{\Lambda}$	$0.6900^{+0.0067}_{-0.0060} \quad (-0.0\sigma)$	$z_{\text{eq}}$	$3390 \pm 23 \quad (+0.5\sigma)$	$\chi_{\text{prior}}^2$	$11.6 \pm 4.6 \quad (+1.1\sigma)$
$\Omega_{\text{m}}$	$0.3100^{+0.0060}_{-0.0067} \quad (+0.0\sigma)$	$k_{\text{eq}}$	$0.010345 \pm 0.000070 \quad (+0.5\sigma)$	$\chi_{\text{BAO}}^2$	$6.1 \pm 1.2 \quad (-0.1\sigma)$
$\Omega_{\text{m}}h^2$	$0.14236 \pm 0.00096 \quad (+0.4\sigma)$	$100\theta_{\text{eq}}$	$0.8157 \pm 0.0043 \quad (-0.4\sigma)$	$\chi_{\text{CMB}}^2$	$2779.5 \pm 5.8 \quad (+289.9\sigma)$
$\Omega_{\nu}h^2$	$< 0.000630 \quad (-0.2\sigma)$	$100\theta_{\text{s,eq}}$	$0.4506 \pm 0.0022 \quad (-0.4\sigma)$		

$\bar{\chi}_{\text{eff}}^2 = 2797.12$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.77$ ;  $R - 1 = 0.00800$



6.46 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02242 \pm 0.00013 \quad (+1.0\sigma)$	$\Omega_{\text{m}}h^3$	$0.09649^{+0.00037}_{-0.00031} \quad (+0.9\sigma)$	$H(0.15)$	$73.10 \pm 0.41 \quad (+0.2\sigma)$
$\Omega_{\text{c}}h^2$	$0.11933 \pm 0.00097 \quad (+0.4\sigma)$	$\sigma_8$	$0.815^{+0.012}_{-0.0080} \quad (+0.4\sigma)$	$D_{\text{M}}(0.15)$	$639.2 \pm 4.1 \quad (-0.2\sigma)$
$100\theta_{\text{MC}}$	$1.04102 \pm 0.00029 \quad (-0.0\sigma)$	$S_8$	$0.827 \pm 0.013 \quad (+0.4\sigma)$	$H(0.38)$	$83.18 \pm 0.31 \quad (+0.3\sigma)$
$\tau$	$0.0561^{+0.0055}_{-0.0081} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4531 \pm 0.0072 \quad (+0.4\sigma)$	$D_{\text{M}}(0.38)$	$1525.1 \pm 8.2 \quad (-0.2\sigma)$
$\Sigma m_{\nu} [\text{eV}]$	$< 0.0560 \quad (-0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6077^{+0.0089}_{-0.0074} \quad (+0.4\sigma)$	$H(0.51)$	$89.88^{+0.27}_{-0.24} \quad (+0.4\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.047^{+0.013}_{-0.016} \quad (+0.3\sigma)$	$\sigma_8/h^{0.5}$	$0.990^{+0.014}_{-0.011} \quad (+0.4\sigma)$	$D_{\text{M}}(0.51)$	$1976.0 \pm 9.7 \quad (-0.2\sigma)$
$n_{\text{s}}$	$0.9669 \pm 0.0037 \quad (+0.0\sigma)$	$r_{\text{drag}}h$	$99.88 \pm 0.78 \quad (-0.1\sigma)$	$H(0.61)$	$95.49^{+0.23}_{-0.20} \quad (+0.5\sigma)$
$y_{\text{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.440 \pm 0.025 \quad (+0.4\sigma)$	$D_{\text{M}}(0.61)$	$2300 \pm 11 \quad (-0.2\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.1\sigma)$	$z_{\text{re}}$	$7.82^{+0.60}_{-0.79} \quad (+0.1\sigma)$	$H(2.33)$	$236.09 \pm 0.58 \quad (+0.6\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_{\text{s}}$	$2.105^{+0.026}_{-0.035} \quad (+0.3\sigma)$	$D_{\text{M}}(2.33)$	$5753.9^{+9.5}_{-12} \quad (-0.7\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5 \pm 1.9 \quad (+0.2\sigma)$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.881 \pm 0.011 \quad (+0.4\sigma)$	$f\sigma_8(0.15)$	$0.4578 \pm 0.0068 \quad (+0.4\sigma)$
$A_{100}^{\text{PS}}$	$257 \pm 28 \quad (-0.2\sigma)$	$D_{40}$	$1228 \pm 12 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.753^{+0.011}_{-0.0072} \quad (+0.4\sigma)$
$A_{143}^{\text{PS}}$	$45 \pm 8 \quad (-0.4\sigma)$	$D_{220}$	$5737 \pm 38 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4767^{+0.0065}_{-0.0059} \quad (+0.4\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{810}$	$2540 \pm 14 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6680^{+0.0099}_{-0.0062} \quad (+0.4\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{1420}$	$817.9 \pm 4.8 \quad (+0.5\sigma)$	$f\sigma_8(0.51)$	$0.4756^{+0.0063}_{-0.0054} \quad (+0.4\sigma)$
$A^{\text{kSZ}}$	$< 4.08 \quad (-0.2\sigma)$	$D_{2000}$	$231.2 \pm 1.6 \quad (+0.7\sigma)$	$\sigma_8(0.51)$	$0.6252^{+0.0093}_{-0.0058} \quad (+0.4\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$n_{\text{s},0.002}$	$0.9669 \pm 0.0037 \quad (+0.0\sigma)$	$f\sigma_8(0.61)$	$0.4708^{+0.0062}_{-0.0051} \quad (+0.4\sigma)$
$A_{143}^{\text{dustTT}}$	$10.8 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.245413^{+0.000054}_{-0.000047} \quad (+1.0\sigma)$	$\sigma_8(0.61)$	$0.5950^{+0.0088}_{-0.0055} \quad (+0.4\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246740^{+0.000054}_{-0.000048} \quad (+1.0\sigma)$	$f\sigma_8(2.33)$	$0.2999^{+0.0038}_{-0.0027} \quad (+0.4\sigma)$
$A_{217}^{\text{dustTT}}$	$93.8 \pm 7.3 \quad (+0.0\sigma)$	$10^5 \text{D/H}$	$2.577 \pm 0.024 \quad (-1.0\sigma)$	$\sigma_8(2.33)$	$0.3093^{+0.0044}_{-0.0028} \quad (+0.4\sigma)$
$A_{100}^{\text{dustTE}}$	$0.115 \pm 0.038$	$\text{Age/Gyr}$	$13.776^{+0.021}_{-0.026} \quad (-0.7\sigma)$	$f_{2000}^{143}$	$29.2 \pm 2.7 \quad (-0.5\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.029$	$z_*$	$1089.80 \pm 0.22 \quad (-0.7\sigma)$	$f_{2000}^{143 \times 217}$	$31.9 \pm 1.8 \quad (-0.6\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.481 \pm 0.084$	$r_*$	$144.57 \pm 0.23 \quad (-0.8\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.8 \quad (-0.5\sigma)$
$A_{143}^{\text{dustTE}}$	$0.224 \pm 0.054$	$100\theta_*$	$1.04119 \pm 0.00029 \quad (-0.1\sigma)$	$\chi_{\text{simall}}^2$	$397.1 \pm 2.0 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.664 \pm 0.079$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.885 \pm 0.022 \quad (-0.8\sigma)$	$\chi_{\text{lowl}}^2$	$23.22 \pm 0.84 \quad (+0.2\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.27$	$z_{\text{drag}}$	$1060.00 \pm 0.29 \quad (+1.1\sigma)$	$\chi_{\text{plik}}^2$	$2359.1 \pm 5.9 \quad (+288.4\sigma)$
$c_{100}$	$0.99967 \pm 0.00060 \quad (+0.1\sigma)$	$r_{\text{drag}}$	$147.22 \pm 0.24 \quad (-1.0\sigma)$	$\chi_{\text{JLA}}^2$	$1035.02 \pm 0.28 \quad (-0.0\sigma)$
$c_{217}$	$0.99818 \pm 0.00062 \quad (-0.1\sigma)$	$k_{\text{D}}$	$0.14077 \pm 0.00029 \quad (+1.1\sigma)$	$\chi_{6\text{DF}}^2$	$0.041 \pm 0.056 \quad (-0.1\sigma)$
$H_0$	$67.84 \pm 0.48 \quad (+0.1\sigma)$	$100\theta_{\text{D}}$	$0.16073 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{\text{MGS}}^2$	$1.40 \pm 0.44 \quad (-0.1\sigma)$
$\Omega_{\Lambda}$	$0.6909 \pm 0.0061 \quad (-0.1\sigma)$	$z_{\text{eq}}$	$3387 \pm 22 \quad (+0.6\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.5 \pm 1.2 \quad (+0.0\sigma)$
$\Omega_{\text{m}}$	$0.3091 \pm 0.0061 \quad (+0.1\sigma)$	$k_{\text{eq}}$	$0.010338 \pm 0.000068 \quad (+0.6\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.6 \quad (+1.1\sigma)$
$\Omega_{\text{m}}h^2$	$0.14224 \pm 0.00091 \quad (+0.5\sigma)$	$100\theta_{\text{eq}}$	$0.8162 \pm 0.0042 \quad (-0.4\sigma)$	$\chi_{\text{BAO}}^2$	$5.92 \pm 0.97 \quad (-0.0\sigma)$
$\Omega_{\nu}h^2$	$< 0.000602 \quad (-0.2\sigma)$	$100\theta_{\text{s,eq}}$	$0.4509 \pm 0.0021 \quad (-0.5\sigma)$	$\chi_{\text{CMB}}^2$	$2779.5 \pm 5.8 \quad (+290.6\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 3831.97; \Delta\bar{\chi}_{\text{eff}}^2 = 1591.68; R - 1 = 0.01168$$



## 6.47 base\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022216	$0.02222 \pm 0.00019$	$\sigma_8 \Omega_m^{0.5}$	0.4545	$0.450^{+0.010}_{-0.0086}$	$D_M(0.15)$	638.1	$640.6 \pm 5.0$
$\Omega_c h^2$	0.11938	$0.1189 \pm 0.0013$	$\sigma_8 \Omega_m^{0.25}$	0.6109	$0.603^{+0.013}_{-0.0088}$	$H(0.38)$	83.233	$83.02 \pm 0.39$
$100\theta_{MC}$	1.041014	$1.04105 \pm 0.00042$	$\sigma_8/h^{0.5}$	0.9958	$0.982^{+0.020}_{-0.013}$	$D_M(0.38)$	1523.1	$1528 \pm 10$
$\tau$	0.0531	$0.0536 \pm 0.0079$	$r_{drag}h$	100.22	$99.88 \pm 0.97$	$H(0.51)$	89.903	$89.71 \pm 0.33$
$\Sigma m_\nu$ [eV]	0.0034	$< 0.0747$	$\langle d^2 \rangle^{1/2}$	2.4386	$2.424^{+0.032}_{-0.029}$	$D_M(0.51)$	1973.8	$1980 \pm 12$
$\ln(10^{10} A_s)$	3.0387	$3.038 \pm 0.016$	$z_{re}$	7.57	$7.61 \pm 0.81$	$H(0.61)$	95.485	$95.31 \pm 0.29$
$n_s$	0.96698	$0.9674 \pm 0.0044$	$10^9 A_s$	2.0878	$2.088 \pm 0.034$	$D_M(0.61)$	2297.4	$2304 \pm 13$
$y_{cal}$	1.00052	$1.0005 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8776	$1.875 \pm 0.012$	$H(2.33)$	235.69	$235.71 \pm 0.77$
$A_{100}^{PS}$	234.1	$242 \pm 25$	$D_{40}$	1223.0	$1222 \pm 13$	$D_M(2.33)$	5755.3	$5764^{+13}_{-15}$
$A_{143}^{PS}$	43.5	$40 \pm 8$	$D_{220}$	5706.7	$5709 \pm 40$	$f\sigma_8(0.15)$	0.4588	$0.4543^{+0.0096}_{-0.0080}$
$A_{217}^{PS}$	101.9	$101 \pm 10$	$D_{810}$	2534.3	$2533 \pm 14$	$\sigma_8(0.15)$	0.7590	$0.747^{+0.015}_{-0.0082}$
$A_{217}^{CIB}$	44.6	$41 \pm 7$	$D_{1420}$	815.3	$815.0 \pm 5.1$	$f\sigma_8(0.38)$	0.4784	$0.4730^{+0.0092}_{-0.0070}$
$A_{143}^{tSZ}$	6.47	$3.8^{+1.8}_{-2.6}$	$D_{2000}$	230.14	$229.9 \pm 1.8$	$\sigma_8(0.38)$	0.6731	$0.662^{+0.014}_{-0.0071}$
$r_{143 \times 217}^{PS}$	0.626	$0.65 \pm 0.13$	$n_{s,0.002}$	0.96698	$0.9674 \pm 0.0044$	$f\sigma_8(0.51)$	0.4775	$0.4719^{+0.0089}_{-0.0064}$
$r_{143 \times 217}^{CIB}$	0.839	$0.58^{+0.40}_{-0.15}$	$Y_P$	0.245333	$0.245331^{+0.000087}_{-0.000073}$	$\sigma_8(0.51)$	0.6301	$0.620^{+0.013}_{-0.0066}$
$\xi^{tSZ \times CIB}$	0.29	—	$Y_P^{BBN}$	0.246659	$0.246657^{+0.000087}_{-0.000073}$	$f\sigma_8(0.61)$	0.4728	$0.4671^{+0.0087}_{-0.0059}$
$A^{kSZ}$	0.3	—	$10^5 D/H$	2.6148	$2.615 \pm 0.037$	$\sigma_8(0.61)$	0.5996	$0.590^{+0.012}_{-0.0063}$
$A_{100}^{dust}$	1.013	$1.01 \pm 0.19$	Age/Gyr	13.7795	$13.801^{+0.031}_{-0.036}$	$f\sigma_8(2.33)$	0.30158	$0.2976^{+0.0052}_{-0.0030}$
$A_{143}^{dust}$	0.992	$0.98 \pm 0.17$	$z_*$	1090.057	$1090.02 \pm 0.30$	$\sigma_8(2.33)$	0.31158	$0.3068^{+0.0060}_{-0.0032}$
$A_{217}^{dust}$	0.969	$0.97 \pm 0.10$	$r_*$	144.715	$144.83 \pm 0.33$	$f_{2000}^{143}$	30.50	$30.5 \pm 3.0$
$A_{143 \times 217}^{dust}$	0.996	$1.03 \pm 0.16$	$100\theta_*$	1.041179	$1.04125 \pm 0.00042$	$f_{2000}^{217}$	107.13	$107.4 \pm 2.0$
$c_{100}$	0.99764	$0.9975 \pm 0.0010$	$D_M(z_*)/\text{Gpc}$	13.8991	$13.909 \pm 0.032$	$f_{2000}^{143 \times 217}$	32.49	$32.7 \pm 2.1$
$c_{217}$	1.00136	$1.0012 \pm 0.0016$	$z_{drag}$	1059.513	$1059.51 \pm 0.44$	$\chi_{small}^2$	395.87	$397.0 \pm 1.8$
$H_0$	67.98	$67.69 \pm 0.59$	$r_{drag}$	147.435	$147.55 \pm 0.36$	$\chi_{lowl}^2$	22.93	$22.85 \pm 0.93$
$\Omega_\Lambda$	0.6935	$0.6904 \pm 0.0075$	$k_D$	0.140385	$0.14027 \pm 0.00045$	$\chi_{CamSpec}^2$	7050.5	$7063.9 \pm 5.6$
$\Omega_m$	0.3065	$0.3096 \pm 0.0075$	$100\theta_D$	0.161006	$0.16103 \pm 0.00026$	$\chi_{6DF}^2$	0.0029	$0.054 \pm 0.073$
$\Omega_m h^2$	0.14164	$0.1418 \pm 0.0012$	$z_{eq}$	3383.8	$3373 \pm 31$	$\chi_{MGS}^2$	1.54	$1.42 \pm 0.55$
$\Omega_\nu h^2$	0.000037	$< 0.000804$	$k_{eq}$	0.010327	$0.010295 \pm 0.000093$	$\chi_{DR12BAO}^2$	3.66	$4.6 \pm 1.5$
$\Omega_m h^3$	0.09628	$0.09599^{+0.00057}_{-0.00049}$	$100\theta_{eq}$	0.8162	$0.8183^{+0.0053}_{-0.0060}$	$\chi_{prior}^2$	2.06	$7.6 \pm 3.5$
$\sigma_8$	0.8210	$0.808^{+0.017}_{-0.0092}$	$100\theta_{s,eq}$	0.45101	$0.4521^{+0.0027}_{-0.0031}$	$\chi_{BAO}^2$	5.21	$6.1 \pm 1.3$
$S_8$	0.8299	$0.821^{+0.019}_{-0.016}$	$H(0.15)$	73.21	$72.95 \pm 0.51$	$\chi_{CMB}^2$	7469.3	$7483.8 \pm 5.6$

Best-fit  $\chi_{eff}^2 = 7476.59$ ;  $\bar{\chi}_{eff}^2 = 7497.48$ ;  $R - 1 = 0.00749$

$\chi_{eff}^2$ : BAO - 6DF: 0.00 MGS: 1.54 DR12BAO: 3.66 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 commander\_dx12\_v3.2\_29: 22.93 CamSpec like\_10.7HM: 7050.52



# 6.48 base\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}} h^2$	0.022200	$0.02223 \pm 0.00019$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	0.6099	$0.602^{+0.012}_{-0.0086}$	$D_{\mathrm{M}}(0.38)$	1523.3	$1526.9 \pm 9.7$
$\Omega_{\mathrm{c}} h^2$	0.11938	$0.1188 \pm 0.0013$	$\sigma_8/h^{0.5}$	0.9942	$0.982^{+0.019}_{-0.013}$	$H(0.51)$	89.891	$89.75 \pm 0.32$
$100\theta_{\mathrm{MC}}$	1.040996	$1.04107 \pm 0.00042$	$r_{\mathrm{drag}} h$	100.22	$100.02 \pm 0.92$	$D_{\mathrm{M}}(0.51)$	1974.1	$1978 \pm 12$
$\tau$	0.0517	$0.0538 \pm 0.0080$	$\langle d^2 \rangle^{1/2}$	2.4362	$2.422^{+0.032}_{-0.028}$	$H(0.61)$	95.473	$95.35 \pm 0.28$
$\Sigma m_{\nu}$ [eV]	0.0009	$< 0.0722$	$z_{\mathrm{re}}$	7.43	$7.62 \pm 0.81$	$D_{\mathrm{M}}(0.61)$	2297.7	$2303 \pm 13$
$\ln(10^{10} A_{\mathrm{s}})$	3.0354	$3.038 \pm 0.017$	$10^9 A_{\mathrm{s}}$	2.0809	$2.088 \pm 0.034$	$H(2.33)$	235.66	$235.62 \pm 0.74$
$n_{\mathrm{s}}$	0.96625	$0.9677 \pm 0.0044$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8765	$1.874 \pm 0.012$	$D_{\mathrm{M}}(2.33)$	5756.0	$5763^{+13}_{-15}$
$y_{\mathrm{cal}}$	1.00035	$1.0005 \pm 0.0025$	$D_{40}$	1223.7	$1222 \pm 13$	$f\sigma_8(0.15)$	0.4581	$0.4536^{+0.0093}_{-0.0077}$
$A_{100}^{\mathrm{PS}}$	236.9	$243 \pm 25$	$D_{220}$	5706.1	$5710 \pm 40$	$\sigma_8(0.15)$	0.7578	$0.747^{+0.015}_{-0.0082}$
$A_{143}^{\mathrm{PS}}$	39.2	$40 \pm 8$	$D_{810}$	2532.5	$2533 \pm 14$	$f\sigma_8(0.38)$	0.4775	$0.4726^{+0.0089}_{-0.0067}$
$A_{217}^{\mathrm{PS}}$	99.97	$101 \pm 10$	$D_{1420}$	814.4	$815.1 \pm 5.1$	$\sigma_8(0.38)$	0.6720	$0.663^{+0.013}_{-0.0071}$
$A_{217}^{\mathrm{CIB}}$	46.1	$41 \pm 7$	$D_{2000}$	229.76	$229.9 \pm 1.8$	$f\sigma_8(0.51)$	0.4766	$0.4716^{+0.0086}_{-0.0062}$
$A_{143}^{\mathrm{tSZ}}$	6.64	$3.8^{+1.8}_{-2.6}$	$n_{\mathrm{s},0.002}$	0.96625	$0.9677 \pm 0.0044$	$\sigma_8(0.51)$	0.6290	$0.620^{+0.012}_{-0.0066}$
$r_{143 \times 217}^{\mathrm{PS}}$	0.559	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	0.245326	$0.245335^{+0.000086}_{-0.000073}$	$f\sigma_8(0.61)$	0.4720	$0.4669^{+0.0084}_{-0.0058}$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.806	$0.58^{+0.39}_{-0.15}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246652	$0.246662^{+0.000086}_{-0.000073}$	$\sigma_8(0.61)$	0.5986	$0.590^{+0.012}_{-0.0063}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.00	—	$10^5 \mathrm{D}/\mathrm{H}$	2.6180	$2.613 \pm 0.037$	$f\sigma_8(2.33)$	0.30105	$0.2977^{+0.0051}_{-0.0030}$
$A^{\mathrm{kSZ}}$	0.2	—	Age/Gyr	13.7811	$13.798^{+0.030}_{-0.035}$	$\sigma_8(2.33)$	0.31103	$0.3070^{+0.0057}_{-0.0032}$
$A_{100}^{\mathrm{dust}}$	1.008	$1.01 \pm 0.19$	$z_*$	1090.077	$1089.99 \pm 0.29$	$f_{2000}^{143}$	30.85	$30.5 \pm 3.0$
$A_{143}^{\mathrm{dust}}$	0.988	$0.98 \pm 0.17$	$r_*$	144.728	$144.86 \pm 0.33$	$f_{2000}^{217}$	107.38	$107.3 \pm 2.0$
$A_{217}^{\mathrm{dust}}$	0.963	$0.97 \pm 0.10$	$100\theta_*$	1.041170	$1.04127 \pm 0.00042$	$f_{2000}^{143 \times 217}$	32.74	$32.7 \pm 2.1$
$A_{143 \times 217}^{\mathrm{dust}}$	0.996	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.9005	$13.911 \pm 0.032$	$\chi_{\mathrm{small}}^2$	395.76	$397.0 \pm 1.8$
$c_{100}$	0.99759	$0.9975 \pm 0.0010$	$z_{\mathrm{drag}}$	1059.475	$1059.52 \pm 0.44$	$\chi_{\mathrm{lowl}}^2$	23.01	$22.80 \pm 0.91$
$c_{217}$	1.00140	$1.0012 \pm 0.0016$	$r_{\mathrm{drag}}$	147.454	$147.57 \pm 0.35$	$\chi_{\mathrm{CamSpec}}^2$	7050.4	$7064.0 \pm 5.7$
$H_0$	67.97	$67.78 \pm 0.56$	$k_{\mathrm{D}}$	0.140352	$0.14025 \pm 0.00045$	$\chi_{\mathrm{JLA}}^2$	1034.853	$1035.02 \pm 0.31$
$\Omega_{\Lambda}$	0.6935	$0.6915 \pm 0.0071$	$100\theta_{\mathrm{D}}$	0.161028	$0.16102 \pm 0.00025$	$\chi_{6\mathrm{DF}}^2$	0.0030	$0.044 \pm 0.061$
$\Omega_{\mathrm{m}}$	0.3065	$0.3085 \pm 0.0071$	$z_{\mathrm{eq}}$	3383.4	$3370 \pm 30$	$\chi_{\mathrm{MGS}}^2$	1.54	$1.49 \pm 0.53$
$\Omega_{\mathrm{m}} h^2$	0.14159	$0.1417 \pm 0.0011$	$k_{\mathrm{eq}}$	0.010326	$0.010286 \pm 0.000090$	$\chi_{\mathrm{DR12BAO}}^2$	3.66	$4.4 \pm 1.3$
$\Omega_{\nu} h^2$	$0.96 \cdot 10^{-5}$	$< 0.000776$	$100\theta_{\mathrm{eq}}$	0.8162	$0.8188^{+0.0051}_{-0.0058}$	$\chi_{\mathrm{prior}}^2$	2.18	$7.6 \pm 3.4$
$\Omega_{\mathrm{m}} h^3$	0.09623	$0.09601^{+0.00056}_{-0.00048}$	$100\theta_{\mathrm{s,eq}}$	0.45103	$0.4524^{+0.0026}_{-0.0030}$	$\chi_{\mathrm{BAO}}^2$	5.206	$5.9 \pm 1.0$
$\sigma_8$	0.8197	$0.808^{+0.016}_{-0.0090}$	$H(0.15)$	73.195	$73.02 \pm 0.49$	$\chi_{\mathrm{CMB}}^2$	7469.2	$7483.8 \pm 5.6$
$S_8$	0.8285	$0.819^{+0.018}_{-0.015}$	$D_{\mathrm{M}}(0.15)$	638.21	$639.9 \pm 4.8$			
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	0.4538	$0.4488^{+0.0099}_{-0.0082}$	$H(0.38)$	83.222	$83.07 \pm 0.38$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 8511.39$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 8532.36$ ;  $R - 1 = 0.00853$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.54 DR12BAO: 3.66 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.76 commander\_dx12\_v3.2.29: 23.01 CamSpec like\_10.7HM: 7050.38  
SN - JLA Pantheon18: 1034.85



## 6.49 base\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02222 \pm 0.00019$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.450^{+0.010}_{-0.0086}$	$D_{\mathrm{M}}(0.15)$	$640.5 \pm 5.0$
$\Omega_{\mathrm{c}} h^2$	$0.1189 \pm 0.0013$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.603^{+0.012}_{-0.0087}$	$H(0.38)$	$83.03 \pm 0.40$
$100\theta_{\mathrm{MC}}$	$1.04105 \pm 0.00042$	$\sigma_8/h^{0.5}$	$0.983^{+0.019}_{-0.013}$	$D_{\mathrm{M}}(0.38)$	$1528 \pm 10$
$\tau$	$0.0549^{+0.0051}_{-0.0082}$	$r_{\mathrm{drag}} h$	$99.90 \pm 0.97$	$H(0.51)$	$89.72 \pm 0.33$
$\Sigma m_{\nu} [\mathrm{eV}]$	$< 0.0752$	$\langle d^2 \rangle^{1/2}$	$2.426^{+0.031}_{-0.028}$	$D_{\mathrm{M}}(0.51)$	$1980 \pm 12$
$\ln(10^{10} A_{\mathrm{s}})$	$3.041^{+0.012}_{-0.016}$	$z_{\mathrm{re}}$	$7.75^{+0.56}_{-0.81}$	$H(0.61)$	$95.32 \pm 0.29$
$n_{\mathrm{s}}$	$0.9675 \pm 0.0044$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.025}_{-0.034}$	$D_{\mathrm{M}}(0.61)$	$2304 \pm 13$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.875 \pm 0.012$	$H(2.33)$	$235.70 \pm 0.77$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25$	$D_{40}$	$1222 \pm 13$	$D_{\mathrm{M}}(2.33)$	$5764^{+13}_{-16}$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8$	$D_{220}$	$5709 \pm 40$	$f\sigma_8(0.15)$	$0.4547^{+0.0096}_{-0.0080}$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{810}$	$2533 \pm 14$	$\sigma_8(0.15)$	$0.748^{+0.015}_{-0.0079}$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{1420}$	$815.0 \pm 5.1$	$f\sigma_8(0.38)$	$0.4735^{+0.0091}_{-0.0069}$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$D_{2000}$	$229.9 \pm 1.8$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.0068}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9675 \pm 0.0044$	$f\sigma_8(0.51)$	$0.4723^{+0.0088}_{-0.0062}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.58^{+0.39}_{-0.15}$	$Y_{\mathrm{P}}$	$0.245333^{+0.000087}_{-0.000073}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.0064}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246659^{+0.000087}_{-0.000073}$	$f\sigma_8(0.61)$	$0.4676^{+0.0086}_{-0.0058}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.614 \pm 0.037$	$\sigma_8(0.61)$	$0.591^{+0.012}_{-0.0060}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$\mathrm{Age}/\mathrm{Gyr}$	$13.801^{+0.031}_{-0.036}$	$f\sigma_8(2.33)$	$0.2979^{+0.0051}_{-0.0028}$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.18$	$z_*$	$1090.01 \pm 0.30$	$\sigma_8(2.33)$	$0.3072^{+0.0058}_{-0.0031}$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$r_*$	$144.83 \pm 0.33$	$f_{2000}^{143}$	$30.4 \pm 3.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04126 \pm 0.00042$	$f_{2000}^{217}$	$107.3 \pm 2.0$
$c_{100}$	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.909 \pm 0.032$	$f_{2000}^{143 \times 217}$	$32.7 \pm 2.1$
$c_{217}$	$1.0012 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.51 \pm 0.44$	$\chi_{\mathrm{small}}^2$	$396.9 \pm 1.8$
$H_0$	$67.71 \pm 0.59$	$r_{\mathrm{drag}}$	$147.55 \pm 0.36$	$\chi_{\mathrm{lowl}}^2$	$22.86 \pm 0.93$
$\Omega_{\Lambda}$	$0.6906 \pm 0.0076$	$k_{\mathrm{D}}$	$0.14027 \pm 0.00045$	$\chi_{\mathrm{CamSpec}}^2$	$7063.8 \pm 5.6$
$\Omega_{\mathrm{m}}$	$0.3094 \pm 0.0076$	$100\theta_{\mathrm{D}}$	$0.16102 \pm 0.00026$	$\chi_{6\mathrm{DF}}^2$	$0.053 \pm 0.072$
$\Omega_{\mathrm{m}} h^2$	$0.1418 \pm 0.0012$	$z_{\mathrm{eq}}$	$3372 \pm 31$	$\chi_{\mathrm{MGS}}^2$	$1.43 \pm 0.55$
$\Omega_{\nu} h^2$	$< 0.000808$	$k_{\mathrm{eq}}$	$0.010293 \pm 0.000093$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.5$
$\Omega_{\mathrm{m}} h^3$	$0.09599^{+0.00057}_{-0.00049}$	$100\theta_{\mathrm{eq}}$	$0.8184^{+0.0053}_{-0.0059}$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.5$
$\sigma_8$	$0.809^{+0.016}_{-0.0088}$	$100\theta_{\mathrm{s,eq}}$	$0.4522^{+0.0028}_{-0.0031}$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.3$
$S_8$	$0.821^{+0.019}_{-0.016}$	$H(0.15)$	$72.96 \pm 0.51$	$\chi_{\mathrm{CMB}}^2$	$7483.6 \pm 5.5$

$$\bar{\chi}_{\mathrm{eff}}^2 = 7497.29; R - 1 = 0.00759$$



## 6.50 base\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_post\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02223 \pm 0.00019$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.603^{+0.012}_{-0.0085}$	$D_{\mathrm{M}}(0.38)$	$1526.7 \pm 9.7$
$\Omega_{\mathrm{c}} h^2$	$0.1188 \pm 0.0013$	$\sigma_8 / h^{0.5}$	$0.983^{+0.019}_{-0.012}$	$H(0.51)$	$89.76 \pm 0.32$
$100\theta_{\mathrm{MC}}$	$1.04107 \pm 0.00042$	$r_{\mathrm{drag}} h$	$100.04 \pm 0.92$	$D_{\mathrm{M}}(0.51)$	$1978 \pm 12$
$\tau$	$0.0550^{+0.0051}_{-0.0083}$	$\langle d^2 \rangle^{1/2}$	$2.425^{+0.030}_{-0.028}$	$H(0.61)$	$95.35 \pm 0.28$
$\Sigma m_{\nu} [\mathrm{eV}]$	$< 0.0724$	$z_{\mathrm{re}}$	$7.75^{+0.56}_{-0.83}$	$D_{\mathrm{M}}(0.61)$	$2302 \pm 13$
$\ln(10^{10} A_{\mathrm{s}})$	$3.041^{+0.012}_{-0.016}$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.025}_{-0.035}$	$H(2.33)$	$235.61 \pm 0.74$
$n_{\mathrm{s}}$	$0.9678 \pm 0.0044$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.874 \pm 0.012$	$D_{\mathrm{M}}(2.33)$	$5763^{+13}_{-15}$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{40}$	$1222 \pm 13$	$f\sigma_8(0.15)$	$0.4540^{+0.0092}_{-0.0077}$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25$	$D_{220}$	$5710 \pm 40$	$\sigma_8(0.15)$	$0.748^{+0.015}_{-0.0079}$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8$	$D_{810}$	$2533 \pm 14$	$f\sigma_8(0.38)$	$0.4731^{+0.0088}_{-0.0067}$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{1420}$	$815.1 \pm 5.1$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.0068}$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{2000}$	$230.0 \pm 1.8$	$f\sigma_8(0.51)$	$0.4720^{+0.0085}_{-0.0061}$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$n_{\mathrm{s},0.002}$	$0.9678 \pm 0.0044$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.0064}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	$0.245337^{+0.000085}_{-0.000073}$	$f\sigma_8(0.61)$	$0.4673^{+0.0082}_{-0.0057}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.58^{+0.39}_{-0.15}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246663^{+0.000086}_{-0.000073}$	$\sigma_8(0.61)$	$0.591^{+0.011}_{-0.0060}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.612 \pm 0.036$	$f\sigma_8(2.33)$	$0.2981^{+0.0049}_{-0.0028}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.797^{+0.030}_{-0.035}$	$\sigma_8(2.33)$	$0.3074^{+0.0056}_{-0.0031}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$z_*$	$1089.98 \pm 0.29$	$f_{2000}^{143}$	$30.4 \pm 3.0$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.17$	$r_*$	$144.86 \pm 0.33$	$f_{2000}^{217}$	$107.3 \pm 2.0$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04127 \pm 0.00042$	$f_{2000}^{143 \times 217}$	$32.6 \pm 2.1$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.912 \pm 0.032$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.8$
$c_{100}$	$0.9975 \pm 0.0010$	$z_{\mathrm{drag}}$	$1059.53 \pm 0.44$	$\chi_{\mathrm{lowl}}^2$	$22.81 \pm 0.91$
$c_{217}$	$1.0012 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.57 \pm 0.35$	$\chi_{\mathrm{CamSpec}}^2$	$7063.9 \pm 5.7$
$H_0$	$67.79 \pm 0.56$	$k_{\mathrm{D}}$	$0.14025 \pm 0.00045$	$\chi_{\mathrm{JLA}}^2$	$1035.02 \pm 0.31$
$\Omega_{\Lambda}$	$0.6917 \pm 0.0071$	$100\theta_{\mathrm{D}}$	$0.16102 \pm 0.00025$	$\chi_{6\mathrm{DF}}^2$	$0.044 \pm 0.060$
$\Omega_{\mathrm{m}}$	$0.3083 \pm 0.0071$	$z_{\mathrm{eq}}$	$3369 \pm 30$	$\chi_{\mathrm{MGS}}^2$	$1.50 \pm 0.53$
$\Omega_{\mathrm{m}} h^2$	$0.1416 \pm 0.0011$	$k_{\mathrm{eq}}$	$0.010284 \pm 0.000090$	$\chi_{\mathrm{DR12BAO}}^2$	$4.4 \pm 1.3$
$\Omega_{\nu} h^2$	$< 0.000778$	$100\theta_{\mathrm{eq}}$	$0.8190^{+0.0051}_{-0.0057}$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.4$
$\Omega_{\mathrm{m}} h^3$	$0.09601^{+0.00057}_{-0.00049}$	$100\theta_{\mathrm{s,eq}}$	$0.4524^{+0.0026}_{-0.0030}$	$\chi_{\mathrm{BAO}}^2$	$5.9 \pm 1.0$
$\sigma_8$	$0.809^{+0.016}_{-0.0088}$	$H(0.15)$	$73.03 \pm 0.49$	$\chi_{\mathrm{CMB}}^2$	$7483.6 \pm 5.6$
$S_8$	$0.820^{+0.018}_{-0.015}$	$D_{\mathrm{M}}(0.15)$	$639.8 \pm 4.8$		
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4492^{+0.0098}_{-0.0082}$	$H(0.38)$	$83.08 \pm 0.38$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 8532.17; R - 1 = 0.00943$$



## 6.51 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022331	$0.02234 \pm 0.00015$ (+0.6 $\sigma$ )	$S_8$	0.8271	$0.820 \pm 0.015$ (−0.1 $\sigma$ )	$D_M(0.15)$	637.06	$640.1^{+4.3}_{-5.0}$ (−0.1 $\sigma$ )
$\Omega_c h^2$	0.11924	$0.1189 \pm 0.0011$ (+0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4530	$0.4489 \pm 0.0081$ (−0.1 $\sigma$ )	$H(0.38)$	83.331	$83.08^{+0.39}_{-0.33}$ (+0.2 $\sigma$ )
$100\theta_{MC}$	1.040959	$1.04095 \pm 0.00030$ (−0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6094	$0.602^{+0.011}_{-0.0082}$ (−0.1 $\sigma$ )	$D_M(0.38)$	1520.8	$1527.1^{+8.7}_{-10}$ (−0.1 $\sigma$ )
$\tau$	0.0530	$0.0534 \pm 0.0079$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9933	$0.981^{+0.017}_{-0.012}$ (−0.1 $\sigma$ )	$H(0.51)$	89.993	$89.77^{+0.33}_{-0.27}$ (+0.2 $\sigma$ )
$\Sigma m_\nu$ [eV]	0.0046	< 0.0757 (+0.0 $\sigma$ )	$r_{drag} h$	100.34	$99.88 \pm 0.90$ (−0.0 $\sigma$ )	$D_M(0.51)$	1971.1	$1979^{+10}_{-12}$ (−0.1 $\sigma$ )
$\ln(10^{10} A_s)$	3.0382	$3.038 \pm 0.016$ (−0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4352	$2.423 \pm 0.027$ (−0.0 $\sigma$ )	$H(0.61)$	95.569	$95.38^{+0.29}_{-0.23}$ (+0.2 $\sigma$ )
$n_s$	0.96730	$0.9675 \pm 0.0039$ (+0.0 $\sigma$ )	$z_{re}$	7.54	$7.56 \pm 0.80$ (−0.1 $\sigma$ )	$D_M(0.61)$	2294.4	$2303^{+11}_{-13}$ (−0.1 $\sigma$ )
$y_{cal}$	1.00028	$1.0005 \pm 0.0025$ (−0.0 $\sigma$ )	$10^9 A_s$	2.0868	$2.087 \pm 0.034$ (−0.0 $\sigma$ )	$H(2.33)$	235.71	$235.83 \pm 0.65$ (+0.1 $\sigma$ )
$A_{100}^{PS}$	232.4	$239 \pm 25$ (−0.1 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8768	$1.876 \pm 0.011$ (+0.1 $\sigma$ )	$D_M(2.33)$	5750.8	$5761^{+11}_{-14}$ (−0.2 $\sigma$ )
$A_{143}^{PS}$	41.7	$39 \pm 8$ (−0.2 $\sigma$ )	$D_{40}$	1222.9	$1223 \pm 12$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4574	$0.4537 \pm 0.0076$ (−0.1 $\sigma$ )
$A_{217}^{PS}$	102.5	$103 \pm 10$ (+0.1 $\sigma$ )	$D_{220}$	5715.7	$5720 \pm 39$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7579	$0.746^{+0.014}_{-0.0083}$ (−0.0 $\sigma$ )
$A_{217}^{CIB}$	43.9	$39 \pm 7$ (−0.2 $\sigma$ )	$D_{810}$	2534.1	$2534 \pm 14$ (+0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.4771	$0.4725^{+0.0077}_{-0.0065}$ (−0.1 $\sigma$ )
$A_{143}^{tSZ}$	6.59	$3.9^{+1.9}_{-2.5}$ (+0.1 $\sigma$ )	$D_{1420}$	815.88	$816.1 \pm 4.8$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6723	$0.662^{+0.013}_{-0.0073}$ (−0.0 $\sigma$ )
$r_{143 \times 217}^{PS}$	0.630	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$D_{2000}$	230.49	$230.4 \pm 1.6$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.4764	$0.4714^{+0.0077}_{-0.0060}$ (−0.1 $\sigma$ )
$r_{143 \times 217}^{CIB}$	0.803	$0.56^{+0.40}_{-0.18}$ (−0.1 $\sigma$ )	$n_{s,0.002}$	0.96730	$0.9675 \pm 0.0039$ (+0.0 $\sigma$ )	$\sigma_8(0.51)$	0.6294	$0.619^{+0.012}_{-0.0068}$ (−0.0 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.26	—	$Y_P$	0.245380	$0.245381^{+0.000061}_{-0.000055}$ (+0.6 $\sigma$ )	$f\sigma_8(0.61)$	0.4718	$0.4666^{+0.0076}_{-0.0056}$ (−0.1 $\sigma$ )
$A^{kSZ}$	0.01	$4.7^{+2.3}_{-4.0}$ (−0.1 $\sigma$ )	$Y_P^{BBN}$	0.246706	$0.246707^{+0.000062}_{-0.000055}$ (+0.6 $\sigma$ )	$\sigma_8(0.61)$	0.5990	$0.589^{+0.012}_{-0.0065}$ (−0.0 $\sigma$ )
$A_{100}^{dust}$	1.011	$1.01 \pm 0.19$ (+0.0 $\sigma$ )	$10^5 D/H$	2.5929	$2.592 \pm 0.028$ (−0.6 $\sigma$ )	$f\sigma_8(2.33)$	0.30133	$0.2974^{+0.0051}_{-0.0031}$ (−0.0 $\sigma$ )
$A_{143}^{dust}$	0.975	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	Age/Gyr	13.7692	$13.792^{+0.025}_{-0.033}$ (−0.3 $\sigma$ )	$\sigma_8(2.33)$	0.31136	$0.3066^{+0.0059}_{-0.0033}$ (−0.0 $\sigma$ )
$A_{217}^{dust}$	0.973	$0.98 \pm 0.10$ (+0.1 $\sigma$ )	$z_*$	1089.897	$1089.87 \pm 0.24$ (−0.5 $\sigma$ )	$f_{2000}^{143}$	29.72	$29.5 \pm 2.8$ (−0.3 $\sigma$ )
$A_{143 \times 217}^{dust}$	1.006	$1.03 \pm 0.16$ (−0.0 $\sigma$ )	$r_*$	144.664	$144.74 \pm 0.26$ (−0.3 $\sigma$ )	$f_{2000}^{217}$	106.53	$106.8 \pm 1.9$ (−0.3 $\sigma$ )
$c_{100}$	0.99768	$0.9975 \pm 0.0011$ (+0.0 $\sigma$ )	$100\theta_*$	1.041115	$1.04114 \pm 0.00030$ (−0.3 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.88	$32.0 \pm 2.0$ (−0.3 $\sigma$ )
$c_{217}$	1.00130	$1.0011 \pm 0.0016$ (−0.1 $\sigma$ )	$D_M(z_*)/\text{Gpc}$	13.8951	$13.902 \pm 0.025$ (−0.2 $\sigma$ )	$\chi_{small}^2$	395.85	$396.9 \pm 1.7$ (−0.0 $\sigma$ )
$c_{TE}$	0.99638	$0.9968 \pm 0.0049$	$z_{drag}$	1059.780	$1059.78 \pm 0.32$ (+0.6 $\sigma$ )	$\chi_{lowl}^2$	22.91	$22.85 \pm 0.83$ (−0.0 $\sigma$ )
$c_{EE}$	0.99209	$0.9923 \pm 0.0049$	$r_{drag}$	147.344	$147.41 \pm 0.27$ (−0.4 $\sigma$ )	$\chi_{CamSpec}^2$	11499.2	$11514.8 \pm 5.8$ (+788.2 $\sigma$ )
$H_0$	68.10	$67.75^{+0.58}_{-0.51}$ (+0.1 $\sigma$ )	$k_D$	0.140566	$0.14050 \pm 0.00033$ (+0.5 $\sigma$ )	$\chi_{6DF}^2$	0.0009	$0.049 \pm 0.069$ (−0.1 $\sigma$ )
$\Omega_\Lambda$	0.6946	$0.6907^{+0.0074}_{-0.0065}$ (+0.0 $\sigma$ )	$100\theta_D$	0.160845	$0.16085 \pm 0.00019$ (−0.7 $\sigma$ )	$\chi_{MGS}^2$	1.61	$1.41 \pm 0.50$ (−0.0 $\sigma$ )
$\Omega_m$	0.3054	$0.3093^{+0.0065}_{-0.0074}$ (−0.0 $\sigma$ )	$z_{eq}$	3383.1	$3376 \pm 25$ (+0.1 $\sigma$ )	$\chi_{DR12BAO}^2$	3.59	$4.6 \pm 1.5$ (−0.0 $\sigma$ )
$\Omega_m h^2$	0.14162	$0.1419 \pm 0.0010$ (+0.1 $\sigma$ )	$k_{eq}$	0.010325	$0.010304 \pm 0.000075$ (+0.1 $\sigma$ )	$\chi_{prior}^2$	2.14	$7.8 \pm 3.4$ (+0.1 $\sigma$ )
$\Omega_\nu h^2$	0.000049	< 0.000813 (+0.0 $\sigma$ )	$100\theta_{eq}$	0.81658	$0.8180 \pm 0.0046$ (−0.1 $\sigma$ )	$\chi_{BAO}^2$	5.20	$6.0 \pm 1.2$ (−0.0 $\sigma$ )
$\Omega_m h^3$	0.096442	$0.09616^{+0.00046}_{-0.00036}$ (+0.3 $\sigma$ )	$100\theta_{s,eq}$	0.45112	$0.4518 \pm 0.0024$ (−0.1 $\sigma$ )	$\chi_{CMB}^2$	11917.9	$11934.6 \pm 5.8$ (+797.2 $\sigma$ )
$\sigma_8$	0.8197	$0.807^{+0.016}_{-0.0092}$ (−0.0 $\sigma$ )	$H(0.15)$	73.318	$73.01^{+0.51}_{-0.44}$ (+0.1 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 11925.28$ ;  $\Delta\chi_{\text{eff}}^2 = 4448.69$ ;  $\bar{\chi}_{\text{eff}}^2 = 11948.38$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4450.90$ ;  $R - 1 = 0.01113$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 ( $\Delta$  -0.00) MGS: 1.61 ( $\Delta$  0.07) DR12BAO: 3.59 ( $\Delta$  -0.07) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.85 ( $\Delta$  -0.02) commander\_dx12.v3.2.29: 22.91 ( $\Delta$  -0.01) CamSpec like\_10.7HM\_1400\_unified: 11499.17



## 6.52 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022328	$0.02234 \pm 0.00015$ (+0.6 $\sigma$ )	$S_8$	0.8278	$0.819 \pm 0.014$ (−0.0 $\sigma$ )	$D_M(0.15)$	637.06	$639.4^{+4.0}_{-4.7}$ (−0.1 $\sigma$ )
$\Omega_c h^2$	0.11927	$0.1188 \pm 0.0010$ (+0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4534	$0.4485 \pm 0.0079$ (−0.0 $\sigma$ )	$H(0.38)$	83.332	$83.13^{+0.37}_{-0.32}$ (+0.2 $\sigma$ )
$100\theta_{MC}$	1.040966	$1.04096 \pm 0.00030$ (−0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6099	$0.602^{+0.010}_{-0.0082}$ (−0.0 $\sigma$ )	$D_M(0.38)$	1520.8	$1525.7^{+8.2}_{-9.6}$ (−0.1 $\sigma$ )
$\tau$	0.0533	$0.0535 \pm 0.0079$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9943	$0.981^{+0.017}_{-0.012}$ (−0.0 $\sigma$ )	$H(0.51)$	89.993	$89.81^{+0.31}_{-0.26}$ (+0.2 $\sigma$ )
$\Sigma m_\nu$ [eV]	0.0005	< 0.0707 (−0.0 $\sigma$ )	$r_{\text{drag}} h$	100.33	$100.00 \pm 0.85$ (−0.0 $\sigma$ )	$D_M(0.51)$	1971.0	$1977.0^{+9.7}_{-11}$ (−0.1 $\sigma$ )
$\ln(10^{10} A_s)$	3.0390	$3.038 \pm 0.016$ (−0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4366	$2.422 \pm 0.027$ (−0.0 $\sigma$ )	$H(0.61)$	95.569	$95.41^{+0.27}_{-0.22}$ (+0.2 $\sigma$ )
$n_s$	0.96732	$0.9677 \pm 0.0039$ (+0.0 $\sigma$ )	$z_{\text{re}}$	7.56	$7.56 \pm 0.80$ (−0.1 $\sigma$ )	$D_M(0.61)$	2294.4	$2301^{+11}_{-12}$ (−0.1 $\sigma$ )
$y_{\text{cal}}$	1.00032	$1.0005 \pm 0.0025$ (−0.0 $\sigma$ )	$10^9 A_s$	2.0885	$2.087 \pm 0.034$ (−0.0 $\sigma$ )	$H(2.33)$	235.71	$235.75 \pm 0.63$ (+0.2 $\sigma$ )
$A_{100}^{\text{PS}}$	231.5	$239 \pm 25$ (−0.1 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8775	$1.875 \pm 0.011$ (+0.1 $\sigma$ )	$D_M(2.33)$	5750.8	$5759^{+11}_{-14}$ (−0.3 $\sigma$ )
$A_{143}^{\text{PS}}$	46.2	$39 \pm 8$ (−0.2 $\sigma$ )	$D_{40}$	1223.3	$1223 \pm 12$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4578	$0.4534 \pm 0.0075$ (−0.0 $\sigma$ )
$A_{217}^{\text{PS}}$	103.8	$103 \pm 10$ (+0.1 $\sigma$ )	$D_{220}$	5716.8	$5721 \pm 39$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7587	$0.747^{+0.014}_{-0.0082}$ (−0.0 $\sigma$ )
$A_{217}^{\text{CIB}}$	43.2	$39 \pm 7$ (−0.2 $\sigma$ )	$D_{810}$	2534.9	$2534 \pm 14$ (+0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.4775	$0.4724^{+0.0074}_{-0.0064}$ (−0.0 $\sigma$ )
$A_{143}^{\text{tSZ}}$	6.53	$3.9^{+1.9}_{-2.5}$ (+0.1 $\sigma$ )	$D_{1420}$	816.14	$816.1 \pm 4.8$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6730	$0.662^{+0.012}_{-0.0071}$ (−0.0 $\sigma$ )
$r_{143 \times 217}^{\text{PS}}$	0.679	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$D_{2000}$	230.57	$230.4 \pm 1.6$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.4768	$0.4714^{+0.0074}_{-0.0059}$ (−0.0 $\sigma$ )
$r_{143 \times 217}^{\text{CIB}}$	0.853	$0.55^{+0.40}_{-0.18}$ (−0.1 $\sigma$ )	$n_{s,0.002}$	0.96732	$0.9677 \pm 0.0039$ (+0.0 $\sigma$ )	$\sigma_8(0.51)$	0.6300	$0.620^{+0.012}_{-0.0066}$ (−0.0 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.52	—	$Y_P$	0.245379	$0.245383^{+0.000060}_{-0.000054}$ (+0.6 $\sigma$ )	$f\sigma_8(0.61)$	0.4722	$0.4667^{+0.0073}_{-0.0056}$ (−0.0 $\sigma$ )
$A^{\text{kSZ}}$	0.01	$4.7^{+2.3}_{-3.9}$ (−0.1 $\sigma$ )	$Y_P^{\text{BBN}}$	0.246705	$0.246710^{+0.000060}_{-0.000055}$ (+0.6 $\sigma$ )	$\sigma_8(0.61)$	0.5995	$0.590^{+0.011}_{-0.0063}$ (−0.0 $\sigma$ )
$A_{100}^{\text{dust}}$	1.008	$1.01 \pm 0.19$ (+0.0 $\sigma$ )	$10^5 \text{D/H}$	2.5933	$2.591 \pm 0.027$ (−0.6 $\sigma$ )	$f\sigma_8(2.33)$	0.30155	$0.2977^{+0.0048}_{-0.0030}$ (−0.0 $\sigma$ )
$A_{143}^{\text{dust}}$	0.983	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	Age/Gyr	13.7690	$13.789^{+0.024}_{-0.031}$ (−0.3 $\sigma$ )	$\sigma_8(2.33)$	0.31161	$0.3070^{+0.0056}_{-0.0032}$ (−0.0 $\sigma$ )
$A_{217}^{\text{dust}}$	0.978	$0.98 \pm 0.10$ (+0.1 $\sigma$ )	$z_*$	1089.903	$1089.85 \pm 0.23$ (−0.5 $\sigma$ )	$f_{2000}^{143}$	29.78	$29.5 \pm 2.8$ (−0.3 $\sigma$ )
$A_{143 \times 217}^{\text{dust}}$	1.004	$1.03 \pm 0.16$ (−0.0 $\sigma$ )	$r_*$	144.659	$144.76 \pm 0.26$ (−0.3 $\sigma$ )	$f_{2000}^{217}$	106.51	$106.7 \pm 1.9$ (−0.3 $\sigma$ )
$c_{100}$	0.99774	$0.9975 \pm 0.0011$ (+0.0 $\sigma$ )	$100\theta_*$	1.041116	$1.04115 \pm 0.00030$ (−0.3 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.92	$32.0 \pm 2.0$ (−0.4 $\sigma$ )
$c_{217}$	1.00133	$1.0011 \pm 0.0015$ (−0.1 $\sigma$ )	$D_M(z_*)/\text{Gpc}$	13.8946	$13.903 \pm 0.025$ (−0.3 $\sigma$ )	$\chi_{\text{simall}}^2$	395.86	$397.0 \pm 1.7$ (−0.0 $\sigma$ )
$c_{TE}$	0.99643	$0.9968 \pm 0.0049$	$z_{\text{drag}}$	1059.780	$1059.79 \pm 0.32$ (+0.6 $\sigma$ )	$\chi_{\text{lowl}}^2$	22.93	$22.82 \pm 0.82$ (+0.0 $\sigma$ )
$c_{EE}$	0.99241	$0.9924 \pm 0.0049$	$r_{\text{drag}}$	147.338	$147.43 \pm 0.27$ (−0.4 $\sigma$ )	$\chi_{\text{CamSpec}}^2$	11499.3	$11514.7 \pm 5.8$ (+785.4 $\sigma$ )
$H_0$	68.10	$67.83^{+0.55}_{-0.48}$ (+0.1 $\sigma$ )	$k_D$	0.140570	$0.14049 \pm 0.00033$ (+0.5 $\sigma$ )	$\chi_{\text{JLA}}^2$	1034.819	$1035.00 \pm 0.29$ (−0.1 $\sigma$ )
$\Omega_\Lambda$	0.6946	$0.6917^{+0.0069}_{-0.0062}$ (+0.0 $\sigma$ )	$100\theta_D$	0.160847	$0.16084 \pm 0.00019$ (−0.7 $\sigma$ )	$\chi_{\text{6DF}}^2$	0.00097	$0.040 \pm 0.057$ (−0.1 $\sigma$ )
$\Omega_m$	0.3054	$0.3083^{+0.0062}_{-0.0069}$ (−0.0 $\sigma$ )	$z_{\text{eq}}$	3383.8	$3374 \pm 24$ (+0.1 $\sigma$ )	$\chi_{\text{MGS}}^2$	1.608	$1.47 \pm 0.49$ (−0.0 $\sigma$ )
$\Omega_m h^2$	0.14160	$0.14181 \pm 0.00098$ (+0.1 $\sigma$ )	$k_{\text{eq}}$	0.010327	$0.010297 \pm 0.000074$ (+0.1 $\sigma$ )	$\chi_{\text{DR12BAO}}^2$	3.60	$4.4 \pm 1.2$ (−0.0 $\sigma$ )
$\Omega_\nu h^2$	$0.6 \cdot 10^{-5}$	< 0.000760 (−0.0 $\sigma$ )	$100\theta_{\text{eq}}$	0.81646	$0.8184 \pm 0.0045$ (−0.1 $\sigma$ )	$\chi_{\text{prior}}^2$	2.03	$7.8 \pm 3.4$ (+0.1 $\sigma$ )
$\Omega_m h^3$	0.096430	$0.09618^{+0.00045}_{-0.00036}$ (+0.3 $\sigma$ )	$100\theta_{s,\text{eq}}$	0.45106	$0.4521 \pm 0.0023$ (−0.1 $\sigma$ )	$\chi_{\text{BAO}}^2$	5.208	$5.89 \pm 0.98$ (−0.0 $\sigma$ )
$\sigma_8$	0.8205	$0.808^{+0.015}_{-0.0090}$ (−0.0 $\sigma$ )	$H(0.15)$	73.318	$73.07^{+0.48}_{-0.42}$ (+0.1 $\sigma$ )	$\chi_{\text{CMB}}^2$	11918.0	$11934.5 \pm 5.9$ (+794.3 $\sigma$ )

Best-fit  $\chi_{\text{eff}}^2 = 12960.09$ ;  $\Delta\chi_{\text{eff}}^2 = 4448.70$ ;  $\bar{\chi}_{\text{eff}}^2 = 12983.16$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4450.80$ ;  $R - 1 = 0.01385$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 ( $\Delta$  -0.00) MGS: 1.61 ( $\Delta$  0.07) DR12BAO: 3.60 ( $\Delta$  -0.06) CMB - simall\_100x143\_offlike5\_EE\_Aplanck.B: 395.86 ( $\Delta$  0.10) commander\_dx12.v3.2.29: 22.93 ( $\Delta$  -0.08) CamSpec like\_10.7HM\_1400\_unified: 11499.25 SN - JLA Pantheon18: 1034.82 ( $\Delta$  -0.03)



### 6.53 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02234 \pm 0.00015 \quad (+0.6\sigma)$	$S_8$	$0.820 \pm 0.015 \quad (-0.1\sigma)$	$D_M(0.15)$	$640.0^{+4.3}_{-5.0} \quad (-0.1\sigma)$
$\Omega_c h^2$	$0.1189 \pm 0.0011 \quad (+0.0\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4493 \pm 0.0081 \quad (-0.1\sigma)$	$H(0.38)$	$83.08^{+0.39}_{-0.33} \quad (+0.1\sigma)$
$100\theta_{MC}$	$1.04096 \pm 0.00030 \quad (-0.2\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.603^{+0.011}_{-0.0080} \quad (-0.1\sigma)$	$D_M(0.38)$	$1526.9^{+8.7}_{-10} \quad (-0.1\sigma)$
$\tau$	$0.0548^{+0.0048}_{-0.0084} \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.982^{+0.017}_{-0.012} \quad (-0.1\sigma)$	$H(0.51)$	$89.78^{+0.33}_{-0.27} \quad (+0.2\sigma)$
$\Sigma m_\nu [\text{eV}]$	$< 0.0767 \quad (+0.0\sigma)$	$r_{\text{drag}} h$	$99.89 \pm 0.90 \quad (-0.0\sigma)$	$D_M(0.51)$	$1978^{+10}_{-12} \quad (-0.1\sigma)$
$\ln(10^{10} A_s)$	$3.041^{+0.012}_{-0.016} \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.426 \pm 0.027 \quad (-0.0\sigma)$	$H(0.61)$	$95.38^{+0.29}_{-0.23} \quad (+0.2\sigma)$
$n_s$	$0.9677 \pm 0.0039 \quad (+0.0\sigma)$	$z_{\text{re}}$	$7.70^{+0.54}_{-0.83} \quad (-0.1\sigma)$	$D_M(0.61)$	$2302^{+11}_{-13} \quad (-0.1\sigma)$
$y_{\text{cal}}$	$1.0005 \pm 0.0025 \quad (-0.0\sigma)$	$10^9 A_s$	$2.093^{+0.024}_{-0.035} \quad (+0.0\sigma)$	$H(2.33)$	$235.82 \pm 0.65 \quad (+0.2\sigma)$
$A_{100}^{\text{PS}}$	$239 \pm 25 \quad (-0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.876 \pm 0.011 \quad (+0.1\sigma)$	$D_M(2.33)$	$5761^{+11}_{-14} \quad (-0.2\sigma)$
$A_{143}^{\text{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$D_{40}$	$1223 \pm 12 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4542 \pm 0.0076 \quad (-0.1\sigma)$
$A_{217}^{\text{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$D_{220}$	$5720 \pm 39 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.747^{+0.014}_{-0.0079} \quad (-0.0\sigma)$
$A_{217}^{\text{CIB}}$	$39 \pm 7 \quad (-0.2\sigma)$	$D_{810}$	$2534 \pm 14 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4730^{+0.0077}_{-0.0063} \quad (-0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$3.9^{+1.9}_{-2.5} \quad (+0.1\sigma)$	$D_{1420}$	$816.1 \pm 4.8 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.662^{+0.013}_{-0.0069} \quad (-0.0\sigma)$
$r_{143 \times 217}^{\text{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$D_{2000}$	$230.4 \pm 1.6 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4719^{+0.0076}_{-0.0058} \quad (-0.1\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	$0.55^{+0.40}_{-0.18} \quad (-0.1\sigma)$	$n_{s,0.002}$	$0.9677 \pm 0.0039 \quad (+0.0\sigma)$	$\sigma_8(0.51)$	$0.620^{+0.012}_{-0.0064} \quad (-0.0\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.245382^{+0.000061}_{-0.000055} \quad (+0.6\sigma)$	$f\sigma_8(0.61)$	$0.4671^{+0.0075}_{-0.0054} \quad (-0.1\sigma)$
$A^{\text{kSZ}}$	$4.7^{+2.2}_{-4.0} \quad (-0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.246708^{+0.000062}_{-0.000055} \quad (+0.6\sigma)$	$\sigma_8(0.61)$	$0.590^{+0.012}_{-0.0061} \quad (-0.0\sigma)$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.19 \quad (+0.0\sigma)$	$10^5 \text{D/H}$	$2.592 \pm 0.028 \quad (-0.6\sigma)$	$f\sigma_8(2.33)$	$0.2977^{+0.0050}_{-0.0029} \quad (-0.0\sigma)$
$A_{143}^{\text{dust}}$	$0.97 \pm 0.18 \quad (-0.1\sigma)$	$\text{Age/Gyr}$	$13.792^{+0.025}_{-0.033} \quad (-0.2\sigma)$	$\sigma_8(2.33)$	$0.3070^{+0.0058}_{-0.0031} \quad (-0.0\sigma)$
$A_{217}^{\text{dust}}$	$0.98 \pm 0.10 \quad (+0.0\sigma)$	$z_*$	$1089.86 \pm 0.24 \quad (-0.5\sigma)$	$f_{2000}^{143}$	$29.5 \pm 2.8 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$r_*$	$144.74 \pm 0.26 \quad (-0.3\sigma)$	$f_{2000}^{217}$	$106.7 \pm 1.9 \quad (-0.3\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$100\theta_*$	$1.04115 \pm 0.00030 \quad (-0.3\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.0 \quad (-0.3\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$D_M(z_*)/\text{Gpc}$	$13.902 \pm 0.025 \quad (-0.2\sigma)$	$\chi_{\text{small}}^2$	$396.9 \pm 1.8 \quad (-0.0\sigma)$
$c_{TE}$	$0.9968 \pm 0.0049$	$z_{\text{drag}}$	$1059.79 \pm 0.32 \quad (+0.6\sigma)$	$\chi_{\text{lowl}}^2$	$22.86 \pm 0.83 \quad (+0.0\sigma)$
$c_{EE}$	$0.9923 \pm 0.0049$	$r_{\text{drag}}$	$147.42 \pm 0.28 \quad (-0.4\sigma)$	$\chi_{\text{CamSpec}}^2$	$11514.6 \pm 5.8 \quad (+791.0\sigma)$
$H_0$	$67.76^{+0.58}_{-0.51} \quad (+0.1\sigma)$	$k_D$	$0.14050 \pm 0.00033 \quad (+0.5\sigma)$	$\chi_{6\text{DF}}^2$	$0.048 \pm 0.068 \quad (-0.1\sigma)$
$\Omega_\Lambda$	$0.6908^{+0.0073}_{-0.0066} \quad (+0.0\sigma)$	$100\theta_D$	$0.16084 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{\text{MGS}}^2$	$1.42 \pm 0.50 \quad (-0.0\sigma)$
$\Omega_m$	$0.3092^{+0.0066}_{-0.0073} \quad (-0.0\sigma)$	$z_{\text{eq}}$	$3375 \pm 25 \quad (+0.1\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.6 \pm 1.5 \quad (-0.0\sigma)$
$\Omega_m h^2$	$0.1419 \pm 0.0010 \quad (+0.1\sigma)$	$k_{\text{eq}}$	$0.010302 \pm 0.000075 \quad (+0.1\sigma)$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_\nu h^2$	$< 0.000825 \quad (+0.0\sigma)$	$100\theta_{\text{eq}}$	$0.8181 \pm 0.0047 \quad (-0.1\sigma)$	$\chi_{\text{BAO}}^2$	$6.0 \pm 1.2 \quad (-0.0\sigma)$
$\Omega_m h^3$	$0.09616^{+0.00047}_{-0.00036} \quad (+0.3\sigma)$	$100\theta_{s,\text{eq}}$	$0.4519 \pm 0.0024 \quad (-0.1\sigma)$	$\chi_{\text{CMB}}^2$	$11934.4 \pm 5.8 \quad (+804.3\sigma)$
$\sigma_8$	$0.808^{+0.015}_{-0.0087} \quad (-0.0\sigma)$	$H(0.15)$	$73.01^{+0.51}_{-0.44} \quad (+0.1\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 11948.19; \Delta\bar{\chi}_{\text{eff}}^2 = 4450.90; R - 1 = 0.01072$$



# 6.54 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02235 \pm 0.00015 \quad (+0.6\sigma)$	$S_8$	$0.820 \pm 0.014 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.15)$	$639.4^{+4.1}_{-4.7} \quad (-0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1188 \pm 0.0010 \quad (+0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4490 \pm 0.0079 \quad (-0.0\sigma)$	$H(0.38)$	$83.13^{+0.37}_{-0.32} \quad (+0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04097 \pm 0.00030 \quad (-0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.603^{+0.010}_{-0.0079} \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1525.7^{+8.3}_{-9.6} \quad (-0.1\sigma)$
$\tau$	$0.0549^{+0.0048}_{-0.0084} \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.982^{+0.017}_{-0.012} \quad (-0.0\sigma)$	$H(0.51)$	$89.82^{+0.31}_{-0.26} \quad (+0.2\sigma)$
$\Sigma m_{\nu} [\mathrm{eV}]$	$< 0.0717 \quad (-0.0\sigma)$	$r_{\mathrm{drag}}h$	$100.01 \pm 0.85 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1976.9^{+9.8}_{-11} \quad (-0.1\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.012}_{-0.017} \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.425 \pm 0.026 \quad (+0.0\sigma)$	$H(0.61)$	$95.41^{+0.27}_{-0.22} \quad (+0.2\sigma)$
$n_{\mathrm{s}}$	$0.9679 \pm 0.0039 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.71^{+0.54}_{-0.84} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2301^{+11}_{-12} \quad (-0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.024}_{-0.035} \quad (+0.0\sigma)$	$H(2.33)$	$235.74 \pm 0.62 \quad (+0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$239 \pm 25 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.875 \pm 0.011 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5759^{+11}_{-14} \quad (-0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$D_{40}$	$1223 \pm 12 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4538 \pm 0.0074 \quad (-0.0\sigma)$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$D_{220}$	$5721 \pm 39 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.748^{+0.014}_{-0.0077} \quad (-0.0\sigma)$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7 \quad (-0.2\sigma)$	$D_{810}$	$2534 \pm 14 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4729^{+0.0074}_{-0.0062} \quad (-0.0\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5} \quad (+0.1\sigma)$	$D_{1420}$	$816.1 \pm 4.8 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.663^{+0.012}_{-0.0067} \quad (-0.0\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$D_{2000}$	$230.5 \pm 1.6 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4719^{+0.0073}_{-0.0057} \quad (-0.0\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.40}_{-0.18} \quad (-0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9679 \pm 0.0039 \quad (+0.0\sigma)$	$\sigma_8(0.51)$	$0.621^{+0.011}_{-0.0063} \quad (-0.0\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.245384^{+0.000060}_{-0.000054} \quad (+0.6\sigma)$	$f\sigma_8(0.61)$	$0.4672^{+0.0072}_{-0.0054} \quad (-0.0\sigma)$
$A^{\mathrm{kSZ}}$	$4.7^{+2.3}_{-3.9} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246711^{+0.000060}_{-0.000054} \quad (+0.6\sigma)$	$\sigma_8(0.61)$	$0.591^{+0.011}_{-0.0059} \quad (-0.0\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19 \quad (+0.0\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.590 \pm 0.027 \quad (-0.6\sigma)$	$f\sigma_8(2.33)$	$0.2980^{+0.0047}_{-0.0028} \quad (-0.0\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.18 \quad (-0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.789^{+0.024}_{-0.031} \quad (-0.3\sigma)$	$\sigma_8(2.33)$	$0.3073^{+0.0055}_{-0.0030} \quad (-0.0\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$z_*$	$1089.84 \pm 0.23 \quad (-0.5\sigma)$	$f_{2000}^{143}$	$29.4 \pm 2.8 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$r_*$	$144.76 \pm 0.26 \quad (-0.3\sigma)$	$f_{2000}^{217}$	$106.7 \pm 1.9 \quad (-0.3\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$100\theta_*$	$1.04116 \pm 0.00030 \quad (-0.3\sigma)$	$f_{2000}^{143 \times 217}$	$31.9 \pm 2.0 \quad (-0.3\sigma)$
$c_{217}$	$1.0011 \pm 0.0015 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.904 \pm 0.025 \quad (-0.3\sigma)$	$\chi_{\mathrm{small}}^2$	$396.9 \pm 1.8 \quad (-0.0\sigma)$
$c_{TE}$	$0.9968 \pm 0.0049$	$z_{\mathrm{drag}}$	$1059.80 \pm 0.32 \quad (+0.6\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.83 \pm 0.82 \quad (+0.0\sigma)$
$c_{EE}$	$0.9923 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.44 \pm 0.27 \quad (-0.4\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11514.6 \pm 5.8 \quad (+786.4\sigma)$
$H_0$	$67.83^{+0.54}_{-0.49} \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.14048 \pm 0.00033 \quad (+0.5\sigma)$	$\chi_{\mathrm{JLA}}^2$	$1035.00 \pm 0.29 \quad (-0.1\sigma)$
$\Omega_{\Lambda}$	$0.6918^{+0.0069}_{-0.0062} \quad (+0.0\sigma)$	$100\theta_{\mathrm{D}}$	$0.16084 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.040 \pm 0.056 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3082^{+0.0062}_{-0.0069} \quad (-0.0\sigma)$	$z_{\mathrm{eq}}$	$3373 \pm 24 \quad (+0.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.48 \pm 0.49 \quad (-0.0\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14179 \pm 0.00098 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010296 \pm 0.000074 \quad (+0.1\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.4 \pm 1.2 \quad (-0.0\sigma)$
$\Omega_{\nu}h^2$	$< 0.000771 \quad (-0.0\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8185 \pm 0.0045 \quad (-0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09618^{+0.00045}_{-0.00036} \quad (+0.3\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4521 \pm 0.0023 \quad (-0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$5.88 \pm 0.97 \quad (-0.0\sigma)$
$\sigma_8$	$0.809^{+0.015}_{-0.0085} \quad (-0.0\sigma)$	$H(0.15)$	$73.08^{+0.48}_{-0.42} \quad (+0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11934.3 \pm 5.8 \quad (+798.6\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 12982.95; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.78; R - 1 = 0.01405$$



## 6.55 base\_mnu\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022232	$0.02222 \pm 0.00019$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6115	$0.6058^{+0.0083}_{-0.0068}$	$H(0.38)$	83.236	$83.01 \pm 0.38$
$\Omega_{\mathrm{c}}h^2$	0.11936	$0.1192 \pm 0.0011$	$\sigma_8/h^{0.5}$	0.9967	$0.987^{+0.013}_{-0.010}$	$D_{\mathrm{M}}(0.38)$	1523.0	$1528.6 \pm 9.9$
$100\theta_{\mathrm{MC}}$	1.040955	$1.04097 \pm 0.00042$	$r_{\mathrm{drag}}h$	100.22	$99.81 \pm 0.92$	$H(0.51)$	89.905	$89.71 \pm 0.32$
$\tau$	0.0542	$0.0542 \pm 0.0074$	$\langle d^2 \rangle^{1/2}$	2.4437	$2.435 \pm 0.022$	$D_{\mathrm{M}}(0.51)$	1973.7	$1980 \pm 12$
$\Sigma m_{\nu}$ [eV]	0.0037	$< 0.0628$	$z_{\mathrm{re}}$	7.68	$7.67 \pm 0.75$	$H(0.61)$	95.487	$95.32 \pm 0.28$
$\ln(10^{10}A_{\mathrm{s}})$	3.0419	$3.042 \pm 0.015$	$10^9 A_{\mathrm{s}}$	2.0944	$2.095 \pm 0.031$	$D_{\mathrm{M}}(0.61)$	2297.3	$2305 \pm 13$
$n_{\mathrm{s}}$	0.96622	$0.9659 \pm 0.0041$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8794	$1.879 \pm 0.011$	$H(2.33)$	235.68	$235.80 \pm 0.70$
$y_{\mathrm{cal}}$	1.00022	$1.0006 \pm 0.0025$	$D_{40}$	1226.6	$1228 \pm 12$	$D_{\mathrm{M}}(2.33)$	5755.2	$5764 \pm 14$
$A_{217}^{\mathrm{CIB}}$	48.3	$48 \pm 7$	$D_{220}$	5718.2	$5723 \pm 40$	$f\sigma_8(0.15)$	0.4593	$0.4566 \pm 0.0064$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.36	—	$D_{810}$	2536.1	$2536 \pm 14$	$\sigma_8(0.15)$	0.7598	$0.750^{+0.011}_{-0.0068}$
$A_{143}^{\mathrm{tSZ}}$	7.04	$5.1 \pm 2.0$	$D_{1420}$	815.6	$815.5 \pm 5.1$	$f\sigma_8(0.38)$	0.4788	$0.4753^{+0.0061}_{-0.0054}$
$A_{100}^{\mathrm{PS}}$	252.9	$263 \pm 28$	$D_{2000}$	230.22	$230.0 \pm 1.8$	$\sigma_8(0.38)$	0.6738	$0.6653^{+0.0098}_{-0.0060}$
$A_{143}^{\mathrm{PS}}$	49.3	$48 \pm 8$	$n_{\mathrm{s},0.002}$	0.96622	$0.9659 \pm 0.0041$	$f\sigma_8(0.51)$	0.4779	$0.4741^{+0.0059}_{-0.0049}$
$A_{143 \times 217}^{\mathrm{PS}}$	47.5	$43 \pm 9$	$Y_{\mathrm{P}}$	0.245339	$0.245330^{+0.000086}_{-0.000074}$	$\sigma_8(0.51)$	0.6307	$0.6226^{+0.0093}_{-0.0057}$
$A_{217}^{\mathrm{PS}}$	119.5	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246666	$0.246656^{+0.000086}_{-0.000074}$	$f\sigma_8(0.61)$	0.4732	$0.4692^{+0.0057}_{-0.0046}$
$A^{\mathrm{kSZ}}$	0.00	$< 4.76$	$10^5 D/H$	2.6117	$2.615 \pm 0.037$	$\sigma_8(0.61)$	0.6002	$0.5925^{+0.0089}_{-0.0054}$
$A_{100}^{\mathrm{dustTT}}$	8.88	$8.9 \pm 1.8$	Age/Gyr	13.7793	$13.800^{+0.030}_{-0.034}$	$f\sigma_8(2.33)$	0.30190	$0.2987^{+0.0039}_{-0.0026}$
$A_{143}^{\mathrm{dustTT}}$	10.78	$10.7 \pm 1.8$	$z_*$	1090.035	$1090.04 \pm 0.29$	$\sigma_8(2.33)$	0.31191	$0.3080^{+0.0046}_{-0.0029}$
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.46	$18.3 \pm 3.3$	$r_*$	144.709	$144.77 \pm 0.28$	$f_{2000}^{143}$	30.01	$30.8 \pm 2.9$
$A_{217}^{\mathrm{dustTT}}$	94.7	$93.4 \pm 7.3$	$100\theta_*$	1.041127	$1.04116 \pm 0.00041$	$f_{2000}^{143 \times 217}$	32.96	$33.2 \pm 2.0$
$c_{100}$	0.99967	$0.99961 \pm 0.00061$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8993	$13.905 \pm 0.028$	$f_{2000}^{217}$	107.38	$107.9 \pm 1.9$
$c_{217}$	0.99825	$0.99826 \pm 0.00062$	$z_{\mathrm{drag}}$	1059.551	$1059.52 \pm 0.44$	$\chi_{\mathrm{lensing}}^2$	8.963	$9.41 \pm 0.79$
$H_0$	67.98	$67.67 \pm 0.57$	$r_{\mathrm{drag}}$	147.424	$147.49 \pm 0.31$	$\chi_{\mathrm{small}}^2$	396.04	$397.0 \pm 1.7$
$\Omega_{\Lambda}$	0.6935	$0.6900 \pm 0.0072$	$k_{\mathrm{D}}$	0.140409	$0.14033 \pm 0.00042$	$\chi_{\mathrm{lowl}}^2$	23.24	$23.28 \pm 0.87$
$\Omega_{\mathrm{m}}$	0.3065	$0.3100 \pm 0.0072$	$100\theta_{\mathrm{D}}$	0.160977	$0.16101 \pm 0.00026$	$\chi_{\mathrm{plik}}^2$	758.7	$771.4 \pm 5.3$
$\Omega_{\mathrm{m}}h^2$	0.14163	$0.1419 \pm 0.0011$	$z_{\mathrm{eq}}$	3383.6	$3379 \pm 25$	$\chi_{6\mathrm{DF}}^2$	0.0030	$0.055 \pm 0.073$
$\Omega_{\nu}h^2$	0.000040	$< 0.000675$	$k_{\mathrm{eq}}$	0.010327	$0.010312 \pm 0.000077$	$\chi_{\mathrm{MGS}}^2$	1.54	$1.37 \pm 0.51$
$\Omega_{\mathrm{m}}h^3$	0.096281	$0.09604 \pm 0.00049$	$100\theta_{\mathrm{eq}}$	0.81623	$0.8172 \pm 0.0047$	$\chi_{\mathrm{DR12BAO}}^2$	3.67	$4.7 \pm 1.6$
$\sigma_8$	0.8218	$0.812^{+0.012}_{-0.0074}$	$100\theta_{\mathrm{s,eq}}$	0.45102	$0.4515 \pm 0.0024$	$\chi_{\mathrm{prior}}^2$	1.30	$7.3 \pm 3.7$
$S_8$	0.8306	$0.825 \pm 0.013$	$H(0.15)$	73.209	$72.93 \pm 0.50$	$\chi_{\mathrm{CMB}}^2$	1186.9	$1201.0 \pm 5.5$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4550	$0.4520 \pm 0.0069$	$D_{\mathrm{M}}(0.15)$	638.09	$640.8 \pm 4.9$	$\chi_{\mathrm{BAO}}^2$	5.21	$6.1 \pm 1.3$

Best-fit  $\chi_{\mathrm{eff}}^2 = 1193.44$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1214.40$ ;  $R - 1 = 0.00805$

$\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.54 DR12BAO: 3.67 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.96 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.04 commander\_dx12.v3.2.29: 23.24 plik\_rd12\_HM.v22\_TT: 758.68



## 6.56 base\_mnu\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022235	$0.02223 \pm 0.00019$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6103	$0.6055^{+0.0082}_{-0.0067}$	$H(0.38)$	83.272	$83.07 \pm 0.36$
$\Omega_{\mathrm{c}}h^2$	0.11922	$0.1190 \pm 0.0011$	$\sigma_8/h^{0.5}$	0.9952	$0.987^{+0.013}_{-0.0098}$	$D_{\mathrm{M}}(0.38)$	1522.0	$1527.2 \pm 9.4$
$100\theta_{\mathrm{MC}}$	1.040966	$1.04098 \pm 0.00042$	$r_{\mathrm{drag}}h$	100.33	$99.95 \pm 0.87$	$H(0.51)$	89.931	$89.75 \pm 0.31$
$\tau$	0.0531	$0.0544 \pm 0.0074$	$\langle d^2 \rangle^{1/2}$	2.4387	$2.434 \pm 0.022$	$D_{\mathrm{M}}(0.51)$	1972.5	$1979 \pm 11$
$\Sigma m_{\nu}$ [eV]	0.0002	$< 0.0592$	$z_{\mathrm{re}}$	7.57	$7.69 \pm 0.74$	$H(0.61)$	95.506	$95.35 \pm 0.27$
$\ln(10^{10}A_{\mathrm{s}})$	3.0397	$3.042 \pm 0.015$	$10^9 A_{\mathrm{s}}$	2.0899	$2.095 \pm 0.031$	$D_{\mathrm{M}}(0.61)$	2296.1	$2303 \pm 12$
$n_{\mathrm{s}}$	0.96676	$0.9662 \pm 0.0040$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8792	$1.879 \pm 0.011$	$H(2.33)$	235.59	$235.71 \pm 0.68$
$y_{\mathrm{cal}}$	1.00041	$1.0007 \pm 0.0025$	$D_{40}$	1225.3	$1228 \pm 12$	$D_{\mathrm{M}}(2.33)$	5754.5	$5762 \pm 14$
$A_{217}^{\mathrm{CIB}}$	48.7	$48 \pm 7$	$D_{220}$	5718.4	$5724 \pm 40$	$f\sigma_8(0.15)$	0.4581	$0.4561 \pm 0.0063$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.29	—	$D_{810}$	2536.8	$2537 \pm 14$	$\sigma_8(0.15)$	0.7590	$0.751^{+0.011}_{-0.0067}$
$A_{143}^{\mathrm{tSZ}}$	7.04	$5.1 \pm 2.0$	$D_{1420}$	816.0	$815.6 \pm 5.1$	$f\sigma_8(0.38)$	0.4778	$0.4750^{+0.0060}_{-0.0053}$
$A_{100}^{\mathrm{PS}}$	254.1	$262 \pm 28$	$D_{2000}$	230.33	$230.1 \pm 1.8$	$\sigma_8(0.38)$	0.6732	$0.6658^{+0.0095}_{-0.0059}$
$A_{143}^{\mathrm{PS}}$	48.2	$48 \pm 8$	$n_{\mathrm{s},0.002}$	0.96676	$0.9662 \pm 0.0040$	$f\sigma_8(0.51)$	0.4770	$0.4739^{+0.0058}_{-0.0048}$
$A_{143 \times 217}^{\mathrm{PS}}$	45.7	$43 \pm 9$	$Y_{\mathrm{P}}$	0.245340	$0.245334^{+0.000085}_{-0.000074}$	$\sigma_8(0.51)$	0.6302	$0.6232^{+0.0089}_{-0.0056}$
$A_{217}^{\mathrm{PS}}$	118.8	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246667	$0.246660^{+0.000086}_{-0.000074}$	$f\sigma_8(0.61)$	0.4724	$0.4692^{+0.0056}_{-0.0045}$
$A^{\mathrm{kSZ}}$	0.01	$< 4.79$	$10^5 \mathrm{D}/\mathrm{H}$	2.6113	$2.613 \pm 0.037$	$\sigma_8(0.61)$	0.5997	$0.5930^{+0.0085}_{-0.0053}$
$A_{100}^{\mathrm{dustTT}}$	8.91	$8.9 \pm 1.8$	Age/Gyr	13.7778	$13.796 \pm 0.031$	$f\sigma_8(2.33)$	0.30165	$0.2990^{+0.0037}_{-0.0026}$
$A_{143}^{\mathrm{dustTT}}$	10.76	$10.7 \pm 1.8$	$z_*$	1090.019	$1090.02 \pm 0.28$	$\sigma_8(2.33)$	0.31171	$0.3084^{+0.0044}_{-0.0029}$
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.24	$18.2 \pm 3.3$	$r_*$	144.743	$144.80 \pm 0.28$	$\chi_{\mathrm{lensing}}^2$	8.911	$9.40 \pm 0.78$
$A_{217}^{\mathrm{dustTT}}$	94.4	$93.4 \pm 7.3$	$100\theta_*$	1.041135	$1.04118 \pm 0.00041$	$\chi_{\mathrm{small}}^2$	395.89	$397.0 \pm 1.7$
$c_{100}$	0.99966	$0.99961 \pm 0.00061$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.9024	$13.907 \pm 0.027$	$\chi_{\mathrm{lowl}}^2$	23.08	$23.23 \pm 0.85$
$c_{217}$	0.99824	$0.99826 \pm 0.00063$	$z_{\mathrm{drag}}$	1059.551	$1059.53 \pm 0.44$	$\chi_{\mathrm{plik}}^2$	758.9	$771.4 \pm 5.3$
$H_0$	68.04	$67.75 \pm 0.54$	$r_{\mathrm{drag}}$	147.457	$147.51 \pm 0.31$	$\chi_{\mathrm{JLA}}^2$	1034.824	$1035.03 \pm 0.31$
$\Omega_{\Lambda}$	0.6945	$0.6911 \pm 0.0068$	$k_{\mathrm{D}}$	0.140375	$0.14031 \pm 0.00042$	$\chi_{6\mathrm{DF}}^2$	0.00096	$0.044 \pm 0.060$
$\Omega_{\mathrm{m}}$	0.3055	$0.3089 \pm 0.0068$	$100\theta_{\mathrm{D}}$	0.160979	$0.16100 \pm 0.00026$	$\chi_{\mathrm{MGS}}^2$	1.608	$1.45 \pm 0.50$
$\Omega_{\mathrm{m}}h^2$	0.14146	$0.1418 \pm 0.0010$	$z_{\mathrm{eq}}$	3380.3	$3376 \pm 25$	$\chi_{\mathrm{DR12BAO}}^2$	3.58	$4.4 \pm 1.3$
$\Omega_{\nu}h^2$	$0.2 \cdot 10^{-5}$	$< 0.000636$	$k_{\mathrm{eq}}$	0.010317	$0.010303 \pm 0.000075$	$\chi_{\mathrm{prior}}^2$	1.37	$7.3 \pm 3.7$
$\Omega_{\mathrm{m}}h^3$	0.096251	$0.09606 \pm 0.00049$	$100\theta_{\mathrm{eq}}$	0.81683	$0.8177 \pm 0.0046$	$\chi_{\mathrm{CMB}}^2$	1186.8	$1201.1 \pm 5.5$
$\sigma_8$	0.8209	$0.812^{+0.011}_{-0.0073}$	$100\theta_{\mathrm{s,eq}}$	0.45133	$0.4518 \pm 0.0024$	$\chi_{\mathrm{BAO}}^2$	5.188	$5.9 \pm 1.0$
$S_8$	0.8284	$0.824 \pm 0.012$	$H(0.15)$	73.262	$73.00 \pm 0.47$			
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4538	$0.4514 \pm 0.0067$	$D_{\mathrm{M}}(0.15)$	637.56	$640.1 \pm 4.6$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 2228.19$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2249.31$ ;  $R - 1 = 0.00867$

$\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.61 DR12BAO: 3.58 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.91 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.89 commander\_dx12\_v3\_2\_29: 23.08 plik\_rd12\_HM\_v22\_TT: 758.94 SN - JLA Pantheon18: 1034.82



# 6.57 base\_mnu\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02222 \pm 0.00019$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6060^{+0.0083}_{-0.0067}$	$H(0.38)$	$83.02 \pm 0.38$
$\Omega_{\mathrm{c}}h^2$	$0.1191 \pm 0.0011$	$\sigma_8/h^{0.5}$	$0.987^{+0.013}_{-0.0097}$	$D_{\mathrm{M}}(0.38)$	$1528.4^{+9.3}_{-10}$
$100\theta_{\mathrm{MC}}$	$1.04097 \pm 0.00042$	$r_{\mathrm{drag}}h$	$99.83 \pm 0.92$	$H(0.51)$	$89.72^{+0.34}_{-0.30}$
$\tau$	$0.0551^{+0.0055}_{-0.0076}$	$\langle d^2 \rangle^{1/2}$	$2.436 \pm 0.022$	$D_{\mathrm{M}}(0.51)$	$1980^{+11}_{-12}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$< 0.0636$	$z_{\mathrm{re}}$	$7.77^{+0.59}_{-0.74}$	$H(0.61)$	$95.32^{+0.29}_{-0.26}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.012}_{-0.015}$	$10^9 A_{\mathrm{s}}$	$2.098^{+0.024}_{-0.031}$	$D_{\mathrm{M}}(0.61)$	$2304^{+12}_{-13}$
$n_{\mathrm{s}}$	$0.9660 \pm 0.0040$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879 \pm 0.011$	$H(2.33)$	$235.78 \pm 0.70$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{40}$	$1228 \pm 12$	$D_{\mathrm{M}}(2.33)$	$5764^{+13}_{-15}$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{220}$	$5723 \pm 40$	$f\sigma_8(0.15)$	$0.4568 \pm 0.0064$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2536 \pm 14$	$\sigma_8(0.15)$	$0.751^{+0.011}_{-0.0065}$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{1420}$	$815.4 \pm 5.1$	$f\sigma_8(0.38)$	$0.4755^{+0.0061}_{-0.0053}$
$A_{100}^{\mathrm{PS}}$	$263 \pm 28$	$D_{2000}$	$230.0 \pm 1.8$	$\sigma_8(0.38)$	$0.6657^{+0.0098}_{-0.0058}$
$A_{143}^{\mathrm{PS}}$	$48 \pm 8$	$n_{\mathrm{s},0.002}$	$0.9660 \pm 0.0040$	$f\sigma_8(0.51)$	$0.4743^{+0.0058}_{-0.0048}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}$	$0.245331^{+0.000085}_{-0.000074}$	$\sigma_8(0.51)$	$0.6230^{+0.0093}_{-0.0054}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246657^{+0.000086}_{-0.000075}$	$f\sigma_8(0.61)$	$0.4695^{+0.0057}_{-0.0045}$
$A^{\mathrm{kSZ}}$	$< 4.76$	$10^5 \mathrm{D}/\mathrm{H}$	$2.614 \pm 0.037$	$\sigma_8(0.61)$	$0.5928^{+0.0088}_{-0.0052}$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$\mathrm{Age}/\mathrm{Gyr}$	$13.800^{+0.030}_{-0.034}$	$f\sigma_8(2.33)$	$0.2989^{+0.0038}_{-0.0025}$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$z_*$	$1090.03 \pm 0.29$	$\sigma_8(2.33)$	$0.3082^{+0.0045}_{-0.0028}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$r_*$	$144.78 \pm 0.28$	$f_{2000}^{143}$	$30.8 \pm 2.9$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.3$	$100\theta_*$	$1.04117 \pm 0.00041$	$f_{2000}^{143 \times 217}$	$33.2 \pm 2.0$
$c_{100}$	$0.99961 \pm 0.00061$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.905 \pm 0.028$	$f_{2000}^{217}$	$107.8 \pm 1.9$
$c_{217}$	$0.99826 \pm 0.00062$	$z_{\mathrm{drag}}$	$1059.52 \pm 0.44$	$\chi_{\mathrm{lensing}}^2$	$9.38 \pm 0.76$
$H_0$	$67.68 \pm 0.57$	$r_{\mathrm{drag}}$	$147.50 \pm 0.31$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.7$
$\Omega_{\Lambda}$	$0.6901^{+0.0076}_{-0.0068}$	$k_{\mathrm{D}}$	$0.14032 \pm 0.00042$	$\chi_{\mathrm{lowl}}^2$	$23.27 \pm 0.87$
$\Omega_{\mathrm{m}}$	$0.3099^{+0.0068}_{-0.0076}$	$100\theta_{\mathrm{D}}$	$0.16101 \pm 0.00026$	$\chi_{\mathrm{plik}}^2$	$771.3 \pm 5.3$
$\Omega_{\mathrm{m}}h^2$	$0.1419 \pm 0.0011$	$z_{\mathrm{eq}}$	$3378 \pm 25$	$\chi_{6\mathrm{DF}}^2$	$0.054 \pm 0.073$
$\Omega_{\nu}h^2$	$< 0.000684$	$k_{\mathrm{eq}}$	$0.010309 \pm 0.000077$	$\chi_{\mathrm{MGS}}^2$	$1.39 \pm 0.52$
$\Omega_{\mathrm{m}}h^3$	$0.09604 \pm 0.00049$	$100\theta_{\mathrm{eq}}$	$0.8173 \pm 0.0047$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.6$
$\sigma_8$	$0.812^{+0.012}_{-0.0072}$	$100\theta_{\mathrm{s,eq}}$	$0.4516 \pm 0.0024$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$S_8$	$0.825 \pm 0.013$	$H(0.15)$	$72.94 \pm 0.50$	$\chi_{\mathrm{CMB}}^2$	$1200.9 \pm 5.5$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4521 \pm 0.0069$	$D_{\mathrm{M}}(0.15)$	$640.7^{+4.5}_{-5.1}$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.3$

$\bar{\chi}_{\mathrm{eff}}^2 = 1214.24$ ;  $R - 1 = 0.00889$



# 6.58 base\_mnu\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02223 \pm 0.00019$	$\sigma_8/h^{0.5}$	$0.987^{+0.013}_{-0.0096}$	$H(0.51)$	$89.76 \pm 0.31$
$\Omega_{\mathrm{c}}h^2$	$0.1190 \pm 0.0011$	$r_{\mathrm{drag}}h$	$99.97 \pm 0.88$	$D_{\mathrm{M}}(0.51)$	$1979 \pm 11$
$100\theta_{\mathrm{MC}}$	$1.04099 \pm 0.00042$	$\langle d^2 \rangle^{1/2}$	$2.435 \pm 0.022$	$H(0.61)$	$95.35 \pm 0.27$
$\tau$	$0.0553^{+0.0056}_{-0.0075}$	$z_{\mathrm{re}}$	$7.78^{+0.60}_{-0.74}$	$D_{\mathrm{M}}(0.61)$	$2303 \pm 12$
$\Sigma m_{\nu}$ [eV]	$< 0.0600$	$10^9 A_{\mathrm{s}}$	$2.098^{+0.024}_{-0.031}$	$H(2.33)$	$235.70 \pm 0.68$
$\ln(10^{10} A_{\mathrm{s}})$	$3.044^{+0.012}_{-0.015}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878 \pm 0.011$	$D_{\mathrm{M}}(2.33)$	$5762 \pm 14$
$n_{\mathrm{s}}$	$0.9663 \pm 0.0040$	$D_{40}$	$1227 \pm 12$	$f\sigma_8(0.15)$	$0.4562 \pm 0.0063$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{220}$	$5724 \pm 40$	$\sigma_8(0.15)$	$0.751^{+0.010}_{-0.0064}$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2536 \pm 14$	$f\sigma_8(0.38)$	$0.4752^{+0.0060}_{-0.0052}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815.6 \pm 5.1$	$\sigma_8(0.38)$	$0.6661^{+0.0094}_{-0.0056}$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{2000}$	$230.1 \pm 1.8$	$f\sigma_8(0.51)$	$0.4741^{+0.0057}_{-0.0048}$
$A_{100}^{\mathrm{PS}}$	$262 \pm 28$	$n_{\mathrm{s},0.002}$	$0.9663 \pm 0.0040$	$\sigma_8(0.51)$	$0.6235^{+0.0089}_{-0.0053}$
$A_{143}^{\mathrm{PS}}$	$48 \pm 8$	$Y_{\mathrm{P}}$	$0.245335^{+0.000086}_{-0.000074}$	$f\sigma_8(0.61)$	$0.4694^{+0.0056}_{-0.0044}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246661^{+0.000086}_{-0.000074}$	$\sigma_8(0.61)$	$0.5934^{+0.0085}_{-0.0051}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.613 \pm 0.037$	$f\sigma_8(2.33)$	$0.2991^{+0.0037}_{-0.0025}$
$A^{\mathrm{kSZ}}$	$< 4.79$	Age/Gyr	$13.796 \pm 0.032$	$\sigma_8(2.33)$	$0.3086^{+0.0043}_{-0.0027}$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$z_*$	$1090.01 \pm 0.28$	$f_{2000}^{143}$	$30.7 \pm 2.9$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$r_*$	$144.80 \pm 0.28$	$f_{2000}^{143 \times 217}$	$33.2 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.2 \pm 3.3$	$100\theta_*$	$1.04118 \pm 0.00041$	$f_{2000}^{217}$	$107.8 \pm 1.9$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.907 \pm 0.027$	$\chi_{\mathrm{lensing}}^2$	$9.37 \pm 0.75$
$c_{100}$	$0.99961 \pm 0.00061$	$z_{\mathrm{drag}}$	$1059.53 \pm 0.44$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.7$
$c_{217}$	$0.99826 \pm 0.00063$	$r_{\mathrm{drag}}$	$147.52 \pm 0.31$	$\chi_{\mathrm{lowl}}^2$	$23.22 \pm 0.86$
$H_0$	$67.77 \pm 0.54$	$k_{\mathrm{D}}$	$0.14031 \pm 0.00042$	$\chi_{\mathrm{plik}}^2$	$771.4 \pm 5.3$
$\Omega_{\Lambda}$	$0.6912 \pm 0.0068$	$100\theta_{\mathrm{D}}$	$0.16100 \pm 0.00026$	$\chi_{\mathrm{JLA}}^2$	$1035.02 \pm 0.31$
$\Omega_{\mathrm{m}}$	$0.3088 \pm 0.0068$	$z_{\mathrm{eq}}$	$3375 \pm 25$	$\chi_{6\mathrm{DF}}^2$	$0.043 \pm 0.060$
$\Omega_{\mathrm{m}}h^2$	$0.1418 \pm 0.0010$	$k_{\mathrm{eq}}$	$0.010301 \pm 0.000075$	$\chi_{\mathrm{MGS}}^2$	$1.46 \pm 0.50$
$\Omega_{\nu}h^2$	$< 0.000645$	$100\theta_{\mathrm{eq}}$	$0.8179 \pm 0.0045$	$\chi_{\mathrm{DR12BAO}}^2$	$4.4 \pm 1.3$
$\Omega_{\mathrm{m}}h^3$	$0.09606 \pm 0.00049$	$100\theta_{\mathrm{s,eq}}$	$0.4519 \pm 0.0023$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8$	$0.813^{+0.011}_{-0.0070}$	$H(0.15)$	$73.01 \pm 0.47$	$\chi_{\mathrm{CMB}}^2$	$1200.9 \pm 5.5$
$S_8$	$0.824 \pm 0.012$	$D_{\mathrm{M}}(0.15)$	$640.0 \pm 4.6$	$\chi_{\mathrm{BAO}}^2$	$5.9 \pm 1.0$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4515 \pm 0.0068$	$H(0.38)$	$83.07 \pm 0.37$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6057^{+0.0082}_{-0.0066}$	$D_{\mathrm{M}}(0.38)$	$1527.0 \pm 9.4$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2249.16; R - 1 = 0.00928$$



## 6.59 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022417	$0.02242 \pm 0.00013$ (+1.1 $\sigma$ )	$\Omega_m h^3$	0.096661	$0.09649^{+0.00037}_{-0.00031}$ (+0.9 $\sigma$ )	$H(0.15)$	73.330	$73.09^{+0.46}_{-0.40}$ (+0.3 $\sigma$ )
$\Omega_c h^2$	0.11952	$0.11934 \pm 0.00093$ (+0.2 $\sigma$ )	$\sigma_8$	0.8220	$0.814^{+0.010}_{-0.0070}$ (+0.2 $\sigma$ )	$D_M(0.15)$	637.01	$639.4^{+3.9}_{-4.6}$ (−0.3 $\sigma$ )
$100\theta_{MC}$	1.040999	$1.04100 \pm 0.00029$ (+0.1 $\sigma$ )	$S_8$	0.8303	$0.826 \pm 0.011$ (+0.1 $\sigma$ )	$H(0.38)$	83.364	$83.17^{+0.35}_{-0.30}$ (+0.4 $\sigma$ )
$\tau$	0.0533	$0.0553 \pm 0.0073$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4548	$0.4527 \pm 0.0060$ (+0.1 $\sigma$ )	$D_M(0.38)$	1520.5	$1525.4^{+7.9}_{-9.3}$ (−0.3 $\sigma$ )
$\Sigma m_\nu$ [eV]	0.0009	$< 0.0578$ (−0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6114	$0.6070^{+0.0070}_{-0.0062}$ (+0.2 $\sigma$ )	$H(0.51)$	90.038	$89.87^{+0.29}_{-0.25}$ (+0.5 $\sigma$ )
$\ln(10^{10} A_s)$	3.0415	$3.045 \pm 0.014$ (+0.2 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9961	$0.988^{+0.011}_{-0.0093}$ (+0.1 $\sigma$ )	$D_M(0.51)$	1970.6	$1976.4^{+9.3}_{-11}$ (−0.3 $\sigma$ )
$n_s$	0.96721	$0.9666 \pm 0.0037$ (+0.2 $\sigma$ )	$r_{drag} h$	100.22	$99.85 \pm 0.83$ (+0.0 $\sigma$ )	$H(0.61)$	95.625	$95.48^{+0.25}_{-0.21}$ (+0.6 $\sigma$ )
$y_{cal}$	1.00055	$1.0006 \pm 0.0024$ (+0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4415	$2.438 \pm 0.020$ (+0.1 $\sigma$ )	$D_M(0.61)$	2293.7	$2300^{+10}_{-12}$ (−0.4 $\sigma$ )
$A_{217}^{CIB}$	46.5	$47 \pm 7$ (−0.1 $\sigma$ )	$z_{re}$	7.55	$7.75 \pm 0.73$ (+0.1 $\sigma$ )	$H(2.33)$	235.97	$236.10 \pm 0.59$ (+0.4 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.50	—	$10^9 A_s$	2.0937	$2.101 \pm 0.030$ (+0.2 $\sigma$ )	$D_M(2.33)$	5747.0	$5754.3^{+9.9}_{-12}$ (−0.7 $\sigma$ )
$A_{143}^{tSZ}$	7.23	$5.5^{+2.2}_{-1.9}$ (+0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8820	$1.881 \pm 0.010$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4591	$0.4573 \pm 0.0056$ (+0.1 $\sigma$ )
$A_{100}^{PS}$	248.9	$258 \pm 28$ (−0.2 $\sigma$ )	$D_{40}$	1226.5	$1229 \pm 11$ (+0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7599	$0.7524^{+0.0098}_{-0.0064}$ (+0.2 $\sigma$ )
$A_{143}^{PS}$	48.1	$45 \pm 8$ (−0.4 $\sigma$ )	$D_{220}$	5732.7	$5738 \pm 38$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4787	$0.4762 \pm 0.0051$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{PS}$	49.2	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{810}$	2540.3	$2539 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6740	$0.6672^{+0.0089}_{-0.0057}$ (+0.2 $\sigma$ )
$A_{217}^{PS}$	120.4	$115 \pm 10$ (−0.0 $\sigma$ )	$D_{1420}$	818.33	$817.6 \pm 4.7$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.47786	$0.4751^{+0.0050}_{-0.0044}$ (+0.2 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.13$ (−0.2 $\sigma$ )	$D_{2000}$	231.42	$231.1 \pm 1.5$ (+0.6 $\sigma$ )	$\sigma_8(0.51)$	0.6309	$0.6244^{+0.0084}_{-0.0053}$ (+0.2 $\sigma$ )
$A_{100}^{dustTT}$	8.86	$8.9 \pm 1.8$ (+0.0 $\sigma$ )	$n_{s,0.002}$	0.96721	$0.9666 \pm 0.0037$ (+0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.47320	$0.4702^{+0.0049}_{-0.0042}$ (+0.2 $\sigma$ )
$A_{143}^{dustTT}$	11.04	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P$	0.245414	$0.245414^{+0.000054}_{-0.000048}$ (+1.0 $\sigma$ )	$\sigma_8(0.61)$	0.6004	$0.5942^{+0.0080}_{-0.0051}$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.04	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246741	$0.246740^{+0.000054}_{-0.000048}$ (+1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.30197	$0.2995^{+0.0035}_{-0.0025}$ (+0.2 $\sigma$ )
$A_{217}^{dustTT}$	95.5	$93.7 \pm 7.4$ (+0.0 $\sigma$ )	$10^5 D/H$	2.5767	$2.576 \pm 0.025$ (−1.0 $\sigma$ )	$\sigma_8(2.33)$	0.31200	$0.3090^{+0.0042}_{-0.0027}$ (+0.2 $\sigma$ )
$A_{100}^{dustTE}$	0.1140	$0.114 \pm 0.038$	Age/Gyr	13.7599	$13.777^{+0.023}_{-0.028}$ (−0.7 $\sigma$ )	$f_{2000}^{143}$	28.58	$29.3 \pm 2.7$ (−0.5 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1347	$0.135 \pm 0.030$	$z_*$	1089.812	$1089.79 \pm 0.22$ (−0.9 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.85	$32.0 \pm 1.9$ (−0.6 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.481	$0.481 \pm 0.085$	$r_*$	144.527	$144.57 \pm 0.22$ (−0.7 $\sigma$ )	$f_{2000}^{217}$	106.44	$106.8 \pm 1.8$ (−0.5 $\sigma$ )
$A_{143}^{dustTE}$	0.225	$0.225 \pm 0.053$	$100\theta_*$	1.041148	$1.04117 \pm 0.00029$ (+0.0 $\sigma$ )	$\chi_{lensing}^2$	8.966	$9.24 \pm 0.63$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.664	$0.664 \pm 0.080$	$D_M(z_*)/\text{Gpc}$	13.8815	$13.885 \pm 0.021$ (−0.7 $\sigma$ )	$\chi_{small}^2$	395.88	$397.1 \pm 1.8$ (+0.1 $\sigma$ )
$A_{217}^{dustTE}$	2.079	$2.08 \pm 0.27$	$z_{drag}$	1060.009	$1060.00 \pm 0.29$ (+1.1 $\sigma$ )	$\chi_{lowl}^2$	23.09	$23.25 \pm 0.79$ (−0.0 $\sigma$ )
$c_{100}$	0.99973	$0.99967 \pm 0.00062$ (+0.1 $\sigma$ )	$r_{drag}$	147.173	$147.22 \pm 0.23$ (−0.9 $\sigma$ )	$\chi_{plik}^2$	2344.2	$2359.3 \pm 5.8$ (+298.7 $\sigma$ )
$c_{217}$	0.99818	$0.99818 \pm 0.00062$ (−0.1 $\sigma$ )	$k_D$	0.140811	$0.14077 \pm 0.00028$ (+1.1 $\sigma$ )	$\chi_{6DF}^2$	0.0030	$0.046 \pm 0.065$ (−0.1 $\sigma$ )
$H_0$	68.098	$67.83^{+0.53}_{-0.46}$ (+0.3 $\sigma$ )	$100\theta_D$	0.160723	$0.16073 \pm 0.00017$ (−1.1 $\sigma$ )	$\chi_{MGS}^2$	1.540	$1.39 \pm 0.46$ (+0.0 $\sigma$ )
$\Omega_\Lambda$	0.6939	$0.6907^{+0.0068}_{-0.0059}$ (+0.1 $\sigma$ )	$z_{eq}$	3391.8	$3388 \pm 21$ (+0.4 $\sigma$ )	$\chi_{DR12BAO}^2$	3.71	$4.6 \pm 1.4$ (−0.1 $\sigma$ )
$\Omega_m$	0.3061	$0.3093^{+0.0059}_{-0.0068}$ (−0.1 $\sigma$ )	$k_{eq}$	0.010352	$0.010339 \pm 0.000065$ (+0.4 $\sigma$ )	$\chi_{prior}^2$	1.71	$11.6 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_m h^2$	0.14194	$0.14226 \pm 0.00094$ (+0.3 $\sigma$ )	$100\theta_{eq}$	0.81530	$0.8161 \pm 0.0040$ (−0.2 $\sigma$ )	$\chi_{CMB}^2$	2772.2	$2788.9 \pm 5.9$ (+287.7 $\sigma$ )
$\Omega_\nu h^2$	$0.97 \cdot 10^{-5}$	$< 0.000622$ (−0.1 $\sigma$ )	$100\theta_{s,eq}$	0.45039	$0.4508 \pm 0.0020$ (−0.3 $\sigma$ )	$\chi_{BAO}^2$	5.252	$6.0 \pm 1.1$ (−0.1 $\sigma$ )

Best-fit  $\chi_{eff}^2 = 2779.13$ ;  $\Delta\chi_{eff}^2 = 1585.70$ ;  $\bar{\chi}_{eff}^2 = 2806.44$ ;  $\Delta\bar{\chi}_{eff}^2 = 1592.04$ ;  $R - 1 = 0.01008$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.00 ( $\Delta$  0.00) MGS: 1.54 ( $\Delta$  0.00) DR12BAO: 3.71 ( $\Delta$  0.04) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb\_consext8: 8.97 ( $\Delta$  0.00) small\_100x143\_offlike5\_EE\_Aplanck.L  
395.88 ( $\Delta$  -0.15) commander\_dx12\_v3.2\_29: 23.09 ( $\Delta$  -0.15) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.24



# 6.60 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022419	$0.02243 \pm 0.00013$ (+1.0 $\sigma$ )	$\sigma_8$	0.8217	$0.8145^{+0.0098}_{-0.0069}$ (+0.2 $\sigma$ )	$H(0.38)$	83.364	$83.22^{+0.33}_{-0.29}$ (+0.4 $\sigma$ )
$\Omega_c h^2$	0.11950	$0.11925 \pm 0.00091$ (+0.2 $\sigma$ )	$S_8$	0.8300	$0.826 \pm 0.011$ (+0.1 $\sigma$ )	$D_M(0.38)$	1520.5	$1524.2^{+7.6}_{-8.6}$ (−0.3 $\sigma$ )
$100\theta_{MC}$	1.040996	$1.04101 \pm 0.00029$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4546	$0.4523 \pm 0.0058$ (+0.1 $\sigma$ )	$H(0.51)$	90.038	$89.91^{+0.27}_{-0.24}$ (+0.5 $\sigma$ )
$\tau$	0.0533	$0.0555 \pm 0.0073$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6112	$0.6069^{+0.0069}_{-0.0061}$ (+0.2 $\sigma$ )	$D_M(0.51)$	1970.6	$1975.0^{+9.0}_{-10}$ (−0.3 $\sigma$ )
$\Sigma m_\nu$ [eV]	0.0035	$< 0.0537$ (−0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9957	$0.988^{+0.011}_{-0.0091}$ (+0.1 $\sigma$ )	$H(0.61)$	95.624	$95.51^{+0.23}_{-0.20}$ (+0.6 $\sigma$ )
$\ln(10^{10} A_s)$	3.0414	$3.045 \pm 0.014$ (+0.2 $\sigma$ )	$r_{drag} h$	100.22	$99.96 \pm 0.78$ (+0.0 $\sigma$ )	$D_M(0.61)$	2293.7	$2298.6^{+9.8}_{-11}$ (−0.4 $\sigma$ )
$n_s$	0.96738	$0.9668 \pm 0.0036$ (+0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4408	$2.438 \pm 0.020$ (+0.2 $\sigma$ )	$H(2.33)$	235.96	$236.03 \pm 0.56$ (+0.5 $\sigma$ )
$y_{cal}$	1.00052	$1.0007 \pm 0.0025$ (+0.0 $\sigma$ )	$z_{re}$	7.55	$7.76 \pm 0.73$ (+0.1 $\sigma$ )	$D_M(2.33)$	5747.1	$5752.9^{+9.7}_{-11}$ (−0.7 $\sigma$ )
$A_{217}^{CIB}$	46.4	$47 \pm 7$ (−0.1 $\sigma$ )	$10^9 A_s$	2.0935	$2.101 \pm 0.030$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4590	$0.4570 \pm 0.0055$ (+0.1 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.55	—	$10^9 A_s e^{-2\tau}$	1.8820	$1.880 \pm 0.010$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7597	$0.7529^{+0.0092}_{-0.0063}$ (+0.2 $\sigma$ )
$A_{143}^{tSZ}$	7.12	$5.5^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$D_{40}$	1226.1	$1228 \pm 11$ (+0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.47860	$0.4761 \pm 0.0050$ (+0.2 $\sigma$ )
$A_{100}^{PS}$	248.2	$258 \pm 28$ (−0.2 $\sigma$ )	$D_{220}$	5732.2	$5738 \pm 38$ (+0.3 $\sigma$ )	$\sigma_8(0.38)$	0.6738	$0.6677^{+0.0084}_{-0.0056}$ (+0.2 $\sigma$ )
$A_{143}^{PS}$	48.8	$45 \pm 8$ (−0.4 $\sigma$ )	$D_{810}$	2540.4	$2539 \pm 13$ (+0.2 $\sigma$ )	$f\sigma_8(0.51)$	0.47774	$0.4750 \pm 0.0048$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{PS}$	50.3	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{1420}$	818.44	$817.7 \pm 4.7$ (+0.4 $\sigma$ )	$\sigma_8(0.51)$	0.6307	$0.6250^{+0.0079}_{-0.0053}$ (+0.2 $\sigma$ )
$A_{217}^{PS}$	120.8	$115 \pm 10$ (−0.0 $\sigma$ )	$D_{2000}$	231.46	$231.1 \pm 1.5$ (+0.6 $\sigma$ )	$f\sigma_8(0.61)$	0.47309	$0.4703^{+0.0048}_{-0.0042}$ (+0.2 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.06$ (−0.2 $\sigma$ )	$n_{s,0.002}$	0.96738	$0.9668 \pm 0.0036$ (+0.2 $\sigma$ )	$\sigma_8(0.61)$	0.6002	$0.5947^{+0.0076}_{-0.0050}$ (+0.2 $\sigma$ )
$A_{100}^{dustTT}$	8.91	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P$	0.245415	$0.245417^{+0.000053}_{-0.000048}$ (+1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.30191	$0.2998^{+0.0033}_{-0.0025}$ (+0.2 $\sigma$ )
$A_{143}^{dustTT}$	11.04	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246741	$0.246743^{+0.000053}_{-0.000048}$ (+1.0 $\sigma$ )	$\sigma_8(2.33)$	0.31194	$0.3093^{+0.0039}_{-0.0027}$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.00	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5765	$2.575 \pm 0.024$ (−1.0 $\sigma$ )	$f_{2000}^{143}$	28.49	$29.2 \pm 2.7$ (−0.5 $\sigma$ )
$A_{217}^{dustTT}$	95.4	$93.7 \pm 7.5$ (+0.0 $\sigma$ )	Age/Gyr	13.7600	$13.774^{+0.022}_{-0.026}$ (−0.7 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.79	$31.9 \pm 1.9$ (−0.6 $\sigma$ )
$A_{100}^{dustTE}$	0.1141	$0.115 \pm 0.039$	$z_*$	1089.809	$1089.78 \pm 0.21$ (−0.8 $\sigma$ )	$f_{2000}^{217}$	106.39	$106.8 \pm 1.8$ (−0.5 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1352	$0.135 \pm 0.029$	$r_*$	144.531	$144.59 \pm 0.22$ (−0.7 $\sigma$ )	$\chi_{lensing}^2$	8.960	$9.22 \pm 0.62$ (−0.2 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.483	$0.483 \pm 0.086$	$100\theta_*$	1.041147	$1.04118 \pm 0.00029$ (+0.0 $\sigma$ )	$\chi_{small}^2$	395.88	$397.1 \pm 1.9$ (+0.1 $\sigma$ )
$A_{143}^{dustTE}$	0.226	$0.223 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	13.8819	$13.887 \pm 0.021$ (−0.7 $\sigma$ )	$\chi_{lowl}^2$	23.05	$23.22 \pm 0.77$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.666	$0.663 \pm 0.081$	$z_{drag}$	1060.009	$1060.02 \pm 0.29$ (+1.1 $\sigma$ )	$\chi_{plik}^2$	2344.3	$2359.2 \pm 5.8$ (+298.3 $\sigma$ )
$A_{217}^{dustTE}$	2.083	$2.08 \pm 0.27$	$r_{drag}$	147.177	$147.23 \pm 0.23$ (−0.9 $\sigma$ )	$\chi_{JLA}^2$	1034.840	$1034.99 \pm 0.27$ (−0.1 $\sigma$ )
$c_{100}$	0.99971	$0.99966 \pm 0.00062$ (+0.1 $\sigma$ )	$k_D$	0.140808	$0.14076 \pm 0.00028$ (+1.1 $\sigma$ )	$\chi_{6DF}^2$	0.0030	$0.037 \pm 0.053$ (−0.1 $\sigma$ )
$c_{217}$	0.99818	$0.99818 \pm 0.00061$ (−0.1 $\sigma$ )	$100\theta_D$	0.160721	$0.16072 \pm 0.00017$ (−1.1 $\sigma$ )	$\chi_{MGS}^2$	1.540	$1.45 \pm 0.44$ (−0.0 $\sigma$ )
$H_0$	68.098	$67.89^{+0.49}_{-0.45}$ (+0.3 $\sigma$ )	$z_{eq}$	3391.4	$3386 \pm 21$ (+0.4 $\sigma$ )	$\chi_{DR12BAO}^2$	3.71	$4.4 \pm 1.2$ (−0.1 $\sigma$ )
$\Omega_\Lambda$	0.6939	$0.6916^{+0.0064}_{-0.0057}$ (+0.1 $\sigma$ )	$k_{eq}$	0.010351	$0.010333 \pm 0.000063$ (+0.4 $\sigma$ )	$\chi_{prior}^2$	1.68	$11.6 \pm 4.6$ (+1.2 $\sigma$ )
$\Omega_m$	0.3061	$0.3084^{+0.0057}_{-0.0064}$ (−0.1 $\sigma$ )	$100\theta_{eq}$	0.81538	$0.8165 \pm 0.0039$ (−0.3 $\sigma$ )	$\chi_{CMB}^2$	2772.2	$2788.7 \pm 5.9$ (+288.4 $\sigma$ )
$\Omega_m h^2$	0.14196	$0.14215 \pm 0.00089$ (+0.4 $\sigma$ )	$100\theta_{s,eq}$	0.45043	$0.4510 \pm 0.0020$ (−0.3 $\sigma$ )	$\chi_{BAO}^2$	5.249	$5.86 \pm 0.92$ (−0.1 $\sigma$ )
$\Omega_\nu h^2$	$3.8 \cdot 10^{-5}$	$< 0.000578$ (−0.1 $\sigma$ )	$H(0.15)$	73.329	$73.15^{+0.43}_{-0.39}$ (+0.3 $\sigma$ )			
$\Omega_m h^3$	0.096668	$0.09650^{+0.00036}_{-0.00030}$ (+0.9 $\sigma$ )	$D_M(0.15)$	637.02	$638.8^{+3.8}_{-4.3}$ (−0.3 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 3813.97$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.78$ ;  $\bar{\chi}_{\text{eff}}^2 = 3841.20$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.89$ ;  $R - 1 = 0.01317$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 ( $\Delta$  0.00) MGS: 1.54 ( $\Delta$  -0.07) DR12BAO: 3.71 ( $\Delta$  0.13) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.96 ( $\Delta$  0.05) small\_100x143\_offlike5\_EE\_Aplanck: 395.88 ( $\Delta$  -0.01) commander\_dx12\_v3.2.29: 23.05 ( $\Delta$  -0.03) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.32 SN - JLA Pantheon18: 1034.84 ( $\Delta$  0.02)



6.61 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02242 \pm 0.00013 \quad (+1.1\sigma)$	$\Omega_m h^3$	$0.09648^{+0.00037}_{-0.00031} \quad (+0.9\sigma)$	$H(0.15)$	$73.09^{+0.46}_{-0.40} \quad (+0.3\sigma)$
$\Omega_c h^2$	$0.11931 \pm 0.00092 \quad (+0.2\sigma)$	$\sigma_8$	$0.814^{+0.010}_{-0.0067} \quad (+0.2\sigma)$	$D_M(0.15)$	$639.3^{+3.9}_{-4.6} \quad (-0.3\sigma)$
$100\theta_{MC}$	$1.04100 \pm 0.00029 \quad (+0.1\sigma)$	$S_8$	$0.827 \pm 0.011 \quad (+0.1\sigma)$	$H(0.38)$	$83.18^{+0.35}_{-0.30} \quad (+0.4\sigma)$
$\tau$	$0.0561^{+0.0056}_{-0.0076} \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4528 \pm 0.0059 \quad (+0.1\sigma)$	$D_M(0.38)$	$1525.3^{+7.9}_{-9.3} \quad (-0.3\sigma)$
$\Sigma m_\nu [\text{eV}]$	$< 0.0584 \quad (-0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6072^{+0.0070}_{-0.0061} \quad (+0.2\sigma)$	$H(0.51)$	$89.88^{+0.29}_{-0.25} \quad (+0.5\sigma)$
$\ln(10^{10} A_s)$	$3.046^{+0.012}_{-0.015} \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.989^{+0.011}_{-0.0091} \quad (+0.1\sigma)$	$D_M(0.51)$	$1976.2^{+9.3}_{-11} \quad (-0.3\sigma)$
$n_s$	$0.9667 \pm 0.0037 \quad (+0.2\sigma)$	$r_{\text{drag}} h$	$99.87 \pm 0.83 \quad (+0.0\sigma)$	$H(0.61)$	$95.48^{+0.25}_{-0.21} \quad (+0.6\sigma)$
$y_{\text{cal}}$	$1.0006 \pm 0.0024 \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.439 \pm 0.020 \quad (+0.1\sigma)$	$D_M(0.61)$	$2300^{+10}_{-12} \quad (-0.4\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.1\sigma)$	$z_{\text{re}}$	$7.82^{+0.60}_{-0.74} \quad (+0.1\sigma)$	$H(2.33)$	$236.09 \pm 0.58 \quad (+0.4\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s$	$2.104^{+0.024}_{-0.031} \quad (+0.2\sigma)$	$D_M(2.33)$	$5754^{+10}_{-12} \quad (-0.7\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.2}_{-1.9} \quad (+0.2\sigma)$	$10^9 A_s e^{-2\tau}$	$1.881 \pm 0.010 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4575 \pm 0.0055 \quad (+0.1\sigma)$
$A_{100}^{\text{PS}}$	$258 \pm 28 \quad (-0.2\sigma)$	$D_{40}$	$1229 \pm 11 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7527^{+0.0097}_{-0.0061} \quad (+0.2\sigma)$
$A_{143}^{\text{PS}}$	$45 \pm 8 \quad (-0.4\sigma)$	$D_{220}$	$5737 \pm 38 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4764 \pm 0.0050 \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6675^{+0.0088}_{-0.0054} \quad (+0.2\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{1420}$	$817.6 \pm 4.7 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4753^{+0.0049}_{-0.0044} \quad (+0.2\sigma)$
$A^{\text{kSZ}}$	$< 4.12 \quad (-0.2\sigma)$	$D_{2000}$	$231.1 \pm 1.5 \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.6247^{+0.0083}_{-0.0051} \quad (+0.2\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$n_{s,0.002}$	$0.9667 \pm 0.0037 \quad (+0.2\sigma)$	$f\sigma_8(0.61)$	$0.4704^{+0.0048}_{-0.0041} \quad (+0.2\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_P$	$0.245414^{+0.000054}_{-0.000048} \quad (+1.0\sigma)$	$\sigma_8(0.61)$	$0.5945^{+0.0080}_{-0.0049} \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.246741^{+0.000054}_{-0.000048} \quad (+1.0\sigma)$	$f\sigma_8(2.33)$	$0.2997^{+0.0035}_{-0.0024} \quad (+0.2\sigma)$
$A_{217}^{\text{dustTT}}$	$93.7 \pm 7.4 \quad (+0.0\sigma)$	$10^5 D/H$	$2.576 \pm 0.025 \quad (-1.0\sigma)$	$\sigma_8(2.33)$	$0.3091^{+0.0041}_{-0.0026} \quad (+0.2\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$\text{Age/Gyr}$	$13.777^{+0.023}_{-0.028} \quad (-0.7\sigma)$	$f_{2000}^{143}$	$29.3 \pm 2.7 \quad (-0.5\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$z_*$	$1089.79 \pm 0.21 \quad (-0.8\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 1.8 \quad (-0.6\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.481 \pm 0.085$	$r_*$	$144.57 \pm 0.22 \quad (-0.7\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.8 \quad (-0.5\sigma)$
$A_{143}^{\text{dustTE}}$	$0.224 \pm 0.053$	$100\theta_*$	$1.04118 \pm 0.00029 \quad (+0.0\sigma)$	$\chi^2_{\text{lensing}}$	$9.22 \pm 0.62 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.664 \pm 0.080$	$D_M(z_*)/\text{Gpc}$	$13.886 \pm 0.021 \quad (-0.7\sigma)$	$\chi^2_{\text{small}}$	$397.1 \pm 1.9 \quad (+0.1\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.27$	$z_{\text{drag}}$	$1060.01 \pm 0.29 \quad (+1.1\sigma)$	$\chi^2_{\text{lowl}}$	$23.25 \pm 0.79 \quad (-0.0\sigma)$
$c_{100}$	$0.99966 \pm 0.00062 \quad (+0.1\sigma)$	$r_{\text{drag}}$	$147.22 \pm 0.23 \quad (-0.9\sigma)$	$\chi^2_{\text{plik}}$	$2359.1 \pm 5.8 \quad (+298.2\sigma)$
$c_{217}$	$0.99818 \pm 0.00062 \quad (-0.1\sigma)$	$k_D$	$0.14077 \pm 0.00028 \quad (+1.1\sigma)$	$\chi^2_{6\text{DF}}$	$0.045 \pm 0.063 \quad (-0.1\sigma)$
$H_0$	$67.83^{+0.53}_{-0.46} \quad (+0.3\sigma)$	$100\theta_D$	$0.16072 \pm 0.00017 \quad (-1.1\sigma)$	$\chi^2_{\text{MGS}}$	$1.39 \pm 0.46 \quad (+0.0\sigma)$
$\Omega_\Lambda$	$0.6908^{+0.0068}_{-0.0059} \quad (+0.1\sigma)$	$z_{\text{eq}}$	$3387 \pm 21 \quad (+0.4\sigma)$	$\chi^2_{\text{DR12BAO}}$	$4.5 \pm 1.4 \quad (-0.1\sigma)$
$\Omega_m$	$0.3092^{+0.0059}_{-0.0068} \quad (-0.1\sigma)$	$k_{\text{eq}}$	$0.010337 \pm 0.000064 \quad (+0.4\sigma)$	$\chi^2_{\text{prior}}$	$11.6 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_m h^2$	$0.14224 \pm 0.00093 \quad (+0.3\sigma)$	$100\theta_{\text{eq}}$	$0.8162 \pm 0.0039 \quad (-0.2\sigma)$	$\chi^2_{\text{CMB}}$	$2788.7 \pm 5.9 \quad (+289.5\sigma)$
$\Omega_\nu h^2$	$< 0.000628 \quad (-0.1\sigma)$	$100\theta_{s,\text{eq}}$	$0.4509 \pm 0.0020 \quad (-0.3\sigma)$	$\chi^2_{\text{BAO}}$	$6.0 \pm 1.1 \quad (-0.1\sigma)$

$$\bar{\chi}^2_{\text{eff}} = 2806.28; \Delta\bar{\chi}^2_{\text{eff}} = 1592.04; R - 1 = 0.01177$$



## 6.62 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02243 \pm 0.00013 \quad (+1.0\sigma)$	$\sigma_8$	$0.8148^{+0.0098}_{-0.0066} \quad (+0.2\sigma)$	$H(0.38)$	$83.22^{+0.33}_{-0.29} \quad (+0.4\sigma)$
$\Omega_c h^2$	$0.11922 \pm 0.00090 \quad (+0.2\sigma)$	$S_8$	$0.826 \pm 0.011 \quad (+0.1\sigma)$	$D_M(0.38)$	$1524.1^{+7.6}_{-8.6} \quad (-0.3\sigma)$
$100\theta_{MC}$	$1.04102 \pm 0.00029 \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4524 \pm 0.0058 \quad (+0.1\sigma)$	$H(0.51)$	$89.91^{+0.27}_{-0.24} \quad (+0.5\sigma)$
$\tau$	$0.0562^{+0.0057}_{-0.0076} \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6072^{+0.0068}_{-0.0060} \quad (+0.2\sigma)$	$D_M(0.51)$	$1974.9^{+9.0}_{-10} \quad (-0.3\sigma)$
$\Sigma m_\nu [\text{eV}]$	$< 0.0544 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.989^{+0.011}_{-0.0090} \quad (+0.1\sigma)$	$H(0.61)$	$95.51^{+0.23}_{-0.20} \quad (+0.6\sigma)$
$\ln(10^{10} A_s)$	$3.046^{+0.012}_{-0.015} \quad (+0.2\sigma)$	$r_{\text{drag}} h$	$99.97 \pm 0.78 \quad (+0.0\sigma)$	$D_M(0.61)$	$2298.4^{+9.8}_{-11} \quad (-0.3\sigma)$
$n_s$	$0.9669 \pm 0.0036 \quad (+0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.439 \pm 0.020 \quad (+0.2\sigma)$	$H(2.33)$	$236.02 \pm 0.56 \quad (+0.5\sigma)$
$y_{\text{cal}}$	$1.0006 \pm 0.0025 \quad (+0.0\sigma)$	$z_{\text{re}}$	$7.83^{+0.61}_{-0.75} \quad (+0.1\sigma)$	$D_M(2.33)$	$5752.9^{+9.7}_{-11} \quad (-0.7\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.1\sigma)$	$10^9 A_s$	$2.104^{+0.025}_{-0.031} \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4571 \pm 0.0054 \quad (+0.1\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.880 \pm 0.010 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.7532^{+0.0092}_{-0.0060} \quad (+0.2\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$D_{40}$	$1228 \pm 11 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4762 \pm 0.0049 \quad (+0.2\sigma)$
$A_{100}^{\text{PS}}$	$257 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5738 \pm 38 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6680^{+0.0083}_{-0.0053} \quad (+0.2\sigma)$
$A_{143}^{\text{PS}}$	$45 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4752 \pm 0.0047 \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$817.7 \pm 4.7 \quad (+0.4\sigma)$	$\sigma_8(0.51)$	$0.6253^{+0.0079}_{-0.0050} \quad (+0.2\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (-0.0\sigma)$	$D_{2000}$	$231.1 \pm 1.5 \quad (+0.6\sigma)$	$f\sigma_8(0.61)$	$0.4704^{+0.0047}_{-0.0041} \quad (+0.2\sigma)$
$A^{\text{kSZ}}$	$< 4.05 \quad (-0.2\sigma)$	$n_{s,0.002}$	$0.9669 \pm 0.0036 \quad (+0.2\sigma)$	$\sigma_8(0.61)$	$0.5950^{+0.0075}_{-0.0048} \quad (+0.2\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_P$	$0.245417^{+0.000053}_{-0.000048} \quad (+1.0\sigma)$	$f\sigma_8(2.33)$	$0.2999^{+0.0033}_{-0.0023} \quad (+0.2\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.246744^{+0.000053}_{-0.000048} \quad (+1.0\sigma)$	$\sigma_8(2.33)$	$0.3094^{+0.0039}_{-0.0026} \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$10^5 D/H$	$2.575 \pm 0.024 \quad (-1.0\sigma)$	$f_{2000}^{143}$	$29.2 \pm 2.7 \quad (-0.5\sigma)$
$A_{217}^{\text{dustTT}}$	$93.7 \pm 7.5 \quad (+0.0\sigma)$	Age/Gyr	$13.774^{+0.022}_{-0.026} \quad (-0.7\sigma)$	$f_{2000}^{143 \times 217}$	$31.9 \pm 1.9 \quad (-0.6\sigma)$
$A_{100}^{\text{dustTE}}$	$0.115 \pm 0.039$	$z_*$	$1089.77 \pm 0.21 \quad (-0.8\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.8 \quad (-0.5\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.029$	$r_*$	$144.59 \pm 0.21 \quad (-0.8\sigma)$	$\chi_{\text{lensing}}^2$	$9.20 \pm 0.60 \quad (-0.2\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.483 \pm 0.086$	$100\theta_*$	$1.04119 \pm 0.00029 \quad (+0.0\sigma)$	$\chi_{\text{simall}}^2$	$397.1 \pm 1.9 \quad (+0.1\sigma)$
$A_{143}^{\text{dustTE}}$	$0.223 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	$13.887 \pm 0.021 \quad (-0.7\sigma)$	$\chi_{\text{lowl}}^2$	$23.22 \pm 0.77 \quad (-0.0\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.663 \pm 0.081$	$z_{\text{drag}}$	$1060.02 \pm 0.29 \quad (+1.1\sigma)$	$\chi_{\text{plik}}^2$	$2359.0 \pm 5.8 \quad (+298.0\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.27$	$r_{\text{drag}}$	$147.24 \pm 0.23 \quad (-0.9\sigma)$	$\chi_{\text{JLA}}^2$	$1034.99 \pm 0.27 \quad (-0.1\sigma)$
$c_{100}$	$0.99966 \pm 0.00062 \quad (+0.1\sigma)$	$k_D$	$0.14076 \pm 0.00028 \quad (+1.1\sigma)$	$\chi_{6\text{DF}}^2$	$0.037 \pm 0.052 \quad (-0.1\sigma)$
$c_{217}$	$0.99818 \pm 0.00061 \quad (-0.1\sigma)$	$100\theta_D$	$0.16072 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{\text{MGS}}^2$	$1.45 \pm 0.44 \quad (-0.0\sigma)$
$H_0$	$67.90^{+0.49}_{-0.45} \quad (+0.2\sigma)$	$z_{\text{eq}}$	$3385 \pm 20 \quad (+0.4\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.4 \pm 1.2 \quad (-0.0\sigma)$
$\Omega_\Lambda$	$0.6917^{+0.0063}_{-0.0057} \quad (+0.1\sigma)$	$k_{\text{eq}}$	$0.010331 \pm 0.000062 \quad (+0.4\sigma)$	$\chi_{\text{prior}}^2$	$11.6 \pm 4.6 \quad (+1.2\sigma)$
$\Omega_m$	$0.3083^{+0.0057}_{-0.0063} \quad (-0.1\sigma)$	$100\theta_{\text{eq}}$	$0.8166 \pm 0.0038 \quad (-0.3\sigma)$	$\chi_{\text{CMB}}^2$	$2788.6 \pm 5.9 \quad (+290.3\sigma)$
$\Omega_m h^2$	$0.14213 \pm 0.00089 \quad (+0.4\sigma)$	$100\theta_{s,\text{eq}}$	$0.4511 \pm 0.0020 \quad (-0.3\sigma)$	$\chi_{\text{BAO}}^2$	$5.84 \pm 0.91 \quad (-0.1\sigma)$
$\Omega_\nu h^2$	$< 0.000585 \quad (-0.1\sigma)$	$H(0.15)$	$73.15^{+0.43}_{-0.39} \quad (+0.3\sigma)$		
$\Omega_m h^3$	$0.09650^{+0.00036}_{-0.00030} \quad (+0.9\sigma)$	$D_M(0.15)$	$638.7^{+3.7}_{-4.2} \quad (-0.3\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 3841.03; \Delta \bar{\chi}_{\text{eff}}^2 = 1591.87; R - 1 = 0.01560$$



### 6.63 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022335	$0.02233 \pm 0.00015$	$S_8$	0.8275	$0.824 \pm 0.011$	$D_M(0.15)$	637.07	$639.9^{+3.9}_{-4.9}$
$\Omega_c h^2$	0.11925	$0.11911 \pm 0.00093$	$\sigma_8 \Omega_m^{0.5}$	0.4532	$0.4511 \pm 0.0060$	$H(0.38)$	83.331	$83.10^{+0.38}_{-0.30}$
$100\theta_{MC}$	1.040934	$1.04094 \pm 0.00030$	$\sigma_8 \Omega_m^{0.25}$	0.6097	$0.6049^{+0.0076}_{-0.0063}$	$D_M(0.38)$	1520.8	$1526.7^{+7.8}_{-9.9}$
$\tau$	0.0533	$0.0545 \pm 0.0073$	$\sigma_8/h^{0.5}$	0.9938	$0.985^{+0.012}_{-0.0094}$	$H(0.51)$	89.993	$89.80^{+0.32}_{-0.25}$
$\Sigma m_\nu$ [eV]	0.0037	$< 0.0637$	$r_{\text{drag}} h$	100.33	$99.88^{+0.89}_{-0.77}$	$D_M(0.51)$	1971.1	$1978.0^{+9.3}_{-12}$
$\ln(10^{10} A_s)$	3.0391	$3.041 \pm 0.014$	$\langle d^2 \rangle^{1/2}$	2.4368	$2.431 \pm 0.021$	$H(0.61)$	95.569	$95.40^{+0.28}_{-0.21}$
$n_s$	0.96708	$0.9670 \pm 0.0038$	$z_{\text{re}}$	7.56	$7.67 \pm 0.74$	$D_M(0.61)$	2294.4	$2302^{+10}_{-13}$
$y_{\text{cal}}$	1.00049	$1.0006 \pm 0.0025$	$10^9 A_s$	2.0887	$2.094 \pm 0.030$	$H(2.33)$	235.71	$235.88 \pm 0.59$
$A_{100}^{\text{PS}}$	234.6	$239 \pm 25$	$10^9 A_s e^{-2\tau}$	1.8776	$1.877 \pm 0.010$	$D_M(2.33)$	5750.8	$5759^{+10}_{-14}$
$A_{143}^{\text{PS}}$	41.4	$39 \pm 8$	$D_{40}$	1224.1	$1225 \pm 11$	$f\sigma_8(0.15)$	0.4576	$0.4558 \pm 0.0056$
$A_{217}^{\text{PS}}$	103.7	$103 \pm 10$	$D_{220}$	5719.8	$5724 \pm 38$	$\sigma_8(0.15)$	0.7583	$0.750^{+0.011}_{-0.0066}$
$A_{217}^{\text{CIB}}$	42.1	$39 \pm 7$	$D_{810}$	2535.1	$2535 \pm 13$	$f\sigma_8(0.38)$	0.4774	$0.4746^{+0.0055}_{-0.0049}$
$A_{143}^{\text{tSZ}}$	5.60	$3.9^{+1.9}_{-2.5}$	$D_{1420}$	816.11	$816.2 \pm 4.8$	$\sigma_8(0.38)$	0.6727	$0.6649^{+0.0098}_{-0.0058}$
$r_{143 \times 217}^{\text{PS}}$	0.641	$0.66 \pm 0.13$	$D_{2000}$	230.55	$230.5 \pm 1.6$	$f\sigma_8(0.51)$	0.47660	$0.4735^{+0.0054}_{-0.0045}$
$r_{143 \times 217}^{\text{CIB}}$	0.743	$0.56^{+0.40}_{-0.17}$	$n_{s,0.002}$	0.96708	$0.9670 \pm 0.0038$	$\sigma_8(0.51)$	0.6297	$0.6223^{+0.0093}_{-0.0055}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.33	—	$Y_P$	0.245382	$0.245379^{+0.000061}_{-0.000055}$	$f\sigma_8(0.61)$	0.47202	$0.4687^{+0.0054}_{-0.0043}$
$A^{\text{kSZ}}$	1.47	$4.7^{+2.1}_{-4.0}$	$Y_P^{\text{BBN}}$	0.246708	$0.246705^{+0.000061}_{-0.000056}$	$\sigma_8(0.61)$	0.5993	$0.5922^{+0.0089}_{-0.0053}$
$A_{100}^{\text{dust}}$	1.010	$1.01 \pm 0.19$	$10^5 \text{D/H}$	2.5920	$2.593 \pm 0.027$	$f\sigma_8(2.33)$	0.30146	$0.2986^{+0.0039}_{-0.0025}$
$A_{143}^{\text{dust}}$	0.987	$0.96 \pm 0.17$	Age/Gyr	13.7691	$13.789^{+0.024}_{-0.031}$	$\sigma_8(2.33)$	0.31150	$0.3080^{+0.0046}_{-0.0028}$
$A_{217}^{\text{dust}}$	0.968	$0.98 \pm 0.10$	$z_*$	1089.892	$1089.89 \pm 0.22$	$f_{2000}^{143}$	29.64	$29.5 \pm 2.8$
$A_{143 \times 217}^{\text{dust}}$	0.995	$1.03 \pm 0.16$	$r_*$	144.659	$144.70 \pm 0.23$	$f_{2000}^{217}$	106.61	$106.7 \pm 1.9$
$c_{100}$	0.99756	$0.9976 \pm 0.0011$	$100\theta_*$	1.041097	$1.04112 \pm 0.00030$	$f_{2000}^{143 \times 217}$	31.88	$31.9 \pm 2.0$
$c_{217}$	1.00108	$1.0011 \pm 0.0016$	$D_M(z_*)/\text{Gpc}$	13.8949	$13.898 \pm 0.022$	$\chi^2_{\text{lensing}}$	8.890	$9.39 \pm 0.79$
$c_{TE}$	0.99650	$0.9966 \pm 0.0049$	$z_{\text{drag}}$	1059.780	$1059.78 \pm 0.32$	$\chi^2_{\text{small}}$	395.87	$397.0 \pm 1.6$
$c_{EE}$	0.99208	$0.9924 \pm 0.0049$	$r_{\text{drag}}$	147.338	$147.37 \pm 0.24$	$\chi^2_{\text{lowl}}$	22.96	$23.02 \pm 0.79$
$H_0$	68.10	$67.77^{+0.56}_{-0.46}$	$k_D$	0.140577	$0.14054 \pm 0.00031$	$\chi^2_{\text{CamSpec}}$	11499.2	$11514.0 \pm 5.5$
$\Omega_\Lambda$	0.6946	$0.6907^{+0.0071}_{-0.0058}$	$100\theta_D$	0.160835	$0.16085 \pm 0.00019$	$\chi^2_{6\text{DF}}$	0.0010	$0.045 \pm 0.065$
$\Omega_m$	0.3054	$0.3093^{+0.0058}_{-0.0071}$	$z_{\text{eq}}$	3383.4	$3380 \pm 21$	$\chi^2_{\text{MGS}}$	1.608	$1.40 \pm 0.47$
$\Omega_m h^2$	0.14162	$0.14200 \pm 0.00094$	$k_{\text{eq}}$	0.010326	$0.010316 \pm 0.000065$	$\chi^2_{\text{DR12BAO}}$	3.60	$4.5 \pm 1.4$
$\Omega_\nu h^2$	0.000040	$< 0.000685$	$100\theta_{\text{eq}}$	0.81653	$0.8172 \pm 0.0040$	$\chi^2_{\text{prior}}$	2.14	$7.7 \pm 3.4$
$\Omega_m h^3$	0.096442	$0.09623^{+0.00040}_{-0.00035}$	$100\theta_{s,\text{eq}}$	0.45110	$0.4514 \pm 0.0020$	$\chi^2_{\text{CMB}}$	11926.9	$11943.4 \pm 5.8$
$\sigma_8$	0.8201	$0.811^{+0.011}_{-0.0071}$	$H(0.15)$	73.318	$73.03^{+0.49}_{-0.40}$	$\chi^2_{\text{BAO}}$	5.209	$6.0 \pm 1.1$

Best-fit  $\chi^2_{\text{eff}} = 11934.26$ ;  $\bar{\chi}^2_{\text{eff}} = 11957.14$ ;  $R - 1 = 0.00745$   
 $\chi^2_{\text{eff}}$ : BAO - 6DF: 0.00 MGS: 1.61 DR12BAO: 3.60 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.89 small\_100x143.offlike5\_EE\_Aplanck\_B: 395.87 comman-  
der\_dx12\_v3\_2\_29: 22.96 CamSpec like\_10.7HM\_1400\_unified: 11499.19



# 6.64 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}} h^2$	0.022346	$0.02234 \pm 0.00014$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	0.4525	$0.4507 \pm 0.0059$	$D_{\mathrm{M}}(0.38)$	1519.6	$1525.5^{+7.6}_{-9.2}$
$\Omega_{\mathrm{c}} h^2$	0.11912	$0.11902 \pm 0.00091$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	0.6091	$0.6049^{+0.0074}_{-0.0062}$	$H(0.51)$	90.027	$89.83^{+0.30}_{-0.24}$
$100\theta_{\mathrm{MC}}$	1.040966	$1.04095 \pm 0.00030$	$\sigma_8/h^{0.5}$	0.9932	$0.986^{+0.012}_{-0.0092}$	$D_{\mathrm{M}}(0.51)$	1969.7	$1976.6^{+8.9}_{-11}$
$\tau$	0.0533	$0.0546 \pm 0.0073$	$r_{\mathrm{drag}} h$	100.45	$99.99^{+0.83}_{-0.74}$	$H(0.61)$	95.597	$95.43^{+0.26}_{-0.21}$
$\Sigma m_{\nu} [\mathrm{eV}]$	0.0008	$< 0.0593$	$\langle d^2 \rangle^{1/2}$	2.4348	$2.430 \pm 0.021$	$D_{\mathrm{M}}(0.61)$	2292.9	$2300.5^{+9.7}_{-12}$
$\ln(10^{10} A_{\mathrm{s}})$	3.0391	$3.042 \pm 0.014$	$z_{\mathrm{re}}$	7.56	$7.68 \pm 0.74$	$H(2.33)$	235.63	$235.81 \pm 0.57$
$n_{\mathrm{s}}$	0.96751	$0.9672 \pm 0.0037$	$10^9 A_{\mathrm{s}}$	2.0886	$2.094 \pm 0.030$	$D_{\mathrm{M}}(2.33)$	5749.6	$5758^{+10}_{-13}$
$y_{\mathrm{cal}}$	1.00045	$1.0006 \pm 0.0025$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8774	$1.877 \pm 0.010$	$f\sigma_8(0.15)$	0.4569	$0.4555 \pm 0.0055$
$A_{100}^{\mathrm{PS}}$	231.8	$239 \pm 25$	$D_{40}$	1223.3	$1225 \pm 11$	$\sigma_8(0.15)$	0.7583	$0.750^{+0.010}_{-0.0064}$
$A_{143}^{\mathrm{PS}}$	44.3	$39 \pm 8$	$D_{220}$	5720.5	$5724 \pm 39$	$f\sigma_8(0.38)$	0.4769	$0.4745^{+0.0054}_{-0.0048}$
$A_{217}^{\mathrm{PS}}$	103.3	$103 \pm 10$	$D_{810}$	2535.5	$2536 \pm 13$	$\sigma_8(0.38)$	0.6728	$0.6655^{+0.0093}_{-0.0057}$
$A_{217}^{\mathrm{CIB}}$	43.3	$39 \pm 7$	$D_{1420}$	816.39	$816.3 \pm 4.8$	$f\sigma_8(0.51)$	0.47622	$0.4735^{+0.0053}_{-0.0045}$
$A_{143}^{\mathrm{tSZ}}$	6.49	$3.9^{+1.8}_{-2.6}$	$D_{2000}$	230.66	$230.5 \pm 1.6$	$\sigma_8(0.51)$	0.6298	$0.6229^{+0.0088}_{-0.0054}$
$r_{143 \times 217}^{\mathrm{PS}}$	0.662	$0.66 \pm 0.13$	$n_{\mathrm{s},0.002}$	0.96751	$0.9672 \pm 0.0037$	$f\sigma_8(0.61)$	0.47171	$0.4687^{+0.0052}_{-0.0042}$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.826	$0.56^{+0.41}_{-0.16}$	$Y_{\mathrm{P}}$	0.245386	$0.245382^{+0.000061}_{-0.000054}$	$\sigma_8(0.61)$	0.5994	$0.5928^{+0.0084}_{-0.0051}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.42	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246712	$0.246708^{+0.000062}_{-0.000054}$	$f\sigma_8(2.33)$	0.30153	$0.2989^{+0.0037}_{-0.0025}$
$A^{\mathrm{kSZ}}$	0.08	$4.6^{+1.9}_{-4.1}$	$10^5 \mathrm{D}/\mathrm{H}$	2.5901	$2.592 \pm 0.027$	$\sigma_8(2.33)$	0.31163	$0.3083^{+0.0044}_{-0.0027}$
$A_{100}^{\mathrm{dust}}$	1.014	$1.01 \pm 0.19$	Age/Gyr	13.7663	$13.786^{+0.023}_{-0.029}$	$f_{2000}^{143}$	29.65	$29.5 \pm 2.8$
$A_{143}^{\mathrm{dust}}$	0.977	$0.96 \pm 0.17$	$z_*$	1089.868	$1089.87 \pm 0.22$	$f_{2000}^{217}$	106.43	$106.7 \pm 1.9$
$A_{217}^{\mathrm{dust}}$	0.975	$0.98 \pm 0.10$	$r_*$	144.683	$144.71 \pm 0.22$	$f_{2000}^{143 \times 217}$	31.82	$31.9 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	1.004	$1.03 \pm 0.16$	$100\theta_*$	1.041122	$1.04113 \pm 0.00030$	$\chi_{\mathrm{lensing}}^2$	8.882	$9.38 \pm 0.78$
$c_{100}$	0.99773	$0.9976 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8969	$13.899 \pm 0.022$	$\chi_{\mathrm{small}}^2$	395.86	$397.0 \pm 1.7$
$c_{217}$	1.00128	$1.0011 \pm 0.0016$	$z_{\mathrm{drag}}$	1059.818	$1059.79 \pm 0.32$	$\chi_{\mathrm{lowl}}^2$	22.90	$22.99 \pm 0.78$
$c_{TE}$	0.99641	$0.9965 \pm 0.0049$	$r_{\mathrm{drag}}$	147.357	$147.39 \pm 0.24$	$\chi_{\mathrm{CamSpec}}^2$	11499.3	$11514.0 \pm 5.5$
$c_{EE}$	0.99220	$0.9925 \pm 0.0049$	$k_{\mathrm{D}}$	0.140562	$0.14053 \pm 0.00031$	$\chi_{\mathrm{JLA}}^2$	1034.797	$1034.99 \pm 0.28$
$H_0$	68.167	$67.84^{+0.52}_{-0.44}$	$100\theta_{\mathrm{D}}$	0.160829	$0.16084 \pm 0.00019$	$\chi_{6\mathrm{DF}}^2$	0.0001	$0.037 \pm 0.054$
$\Omega_{\Lambda}$	0.6955	$0.6916^{+0.0066}_{-0.0056}$	$z_{\mathrm{eq}}$	3380.7	$3378 \pm 21$	$\chi_{\mathrm{MGS}}^2$	1.677	$1.46 \pm 0.45$
$\Omega_{\mathrm{m}}$	0.3045	$0.3084^{+0.0056}_{-0.0066}$	$k_{\mathrm{eq}}$	0.010318	$0.010310 \pm 0.000063$	$\chi_{\mathrm{DR12BAO}}^2$	3.52	$4.3 \pm 1.2$
$\Omega_{\mathrm{m}} h^2$	0.14148	$0.14188 \pm 0.00090$	$100\theta_{\mathrm{eq}}$	0.81707	$0.8176 \pm 0.0039$	$\chi_{\mathrm{prior}}^2$	2.05	$7.7 \pm 3.4$
$\Omega_{\nu} h^2$	$0.9 \cdot 10^{-5}$	$< 0.000637$	$100\theta_{\mathrm{s,eq}}$	0.45137	$0.4516 \pm 0.0020$	$\chi_{\mathrm{CMB}}^2$	11926.9	$11943.4 \pm 5.7$
$\Omega_{\mathrm{m}} h^3$	0.096442	$0.09625^{+0.00040}_{-0.00034}$	$H(0.15)$	73.378	$73.09^{+0.46}_{-0.39}$	$\chi_{\mathrm{BAO}}^2$	5.200	$5.84 \pm 0.93$
$\sigma_8$	0.8200	$0.812^{+0.011}_{-0.0070}$	$D_{\mathrm{M}}(0.15)$	636.48	$639.3^{+3.7}_{-4.5}$			
$S_8$	0.8261	$0.823 \pm 0.011$	$H(0.38)$	83.375	$83.15^{+0.35}_{-0.29}$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 12968.97$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 12991.94$ ;  $R - 1 = 0.00817$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.52 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.88 small\_100x143.offlike5\_EE\_Aplanck\_B: 395.86 commander\_dx12.v3.2.29: 22.90 CamSpec like\_10.7HM\_1400\_unified: 11499.28 SN - JLA Pantheon18: 1034.80



# 6.65 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02234 \pm 0.00014$	$S_8$	$0.824 \pm 0.011$	$D_M(0.15)$	$639.8^{+3.8}_{-4.9}$
$\Omega_c h^2$	$0.11908 \pm 0.00092$	$\sigma_8 \Omega_m^{0.5}$	$0.4512 \pm 0.0060$	$H(0.38)$	$83.11^{+0.38}_{-0.30}$
$100\theta_{MC}$	$1.04094 \pm 0.00030$	$\sigma_8 \Omega_m^{0.25}$	$0.6052^{+0.0075}_{-0.0062}$	$D_M(0.38)$	$1526.5^{+7.8}_{-9.9}$
$\tau$	$0.0554^{+0.0053}_{-0.0076}$	$\sigma_8/h^{0.5}$	$0.986^{+0.012}_{-0.0092}$	$H(0.51)$	$89.80^{+0.32}_{-0.25}$
$\Sigma m_\nu$ [eV]	$< 0.0644$	$r_{\text{drag}} h$	$99.89^{+0.88}_{-0.76}$	$D_M(0.51)$	$1977.9^{+9.2}_{-12}$
$\ln(10^{10} A_s)$	$3.043^{+0.011}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	$2.433 \pm 0.020$	$H(0.61)$	$95.40^{+0.28}_{-0.21}$
$n_s$	$0.9671 \pm 0.0037$	$z_{\text{re}}$	$7.77^{+0.58}_{-0.75}$	$D_M(0.61)$	$2302^{+10}_{-13}$
$y_{\text{cal}}$	$1.0006 \pm 0.0025$	$10^9 A_s$	$2.097^{+0.023}_{-0.031}$	$H(2.33)$	$235.87 \pm 0.59$
$A_{100}^{\text{PS}}$	$239 \pm 25$	$10^9 A_s e^{-2\tau}$	$1.877 \pm 0.010$	$D_M(2.33)$	$5759^{+10}_{-14}$
$A_{143}^{\text{PS}}$	$39 \pm 8$	$D_{40}$	$1225 \pm 11$	$f\sigma_8(0.15)$	$0.4560 \pm 0.0056$
$A_{217}^{\text{PS}}$	$103 \pm 10$	$D_{220}$	$5723 \pm 38$	$\sigma_8(0.15)$	$0.750^{+0.011}_{-0.0064}$
$A_{217}^{\text{CIB}}$	$39 \pm 7$	$D_{810}$	$2535 \pm 13$	$f\sigma_8(0.38)$	$0.4749^{+0.0053}_{-0.0048}$
$A_{143}^{\text{tSZ}}$	$3.9^{+1.9}_{-2.5}$	$D_{1420}$	$816.1 \pm 4.8$	$\sigma_8(0.38)$	$0.6653^{+0.0097}_{-0.0056}$
$r_{143 \times 217}^{\text{PS}}$	$0.66 \pm 0.13$	$D_{2000}$	$230.5 \pm 1.6$	$f\sigma_8(0.51)$	$0.4737^{+0.0053}_{-0.0045}$
$r_{143 \times 217}^{\text{CIB}}$	$0.56^{+0.40}_{-0.17}$	$n_{s,0.002}$	$0.9671 \pm 0.0037$	$\sigma_8(0.51)$	$0.6227^{+0.0092}_{-0.0053}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.245380^{+0.000061}_{-0.000055}$	$f\sigma_8(0.61)$	$0.4689^{+0.0053}_{-0.0042}$
$A^{\text{kSZ}}$	$4.6^{+2.1}_{-4.1}$	$Y_P^{\text{BBN}}$	$0.246707^{+0.000061}_{-0.000055}$	$\sigma_8(0.61)$	$0.5926^{+0.0088}_{-0.0051}$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.19$	$10^5 \text{D/H}$	$2.592 \pm 0.027$	$f\sigma_8(2.33)$	$0.2988^{+0.0038}_{-0.0024}$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.17$	$\text{Age/Gyr}$	$13.789^{+0.024}_{-0.031}$	$\sigma_8(2.33)$	$0.3082^{+0.0046}_{-0.0027}$
$A_{217}^{\text{dust}}$	$0.98 \pm 0.10$	$z_*$	$1089.88 \pm 0.22$	$f_{2000}^{143}$	$29.5 \pm 2.8$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16$	$r_*$	$144.70 \pm 0.23$	$f_{2000}^{217}$	$106.7 \pm 1.9$
$c_{100}$	$0.9976 \pm 0.0011$	$100\theta_*$	$1.04113 \pm 0.00030$	$f_{2000}^{143 \times 217}$	$31.9 \pm 2.0$
$c_{217}$	$1.0011 \pm 0.0016$	$D_M(z_*)/\text{Gpc}$	$13.898 \pm 0.022$	$\chi_{\text{lensing}}^2$	$9.34 \pm 0.72$
$c_{TE}$	$0.9965 \pm 0.0049$	$z_{\text{drag}}$	$1059.79 \pm 0.32$	$\chi_{\text{simall}}^2$	$396.9 \pm 1.7$
$c_{EE}$	$0.9924 \pm 0.0049$	$r_{\text{drag}}$	$147.38 \pm 0.24$	$\chi_{\text{lowl}}^2$	$23.02 \pm 0.78$
$H_0$	$67.78^{+0.56}_{-0.46}$	$k_D$	$0.14053 \pm 0.00031$	$\chi_{\text{CamSpec}}^2$	$11513.9 \pm 5.5$
$\Omega_\Lambda$	$0.6909^{+0.0071}_{-0.0058}$	$100\theta_D$	$0.16084 \pm 0.00019$	$\chi_{6\text{DF}}^2$	$0.044 \pm 0.064$
$\Omega_m$	$0.3091^{+0.0058}_{-0.0071}$	$z_{\text{eq}}$	$3379 \pm 21$	$\chi_{\text{MGS}}^2$	$1.41 \pm 0.47$
$\Omega_m h^2$	$0.14198 \pm 0.00094$	$k_{\text{eq}}$	$0.010314 \pm 0.000064$	$\chi_{\text{DR12BAO}}^2$	$4.5 \pm 1.4$
$\Omega_\nu h^2$	$< 0.000692$	$100\theta_{\text{eq}}$	$0.8173 \pm 0.0039$	$\chi_{\text{prior}}^2$	$7.7 \pm 3.4$
$\Omega_m h^3$	$0.09623^{+0.00041}_{-0.00035}$	$100\theta_{s,\text{eq}}$	$0.4515 \pm 0.0020$	$\chi_{\text{CMB}}^2$	$11943.2 \pm 5.7$
$\sigma_8$	$0.812^{+0.011}_{-0.0069}$	$H(0.15)$	$73.03^{+0.49}_{-0.40}$	$\chi_{\text{BAO}}^2$	$6.0 \pm 1.1$

$$\bar{\chi}_{\text{eff}}^2 = 11956.94; R - 1 = 0.00819$$



# 6.66 base\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02234 \pm 0.00014$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4509 \pm 0.0059$	$D_{\mathrm{M}}(0.38)$	$1525.3^{+7.6}_{-9.2}$
$\Omega_{\mathrm{c}}h^2$	$0.11899 \pm 0.00090$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6051^{+0.0073}_{-0.0061}$	$H(0.51)$	$89.84^{+0.30}_{-0.24}$
$100\theta_{\mathrm{MC}}$	$1.04095 \pm 0.00030$	$\sigma_8/h^{0.5}$	$0.986^{+0.012}_{-0.0091}$	$D_{\mathrm{M}}(0.51)$	$1976.5^{+8.9}_{-11}$
$\tau$	$0.0555^{+0.0053}_{-0.0077}$	$r_{\mathrm{drag}}h$	$100.00^{+0.82}_{-0.74}$	$H(0.61)$	$95.43^{+0.26}_{-0.21}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$< 0.0600$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.020$	$D_{\mathrm{M}}(0.61)$	$2300.3^{+9.7}_{-12}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.011}_{-0.015}$	$z_{\mathrm{re}}$	$7.78^{+0.57}_{-0.76}$	$H(2.33)$	$235.80 \pm 0.57$
$n_{\mathrm{s}}$	$0.9673 \pm 0.0037$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.023}_{-0.031}$	$D_{\mathrm{M}}(2.33)$	$5758^{+10}_{-13}$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.010$	$f\sigma_8(0.15)$	$0.4556 \pm 0.0055$
$A_{100}^{\mathrm{PS}}$	$239 \pm 25$	$D_{40}$	$1225 \pm 11$	$\sigma_8(0.15)$	$0.751^{+0.010}_{-0.0062}$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8$	$D_{220}$	$5724 \pm 39$	$f\sigma_8(0.38)$	$0.4747 \pm 0.0051$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10$	$D_{810}$	$2535 \pm 13$	$\sigma_8(0.38)$	$0.6659^{+0.0092}_{-0.0055}$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7$	$D_{1420}$	$816.2 \pm 4.8$	$f\sigma_8(0.51)$	$0.4737^{+0.0051}_{-0.0044}$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.8}_{-2.6}$	$D_{2000}$	$230.5 \pm 1.6$	$\sigma_8(0.51)$	$0.6233^{+0.0087}_{-0.0052}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9673 \pm 0.0037$	$f\sigma_8(0.61)$	$0.4690^{+0.0051}_{-0.0041}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.41}_{-0.16}$	$Y_{\mathrm{P}}$	$0.245383^{+0.000061}_{-0.000054}$	$\sigma_8(0.61)$	$0.5931^{+0.0083}_{-0.0049}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246709^{+0.000061}_{-0.000054}$	$f\sigma_8(2.33)$	$0.2991^{+0.0036}_{-0.0024}$
$A^{\mathrm{kSZ}}$	$4.6^{+1.9}_{-4.2}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.591 \pm 0.027$	$\sigma_8(2.33)$	$0.3085^{+0.0043}_{-0.0026}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$\mathrm{Age}/\mathrm{Gyr}$	$13.786^{+0.023}_{-0.029}$	$f_{2000}^{143}$	$29.4 \pm 2.8$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.17$	$z_*$	$1089.86 \pm 0.22$	$f_{2000}^{217}$	$106.7 \pm 1.9$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$r_*$	$144.72 \pm 0.22$	$f_{2000}^{143 \times 217}$	$31.9 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04114 \pm 0.00030$	$\chi_{\mathrm{lensing}}^2$	$9.33 \pm 0.71$
$c_{100}$	$0.9976 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.900 \pm 0.022$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.7$
$c_{217}$	$1.0011 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.80 \pm 0.32$	$\chi_{\mathrm{lowl}}^2$	$22.99 \pm 0.78$
$c_{TE}$	$0.9965 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.39 \pm 0.24$	$\chi_{\mathrm{CamSpec}}^2$	$11514.0 \pm 5.5$
$c_{EE}$	$0.9925 \pm 0.0049$	$k_{\mathrm{D}}$	$0.14052 \pm 0.00031$	$\chi_{\mathrm{JLA}}^2$	$1034.99 \pm 0.28$
$H_0$	$67.85^{+0.52}_{-0.44}$	$100\theta_{\mathrm{D}}$	$0.16084 \pm 0.00019$	$\chi_{6\mathrm{DF}}^2$	$0.036 \pm 0.054$
$\Omega_{\Lambda}$	$0.6917^{+0.0066}_{-0.0056}$	$z_{\mathrm{eq}}$	$3378 \pm 21$	$\chi_{\mathrm{MGS}}^2$	$1.47 \pm 0.46$
$\Omega_{\mathrm{m}}$	$0.3083^{+0.0056}_{-0.0066}$	$k_{\mathrm{eq}}$	$0.010308 \pm 0.000063$	$\chi_{\mathrm{DR12BAO}}^2$	$4.3 \pm 1.2$
$\Omega_{\mathrm{m}}h^2$	$0.14186 \pm 0.00090$	$100\theta_{\mathrm{eq}}$	$0.8177 \pm 0.0039$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.4$
$\Omega_{\nu}h^2$	$< 0.000645$	$100\theta_{\mathrm{s,eq}}$	$0.4517 \pm 0.0020$	$\chi_{\mathrm{CMB}}^2$	$11943.2 \pm 5.7$
$\Omega_{\mathrm{m}}h^3$	$0.09625^{+0.00040}_{-0.00034}$	$H(0.15)$	$73.09^{+0.46}_{-0.39}$	$\chi_{\mathrm{BAO}}^2$	$5.83 \pm 0.92$
$\sigma_8$	$0.812^{+0.011}_{-0.0067}$	$D_{\mathrm{M}}(0.15)$	$639.2^{+3.7}_{-4.5}$		
$S_8$	$0.823 \pm 0.011$	$H(0.38)$	$83.15^{+0.35}_{-0.29}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 12991.75; R - 1 = 0.00951$$



## 6.67 base\_mnu\_CleanedCamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022129	$0.02203^{+0.00026}_{-0.00023}$	$\sigma_8 \Omega_m^{0.25}$	0.6140	$0.598^{+0.024}_{-0.012}$	$H(0.15)$	72.88	$71.2^{+2.1}_{-0.89}$
$\Omega_c h^2$	0.12011	$0.1209 \pm 0.0022$	$\sigma_8/h^{0.5}$	0.9998	$0.969^{+0.041}_{-0.017}$	$D_M(0.15)$	641.3	$658.5^{+8.3}_{-22}$
$100\theta_{MC}$	1.04085	$1.04065 \pm 0.00052$	$r_{drag}h$	99.60	$96.8^{+3.8}_{-1.8}$	$H(0.38)$	82.99	$81.7^{+1.6}_{-0.66}$
$\tau$	0.0518	$0.0513 \pm 0.0079$	$\langle d^2 \rangle^{1/2}$	2.4528	$2.444 \pm 0.038$	$D_M(0.38)$	1529.6	$1564^{+17}_{-45}$
$\Sigma m_\nu$ [eV]	0.000	$< 0.198$	$z_{re}$	7.47	$7.45 \pm 0.83$	$H(0.51)$	89.70	$88.7^{+1.3}_{-0.53}$
$\ln(10^{10} A_s)$	3.0372	$3.037 \pm 0.016$	$10^9 A_s$	2.0847	$2.085 \pm 0.034$	$D_M(0.51)$	1981.5	$2022^{+20}_{-52}$
$n_s$	0.9630	$0.9607^{+0.0067}_{-0.0058}$	$10^9 A_s e^{-2\tau}$	1.8794	$1.881 \pm 0.014$	$H(0.61)$	95.32	$94.5^{+1.1}_{-0.44}$
$y_{cal}$	1.00036	$1.0004 \pm 0.0025$	$D_{40}$	1231.1	$1233 \pm 15$	$D_M(0.61)$	2305.7	$2350^{+22}_{-57}$
$A_{100}^{PS}$	254.7	$258 \pm 27$	$D_{220}$	5708.2	$5706 \pm 42$	$H(2.33)$	236.05	$237.5^{+1.3}_{-2.1}$
$A_{143}^{tSZ}$	4.81	$3.6^{+1.6}_{-2.7}$	$D_{810}$	2531.2	$2532 \pm 14$	$D_M(2.33)$	5762.7	$5807^{+19}_{-56}$
$A^{kSZ}$	2.71	$> 3.99$	$D_{1420}$	812.6	$812.3 \pm 5.3$	$f\sigma_8(0.15)$	0.4625	$0.458 \pm 0.013$
$A_{100}^{dust}$	0.995	$1.00 \pm 0.20$	$D_{2000}$	229.07	$228.5 \pm 2.0$	$\sigma_8(0.15)$	0.7594	$0.724^{+0.040}_{-0.010}$
$A_{143}^{power}$	11.42	$10.9^{+2.2}_{-2.6}$	$n_{s,0.002}$	0.9630	$0.9607^{+0.0067}_{-0.0058}$	$f\sigma_8(0.38)$	0.4809	$0.471^{+0.016}_{-0.0097}$
$A_{217}^{power}$	9.65	$8.5^{+1.8}_{-3.2}$	$Y_P$	0.245296	$0.24525^{+0.00013}_{-0.000091}$	$\sigma_8(0.38)$	0.6730	$0.640^{+0.037}_{-0.0087}$
$A_{143 \times 217}^{power}$	5.97	$4.7^{+1.8}_{-3.0}$	$Y_P^{BBN}$	0.246622	$0.24657^{+0.00013}_{-0.000092}$	$f\sigma_8(0.51)$	0.4795	$0.467^{+0.018}_{-0.0082}$
$\gamma_{143}^{power}$	1.288	$1.33^{+0.39}_{-0.53}$	$10^5 D/H$	2.6316	$2.650^{+0.043}_{-0.050}$	$\sigma_8(0.51)$	0.6297	$0.598^{+0.036}_{-0.0081}$
$\gamma_{217}^{power}$	1.41	$1.34 \pm 0.61$	Age/Gyr	13.796	$13.899^{+0.042}_{-0.13}$	$f\sigma_8(0.61)$	0.4744	$0.461^{+0.019}_{-0.0072}$
$\gamma_{143 \times 217}^{power}$	1.32	$1.30^{+0.59}_{-0.68}$	$z_*$	1090.231	$1090.45^{+0.41}_{-0.52}$	$\sigma_8(0.61)$	0.5991	$0.569^{+0.034}_{-0.0077}$
$c_{100}$	0.99792	$0.9978 \pm 0.0011$	$r_*$	144.60	$144.44 \pm 0.50$	$f\sigma_8(2.33)$	0.3011	$0.287^{+0.016}_{-0.0033}$
$c_{217}$	0.99896	$0.9994^{+0.0013}_{-0.0017}$	$100\theta_*$	1.041024	$1.04092 \pm 0.00049$	$\sigma_8(2.33)$	0.3109	$0.295^{+0.018}_{-0.0040}$
$H_0$	67.60	$65.7^{+2.4}_{-1.0}$	$D_M(z_*)/\text{Gpc}$	13.8897	$13.876 \pm 0.046$	$f_{2000}^{143}$	23.28	$24^{+3}_{-3}$
$\Omega_\Lambda$	0.6887	$0.663^{+0.034}_{-0.012}$	$z_{drag}$	1059.361	$1059.23 \pm 0.48$	$f_{2000}^{217}$	16.97	$17.4 \pm 2.1$
$\Omega_m$	0.3113	$0.337^{+0.012}_{-0.034}$	$r_{drag}$	147.342	$147.21 \pm 0.49$	$f_{2000}^{143 \times 217}$	11.23	$11.7^{+2.2}_{-2.5}$
$\Omega_m h^2$	0.14223	$0.1448^{+0.0021}_{-0.0036}$	$k_D$	0.14041	$0.14050 \pm 0.00052$	$\chi_{small}^2$	395.81	$396.9 \pm 1.6$
$\Omega_\nu h^2$	0.00000	$< 0.00212$	$100\theta_D$	0.161083	$0.16115 \pm 0.00027$	$\chi_{lowl}^2$	23.69	$23.9 \pm 1.3$
$\Omega_m h^3$	0.09615	$0.0951^{+0.0014}_{-0.00046}$	$z_{eq}$	3399.0	$3415 \pm 50$	$\chi_{CamSpec}^2$	6703.6	$6717.4 \pm 5.4$
$\sigma_8$	0.8220	$0.786^{+0.042}_{-0.011}$	$k_{eq}$	0.010374	$0.01042 \pm 0.00015$	$\chi_{prior}^2$	1.47	$5.3 \pm 2.9$
$S_8$	0.8373	$0.831 \pm 0.025$	$100\theta_{eq}$	0.8131	$0.8103 \pm 0.0092$	$\chi_{CMB}^2$	7123.1	$7138.2 \pm 5.5$
$\sigma_8 \Omega_m^{0.5}$	0.4586	$0.455 \pm 0.014$	$100\theta_{s,eq}$	0.44945	$0.4480 \pm 0.0047$			

Best-fit  $\chi_{eff}^2 = 7124.58$ ;  $\bar{\chi}_{eff}^2 = 7143.49$ ;  $R - 1 = 0.00791$

$\chi_{eff}^2$ : CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.81 commander\_dx12\_v3.2\_29: 23.69 CamSpec like\_10.7cleaned: 6703.61



## 6.68 base\_mnu\_lensing\_lenspriors

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02221	$0.02220 \pm 0.00050$	$D_{40}$	1540	$1082^{+200}_{-300}$	$H(0.15)$	92.1	$77 \pm 20$
$\Omega_c h^2$	0.1272	$0.168^{+0.036}_{-0.042}$	$D_{220}$	6680	$4588^{+900}_{-2000}$	$D_M(0.15)$	501	$655^{+80}_{-200}$
$100\theta_{MC}$	1.118	$1.111^{+0.074}_{-0.063}$	$D_{810}$	2684	$1908^{+500}_{-700}$	$H(0.38)$	101.0	$91^{+10}_{-20}$
$\Sigma m_\nu$ [eV]	0.55	$< 2.80$	$D_{1420}$	733	$564^{+200}_{-300}$	$D_M(0.38)$	1217	$1509^{+200}_{-400}$
$\ln(10^{10} A_s)$	3.238	$2.96 \pm 0.19$	$D_{2000}$	210	$167^{+40}_{-80}$	$H(0.51)$	107.1	$100 \pm 10$
$n_s$	0.9607	$0.960 \pm 0.020$	$n_{s,0.002}$	0.9607	$0.960 \pm 0.020$	$D_M(0.51)$	1592	$1927^{+200}_{-500}$
$H_0$	87.6	—	$Y_P$	0.245330	$0.24531^{+0.00023}_{-0.00020}$	$H(0.61)$	112.3	$108 \pm 10$
$\Omega_\Lambda$	0.798	$0.45^{+0.37}_{-0.11}$	$Y_P^{BBN}$	0.246656	$0.24664^{+0.00023}_{-0.00020}$	$D_M(0.61)$	1866	$2221^{+300}_{-600}$
$\Omega_m$	0.202	$0.55^{+0.11}_{-0.37}$	$10^5 D/H$	2.616	$2.621^{+0.089}_{-0.10}$	$H(2.33)$	251.9	$284^{+40}_{-30}$
$\Omega_m h^2$	0.155	$0.213^{+0.045}_{-0.064}$	Age/Gyr	11.97	$12.5^{+1.2}_{-2.1}$	$D_M(2.33)$	4976	$5207^{+510}_{-850}$
$\Omega_\nu h^2$	0.0059	$< 0.0301$	$z_*$	1090.86	$1094.9 \pm 3.5$	$f\sigma_8(0.15)$	0.4056	$0.457^{+0.044}_{-0.025}$
$\Omega_m h^3$	0.136	$0.147^{+0.035}_{-0.067}$	$r_*$	142.6	$133.0^{+7.4}_{-11}$	$\sigma_8(0.15)$	0.816	$0.63^{+0.11}_{-0.13}$
$\sigma_8$	0.868	$0.70^{+0.11}_{-0.12}$	$100\theta_*$	1.118	$1.112^{+0.074}_{-0.063}$	$f\sigma_8(0.38)$	0.4510	$0.440^{+0.031}_{-0.019}$
$S_8$	0.713	$0.87^{+0.11}_{-0.14}$	$D_M(z_*)/\text{Gpc}$	12.75	$12.0^{+1.0}_{-1.7}$	$\sigma_8(0.38)$	0.739	$0.55^{+0.11}_{-0.14}$
$\sigma_8 \Omega_m^{0.5}$	0.390	$0.474^{+0.058}_{-0.078}$	$z_{\text{drag}}$	1060.16	$1063.4 \pm 3.1$	$f\sigma_8(0.51)$	0.4647	$0.427^{+0.047}_{-0.023}$
$\sigma_8 \Omega_m^{0.25}$	0.5820	$0.569 \pm 0.023$	$r_{\text{drag}}$	145.3	$135.5^{+7.6}_{-11}$	$\sigma_8(0.51)$	0.699	$0.51^{+0.10}_{-0.14}$
$\sigma_8/h^{0.5}$	0.927	$0.846^{+0.055}_{-0.091}$	$k_D$	0.1428	$0.155 \pm 0.011$	$f\sigma_8(0.61)$	0.4703	$0.416^{+0.059}_{-0.029}$
$r_{\text{drag}} h$	127.2	$93^{+20}_{-30}$	$100\theta_D$	0.1726	$0.170^{+0.011}_{-0.0094}$	$\sigma_8(0.61)$	0.670	$0.488^{+0.098}_{-0.13}$
$\langle d^2 \rangle^{1/2}$	2.516	$2.495 \pm 0.059$	$z_{\text{eq}}$	3569	$4534^{+900}_{-1000}$	$f\sigma_8(2.33)$	0.351	$0.250^{+0.052}_{-0.077}$
$z_{\text{re}}$	8.12	$8.87^{+0.87}_{-0.75}$	$k_{\text{eq}}$	0.01090	$0.0139^{+0.0026}_{-0.0032}$	$\sigma_8(2.33)$	0.366	$0.252^{+0.051}_{-0.086}$
$10^9 A_s$	2.548	$1.96^{+0.29}_{-0.44}$	$100\theta_{\text{eq}}$	0.843	$0.724^{+0.058}_{-0.095}$	$\chi^2_{\text{lensing}}$	7.40	$10.3 \pm 2.2$
$10^9 A_s e^{-2\tau}$	2.282	$1.76^{+0.26}_{-0.40}$	$100\theta_{s,\text{eq}}$	0.4670	$0.403^{+0.031}_{-0.049}$	$\chi^2_{\text{prior}}$	0.00	$2.0 \pm 2.0$

Best-fit  $\chi^2_{\text{eff}} = 7.40$ ;  $\bar{\chi}^2_{\text{eff}} = 12.38$ ;  $R - 1 = 0.00245$

$\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 7.40



## 6.69 base\_mnu\_lensing\_lenspriors\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02225	$0.02221 \pm 0.00051$	$D_{220}$	6603	$4854^{+800}_{-2000}$	$H(0.38)$	84.0	$102^{+20}_{-9}$
$\Omega_c h^2$	0.1162	$0.168^{+0.041}_{-0.035}$	$D_{810}$	2872	$1826^{+700}_{-1000}$	$D_M(0.38)$	1506	$1255^{+80}_{-200}$
$100\theta_{MC}$	1.048	$1.155^{+0.088}_{-0.038}$	$D_{1420}$	916	$527^{+400}_{-300}$	$H(0.51)$	90.6	$110^{+20}_{-10}$
$\Sigma m_\nu$ [eV]	0.31	$2.03^{+0.65}_{-2.0}$	$D_{2000}$	258	$152^{+100}_{-80}$	$D_M(0.51)$	1952	$1627^{+100}_{-260}$
$\ln(10^{10} A_s)$	3.166	$3.05^{+0.12}_{-0.13}$	$n_{s,0.002}$	0.9593	$0.960 \pm 0.020$	$H(0.61)$	96.2	$117^{+20}_{-10}$
$n_s$	0.9593	$0.960 \pm 0.020$	$Y_P$	0.245348	$0.24532^{+0.00023}_{-0.00020}$	$D_M(0.61)$	2274	$1895^{+120}_{-300}$
$H_0$	68.9	$84^{+10}_{-7}$	$Y_P^{BBN}$	0.246675	$0.24664^{+0.00023}_{-0.00020}$	$H(2.33)$	236.0	$287^{+40}_{-30}$
$\Omega_\Lambda$	0.7016	$0.700 \pm 0.022$	$10^5 D/H$	2.607	$2.619^{+0.089}_{-0.099}$	$D_M(2.33)$	5719	$4765^{+310}_{-760}$
$\Omega_m$	0.2984	$0.300 \pm 0.022$	Age/Gyr	13.69	$11.41^{+0.74}_{-1.8}$	$f\sigma_8(0.15)$	0.4427	$0.433 \pm 0.019$
$\Omega_m h^2$	0.142	$0.212 \pm 0.047$	$z_*$	1089.76	$1094.9^{+3.9}_{-3.4}$	$\sigma_8(0.15)$	0.7362	$0.717 \pm 0.034$
$\Omega_\nu h^2$	0.0033	$0.0218^{+0.0068}_{-0.021}$	$r_*$	145.5	$132.9^{+6.2}_{-11}$	$f\sigma_8(0.38)$	0.4643	$0.455^{+0.020}_{-0.018}$
$\Omega_m h^3$	0.098	$0.182^{+0.051}_{-0.079}$	$100\theta_*$	1.049	$1.156^{+0.088}_{-0.038}$	$\sigma_8(0.38)$	0.6547	$0.638 \pm 0.032$
$\sigma_8$	0.7948	$0.774 \pm 0.036$	$D_M(z_*)/\text{Gpc}$	13.87	$11.57^{+0.79}_{-1.8}$	$f\sigma_8(0.51)$	0.4647	$0.456^{+0.020}_{-0.018}$
$S_8$	0.7926	$0.772 \pm 0.035$	$z_{\text{drag}}$	1059.44	$1063.4^{+3.3}_{-2.8}$	$\sigma_8(0.51)$	0.6137	$0.598 \pm 0.030$
$\sigma_8 \Omega_m^{0.5}$	0.4341	$0.423 \pm 0.019$	$r_{\text{drag}}$	148.2	$135.3^{+6.3}_{-11}$	$f\sigma_8(0.61)$	0.4611	$0.452^{+0.020}_{-0.018}$
$\sigma_8 \Omega_m^{0.25}$	0.5874	$0.572 \pm 0.024$	$k_D$	0.1397	$0.155^{+0.013}_{-0.0094}$	$\sigma_8(0.61)$	0.5846	$0.570 \pm 0.029$
$\sigma_8/h^{0.5}$	0.957	$0.850^{+0.065}_{-0.082}$	$100\theta_D$	0.1622	$0.177^{+0.012}_{-0.0056}$	$f\sigma_8(2.33)$	0.2992	$0.296 \pm 0.015$
$r_{\text{drag}} h$	102.1	$112.7^{+8.6}_{-5.9}$	$z_{\text{eq}}$	3307	$4555^{+1000}_{-800}$	$\sigma_8(2.33)$	0.3069	$0.301 \pm 0.016$
$\langle d^2 \rangle^{1/2}$	2.517	$2.488^{+0.053}_{-0.060}$	$k_{\text{eq}}$	0.01010	$0.0140^{+0.0030}_{-0.0026}$	$\chi^2_{\text{lensing}}$	7.49	$10.2 \pm 2.1$
$z_{\text{re}}$	7.77	$8.94^{+0.94}_{-0.65}$	$100\theta_{\text{eq}}$	0.837	$0.747^{+0.044}_{-0.073}$	$\chi^2_{\text{JLA}}$	1034.73	$1035.7 \pm 1.4$
$10^9 A_s$	2.370	$2.12^{+0.21}_{-0.30}$	$100\theta_{s,\text{eq}}$	0.4618	$0.416^{+0.023}_{-0.037}$	$\chi^2_{\text{prior}}$	0.01	$2.0 \pm 2.1$
$10^9 A_s e^{-2\tau}$	2.123	$1.90^{+0.19}_{-0.27}$	$H(0.15)$	74.1	$90^{+10}_{-8}$			
$D_{40}$	1421	$1182^{+100}_{-200}$	$D_M(0.15)$	630	$525^{+33}_{-85}$			

Best-fit  $\chi^2_{\text{eff}} = 1042.24$ ;  $\bar{\chi}^2_{\text{eff}} = 1047.91$ ;  $R - 1 = 0.00847$

$\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmargd: 7.49 SN - JLA Pantheon18: 1034.73



## 6.70 base\_mnu\_lensing\_lenspriors\_post\_agr2

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00051$	$D_{40}$	$1101^{+200}_{-400}$	$H(0.15)$	$77^{+10}_{-20}$
$\Omega_{\mathrm{c}}h^2$	$0.166 \pm 0.037$	$D_{220}$	$4687^{+900}_{-2000}$	$D_{\mathrm{M}}(0.15)$	$653^{+80}_{-200}$
$100\theta_{\mathrm{MC}}$	$1.112^{+0.073}_{-0.062}$	$D_{810}$	$1939^{+500}_{-800}$	$H(0.38)$	$91^{+10}_{-20}$
$\Sigma m_{\nu}$ [eV]	$< 2.96$	$D_{1420}$	$572^{+200}_{-300}$	$D_{\mathrm{M}}(0.38)$	$1505^{+200}_{-400}$
$\ln(10^{10}A_{\mathrm{s}})$	$2.97 \pm 0.19$	$D_{2000}$	$169^{+40}_{-90}$	$H(0.51)$	$100 \pm 10$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$1921^{+200}_{-500}$
$H_0$	—	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00020}$	$H(0.61)$	$108 \pm 10$
$\Omega_{\Lambda}$	$0.46^{+0.38}_{-0.10}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2215^{+300}_{-600}$
$\Omega_{\mathrm{m}}$	$0.54^{+0.10}_{-0.38}$	$10^5\mathrm{D}/\mathrm{H}$	$2.621^{+0.089}_{-0.10}$	$H(2.33)$	$283^{+40}_{-30}$
$\Omega_{\mathrm{m}}h^2$	$0.212^{+0.048}_{-0.064}$	Age/Gyr	$12.5^{+1.2}_{-2.0}$	$D_{\mathrm{M}}(2.33)$	$5203^{+500}_{-830}$
$\Omega_{\nu}h^2$	$< 0.0318$	$z_{*}$	$1094.8 \pm 3.6$	$f\sigma_{\mathrm{s}}(0.15)$	$0.449^{+0.044}_{-0.022}$
$\Omega_{\mathrm{m}}h^3$	$0.146^{+0.035}_{-0.066}$	$r_{*}$	$133.3^{+7.0}_{-11}$	$\sigma_{\mathrm{s}}(0.15)$	$0.62 \pm 0.11$
$\sigma_{\mathrm{s}}$	$0.69 \pm 0.10$	$100\theta_{*}$	$1.113^{+0.073}_{-0.062}$	$f\sigma_{\mathrm{s}}(0.38)$	$0.433^{+0.028}_{-0.014}$
$S_{\mathrm{s}}$	$0.85^{+0.10}_{-0.14}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$12.0^{+1.0}_{-1.7}$	$\sigma_{\mathrm{s}}(0.38)$	$0.55^{+0.11}_{-0.13}$
$\sigma_{\mathrm{s}}\Omega_{\mathrm{m}}^{0.5}$	$0.465^{+0.056}_{-0.079}$	$z_{\mathrm{drag}}$	$1063.3^{+3.5}_{-3.1}$	$f\sigma_{\mathrm{s}}(0.51)$	$0.420^{+0.044}_{-0.018}$
$\sigma_{\mathrm{s}}\Omega_{\mathrm{m}}^{0.25}$	$0.559 \pm 0.018$	$r_{\mathrm{drag}}$	$135.7^{+7.1}_{-12}$	$\sigma_{\mathrm{s}}(0.51)$	$0.51^{+0.10}_{-0.13}$
$\sigma_{\mathrm{s}}/h^{0.5}$	$0.832^{+0.042}_{-0.086}$	$k_{\mathrm{D}}$	$0.155^{+0.013}_{-0.011}$	$f\sigma_{\mathrm{s}}(0.61)$	$0.410^{+0.056}_{-0.025}$
$r_{\mathrm{drag}}h$	$93^{+20}_{-30}$	$100\theta_{\mathrm{D}}$	$0.1702 \pm 0.0094$	$\sigma_{\mathrm{s}}(0.61)$	$0.482^{+0.097}_{-0.13}$
$\langle d^2 \rangle^{1/2}$	$2.498 \pm 0.059$	$z_{\mathrm{eq}}$	$4494 \pm 900$	$f\sigma_{\mathrm{s}}(2.33)$	$0.247^{+0.052}_{-0.076}$
$z_{\mathrm{re}}$	$8.86^{+0.92}_{-0.71}$	$k_{\mathrm{eq}}$	$0.0138 \pm 0.0027$	$\sigma_{\mathrm{s}}(2.33)$	$0.249^{+0.051}_{-0.085}$
$10^9A_{\mathrm{s}}$	$1.99^{+0.30}_{-0.47}$	$100\theta_{\mathrm{eq}}$	$0.730^{+0.057}_{-0.10}$	$\chi^2_{\mathrm{lensing}}$	$12.6 \pm 2.1$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.78^{+0.27}_{-0.42}$	$100\theta_{\mathrm{s,eq}}$	$0.407^{+0.031}_{-0.053}$	$\chi^2_{\mathrm{prior}}$	$2.1 \pm 2.1$
$\bar{\chi}^2_{\mathrm{eff}} = 14.65; R - 1 = 0.00247$					



# 6.71 base\_mnu\_lensing\_lenspriors\_post\_conslmin40

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00050$	$D_{40}$	$1089^{+200}_{-400}$	$H(0.15)$	$77 \pm 20$
$\Omega_{\mathrm{c}}h^2$	$0.168^{+0.035}_{-0.048}$	$D_{220}$	$4631^{+1000}_{-2000}$	$D_{\mathrm{M}}(0.15)$	$655^{+80}_{-200}$
$100\theta_{\mathrm{MC}}$	$1.111^{+0.076}_{-0.064}$	$D_{810}$	$1919^{+500}_{-800}$	$H(0.38)$	$91^{+10}_{-20}$
$\Sigma m_{\nu}$ [eV]	$< 2.82$	$D_{1420}$	$568^{+200}_{-300}$	$D_{\mathrm{M}}(0.38)$	$1509^{+200}_{-400}$
$\ln(10^{10}A_{\mathrm{s}})$	$2.96 \pm 0.21$	$D_{2000}$	$169^{+40}_{-90}$	$H(0.51)$	$100 \pm 10$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$1926^{+200}_{-500}$
$H_0$	—	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00020}$	$H(0.61)$	$108 \pm 10$
$\Omega_{\Lambda}$	$0.45^{+0.38}_{-0.11}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2220^{+300}_{-600}$
$\Omega_{\mathrm{m}}$	$0.55^{+0.11}_{-0.38}$	$10^5\mathrm{D}/\mathrm{H}$	$2.621^{+0.089}_{-0.099}$	$H(2.33)$	$284 \pm 30$
$\Omega_{\mathrm{m}}h^2$	$0.213^{+0.045}_{-0.069}$	Age/Gyr	$12.5^{+1.3}_{-2.1}$	$D_{\mathrm{M}}(2.33)$	$5208^{+520}_{-870}$
$\Omega_{\nu}h^2$	$< 0.0303$	$z_{*}$	$1094.9^{+3.7}_{-4.4}$	$f\sigma_8(0.15)$	$0.457^{+0.045}_{-0.025}$
$\Omega_{\mathrm{m}}h^3$	$0.147^{+0.035}_{-0.069}$	$r_{*}$	$133.0^{+8.4}_{-11}$	$\sigma_8(0.15)$	$0.63 \pm 0.11$
$\sigma_8$	$0.70 \pm 0.11$	$100\theta_{*}$	$1.112^{+0.076}_{-0.064}$	$f\sigma_8(0.38)$	$0.440^{+0.031}_{-0.020}$
$S_8$	$0.87^{+0.11}_{-0.14}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$12.0^{+1.1}_{-1.7}$	$\sigma_8(0.38)$	$0.55^{+0.11}_{-0.13}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.474^{+0.060}_{-0.077}$	$z_{\mathrm{drag}}$	$1063.4 \pm 3.2$	$f\sigma_8(0.51)$	$0.427^{+0.047}_{-0.023}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.569 \pm 0.024$	$r_{\mathrm{drag}}$	$135.5^{+8.6}_{-11}$	$\sigma_8(0.51)$	$0.51^{+0.10}_{-0.13}$
$\sigma_8/h^{0.5}$	$0.846^{+0.055}_{-0.090}$	$k_{\mathrm{D}}$	$0.155 \pm 0.011$	$f\sigma_8(0.61)$	$0.416^{+0.058}_{-0.030}$
$r_{\mathrm{drag}}h$	$93^{+20}_{-30}$	$100\theta_{\mathrm{D}}$	$0.170^{+0.011}_{-0.0094}$	$\sigma_8(0.61)$	$0.488^{+0.099}_{-0.13}$
$\langle d^2 \rangle^{1/2}$	$2.496 \pm 0.073$	$z_{\mathrm{eq}}$	$4547^{+800}_{-1000}$	$f\sigma_8(2.33)$	$0.250^{+0.053}_{-0.076}$
$z_{\mathrm{re}}$	$8.87 \pm 0.78$	$k_{\mathrm{eq}}$	$0.0140^{+0.0026}_{-0.0036}$	$\sigma_8(2.33)$	$0.252^{+0.052}_{-0.085}$
$10^9A_{\mathrm{s}}$	$1.97^{+0.32}_{-0.49}$	$100\theta_{\mathrm{eq}}$	$0.724^{+0.066}_{-0.10}$	$\chi^2_{\mathrm{lensing}}$	$10.3 \pm 2.1$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.77^{+0.28}_{-0.44}$	$100\theta_{\mathrm{s,eq}}$	$0.404^{+0.035}_{-0.052}$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 2.1$
$\bar{\chi}^2_{\mathrm{eff}} = 12.33; R - 1 = 0.00626$					



## 6.72 base\_mnu\_lensing\_lenspriors\_post\_agrlmax425

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02220 \pm 0.00050$	$D_{40}$	$1090^{+200}_{-300}$	$H(0.15)$	$76^{+10}_{-20}$
$\Omega_{\mathrm{c}} h^2$	$0.166^{+0.031}_{-0.045}$	$D_{220}$	$4639^{+1000}_{-2000}$	$D_{\mathrm{M}}(0.15)$	$658^{+80}_{-200}$
$100\theta_{\mathrm{MC}}$	$1.107^{+0.072}_{-0.064}$	$D_{810}$	$1937^{+500}_{-700}$	$H(0.38)$	$90^{+10}_{-20}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$< 2.55$	$D_{1420}$	$573^{+200}_{-300}$	$D_{\mathrm{M}}(0.38)$	$1517^{+200}_{-400}$
$\ln(10^{10} A_{\mathrm{s}})$	$2.96 \pm 0.19$	$D_{2000}$	$170^{+40}_{-80}$	$H(0.51)$	$100 \pm 10$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$1937^{+200}_{-500}$
$H_0$	—	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00020}$	$H(0.61)$	$107 \pm 10$
$\Omega_{\Lambda}$	$0.46^{+0.37}_{-0.11}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2233^{+300}_{-600}$
$\Omega_{\mathrm{m}}$	$0.54^{+0.11}_{-0.37}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.622^{+0.089}_{-0.10}$	$H(2.33)$	$281^{+30}_{-40}$
$\Omega_{\mathrm{m}} h^2$	$0.209^{+0.039}_{-0.065}$	Age/Gyr	$12.6^{+1.3}_{-2.0}$	$D_{\mathrm{M}}(2.33)$	$5241^{+530}_{-850}$
$\Omega_{\nu} h^2$	$< 0.0274$	$z_{*}$	$1094.6^{+3.2}_{-4.3}$	$f\sigma_{\mathrm{s}}(0.15)$	$0.460^{+0.045}_{-0.025}$
$\Omega_{\mathrm{m}} h^3$	$0.143^{+0.033}_{-0.065}$	$r_{*}$	$133.6 \pm 8.2$	$\sigma_{\mathrm{s}}(0.15)$	$0.64 \pm 0.11$
$\sigma_{\mathrm{s}}$	$0.70 \pm 0.11$	$100\theta_{*}$	$1.108^{+0.072}_{-0.064}$	$f\sigma_{\mathrm{s}}(0.38)$	$0.443^{+0.031}_{-0.018}$
$S_{\mathrm{s}}$	$0.87^{+0.11}_{-0.14}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$12.1^{+1.1}_{-1.6}$	$\sigma_{\mathrm{s}}(0.38)$	$0.56^{+0.11}_{-0.14}$
$\sigma_{\mathrm{s}} \Omega_{\mathrm{m}}^{0.5}$	$0.476^{+0.059}_{-0.078}$	$z_{\mathrm{drag}}$	$1063.2 \pm 3.0$	$f\sigma_{\mathrm{s}}(0.51)$	$0.431^{+0.047}_{-0.022}$
$\sigma_{\mathrm{s}} \Omega_{\mathrm{m}}^{0.25}$	$0.573 \pm 0.023$	$r_{\mathrm{drag}}$	$136.0 \pm 8.4$	$\sigma_{\mathrm{s}}(0.51)$	$0.52^{+0.10}_{-0.14}$
$\sigma_{\mathrm{s}}/h^{0.5}$	$0.855^{+0.064}_{-0.081}$	$k_{\mathrm{D}}$	$0.1543^{+0.0099}_{-0.013}$	$f\sigma_{\mathrm{s}}(0.61)$	$0.420^{+0.059}_{-0.029}$
$r_{\mathrm{drag}} h$	$93^{+20}_{-30}$	$100\theta_{\mathrm{D}}$	$0.1696 \pm 0.0095$	$\sigma_{\mathrm{s}}(0.61)$	$0.49^{+0.10}_{-0.13}$
$\langle d^2 \rangle^{1/2}$	$2.495 \pm 0.059$	$z_{\mathrm{eq}}$	$4487^{+700}_{-1000}$	$f\sigma_{\mathrm{s}}(2.33)$	$0.252^{+0.054}_{-0.077}$
$z_{\mathrm{re}}$	$8.82 \pm 0.74$	$k_{\mathrm{eq}}$	$0.0138^{+0.0023}_{-0.0034}$	$\sigma_{\mathrm{s}}(2.33)$	$0.255^{+0.053}_{-0.087}$
$10^9 A_{\mathrm{s}}$	$1.97^{+0.31}_{-0.43}$	$100\theta_{\mathrm{eq}}$	$0.726^{+0.063}_{-0.092}$	$\chi^2_{\mathrm{lensing}}$	$8.2 \pm 2.3$
$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.77^{+0.27}_{-0.39}$	$100\theta_{\mathrm{s,eq}}$	$0.404^{+0.034}_{-0.048}$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 2.1$

$$\bar{\chi}^2_{\mathrm{eff}} = 10.23; R - 1 = 0.00322$$



### 6.73 base\_mnu\_lensing\_lenspriors\_post\_ptt

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02219 \pm 0.00049$	$D_{40}$	$1245^{+200}_{-400}$	$H(0.15)$	$76 \pm 20$
$\Omega_c h^2$	$0.153 \pm 0.035$	$D_{220}$	$5459^{+1000}_{-2000}$	$D_M(0.15)$	$660^{+100}_{-200}$
$100\theta_{MC}$	$1.102^{+0.080}_{-0.064}$	$D_{810}$	$2219^{+600}_{-800}$	$H(0.38)$	$90 \pm 10$
$\Sigma m_\nu$ [eV]	$< 2.81$	$D_{1420}$	$659^{+200}_{-300}$	$D_M(0.38)$	$1528^{+200}_{-400}$
$\ln(10^{10} A_s)$	$3.08 \pm 0.20$	$D_{2000}$	$200^{+50}_{-100}$	$H(0.51)$	$98 \pm 10$
$n_s$	$0.959 \pm 0.020$	$n_{s,0.002}$	$0.959 \pm 0.020$	$D_M(0.51)$	$1954^{+300}_{-500}$
$H_0$	—	$Y_P$	$0.24531 \pm 0.00021$	$H(0.61)$	$105 \pm 10$
$\Omega_\Lambda$	$0.49^{+0.35}_{-0.11}$	$Y_P^{BBN}$	$0.24664 \pm 0.00021$	$D_M(0.61)$	$2255^{+300}_{-600}$
$\Omega_m$	$0.51^{+0.11}_{-0.35}$	$10^5 D/H$	$2.622 \pm 0.093$	$H(2.33)$	$274^{+40}_{-30}$
$\Omega_m h^2$	$0.198^{+0.047}_{-0.055}$	Age/Gyr	$12.8^{+1.3}_{-2.2}$	$D_M(2.33)$	$5336^{+550}_{-910}$
$\Omega_\nu h^2$	$< 0.0302$	$z_*$	$1093.8 \pm 3.5$	$f\sigma_8(0.15)$	$0.441^{+0.046}_{-0.030}$
$\Omega_m h^3$	$0.137^{+0.039}_{-0.061}$	$r_*$	$135.9^{+8.0}_{-10}$	$\sigma_8(0.15)$	$0.63 \pm 0.11$
$\sigma_8$	$0.69 \pm 0.10$	$100\theta_*$	$1.102^{+0.080}_{-0.064}$	$f\sigma_8(0.38)$	$0.429^{+0.027}_{-0.020}$
$S_8$	$0.83^{+0.11}_{-0.14}$	$D_M(z_*)/\text{Gpc}$	$12.4^{+1.1}_{-1.8}$	$\sigma_8(0.38)$	$0.55^{+0.11}_{-0.12}$
$\sigma_8 \Omega_m^{0.5}$	$0.454^{+0.059}_{-0.074}$	$z_{\text{drag}}$	$1062.5 \pm 3.1$	$f\sigma_8(0.51)$	$0.419^{+0.041}_{-0.022}$
$\sigma_8 \Omega_m^{0.25}$	$0.553 \pm 0.023$	$r_{\text{drag}}$	$138.5^{+8.2}_{-11}$	$\sigma_8(0.51)$	$0.51^{+0.10}_{-0.12}$
$\sigma_8/h^{0.5}$	$0.838^{+0.056}_{-0.089}$	$k_D$	$0.152 \pm 0.011$	$f\sigma_8(0.61)$	$0.409^{+0.052}_{-0.028}$
$r_{\text{drag}} h$	$95^{+20}_{-30}$	$100\theta_D$	$0.169^{+0.011}_{-0.0095}$	$\sigma_8(0.61)$	$0.49^{+0.10}_{-0.12}$
$\langle d^2 \rangle^{1/2}$	$2.570 \pm 0.071$	$z_{\text{eq}}$	$4185 \pm 800$	$f\sigma_8(2.33)$	$0.250^{+0.056}_{-0.069}$
$z_{\text{re}}$	$8.65^{+0.85}_{-0.74}$	$k_{\text{eq}}$	$0.0129 \pm 0.0026$	$\sigma_8(2.33)$	$0.253^{+0.056}_{-0.078}$
$10^9 A_s$	$2.22^{+0.35}_{-0.52}$	$100\theta_{\text{eq}}$	$0.761^{+0.064}_{-0.10}$	$\chi^2_{\text{lensing}}$	$11.5 \pm 2.0$
$10^9 A_s e^{-2\tau}$	$1.99^{+0.31}_{-0.47}$	$100\theta_{s,\text{eq}}$	$0.423^{+0.034}_{-0.051}$	$\chi^2_{\text{prior}}$	$2.0 \pm 2.0$
$\bar{\chi}^2_{\text{eff}} = 13.44; R - 1 = 0.08205$					



## 6.74 base\_mnu\_lensing\_lenspriors\_post\_bfcl

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00050$	$D_{40}$	$1055^{+200}_{-300}$	$H(0.15)$	$77 \pm 20$
$\Omega_{\mathrm{c}}h^2$	$0.169^{+0.035}_{-0.044}$	$D_{220}$	$4463^{+900}_{-2000}$	$D_{\mathrm{M}}(0.15)$	$654^{+80}_{-200}$
$100\theta_{\mathrm{MC}}$	$1.112^{+0.074}_{-0.062}$	$D_{810}$	$1859^{+500}_{-700}$	$H(0.38)$	$91^{+10}_{-20}$
$\Sigma m_{\nu}$ [eV]	$< 2.78$	$D_{1420}$	$549^{+200}_{-300}$	$D_{\mathrm{M}}(0.38)$	$1507^{+200}_{-400}$
$\ln(10^{10}A_{\mathrm{s}})$	$2.94 \pm 0.19$	$D_{2000}$	$163^{+40}_{-80}$	$H(0.51)$	$100 \pm 10$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$1924^{+200}_{-500}$
$H_0$	—	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00020}$	$H(0.61)$	$108 \pm 10$
$\Omega_{\Lambda}$	$0.45^{+0.37}_{-0.11}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2218^{+300}_{-600}$
$\Omega_{\mathrm{m}}$	$0.55^{+0.11}_{-0.37}$	$10^5\mathrm{D}/\mathrm{H}$	$2.621^{+0.089}_{-0.10}$	$H(2.33)$	$284 \pm 30$
$\Omega_{\mathrm{m}}h^2$	$0.213^{+0.044}_{-0.065}$	Age/Gyr	$12.5^{+1.2}_{-2.0}$	$D_{\mathrm{M}}(2.33)$	$5199^{+510}_{-850}$
$\Omega_{\nu}h^2$	$< 0.0299$	$z_{*}$	$1094.9 \pm 3.5$	$f\sigma_8(0.15)$	$0.455^{+0.044}_{-0.025}$
$\Omega_{\mathrm{m}}h^3$	$0.147^{+0.035}_{-0.067}$	$r_{*}$	$132.9^{+7.8}_{-10}$	$\sigma_8(0.15)$	$0.63 \pm 0.11$
$\sigma_8$	$0.69 \pm 0.11$	$100\theta_{*}$	$1.112^{+0.074}_{-0.062}$	$f\sigma_8(0.38)$	$0.438^{+0.031}_{-0.019}$
$S_8$	$0.86^{+0.10}_{-0.14}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$12.0^{+1.1}_{-1.7}$	$\sigma_8(0.38)$	$0.55^{+0.11}_{-0.13}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.472^{+0.057}_{-0.077}$	$z_{\mathrm{drag}}$	$1063.5 \pm 3.1$	$f\sigma_8(0.51)$	$0.425^{+0.047}_{-0.023}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.566 \pm 0.023$	$r_{\mathrm{drag}}$	$135.3^{+7.9}_{-11}$	$\sigma_8(0.51)$	$0.51^{+0.10}_{-0.13}$
$\sigma_8/h^{0.5}$	$0.841^{+0.055}_{-0.090}$	$k_{\mathrm{D}}$	$0.155 \pm 0.011$	$f\sigma_8(0.61)$	$0.414^{+0.059}_{-0.029}$
$r_{\mathrm{drag}}h$	$93^{+20}_{-30}$	$100\theta_{\mathrm{D}}$	$0.170^{+0.011}_{-0.0093}$	$\sigma_8(0.61)$	$0.485^{+0.099}_{-0.13}$
$\langle d^2 \rangle^{1/2}$	$2.470 \pm 0.056$	$z_{\mathrm{eq}}$	$4559^{+800}_{-1000}$	$f\sigma_8(2.33)$	$0.248^{+0.053}_{-0.075}$
$z_{\mathrm{re}}$	$8.88^{+0.85}_{-0.77}$	$k_{\mathrm{eq}}$	$0.0140^{+0.0026}_{-0.0033}$	$\sigma_8(2.33)$	$0.251^{+0.052}_{-0.084}$
$10^9A_{\mathrm{s}}$	$1.92^{+0.29}_{-0.42}$	$100\theta_{\mathrm{eq}}$	$0.721^{+0.061}_{-0.094}$	$\chi^2_{\mathrm{lensing}}$	$10.5 \pm 2.2$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.72^{+0.26}_{-0.38}$	$100\theta_{\mathrm{s,eq}}$	$0.402^{+0.033}_{-0.049}$	$\chi^2_{\mathrm{prior}}$	$2.1 \pm 2.1$

$$\bar{\chi}^2_{\mathrm{eff}} = 12.60; R - 1 = 0.00308$$



## 6.75 base\_mnu\_lensing\_lenspriors\_post\_agr2bfcl

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02220 \pm 0.00050$	$D_{40}$	$1077^{+200}_{-300}$	$H(0.15)$	$77 \pm 20$
$\Omega_c h^2$	$0.166^{+0.036}_{-0.044}$	$D_{220}$	$4579^{+900}_{-2000}$	$D_M(0.15)$	$652^{+80}_{-200}$
$100\theta_{MC}$	$1.112^{+0.075}_{-0.061}$	$D_{810}$	$1896^{+500}_{-700}$	$H(0.38)$	$91^{+10}_{-20}$
$\Sigma m_\nu$ [eV]	$< 2.89$	$D_{1420}$	$559^{+200}_{-300}$	$D_M(0.38)$	$1505^{+200}_{-400}$
$\ln(10^{10} A_s)$	$2.95 \pm 0.19$	$D_{2000}$	$166^{+40}_{-80}$	$H(0.51)$	$100 \pm 10$
$n_s$	$0.959 \pm 0.020$	$n_{s,0.002}$	$0.959 \pm 0.020$	$D_M(0.51)$	$1921^{+200}_{-500}$
$H_0$	—	$Y_P$	$0.24531^{+0.00023}_{-0.00019}$	$H(0.61)$	$108 \pm 10$
$\Omega_\Lambda$	$0.46^{+0.37}_{-0.10}$	$Y_P^{BBN}$	$0.24664^{+0.00023}_{-0.00020}$	$D_M(0.61)$	$2215^{+300}_{-600}$
$\Omega_m$	$0.54^{+0.10}_{-0.37}$	$10^5 D/H$	$2.621^{+0.088}_{-0.10}$	$H(2.33)$	$283^{+40}_{-30}$
$\Omega_m h^2$	$0.212^{+0.045}_{-0.067}$	Age/Gyr	$12.5^{+1.2}_{-2.0}$	$D_M(2.33)$	$5205^{+500}_{-840}$
$\Omega_\nu h^2$	$< 0.0311$	$z_*$	$1094.8 \pm 3.6$	$f\sigma_8(0.15)$	$0.447^{+0.043}_{-0.022}$
$\Omega_m h^3$	$0.146^{+0.035}_{-0.066}$	$r_*$	$133.3^{+7.5}_{-11}$	$\sigma_8(0.15)$	$0.62 \pm 0.11$
$\sigma_8$	$0.68 \pm 0.10$	$100\theta_*$	$1.112^{+0.075}_{-0.061}$	$f\sigma_8(0.38)$	$0.431^{+0.027}_{-0.014}$
$S_8$	$0.85^{+0.10}_{-0.14}$	$D_M(z_*)/\text{Gpc}$	$12.1^{+1.1}_{-1.7}$	$\sigma_8(0.38)$	$0.54^{+0.11}_{-0.13}$
$\sigma_8 \Omega_m^{0.5}$	$0.463^{+0.055}_{-0.077}$	$z_{\text{drag}}$	$1063.3 \pm 3.1$	$f\sigma_8(0.51)$	$0.419^{+0.044}_{-0.018}$
$\sigma_8 \Omega_m^{0.25}$	$0.557 \pm 0.018$	$r_{\text{drag}}$	$135.7^{+7.7}_{-11}$	$\sigma_8(0.51)$	$0.51^{+0.10}_{-0.13}$
$\sigma_8/h^{0.5}$	$0.829^{+0.044}_{-0.085}$	$k_D$	$0.155 \pm 0.011$	$f\sigma_8(0.61)$	$0.408^{+0.056}_{-0.025}$
$r_{\text{drag}} h$	$93^{+20}_{-30}$	$100\theta_D$	$0.170^{+0.011}_{-0.0091}$	$\sigma_8(0.61)$	$0.480^{+0.098}_{-0.13}$
$\langle d^2 \rangle^{1/2}$	$2.472 \pm 0.057$	$z_{\text{eq}}$	$4504^{+900}_{-1000}$	$f\sigma_8(2.33)$	$0.246^{+0.053}_{-0.074}$
$z_{\text{re}}$	$8.86^{+0.89}_{-0.76}$	$k_{\text{eq}}$	$0.0138^{+0.0027}_{-0.0034}$	$\sigma_8(2.33)$	$0.249^{+0.051}_{-0.084}$
$10^9 A_s$	$1.95^{+0.31}_{-0.45}$	$100\theta_{\text{eq}}$	$0.729^{+0.061}_{-0.10}$	$\chi^2_{\text{lensing}}$	$12.8 \pm 2.1$
$10^9 A_s e^{-2\tau}$	$1.74^{+0.27}_{-0.41}$	$100\theta_{s,\text{eq}}$	$0.406^{+0.033}_{-0.052}$	$\chi^2_{\text{prior}}$	$2.1 \pm 2.1$
$\bar{\chi}^2_{\text{eff}} = 14.86; R - 1 = 0.00267$					



## 6.76 base\_mnu\_lensing\_lenspriors\_post\_linear

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00050$	$D_{40}$	$1050^{+200}_{-300}$	$H(0.15)$	$77 \pm 20$
$\Omega_{\mathrm{c}}h^2$	$0.172^{+0.037}_{-0.043}$	$D_{220}$	$4412^{+900}_{-2000}$	$D_{\mathrm{M}}(0.15)$	$657^{+80}_{-200}$
$100\theta_{\mathrm{MC}}$	$1.113^{+0.072}_{-0.063}$	$D_{810}$	$1847^{+500}_{-700}$	$H(0.38)$	$91^{+10}_{-20}$
$\Sigma m_{\nu}$ [eV]	$< 2.79$	$D_{1420}$	$545^{+200}_{-300}$	$D_{\mathrm{M}}(0.38)$	$1510^{+300}_{-400}$
$\ln(10^{10}A_{\mathrm{s}})$	$2.94 \pm 0.19$	$D_{2000}$	$161^{+40}_{-80}$	$H(0.51)$	$100 \pm 10$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$1926^{+200}_{-500}$
$H_0$	—	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00020}$	$H(0.61)$	$108 \pm 10$
$\Omega_{\Lambda}$	$0.43^{+0.39}_{-0.11}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2219^{+300}_{-600}$
$\Omega_{\mathrm{m}}$	$0.57^{+0.11}_{-0.39}$	$10^5\mathrm{D}/\mathrm{H}$	$2.622^{+0.088}_{-0.10}$	$H(2.33)$	$286^{+40}_{-30}$
$\Omega_{\mathrm{m}}h^2$	$0.217^{+0.047}_{-0.064}$	Age/Gyr	$12.4^{+1.2}_{-2.0}$	$D_{\mathrm{M}}(2.33)$	$5182^{+510}_{-830}$
$\Omega_{\nu}h^2$	$< 0.0300$	$z_{*}$	$1095.2 \pm 3.6$	$f\sigma_{\mathrm{s}}(0.15)$	$0.466^{+0.045}_{-0.026}$
$\Omega_{\mathrm{m}}h^3$	$0.149^{+0.035}_{-0.067}$	$r_{*}$	$132.1^{+7.4}_{-10}$	$\sigma_{\mathrm{s}}(0.15)$	$0.64^{+0.11}_{-0.13}$
$\sigma_{\mathrm{s}}$	$0.70^{+0.11}_{-0.12}$	$100\theta_{*}$	$1.114^{+0.072}_{-0.063}$	$f\sigma_{\mathrm{s}}(0.38)$	$0.447^{+0.032}_{-0.020}$
$S_{\mathrm{s}}$	$0.89^{+0.11}_{-0.15}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$11.9^{+1.0}_{-1.6}$	$\sigma_{\mathrm{s}}(0.38)$	$0.56^{+0.11}_{-0.14}$
$\sigma_{\mathrm{s}}\Omega_{\mathrm{m}}^{0.5}$	$0.486^{+0.062}_{-0.080}$	$z_{\mathrm{drag}}$	$1063.7 \pm 3.1$	$f\sigma_{\mathrm{s}}(0.51)$	$0.432^{+0.049}_{-0.025}$
$\sigma_{\mathrm{s}}\Omega_{\mathrm{m}}^{0.25}$	$0.578 \pm 0.024$	$r_{\mathrm{drag}}$	$134.6^{+7.6}_{-11}$	$\sigma_{\mathrm{s}}(0.51)$	$0.52^{+0.10}_{-0.14}$
$\sigma_{\mathrm{s}}/h^{0.5}$	$0.855^{+0.059}_{-0.089}$	$k_{\mathrm{D}}$	$0.156 \pm 0.011$	$f\sigma_{\mathrm{s}}(0.61)$	$0.420^{+0.061}_{-0.031}$
$r_{\mathrm{drag}}h$	$92^{+20}_{-30}$	$100\theta_{\mathrm{D}}$	$0.1703 \pm 0.0094$	$\sigma_{\mathrm{s}}(0.61)$	$0.490^{+0.098}_{-0.14}$
$\langle d^2 \rangle^{1/2}$	$2.487 \pm 0.059$	$z_{\mathrm{eq}}$	$4647^{+900}_{-1000}$	$f\sigma_{\mathrm{s}}(2.33)$	$0.250^{+0.052}_{-0.077}$
$z_{\mathrm{re}}$	$8.94^{+0.87}_{-0.75}$	$k_{\mathrm{eq}}$	$0.0143^{+0.0027}_{-0.0033}$	$\sigma_{\mathrm{s}}(2.33)$	$0.253^{+0.051}_{-0.086}$
$10^9A_{\mathrm{s}}$	$1.92^{+0.29}_{-0.43}$	$100\theta_{\mathrm{eq}}$	$0.712^{+0.059}_{-0.093}$	$\chi^2_{\mathrm{lensing}}$	$10.8 \pm 2.2$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.72^{+0.26}_{-0.38}$	$100\theta_{\mathrm{s,eq}}$	$0.397^{+0.032}_{-0.048}$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 2.0$
$\bar{\chi}^2_{\mathrm{eff}} = 12.85; R - 1 = 0.00368$					



# 6.77 base\_mnu\_lensing\_lenspriors\_post\_acc

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00051$	$D_{40}$	$1084^{+200}_{-300}$	$H(0.15)$	$77 \pm 20$
$\Omega_{\mathrm{c}}h^2$	$0.167^{+0.036}_{-0.042}$	$D_{220}$	$4594^{+900}_{-2000}$	$D_{\mathrm{M}}(0.15)$	$655^{+80}_{-200}$
$100\theta_{\mathrm{MC}}$	$1.111^{+0.074}_{-0.063}$	$D_{810}$	$1913^{+500}_{-700}$	$H(0.38)$	$91^{+10}_{-20}$
$\Sigma m_{\nu}$ [eV]	$< 2.78$	$D_{1420}$	$565^{+200}_{-300}$	$D_{\mathrm{M}}(0.38)$	$1509^{+200}_{-400}$
$\ln(10^{10}A_{\mathrm{s}})$	$2.96 \pm 0.19$	$D_{2000}$	$168^{+40}_{-80}$	$H(0.51)$	$100 \pm 10$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$1927^{+200}_{-500}$
$H_0$	—	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00020}$	$H(0.61)$	$108 \pm 10$
$\Omega_{\Lambda}$	$0.45^{+0.37}_{-0.11}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2221^{+300}_{-600}$
$\Omega_{\mathrm{m}}$	$0.55^{+0.11}_{-0.37}$	$10^5\mathrm{D}/\mathrm{H}$	$2.621^{+0.089}_{-0.10}$	$H(2.33)$	$283^{+40}_{-30}$
$\Omega_{\mathrm{m}}h^2$	$0.212^{+0.045}_{-0.063}$	Age/Gyr	$12.5^{+1.3}_{-2.0}$	$D_{\mathrm{M}}(2.33)$	$5209^{+520}_{-850}$
$\Omega_{\nu}h^2$	$< 0.0299$	$z_{*}$	$1094.8 \pm 3.5$	$f\sigma_8(0.15)$	$0.457^{+0.044}_{-0.025}$
$\Omega_{\mathrm{m}}h^3$	$0.146^{+0.035}_{-0.067}$	$r_{*}$	$133.1^{+7.5}_{-10}$	$\sigma_8(0.15)$	$0.63 \pm 0.11$
$\sigma_8$	$0.70 \pm 0.11$	$100\theta_{*}$	$1.112^{+0.074}_{-0.063}$	$f\sigma_8(0.38)$	$0.440^{+0.030}_{-0.018}$
$S_8$	$0.86^{+0.10}_{-0.14}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$12.0^{+1.0}_{-1.7}$	$\sigma_8(0.38)$	$0.55^{+0.11}_{-0.13}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.474^{+0.057}_{-0.077}$	$z_{\mathrm{drag}}$	$1063.4 \pm 3.0$	$f\sigma_8(0.51)$	$0.427^{+0.047}_{-0.022}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.568 \pm 0.022$	$r_{\mathrm{drag}}$	$135.5^{+7.7}_{-11}$	$\sigma_8(0.51)$	$0.51^{+0.10}_{-0.13}$
$\sigma_8/h^{0.5}$	$0.845^{+0.056}_{-0.089}$	$k_{\mathrm{D}}$	$0.155 \pm 0.011$	$f\sigma_8(0.61)$	$0.416^{+0.059}_{-0.029}$
$r_{\mathrm{drag}}h$	$93^{+20}_{-30}$	$100\theta_{\mathrm{D}}$	$0.170^{+0.011}_{-0.0094}$	$\sigma_8(0.61)$	$0.488^{+0.099}_{-0.13}$
$\langle d^2 \rangle^{1/2}$	$2.496 \pm 0.059$	$z_{\mathrm{eq}}$	$4526^{+800}_{-1000}$	$f\sigma_8(2.33)$	$0.250^{+0.053}_{-0.075}$
$z_{\mathrm{re}}$	$8.86^{+0.86}_{-0.75}$	$k_{\mathrm{eq}}$	$0.0139^{+0.0026}_{-0.0032}$	$\sigma_8(2.33)$	$0.252^{+0.052}_{-0.084}$
$10^9A_{\mathrm{s}}$	$1.97^{+0.29}_{-0.44}$	$100\theta_{\mathrm{eq}}$	$0.724^{+0.058}_{-0.094}$	$\chi^2_{\mathrm{lensing}}$	$10.3 \pm 2.2$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.76^{+0.26}_{-0.39}$	$100\theta_{\mathrm{s,eq}}$	$0.404^{+0.031}_{-0.049}$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 2.0$
$\bar{\chi}^2_{\mathrm{eff}} = 12.32; R - 1 = 0.00185$					



# 6.78 base\_mnu\_lensing\_lenspriors\_post\_agr2acc

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00051$	$D_{40}$	$1101^{+200}_{-400}$	$H(0.15)$	$77^{+10}_{-20}$
$\Omega_{\mathrm{c}}h^2$	$0.166 \pm 0.036$	$D_{220}$	$4682^{+900}_{-2000}$	$D_{\mathrm{M}}(0.15)$	$652^{+80}_{-200}$
$100\theta_{\mathrm{MC}}$	$1.113^{+0.073}_{-0.062}$	$D_{810}$	$1938^{+500}_{-800}$	$H(0.38)$	$91^{+10}_{-20}$
$\Sigma m_{\nu}$ [eV]	$< 2.98$	$D_{1420}$	$570^{+200}_{-300}$	$D_{\mathrm{M}}(0.38)$	$1504^{+200}_{-400}$
$\ln(10^{10}A_{\mathrm{s}})$	$2.97 \pm 0.19$	$D_{2000}$	$169^{+40}_{-80}$	$H(0.51)$	$100 \pm 10$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$1920^{+200}_{-500}$
$H_0$	—	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00020}$	$H(0.61)$	$108 \pm 10$
$\Omega_{\Lambda}$	$0.46^{+0.38}_{-0.11}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2214^{+300}_{-600}$
$\Omega_{\mathrm{m}}$	$0.54^{+0.11}_{-0.38}$	$10^5\mathrm{D}/\mathrm{H}$	$2.620^{+0.089}_{-0.10}$	$H(2.33)$	$283^{+40}_{-30}$
$\Omega_{\mathrm{m}}h^2$	$0.212 \pm 0.050$	Age/Gyr	$12.5^{+1.2}_{-2.0}$	$D_{\mathrm{M}}(2.33)$	$5199^{+510}_{-830}$
$\Omega_{\nu}h^2$	$0.0242^{+0.0079}_{-0.024}$	$z_{*}$	$1094.8^{+4.2}_{-3.6}$	$f\sigma_{\mathrm{s}}(0.15)$	$0.448^{+0.044}_{-0.022}$
$\Omega_{\mathrm{m}}h^3$	$0.147^{+0.036}_{-0.066}$	$r_{*}$	$133.2^{+6.9}_{-11}$	$\sigma_{\mathrm{s}}(0.15)$	$0.62 \pm 0.11$
$\sigma_{\mathrm{s}}$	$0.68 \pm 0.10$	$100\theta_{*}$	$1.113^{+0.073}_{-0.062}$	$f\sigma_{\mathrm{s}}(0.38)$	$0.432^{+0.027}_{-0.014}$
$S_{\mathrm{s}}$	$0.85^{+0.10}_{-0.14}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$12.0^{+1.0}_{-1.7}$	$\sigma_{\mathrm{s}}(0.38)$	$0.54^{+0.11}_{-0.13}$
$\sigma_{\mathrm{s}}\Omega_{\mathrm{m}}^{0.5}$	$0.464^{+0.056}_{-0.078}$	$z_{\mathrm{drag}}$	$1063.4^{+3.5}_{-3.0}$	$f\sigma_{\mathrm{s}}(0.51)$	$0.419^{+0.044}_{-0.018}$
$\sigma_{\mathrm{s}}\Omega_{\mathrm{m}}^{0.25}$	$0.558 \pm 0.017$	$r_{\mathrm{drag}}$	$135.7^{+7.0}_{-12}$	$\sigma_{\mathrm{s}}(0.51)$	$0.51^{+0.10}_{-0.13}$
$\sigma_{\mathrm{s}}/h^{0.5}$	$0.830^{+0.041}_{-0.085}$	$k_{\mathrm{D}}$	$0.155^{+0.013}_{-0.010}$	$f\sigma_{\mathrm{s}}(0.61)$	$0.409^{+0.056}_{-0.025}$
$r_{\mathrm{drag}}h$	$94^{+20}_{-30}$	$100\theta_{\mathrm{D}}$	$0.170^{+0.010}_{-0.0092}$	$\sigma_{\mathrm{s}}(0.61)$	$0.481^{+0.097}_{-0.13}$
$\langle d^2 \rangle^{1/2}$	$2.499 \pm 0.059$	$z_{\mathrm{eq}}$	$4496 \pm 900$	$f\sigma_{\mathrm{s}}(2.33)$	$0.246^{+0.053}_{-0.075}$
$z_{\mathrm{re}}$	$8.87^{+0.93}_{-0.69}$	$k_{\mathrm{eq}}$	$0.0138 \pm 0.0027$	$\sigma_{\mathrm{s}}(2.33)$	$0.249^{+0.051}_{-0.084}$
$10^9A_{\mathrm{s}}$	$1.99^{+0.30}_{-0.47}$	$100\theta_{\mathrm{eq}}$	$0.730^{+0.056}_{-0.10}$	$\chi^2_{\mathrm{lensing}}$	$12.6 \pm 2.1$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.78^{+0.27}_{-0.42}$	$100\theta_{\mathrm{s,eq}}$	$0.407^{+0.031}_{-0.053}$	$\chi^2_{\mathrm{prior}}$	$2.1 \pm 2.1$

$$\bar{\chi}^2_{\mathrm{eff}} = 14.67; R - 1 = 0.00159$$



## 6.79 base\_mnu\_lensing\_lenspriors\_post\_takahashi

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00050$	$D_{40}$	$1095^{+200}_{-300}$	$H(0.15)$	$77 \pm 20$
$\Omega_{\mathrm{c}}h^2$	$0.164 \pm 0.034$	$D_{220}$	$4668^{+900}_{-2000}$	$D_{\mathrm{M}}(0.15)$	$655^{+80}_{-200}$
$100\theta_{\mathrm{MC}}$	$1.110^{+0.074}_{-0.063}$	$D_{810}$	$1939^{+500}_{-700}$	$H(0.38)$	$91^{+10}_{-20}$
$\Sigma m_{\nu}$ [eV]	$< 2.83$	$D_{1420}$	$572^{+200}_{-300}$	$D_{\mathrm{M}}(0.38)$	$1510^{+300}_{-400}$
$\ln(10^{10}A_{\mathrm{s}})$	$2.97 \pm 0.18$	$D_{2000}$	$170^{+40}_{-80}$	$H(0.51)$	$100 \pm 10$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$1929^{+300}_{-500}$
$H_0$	—	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00020}$	$H(0.61)$	$107 \pm 10$
$\Omega_{\Lambda}$	$0.46^{+0.36}_{-0.11}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2225^{+300}_{-600}$
$\Omega_{\mathrm{m}}$	$0.54^{+0.11}_{-0.36}$	$10^5\mathrm{D}/\mathrm{H}$	$2.621 \pm 0.096$	$H(2.33)$	$281^{+40}_{-30}$
$\Omega_{\mathrm{m}}h^2$	$0.209^{+0.045}_{-0.059}$	Age/Gyr	$12.5^{+1.3}_{-2.0}$	$D_{\mathrm{M}}(2.33)$	$5228^{+510}_{-850}$
$\Omega_{\nu}h^2$	$< 0.0304$	$z_{*}$	$1094.6 \pm 3.4$	$f\sigma_8(0.15)$	$0.449^{+0.043}_{-0.028}$
$\Omega_{\mathrm{m}}h^3$	$0.144^{+0.034}_{-0.065}$	$r_{*}$	$133.6^{+7.2}_{-10}$	$\sigma_8(0.15)$	$0.63^{+0.11}_{-0.13}$
$\sigma_8$	$0.69^{+0.10}_{-0.12}$	$100\theta_{*}$	$1.111^{+0.074}_{-0.063}$	$f\sigma_8(0.38)$	$0.434^{+0.032}_{-0.021}$
$S_8$	$0.85^{+0.10}_{-0.14}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$12.1^{+1.0}_{-1.6}$	$\sigma_8(0.38)$	$0.55^{+0.11}_{-0.13}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.465^{+0.056}_{-0.075}$	$z_{\mathrm{drag}}$	$1063.2 \pm 2.9$	$f\sigma_8(0.51)$	$0.422^{+0.047}_{-0.024}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.560 \pm 0.025$	$r_{\mathrm{drag}}$	$136.1^{+7.3}_{-10}$	$\sigma_8(0.51)$	$0.51^{+0.10}_{-0.13}$
$\sigma_8/h^{0.5}$	$0.836^{+0.060}_{-0.096}$	$k_{\mathrm{D}}$	$0.154 \pm 0.010$	$f\sigma_8(0.61)$	$0.411^{+0.059}_{-0.030}$
$r_{\mathrm{drag}}h$	$93^{+20}_{-30}$	$100\theta_{\mathrm{D}}$	$0.170^{+0.011}_{-0.0093}$	$\sigma_8(0.61)$	$0.484^{+0.097}_{-0.13}$
$\langle d^2 \rangle^{1/2}$	$2.498 \pm 0.058$	$z_{\mathrm{eq}}$	$4448 \pm 800$	$f\sigma_8(2.33)$	$0.248^{+0.052}_{-0.075}$
$z_{\mathrm{re}}$	$8.82^{+0.84}_{-0.71}$	$k_{\mathrm{eq}}$	$0.0137^{+0.0026}_{-0.0029}$	$\sigma_8(2.33)$	$0.250^{+0.051}_{-0.084}$
$10^9A_{\mathrm{s}}$	$1.98^{+0.29}_{-0.44}$	$100\theta_{\mathrm{eq}}$	$0.732^{+0.054}_{-0.091}$	$\chi^2_{\mathrm{lensing}}$	$10.1 \pm 2.1$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.77^{+0.26}_{-0.39}$	$100\theta_{\mathrm{s,eq}}$	$0.408^{+0.029}_{-0.047}$	$\chi^2_{\mathrm{prior}}$	$2.1 \pm 2.1$

$$\bar{\chi}^2_{\mathrm{eff}} = 12.19; R - 1 = 0.00405$$



## 6.80 base\_mnu\_lensing\_lenspriors\_post\_agr2takahashi

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02220 \pm 0.00051$	$D_{40}$	$1124^{+200}_{-400}$	$H(0.15)$	$77 \pm 20$
$\Omega_{\mathrm{c}} h^2$	$0.161 \pm 0.034$	$D_{220}$	$4816^{+900}_{-2000}$	$D_{\mathrm{M}}(0.15)$	$649^{+90}_{-200}$
$100\theta_{\mathrm{MC}}$	$1.112^{+0.074}_{-0.061}$	$D_{810}$	$1982^{+500}_{-800}$	$H(0.38)$	$91^{+10}_{-20}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$< 2.99$	$D_{1420}$	$583^{+200}_{-300}$	$D_{\mathrm{M}}(0.38)$	$1499^{+300}_{-400}$
$\ln(10^{10} A_{\mathrm{s}})$	$2.99 \pm 0.19$	$D_{2000}$	$173^{+40}_{-90}$	$H(0.51)$	$100 \pm 10$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$1917^{+200}_{-500}$
$H_0$	—	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00020}$	$H(0.61)$	$107 \pm 10$
$\Omega_{\Lambda}$	$0.48^{+0.35}_{-0.10}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2211^{+300}_{-600}$
$\Omega_{\mathrm{m}}$	$0.52^{+0.10}_{-0.35}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.622 \pm 0.096$	$H(2.33)$	$281^{+40}_{-30}$
$\Omega_{\mathrm{m}} h^2$	$0.207 \pm 0.048$	Age/Gyr	$12.5^{+1.2}_{-2.0}$	$D_{\mathrm{M}}(2.33)$	$5219^{+500}_{-830}$
$\Omega_{\nu} h^2$	$< 0.0321$	$z_{*}$	$1094.5^{+4.0}_{-3.5}$	$f\sigma_{\mathrm{s}}(0.15)$	$0.438^{+0.042}_{-0.025}$
$\Omega_{\mathrm{m}} h^3$	$0.145^{+0.036}_{-0.064}$	$r_{*}$	$134.1^{+6.8}_{-11}$	$\sigma_{\mathrm{s}}(0.15)$	$0.62^{+0.11}_{-0.12}$
$\sigma_{\mathrm{s}}$	$0.68^{+0.10}_{-0.12}$	$100\theta_{*}$	$1.112^{+0.074}_{-0.061}$	$f\sigma_{\mathrm{s}}(0.38)$	$0.425^{+0.028}_{-0.016}$
$S_{\mathrm{s}}$	$0.825^{+0.095}_{-0.14}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$12.1^{+1.0}_{-1.6}$	$\sigma_{\mathrm{s}}(0.38)$	$0.54^{+0.11}_{-0.13}$
$\sigma_{\mathrm{s}}\Omega_{\mathrm{m}}^{0.5}$	$0.452^{+0.052}_{-0.074}$	$z_{\mathrm{drag}}$	$1063.1^{+3.4}_{-2.9}$	$f\sigma_{\mathrm{s}}(0.51)$	$0.414^{+0.044}_{-0.019}$
$\sigma_{\mathrm{s}}\Omega_{\mathrm{m}}^{0.25}$	$0.548 \pm 0.020$	$r_{\mathrm{drag}}$	$136.6^{+6.9}_{-11}$	$\sigma_{\mathrm{s}}(0.51)$	$0.50^{+0.10}_{-0.13}$
$\sigma_{\mathrm{s}}/h^{0.5}$	$0.820^{+0.049}_{-0.092}$	$k_{\mathrm{D}}$	$0.154^{+0.012}_{-0.010}$	$f\sigma_{\mathrm{s}}(0.61)$	$0.404^{+0.055}_{-0.026}$
$r_{\mathrm{drag}} h$	$95^{+20}_{-30}$	$100\theta_{\mathrm{D}}$	$0.170^{+0.011}_{-0.0090}$	$\sigma_{\mathrm{s}}(0.61)$	$0.479^{+0.097}_{-0.13}$
$\langle d^2 \rangle^{1/2}$	$2.502 \pm 0.058$	$z_{\mathrm{eq}}$	$4381 \pm 800$	$f\sigma_{\mathrm{s}}(2.33)$	$0.246^{+0.052}_{-0.073}$
$z_{\mathrm{re}}$	$8.80^{+0.89}_{-0.68}$	$k_{\mathrm{eq}}$	$0.0135 \pm 0.0026$	$\sigma_{\mathrm{s}}(2.33)$	$0.249^{+0.051}_{-0.083}$
$10^9 A_{\mathrm{s}}$	$2.02^{+0.30}_{-0.47}$	$100\theta_{\mathrm{eq}}$	$0.742^{+0.052}_{-0.097}$	$\chi^2_{\mathrm{lensing}}$	$12.5 \pm 2.0$
$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.81^{+0.27}_{-0.42}$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.413^{+0.028}_{-0.050}$	$\chi^2_{\mathrm{prior}}$	$2.1 \pm 2.1$

$$\bar{\chi}^2_{\mathrm{eff}} = 14.57; R - 1 = 0.00607$$



## 6.81 base\_mnu\_lensing\_lenspriors\_post\_Apr6

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00050$	$D_{40}$	$1076^{+200}_{-300}$	$H(0.15)$	$76^{+10}_{-20}$
$\Omega_{\mathrm{c}}h^2$	$0.167^{+0.032}_{-0.045}$	$D_{220}$	$4571^{+1000}_{-2000}$	$D_{\mathrm{M}}(0.15)$	$658^{+80}_{-200}$
$100\theta_{\mathrm{MC}}$	$1.108^{+0.072}_{-0.064}$	$D_{810}$	$1910^{+500}_{-700}$	$H(0.38)$	$91^{+10}_{-20}$
$\Sigma m_{\nu}$ [eV]	$< 2.58$	$D_{1420}$	$565^{+200}_{-300}$	$D_{\mathrm{M}}(0.38)$	$1516^{+200}_{-400}$
$\ln(10^{10}A_{\mathrm{s}})$	$2.95 \pm 0.19$	$D_{2000}$	$168^{+40}_{-80}$	$H(0.51)$	$100 \pm 10$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$1935^{+200}_{-500}$
$H_0$	—	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00020}$	$H(0.61)$	$107 \pm 10$
$\Omega_{\Lambda}$	$0.45^{+0.37}_{-0.11}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2231^{+300}_{-600}$
$\Omega_{\mathrm{m}}$	$0.55^{+0.11}_{-0.37}$	$10^5\mathrm{D}/\mathrm{H}$	$2.622^{+0.089}_{-0.10}$	$H(2.33)$	$282 \pm 30$
$\Omega_{\mathrm{m}}h^2$	$0.210^{+0.039}_{-0.066}$	Age/Gyr	$12.6^{+1.3}_{-2.0}$	$D_{\mathrm{M}}(2.33)$	$5233^{+520}_{-850}$
$\Omega_{\nu}h^2$	$< 0.0277$	$z_{*}$	$1094.7^{+3.2}_{-4.3}$	$f\sigma_{\mathrm{s}}(0.15)$	$0.460^{+0.044}_{-0.025}$
$\Omega_{\mathrm{m}}h^3$	$0.144^{+0.033}_{-0.066}$	$r_{*}$	$133.3 \pm 8.2$	$\sigma_{\mathrm{s}}(0.15)$	$0.64 \pm 0.11$
$\sigma_{\mathrm{s}}$	$0.70 \pm 0.11$	$100\theta_{*}$	$1.109^{+0.072}_{-0.064}$	$f\sigma_{\mathrm{s}}(0.38)$	$0.443^{+0.031}_{-0.018}$
$S_{\mathrm{s}}$	$0.87^{+0.11}_{-0.14}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$12.1^{+1.1}_{-1.6}$	$\sigma_{\mathrm{s}}(0.38)$	$0.56^{+0.11}_{-0.13}$
$\sigma_{\mathrm{s}}\Omega_{\mathrm{m}}^{0.5}$	$0.477^{+0.058}_{-0.078}$	$z_{\mathrm{drag}}$	$1063.3 \pm 3.0$	$f\sigma_{\mathrm{s}}(0.51)$	$0.430^{+0.048}_{-0.023}$
$\sigma_{\mathrm{s}}\Omega_{\mathrm{m}}^{0.25}$	$0.572 \pm 0.023$	$r_{\mathrm{drag}}$	$135.8 \pm 8.4$	$\sigma_{\mathrm{s}}(0.51)$	$0.52^{+0.10}_{-0.14}$
$\sigma_{\mathrm{s}}/h^{0.5}$	$0.853^{+0.064}_{-0.082}$	$k_{\mathrm{D}}$	$0.155^{+0.010}_{-0.013}$	$f\sigma_{\mathrm{s}}(0.61)$	$0.419^{+0.059}_{-0.029}$
$r_{\mathrm{drag}}h$	$93^{+20}_{-30}$	$100\theta_{\mathrm{D}}$	$0.1697 \pm 0.0095$	$\sigma_{\mathrm{s}}(0.61)$	$0.49^{+0.10}_{-0.13}$
$\langle d^2 \rangle^{1/2}$	$2.486 \pm 0.058$	$z_{\mathrm{eq}}$	$4512^{+800}_{-1000}$	$f\sigma_{\mathrm{s}}(2.33)$	$0.252^{+0.054}_{-0.077}$
$z_{\mathrm{re}}$	$8.83 \pm 0.74$	$k_{\mathrm{eq}}$	$0.0139^{+0.0023}_{-0.0034}$	$\sigma_{\mathrm{s}}(2.33)$	$0.254^{+0.052}_{-0.086}$
$10^9A_{\mathrm{s}}$	$1.95^{+0.30}_{-0.42}$	$100\theta_{\mathrm{eq}}$	$0.723^{+0.063}_{-0.092}$	$\chi^2_{\mathrm{lensing}}$	$9.2 \pm 2.3$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.75^{+0.27}_{-0.38}$	$100\theta_{\mathrm{s,eq}}$	$0.403^{+0.034}_{-0.048}$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 2.1$

$$\bar{\chi}^2_{\mathrm{eff}} = 11.22; R - 1 = 0.00322$$



## 6.82 base\_mnu\_lensing\_lenspriors\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02221	$0.02221 \pm 0.00050$	$D_{40}$	1365	$1107^{+100}_{-300}$	$H(0.15)$	69.8	$61.9^{+3.3}_{-9.1}$
$\Omega_c h^2$	0.1191	$0.142^{+0.025}_{-0.021}$	$D_{220}$	6388	$5103^{+700}_{-2000}$	$D_M(0.15)$	673	$798^{+200}_{-70}$
$100\theta_{MC}$	1.04089	$1.04089 \pm 0.00060$	$D_{810}$	2807	$2374^{+300}_{-600}$	$H(0.38)$	80.54	$76.4^{+1.3}_{-4.3}$
$\Sigma m_\nu$ [eV]	0.46	$1.27^{+0.57}_{-1.1}$	$D_{1420}$	900	$775^{+100}_{-200}$	$D_M(0.38)$	1595	$1807^{+300}_{-100}$
$\ln(10^{10} A_s)$	3.145	$2.98^{+0.15}_{-0.19}$	$D_{2000}$	253.6	$220^{+30}_{-50}$	$H(0.51)$	87.63	$85.43^{+0.40}_{-2.5}$
$n_s$	0.9603	$0.961 \pm 0.020$	$n_{s,0.002}$	0.9603	$0.961 \pm 0.020$	$D_M(0.51)$	2059	$2291^{+300}_{-100}$
$H_0$	64.1	$< 57.9$	$Y_P$	0.245331	$0.24532^{+0.00022}_{-0.00020}$	$H(0.61)$	93.53	$92.75^{+0.69}_{-1.6}$
$\Omega_\Lambda$	0.644	$0.29^{+0.46}_{-0.20}$	$Y_P^{BBN}$	0.246658	$0.24664^{+0.00023}_{-0.00020}$	$D_M(0.61)$	2390	$2628^{+290}_{-120}$
$\Omega_m$	0.356	$0.71^{+0.20}_{-0.46}$	$10^5 D/H$	2.615	$2.619 \pm 0.095$	$H(2.33)$	238.1	$258^{+24}_{-16}$
$\Omega_m h^2$	0.1462	$0.178^{+0.037}_{-0.026}$	Age/Gyr	14.010	$14.25^{+0.30}_{-0.14}$	$D_M(2.33)$	5855	$5940^{+110}_{-44}$
$\Omega_\nu h^2$	0.0049	$0.0136^{+0.0061}_{-0.012}$	$z_*$	1090.12	$1092.5^{+2.5}_{-2.1}$	$f\sigma_8(0.15)$	0.4567	$0.477^{+0.030}_{-0.015}$
$\Omega_m h^3$	0.09369	$0.0928 \pm 0.0021$	$r_*$	144.7	$138.7^{+4.3}_{-7.2}$	$\sigma_8(0.15)$	0.696	$0.579^{+0.066}_{-0.14}$
$\sigma_8$	0.757	$0.646^{+0.065}_{-0.14}$	$100\theta_*$	1.04127	$1.04136 \pm 0.00061$	$f\sigma_8(0.38)$	0.4653	$0.435^{+0.039}_{-0.023}$
$S_8$	0.825	$0.934^{+0.13}_{-0.089}$	$D_M(z_*)/\text{Gpc}$	13.89	$13.31^{+0.42}_{-0.69}$	$\sigma_8(0.38)$	0.614	$0.497^{+0.062}_{-0.14}$
$\sigma_8 \Omega_m^{0.5}$	0.452	$0.512^{+0.070}_{-0.049}$	$z_{\text{drag}}$	1059.59	$1061.5 \pm 2.1$	$f\sigma_8(0.51)$	0.460	$0.413 \pm 0.041$
$\sigma_8 \Omega_m^{0.25}$	0.5849	$0.570 \pm 0.022$	$r_{\text{drag}}$	147.4	$141.2^{+4.5}_{-7.4}$	$\sigma_8(0.51)$	0.573	$0.460^{+0.058}_{-0.14}$
$\sigma_8/h^{0.5}$	0.946	$0.882^{+0.055}_{-0.072}$	$k_D$	0.1405	$0.1477^{+0.0080}_{-0.0062}$	$f\sigma_8(0.61)$	0.452	$0.397 \pm 0.047$
$r_{\text{drag}} h$	94.4	$76^{+8}_{-20}$	$100\theta_D$	0.16092	$0.1600 \pm 0.0011$	$\sigma_8(0.61)$	0.545	$0.435^{+0.056}_{-0.13}$
$\langle d^2 \rangle^{1/2}$	2.529	$2.525 \pm 0.051$	$z_{\text{eq}}$	3376	$3935^{+600}_{-500}$	$f\sigma_8(2.33)$	0.278	$0.219^{+0.030}_{-0.071}$
$z_{\text{re}}$	7.829	$8.30^{+0.52}_{-0.41}$	$k_{\text{eq}}$	0.01031	$0.0120^{+0.0018}_{-0.0016}$	$\sigma_8(2.33)$	0.282	$0.220^{+0.030}_{-0.075}$
$10^9 A_s$	2.322	$1.99^{+0.23}_{-0.42}$	$100\theta_{\text{eq}}$	0.818	$0.742^{+0.048}_{-0.093}$	$\chi^2_{\text{lensing}}$	7.47	$9.8 \pm 2.0$
$10^9 A_s e^{-2\tau}$	2.080	$1.79^{+0.21}_{-0.38}$	$100\theta_{s,\text{eq}}$	0.4521	$0.412^{+0.025}_{-0.049}$	$\chi^2_{\text{prior}}$	0.00	$3.0 \pm 2.4$

Best-fit  $\chi^2_{\text{eff}} = 7.48$ ;  $\bar{\chi}^2_{\text{eff}} = 12.80$ ;  $R - 1 = 0.00091$

$\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 7.47



### 6.83 base\_mnu\_lensing\_lenspriors\_theta\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022204	$0.02220 \pm 0.00049$	$D_{220}$	6761	$6806^{+560}_{-750}$	$H(0.38)$	82.84	$82.7 \pm 1.0$
$\Omega_c h^2$	0.11300	$0.1130 \pm 0.0043$	$D_{810}$	2916	$2940^{+230}_{-310}$	$D_M(0.38)$	1527.2	$1530 \pm 27$
$100\theta_{MC}$	1.04090	$1.04087 \pm 0.00061$	$D_{1420}$	930	$939^{+76}_{-100}$	$H(0.51)$	89.37	$89.30 \pm 0.87$
$\Sigma m_\nu$ [eV]	0.261	$0.28^{+0.10}_{-0.25}$	$D_{2000}$	261.4	$264^{+22}_{-30}$	$D_M(0.51)$	1980.3	$1984 \pm 32$
$\ln(10^{10} A_s)$	3.178	$3.181^{+0.081}_{-0.093}$	$n_{s,0.002}$	0.9609	$0.963 \pm 0.019$	$H(0.61)$	94.85	$94.78^{+0.82}_{-0.73}$
$n_s$	0.9609	$0.963 \pm 0.019$	$Y_P$	0.245327	$0.24531 \pm 0.00021$	$D_M(0.61)$	2306.0	$2310 \pm 35$
$H_0$	67.93	$67.8 \pm 1.6$	$Y_P^{BBN}$	0.246654	$0.24664 \pm 0.00021$	$H(2.33)$	232.87	$233.0 \pm 2.7$
$\Omega_\Lambda$	0.7009	$0.699 \pm 0.021$	$10^5 D/H$	2.617	$2.620 \pm 0.093$	$D_M(2.33)$	5798.1	$5802^{+37}_{-45}$
$\Omega_m$	0.2991	$0.301 \pm 0.021$	Age/Gyr	13.885	$13.895^{+0.086}_{-0.10}$	$f\sigma_8(0.15)$	0.4418	$0.441 \pm 0.015$
$\Omega_m h^2$	0.13801	$0.1382 \pm 0.0039$	$z_*$	1089.54	$1089.56 \pm 0.67$	$\sigma_8(0.15)$	0.7346	$0.731^{+0.028}_{-0.023}$
$\Omega_\nu h^2$	0.00281	$0.0030^{+0.0011}_{-0.0027}$	$r_*$	146.37	$146.4 \pm 1.2$	$f\sigma_8(0.38)$	0.4631	$0.461^{+0.014}_{-0.012}$
$\Omega_m h^3$	0.09375	$0.0936 \pm 0.0018$	$100\theta_*$	1.04123	$1.04119 \pm 0.00062$	$\sigma_8(0.38)$	0.6531	$0.650^{+0.025}_{-0.022}$
$\sigma_8$	0.7932	$0.790^{+0.029}_{-0.024}$	$D_M(z_*)/\text{Gpc}$	14.057	$14.06 \pm 0.12$	$f\sigma_8(0.51)$	0.4634	$0.462^{+0.014}_{-0.012}$
$S_8$	0.7919	$0.791 \pm 0.029$	$z_{\text{drag}}$	1059.06	$1059.1 \pm 1.2$	$\sigma_8(0.51)$	0.6121	$0.609^{+0.024}_{-0.021}$
$\sigma_8 \Omega_m^{0.5}$	0.4337	$0.433 \pm 0.016$	$r_{\text{drag}}$	149.13	$149.1 \pm 1.4$	$f\sigma_8(0.61)$	0.4597	$0.458^{+0.013}_{-0.011}$
$\sigma_8 \Omega_m^{0.25}$	0.5865	$0.585^{+0.020}_{-0.017}$	$k_D$	0.13863	$0.1386 \pm 0.0016$	$\sigma_8(0.61)$	0.5830	$0.580^{+0.023}_{-0.020}$
$\sigma_8/h^{0.5}$	0.9623	$0.959^{+0.031}_{-0.026}$	$100\theta_D$	0.16120	$0.16120 \pm 0.00073$	$f\sigma_8(2.33)$	0.2978	$0.296 \pm 0.010$
$r_{\text{drag}} h$	101.31	$101.1 \pm 2.8$	$z_{\text{eq}}$	3231	$3230 \pm 110$	$\sigma_8(2.33)$	0.3057	$0.304 \pm 0.012$
$\langle d^2 \rangle^{1/2}$	2.522	$2.523^{+0.047}_{-0.054}$	$k_{\text{eq}}$	0.009863	$0.00986 \pm 0.00032$	$\chi^2_{\text{lensing}}$	7.50	$9.2 \pm 1.7$
$z_{\text{re}}$	7.704	$7.71 \pm 0.12$	$100\theta_{\text{eq}}$	0.8451	$0.846 \pm 0.021$	$\chi^2_{\text{JLA}}$	1034.73	$1035.6 \pm 1.3$
$10^9 A_s$	2.399	$2.42^{+0.18}_{-0.24}$	$100\theta_{s,\text{eq}}$	0.4661	$0.467 \pm 0.011$	$\chi^2_{\text{prior}}$	0.00	$3.0 \pm 2.4$
$10^9 A_s e^{-2\tau}$	2.149	$2.16^{+0.16}_{-0.21}$	$H(0.15)$	73.04	$72.9 \pm 1.4$			
$D_{40}$	1440	$1441^{+110}_{-130}$	$D_M(0.15)$	639.1	$641 \pm 13$			

Best-fit  $\chi^2_{\text{eff}} = 1042.24$ ;  $\bar{\chi}^2_{\text{eff}} = 1047.78$ ;  $R - 1 = 0.00923$

$\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmargd: 7.50 SN - JLA Pantheon18: 1034.73



## 6.84 base\_mnu\_lensing\_lenspriors\_theta\_post\_agr2

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02221 \pm 0.00051$	$D_{40}$	$1140^{+200}_{-300}$	$H(0.15)$	$62.1^{+3.5}_{-9.4}$
$\Omega_{\mathrm{c}}h^2$	$0.140^{+0.026}_{-0.021}$	$D_{220}$	$5286^{+800}_{-2000}$	$D_{\mathrm{M}}(0.15)$	$796^{+200}_{-100}$
$100\theta_{\mathrm{MC}}$	$1.04089 \pm 0.00060$	$D_{810}$	$2438^{+300}_{-600}$	$H(0.38)$	$76.4^{+1.6}_{-4.5}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$1.36^{+0.77}_{-1.0}$	$D_{1420}$	$795^{+100}_{-200}$	$D_{\mathrm{M}}(0.38)$	$1805^{+300}_{-100}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.00^{+0.16}_{-0.20}$	$D_{2000}$	$225^{+30}_{-50}$	$H(0.51)$	$85.40^{+0.34}_{-2.6}$
$n_{\mathrm{s}}$	$0.960 \pm 0.020$	$n_{\mathrm{s},0.002}$	$0.960 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$2288^{+300}_{-100}$
$H_0$	$< 58.5$	$Y_{\mathrm{P}}$	$0.24532^{+0.00023}_{-0.00020}$	$H(0.61)$	$92.66^{+0.61}_{-1.8}$
$\Omega_{\Lambda}$	$0.29^{+0.48}_{-0.21}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00023}_{-0.00021}$	$D_{\mathrm{M}}(0.61)$	$2625^{+300}_{-100}$
$\Omega_{\mathrm{m}}$	$0.71^{+0.21}_{-0.48}$	$10^5\mathrm{D}/\mathrm{H}$	$2.620 \pm 0.096$	$H(2.33)$	$257^{+26}_{-19}$
$\Omega_{\mathrm{m}}h^2$	$0.176^{+0.041}_{-0.027}$	$\mathrm{Age}/\mathrm{Gyr}$	$14.28^{+0.31}_{-0.13}$	$D_{\mathrm{M}}(2.33)$	$5949^{+110}_{-37}$
$\Omega_{\nu}h^2$	$0.0146^{+0.0083}_{-0.011}$	$z_{*}$	$1092.3^{+2.7}_{-2.2}$	$f\sigma_8(0.15)$	$0.466^{+0.030}_{-0.011}$
$\Omega_{\mathrm{m}}h^3$	$0.0920 \pm 0.0019$	$r_{*}$	$139.2^{+4.4}_{-7.7}$	$\sigma_8(0.15)$	$0.571^{+0.065}_{-0.14}$
$\sigma_8$	$0.637^{+0.062}_{-0.14}$	$100\theta_{*}$	$1.04139 \pm 0.00061$	$f\sigma_8(0.38)$	$0.427^{+0.037}_{-0.021}$
$S_8$	$0.912^{+0.14}_{-0.087}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.37^{+0.43}_{-0.74}$	$\sigma_8(0.38)$	$0.492^{+0.061}_{-0.14}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.500^{+0.076}_{-0.048}$	$z_{\mathrm{drag}}$	$1061.3 \pm 2.2$	$f\sigma_8(0.51)$	$0.406 \pm 0.040$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.559^{+0.016}_{-0.020}$	$r_{\mathrm{drag}}$	$141.8^{+4.6}_{-7.8}$	$\sigma_8(0.51)$	$0.455^{+0.059}_{-0.14}$
$\sigma_8/h^{0.5}$	$0.867^{+0.047}_{-0.074}$	$k_{\mathrm{D}}$	$0.1471^{+0.0085}_{-0.0065}$	$f\sigma_8(0.61)$	$0.390 \pm 0.047$
$r_{\mathrm{drag}}h$	$77^{+9}_{-20}$	$100\theta_{\mathrm{D}}$	$0.1600 \pm 0.0012$	$\sigma_8(0.61)$	$0.430^{+0.056}_{-0.13}$
$\langle d^2 \rangle^{1/2}$	$2.531 \pm 0.049$	$z_{\mathrm{eq}}$	$3867^{+600}_{-500}$	$f\sigma_8(2.33)$	$0.217^{+0.031}_{-0.072}$
$z_{\mathrm{re}}$	$8.27^{+0.56}_{-0.42}$	$k_{\mathrm{eq}}$	$0.0118^{+0.0020}_{-0.0016}$	$\sigma_8(2.33)$	$0.218^{+0.030}_{-0.075}$
$10^9A_{\mathrm{s}}$	$2.04^{+0.25}_{-0.45}$	$100\theta_{\mathrm{eq}}$	$0.753^{+0.048}_{-0.099}$	$\chi^2_{\mathrm{lensing}}$	$12.1 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.83^{+0.22}_{-0.40}$	$100\theta_{\mathrm{s,eq}}$	$0.418^{+0.026}_{-0.052}$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.4$

$\bar{\chi}^2_{\mathrm{eff}} = 15.15; R - 1 = 0.00151$



## 6.85 base\_mnu\_lensing\_lenspriors\_theta\_post\_conslmin40

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02221 \pm 0.00050$	$D_{40}$	$1131^{+200}_{-300}$	$H(0.15)$	$62.1^{+3.4}_{-9.3}$
$\Omega_{\mathrm{c}}h^2$	$0.141 \pm 0.022$	$D_{220}$	$5233^{+800}_{-2000}$	$D_{\mathrm{M}}(0.15)$	$794^{+200}_{-80}$
$100\theta_{\mathrm{MC}}$	$1.04089 \pm 0.00060$	$D_{810}$	$2421^{+300}_{-600}$	$H(0.38)$	$76.5^{+1.3}_{-4.4}$
$\Sigma m_{\nu}$ [eV]	$1.27^{+0.56}_{-1.1}$	$D_{1420}$	$790^{+100}_{-200}$	$D_{\mathrm{M}}(0.38)$	$1801^{+300}_{-100}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.00^{+0.16}_{-0.20}$	$D_{2000}$	$224^{+30}_{-50}$	$H(0.51)$	$85.46^{+0.46}_{-2.6}$
$n_{\mathrm{s}}$	$0.961 \pm 0.020$	$n_{\mathrm{s},0.002}$	$0.961 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$2284^{+300}_{-100}$
$H_0$	$< 58.3$	$Y_{\mathrm{P}}$	$0.24532^{+0.00023}_{-0.00020}$	$H(0.61)$	$92.73^{+0.73}_{-1.7}$
$\Omega_{\Lambda}$	$0.30^{+0.46}_{-0.20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2621^{+290}_{-120}$
$\Omega_{\mathrm{m}}$	$0.70^{+0.20}_{-0.46}$	$10^5\mathrm{D}/\mathrm{H}$	$2.620 \pm 0.094$	$H(2.33)$	$257^{+23}_{-17}$
$\Omega_{\mathrm{m}}h^2$	$0.177^{+0.035}_{-0.029}$	Age/Gyr	$14.25^{+0.30}_{-0.15}$	$D_{\mathrm{M}}(2.33)$	$5940^{+110}_{-48}$
$\Omega_{\nu}h^2$	$0.0136^{+0.0060}_{-0.011}$	$z_{*}$	$1092.4^{+2.5}_{-2.2}$	$f\sigma_8(0.15)$	$0.474^{+0.033}_{-0.016}$
$\Omega_{\mathrm{m}}h^3$	$0.0926^{+0.0021}_{-0.0023}$	$r_{*}$	$139.0^{+4.7}_{-7.2}$	$\sigma_8(0.15)$	$0.580^{+0.068}_{-0.14}$
$\sigma_8$	$0.647^{+0.067}_{-0.14}$	$100\theta_{*}$	$1.04137 \pm 0.00061$	$f\sigma_8(0.38)$	$0.435^{+0.038}_{-0.023}$
$S_8$	$0.927^{+0.13}_{-0.094}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.34^{+0.45}_{-0.69}$	$\sigma_8(0.38)$	$0.499^{+0.064}_{-0.14}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.508^{+0.071}_{-0.052}$	$z_{\mathrm{drag}}$	$1061.4 \pm 2.1$	$f\sigma_8(0.51)$	$0.413^{+0.055}_{-0.032}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.569^{+0.021}_{-0.024}$	$r_{\mathrm{drag}}$	$141.5^{+4.9}_{-7.3}$	$\sigma_8(0.51)$	$0.462^{+0.060}_{-0.14}$
$\sigma_8/h^{0.5}$	$0.881^{+0.056}_{-0.069}$	$k_{\mathrm{D}}$	$0.1474^{+0.0079}_{-0.0065}$	$f\sigma_8(0.61)$	$0.397 \pm 0.047$
$r_{\mathrm{drag}}h$	$77^{+9}_{-20}$	$100\theta_{\mathrm{D}}$	$0.1600 \pm 0.0011$	$\sigma_8(0.61)$	$0.437^{+0.058}_{-0.13}$
$\langle d^2 \rangle^{1/2}$	$2.534 \pm 0.061$	$z_{\mathrm{eq}}$	$3903 \pm 500$	$f\sigma_8(2.33)$	$0.221^{+0.031}_{-0.071}$
$z_{\mathrm{re}}$	$8.28^{+0.52}_{-0.42}$	$k_{\mathrm{eq}}$	$0.0120 \pm 0.0016$	$\sigma_8(2.33)$	$0.221^{+0.031}_{-0.075}$
$10^9A_{\mathrm{s}}$	$2.03^{+0.25}_{-0.45}$	$100\theta_{\mathrm{eq}}$	$0.747^{+0.052}_{-0.095}$	$\chi^2_{\mathrm{lensing}}$	$9.7 \pm 1.9$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.82^{+0.23}_{-0.40}$	$100\theta_{\mathrm{s,eq}}$	$0.415^{+0.028}_{-0.050}$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.4$

$\bar{\chi}^2_{\mathrm{eff}} = 12.69$ ;  $R - 1 = 0.00184$



## 6.86 base\_mnu\_lensing\_lenspriors\_theta\_post\_agrlmax425

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00050$	$D_{40}$	$1098^{+100}_{-300}$	$H(0.15)$	$61.8^{+3.3}_{-9.0}$
$\Omega_{\mathrm{c}}h^2$	$0.143 \pm 0.021$	$D_{220}$	$5051^{+800}_{-2000}$	$D_{\mathrm{M}}(0.15)$	$798^{+200}_{-80}$
$100\theta_{\mathrm{MC}}$	$1.04089 \pm 0.00060$	$D_{810}$	$2353^{+300}_{-500}$	$H(0.38)$	$76.4^{+1.3}_{-4.2}$
$\Sigma m_{\nu}$ [eV]	$1.24^{+0.58}_{-0.99}$	$D_{1420}$	$769^{+100}_{-200}$	$D_{\mathrm{M}}(0.38)$	$1808^{+300}_{-100}$
$\ln(10^{10}A_{\mathrm{s}})$	$2.97^{+0.15}_{-0.19}$	$D_{2000}$	$218^{+30}_{-40}$	$H(0.51)$	$85.42^{+0.43}_{-2.4}$
$n_{\mathrm{s}}$	$0.960 \pm 0.020$	$n_{\mathrm{s},0.002}$	$0.960 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$2291^{+300}_{-100}$
$H_0$	$< 57.8$	$Y_{\mathrm{P}}$	$0.24532^{+0.00023}_{-0.00020}$	$H(0.61)$	$92.76^{+0.70}_{-1.6}$
$\Omega_{\Lambda}$	$0.29^{+0.45}_{-0.20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2628^{+280}_{-120}$
$\Omega_{\mathrm{m}}$	$0.71^{+0.20}_{-0.45}$	$10^5\mathrm{D}/\mathrm{H}$	$2.620 \pm 0.094$	$H(2.33)$	$259^{+22}_{-17}$
$\Omega_{\mathrm{m}}h^2$	$0.179 \pm 0.028$	Age/Gyr	$14.25^{+0.28}_{-0.14}$	$D_{\mathrm{M}}(2.33)$	$5937^{+100}_{-44}$
$\Omega_{\nu}h^2$	$0.0133^{+0.0063}_{-0.011}$	$z_{*}$	$1092.5^{+2.4}_{-2.2}$	$f\sigma_8(0.15)$	$0.479^{+0.030}_{-0.015}$
$\Omega_{\mathrm{m}}h^3$	$0.0930 \pm 0.0021$	$r_{*}$	$138.5^{+4.5}_{-6.9}$	$\sigma_8(0.15)$	$0.580^{+0.067}_{-0.14}$
$\sigma_8$	$0.648^{+0.066}_{-0.13}$	$100\theta_{*}$	$1.04136 \pm 0.00061$	$f\sigma_8(0.38)$	$0.438^{+0.039}_{-0.022}$
$S_8$	$0.939^{+0.12}_{-0.091}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.30^{+0.43}_{-0.66}$	$\sigma_8(0.38)$	$0.499^{+0.062}_{-0.14}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.514^{+0.068}_{-0.050}$	$z_{\mathrm{drag}}$	$1061.5 \pm 2.1$	$f\sigma_8(0.51)$	$0.415^{+0.055}_{-0.031}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.573 \pm 0.021$	$r_{\mathrm{drag}}$	$141.1^{+4.7}_{-7.0}$	$\sigma_8(0.51)$	$0.461^{+0.059}_{-0.13}$
$\sigma_8/h^{0.5}$	$0.885^{+0.056}_{-0.068}$	$k_{\mathrm{D}}$	$0.1478^{+0.0076}_{-0.0064}$	$f\sigma_8(0.61)$	$0.399 \pm 0.047$
$r_{\mathrm{drag}}h$	$76^{+9}_{-20}$	$100\theta_{\mathrm{D}}$	$0.1600 \pm 0.0011$	$\sigma_8(0.61)$	$0.436^{+0.057}_{-0.13}$
$\langle d^2 \rangle^{1/2}$	$2.522 \pm 0.051$	$z_{\mathrm{eq}}$	$3952 \pm 500$	$f\sigma_8(2.33)$	$0.220^{+0.031}_{-0.070}$
$z_{\mathrm{re}}$	$8.31^{+0.50}_{-0.42}$	$k_{\mathrm{eq}}$	$0.0121 \pm 0.0016$	$\sigma_8(2.33)$	$0.220^{+0.030}_{-0.073}$
$10^9A_{\mathrm{s}}$	$1.98^{+0.24}_{-0.41}$	$100\theta_{\mathrm{eq}}$	$0.739^{+0.049}_{-0.090}$	$\chi^2_{\mathrm{lensing}}$	$7.6 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.77^{+0.21}_{-0.37}$	$100\theta_{\mathrm{s,eq}}$	$0.411^{+0.026}_{-0.047}$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.4$

$\bar{\chi}^2_{\mathrm{eff}} = 10.54$ ;  $R - 1 = 0.00109$



## 6.87 base\_mnu\_lensing\_lenspriors\_theta\_post\_ptt

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00048$	$D_{40}$	$1264^{+200}_{-400}$	$H(0.15)$	$62.9^{+3.9}_{-10}$
$\Omega_{\mathrm{c}}h^2$	$0.134^{+0.024}_{-0.022}$	$D_{220}$	$5943^{+1000}_{-2000}$	$D_{\mathrm{M}}(0.15)$	$784^{+200}_{-100}$
$100\theta_{\mathrm{MC}}$	$1.04088 \pm 0.00059$	$D_{810}$	$2695^{+400}_{-700}$	$H(0.38)$	$76.8^{+1.4}_{-5.2}$
$\Sigma m_{\nu}$ [eV]	$1.43^{+0.51}_{-1.3}$	$D_{1420}$	$875^{+100}_{-200}$	$D_{\mathrm{M}}(0.38)$	$1786^{+300}_{-100}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.09^{+0.17}_{-0.22}$	$D_{2000}$	$248^{+30}_{-60}$	$H(0.51)$	$85.46^{+0.35}_{-3.1}$
$n_{\mathrm{s}}$	$0.961 \pm 0.020$	$n_{\mathrm{s},0.002}$	$0.961 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$2268^{+300}_{-100}$
$H_0$	$< 59.2$	$Y_{\mathrm{P}}$	$0.24531 \pm 0.00021$	$H(0.61)$	$92.53^{+0.54}_{-2.1}$
$\Omega_{\Lambda}$	$0.33^{+0.46}_{-0.21}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664 \pm 0.00021$	$D_{\mathrm{M}}(0.61)$	$2605^{+300}_{-100}$
$\Omega_{\mathrm{m}}$	$0.67^{+0.21}_{-0.46}$	$10^5\mathrm{D}/\mathrm{H}$	$2.620 \pm 0.092$	$H(2.33)$	$254^{+23}_{-18}$
$\Omega_{\mathrm{m}}h^2$	$0.171^{+0.035}_{-0.030}$	Age/Gyr	$14.30^{+0.35}_{-0.15}$	$D_{\mathrm{M}}(2.33)$	$5958^{+130}_{-44}$
$\Omega_{\nu}h^2$	$0.0154^{+0.0055}_{-0.014}$	$z_{*}$	$1091.9^{+2.7}_{-2.3}$	$f\sigma_8(0.15)$	$0.459^{+0.037}_{-0.020}$
$\Omega_{\mathrm{m}}h^3$	$0.0911 \pm 0.0021$	$r_{*}$	$140.5^{+5.1}_{-7.4}$	$\sigma_8(0.15)$	$0.580^{+0.078}_{-0.14}$
$\sigma_8$	$0.644^{+0.075}_{-0.14}$	$100\theta_{*}$	$1.04140 \pm 0.00060$	$f\sigma_8(0.38)$	$0.426^{+0.034}_{-0.023}$
$S_8$	$0.89^{+0.13}_{-0.11}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.49^{+0.49}_{-0.71}$	$\sigma_8(0.38)$	$0.501^{+0.073}_{-0.14}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.488^{+0.071}_{-0.058}$	$z_{\mathrm{drag}}$	$1061.0 \pm 2.2$	$f\sigma_8(0.51)$	$0.407^{+0.051}_{-0.039}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.555 \pm 0.022$	$r_{\mathrm{drag}}$	$143.1^{+5.3}_{-7.6}$	$\sigma_8(0.51)$	$0.464^{+0.069}_{-0.14}$
$\sigma_8/h^{0.5}$	$0.868 \pm 0.060$	$k_{\mathrm{D}}$	$0.1457^{+0.0082}_{-0.0069}$	$f\sigma_8(0.61)$	$0.392^{+0.061}_{-0.050}$
$r_{\mathrm{drag}}h$	$79^{+10}_{-20}$	$100\theta_{\mathrm{D}}$	$0.1601 \pm 0.0012$	$\sigma_8(0.61)$	$0.439^{+0.066}_{-0.14}$
$\langle d^2 \rangle^{1/2}$	$2.596^{+0.063}_{-0.056}$	$z_{\mathrm{eq}}$	$3727^{+600}_{-500}$	$f\sigma_8(2.33)$	$0.223^{+0.036}_{-0.075}$
$z_{\mathrm{re}}$	$8.20^{+0.54}_{-0.44}$	$k_{\mathrm{eq}}$	$0.0114^{+0.0018}_{-0.0016}$	$\sigma_8(2.33)$	$0.224^{+0.035}_{-0.080}$
$10^9A_{\mathrm{s}}$	$2.24^{+0.29}_{-0.54}$	$100\theta_{\mathrm{eq}}$	$0.775^{+0.057}_{-0.10}$	$\chi^2_{\mathrm{lensing}}$	$11.1 \pm 1.9$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.01^{+0.26}_{-0.48}$	$100\theta_{\mathrm{s,eq}}$	$0.429^{+0.031}_{-0.053}$	$\chi^2_{\mathrm{prior}}$	$2.9 \pm 2.4$

$\bar{\chi}^2_{\mathrm{eff}} = 13.98$ ;  $R - 1 = 0.03431$



## 6.88 base\_mnu\_lensing\_lenspriors\_theta\_post\_bfcl

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02221 \pm 0.00050$	$D_{40}$	$1078^{+100}_{-300}$	$H(0.15)$	$61.8^{+3.5}_{-9.0}$
$\Omega_{\mathrm{c}}h^2$	$0.143 \pm 0.021$	$D_{220}$	$4963^{+800}_{-2000}$	$D_{\mathrm{M}}(0.15)$	$798^{+200}_{-90}$
$100\theta_{\mathrm{MC}}$	$1.04089 \pm 0.00060$	$D_{810}$	$2314^{+300}_{-500}$	$H(0.38)$	$76.4^{+1.3}_{-4.2}$
$\Sigma m_{\nu}$ [eV]	$1.25^{+0.58}_{-1.0}$	$D_{1420}$	$756^{+100}_{-200}$	$D_{\mathrm{M}}(0.38)$	$1808^{+300}_{-100}$
$\ln(10^{10}A_{\mathrm{s}})$	$2.95^{+0.15}_{-0.19}$	$D_{2000}$	$215^{+30}_{-40}$	$H(0.51)$	$85.43^{+0.45}_{-2.4}$
$n_{\mathrm{s}}$	$0.961 \pm 0.020$	$n_{\mathrm{s},0.002}$	$0.961 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$2292^{+300}_{-100}$
$H_0$	$< 57.9$	$Y_{\mathrm{P}}$	$0.24532 \pm 0.00022$	$H(0.61)$	$92.77^{+0.72}_{-1.6}$
$\Omega_{\Lambda}$	$0.28^{+0.46}_{-0.20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664 \pm 0.00022$	$D_{\mathrm{M}}(0.61)$	$2629^{+280}_{-120}$
$\Omega_{\mathrm{m}}$	$0.72^{+0.20}_{-0.46}$	$10^5D/\mathrm{H}$	$2.619 \pm 0.095$	$H(2.33)$	$259^{+23}_{-16}$
$\Omega_{\mathrm{m}}h^2$	$0.179^{+0.035}_{-0.028}$	Age/Gyr	$14.25^{+0.29}_{-0.14}$	$D_{\mathrm{M}}(2.33)$	$5938^{+100}_{-46}$
$\Omega_{\nu}h^2$	$0.0134^{+0.0062}_{-0.011}$	$z_{*}$	$1092.5^{+2.4}_{-2.2}$	$f\sigma_8(0.15)$	$0.475^{+0.029}_{-0.015}$
$\Omega_{\mathrm{m}}h^3$	$0.0929 \pm 0.0021$	$r_{*}$	$138.5^{+4.5}_{-7.0}$	$\sigma_8(0.15)$	$0.574^{+0.068}_{-0.14}$
$\sigma_8$	$0.641^{+0.066}_{-0.13}$	$100\theta_{*}$	$1.04136 \pm 0.00061$	$f\sigma_8(0.38)$	$0.433^{+0.039}_{-0.023}$
$S_8$	$0.930^{+0.12}_{-0.090}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.30^{+0.43}_{-0.67}$	$\sigma_8(0.38)$	$0.493^{+0.063}_{-0.14}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.510^{+0.068}_{-0.049}$	$z_{\mathrm{drag}}$	$1061.5 \pm 2.1$	$f\sigma_8(0.51)$	$0.411 \pm 0.041$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.567^{+0.020}_{-0.023}$	$r_{\mathrm{drag}}$	$141.1^{+4.7}_{-7.1}$	$\sigma_8(0.51)$	$0.456^{+0.060}_{-0.13}$
$\sigma_8/h^{0.5}$	$0.877^{+0.055}_{-0.069}$	$k_{\mathrm{D}}$	$0.1479^{+0.0077}_{-0.0064}$	$f\sigma_8(0.61)$	$0.394 \pm 0.047$
$r_{\mathrm{drag}}h$	$76^{+9}_{-20}$	$100\theta_{\mathrm{D}}$	$0.1600 \pm 0.0011$	$\sigma_8(0.61)$	$0.431^{+0.058}_{-0.13}$
$\langle d^2 \rangle^{1/2}$	$2.499 \pm 0.048$	$z_{\mathrm{eq}}$	$3952 \pm 500$	$f\sigma_8(2.33)$	$0.217^{+0.031}_{-0.069}$
$z_{\mathrm{re}}$	$8.31^{+0.50}_{-0.42}$	$k_{\mathrm{eq}}$	$0.0121 \pm 0.0016$	$\sigma_8(2.33)$	$0.218^{+0.031}_{-0.073}$
$10^9A_{\mathrm{s}}$	$1.94^{+0.24}_{-0.40}$	$100\theta_{\mathrm{eq}}$	$0.739^{+0.049}_{-0.090}$	$\chi^2_{\mathrm{lensing}}$	$9.96 \pm 1.9$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.74^{+0.21}_{-0.36}$	$100\theta_{\mathrm{s,eq}}$	$0.411^{+0.026}_{-0.048}$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.4$

$\bar{\chi}^2_{\mathrm{eff}} = 12.95$ ;  $R - 1 = 0.00197$



## 6.89 base\_mnu\_lensing\_lenspriors\_theta\_post\_agr2bfcl

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02220 \pm 0.00051$	$D_{40}$	$1111^{+200}_{-300}$	$H(0.15)$	$62.1^{+3.6}_{-9.4}$
$\Omega_{\mathrm{c}} h^2$	$0.140^{+0.025}_{-0.022}$	$D_{220}$	$5147^{+800}_{-2000}$	$D_{\mathrm{M}}(0.15)$	$795^{+200}_{-100}$
$100\theta_{\mathrm{MC}}$	$1.04089 \pm 0.00060$	$D_{810}$	$2378^{+300}_{-600}$	$H(0.38)$	$76.4^{+1.7}_{-4.4}$
$\Sigma m_{\nu}$ [eV]	$1.33^{+0.69}_{-1.0}$	$D_{1420}$	$775^{+100}_{-200}$	$D_{\mathrm{M}}(0.38)$	$1804^{+300}_{-100}$
$\ln(10^{10} A_{\mathrm{s}})$	$2.98^{+0.16}_{-0.19}$	$D_{2000}$	$220^{+30}_{-50}$	$H(0.51)$	$85.41^{+0.41}_{-2.6}$
$n_{\mathrm{s}}$	$0.960 \pm 0.020$	$n_{\mathrm{s},0.002}$	$0.960 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$2287^{+300}_{-100}$
$H_0$	$< 58.6$	$Y_{\mathrm{P}}$	$0.24532 \pm 0.00022$	$H(0.61)$	$92.67^{+0.65}_{-1.7}$
$\Omega_{\Lambda}$	$0.29^{+0.47}_{-0.21}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664 \pm 0.00022$	$D_{\mathrm{M}}(0.61)$	$2624^{+300}_{-100}$
$\Omega_{\mathrm{m}}$	$0.71^{+0.21}_{-0.47}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.620 \pm 0.096$	$H(2.33)$	$257^{+25}_{-21}$
$\Omega_{\mathrm{m}} h^2$	$0.177^{+0.039}_{-0.034}$	Age/Gyr	$14.27^{+0.30}_{-0.13}$	$D_{\mathrm{M}}(2.33)$	$5946^{+110}_{-40}$
$\Omega_{\nu} h^2$	$0.0143^{+0.0074}_{-0.011}$	$z_{*}$	$1092.3 \pm 2.2$	$f\sigma_8(0.15)$	$0.464^{+0.029}_{-0.012}$
$\Omega_{\mathrm{m}} h^3$	$0.0922 \pm 0.0019$	$r_{*}$	$139.1^{+4.6}_{-7.5}$	$\sigma_8(0.15)$	$0.569^{+0.067}_{-0.14}$
$\sigma_8$	$0.634^{+0.064}_{-0.13}$	$100\theta_{*}$	$1.04138 \pm 0.00061$	$f\sigma_8(0.38)$	$0.425^{+0.037}_{-0.020}$
$S_8$	$0.908^{+0.13}_{-0.089}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.36^{+0.44}_{-0.72}$	$\sigma_8(0.38)$	$0.489^{+0.064}_{-0.14}$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.497^{+0.073}_{-0.049}$	$z_{\mathrm{drag}}$	$1061.4 \pm 2.2$	$f\sigma_8(0.51)$	$0.404 \pm 0.040$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.557^{+0.016}_{-0.020}$	$r_{\mathrm{drag}}$	$141.7^{+4.8}_{-7.6}$	$\sigma_8(0.51)$	$0.453^{+0.061}_{-0.13}$
$\sigma_8/h^{0.5}$	$0.863^{+0.049}_{-0.071}$	$k_{\mathrm{D}}$	$0.1472^{+0.0081}_{-0.0067}$	$f\sigma_8(0.61)$	$0.389 \pm 0.046$
$r_{\mathrm{drag}} h$	$77^{+9}_{-20}$	$100\theta_{\mathrm{D}}$	$0.1600 \pm 0.0011$	$\sigma_8(0.61)$	$0.428^{+0.059}_{-0.13}$
$\langle d^2 \rangle^{1/2}$	$2.505 \pm 0.046$	$z_{\mathrm{eq}}$	$3880^{+600}_{-500}$	$f\sigma_8(2.33)$	$0.216^{+0.034}_{-0.071}$
$z_{\mathrm{re}}$	$8.28^{+0.52}_{-0.44}$	$k_{\mathrm{eq}}$	$0.0119^{+0.0019}_{-0.0017}$	$\sigma_8(2.33)$	$0.217^{+0.032}_{-0.074}$
$10^9 A_{\mathrm{s}}$	$1.99^{+0.25}_{-0.43}$	$100\theta_{\mathrm{eq}}$	$0.750^{+0.050}_{-0.097}$	$\chi^2_{\mathrm{lensing}}$	$12.3 \pm 1.9$
$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.78^{+0.23}_{-0.38}$	$100\theta_{\mathrm{s,eq}}$	$0.416^{+0.027}_{-0.051}$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.3$

$\bar{\chi}^2_{\mathrm{eff}} = 15.30$ ;  $R - 1 = 0.00207$



## 6.90 base\_mnu\_lensing\_lenspriors\_theta\_post\_linear

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02220 \pm 0.00049$	$D_{40}$	$1075^{+100}_{-300}$	$H(0.15)$	$61.4^{+3.1}_{-8.6}$
$\Omega_{\mathrm{c}} h^2$	$0.146^{+0.025}_{-0.021}$	$D_{220}$	$4920^{+700}_{-2000}$	$D_{\mathrm{M}}(0.15)$	$805^{+200}_{-80}$
$100\theta_{\mathrm{MC}}$	$1.04089 \pm 0.00060$	$D_{810}$	$2311^{+300}_{-500}$	$H(0.38)$	$76.2^{+1.2}_{-4.0}$
$\Sigma m_{\nu}$ [eV]	$1.23^{+0.58}_{-0.99}$	$D_{1420}$	$756^{+90}_{-200}$	$D_{\mathrm{M}}(0.38)$	$1819^{+300}_{-100}$
$\ln(10^{10} A_{\mathrm{s}})$	$2.96^{+0.14}_{-0.19}$	$D_{2000}$	$215^{+30}_{-40}$	$H(0.51)$	$85.42^{+0.38}_{-2.3}$
$n_{\mathrm{s}}$	$0.961 \pm 0.020$	$n_{\mathrm{s},0.002}$	$0.961 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$2302^{+300}_{-100}$
$H_0$	$< 57.0$	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00020}$	$H(0.61)$	$92.86^{+0.76}_{-1.5}$
$\Omega_{\Lambda}$	$0.26^{+0.47}_{-0.21}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2639^{+270}_{-110}$
$\Omega_{\mathrm{m}}$	$0.74^{+0.21}_{-0.47}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.620 \pm 0.094$	$H(2.33)$	$260^{+24}_{-15}$
$\Omega_{\mathrm{m}} h^2$	$0.181^{+0.038}_{-0.024}$	Age/Gyr	$14.24^{+0.28}_{-0.13}$	$D_{\mathrm{M}}(2.33)$	$5934^{+99}_{-43}$
$\Omega_{\nu} h^2$	$0.0132^{+0.0062}_{-0.011}$	$z_{*}$	$1092.7^{+2.5}_{-2.1}$	$f\sigma_8(0.15)$	$0.487^{+0.030}_{-0.016}$
$\Omega_{\mathrm{m}} h^3$	$0.0933 \pm 0.0022$	$r_{*}$	$137.9^{+4.2}_{-7.0}$	$\sigma_8(0.15)$	$0.580^{+0.066}_{-0.14}$
$\sigma_8$	$0.649^{+0.065}_{-0.13}$	$100\theta_{*}$	$1.04135 \pm 0.00061$	$f\sigma_8(0.38)$	$0.441^{+0.040}_{-0.024}$
$S_8$	$0.959^{+0.13}_{-0.089}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.25^{+0.40}_{-0.68}$	$\sigma_8(0.38)$	$0.498^{+0.061}_{-0.14}$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.525^{+0.070}_{-0.049}$	$z_{\mathrm{drag}}$	$1061.7^{+2.3}_{-2.0}$	$f\sigma_8(0.51)$	$0.417 \pm 0.041$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.580 \pm 0.022$	$r_{\mathrm{drag}}$	$140.5^{+4.3}_{-7.2}$	$\sigma_8(0.51)$	$0.460^{+0.058}_{-0.13}$
$\sigma_8/h^{0.5}$	$0.892^{+0.056}_{-0.068}$	$k_{\mathrm{D}}$	$0.1485^{+0.0080}_{-0.0059}$	$f\sigma_8(0.61)$	$0.400 \pm 0.047$
$r_{\mathrm{drag}} h$	$75^{+8}_{-20}$	$100\theta_{\mathrm{D}}$	$0.1600^{+0.0010}_{-0.0011}$	$\sigma_8(0.61)$	$0.434^{+0.055}_{-0.13}$
$\langle d^2 \rangle^{1/2}$	$2.518 \pm 0.051$	$z_{\mathrm{eq}}$	$4017^{+600}_{-500}$	$f\sigma_8(2.33)$	$0.219^{+0.030}_{-0.068}$
$z_{\mathrm{re}}$	$8.35^{+0.52}_{-0.40}$	$k_{\mathrm{eq}}$	$0.0123^{+0.0019}_{-0.0015}$	$\sigma_8(2.33)$	$0.219^{+0.029}_{-0.071}$
$10^9 A_{\mathrm{s}}$	$1.95^{+0.22}_{-0.40}$	$100\theta_{\mathrm{eq}}$	$0.730^{+0.047}_{-0.089}$	$\chi^2_{\mathrm{lensing}}$	$10.2 \pm 1.9$
$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.75^{+0.20}_{-0.36}$	$100\theta_{\mathrm{s,eq}}$	$0.406^{+0.025}_{-0.047}$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.4$

$\bar{\chi}^2_{\mathrm{eff}} = 13.20$ ;  $R - 1 = 0.00228$



## 6.91 base\_mnu\_lensing\_lenspriors\_theta\_post\_acc

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02222 \pm 0.00050$	$D_{40}$	$1110^{+200}_{-300}$	$H(0.15)$	$61.9^{+3.4}_{-9.1}$
$\Omega_{\mathrm{c}}h^2$	$0.142^{+0.024}_{-0.022}$	$D_{220}$	$5116^{+800}_{-2000}$	$D_{\mathrm{M}}(0.15)$	$797^{+200}_{-90}$
$100\theta_{\mathrm{MC}}$	$1.04087 \pm 0.00060$	$D_{810}$	$2381^{+300}_{-600}$	$H(0.38)$	$76.4^{+1.3}_{-4.3}$
$\Sigma m_{\nu}$ [eV]	$1.27^{+0.58}_{-1.1}$	$D_{1420}$	$777^{+100}_{-200}$	$D_{\mathrm{M}}(0.38)$	$1806^{+300}_{-100}$
$\ln(10^{10}A_{\mathrm{s}})$	$2.98^{+0.15}_{-0.19}$	$D_{2000}$	$221^{+30}_{-50}$	$H(0.51)$	$85.42^{+0.44}_{-2.5}$
$n_{\mathrm{s}}$	$0.961 \pm 0.020$	$n_{\mathrm{s},0.002}$	$0.961 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$2289^{+300}_{-100}$
$H_0$	$< 58.0$	$Y_{\mathrm{P}}$	$0.24532^{+0.00022}_{-0.00020}$	$H(0.61)$	$92.74^{+0.71}_{-1.6}$
$\Omega_{\Lambda}$	$0.29^{+0.46}_{-0.20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2626^{+280}_{-120}$
$\Omega_{\mathrm{m}}$	$0.71^{+0.20}_{-0.46}$	$10^5\mathrm{D}/\mathrm{H}$	$2.617 \pm 0.094$	$H(2.33)$	$258^{+23}_{-16}$
$\Omega_{\mathrm{m}}h^2$	$0.178^{+0.036}_{-0.027}$	Age/Gyr	$14.25^{+0.29}_{-0.14}$	$D_{\mathrm{M}}(2.33)$	$5940^{+110}_{-45}$
$\Omega_{\nu}h^2$	$0.0136^{+0.0062}_{-0.011}$	$z_{*}$	$1092.5^{+2.5}_{-2.2}$	$f\sigma_8(0.15)$	$0.476^{+0.030}_{-0.015}$
$\Omega_{\mathrm{m}}h^3$	$0.0927 \pm 0.0021$	$r_{*}$	$138.7^{+4.5}_{-7.1}$	$\sigma_8(0.15)$	$0.579^{+0.068}_{-0.14}$
$\sigma_8$	$0.646^{+0.067}_{-0.13}$	$100\theta_{*}$	$1.04135 \pm 0.00061$	$f\sigma_8(0.38)$	$0.435^{+0.038}_{-0.023}$
$S_8$	$0.932^{+0.13}_{-0.092}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.32^{+0.43}_{-0.68}$	$\sigma_8(0.38)$	$0.497^{+0.064}_{-0.14}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.511^{+0.069}_{-0.050}$	$z_{\mathrm{drag}}$	$1061.5 \pm 2.1$	$f\sigma_8(0.51)$	$0.413^{+0.055}_{-0.032}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.570 \pm 0.021$	$r_{\mathrm{drag}}$	$141.3^{+4.7}_{-7.2}$	$\sigma_8(0.51)$	$0.460^{+0.061}_{-0.14}$
$\sigma_8/h^{0.5}$	$0.881^{+0.056}_{-0.070}$	$k_{\mathrm{D}}$	$0.1477^{+0.0078}_{-0.0063}$	$f\sigma_8(0.61)$	$0.397 \pm 0.047$
$r_{\mathrm{drag}}h$	$76^{+9}_{-20}$	$100\theta_{\mathrm{D}}$	$0.1600 \pm 0.0011$	$\sigma_8(0.61)$	$0.435^{+0.058}_{-0.13}$
$\langle d^2 \rangle^{1/2}$	$2.526 \pm 0.051$	$z_{\mathrm{eq}}$	$3928^{+600}_{-500}$	$f\sigma_8(2.33)$	$0.219^{+0.032}_{-0.070}$
$z_{\mathrm{re}}$	$8.30^{+0.52}_{-0.41}$	$k_{\mathrm{eq}}$	$0.0120^{+0.0018}_{-0.0016}$	$\sigma_8(2.33)$	$0.220^{+0.031}_{-0.074}$
$10^9A_{\mathrm{s}}$	$2.00^{+0.24}_{-0.41}$	$100\theta_{\mathrm{eq}}$	$0.743^{+0.050}_{-0.091}$	$\chi^2_{\mathrm{lensing}}$	$9.8 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.79^{+0.22}_{-0.37}$	$100\theta_{\mathrm{s,eq}}$	$0.412^{+0.027}_{-0.048}$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.4$

$$\bar{\chi}^2_{\mathrm{eff}} = 12.75; R - 1 = 0.00245$$



## 6.92 base\_mnu\_lensing\_lenspriors\_theta\_post\_agr2acc

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02222 \pm 0.00050$	$D_{40}$	$1149^{+200}_{-300}$	$H(0.15)$	$62.2^{+3.6}_{-9.6}$
$\Omega_{\mathrm{c}}h^2$	$0.139^{+0.026}_{-0.021}$	$D_{220}$	$5334^{+800}_{-2000}$	$D_{\mathrm{M}}(0.15)$	$793^{+200}_{-80}$
$100\theta_{\mathrm{MC}}$	$1.04088 \pm 0.00060$	$D_{810}$	$2458^{+300}_{-600}$	$H(0.38)$	$76.5^{+1.3}_{-4.6}$
$\Sigma m_{\nu}$ [eV]	$1.36^{+0.70}_{-1.1}$	$D_{1420}$	$801^{+100}_{-200}$	$D_{\mathrm{M}}(0.38)$	$1800^{+300}_{-100}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.01^{+0.16}_{-0.20}$	$D_{2000}$	$227^{+30}_{-50}$	$H(0.51)$	$85.41^{+0.37}_{-2.7}$
$n_{\mathrm{s}}$	$0.960 \pm 0.020$	$n_{\mathrm{s},0.002}$	$0.960 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$2283^{+300}_{-100}$
$H_0$	$< 58.6$	$Y_{\mathrm{P}}$	$0.24532^{+0.00022}_{-0.00020}$	$H(0.61)$	$92.64^{+0.63}_{-1.8}$
$\Omega_{\Lambda}$	$0.30^{+0.47}_{-0.21}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665^{+0.00022}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2621^{+300}_{-100}$
$\Omega_{\mathrm{m}}$	$0.70^{+0.21}_{-0.47}$	$10^5\mathrm{D}/\mathrm{H}$	$2.617 \pm 0.094$	$H(2.33)$	$256^{+25}_{-20}$
$\Omega_{\mathrm{m}}h^2$	$0.176^{+0.039}_{-0.030}$	Age/Gyr	$14.28^{+0.32}_{-0.13}$	$D_{\mathrm{M}}(2.33)$	$5949^{+120}_{-38}$
$\Omega_{\nu}h^2$	$0.0146^{+0.0075}_{-0.011}$	$z_{*}$	$1092.2^{+2.6}_{-2.2}$	$f\sigma_8(0.15)$	$0.464^{+0.030}_{-0.012}$
$\Omega_{\mathrm{m}}h^3$	$0.0920 \pm 0.0019$	$r_{*}$	$139.4^{+4.6}_{-7.6}$	$\sigma_8(0.15)$	$0.572^{+0.066}_{-0.14}$
$\sigma_8$	$0.637^{+0.063}_{-0.14}$	$100\theta_{*}$	$1.04138 \pm 0.00062$	$f\sigma_8(0.38)$	$0.426^{+0.037}_{-0.020}$
$S_8$	$0.907^{+0.13}_{-0.090}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.39^{+0.44}_{-0.73}$	$\sigma_8(0.38)$	$0.493^{+0.063}_{-0.14}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.497^{+0.073}_{-0.049}$	$z_{\mathrm{drag}}$	$1061.3 \pm 2.1$	$f\sigma_8(0.51)$	$0.406 \pm 0.040$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.558^{+0.016}_{-0.019}$	$r_{\mathrm{drag}}$	$142.0^{+4.8}_{-7.7}$	$\sigma_8(0.51)$	$0.456^{+0.060}_{-0.14}$
$\sigma_8/h^{0.5}$	$0.866^{+0.048}_{-0.073}$	$k_{\mathrm{D}}$	$0.1470^{+0.0082}_{-0.0066}$	$f\sigma_8(0.61)$	$0.390 \pm 0.047$
$r_{\mathrm{drag}}h$	$77^{+9}_{-20}$	$100\theta_{\mathrm{D}}$	$0.1600 \pm 0.0012$	$\sigma_8(0.61)$	$0.431^{+0.057}_{-0.13}$
$\langle d^2 \rangle^{1/2}$	$2.533 \pm 0.049$	$z_{\mathrm{eq}}$	$3847^{+600}_{-500}$	$f\sigma_8(2.33)$	$0.218^{+0.031}_{-0.072}$
$z_{\mathrm{re}}$	$8.26^{+0.54}_{-0.42}$	$k_{\mathrm{eq}}$	$0.0118^{+0.0019}_{-0.0016}$	$\sigma_8(2.33)$	$0.219^{+0.031}_{-0.076}$
$10^9A_{\mathrm{s}}$	$2.06^{+0.25}_{-0.45}$	$100\theta_{\mathrm{eq}}$	$0.755^{+0.049}_{-0.098}$	$\chi^2_{\mathrm{lensing}}$	$12.2 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.84^{+0.23}_{-0.40}$	$100\theta_{\mathrm{s,eq}}$	$0.419^{+0.026}_{-0.052}$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.4$

$\bar{\chi}^2_{\mathrm{eff}} = 15.21$ ;  $R - 1 = 0.00402$



### 6.93 base\_mnu\_lensing\_lenspriors\_theta\_post\_takahashi

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02221 \pm 0.00050$	$D_{40}$	$1113^{+100}_{-300}$	$H(0.15)$	$61.9^{+3.4}_{-9.1}$
$\Omega_{\mathrm{c}}h^2$	$0.141^{+0.024}_{-0.021}$	$D_{220}$	$5145^{+800}_{-2000}$	$D_{\mathrm{M}}(0.15)$	$797^{+200}_{-80}$
$100\theta_{\mathrm{MC}}$	$1.04089 \pm 0.00060$	$D_{810}$	$2387^{+300}_{-600}$	$H(0.38)$	$76.3^{+1.3}_{-4.4}$
$\Sigma m_{\nu}$ [eV]	$1.31^{+0.56}_{-1.1}$	$D_{1420}$	$779^{+100}_{-200}$	$D_{\mathrm{M}}(0.38)$	$1808^{+300}_{-100}$
$\ln(10^{10}A_{\mathrm{s}})$	$2.98^{+0.15}_{-0.19}$	$D_{2000}$	$221^{+30}_{-50}$	$H(0.51)$	$85.35^{+0.43}_{-2.5}$
$n_{\mathrm{s}}$	$0.961 \pm 0.020$	$n_{\mathrm{s},0.002}$	$0.961 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$2291^{+300}_{-100}$
$H_0$	$< 57.9$	$Y_{\mathrm{P}}$	$0.24532^{+0.00023}_{-0.00020}$	$H(0.61)$	$92.66^{+0.67}_{-1.7}$
$\Omega_{\Lambda}$	$0.29^{+0.46}_{-0.20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00023}_{-0.00021}$	$D_{\mathrm{M}}(0.61)$	$2629^{+290}_{-120}$
$\Omega_{\mathrm{m}}$	$0.71^{+0.20}_{-0.46}$	$10^5\mathrm{D}/\mathrm{H}$	$2.619 \pm 0.095$	$H(2.33)$	$258^{+23}_{-16}$
$\Omega_{\mathrm{m}}h^2$	$0.178^{+0.036}_{-0.026}$	Age/Gyr	$14.27^{+0.30}_{-0.15}$	$D_{\mathrm{M}}(2.33)$	$5945^{+110}_{-46}$
$\Omega_{\nu}h^2$	$0.0141^{+0.0060}_{-0.012}$	$z_{*}$	$1092.4^{+2.5}_{-2.1}$	$f\sigma_8(0.15)$	$0.472^{+0.029}_{-0.016}$
$\Omega_{\mathrm{m}}h^3$	$0.0925 \pm 0.0022$	$r_{*}$	$138.9^{+4.4}_{-7.0}$	$\sigma_8(0.15)$	$0.574^{+0.069}_{-0.14}$
$\sigma_8$	$0.641^{+0.068}_{-0.14}$	$100\theta_{*}$	$1.04137 \pm 0.00061$	$f\sigma_8(0.38)$	$0.432^{+0.041}_{-0.024}$
$S_8$	$0.924^{+0.12}_{-0.085}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.33^{+0.42}_{-0.67}$	$\sigma_8(0.38)$	$0.494^{+0.064}_{-0.14}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.506^{+0.067}_{-0.046}$	$z_{\mathrm{drag}}$	$1061.4 \pm 2.1$	$f\sigma_8(0.51)$	$0.410 \pm 0.042$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.565 \pm 0.024$	$r_{\mathrm{drag}}$	$141.4^{+4.6}_{-7.1}$	$\sigma_8(0.51)$	$0.457^{+0.061}_{-0.14}$
$\sigma_8/h^{0.5}$	$0.875^{+0.061}_{-0.073}$	$k_{\mathrm{D}}$	$0.1475^{+0.0078}_{-0.0062}$	$f\sigma_8(0.61)$	$0.394 \pm 0.048$
$r_{\mathrm{drag}}h$	$76^{+9}_{-20}$	$100\theta_{\mathrm{D}}$	$0.1600 \pm 0.0011$	$\sigma_8(0.61)$	$0.432^{+0.058}_{-0.13}$
$\langle d^2 \rangle^{1/2}$	$2.527 \pm 0.051$	$z_{\mathrm{eq}}$	$3907^{+600}_{-500}$	$f\sigma_8(2.33)$	$0.218^{+0.032}_{-0.071}$
$z_{\mathrm{re}}$	$8.29^{+0.51}_{-0.41}$	$k_{\mathrm{eq}}$	$0.0120^{+0.0018}_{-0.0015}$	$\sigma_8(2.33)$	$0.218^{+0.031}_{-0.075}$
$10^9A_{\mathrm{s}}$	$2.00^{+0.24}_{-0.42}$	$100\theta_{\mathrm{eq}}$	$0.746^{+0.047}_{-0.090}$	$\chi^2_{\mathrm{lensing}}$	$9.7 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.79^{+0.22}_{-0.38}$	$100\theta_{\mathrm{s,eq}}$	$0.414^{+0.025}_{-0.047}$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.4$

$\bar{\chi}^2_{\mathrm{eff}} = 12.69$ ;  $R - 1 = 0.00149$



## 6.94 base\_mnu\_lensing\_lenspriors\_theta\_post\_agr2takahashi

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00051$	$D_{40}$	$1160^{+200}_{-300}$	$H(0.15)$	$62.4^{+3.8}_{-9.8}$
$\Omega_{\mathrm{c}}h^2$	$0.137^{+0.024}_{-0.021}$	$D_{220}$	$5400^{+900}_{-2000}$	$D_{\mathrm{M}}(0.15)$	$791^{+200}_{-90}$
$100\theta_{\mathrm{MC}}$	$1.04089 \pm 0.00060$	$D_{810}$	$2476^{+300}_{-600}$	$H(0.38)$	$76.5^{+1.7}_{-4.7}$
$\Sigma m_{\nu}$ [eV]	$1.38^{+0.48}_{-1.3}$	$D_{1420}$	$806^{+100}_{-200}$	$D_{\mathrm{M}}(0.38)$	$1797^{+300}_{-100}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.01^{+0.16}_{-0.20}$	$D_{2000}$	$228^{+30}_{-50}$	$H(0.51)$	$85.39^{+0.47}_{-2.8}$
$n_{\mathrm{s}}$	$0.960 \pm 0.020$	$n_{\mathrm{s},0.002}$	$0.960 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$2280^{+300}_{-100}$
$H_0$	$< 59.1$	$Y_{\mathrm{P}}$	$0.24531 \pm 0.00022$	$H(0.61)$	$92.57^{+0.57}_{-1.9}$
$\Omega_{\Lambda}$	$0.31^{+0.47}_{-0.20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664 \pm 0.00022$	$D_{\mathrm{M}}(0.61)$	$2617^{+300}_{-100}$
$\Omega_{\mathrm{m}}$	$0.69^{+0.20}_{-0.47}$	$10^5\mathrm{D}/\mathrm{H}$	$2.620 \pm 0.096$	$H(2.33)$	$256^{+24}_{-19}$
$\Omega_{\mathrm{m}}h^2$	$0.174^{+0.037}_{-0.030}$	Age/Gyr	$14.28^{+0.33}_{-0.14}$	$D_{\mathrm{M}}(2.33)$	$5953^{+120}_{-42}$
$\Omega_{\nu}h^2$	$0.0149^{+0.0052}_{-0.014}$	$z_{*}$	$1092.1^{+2.5}_{-2.3}$	$f\sigma_8(0.15)$	$0.459^{+0.029}_{-0.012}$
$\Omega_{\mathrm{m}}h^3$	$0.0917 \pm 0.0020$	$r_{*}$	$139.7^{+4.7}_{-7.4}$	$\sigma_8(0.15)$	$0.570^{+0.070}_{-0.15}$
$\sigma_8$	$0.634^{+0.068}_{-0.14}$	$100\theta_{*}$	$1.04139 \pm 0.00061$	$f\sigma_8(0.38)$	$0.423^{+0.039}_{-0.021}$
$S_8$	$0.894^{+0.13}_{-0.087}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.42^{+0.45}_{-0.71}$	$\sigma_8(0.38)$	$0.491^{+0.066}_{-0.15}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.490^{+0.069}_{-0.048}$	$z_{\mathrm{drag}}$	$1061.2 \pm 2.2$	$f\sigma_8(0.51)$	$0.403 \pm 0.041$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.553^{+0.019}_{-0.022}$	$r_{\mathrm{drag}}$	$142.3^{+4.9}_{-7.5}$	$\sigma_8(0.51)$	$0.455^{+0.063}_{-0.14}$
$\sigma_8/h^{0.5}$	$0.860^{+0.056}_{-0.074}$	$k_{\mathrm{D}}$	$0.1466^{+0.0081}_{-0.0067}$	$f\sigma_8(0.61)$	$0.388 \pm 0.048$
$r_{\mathrm{drag}}h$	$78^{+10}_{-20}$	$100\theta_{\mathrm{D}}$	$0.1601 \pm 0.0012$	$\sigma_8(0.61)$	$0.430^{+0.060}_{-0.14}$
$\langle d^2 \rangle^{1/2}$	$2.534 \pm 0.049$	$z_{\mathrm{eq}}$	$3809^{+600}_{-500}$	$f\sigma_8(2.33)$	$0.218^{+0.033}_{-0.074}$
$z_{\mathrm{re}}$	$8.24^{+0.52}_{-0.44}$	$k_{\mathrm{eq}}$	$0.0117^{+0.0018}_{-0.0016}$	$\sigma_8(2.33)$	$0.218^{+0.033}_{-0.078}$
$10^9A_{\mathrm{s}}$	$2.07^{+0.26}_{-0.45}$	$100\theta_{\mathrm{eq}}$	$0.761^{+0.050}_{-0.096}$	$\chi^2_{\mathrm{lensing}}$	$12.2 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.85^{+0.24}_{-0.40}$	$100\theta_{\mathrm{s,eq}}$	$0.422^{+0.027}_{-0.050}$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.4$

$\bar{\chi}^2_{\mathrm{eff}} = 15.21$ ;  $R - 1 = 0.00352$



## 6.95 base\_mnu\_lensing\_lenspriors\_theta\_post\_Apr6

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02221 \pm 0.00050$	$D_{40}$	$1087^{+100}_{-300}$	$H(0.15)$	$61.8^{+3.3}_{-8.9}$
$\Omega_{\mathrm{c}}h^2$	$0.144 \pm 0.021$	$D_{220}$	$4995^{+800}_{-2000}$	$D_{\mathrm{M}}(0.15)$	$798^{+200}_{-80}$
$100\theta_{\mathrm{MC}}$	$1.04089 \pm 0.00060$	$D_{810}$	$2331^{+300}_{-500}$	$H(0.38)$	$76.4^{+1.3}_{-4.1}$
$\Sigma m_{\nu}$ [eV]	$1.23^{+0.57}_{-1.0}$	$D_{1420}$	$761^{+100}_{-200}$	$D_{\mathrm{M}}(0.38)$	$1808^{+300}_{-100}$
$\ln(10^{10}A_{\mathrm{s}})$	$2.96^{+0.15}_{-0.19}$	$D_{2000}$	$216^{+30}_{-40}$	$H(0.51)$	$85.43^{+0.44}_{-2.3}$
$n_{\mathrm{s}}$	$0.961 \pm 0.020$	$n_{\mathrm{s},0.002}$	$0.961 \pm 0.020$	$D_{\mathrm{M}}(0.51)$	$2291^{+300}_{-100}$
$H_0$	$< 57.8$	$Y_{\mathrm{P}}$	$0.24532^{+0.00023}_{-0.00020}$	$H(0.61)$	$92.78^{+0.71}_{-1.6}$
$\Omega_{\Lambda}$	$0.29^{+0.45}_{-0.20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(0.61)$	$2628^{+280}_{-120}$
$\Omega_{\mathrm{m}}$	$0.71^{+0.20}_{-0.45}$	$10^5\mathrm{D}/\mathrm{H}$	$2.619 \pm 0.095$	$H(2.33)$	$259^{+22}_{-17}$
$\Omega_{\mathrm{m}}h^2$	$0.179 \pm 0.028$	Age/Gyr	$14.24^{+0.28}_{-0.14}$	$D_{\mathrm{M}}(2.33)$	$5936^{+100}_{-45}$
$\Omega_{\nu}h^2$	$0.0132^{+0.0061}_{-0.011}$	$z_{*}$	$1092.6^{+2.4}_{-2.2}$	$f\sigma_8(0.15)$	$0.479^{+0.029}_{-0.015}$
$\Omega_{\mathrm{m}}h^3$	$0.0931 \pm 0.0021$	$r_{*}$	$138.4^{+4.5}_{-6.9}$	$\sigma_8(0.15)$	$0.579^{+0.067}_{-0.14}$
$\sigma_8$	$0.647^{+0.066}_{-0.13}$	$100\theta_{*}$	$1.04136 \pm 0.00061$	$f\sigma_8(0.38)$	$0.437^{+0.039}_{-0.022}$
$S_8$	$0.939^{+0.12}_{-0.090}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.29^{+0.43}_{-0.66}$	$\sigma_8(0.38)$	$0.498^{+0.063}_{-0.14}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.515^{+0.068}_{-0.050}$	$z_{\mathrm{drag}}$	$1061.5 \pm 2.1$	$f\sigma_8(0.51)$	$0.415^{+0.055}_{-0.031}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.573 \pm 0.021$	$r_{\mathrm{drag}}$	$141.0^{+4.7}_{-7.0}$	$\sigma_8(0.51)$	$0.460^{+0.059}_{-0.13}$
$\sigma_8/h^{0.5}$	$0.885^{+0.056}_{-0.068}$	$k_{\mathrm{D}}$	$0.1479^{+0.0076}_{-0.0064}$	$f\sigma_8(0.61)$	$0.398 \pm 0.047$
$r_{\mathrm{drag}}h$	$76^{+9}_{-20}$	$100\theta_{\mathrm{D}}$	$0.1600 \pm 0.0011$	$\sigma_8(0.61)$	$0.435^{+0.057}_{-0.13}$
$\langle d^2 \rangle^{1/2}$	$2.514 \pm 0.050$	$z_{\mathrm{eq}}$	$3961 \pm 500$	$f\sigma_8(2.33)$	$0.219^{+0.031}_{-0.069}$
$z_{\mathrm{re}}$	$8.31^{+0.50}_{-0.42}$	$k_{\mathrm{eq}}$	$0.0121 \pm 0.0016$	$\sigma_8(2.33)$	$0.219^{+0.030}_{-0.073}$
$10^9A_{\mathrm{s}}$	$1.96^{+0.23}_{-0.40}$	$100\theta_{\mathrm{eq}}$	$0.738^{+0.049}_{-0.089}$	$\chi^2_{\mathrm{lensing}}$	$8.5 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.76^{+0.21}_{-0.36}$	$100\theta_{\mathrm{s,eq}}$	$0.410^{+0.026}_{-0.047}$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.4$

$\bar{\chi}^2_{\mathrm{eff}} = 11.51$ ;  $R - 1 = 0.00127$



## 6.96 base\_mnu\_lensing\_lenspriors\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02216	$0.02222 \pm 0.00050$	$D_{810}$	2656	$2165 \pm 500$	$H(0.51)$	93.4	$98.8^{+5.0}_{-6.4}$
$\Omega_c h^2$	0.1328	$0.157^{+0.022}_{-0.029}$	$D_{1420}$	829	$629^{+200}_{-200}$	$D_M(0.51)$	1926	$1850 \pm 79$
$100\theta_{MC}$	1.0763	$1.109^{+0.038}_{-0.034}$	$D_{2000}$	240	$182^{+50}_{-70}$	$H(0.61)$	99.6	$105.8^{+5.7}_{-7.3}$
$\Sigma m_\nu$ [eV]	0.83	$1.64^{+0.59}_{-1.2}$	$n_{s,0.002}$	0.9616	$0.960 \pm 0.020$	$D_M(0.61)$	2237	$2144 \pm 96$
$\ln(10^{10} A_s)$	3.127	$3.03 \pm 0.12$	$Y_P$	0.245310	$0.24532^{+0.00023}_{-0.00019}$	$H(2.33)$	252.3	$274^{+21}_{-26}$
$n_s$	0.9616	$0.960 \pm 0.020$	$Y_P^{BBN}$	0.246637	$0.24665^{+0.00023}_{-0.00019}$	$D_M(2.33)$	5501	$5193 \pm 320$
$H_0$	68.70	$70.6^{+1.8}_{-2.4}$	$10^5 D/H$	2.625	$2.617^{+0.087}_{-0.10}$	$f\sigma_8(0.15)$	0.4545	$0.457 \pm 0.018$
$\Omega_\Lambda$	0.6527	$0.609^{+0.053}_{-0.045}$	Age/Gyr	13.16	$12.43 \pm 0.77$	$\sigma_8(0.15)$	0.6990	$0.669 \pm 0.040$
$\Omega_m$	0.3473	$0.391^{+0.045}_{-0.053}$	$z_*$	1091.53	$1093.8^{+2.2}_{-2.8}$	$f\sigma_8(0.38)$	0.4653	$0.459 \pm 0.018$
$\Omega_m h^2$	0.1639	$0.196^{+0.028}_{-0.040}$	$r_*$	141.1	$135.4 \pm 6.0$	$\sigma_8(0.38)$	0.6173	$0.587 \pm 0.038$
$\Omega_\nu h^2$	0.0089	$0.0176^{+0.0064}_{-0.012}$	$100\theta_*$	1.0768	$1.110^{+0.038}_{-0.034}$	$f\sigma_8(0.51)$	0.4607	$0.450^{+0.020}_{-0.017}$
$\Omega_m h^3$	0.1126	$0.139^{+0.021}_{-0.034}$	$D_M(z_*)/\text{Gpc}$	13.10	$12.22^{+0.88}_{-1.0}$	$\sigma_8(0.51)$	0.5769	$0.548 \pm 0.037$
$\sigma_8$	0.7590	$0.730 \pm 0.041$	$z_{\text{drag}}$	1060.54	$1062.6 \pm 2.3$	$f\sigma_8(0.61)$	0.4538	$0.441^{+0.022}_{-0.018}$
$S_8$	0.8167	$0.830 \pm 0.036$	$r_{\text{drag}}$	143.7	$137.9 \pm 6.1$	$\sigma_8(0.61)$	0.5485	$0.520 \pm 0.036$
$\sigma_8 \Omega_m^{0.5}$	0.4473	$0.454 \pm 0.020$	$k_D$	0.1446	$0.1518^{+0.0068}_{-0.0086}$	$f\sigma_8(2.33)$	0.2828	$0.267^{+0.020}_{-0.017}$
$\sigma_8 \Omega_m^{0.25}$	0.5827	$0.576 \pm 0.023$	$100\theta_D$	0.16590	$0.1701 \pm 0.0045$	$\sigma_8(2.33)$	0.2859	$0.269 \pm 0.020$
$\sigma_8/h^{0.5}$	0.916	$0.869 \pm 0.056$	$z_{\text{eq}}$	3703	$4271^{+500}_{-700}$	$\chi^2_{\text{lensing}}$	7.50	$9.96 \pm 2.1$
$r_{\text{drag}} h$	98.72	$97.2 \pm 2.0$	$k_{\text{eq}}$	0.01132	$0.0131^{+0.0016}_{-0.0022}$	$\chi^2_{6\text{DF}}$	0.086	$0.40 \pm 0.40$
$\langle d^2 \rangle^{1/2}$	2.526	$2.505 \pm 0.054$	$100\theta_{\text{eq}}$	0.791	$0.745^{+0.047}_{-0.057}$	$\chi^2_{\text{MGS}}$	0.982	$0.71 \pm 0.63$
$z_{\text{re}}$	8.17	$8.66^{+0.50}_{-0.59}$	$100\theta_{s,\text{eq}}$	0.4386	$0.415^{+0.025}_{-0.029}$	$\chi^2_{\text{DR12BAO}}$	2.28	$3.7 \pm 1.6$
$10^9 A_s$	2.281	$2.08^{+0.22}_{-0.27}$	$H(0.15)$	74.66	$77.5^{+2.6}_{-3.4}$	$\chi^2_{\text{prior}}$	0.01	$2.0 \pm 2.0$
$10^9 A_s e^{-2\tau}$	2.043	$1.87^{+0.20}_{-0.24}$	$D_M(0.15)$	628.6	$609^{+22}_{-20}$	$\chi^2_{\text{BAO}}$	3.35	$4.9 \pm 1.8$
$D_{40}$	1310	$1160^{+200}_{-200}$	$H(0.38)$	85.96	$90.4^{+4.0}_{-5.3}$			
$D_{220}$	5922	$5016^{+900}_{-1000}$	$D_M(0.38)$	1491	$1436^{+62}_{-56}$			

Best-fit  $\chi^2_{\text{eff}} = 10.86$ ;  $\bar{\chi}^2_{\text{eff}} = 16.83$ ;  $R - 1 = 0.00375$

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.09 MGS: 0.98 DR12BAO: 2.28 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 7.50



## 6.97 base\_mnu\_lensing\_lenspriors\_BAO\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022299	$0.02223 \pm 0.00049$	$D_{810}$	2802	$2828 \pm 280$	$H(0.51)$	90.28	$90.9^{+2.1}_{-2.6}$
$\Omega_c h^2$	0.1184	$0.1205^{+0.0089}_{-0.011}$	$D_{1420}$	895	$896 \pm 97$	$D_M(0.51)$	1969.3	$1962^{+45}_{-39}$
$100\theta_{MC}$	1.0485	$1.054 \pm 0.017$	$D_{2000}$	252.7	$255 \pm 27$	$H(0.61)$	95.93	$96.6^{+2.4}_{-2.9}$
$\Sigma m_\nu$ [eV]	0.334	$0.48^{+0.18}_{-0.41}$	$n_{s,0.002}$	0.9585	$0.961 \pm 0.019$	$D_M(0.61)$	2291	$2282^{+54}_{-47}$
$\ln(10^{10} A_s)$	3.143	$3.158^{+0.093}_{-0.082}$	$Y_P$	0.245367	$0.24532^{+0.00023}_{-0.00019}$	$H(2.33)$	237.6	$240.3^{+8.3}_{-9.9}$
$n_s$	0.9585	$0.961 \pm 0.019$	$Y_P^{BBN}$	0.246693	$0.24665^{+0.00023}_{-0.00019}$	$D_M(2.33)$	5726	$5688 \pm 160$
$H_0$	68.01	$68.1^{+1.1}_{-1.3}$	$10^5 D/H$	2.599	$2.616^{+0.088}_{-0.098}$	$f\sigma_8(0.15)$	0.4480	$0.446 \pm 0.016$
$\Omega_\Lambda$	0.6881	$0.682^{+0.020}_{-0.017}$	Age/Gyr	13.708	$13.62 \pm 0.39$	$\sigma_8(0.15)$	0.7290	$0.718^{+0.029}_{-0.025}$
$\Omega_m$	0.3119	$0.318^{+0.017}_{-0.020}$	$z_*$	1089.91	$1090.3 \pm 1.1$	$f\sigma_8(0.38)$	0.4665	$0.463 \pm 0.015$
$\Omega_m h^2$	0.1442	$0.148^{+0.010}_{-0.013}$	$r_*$	144.85	$144.3^{+2.9}_{-2.5}$	$\sigma_8(0.38)$	0.6469	$0.636^{+0.026}_{-0.022}$
$\Omega_\nu h^2$	0.00359	$0.0052^{+0.0019}_{-0.0044}$	$100\theta_*$	1.0488	$1.055 \pm 0.017$	$f\sigma_8(0.51)$	0.4654	$0.461 \pm 0.015$
$\Omega_m h^3$	0.0981	$0.1009^{+0.0080}_{-0.011}$	$D_M(z_*)/\text{Gpc}$	13.811	$13.69 \pm 0.47$	$\sigma_8(0.51)$	0.6057	$0.596^{+0.025}_{-0.021}$
$\sigma_8$	0.7884	$0.777^{+0.031}_{-0.027}$	$z_{\text{drag}}$	1059.70	$1059.7 \pm 1.4$	$f\sigma_8(0.61)$	0.4607	$0.456 \pm 0.014$
$S_8$	0.8038	$0.799 \pm 0.031$	$r_{\text{drag}}$	147.54	$147.0^{+3.0}_{-2.6}$	$\sigma_8(0.61)$	0.5766	$0.567^{+0.024}_{-0.020}$
$\sigma_8 \Omega_m^{0.5}$	0.4403	$0.438 \pm 0.017$	$k_D$	0.14038	$0.1410^{+0.0028}_{-0.0035}$	$f\sigma_8(2.33)$	0.2948	$0.291^{+0.011}_{-0.0082}$
$\sigma_8 \Omega_m^{0.25}$	0.5892	$0.583 \pm 0.020$	$100\theta_D$	0.16205	$0.1629 \pm 0.0024$	$\sigma_8(2.33)$	0.3017	$0.297^{+0.013}_{-0.010}$
$\sigma_8/h^{0.5}$	0.9560	$0.941^{+0.038}_{-0.032}$	$z_{\text{eq}}$	3361	$3411^{+210}_{-260}$	$\chi^2_{\text{lensing}}$	7.54	$9.4 \pm 2.0$
$r_{\text{drag}} h$	100.34	$100.2 \pm 1.1$	$k_{\text{eq}}$	0.01026	$0.01042^{+0.00065}_{-0.00081}$	$\chi^2_{\text{JLA}}$	1035.08	$1036.1 \pm 1.8$
$\langle d^2 \rangle^{1/2}$	2.511	$2.525 \pm 0.055$	$100\theta_{\text{eq}}$	0.8269	$0.825 \pm 0.031$	$\chi^2_{6\text{DF}}$	0.0002	$0.052 \pm 0.071$
$z_{\text{re}}$	7.793	$7.88 \pm 0.24$	$100\theta_{s,\text{eq}}$	0.4567	$0.456 \pm 0.016$	$\chi^2_{\text{MGS}}$	1.68	$1.69 \pm 0.65$
$10^9 A_s$	2.318	$2.36 \pm 0.20$	$H(0.15)$	73.32	$73.6^{+1.3}_{-1.6}$	$\chi^2_{\text{DR12BAO}}$	3.01	$3.8 \pm 1.4$
$10^9 A_s e^{-2\tau}$	2.077	$2.12 \pm 0.18$	$D_M(0.15)$	637.5	$636^{+13}_{-11}$	$\chi^2_{\text{prior}}$	0.04	$1.9 \pm 1.9$
$D_{40}$	1384	$1394 \pm 130$	$H(0.38)$	83.51	$84.0^{+1.8}_{-2.2}$	$\chi^2_{\text{BAO}}$	4.69	$5.5 \pm 1.6$
$D_{220}$	6407	$6477 \pm 700$	$D_M(0.38)$	1520.2	$1515 \pm 31$			

Best-fit  $\chi^2_{\text{eff}} = 1047.35$ ;  $\bar{\chi}^2_{\text{eff}} = 1053.01$ ;  $R - 1 = 0.03389$

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.01 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmargd: 7.54 SN - JLA Pantheon18: 1035.08



## 6.98 base\_mnu\_lensing\_lenspriors\_BAO\_post\_agr2

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02222 \pm 0.00050$	$D_{810}$	$2193 \pm 500$	$H(0.51)$	$98.7^{+5.3}_{-6.5}$
$\Omega_{\mathrm{c}} h^2$	$0.155^{+0.023}_{-0.029}$	$D_{1420}$	$636^{+200}_{-200}$	$D_{\mathrm{M}}(0.51)$	$1852 \pm 82$
$100\theta_{\mathrm{MC}}$	$1.110^{+0.040}_{-0.033}$	$D_{2000}$	$184^{+50}_{-70}$	$H(0.61)$	$105.7^{+6.0}_{-7.4}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$1.77^{+0.68}_{-1.1}$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.61)$	$2147 \pm 100$
$\ln(10^{10} A_{\mathrm{s}})$	$3.04 \pm 0.12$	$Y_{\mathrm{P}}$	$0.24532^{+0.00023}_{-0.00019}$	$H(2.33)$	$274^{+22}_{-26}$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665^{+0.00023}_{-0.00019}$	$D_{\mathrm{M}}(2.33)$	$5199^{+320}_{-360}$
$H_0$	$70.5^{+1.9}_{-2.4}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.618^{+0.087}_{-0.10}$	$f\sigma_8(0.15)$	$0.448 \pm 0.015$
$\Omega_{\Lambda}$	$0.608 \pm 0.049$	Age/Gyr	$12.44^{+0.76}_{-0.87}$	$\sigma_8(0.15)$	$0.655^{+0.031}_{-0.039}$
$\Omega_{\mathrm{m}}$	$0.392 \pm 0.049$	$z_*$	$1093.7^{+2.3}_{-2.9}$	$f\sigma_8(0.38)$	$0.450 \pm 0.014$
$\Omega_{\mathrm{m}} h^2$	$0.196^{+0.030}_{-0.041}$	$r_*$	$135.6 \pm 6.2$	$\sigma_8(0.38)$	$0.575^{+0.030}_{-0.038}$
$\Omega_{\nu} h^2$	$0.0190^{+0.0073}_{-0.012}$	$100\theta_*$	$1.111^{+0.040}_{-0.033}$	$f\sigma_8(0.51)$	$0.441 \pm 0.015$
$\Omega_{\mathrm{m}} h^3$	$0.139^{+0.023}_{-0.034}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$12.24^{+0.87}_{-1.1}$	$\sigma_8(0.51)$	$0.536^{+0.029}_{-0.037}$
$\sigma_8$	$0.715^{+0.031}_{-0.038}$	$z_{\mathrm{drag}}$	$1062.5 \pm 2.4$	$f\sigma_8(0.61)$	$0.432 \pm 0.016$
$S_8$	$0.813 \pm 0.031$	$r_{\mathrm{drag}}$	$138.1 \pm 6.3$	$\sigma_8(0.61)$	$0.509^{+0.028}_{-0.036}$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.445 \pm 0.017$	$k_{\mathrm{D}}$	$0.1516^{+0.0072}_{-0.0087}$	$f\sigma_8(2.33)$	$0.262 \pm 0.017$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.564 \pm 0.017$	$100\theta_{\mathrm{D}}$	$0.1701^{+0.0051}_{-0.0043}$	$\sigma_8(2.33)$	$0.263^{+0.017}_{-0.021}$
$\sigma_8/h^{0.5}$	$0.852^{+0.046}_{-0.056}$	$z_{\mathrm{eq}}$	$4237^{+500}_{-700}$	$\chi^2_{\mathrm{lensing}}$	$12.3 \pm 2.1$
$r_{\mathrm{drag}} h$	$97.2 \pm 2.0$	$k_{\mathrm{eq}}$	$0.0130^{+0.0017}_{-0.0022}$	$\chi^2_{6\mathrm{DF}}$	$0.41 \pm 0.41$
$\langle d^2 \rangle^{1/2}$	$2.509 \pm 0.054$	$100\theta_{\mathrm{eq}}$	$0.751^{+0.048}_{-0.059}$	$\chi^2_{\mathrm{MGS}}$	$0.71 \pm 0.65$
$z_{\mathrm{re}}$	$8.66 \pm 0.55$	$100\theta_{\mathrm{s,eq}}$	$0.418^{+0.025}_{-0.030}$	$\chi^2_{\mathrm{DR12BAO}}$	$3.8 \pm 1.6$
$10^9 A_{\mathrm{s}}$	$2.11^{+0.24}_{-0.27}$	$H(0.15)$	$77.4^{+2.7}_{-3.5}$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 2.0$
$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.89^{+0.21}_{-0.24}$	$D_{\mathrm{M}}(0.15)$	$610^{+23}_{-21}$	$\chi^2_{\mathrm{BAO}}$	$4.9 \pm 1.8$
$D_{40}$	$1177^{+200}_{-200}$	$H(0.38)$	$90.3^{+4.3}_{-5.3}$		
$D_{220}$	$5112^{+1000}_{-1000}$	$D_{\mathrm{M}}(0.38)$	$1438 \pm 59$		
$\bar{\chi}^2_{\mathrm{eff}} = 19.21; R - 1 = 0.00433$					



## 6.99 base\_mnu\_lensing\_lenspriors\_BAO\_post\_conslmin40

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02221 \pm 0.00050$	$D_{810}$	$2202 \pm 500$	$H(0.51)$	$98.6^{+4.8}_{-6.6}$
$\Omega_{\mathrm{c}}h^2$	$0.155^{+0.021}_{-0.031}$	$D_{1420}$	$642^{+200}_{-200}$	$D_{\mathrm{M}}(0.51)$	$1853^{+89}_{-77}$
$100\theta_{\mathrm{MC}}$	$1.108 \pm 0.035$	$D_{2000}$	$186^{+60}_{-70}$	$H(0.61)$	$105.5^{+5.5}_{-7.5}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$1.62^{+0.59}_{-1.1}$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.61)$	$2148^{+110}_{-94}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.04 \pm 0.13$	$Y_{\mathrm{P}}$	$0.24532^{+0.00023}_{-0.00019}$	$H(2.33)$	$273^{+20}_{-26}$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(2.33)$	$5206 \pm 330$
$H_0$	$70.5^{+1.8}_{-2.5}$	$10^5\mathrm{D}/\mathrm{H}$	$2.618^{+0.088}_{-0.10}$	$f\sigma_8(0.15)$	$0.456 \pm 0.020$
$\Omega_{\Lambda}$	$0.611^{+0.054}_{-0.043}$	Age/Gyr	$12.46 \pm 0.78$	$\sigma_8(0.15)$	$0.668 \pm 0.040$
$\Omega_{\mathrm{m}}$	$0.389^{+0.043}_{-0.054}$	$z_*$	$1093.7^{+2.1}_{-2.9}$	$f\sigma_8(0.38)$	$0.458 \pm 0.019$
$\Omega_{\mathrm{m}}h^2$	$0.195^{+0.027}_{-0.041}$	$r_*$	$135.6^{+6.7}_{-5.7}$	$\sigma_8(0.38)$	$0.587 \pm 0.038$
$\Omega_{\nu}h^2$	$0.0175^{+0.0064}_{-0.012}$	$100\theta_*$	$1.109 \pm 0.035$	$f\sigma_8(0.51)$	$0.450 \pm 0.020$
$\Omega_{\mathrm{m}}h^3$	$0.138^{+0.020}_{-0.035}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$12.26 \pm 0.93$	$\sigma_8(0.51)$	$0.547 \pm 0.037$
$\sigma_8$	$0.729 \pm 0.041$	$z_{\mathrm{drag}}$	$1062.5^{+2.2}_{-2.6}$	$f\sigma_8(0.61)$	$0.441^{+0.022}_{-0.020}$
$S_8$	$0.827 \pm 0.040$	$r_{\mathrm{drag}}$	$138.1^{+6.9}_{-5.9}$	$\sigma_8(0.61)$	$0.520 \pm 0.035$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.453 \pm 0.022$	$k_{\mathrm{D}}$	$0.1515^{+0.0066}_{-0.0089}$	$f\sigma_8(2.33)$	$0.267^{+0.020}_{-0.017}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.574 \pm 0.025$	$100\theta_{\mathrm{D}}$	$0.1699 \pm 0.0046$	$\sigma_8(2.33)$	$0.269 \pm 0.020$
$\sigma_8/h^{0.5}$	$0.869 \pm 0.056$	$z_{\mathrm{eq}}$	$4245^{+500}_{-700}$	$\chi^2_{\mathrm{lensing}}$	$9.96 \pm 2.2$
$r_{\mathrm{drag}}h$	$97.3 \pm 2.0$	$k_{\mathrm{eq}}$	$0.0130^{+0.0016}_{-0.0023}$	$\chi^2_{6\mathrm{DF}}$	$0.39 \pm 0.40$
$\langle d^2 \rangle^{1/2}$	$2.511 \pm 0.068$	$100\theta_{\mathrm{eq}}$	$0.748^{+0.051}_{-0.059}$	$\chi^2_{\mathrm{MGS}}$	$0.73 \pm 0.64$
$z_{\mathrm{re}}$	$8.64^{+0.48}_{-0.60}$	$100\theta_{\mathrm{s,eq}}$	$0.417 \pm 0.028$	$\chi^2_{\mathrm{DR12BAO}}$	$3.7 \pm 1.6$
$10^9A_{\mathrm{s}}$	$2.10^{+0.25}_{-0.31}$	$H(0.15)$	$77.4^{+2.6}_{-3.6}$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.89^{+0.22}_{-0.28}$	$D_{\mathrm{M}}(0.15)$	$610^{+23}_{-20}$	$\chi^2_{\mathrm{BAO}}$	$4.9 \pm 1.8$
$D_{40}$	$1176^{+200}_{-200}$	$H(0.38)$	$90.2^{+3.9}_{-5.5}$		
$D_{220}$	$5103^{+1000}_{-1000}$	$D_{\mathrm{M}}(0.38)$	$1439^{+64}_{-55}$		

$\bar{\chi}^2_{\mathrm{eff}} = 16.84$ ;  $R - 1 = 0.00475$



# 6.100 base\_mnu\_lensing\_lenspriors\_BAO\_post\_agrlmax425

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02221 \pm 0.00050$	$D_{810}$	$2177 \pm 500$	$H(0.51)$	$98.5^{+4.7}_{-6.2}$
$\Omega_{\mathrm{c}}h^2$	$0.156^{+0.021}_{-0.028}$	$D_{1420}$	$635^{+200}_{-200}$	$D_{\mathrm{M}}(0.51)$	$1853^{+83}_{-75}$
$100\theta_{\mathrm{MC}}$	$1.107 \pm 0.034$	$D_{2000}$	$184^{+50}_{-60}$	$H(0.61)$	$105.4^{+5.4}_{-7.0}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$1.54^{+0.56}_{-1.1}$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.61)$	$2149 \pm 94$
$\ln(10^{10}A_{\mathrm{s}})$	$3.03 \pm 0.12$	$Y_{\mathrm{P}}$	$0.24532^{+0.00023}_{-0.00019}$	$H(2.33)$	$273^{+20}_{-25}$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665^{+0.00023}_{-0.00019}$	$D_{\mathrm{M}}(2.33)$	$5209 \pm 310$
$H_0$	$70.6^{+1.8}_{-2.3}$	$10^5\mathrm{D}/\mathrm{H}$	$2.618^{+0.087}_{-0.10}$	$f\sigma_8(0.15)$	$0.459 \pm 0.018$
$\Omega_{\Lambda}$	$0.612^{+0.051}_{-0.043}$	Age/Gyr	$12.46 \pm 0.75$	$\sigma_8(0.15)$	$0.675 \pm 0.039$
$\Omega_{\mathrm{m}}$	$0.388^{+0.043}_{-0.051}$	$z_{*}$	$1093.7^{+2.1}_{-2.7}$	$f\sigma_8(0.38)$	$0.462 \pm 0.017$
$\Omega_{\mathrm{m}}h^2$	$0.194^{+0.026}_{-0.039}$	$r_{*}$	$135.6^{+6.2}_{-5.6}$	$\sigma_8(0.38)$	$0.592 \pm 0.037$
$\Omega_{\nu}h^2$	$0.0165^{+0.0060}_{-0.012}$	$100\theta_{*}$	$1.108 \pm 0.034$	$f\sigma_8(0.51)$	$0.454^{+0.020}_{-0.017}$
$\Omega_{\mathrm{m}}h^3$	$0.138^{+0.020}_{-0.032}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$12.27 \pm 0.90$	$\sigma_8(0.51)$	$0.552 \pm 0.035$
$\sigma_8$	$0.736 \pm 0.039$	$z_{\mathrm{drag}}$	$1062.5^{+2.2}_{-2.4}$	$f\sigma_8(0.61)$	$0.444^{+0.021}_{-0.017}$
$S_8$	$0.833 \pm 0.036$	$r_{\mathrm{drag}}$	$138.1^{+6.4}_{-5.8}$	$\sigma_8(0.61)$	$0.525 \pm 0.034$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.457 \pm 0.020$	$k_{\mathrm{D}}$	$0.1514^{+0.0065}_{-0.0083}$	$f\sigma_8(2.33)$	$0.269^{+0.020}_{-0.016}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.579 \pm 0.022$	$100\theta_{\mathrm{D}}$	$0.1698 \pm 0.0044$	$\sigma_8(2.33)$	$0.271 \pm 0.020$
$\sigma_8/h^{0.5}$	$0.877 \pm 0.054$	$z_{\mathrm{eq}}$	$4251^{+500}_{-700}$	$\chi^2_{\mathrm{lensing}}$	$7.7 \pm 2.1$
$r_{\mathrm{drag}}h$	$97.3 \pm 2.0$	$k_{\mathrm{eq}}$	$0.0130^{+0.0015}_{-0.0021}$	$\chi^2_{6\mathrm{DF}}$	$0.38 \pm 0.39$
$\langle d^2 \rangle^{1/2}$	$2.503 \pm 0.055$	$100\theta_{\mathrm{eq}}$	$0.746^{+0.047}_{-0.055}$	$\chi^2_{\mathrm{MGS}}$	$0.74 \pm 0.63$
$z_{\mathrm{re}}$	$8.63^{+0.47}_{-0.57}$	$100\theta_{\mathrm{s,eq}}$	$0.415^{+0.025}_{-0.028}$	$\chi^2_{\mathrm{DR12BAO}}$	$3.7 \pm 1.6$
$10^9A_{\mathrm{s}}$	$2.08^{+0.22}_{-0.26}$	$H(0.15)$	$77.4^{+2.5}_{-3.3}$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.86^{+0.20}_{-0.24}$	$D_{\mathrm{M}}(0.15)$	$610^{+22}_{-19}$	$\chi^2_{\mathrm{BAO}}$	$4.8 \pm 1.8$
$D_{40}$	$1162^{+200}_{-200}$	$H(0.38)$	$90.2^{+3.9}_{-5.1}$		
$D_{220}$	$5028^{+900}_{-1000}$	$D_{\mathrm{M}}(0.38)$	$1438^{+60}_{-53}$		
$\bar{\chi}^2_{\mathrm{eff}} = 14.55; R - 1 = 0.00373$					



# 6.101    base\_mnu\_lensing\_lenspriors\_BAO\_post\_bfcl

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02222 \pm 0.00050$	$D_{\mathrm{s10}}$	$2111 \pm 500$	$H(0.51)$	$98.9^{+5.0}_{-6.4}$
$\Omega_{\mathrm{c}}h^2$	$0.157^{+0.022}_{-0.029}$	$D_{1420}$	$614^{+200}_{-200}$	$D_{\mathrm{M}}(0.51)$	$1848 \pm 80$
$100\theta_{\mathrm{MC}}$	$1.110^{+0.038}_{-0.034}$	$D_{2000}$	$178^{+50}_{-60}$	$H(0.61)$	$105.8^{+5.7}_{-7.3}$
$\Sigma m_{\nu}$ [eV]	$1.62^{+0.58}_{-1.2}$	$n_{\mathrm{s},0.002}$	$0.960 \pm 0.020$	$D_{\mathrm{M}}(0.61)$	$2142 \pm 97$
$\ln(10^{10}A_{\mathrm{s}})$	$3.01 \pm 0.12$	$Y_{\mathrm{P}}$	$0.24532^{+0.00023}_{-0.00019}$	$H(2.33)$	$274^{+21}_{-26}$
$n_{\mathrm{s}}$	$0.960 \pm 0.020$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(2.33)$	$5189 \pm 320$
$H_0$	$70.7^{+1.8}_{-2.4}$	$10^5\mathrm{D}/\mathrm{H}$	$2.617^{+0.088}_{-0.10}$	$f\sigma_8(0.15)$	$0.455 \pm 0.018$
$\Omega_{\Lambda}$	$0.609^{+0.053}_{-0.045}$	Age/Gyr	$12.41 \pm 0.77$	$\sigma_8(0.15)$	$0.666 \pm 0.040$
$\Omega_{\mathrm{m}}$	$0.391^{+0.045}_{-0.053}$	$z_*$	$1093.8^{+2.2}_{-2.8}$	$f\sigma_8(0.38)$	$0.457 \pm 0.018$
$\Omega_{\mathrm{m}}h^2$	$0.197^{+0.028}_{-0.040}$	$r_*$	$135.3 \pm 6.0$	$\sigma_8(0.38)$	$0.584 \pm 0.038$
$\Omega_{\nu}h^2$	$0.0174^{+0.0063}_{-0.012}$	$100\theta_*$	$1.110^{+0.038}_{-0.034}$	$f\sigma_8(0.51)$	$0.448^{+0.020}_{-0.018}$
$\Omega_{\mathrm{m}}h^3$	$0.140^{+0.022}_{-0.034}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$12.21^{+0.89}_{-1.0}$	$\sigma_8(0.51)$	$0.545 \pm 0.037$
$\sigma_8$	$0.726 \pm 0.041$	$z_{\mathrm{drag}}$	$1062.6 \pm 2.3$	$f\sigma_8(0.61)$	$0.439^{+0.022}_{-0.018}$
$S_8$	$0.826 \pm 0.036$	$r_{\mathrm{drag}}$	$137.7 \pm 6.1$	$\sigma_8(0.61)$	$0.517 \pm 0.035$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.452 \pm 0.020$	$k_{\mathrm{D}}$	$0.1519^{+0.0068}_{-0.0086}$	$f\sigma_8(2.33)$	$0.266^{+0.020}_{-0.017}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.573 \pm 0.023$	$100\theta_{\mathrm{D}}$	$0.1701 \pm 0.0046$	$\sigma_8(2.33)$	$0.267 \pm 0.020$
$\sigma_8/h^{0.5}$	$0.865 \pm 0.056$	$z_{\mathrm{eq}}$	$4287^{+500}_{-700}$	$\chi^2_{\mathrm{lensing}}$	$10.2 \pm 2.1$
$r_{\mathrm{drag}}h$	$97.2 \pm 2.0$	$k_{\mathrm{eq}}$	$0.0131^{+0.0016}_{-0.0022}$	$\chi^2_{6\mathrm{DF}}$	$0.40 \pm 0.40$
$\langle d^2 \rangle^{1/2}$	$2.479 \pm 0.051$	$100\theta_{\mathrm{eq}}$	$0.743^{+0.047}_{-0.057}$	$\chi^2_{\mathrm{MGS}}$	$0.71 \pm 0.64$
$z_{\mathrm{re}}$	$8.67^{+0.50}_{-0.59}$	$100\theta_{\mathrm{s,eq}}$	$0.414^{+0.025}_{-0.029}$	$\chi^2_{\mathrm{DR12BAO}}$	$3.7 \pm 1.6$
$10^9A_{\mathrm{s}}$	$2.03^{+0.22}_{-0.26}$	$H(0.15)$	$77.6^{+2.6}_{-3.4}$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.82^{+0.19}_{-0.23}$	$D_{\mathrm{M}}(0.15)$	$609^{+22}_{-20}$	$\chi^2_{\mathrm{BAO}}$	$4.9 \pm 1.8$
$D_{40}$	$1132^{+100}_{-200}$	$H(0.38)$	$90.5^{+4.1}_{-5.3}$		
$D_{220}$	$4887^{+900}_{-1000}$	$D_{\mathrm{M}}(0.38)$	$1435^{+62}_{-56}$		

$\bar{\chi}^2_{\mathrm{eff}} = 17.06$ ;  $R - 1 = 0.00602$



## 6.102 base\_mnu\_lensing\_lenspriors\_BAO\_post\_agr2bfcl

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02222 \pm 0.00050$	$D_{810}$	$2142 \pm 500$	$H(0.51)$	$98.7^{+5.3}_{-6.5}$
$\Omega_c h^2$	$0.156^{+0.023}_{-0.030}$	$D_{1420}$	$622^{+200}_{-200}$	$D_M(0.51)$	$1852 \pm 83$
$100\theta_{MC}$	$1.110^{+0.040}_{-0.033}$	$D_{2000}$	$180^{+50}_{-70}$	$H(0.61)$	$105.7^{+6.0}_{-7.5}$
$\Sigma m_\nu$ [eV]	$1.73^{+0.67}_{-1.1}$	$n_{s,0.002}$	$0.959 \pm 0.020$	$D_M(0.61)$	$2146 \pm 100$
$\ln(10^{10} A_s)$	$3.02^{+0.13}_{-0.11}$	$Y_P$	$0.24532^{+0.00023}_{-0.00019}$	$H(2.33)$	$274^{+22}_{-26}$
$n_s$	$0.959 \pm 0.020$	$Y_P^{BBN}$	$0.24665^{+0.00023}_{-0.00019}$	$D_M(2.33)$	$5198 \pm 330$
$H_0$	$70.6^{+1.9}_{-2.5}$	$10^5 D/H$	$2.617^{+0.087}_{-0.10}$	$f\sigma_8(0.15)$	$0.446 \pm 0.015$
$\Omega_\Lambda$	$0.608^{+0.053}_{-0.048}$	Age/Gyr	$12.44^{+0.78}_{-0.86}$	$\sigma_8(0.15)$	$0.652^{+0.032}_{-0.039}$
$\Omega_m$	$0.392^{+0.048}_{-0.053}$	$z_*$	$1093.7^{+2.3}_{-2.9}$	$f\sigma_8(0.38)$	$0.448 \pm 0.014$
$\Omega_m h^2$	$0.196^{+0.030}_{-0.041}$	$r_*$	$135.5 \pm 6.2$	$\sigma_8(0.38)$	$0.573^{+0.031}_{-0.038}$
$\Omega_\nu h^2$	$0.0186^{+0.0072}_{-0.012}$	$100\theta_*$	$1.110^{+0.040}_{-0.034}$	$f\sigma_8(0.51)$	$0.440 \pm 0.015$
$\Omega_m h^3$	$0.139^{+0.023}_{-0.035}$	$D_M(z_*)/\text{Gpc}$	$12.23^{+0.89}_{-1.1}$	$\sigma_8(0.51)$	$0.534^{+0.030}_{-0.037}$
$\sigma_8$	$0.712^{+0.032}_{-0.038}$	$z_{\text{drag}}$	$1062.6 \pm 2.4$	$f\sigma_8(0.61)$	$0.431 \pm 0.016$
$S_8$	$0.810 \pm 0.031$	$r_{\text{drag}}$	$138.0 \pm 6.4$	$\sigma_8(0.61)$	$0.507^{+0.029}_{-0.036}$
$\sigma_8 \Omega_m^{0.5}$	$0.444 \pm 0.017$	$k_D$	$0.1517^{+0.0072}_{-0.0088}$	$f\sigma_8(2.33)$	$0.261 \pm 0.017$
$\sigma_8 \Omega_m^{0.25}$	$0.562 \pm 0.017$	$100\theta_D$	$0.1701^{+0.0051}_{-0.0044}$	$\sigma_8(2.33)$	$0.262^{+0.017}_{-0.021}$
$\sigma_8/h^{0.5}$	$0.848^{+0.047}_{-0.055}$	$z_{\text{eq}}$	$4248^{+500}_{-700}$	$\chi^2_{\text{lensing}}$	$12.5 \pm 2.0$
$r_{\text{drag}} h$	$97.2 \pm 2.1$	$k_{\text{eq}}$	$0.0130^{+0.0017}_{-0.0022}$	$\chi^2_{6\text{DF}}$	$0.41 \pm 0.41$
$\langle d^2 \rangle^{1/2}$	$2.483 \pm 0.051$	$100\theta_{\text{eq}}$	$0.749^{+0.049}_{-0.059}$	$\chi^2_{\text{MGS}}$	$0.72 \pm 0.66$
$z_{\text{re}}$	$8.66^{+0.53}_{-0.59}$	$100\theta_{s,\text{eq}}$	$0.417^{+0.026}_{-0.030}$	$\chi^2_{\text{DR12BAO}}$	$3.8 \pm 1.6$
$10^9 A_s$	$2.06^{+0.23}_{-0.26}$	$H(0.15)$	$77.4^{+2.7}_{-3.5}$	$\chi^2_{\text{prior}}$	$2.0 \pm 2.0$
$10^9 A_s e^{-2\tau}$	$1.84^{+0.21}_{-0.24}$	$D_M(0.15)$	$610^{+23}_{-21}$	$\chi^2_{\text{BAO}}$	$4.9 \pm 1.8$
$D_{40}$	$1149^{+200}_{-200}$	$H(0.38)$	$90.3^{+4.3}_{-5.4}$		
$D_{220}$	$4987^{+900}_{-1000}$	$D_M(0.38)$	$1438 \pm 60$		
$\bar{\chi}^2_{\text{eff}} = 19.44; R - 1 = 0.00654$					



### 6.103 base\_mnu\_lensing\_lenspriors\_BAO\_post\_linear

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02222 \pm 0.00050$	$D_{810}$	$2122 \pm 500$	$H(0.51)$	$99.1^{+4.9}_{-6.3}$
$\Omega_{\mathrm{c}}h^2$	$0.159^{+0.022}_{-0.029}$	$D_{1420}$	$616^{+200}_{-200}$	$D_{\mathrm{M}}(0.51)$	$1845 \pm 79$
$100\theta_{\mathrm{MC}}$	$1.110 \pm 0.034$	$D_{2000}$	$178^{+50}_{-60}$	$H(0.61)$	$106.1^{+5.6}_{-7.2}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$1.56^{+0.57}_{-1.1}$	$n_{\mathrm{s},0.002}$	$0.960 \pm 0.020$	$D_{\mathrm{M}}(0.61)$	$2138 \pm 95$
$\ln(10^{10}A_{\mathrm{s}})$	$3.01 \pm 0.12$	$Y_{\mathrm{P}}$	$0.24532^{+0.00023}_{-0.00019}$	$H(2.33)$	$275^{+21}_{-25}$
$n_{\mathrm{s}}$	$0.960 \pm 0.020$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(2.33)$	$5176 \pm 320$
$H_0$	$70.8^{+1.8}_{-2.4}$	$10^5\mathrm{D}/\mathrm{H}$	$2.617^{+0.088}_{-0.10}$	$f\sigma_8(0.15)$	$0.465 \pm 0.019$
$\Omega_{\Lambda}$	$0.608^{+0.052}_{-0.044}$	Age/Gyr	$12.38 \pm 0.76$	$\sigma_8(0.15)$	$0.680 \pm 0.041$
$\Omega_{\mathrm{m}}$	$0.392^{+0.044}_{-0.052}$	$z_*$	$1093.9^{+2.2}_{-2.8}$	$f\sigma_8(0.38)$	$0.467 \pm 0.019$
$\Omega_{\mathrm{m}}h^2$	$0.198^{+0.028}_{-0.040}$	$r_*$	$135.0 \pm 5.9$	$\sigma_8(0.38)$	$0.597 \pm 0.039$
$\Omega_{\nu}h^2$	$0.0167^{+0.0061}_{-0.012}$	$100\theta_*$	$1.111 \pm 0.034$	$f\sigma_8(0.51)$	$0.458^{+0.021}_{-0.018}$
$\Omega_{\mathrm{m}}h^3$	$0.141^{+0.021}_{-0.034}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$12.18^{+0.87}_{-0.98}$	$\sigma_8(0.51)$	$0.556 \pm 0.037$
$\sigma_8$	$0.742 \pm 0.042$	$z_{\mathrm{drag}}$	$1062.7 \pm 2.3$	$f\sigma_8(0.61)$	$0.448^{+0.022}_{-0.019}$
$S_8$	$0.845 \pm 0.038$	$r_{\mathrm{drag}}$	$137.5 \pm 6.0$	$\sigma_8(0.61)$	$0.528 \pm 0.036$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.463 \pm 0.021$	$k_{\mathrm{D}}$	$0.1522^{+0.0067}_{-0.0085}$	$f\sigma_8(2.33)$	$0.271^{+0.021}_{-0.017}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.586 \pm 0.024$	$100\theta_{\mathrm{D}}$	$0.1702 \pm 0.0045$	$\sigma_8(2.33)$	$0.273 \pm 0.020$
$\sigma_8/h^{0.5}$	$0.882 \pm 0.057$	$z_{\mathrm{eq}}$	$4327^{+500}_{-700}$	$\chi^2_{\mathrm{lensing}}$	$10.4 \pm 2.1$
$r_{\mathrm{drag}}h$	$97.2 \pm 2.0$	$k_{\mathrm{eq}}$	$0.0133^{+0.0016}_{-0.0022}$	$\chi^2_{6\mathrm{DF}}$	$0.41 \pm 0.41$
$\langle d^2 \rangle^{1/2}$	$2.497 \pm 0.054$	$100\theta_{\mathrm{eq}}$	$0.738^{+0.046}_{-0.056}$	$\chi^2_{\mathrm{MGS}}$	$0.70 \pm 0.62$
$z_{\mathrm{re}}$	$8.68^{+0.49}_{-0.58}$	$100\theta_{\mathrm{s,eq}}$	$0.411^{+0.024}_{-0.029}$	$\chi^2_{\mathrm{DR12BAO}}$	$3.8 \pm 1.7$
$10^9A_{\mathrm{s}}$	$2.05^{+0.21}_{-0.26}$	$H(0.15)$	$77.7^{+2.6}_{-3.4}$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.84^{+0.19}_{-0.24}$	$D_{\mathrm{M}}(0.15)$	$608^{+22}_{-20}$	$\chi^2_{\mathrm{BAO}}$	$4.9 \pm 1.8$
$D_{40}$	$1141^{+100}_{-200}$	$H(0.38)$	$90.7^{+4.0}_{-5.2}$		
$D_{220}$	$4903^{+800}_{-1000}$	$D_{\mathrm{M}}(0.38)$	$1432^{+61}_{-55}$		

$$\bar{\chi}^2_{\mathrm{eff}} = 17.26; R - 1 = 0.00388$$



# 6.104 base\_mnu\_lensing\_lenspriors\_BAO\_post\_acc

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02222 \pm 0.00050$	$D_{810}$	$2171 \pm 500$	$H(0.51)$	$98.7^{+5.0}_{-6.3}$
$\Omega_{\mathrm{c}}h^2$	$0.156^{+0.022}_{-0.028}$	$D_{1420}$	$631^{+200}_{-200}$	$D_{\mathrm{M}}(0.51)$	$1851 \pm 80$
$100\theta_{\mathrm{MC}}$	$1.109^{+0.038}_{-0.033}$	$D_{2000}$	$183^{+50}_{-60}$	$H(0.61)$	$105.7^{+5.8}_{-7.1}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$1.63^{+0.61}_{-1.1}$	$n_{\mathrm{s},0.002}$	$0.960 \pm 0.020$	$D_{\mathrm{M}}(0.61)$	$2146 \pm 97$
$\ln(10^{10}A_{\mathrm{s}})$	$3.03 \pm 0.12$	$Y_{\mathrm{P}}$	$0.24532^{+0.00023}_{-0.00019}$	$H(2.33)$	$274^{+21}_{-25}$
$n_{\mathrm{s}}$	$0.960 \pm 0.020$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665^{+0.00023}_{-0.00019}$	$D_{\mathrm{M}}(2.33)$	$5198 \pm 320$
$H_0$	$70.6^{+1.9}_{-2.3}$	$10^5\mathrm{D}/\mathrm{H}$	$2.617^{+0.087}_{-0.10}$	$f\sigma_8(0.15)$	$0.456 \pm 0.018$
$\Omega_{\Lambda}$	$0.610^{+0.052}_{-0.045}$	Age/Gyr	$12.44 \pm 0.77$	$\sigma_8(0.15)$	$0.668 \pm 0.040$
$\Omega_{\mathrm{m}}$	$0.390^{+0.045}_{-0.052}$	$z_*$	$1093.7^{+2.2}_{-2.8}$	$f\sigma_8(0.38)$	$0.458 \pm 0.018$
$\Omega_{\mathrm{m}}h^2$	$0.196^{+0.028}_{-0.040}$	$r_*$	$135.5 \pm 6.0$	$\sigma_8(0.38)$	$0.587 \pm 0.038$
$\Omega_{\nu}h^2$	$0.0176^{+0.0066}_{-0.012}$	$100\theta_*$	$1.109^{+0.038}_{-0.033}$	$f\sigma_8(0.51)$	$0.450^{+0.020}_{-0.018}$
$\Omega_{\mathrm{m}}h^3$	$0.139^{+0.022}_{-0.033}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$12.24^{+0.87}_{-1.0}$	$\sigma_8(0.51)$	$0.547 \pm 0.037$
$\sigma_8$	$0.729 \pm 0.041$	$z_{\mathrm{drag}}$	$1062.6 \pm 2.3$	$f\sigma_8(0.61)$	$0.441^{+0.022}_{-0.018}$
$S_8$	$0.828 \pm 0.036$	$r_{\mathrm{drag}}$	$137.9 \pm 6.1$	$\sigma_8(0.61)$	$0.519 \pm 0.036$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.454 \pm 0.020$	$k_{\mathrm{D}}$	$0.1517^{+0.0069}_{-0.0084}$	$f\sigma_8(2.33)$	$0.267^{+0.020}_{-0.018}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.575 \pm 0.023$	$100\theta_{\mathrm{D}}$	$0.1700^{+0.0049}_{-0.0043}$	$\sigma_8(2.33)$	$0.268 \pm 0.020$
$\sigma_8/h^{0.5}$	$0.869 \pm 0.056$	$z_{\mathrm{eq}}$	$4261^{+500}_{-700}$	$\chi^2_{\mathrm{lensing}}$	$9.9 \pm 2.1$
$r_{\mathrm{drag}}h$	$97.3 \pm 2.0$	$k_{\mathrm{eq}}$	$0.0131^{+0.0016}_{-0.0021}$	$\chi^2_{6\mathrm{DF}}$	$0.40 \pm 0.40$
$\langle d^2 \rangle^{1/2}$	$2.506 \pm 0.054$	$100\theta_{\mathrm{eq}}$	$0.746^{+0.046}_{-0.057}$	$\chi^2_{\mathrm{MGS}}$	$0.72 \pm 0.64$
$z_{\mathrm{re}}$	$8.65^{+0.50}_{-0.57}$	$100\theta_{\mathrm{s,eq}}$	$0.416^{+0.024}_{-0.029}$	$\chi^2_{\mathrm{DR12BAO}}$	$3.7 \pm 1.6$
$10^9A_{\mathrm{s}}$	$2.08^{+0.22}_{-0.27}$	$H(0.15)$	$77.5^{+2.7}_{-3.4}$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.87^{+0.20}_{-0.24}$	$D_{\mathrm{M}}(0.15)$	$610^{+22}_{-20}$	$\chi^2_{\mathrm{BAO}}$	$4.9 \pm 1.8$
$D_{40}$	$1163^{+200}_{-200}$	$H(0.38)$	$90.3^{+4.1}_{-5.2}$		
$D_{220}$	$5028^{+900}_{-1000}$	$D_{\mathrm{M}}(0.38)$	$1437 \pm 57$		
$\bar{\chi}^2_{\mathrm{eff}} = 16.78; R - 1 = 0.00542$					



# 6.105 base\_mnu\_lensing\_lenspriors\_BAO\_post\_agr2acc

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02222 \pm 0.00050$	$D_{810}$	$2198 \pm 500$	$H(0.51)$	$98.7^{+5.4}_{-6.4}$
$\Omega_{\mathrm{c}}h^2$	$0.155^{+0.023}_{-0.029}$	$D_{1420}$	$637^{+200}_{-200}$	$D_{\mathrm{M}}(0.51)$	$1853 \pm 83$
$100\theta_{\mathrm{MC}}$	$1.110^{+0.041}_{-0.032}$	$D_{2000}$	$184^{+50}_{-70}$	$H(0.61)$	$105.6^{+6.2}_{-7.3}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$1.79^{+0.71}_{-1.1}$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.61)$	$2148 \pm 100$
$\ln(10^{10}A_{\mathrm{s}})$	$3.04 \pm 0.12$	$Y_{\mathrm{P}}$	$0.24532^{+0.00023}_{-0.00019}$	$H(2.33)$	$274 \pm 24$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665^{+0.00023}_{-0.00019}$	$D_{\mathrm{M}}(2.33)$	$5201^{+320}_{-370}$
$H_0$	$70.5^{+1.9}_{-2.4}$	$10^5\mathrm{D}/\mathrm{H}$	$2.617^{+0.086}_{-0.10}$	$f\sigma_8(0.15)$	$0.447 \pm 0.014$
$\Omega_{\Lambda}$	$0.608 \pm 0.049$	Age/Gyr	$12.44^{+0.76}_{-0.88}$	$\sigma_8(0.15)$	$0.653^{+0.031}_{-0.040}$
$\Omega_{\mathrm{m}}$	$0.392 \pm 0.049$	$z_*$	$1093.7^{+2.4}_{-2.8}$	$f\sigma_8(0.38)$	$0.448 \pm 0.013$
$\Omega_{\mathrm{m}}h^2$	$0.196^{+0.030}_{-0.040}$	$r_*$	$135.6 \pm 6.2$	$\sigma_8(0.38)$	$0.573^{+0.030}_{-0.039}$
$\Omega_{\nu}h^2$	$0.0192^{+0.0076}_{-0.012}$	$100\theta_*$	$1.111^{+0.041}_{-0.032}$	$f\sigma_8(0.51)$	$0.440 \pm 0.015$
$\Omega_{\mathrm{m}}h^3$	$0.139^{+0.023}_{-0.034}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$12.24^{+0.87}_{-1.1}$	$\sigma_8(0.51)$	$0.534^{+0.029}_{-0.038}$
$\sigma_8$	$0.712^{+0.031}_{-0.039}$	$z_{\mathrm{drag}}$	$1062.5 \pm 2.4$	$f\sigma_8(0.61)$	$0.431 \pm 0.016$
$S_8$	$0.811 \pm 0.031$	$r_{\mathrm{drag}}$	$138.1 \pm 6.4$	$\sigma_8(0.61)$	$0.507^{+0.028}_{-0.037}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.444 \pm 0.017$	$k_{\mathrm{D}}$	$0.1516^{+0.0073}_{-0.0087}$	$f\sigma_8(2.33)$	$0.261 \pm 0.017$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.562 \pm 0.017$	$100\theta_{\mathrm{D}}$	$0.1701^{+0.0052}_{-0.0043}$	$\sigma_8(2.33)$	$0.262^{+0.017}_{-0.021}$
$\sigma_8/h^{0.5}$	$0.849^{+0.045}_{-0.057}$	$z_{\mathrm{eq}}$	$4230^{+600}_{-700}$	$\chi^2_{\mathrm{lensing}}$	$12.3 \pm 2.1$
$r_{\mathrm{drag}}h$	$97.2 \pm 2.1$	$k_{\mathrm{eq}}$	$0.0130^{+0.0017}_{-0.0022}$	$\chi^2_{6\mathrm{DF}}$	$0.42 \pm 0.41$
$\langle d^2 \rangle^{1/2}$	$2.511 \pm 0.054$	$100\theta_{\mathrm{eq}}$	$0.752^{+0.048}_{-0.060}$	$\chi^2_{\mathrm{MGS}}$	$0.71 \pm 0.65$
$z_{\mathrm{re}}$	$8.66 \pm 0.55$	$100\theta_{\mathrm{s,eq}}$	$0.419^{+0.025}_{-0.031}$	$\chi^2_{\mathrm{DR12BAO}}$	$3.8 \pm 1.6$
$10^9A_{\mathrm{s}}$	$2.11^{+0.24}_{-0.28}$	$H(0.15)$	$77.4^{+2.8}_{-3.5}$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.89^{+0.21}_{-0.25}$	$D_{\mathrm{M}}(0.15)$	$610 \pm 22$	$\chi^2_{\mathrm{BAO}}$	$4.9 \pm 1.8$
$D_{40}$	$1180^{+200}_{-200}$	$H(0.38)$	$90.3^{+4.4}_{-5.3}$		
$D_{220}$	$5126^{+1000}_{-1000}$	$D_{\mathrm{M}}(0.38)$	$1439 \pm 60$		
$\bar{\chi}^2_{\mathrm{eff}} = 19.27; R - 1 = 0.00616$					



**6.106 base\_mnu\_lensing\_lenspriors\_BAO\_post\_takahashi**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02221 \pm 0.00050$	$D_{810}$	$2166 \pm 500$	$H(0.51)$	$98.7^{+5.0}_{-6.3}$
$\Omega_{\mathrm{c}}h^2$	$0.156^{+0.022}_{-0.028}$	$D_{1420}$	$629^{+200}_{-200}$	$D_{\mathrm{M}}(0.51)$	$1851 \pm 79$
$100\theta_{\mathrm{MC}}$	$1.110^{+0.038}_{-0.034}$	$D_{2000}$	$182^{+50}_{-70}$	$H(0.61)$	$105.7^{+5.8}_{-7.2}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$1.72^{+0.61}_{-1.2}$	$n_{\mathrm{s},0.002}$	$0.960 \pm 0.020$	$D_{\mathrm{M}}(0.61)$	$2146 \pm 96$
$\ln(10^{10}A_{\mathrm{s}})$	$3.03 \pm 0.12$	$Y_{\mathrm{P}}$	$0.24532^{+0.00023}_{-0.00019}$	$H(2.33)$	$274^{+21}_{-25}$
$n_{\mathrm{s}}$	$0.960 \pm 0.020$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(2.33)$	$5195 \pm 320$
$H_0$	$70.6^{+1.9}_{-2.3}$	$10^5\mathrm{D}/\mathrm{H}$	$2.618^{+0.088}_{-0.10}$	$f\sigma_8(0.15)$	$0.451 \pm 0.018$
$\Omega_{\Lambda}$	$0.608^{+0.053}_{-0.045}$	Age/Gyr	$12.43 \pm 0.77$	$\sigma_8(0.15)$	$0.660 \pm 0.044$
$\Omega_{\mathrm{m}}$	$0.392^{+0.045}_{-0.053}$	$z_{*}$	$1093.8^{+2.2}_{-2.8}$	$f\sigma_8(0.38)$	$0.453^{+0.020}_{-0.018}$
$\Omega_{\mathrm{m}}h^2$	$0.196^{+0.028}_{-0.040}$	$r_{*}$	$135.4 \pm 5.9$	$\sigma_8(0.38)$	$0.579 \pm 0.041$
$\Omega_{\nu}h^2$	$0.0185^{+0.0065}_{-0.013}$	$100\theta_{*}$	$1.110^{+0.038}_{-0.034}$	$f\sigma_8(0.51)$	$0.444^{+0.023}_{-0.019}$
$\Omega_{\mathrm{m}}h^3$	$0.139^{+0.022}_{-0.034}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$12.23^{+0.87}_{-1.0}$	$\sigma_8(0.51)$	$0.540 \pm 0.040$
$\sigma_8$	$0.720 \pm 0.044$	$z_{\mathrm{drag}}$	$1062.6 \pm 2.3$	$f\sigma_8(0.61)$	$0.435^{+0.024}_{-0.020}$
$S_8$	$0.819 \pm 0.035$	$r_{\mathrm{drag}}$	$137.9 \pm 6.1$	$\sigma_8(0.61)$	$0.513 \pm 0.038$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.448 \pm 0.019$	$k_{\mathrm{D}}$	$0.1517^{+0.0069}_{-0.0085}$	$f\sigma_8(2.33)$	$0.263^{+0.022}_{-0.018}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.568 \pm 0.025$	$100\theta_{\mathrm{D}}$	$0.1701^{+0.0049}_{-0.0044}$	$\sigma_8(2.33)$	$0.265 \pm 0.022$
$\sigma_8/h^{0.5}$	$0.858 \pm 0.060$	$z_{\mathrm{eq}}$	$4251^{+500}_{-700}$	$\chi^2_{\mathrm{lensing}}$	$9.8 \pm 2.0$
$r_{\mathrm{drag}}h$	$97.2 \pm 2.0$	$k_{\mathrm{eq}}$	$0.0130^{+0.0016}_{-0.0021}$	$\chi^2_{6\mathrm{DF}}$	$0.41 \pm 0.41$
$\langle d^2 \rangle^{1/2}$	$2.506 \pm 0.054$	$100\theta_{\mathrm{eq}}$	$0.748^{+0.045}_{-0.056}$	$\chi^2_{\mathrm{MGS}}$	$0.71 \pm 0.64$
$z_{\mathrm{re}}$	$8.66^{+0.50}_{-0.59}$	$100\theta_{\mathrm{s,eq}}$	$0.417^{+0.024}_{-0.029}$	$\chi^2_{\mathrm{DR12BAO}}$	$3.8 \pm 1.6$
$10^9A_{\mathrm{s}}$	$2.08^{+0.23}_{-0.27}$	$H(0.15)$	$77.4^{+2.7}_{-3.4}$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.87^{+0.20}_{-0.24}$	$D_{\mathrm{M}}(0.15)$	$610 \pm 21$	$\chi^2_{\mathrm{BAO}}$	$4.9 \pm 1.8$
$D_{40}$	$1160^{+200}_{-200}$	$H(0.38)$	$90.3^{+4.1}_{-5.2}$		
$D_{220}$	$5029^{+900}_{-1000}$	$D_{\mathrm{M}}(0.38)$	$1437 \pm 57$		
$\bar{\chi}^2_{\mathrm{eff}} = 16.75; R - 1 = 0.00892$					



# 6.107    base\_mnu\_lensing\_lenspriors\_BAO\_post\_agr2takahashi

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02222 \pm 0.00050$	$D_{810}$	$2199 \pm 500$	$H(0.51)$	$98.6^{+5.4}_{-6.4}$
$\Omega_{\mathrm{c}}h^2$	$0.154^{+0.023}_{-0.028}$	$D_{1420}$	$637^{+200}_{-200}$	$D_{\mathrm{M}}(0.51)$	$1854 \pm 82$
$100\theta_{\mathrm{MC}}$	$1.110^{+0.041}_{-0.033}$	$D_{2000}$	$184^{+50}_{-70}$	$H(0.61)$	$105.6^{+6.2}_{-7.3}$
$\Sigma m_{\nu}$ [eV]	$1.87^{+0.70}_{-1.2}$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.61)$	$2149 \pm 100$
$\ln(10^{10}A_{\mathrm{s}})$	$3.04^{+0.13}_{-0.12}$	$Y_{\mathrm{P}}$	$0.24532^{+0.00023}_{-0.00019}$	$H(2.33)$	$274^{+23}_{-26}$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665^{+0.00023}_{-0.00019}$	$D_{\mathrm{M}}(2.33)$	$5203^{+320}_{-360}$
$H_0$	$70.4^{+1.9}_{-2.4}$	$10^5\mathrm{D}/\mathrm{H}$	$2.618^{+0.088}_{-0.10}$	$f\sigma_8(0.15)$	$0.441 \pm 0.014$
$\Omega_{\Lambda}$	$0.607^{+0.053}_{-0.048}$	Age/Gyr	$12.45^{+0.76}_{-0.88}$	$\sigma_8(0.15)$	$0.644^{+0.036}_{-0.042}$
$\Omega_{\mathrm{m}}$	$0.393 \pm 0.050$	$z_{*}$	$1093.7^{+2.3}_{-2.9}$	$f\sigma_8(0.38)$	$0.442 \pm 0.015$
$\Omega_{\mathrm{m}}h^2$	$0.196^{+0.030}_{-0.041}$	$r_{*}$	$135.7 \pm 6.2$	$\sigma_8(0.38)$	$0.565^{+0.035}_{-0.041}$
$\Omega_{\nu}h^2$	$0.0201^{+0.0075}_{-0.013}$	$100\theta_{*}$	$1.111^{+0.041}_{-0.033}$	$f\sigma_8(0.51)$	$0.434 \pm 0.017$
$\Omega_{\mathrm{m}}h^3$	$0.139^{+0.023}_{-0.034}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$12.24^{+0.87}_{-1.1}$	$\sigma_8(0.51)$	$0.527^{+0.033}_{-0.040}$
$\sigma_8$	$0.703^{+0.036}_{-0.042}$	$z_{\mathrm{drag}}$	$1062.5 \pm 2.4$	$f\sigma_8(0.61)$	$0.425^{+0.020}_{-0.018}$
$S_8$	$0.800 \pm 0.029$	$r_{\mathrm{drag}}$	$138.2 \pm 6.3$	$\sigma_8(0.61)$	$0.500^{+0.032}_{-0.039}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.438 \pm 0.016$	$k_{\mathrm{D}}$	$0.1515^{+0.0073}_{-0.0087}$	$f\sigma_8(2.33)$	$0.257 \pm 0.019$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.555 \pm 0.019$	$100\theta_{\mathrm{D}}$	$0.1702^{+0.0051}_{-0.0043}$	$\sigma_8(2.33)$	$0.259^{+0.019}_{-0.022}$
$\sigma_8/h^{0.5}$	$0.838^{+0.052}_{-0.060}$	$z_{\mathrm{eq}}$	$4208^{+600}_{-700}$	$\chi^2_{\mathrm{lensing}}$	$12.3 \pm 2.0$
$r_{\mathrm{drag}}h$	$97.2 \pm 2.1$	$k_{\mathrm{eq}}$	$0.0129^{+0.0017}_{-0.0021}$	$\chi^2_{6\mathrm{DF}}$	$0.42 \pm 0.42$
$\langle d^2 \rangle^{1/2}$	$2.510 \pm 0.054$	$100\theta_{\mathrm{eq}}$	$0.755^{+0.047}_{-0.058}$	$\chi^2_{\mathrm{MGS}}$	$0.71 \pm 0.66$
$z_{\mathrm{re}}$	$8.66 \pm 0.55$	$100\theta_{\mathrm{s,eq}}$	$0.420^{+0.024}_{-0.030}$	$\chi^2_{\mathrm{DR12BAO}}$	$3.8 \pm 1.6$
$10^9A_{\mathrm{s}}$	$2.11^{+0.25}_{-0.28}$	$H(0.15)$	$77.3^{+2.8}_{-3.5}$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.89^{+0.22}_{-0.25}$	$D_{\mathrm{M}}(0.15)$	$611 \pm 21$	$\chi^2_{\mathrm{BAO}}$	$5.0 \pm 1.8$
$D_{40}$	$1178^{+200}_{-200}$	$H(0.38)$	$90.2^{+4.4}_{-5.3}$		
$D_{220}$	$5136^{+1000}_{-1000}$	$D_{\mathrm{M}}(0.38)$	$1440 \pm 59$		
$\bar{\chi}^2_{\mathrm{eff}} = 19.28; R - 1 = 0.00629$					



# 6.108 base\_mnu\_lensing\_lenspriors\_BAO\_post\_Apr6

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02222 \pm 0.00050$	$D_{810}$	$2153 \pm 500$	$H(0.51)$	$98.6^{+4.8}_{-6.2}$
$\Omega_{\mathrm{c}} h^2$	$0.156^{+0.021}_{-0.029}$	$D_{1420}$	$628^{+200}_{-200}$	$D_{\mathrm{M}}(0.51)$	$1852^{+83}_{-75}$
$100\theta_{\mathrm{MC}}$	$1.108 \pm 0.034$	$D_{2000}$	$182^{+50}_{-60}$	$H(0.61)$	$105.5^{+5.5}_{-7.1}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$1.53^{+0.55}_{-1.1}$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.61)$	$2147 \pm 94$
$\ln(10^{10} A_{\mathrm{s}})$	$3.02 \pm 0.12$	$Y_{\mathrm{P}}$	$0.24532^{+0.00023}_{-0.00019}$	$H(2.33)$	$273^{+20}_{-25}$
$n_{\mathrm{s}}$	$0.959 \pm 0.020$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665^{+0.00023}_{-0.00019}$	$D_{\mathrm{M}}(2.33)$	$5203 \pm 310$
$H_0$	$70.6^{+1.8}_{-2.3}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.618^{+0.087}_{-0.10}$	$f\sigma_8(0.15)$	$0.459 \pm 0.018$
$\Omega_{\Lambda}$	$0.611^{+0.052}_{-0.043}$	Age/Gyr	$12.45 \pm 0.75$	$\sigma_8(0.15)$	$0.674 \pm 0.039$
$\Omega_{\mathrm{m}}$	$0.389^{+0.043}_{-0.052}$	$z_*$	$1093.7^{+2.1}_{-2.8}$	$f\sigma_8(0.38)$	$0.462 \pm 0.018$
$\Omega_{\mathrm{m}} h^2$	$0.195^{+0.027}_{-0.039}$	$r_*$	$135.5^{+6.2}_{-5.6}$	$\sigma_8(0.38)$	$0.592 \pm 0.037$
$\Omega_{\nu} h^2$	$0.0165^{+0.0060}_{-0.012}$	$100\theta_*$	$1.108 \pm 0.034$	$f\sigma_8(0.51)$	$0.453^{+0.020}_{-0.017}$
$\Omega_{\mathrm{m}} h^3$	$0.138^{+0.020}_{-0.033}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$12.25 \pm 0.90$	$\sigma_8(0.51)$	$0.552 \pm 0.036$
$\sigma_8$	$0.735 \pm 0.040$	$z_{\mathrm{drag}}$	$1062.5^{+2.2}_{-2.4}$	$f\sigma_8(0.61)$	$0.444^{+0.021}_{-0.017}$
$S_8$	$0.834 \pm 0.036$	$r_{\mathrm{drag}}$	$138.0^{+6.4}_{-5.8}$	$\sigma_8(0.61)$	$0.524 \pm 0.035$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.457 \pm 0.020$	$k_{\mathrm{D}}$	$0.1515^{+0.0065}_{-0.0084}$	$f\sigma_8(2.33)$	$0.269^{+0.020}_{-0.016}$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.579 \pm 0.023$	$100\theta_{\mathrm{D}}$	$0.1699 \pm 0.0044$	$\sigma_8(2.33)$	$0.271 \pm 0.020$
$\sigma_8/h^{0.5}$	$0.876 \pm 0.054$	$z_{\mathrm{eq}}$	$4266^{+500}_{-700}$	$\chi^2_{\mathrm{lensing}}$	$8.7 \pm 2.1$
$r_{\mathrm{drag}} h$	$97.3 \pm 2.0$	$k_{\mathrm{eq}}$	$0.0131^{+0.0016}_{-0.0021}$	$\chi^2_{6\mathrm{DF}}$	$0.38 \pm 0.39$
$\langle d^2 \rangle^{1/2}$	$2.494 \pm 0.054$	$100\theta_{\mathrm{eq}}$	$0.744^{+0.047}_{-0.055}$	$\chi^2_{\mathrm{MGS}}$	$0.73 \pm 0.63$
$z_{\mathrm{re}}$	$8.64^{+0.48}_{-0.57}$	$100\theta_{\mathrm{s,eq}}$	$0.414^{+0.025}_{-0.028}$	$\chi^2_{\mathrm{DR12BAO}}$	$3.7 \pm 1.6$
$10^9 A_{\mathrm{s}}$	$2.06^{+0.22}_{-0.26}$	$H(0.15)$	$77.4^{+2.5}_{-3.3}$	$\chi^2_{\mathrm{prior}}$	$2.0 \pm 2.0$
$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.85^{+0.19}_{-0.23}$	$D_{\mathrm{M}}(0.15)$	$609^{+22}_{-19}$	$\chi^2_{\mathrm{BAO}}$	$4.8 \pm 1.8$
$D_{40}$	$1150^{+200}_{-200}$	$H(0.38)$	$90.2^{+3.9}_{-5.1}$		
$D_{220}$	$4970^{+900}_{-1000}$	$D_{\mathrm{M}}(0.38)$	$1437^{+60}_{-54}$		
$\bar{\chi}^2_{\mathrm{eff}} = 15.55; R - 1 = 0.00430$					



# 6.109 base\_mnu\_lensing\_lenspriors\_BAO\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022173	$0.02218 \pm 0.00049$	$D_{810}$	2916	$2926^{+210}_{-320}$	$H(0.51)$	89.10	$89.08 \pm 0.67$
$\Omega_c h^2$	0.11357	$0.1136^{+0.0038}_{-0.0032}$	$D_{1420}$	930	$935^{+70}_{-100}$	$D_M(0.51)$	1991.0	$1992 \pm 19$
$100\theta_{MC}$	1.04088	$1.04091 \pm 0.00060$	$D_{2000}$	261.4	$263^{+21}_{-30}$	$H(0.61)$	94.62	$94.61^{+0.72}_{-0.64}$
$\Sigma m_\nu$ [eV]	0.292	$0.30^{+0.15}_{-0.21}$	$n_{s,0.002}$	0.9607	$0.962 \pm 0.019$	$D_M(0.61)$	2317.6	$2319 \pm 21$
$\ln(10^{10} A_s)$	3.178	$3.177^{+0.078}_{-0.094}$	$Y_P$	0.245315	$0.24530^{+0.00023}_{-0.00020}$	$H(2.33)$	233.39	$233.4 \pm 1.7$
$n_s$	0.9607	$0.962 \pm 0.019$	$Y_P^{BBN}$	0.246641	$0.24663^{+0.00023}_{-0.00020}$	$D_M(2.33)$	5808.5	$5809^{+37}_{-43}$
$H_0$	67.41	$67.37 \pm 0.80$	$10^5 D/H$	2.623	$2.624^{+0.087}_{-0.099}$	$f\sigma_8(0.15)$	0.4436	$0.443^{+0.014}_{-0.012}$
$\Omega_\Lambda$	0.6944	$0.6936 \pm 0.0089$	Age/Gyr	13.908	$13.910^{+0.088}_{-0.10}$	$\sigma_8(0.15)$	0.7294	$0.727^{+0.026}_{-0.021}$
$\Omega_m$	0.3056	$0.3064 \pm 0.0089$	$z_*$	1089.63	$1089.65 \pm 0.65$	$f\sigma_8(0.38)$	0.4634	$0.462^{+0.014}_{-0.012}$
$\Omega_m h^2$	0.13888	$0.1390 \pm 0.0022$	$r_*$	146.23	$146.21 \pm 0.99$	$\sigma_8(0.38)$	0.6478	$0.646^{+0.023}_{-0.019}$
$\Omega_\nu h^2$	0.00314	$0.0032^{+0.0016}_{-0.0023}$	$100\theta_*$	1.04122	$1.04124 \pm 0.00061$	$f\sigma_8(0.51)$	0.4630	$0.462^{+0.014}_{-0.012}$
$\Omega_m h^3$	0.09362	$0.0936^{+0.0019}_{-0.0018}$	$D_M(z_*)/\text{Gpc}$	14.044	$14.042 \pm 0.095$	$\sigma_8(0.51)$	0.6069	$0.605^{+0.021}_{-0.018}$
$\sigma_8$	0.7882	$0.786^{+0.028}_{-0.023}$	$z_{\text{drag}}$	1059.06	$1059.1 \pm 1.2$	$f\sigma_8(0.61)$	0.4588	$0.457^{+0.014}_{-0.011}$
$S_8$	0.7956	$0.794^{+0.027}_{-0.024}$	$r_{\text{drag}}$	149.00	$149.0 \pm 1.1$	$\sigma_8(0.61)$	0.5779	$0.576^{+0.020}_{-0.017}$
$\sigma_8 \Omega_m^{0.5}$	0.4357	$0.435^{+0.015}_{-0.013}$	$k_D$	0.13876	$0.1388 \pm 0.0014$	$f\sigma_8(2.33)$	0.2953	$0.2942^{+0.0083}_{-0.0073}$
$\sigma_8 \Omega_m^{0.25}$	0.5860	$0.585^{+0.020}_{-0.017}$	$100\theta_D$	0.16121	$0.16121 \pm 0.00071$	$\sigma_8(2.33)$	0.3027	$0.3015^{+0.0098}_{-0.0084}$
$\sigma_8/h^{0.5}$	0.9600	$0.957^{+0.030}_{-0.026}$	$z_{\text{eq}}$	3244	$3244^{+92}_{-80}$	$\chi^2_{\text{lensing}}$	7.50	$9.2 \pm 1.8$
$r_{\text{drag}} h$	100.44	$100.4 \pm 1.1$	$k_{\text{eq}}$	0.009903	$0.00990^{+0.00028}_{-0.00024}$	$\chi^2_{6\text{DF}}$	0.0001	$0.056 \pm 0.079$
$\langle d^2 \rangle^{1/2}$	2.526	$2.525^{+0.050}_{-0.056}$	$100\theta_{\text{eq}}$	0.8425	$0.843^{+0.014}_{-0.019}$	$\chi^2_{\text{MGS}}$	1.68	$1.72 \pm 0.69$
$z_{\text{re}}$	7.722	$7.73 \pm 0.11$	$100\theta_{s,\text{eq}}$	0.4648	$0.4650^{+0.0076}_{-0.0099}$	$\chi^2_{\text{DR12BAO}}$	3.43	$4.3 \pm 1.4$
$10^9 A_s$	2.400	$2.41^{+0.17}_{-0.24}$	$H(0.15)$	72.58	$72.54 \pm 0.75$	$\chi^2_{\text{prior}}$	0.00	$2.9 \pm 2.4$
$10^9 A_s e^{-2\tau}$	2.150	$2.16^{+0.15}_{-0.22}$	$D_M(0.15)$	643.6	$644.0 \pm 7.2$	$\chi^2_{\text{BAO}}$	5.11	$6.1 \pm 1.4$
$D_{40}$	1437	$1434^{+100}_{-130}$	$H(0.38)$	82.50	$82.47 \pm 0.68$			
$D_{220}$	6745	$6763^{+510}_{-750}$	$D_M(0.38)$	1536.3	$1537 \pm 15$			

Best-fit  $\chi^2_{\text{eff}} = 12.61$ ;  $\bar{\chi}^2_{\text{eff}} = 18.27$ ;  $R - 1 = 0.00180$

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.43 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 7.50



# 6.110 base\_mnu\_lensing\_lenspriors\_BAO\_theta\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022196	$0.02219 \pm 0.00049$	$D_{810}$	2910	$2929^{+210}_{-320}$	$H(0.51)$	89.16	$89.12^{+0.70}_{-0.63}$
$\Omega_c h^2$	0.11359	$0.1135^{+0.0038}_{-0.0032}$	$D_{1420}$	929	$935^{+70}_{-110}$	$D_M(0.51)$	1989.1	$1990 \pm 18$
$100\theta_{MC}$	1.04090	$1.04090 \pm 0.00061$	$D_{2000}$	261.1	$263^{+20}_{-30}$	$H(0.61)$	94.67	$94.64^{+0.71}_{-0.63}$
$\Sigma m_\nu$ [eV]	0.284	$0.30^{+0.14}_{-0.22}$	$n_{s,0.002}$	0.9609	$0.962 \pm 0.019$	$D_M(0.61)$	2315.4	$2317 \pm 20$
$\ln(10^{10} A_s)$	3.176	$3.178^{+0.077}_{-0.096}$	$Y_P$	0.245324	$0.24531^{+0.00023}_{-0.00019}$	$H(2.33)$	233.38	$233.4 \pm 1.7$
$n_s$	0.9609	$0.962 \pm 0.019$	$Y_P^{BBN}$	0.246650	$0.24663^{+0.00023}_{-0.00019}$	$D_M(2.33)$	5805.5	$5808^{+37}_{-43}$
$H_0$	67.50	$67.44 \pm 0.76$	$10^5 D/H$	2.619	$2.623^{+0.087}_{-0.098}$	$f\sigma_8(0.15)$	0.4436	$0.442^{+0.014}_{-0.012}$
$\Omega_\Lambda$	0.6952	$0.6947 \pm 0.0082$	Age/Gyr	13.901	$13.907^{+0.087}_{-0.10}$	$\sigma_8(0.15)$	0.7305	$0.728^{+0.026}_{-0.021}$
$\Omega_m$	0.3048	$0.3053 \pm 0.0082$	$z_*$	1089.61	$1089.63 \pm 0.64$	$f\sigma_8(0.38)$	0.4636	$0.462^{+0.014}_{-0.012}$
$\Omega_m h^2$	0.13884	$0.1388 \pm 0.0021$	$r_*$	146.21	$146.24^{+0.94}_{-1.1}$	$\sigma_8(0.38)$	0.6489	$0.647^{+0.023}_{-0.019}$
$\Omega_\nu h^2$	0.00306	$0.0032^{+0.0015}_{-0.0023}$	$100\theta_*$	1.04123	$1.04123 \pm 0.00062$	$f\sigma_8(0.51)$	0.4633	$0.462^{+0.014}_{-0.012}$
$\Omega_m h^3$	0.09371	$0.0936^{+0.0019}_{-0.0017}$	$D_M(z_*)/\text{Gpc}$	14.042	$14.045^{+0.091}_{-0.10}$	$\sigma_8(0.51)$	0.6079	$0.606^{+0.021}_{-0.018}$
$\sigma_8$	0.7893	$0.787^{+0.028}_{-0.023}$	$z_{\text{drag}}$	1059.09	$1059.1 \pm 1.2$	$f\sigma_8(0.61)$	0.4592	$0.458^{+0.013}_{-0.011}$
$S_8$	0.7955	$0.793^{+0.027}_{-0.024}$	$r_{\text{drag}}$	148.97	$149.0 \pm 1.1$	$\sigma_8(0.61)$	0.5789	$0.577^{+0.020}_{-0.017}$
$\sigma_8 \Omega_m^{0.5}$	0.4357	$0.435^{+0.015}_{-0.013}$	$k_D$	0.13880	$0.1388 \pm 0.0014$	$f\sigma_8(2.33)$	0.2958	$0.2946^{+0.0083}_{-0.0072}$
$\sigma_8 \Omega_m^{0.25}$	0.5865	$0.585^{+0.020}_{-0.017}$	$100\theta_D$	0.16119	$0.16120 \pm 0.00071$	$\sigma_8(2.33)$	0.3032	$0.3020^{+0.0098}_{-0.0083}$
$\sigma_8/h^{0.5}$	0.9607	$0.958^{+0.030}_{-0.026}$	$z_{\text{eq}}$	3245	$3242^{+93}_{-78}$	$\chi^2_{\text{lensing}}$	7.50	$9.2 \pm 1.8$
$r_{\text{drag}} h$	100.55	$100.5 \pm 1.1$	$k_{\text{eq}}$	0.009905	$0.00990^{+0.00028}_{-0.00024}$	$\chi^2_{\text{JLA}}$	1034.803	$1034.95 \pm 0.29$
$\langle d^2 \rangle^{1/2}$	2.524	$2.525^{+0.050}_{-0.056}$	$100\theta_{\text{eq}}$	0.8424	$0.844^{+0.014}_{-0.019}$	$\chi^2_{6\text{DF}}$	0.0002	$0.048 \pm 0.069$
$z_{\text{re}}$	7.716	$7.72 \pm 0.11$	$100\theta_{s,\text{eq}}$	0.4647	$0.4653^{+0.0075}_{-0.010}$	$\chi^2_{\text{MGS}}$	1.75	$1.79 \pm 0.65$
$10^9 A_s$	2.395	$2.41^{+0.16}_{-0.25}$	$H(0.15)$	72.66	$72.61 \pm 0.72$	$\chi^2_{\text{DR12BAO}}$	3.377	$4.2 \pm 1.2$
$10^9 A_s e^{-2\tau}$	2.146	$2.16^{+0.15}_{-0.22}$	$D_M(0.15)$	642.8	$643.3 \pm 6.8$	$\chi^2_{\text{prior}}$	0.00	$2.9 \pm 2.4$
$D_{40}$	1434	$1436^{+100}_{-130}$	$H(0.38)$	82.57	$82.52 \pm 0.67$	$\chi^2_{\text{BAO}}$	5.13	$6.0 \pm 1.2$
$D_{220}$	6734	$6771^{+510}_{-760}$	$D_M(0.38)$	1534.6	$1536 \pm 15$			

Best-fit  $\chi^2_{\text{eff}} = 1047.43$ ;  $\bar{\chi}^2_{\text{eff}} = 1053.09$ ;  $R - 1 = 0.00184$

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.38 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 7.50 SN - JLA Pantheon18: 1034.80



# 6.111 base\_mnu\_lensing\_lenspriors\_BAO\_theta\_post\_agr2

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02218 \pm 0.00049$	$D_{810}$	$2967^{+250}_{-310}$	$H(0.51)$	$88.92 \pm 0.68$
$\Omega_{\mathrm{c}}h^2$	$0.1125 \pm 0.0035$	$D_{1420}$	$946^{+83}_{-100}$	$D_{\mathrm{M}}(0.51)$	$1995 \pm 19$
$100\theta_{\mathrm{MC}}$	$1.04090 \pm 0.00061$	$D_{2000}$	$266^{+24}_{-30}$	$H(0.61)$	$94.44 \pm 0.68$
$\Sigma m_{\nu} [\mathrm{eV}]$	$0.36 \pm 0.17$	$n_{\mathrm{s},0.002}$	$0.960 \pm 0.020$	$D_{\mathrm{M}}(0.61)$	$2323 \pm 21$
$\ln(10^{10}A_{\mathrm{s}})$	$3.189 \pm 0.087$	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00020}$	$H(2.33)$	$233.0 \pm 1.7$
$n_{\mathrm{s}}$	$0.960 \pm 0.020$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(2.33)$	$5820 \pm 40$
$H_0$	$67.26 \pm 0.81$	$10^5\mathrm{D}/\mathrm{H}$	$2.623^{+0.088}_{-0.099}$	$f\sigma_8(0.15)$	$0.435 \pm 0.012$
$\Omega_{\Lambda}$	$0.6937 \pm 0.0088$	Age/Gyr	$13.935 \pm 0.095$	$\sigma_8(0.15)$	$0.715 \pm 0.022$
$\Omega_{\mathrm{m}}$	$0.3063 \pm 0.0088$	$z_*$	$1089.56 \pm 0.64$	$f\sigma_8(0.38)$	$0.455^{+0.012}_{-0.011}$
$\Omega_{\mathrm{m}}h^2$	$0.1385 \pm 0.0021$	$r_*$	$146.49 \pm 0.99$	$\sigma_8(0.38)$	$0.635 \pm 0.019$
$\Omega_{\nu}h^2$	$0.0038 \pm 0.0019$	$100\theta_*$	$1.04126 \pm 0.00062$	$f\sigma_8(0.51)$	$0.454^{+0.012}_{-0.011}$
$\Omega_{\mathrm{m}}h^3$	$0.0931 \pm 0.0018$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.068 \pm 0.095$	$\sigma_8(0.51)$	$0.595 \pm 0.018$
$\sigma_8$	$0.772 \pm 0.024$	$z_{\mathrm{drag}}$	$1059.0 \pm 1.2$	$f\sigma_8(0.61)$	$0.450^{+0.012}_{-0.011}$
$S_8$	$0.780 \pm 0.023$	$r_{\mathrm{drag}}$	$149.3 \pm 1.1$	$\sigma_8(0.61)$	$0.566 \pm 0.017$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.427 \pm 0.013$	$k_{\mathrm{D}}$	$0.1385 \pm 0.0014$	$f\sigma_8(2.33)$	$0.2901 \pm 0.0074$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.575 \pm 0.017$	$100\theta_{\mathrm{D}}$	$0.16122 \pm 0.00071$	$\sigma_8(2.33)$	$0.2969 \pm 0.0086$
$\sigma_8/h^{0.5}$	$0.942 \pm 0.026$	$z_{\mathrm{eq}}$	$3217 \pm 85$	$\chi^2_{\mathrm{lensing}}$	$11.7 \pm 1.8$
$r_{\mathrm{drag}}h$	$100.4 \pm 1.1$	$k_{\mathrm{eq}}$	$0.00982 \pm 0.00026$	$\chi^2_{6\mathrm{DF}}$	$0.055 \pm 0.077$
$\langle d^2 \rangle^{1/2}$	$2.528 \pm 0.054$	$100\theta_{\mathrm{eq}}$	$0.848^{+0.016}_{-0.018}$	$\chi^2_{\mathrm{MGS}}$	$1.73 \pm 0.69$
$z_{\mathrm{re}}$	$7.71 \pm 0.11$	$100\theta_{\mathrm{s,eq}}$	$0.4678^{+0.0085}_{-0.0095}$	$\chi^2_{\mathrm{DR12BAO}}$	$4.3 \pm 1.4$
$10^9A_{\mathrm{s}}$	$2.44^{+0.20}_{-0.24}$	$H(0.15)$	$72.42 \pm 0.76$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.4$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.18^{+0.18}_{-0.21}$	$D_{\mathrm{M}}(0.15)$	$645.1 \pm 7.3$	$\chi^2_{\mathrm{BAO}}$	$6.1 \pm 1.4$
$D_{40}$	$1461 \pm 110$	$H(0.38)$	$82.33 \pm 0.69$		
$D_{220}$	$6900^{+610}_{-720}$	$D_{\mathrm{M}}(0.38)$	$1540 \pm 16$		
$\bar{\chi}^2_{\mathrm{eff}} = 20.82; R - 1 = 0.00190$					



# 6.112 base\_mnu\_lensing\_lenspriors\_BAO\_theta\_post\_conslmin40

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02218 \pm 0.00050$	$D_{810}$	$2993^{+250}_{-380}$	$H(0.51)$	$88.96^{+0.77}_{-0.69}$
$\Omega_{\mathrm{c}} h^2$	$0.1128^{+0.0044}_{-0.0036}$	$D_{1420}$	$955^{+81}_{-120}$	$D_{\mathrm{M}}(0.51)$	$1995^{+19}_{-21}$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00061$	$D_{2000}$	$268^{+23}_{-35}$	$H(0.61)$	$94.48^{+0.78}_{-0.69}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$0.34^{+0.16}_{-0.25}$	$n_{\mathrm{s},0.002}$	$0.962 \pm 0.019$	$D_{\mathrm{M}}(0.61)$	$2322^{+21}_{-24}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.198^{+0.090}_{-0.11}$	$Y_{\mathrm{P}}$	$0.24530^{+0.00023}_{-0.00020}$	$H(2.33)$	$233.1 \pm 1.8$
$n_{\mathrm{s}}$	$0.962 \pm 0.019$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(2.33)$	$5817^{+40}_{-47}$
$H_0$	$67.28 \pm 0.83$	$10^5 \mathrm{D}/\mathrm{H}$	$2.625^{+0.088}_{-0.10}$	$f\sigma_8(0.15)$	$0.440^{+0.015}_{-0.013}$
$\Omega_{\Lambda}$	$0.6936 \pm 0.0089$	Age/Gyr	$13.928^{+0.096}_{-0.11}$	$\sigma_8(0.15)$	$0.723^{+0.028}_{-0.023}$
$\Omega_{\mathrm{m}}$	$0.3064 \pm 0.0089$	$z_*$	$1089.59 \pm 0.66$	$f\sigma_8(0.38)$	$0.460^{+0.015}_{-0.013}$
$\Omega_{\mathrm{m}} h^2$	$0.1386 \pm 0.0023$	$r_*$	$146.4 \pm 1.1$	$\sigma_8(0.38)$	$0.642^{+0.025}_{-0.021}$
$\Omega_{\nu} h^2$	$0.0037^{+0.0018}_{-0.0027}$	$100\theta_*$	$1.04126 \pm 0.00062$	$f\sigma_8(0.51)$	$0.459^{+0.015}_{-0.012}$
$\Omega_{\mathrm{m}} h^3$	$0.0933^{+0.0021}_{-0.0019}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.06 \pm 0.10$	$\sigma_8(0.51)$	$0.601^{+0.023}_{-0.019}$
$\sigma_8$	$0.781^{+0.031}_{-0.025}$	$z_{\mathrm{drag}}$	$1059.0 \pm 1.2$	$f\sigma_8(0.61)$	$0.455^{+0.015}_{-0.012}$
$S_8$	$0.789^{+0.030}_{-0.026}$	$r_{\mathrm{drag}}$	$149.2 \pm 1.2$	$\sigma_8(0.61)$	$0.572^{+0.022}_{-0.018}$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.432^{+0.017}_{-0.014}$	$k_{\mathrm{D}}$	$0.1386 \pm 0.0014$	$f\sigma_8(2.33)$	$0.2929^{+0.0091}_{-0.0077}$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.581^{+0.022}_{-0.018}$	$100\theta_{\mathrm{D}}$	$0.16122^{+0.00067}_{-0.00075}$	$\sigma_8(2.33)$	$0.300^{+0.011}_{-0.0090}$
$\sigma_8/h^{0.5}$	$0.952^{+0.034}_{-0.028}$	$z_{\mathrm{eq}}$	$3225^{+100}_{-89}$	$\chi^2_{\mathrm{lensing}}$	$9.1 \pm 1.7$
$r_{\mathrm{drag}} h$	$100.4 \pm 1.1$	$k_{\mathrm{eq}}$	$0.00985^{+0.00031}_{-0.00027}$	$\chi^2_{6\mathrm{DF}}$	$0.056 \pm 0.079$
$\langle d^2 \rangle^{1/2}$	$2.540^{+0.060}_{-0.072}$	$100\theta_{\mathrm{eq}}$	$0.847^{+0.016}_{-0.022}$	$\chi^2_{\mathrm{MGS}}$	$1.71 \pm 0.69$
$z_{\mathrm{re}}$	$7.72 \pm 0.11$	$100\theta_{\mathrm{s,eq}}$	$0.4671^{+0.0085}_{-0.012}$	$\chi^2_{\mathrm{DR12BAO}}$	$4.3 \pm 1.4$
$10^9 A_{\mathrm{s}}$	$2.46^{+0.19}_{-0.29}$	$H(0.15)$	$72.45 \pm 0.78$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.4$
$10^9 A_{\mathrm{s}} e^{-2\tau}$	$2.20^{+0.17}_{-0.26}$	$D_{\mathrm{M}}(0.15)$	$644.9^{+7.0}_{-7.9}$	$\chi^2_{\mathrm{BAO}}$	$6.1 \pm 1.4$
$D_{40}$	$1468^{+120}_{-160}$	$H(0.38)$	$82.37^{+0.78}_{-0.70}$		
$D_{220}$	$6942^{+600}_{-930}$	$D_{\mathrm{M}}(0.38)$	$1539^{+15}_{-17}$		
$\bar{\chi}^2_{\mathrm{eff}} = 18.19; R - 1 = 0.00198$					



### 6.113 base\_mnu\_lensing\_lenspriors\_BAO\_theta\_post\_agrlmax425

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02217 \pm 0.00049$	$D_{810}$	$2919^{+210}_{-320}$	$H(0.51)$	$89.09^{+0.71}_{-0.64}$
$\Omega_{\mathrm{c}}h^2$	$0.1137^{+0.0038}_{-0.0032}$	$D_{1420}$	$933^{+69}_{-100}$	$D_{\mathrm{M}}(0.51)$	$1992 \pm 19$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00061$	$D_{2000}$	$262^{+20}_{-30}$	$H(0.61)$	$94.62^{+0.72}_{-0.63}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$0.29^{+0.14}_{-0.22}$	$n_{\mathrm{s},0.002}$	$0.962 \pm 0.019$	$D_{\mathrm{M}}(0.61)$	$2318 \pm 21$
$\ln(10^{10}A_{\mathrm{s}})$	$3.175^{+0.076}_{-0.095}$	$Y_{\mathrm{P}}$	$0.24530^{+0.00023}_{-0.00019}$	$H(2.33)$	$233.5 \pm 1.7$
$n_{\mathrm{s}}$	$0.962 \pm 0.019$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(2.33)$	$5808^{+36}_{-43}$
$H_0$	$67.38 \pm 0.80$	$10^5\mathrm{D}/\mathrm{H}$	$2.625^{+0.087}_{-0.099}$	$f\sigma_8(0.15)$	$0.443^{+0.013}_{-0.012}$
$\Omega_{\Lambda}$	$0.6936 \pm 0.0088$	Age/Gyr	$13.907^{+0.086}_{-0.10}$	$\sigma_8(0.15)$	$0.729^{+0.025}_{-0.021}$
$\Omega_{\mathrm{m}}$	$0.3064 \pm 0.0088$	$z_*$	$1089.67 \pm 0.65$	$f\sigma_8(0.38)$	$0.463^{+0.014}_{-0.012}$
$\Omega_{\mathrm{m}}h^2$	$0.1390 \pm 0.0022$	$r_*$	$146.18^{+0.94}_{-1.0}$	$\sigma_8(0.38)$	$0.647^{+0.022}_{-0.019}$
$\Omega_{\nu}h^2$	$0.0031^{+0.0015}_{-0.0023}$	$100\theta_*$	$1.04124 \pm 0.00062$	$f\sigma_8(0.51)$	$0.463^{+0.014}_{-0.011}$
$\Omega_{\mathrm{m}}h^3$	$0.0937^{+0.0019}_{-0.0017}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.039^{+0.090}_{-0.10}$	$\sigma_8(0.51)$	$0.606^{+0.021}_{-0.018}$
$\sigma_8$	$0.788^{+0.027}_{-0.023}$	$z_{\mathrm{drag}}$	$1059.0 \pm 1.2$	$f\sigma_8(0.61)$	$0.458^{+0.013}_{-0.011}$
$S_8$	$0.796^{+0.027}_{-0.024}$	$r_{\mathrm{drag}}$	$148.9 \pm 1.1$	$\sigma_8(0.61)$	$0.577^{+0.020}_{-0.017}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.436^{+0.015}_{-0.013}$	$k_{\mathrm{D}}$	$0.1388 \pm 0.0014$	$f\sigma_8(2.33)$	$0.2947^{+0.0083}_{-0.0073}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.586^{+0.020}_{-0.017}$	$100\theta_{\mathrm{D}}$	$0.16122 \pm 0.00071$	$\sigma_8(2.33)$	$0.3021^{+0.0097}_{-0.0083}$
$\sigma_8/h^{0.5}$	$0.959^{+0.030}_{-0.026}$	$z_{\mathrm{eq}}$	$3248^{+92}_{-78}$	$\chi^2_{\mathrm{lensing}}$	$7.0 \pm 1.8$
$r_{\mathrm{drag}}h$	$100.4 \pm 1.1$	$k_{\mathrm{eq}}$	$0.00991^{+0.00028}_{-0.00024}$	$\chi^2_{6\mathrm{DF}}$	$0.056 \pm 0.079$
$\langle d^2 \rangle^{1/2}$	$2.524^{+0.050}_{-0.056}$	$100\theta_{\mathrm{eq}}$	$0.842^{+0.014}_{-0.019}$	$\chi^2_{\mathrm{MGS}}$	$1.71 \pm 0.69$
$z_{\mathrm{re}}$	$7.73 \pm 0.11$	$100\theta_{\mathrm{s,eq}}$	$0.4647^{+0.0075}_{-0.0098}$	$\chi^2_{\mathrm{DR12BAO}}$	$4.4 \pm 1.4$
$10^9A_{\mathrm{s}}$	$2.40^{+0.16}_{-0.24}$	$H(0.15)$	$72.55 \pm 0.74$	$\chi^2_{\mathrm{prior}}$	$2.9 \pm 2.4$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.15^{+0.14}_{-0.22}$	$D_{\mathrm{M}}(0.15)$	$643.9 \pm 7.1$	$\chi^2_{\mathrm{BAO}}$	$6.1 \pm 1.4$
$D_{40}$	$1430^{+100}_{-130}$	$H(0.38)$	$82.49 \pm 0.68$		
$D_{220}$	$6741^{+500}_{-750}$	$D_{\mathrm{M}}(0.38)$	$1537 \pm 15$		
$\bar{\chi}^2_{\mathrm{eff}} = 16.07; R - 1 = 0.00165$					



# 6.114 base\_mnu\_lensing\_lenspriors\_BAO\_theta\_post\_ptt

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00051$	$D_{810}$	$3253^{+350}_{-300}$	$H(0.51)$	$88.54 \pm 0.73$
$\Omega_{\mathrm{c}}h^2$	$0.1098^{+0.0034}_{-0.0041}$	$D_{1420}$	$1035 \pm 100$	$D_{\mathrm{M}}(0.51)$	$2004 \pm 21$
$100\theta_{\mathrm{MC}}$	$1.04092 \pm 0.00061$	$D_{2000}$	$290 \pm 30$	$H(0.61)$	$94.04 \pm 0.73$
$\Sigma m_{\nu} [\mathrm{eV}]$	$0.50^{+0.22}_{-0.19}$	$n_{\mathrm{s},0.002}$	$0.960 \pm 0.019$	$D_{\mathrm{M}}(0.61)$	$2333 \pm 23$
$\ln(10^{10}A_{\mathrm{s}})$	$3.28^{+0.11}_{-0.078}$	$Y_{\mathrm{P}}$	$0.24531^{+0.00024}_{-0.00020}$	$H(2.33)$	$232.1 \pm 1.7$
$n_{\mathrm{s}}$	$0.960 \pm 0.019$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00024}_{-0.00020}$	$D_{\mathrm{M}}(2.33)$	$5844 \pm 44$
$H_0$	$66.96 \pm 0.86$	$10^5\mathrm{D}/\mathrm{H}$	$2.621^{+0.091}_{-0.10}$	$f\sigma_8(0.15)$	$0.432 \pm 0.015$
$\Omega_{\Lambda}$	$0.6935 \pm 0.0091$	$\mathrm{Age}/\mathrm{Gyr}$	$13.99 \pm 0.10$	$\sigma_8(0.15)$	$0.707 \pm 0.027$
$\Omega_{\mathrm{m}}$	$0.3065 \pm 0.0091$	$z_{*}$	$1089.36 \pm 0.67$	$f\sigma_8(0.38)$	$0.451 \pm 0.015$
$\Omega_{\mathrm{m}}h^2$	$0.1374 \pm 0.0022$	$r_{*}$	$147.1^{+1.1}_{-0.99}$	$\sigma_8(0.38)$	$0.628 \pm 0.024$
$\Omega_{\nu}h^2$	$0.0053^{+0.0024}_{-0.0020}$	$100\theta_{*}$	$1.04133 \pm 0.00063$	$f\sigma_8(0.51)$	$0.451 \pm 0.015$
$\Omega_{\mathrm{m}}h^3$	$0.0920^{+0.0018}_{-0.0021}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$14.13^{+0.10}_{-0.095}$	$\sigma_8(0.51)$	$0.588 \pm 0.023$
$\sigma_8$	$0.764 \pm 0.029$	$z_{\mathrm{drag}}$	$1058.9 \pm 1.2$	$f\sigma_8(0.61)$	$0.447 \pm 0.015$
$S_8$	$0.772 \pm 0.029$	$r_{\mathrm{drag}}$	$149.9 \pm 1.2$	$\sigma_8(0.61)$	$0.560 \pm 0.022$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.423 \pm 0.016$	$k_{\mathrm{D}}$	$0.1379 \pm 0.0014$	$f\sigma_8(2.33)$	$0.2887 \pm 0.0094$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.568 \pm 0.021$	$100\theta_{\mathrm{D}}$	$0.16125 \pm 0.00073$	$\sigma_8(2.33)$	$0.294 \pm 0.011$
$\sigma_8/h^{0.5}$	$0.933 \pm 0.033$	$z_{\mathrm{eq}}$	$3155^{+84}_{-100}$	$\chi^2_{\mathrm{lensing}}$	$10.6 \pm 1.7$
$r_{\mathrm{drag}}h$	$100.4 \pm 1.2$	$k_{\mathrm{eq}}$	$0.00964^{+0.00025}_{-0.00030}$	$\chi^2_{6\mathrm{DF}}$	$0.058 \pm 0.080$
$\langle d^2 \rangle^{1/2}$	$2.605 \pm 0.067$	$100\theta_{\mathrm{eq}}$	$0.862 \pm 0.019$	$\chi^2_{\mathrm{MGS}}$	$1.72 \pm 0.71$
$z_{\mathrm{re}}$	$7.69 \pm 0.12$	$100\theta_{\mathrm{s,eq}}$	$0.475 \pm 0.010$	$\chi^2_{\mathrm{DR12BAO}}$	$4.4 \pm 1.4$
$10^9A_{\mathrm{s}}$	$2.66^{+0.27}_{-0.23}$	$H(0.15)$	$72.10 \pm 0.81$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.4$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.39^{+0.24}_{-0.20}$	$D_{\mathrm{M}}(0.15)$	$648.0 \pm 7.8$	$\chi^2_{\mathrm{BAO}}$	$6.1 \pm 1.4$
$D_{40}$	$1602^{+150}_{-130}$	$H(0.38)$	$81.98 \pm 0.75$		
$D_{220}$	$7646^{+900}_{-700}$	$D_{\mathrm{M}}(0.38)$	$1547 \pm 17$		
$\bar{\chi}^2_{\mathrm{eff}} = 19.79; R - 1 = 0.03408$					



# 6.115 base\_mnu\_lensing\_lenspriors\_BAO\_theta\_post\_bfcl

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02218 \pm 0.00049$	$D_{810}$	$2861^{+200}_{-310}$	$H(0.51)$	$89.11^{+0.71}_{-0.63}$
$\Omega_{\mathrm{c}} h^2$	$0.1138^{+0.0038}_{-0.0031}$	$D_{1420}$	$914^{+66}_{-100}$	$D_{\mathrm{M}}(0.51)$	$1991^{+18}_{-20}$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00061$	$D_{2000}$	$257^{+19}_{-29}$	$H(0.61)$	$94.64^{+0.72}_{-0.62}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$0.29^{+0.13}_{-0.22}$	$n_{\mathrm{s},0.002}$	$0.963 \pm 0.019$	$D_{\mathrm{M}}(0.61)$	$2318^{+20}_{-22}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.154^{+0.074}_{-0.093}$	$Y_{\mathrm{P}}$	$0.24530^{+0.00023}_{-0.00020}$	$H(2.33)$	$233.5 \pm 1.7$
$n_{\mathrm{s}}$	$0.963 \pm 0.019$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(2.33)$	$5807^{+36}_{-43}$
$H_0$	$67.39 \pm 0.80$	$10^5 \mathrm{D}/\mathrm{H}$	$2.625^{+0.088}_{-0.098}$	$f\sigma_8(0.15)$	$0.440^{+0.014}_{-0.011}$
$\Omega_{\Lambda}$	$0.6936 \pm 0.0088$	Age/Gyr	$13.905^{+0.085}_{-0.10}$	$\sigma_8(0.15)$	$0.723^{+0.025}_{-0.021}$
$\Omega_{\mathrm{m}}$	$0.3064 \pm 0.0088$	$z_*$	$1089.67 \pm 0.64$	$f\sigma_8(0.38)$	$0.459^{+0.014}_{-0.011}$
$\Omega_{\mathrm{m}} h^2$	$0.1391 \pm 0.0022$	$r_*$	$146.16^{+0.93}_{-1.1}$	$\sigma_8(0.38)$	$0.642^{+0.023}_{-0.018}$
$\Omega_{\nu} h^2$	$0.0031^{+0.0014}_{-0.0024}$	$100\theta_*$	$1.04124 \pm 0.00062$	$f\sigma_8(0.51)$	$0.459^{+0.014}_{-0.011}$
$\Omega_{\mathrm{m}} h^3$	$0.0937^{+0.0019}_{-0.0017}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.037^{+0.090}_{-0.10}$	$\sigma_8(0.51)$	$0.601^{+0.021}_{-0.017}$
$\sigma_8$	$0.781^{+0.028}_{-0.022}$	$z_{\mathrm{drag}}$	$1059.1 \pm 1.2$	$f\sigma_8(0.61)$	$0.454^{+0.013}_{-0.011}$
$S_8$	$0.789^{+0.027}_{-0.023}$	$r_{\mathrm{drag}}$	$148.9^{+1.0}_{-1.2}$	$\sigma_8(0.61)$	$0.572^{+0.020}_{-0.016}$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.432^{+0.015}_{-0.013}$	$k_{\mathrm{D}}$	$0.1388 \pm 0.0014$	$f\sigma_8(2.33)$	$0.2921^{+0.0082}_{-0.0071}$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.581^{+0.020}_{-0.016}$	$100\theta_{\mathrm{D}}$	$0.16121 \pm 0.00071$	$\sigma_8(2.33)$	$0.2995^{+0.0097}_{-0.0082}$
$\sigma_8/h^{0.5}$	$0.951^{+0.030}_{-0.025}$	$z_{\mathrm{eq}}$	$3250^{+93}_{-78}$	$\chi^2_{\mathrm{lensing}}$	$9.4 \pm 1.8$
$r_{\mathrm{drag}} h$	$100.4 \pm 1.1$	$k_{\mathrm{eq}}$	$0.00992^{+0.00028}_{-0.00024}$	$\chi^2_{6\mathrm{DF}}$	$0.055 \pm 0.079$
$\langle d^2 \rangle^{1/2}$	$2.499 \pm 0.050$	$100\theta_{\mathrm{eq}}$	$0.842^{+0.014}_{-0.019}$	$\chi^2_{\mathrm{MGS}}$	$1.71 \pm 0.69$
$z_{\mathrm{re}}$	$7.73 \pm 0.11$	$100\theta_{\mathrm{s,eq}}$	$0.4644^{+0.0074}_{-0.0099}$	$\chi^2_{\mathrm{DR12BAO}}$	$4.4 \pm 1.4$
$10^9 A_{\mathrm{s}}$	$2.35^{+0.16}_{-0.23}$	$H(0.15)$	$72.57 \pm 0.74$	$\chi^2_{\mathrm{prior}}$	$2.9 \pm 2.3$
$10^9 A_{\mathrm{s}} e^{-2\tau}$	$2.11^{+0.14}_{-0.21}$	$D_{\mathrm{M}}(0.15)$	$643.8 \pm 7.1$	$\chi^2_{\mathrm{BAO}}$	$6.1 \pm 1.4$
$D_{40}$	$1400^{+100}_{-120}$	$H(0.38)$	$82.50^{+0.72}_{-0.65}$		
$D_{220}$	$6599^{+490}_{-720}$	$D_{\mathrm{M}}(0.38)$	$1537 \pm 15$		
$\bar{\chi}^2_{\mathrm{eff}} = 18.46; R - 1 = 0.00205$					



# 6.116 base\_mnu\_lensing\_lenspriors\_BAO\_theta\_post\_agr2bfcl

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02218 \pm 0.00049$	$D_{810}$	$2894^{+240}_{-300}$	$H(0.51)$	$88.97 \pm 0.67$
$\Omega_{\mathrm{c}}h^2$	$0.1128 \pm 0.0034$	$D_{1420}$	$924^{+77}_{-100}$	$D_{\mathrm{M}}(0.51)$	$1994 \pm 19$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00062$	$D_{2000}$	$259^{+22}_{-29}$	$H(0.61)$	$94.49 \pm 0.67$
$\Sigma m_{\nu} [\mathrm{eV}]$	$0.34 \pm 0.17$	$n_{\mathrm{s},0.002}$	$0.961 \pm 0.019$	$D_{\mathrm{M}}(0.61)$	$2321 \pm 21$
$\ln(10^{10}A_{\mathrm{s}})$	$3.165 \pm 0.084$	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00020}$	$H(2.33)$	$233.2 \pm 1.7$
$n_{\mathrm{s}}$	$0.961 \pm 0.019$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(2.33)$	$5816 \pm 40$
$H_0$	$67.29 \pm 0.81$	$10^5 D/H$	$2.624 \pm 0.093$	$f\sigma_8(0.15)$	$0.433 \pm 0.012$
$\Omega_{\Lambda}$	$0.6937 \pm 0.0088$	Age/Gyr	$13.927 \pm 0.094$	$\sigma_8(0.15)$	$0.711 \pm 0.022$
$\Omega_{\mathrm{m}}$	$0.3063 \pm 0.0088$	$z_*$	$1089.59 \pm 0.64$	$f\sigma_8(0.38)$	$0.453^{+0.012}_{-0.011}$
$\Omega_{\mathrm{m}}h^2$	$0.1386 \pm 0.0021$	$r_*$	$146.40 \pm 0.98$	$\sigma_8(0.38)$	$0.632^{+0.020}_{-0.018}$
$\Omega_{\nu}h^2$	$0.0036 \pm 0.0019$	$100\theta_*$	$1.04126 \pm 0.00063$	$f\sigma_8(0.51)$	$0.452^{+0.012}_{-0.011}$
$\Omega_{\mathrm{m}}h^3$	$0.0933 \pm 0.0018$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.060 \pm 0.094$	$\sigma_8(0.51)$	$0.592^{+0.019}_{-0.017}$
$\sigma_8$	$0.769 \pm 0.023$	$z_{\mathrm{drag}}$	$1059.0 \pm 1.2$	$f\sigma_8(0.61)$	$0.448^{+0.012}_{-0.011}$
$S_8$	$0.777 \pm 0.023$	$r_{\mathrm{drag}}$	$149.2 \pm 1.1$	$\sigma_8(0.61)$	$0.564^{+0.018}_{-0.016}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.425 \pm 0.013$	$k_{\mathrm{D}}$	$0.1386 \pm 0.0014$	$f\sigma_8(2.33)$	$0.2884 \pm 0.0073$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.572 \pm 0.017$	$100\theta_{\mathrm{D}}$	$0.16122 \pm 0.00071$	$\sigma_8(2.33)$	$0.2953^{+0.0088}_{-0.0080}$
$\sigma_8/h^{0.5}$	$0.937 \pm 0.026$	$z_{\mathrm{eq}}$	$3226 \pm 84$	$\chi^2_{\mathrm{lensing}}$	$11.9 \pm 1.8$
$r_{\mathrm{drag}}h$	$100.4 \pm 1.1$	$k_{\mathrm{eq}}$	$0.00985 \pm 0.00025$	$\chi^2_{6\mathrm{DF}}$	$0.055 \pm 0.077$
$\langle d^2 \rangle^{1/2}$	$2.501 \pm 0.051$	$100\theta_{\mathrm{eq}}$	$0.847^{+0.016}_{-0.018}$	$\chi^2_{\mathrm{MGS}}$	$1.72 \pm 0.69$
$z_{\mathrm{re}}$	$7.72 \pm 0.11$	$100\theta_{\mathrm{s,eq}}$	$0.4669^{+0.0083}_{-0.0095}$	$\chi^2_{\mathrm{DR12BAO}}$	$4.3 \pm 1.4$
$10^9 A_{\mathrm{s}}$	$2.38^{+0.18}_{-0.22}$	$H(0.15)$	$72.46 \pm 0.75$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.4$
$10^9 A_{\mathrm{s}}e^{-2\tau}$	$2.13^{+0.16}_{-0.20}$	$D_{\mathrm{M}}(0.15)$	$644.8 \pm 7.2$	$\chi^2_{\mathrm{BAO}}$	$6.1 \pm 1.4$
$D_{40}$	$1422 \pm 110$	$H(0.38)$	$82.38 \pm 0.69$		
$D_{220}$	$6715^{+580}_{-680}$	$D_{\mathrm{M}}(0.38)$	$1539 \pm 15$		
$\bar{\chi}^2_{\mathrm{eff}} = 20.96; R - 1 = 0.00384$					



# 6.117 base\_mnu\_lensing\_lenspriors\_BAO\_theta\_post\_linear

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02217 \pm 0.00049$	$D_{810}$	$2899^{+190}_{-310}$	$H(0.51)$	$89.18^{+0.70}_{-0.61}$
$\Omega_{\mathrm{c}}h^2$	$0.1143^{+0.0038}_{-0.0029}$	$D_{1420}$	$927^{+63}_{-100}$	$D_{\mathrm{M}}(0.51)$	$1990^{+17}_{-19}$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00060$	$D_{2000}$	$260^{+19}_{-29}$	$H(0.61)$	$94.71^{+0.71}_{-0.60}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$0.262^{+0.095}_{-0.23}$	$n_{\mathrm{s},0.002}$	$0.963 \pm 0.019$	$D_{\mathrm{M}}(0.61)$	$2316^{+19}_{-22}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.169^{+0.068}_{-0.094}$	$Y_{\mathrm{P}}$	$0.24530^{+0.00023}_{-0.00019}$	$H(2.33)$	$233.7 \pm 1.7$
$n_{\mathrm{s}}$	$0.963 \pm 0.019$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(2.33)$	$5803^{+34}_{-43}$
$H_0$	$67.44 \pm 0.79$	$10^5\mathrm{D}/\mathrm{H}$	$2.626^{+0.087}_{-0.099}$	$f\sigma_8(0.15)$	$0.447^{+0.014}_{-0.012}$
$\Omega_{\Lambda}$	$0.6936 \pm 0.0089$	Age/Gyr	$13.895^{+0.081}_{-0.10}$	$\sigma_8(0.15)$	$0.735^{+0.026}_{-0.020}$
$\Omega_{\mathrm{m}}$	$0.3064 \pm 0.0089$	$z_*$	$1089.71 \pm 0.64$	$f\sigma_8(0.38)$	$0.467^{+0.014}_{-0.011}$
$\Omega_{\mathrm{m}}h^2$	$0.1393 \pm 0.0021$	$r_*$	$146.04^{+0.90}_{-1.0}$	$\sigma_8(0.38)$	$0.653^{+0.023}_{-0.018}$
$\Omega_{\nu}h^2$	$0.0028^{+0.0010}_{-0.0025}$	$100\theta_*$	$1.04122 \pm 0.00061$	$f\sigma_8(0.51)$	$0.466^{+0.014}_{-0.011}$
$\Omega_{\mathrm{m}}h^3$	$0.0939^{+0.0019}_{-0.0016}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.026^{+0.086}_{-0.10}$	$\sigma_8(0.51)$	$0.611^{+0.021}_{-0.017}$
$\sigma_8$	$0.795^{+0.028}_{-0.022}$	$z_{\mathrm{drag}}$	$1059.1 \pm 1.2$	$f\sigma_8(0.61)$	$0.462^{+0.013}_{-0.011}$
$S_8$	$0.803^{+0.027}_{-0.023}$	$r_{\mathrm{drag}}$	$148.8^{+1.0}_{-1.2}$	$\sigma_8(0.61)$	$0.582^{+0.020}_{-0.016}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.440^{+0.015}_{-0.013}$	$k_{\mathrm{D}}$	$0.1390 \pm 0.0014$	$f\sigma_8(2.33)$	$0.2968^{+0.0084}_{-0.0071}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.591^{+0.020}_{-0.016}$	$100\theta_{\mathrm{D}}$	$0.16121 \pm 0.00071$	$\sigma_8(2.33)$	$0.3045^{+0.0098}_{-0.0081}$
$\sigma_8/h^{0.5}$	$0.967^{+0.031}_{-0.025}$	$z_{\mathrm{eq}}$	$3261^{+92}_{-73}$	$\chi^2_{\mathrm{lensing}}$	$9.7 \pm 1.8$
$r_{\mathrm{drag}}h$	$100.3 \pm 1.1$	$k_{\mathrm{eq}}$	$0.00996^{+0.00028}_{-0.00022}$	$\chi^2_{6\mathrm{DF}}$	$0.056 \pm 0.080$
$\langle d^2 \rangle^{1/2}$	$2.520^{+0.048}_{-0.055}$	$100\theta_{\mathrm{eq}}$	$0.840^{+0.013}_{-0.018}$	$\chi^2_{\mathrm{MGS}}$	$1.71 \pm 0.69$
$z_{\mathrm{re}}$	$7.73 \pm 0.11$	$100\theta_{\mathrm{s,eq}}$	$0.4632^{+0.0069}_{-0.0097}$	$\chi^2_{\mathrm{DR12BAO}}$	$4.4 \pm 1.5$
$10^9A_{\mathrm{s}}$	$2.39^{+0.14}_{-0.23}$	$H(0.15)$	$72.62 \pm 0.73$	$\chi^2_{\mathrm{prior}}$	$2.9 \pm 2.4$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.14^{+0.13}_{-0.21}$	$D_{\mathrm{M}}(0.15)$	$643.3 \pm 7.0$	$\chi^2_{\mathrm{BAO}}$	$6.1 \pm 1.4$
$D_{40}$	$1417^{+94}_{-130}$	$H(0.38)$	$82.56^{+0.71}_{-0.63}$		
$D_{220}$	$6673^{+450}_{-730}$	$D_{\mathrm{M}}(0.38)$	$1535^{+14}_{-16}$		
$\bar{\chi}^2_{\mathrm{eff}} = 18.71; R - 1 = 0.00239$					



# 6.118 base\_mnu\_lensing\_lenspriors\_BAO\_theta\_post\_acc

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02218 \pm 0.00049$	$D_{810}$	$2928^{+210}_{-320}$	$H(0.51)$	$89.07^{+0.72}_{-0.65}$
$\Omega_{\mathrm{c}}h^2$	$0.1135^{+0.0038}_{-0.0032}$	$D_{1420}$	$935^{+71}_{-110}$	$D_{\mathrm{M}}(0.51)$	$1992 \pm 19$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00061$	$D_{2000}$	$263^{+21}_{-30}$	$H(0.61)$	$94.60^{+0.72}_{-0.64}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$0.30^{+0.15}_{-0.22}$	$n_{\mathrm{s},0.002}$	$0.962 \pm 0.019$	$D_{\mathrm{M}}(0.61)$	$2319 \pm 21$
$\ln(10^{10}A_{\mathrm{s}})$	$3.177^{+0.078}_{-0.095}$	$Y_{\mathrm{P}}$	$0.24530^{+0.00023}_{-0.00019}$	$H(2.33)$	$233.4 \pm 1.7$
$n_{\mathrm{s}}$	$0.962 \pm 0.019$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(2.33)$	$5810^{+37}_{-44}$
$H_0$	$67.36 \pm 0.80$	$10^5\mathrm{D}/\mathrm{H}$	$2.625^{+0.087}_{-0.099}$	$f\sigma_8(0.15)$	$0.442^{+0.014}_{-0.012}$
$\Omega_{\Lambda}$	$0.6937 \pm 0.0088$	Age/Gyr	$13.911^{+0.088}_{-0.10}$	$\sigma_8(0.15)$	$0.727^{+0.026}_{-0.022}$
$\Omega_{\mathrm{m}}$	$0.3063 \pm 0.0088$	$z_*$	$1089.65 \pm 0.65$	$f\sigma_8(0.38)$	$0.462^{+0.014}_{-0.012}$
$\Omega_{\mathrm{m}}h^2$	$0.1389 \pm 0.0022$	$r_*$	$146.23 \pm 0.99$	$\sigma_8(0.38)$	$0.645^{+0.023}_{-0.019}$
$\Omega_{\nu}h^2$	$0.0032^{+0.0016}_{-0.0023}$	$100\theta_*$	$1.04124 \pm 0.00062$	$f\sigma_8(0.51)$	$0.461^{+0.014}_{-0.012}$
$\Omega_{\mathrm{m}}h^3$	$0.0936^{+0.0020}_{-0.0018}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.043 \pm 0.095$	$\sigma_8(0.51)$	$0.604^{+0.021}_{-0.018}$
$\sigma_8$	$0.785^{+0.028}_{-0.023}$	$z_{\mathrm{drag}}$	$1059.0 \pm 1.2$	$f\sigma_8(0.61)$	$0.457^{+0.014}_{-0.011}$
$S_8$	$0.793^{+0.027}_{-0.024}$	$r_{\mathrm{drag}}$	$149.0 \pm 1.1$	$\sigma_8(0.61)$	$0.575^{+0.020}_{-0.017}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.435^{+0.015}_{-0.013}$	$k_{\mathrm{D}}$	$0.1388 \pm 0.0014$	$f\sigma_8(2.33)$	$0.2940^{+0.0084}_{-0.0074}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.584^{+0.020}_{-0.017}$	$100\theta_{\mathrm{D}}$	$0.16121 \pm 0.00071$	$\sigma_8(2.33)$	$0.3013^{+0.0099}_{-0.0085}$
$\sigma_8/h^{0.5}$	$0.957^{+0.031}_{-0.026}$	$z_{\mathrm{eq}}$	$3243^{+93}_{-80}$	$\chi^2_{\mathrm{lensing}}$	$9.2 \pm 1.8$
$r_{\mathrm{drag}}h$	$100.4 \pm 1.1$	$k_{\mathrm{eq}}$	$0.00990^{+0.00028}_{-0.00024}$	$\chi^2_{6\mathrm{DF}}$	$0.056 \pm 0.079$
$\langle d^2 \rangle^{1/2}$	$2.526^{+0.050}_{-0.056}$	$100\theta_{\mathrm{eq}}$	$0.843^{+0.014}_{-0.019}$	$\chi^2_{\mathrm{MGS}}$	$1.72 \pm 0.69$
$z_{\mathrm{re}}$	$7.73 \pm 0.11$	$100\theta_{\mathrm{s,eq}}$	$0.4652^{+0.0076}_{-0.010}$	$\chi^2_{\mathrm{DR12BAO}}$	$4.3 \pm 1.4$
$10^9A_{\mathrm{s}}$	$2.41^{+0.17}_{-0.24}$	$H(0.15)$	$72.54 \pm 0.75$	$\chi^2_{\mathrm{prior}}$	$2.9 \pm 2.4$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.16^{+0.15}_{-0.22}$	$D_{\mathrm{M}}(0.15)$	$644.0 \pm 7.2$	$\chi^2_{\mathrm{BAO}}$	$6.1 \pm 1.4$
$D_{40}$	$1435^{+110}_{-130}$	$H(0.38)$	$82.47 \pm 0.69$		
$D_{220}$	$6766^{+520}_{-760}$	$D_{\mathrm{M}}(0.38)$	$1537 \pm 15$		
$\bar{\chi}^2_{\mathrm{eff}} = 18.25; R - 1 = 0.00162$					



# 6.119 base\_mnu\_lensing\_lenspriors\_BAO\_theta\_post\_agr2acc

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00049$	$D_{810}$	$2975^{+260}_{-310}$	$H(0.51)$	$88.90 \pm 0.68$
$\Omega_{\mathrm{c}}h^2$	$0.1123 \pm 0.0035$	$D_{1420}$	$948^{+84}_{-100}$	$D_{\mathrm{M}}(0.51)$	$1996 \pm 19$
$100\theta_{\mathrm{MC}}$	$1.04090 \pm 0.00061$	$D_{2000}$	$266^{+24}_{-30}$	$H(0.61)$	$94.42 \pm 0.68$
$\Sigma m_{\nu} [\mathrm{eV}]$	$0.36 \pm 0.18$	$n_{\mathrm{s},0.002}$	$0.960 \pm 0.020$	$D_{\mathrm{M}}(0.61)$	$2323 \pm 22$
$\ln(10^{10}A_{\mathrm{s}})$	$3.192 \pm 0.087$	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00020}$	$H(2.33)$	$233.0 \pm 1.7$
$n_{\mathrm{s}}$	$0.960 \pm 0.020$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(2.33)$	$5821 \pm 40$
$H_0$	$67.24 \pm 0.81$	$10^5\mathrm{D}/\mathrm{H}$	$2.623^{+0.088}_{-0.099}$	$f\sigma_8(0.15)$	$0.435 \pm 0.012$
$\Omega_{\Lambda}$	$0.6937 \pm 0.0088$	Age/Gyr	$13.938 \pm 0.096$	$\sigma_8(0.15)$	$0.713 \pm 0.022$
$\Omega_{\mathrm{m}}$	$0.3063 \pm 0.0088$	$z_*$	$1089.54 \pm 0.64$	$f\sigma_8(0.38)$	$0.454 \pm 0.012$
$\Omega_{\mathrm{m}}h^2$	$0.1384 \pm 0.0021$	$r_*$	$146.52 \pm 0.99$	$\sigma_8(0.38)$	$0.634 \pm 0.020$
$\Omega_{\nu}h^2$	$0.0039 \pm 0.0019$	$100\theta_*$	$1.04126 \pm 0.00062$	$f\sigma_8(0.51)$	$0.454 \pm 0.012$
$\Omega_{\mathrm{m}}h^3$	$0.0931 \pm 0.0018$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.072 \pm 0.095$	$\sigma_8(0.51)$	$0.594 \pm 0.018$
$\sigma_8$	$0.771 \pm 0.024$	$z_{\mathrm{drag}}$	$1059.0 \pm 1.2$	$f\sigma_8(0.61)$	$0.449 \pm 0.012$
$S_8$	$0.779 \pm 0.023$	$r_{\mathrm{drag}}$	$149.3 \pm 1.1$	$\sigma_8(0.61)$	$0.565 \pm 0.017$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.426 \pm 0.013$	$k_{\mathrm{D}}$	$0.1385 \pm 0.0014$	$f\sigma_8(2.33)$	$0.2896 \pm 0.0074$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.573 \pm 0.017$	$100\theta_{\mathrm{D}}$	$0.16123 \pm 0.00071$	$\sigma_8(2.33)$	$0.2963 \pm 0.0087$
$\sigma_8/h^{0.5}$	$0.940 \pm 0.026$	$z_{\mathrm{eq}}$	$3214 \pm 85$	$\chi^2_{\mathrm{lensing}}$	$11.8 \pm 1.9$
$r_{\mathrm{drag}}h$	$100.4 \pm 1.1$	$k_{\mathrm{eq}}$	$0.00981 \pm 0.00026$	$\chi^2_{6\mathrm{DF}}$	$0.055 \pm 0.077$
$\langle d^2 \rangle^{1/2}$	$2.530 \pm 0.054$	$100\theta_{\mathrm{eq}}$	$0.849 \pm 0.017$	$\chi^2_{\mathrm{MGS}}$	$1.73 \pm 0.69$
$z_{\mathrm{re}}$	$7.71 \pm 0.11$	$100\theta_{\mathrm{s,eq}}$	$0.4682 \pm 0.0089$	$\chi^2_{\mathrm{DR12BAO}}$	$4.3 \pm 1.4$
$10^9A_{\mathrm{s}}$	$2.44^{+0.20}_{-0.23}$	$H(0.15)$	$72.40 \pm 0.76$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.4$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.19^{+0.18}_{-0.21}$	$D_{\mathrm{M}}(0.15)$	$645.2 \pm 7.3$	$\chi^2_{\mathrm{BAO}}$	$6.1 \pm 1.4$
$D_{40}$	$1465 \pm 110$	$H(0.38)$	$82.31 \pm 0.70$		
$D_{220}$	$6921^{+620}_{-720}$	$D_{\mathrm{M}}(0.38)$	$1540 \pm 16$		
$\bar{\chi}^2_{\mathrm{eff}} = 20.92; R - 1 = 0.00208$					



# 6.120 base\_mnu\_lensing\_lenspriors\_BAO\_theta\_post\_takahashi

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02218 \pm 0.00049$	$D_{810}$	$2935^{+220}_{-320}$	$H(0.51)$	$89.04 \pm 0.68$
$\Omega_{\mathrm{c}} h^2$	$0.1133^{+0.0039}_{-0.0033}$	$D_{1420}$	$937^{+73}_{-110}$	$D_{\mathrm{M}}(0.51)$	$1993 \pm 19$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00061$	$D_{2000}$	$264^{+21}_{-30}$	$H(0.61)$	$94.56^{+0.73}_{-0.66}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$0.31^{+0.16}_{-0.22}$	$n_{\mathrm{s},0.002}$	$0.962 \pm 0.019$	$D_{\mathrm{M}}(0.61)$	$2320 \pm 21$
$\ln(10^{10} A_{\mathrm{s}})$	$3.180^{+0.080}_{-0.095}$	$Y_{\mathrm{P}}$	$0.24530^{+0.00023}_{-0.00020}$	$H(2.33)$	$233.3 \pm 1.7$
$n_{\mathrm{s}}$	$0.962 \pm 0.019$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(2.33)$	$5812^{+38}_{-44}$
$H_0$	$67.34 \pm 0.81$	$10^5 \mathrm{D}/\mathrm{H}$	$2.624^{+0.088}_{-0.098}$	$f\sigma_8(0.15)$	$0.441^{+0.014}_{-0.013}$
$\Omega_{\Lambda}$	$0.6936 \pm 0.0088$	Age/Gyr	$13.917^{+0.091}_{-0.10}$	$\sigma_8(0.15)$	$0.724^{+0.027}_{-0.023}$
$\Omega_{\mathrm{m}}$	$0.3064 \pm 0.0088$	$z_*$	$1089.63 \pm 0.65$	$f\sigma_8(0.38)$	$0.460^{+0.015}_{-0.012}$
$\Omega_{\mathrm{m}} h^2$	$0.1388 \pm 0.0022$	$r_*$	$146.3 \pm 1.0$	$\sigma_8(0.38)$	$0.643^{+0.024}_{-0.020}$
$\Omega_{\nu} h^2$	$0.0034^{+0.0017}_{-0.0023}$	$100\theta_*$	$1.04124 \pm 0.00062$	$f\sigma_8(0.51)$	$0.460^{+0.014}_{-0.012}$
$\Omega_{\mathrm{m}} h^3$	$0.0935 \pm 0.0018$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.049 \pm 0.097$	$\sigma_8(0.51)$	$0.602^{+0.022}_{-0.019}$
$\sigma_8$	$0.782^{+0.029}_{-0.025}$	$z_{\mathrm{drag}}$	$1059.0 \pm 1.2$	$f\sigma_8(0.61)$	$0.456^{+0.014}_{-0.012}$
$S_8$	$0.790^{+0.028}_{-0.025}$	$r_{\mathrm{drag}}$	$149.1 \pm 1.1$	$\sigma_8(0.61)$	$0.573^{+0.021}_{-0.018}$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.433^{+0.016}_{-0.014}$	$k_{\mathrm{D}}$	$0.1387 \pm 0.0014$	$f\sigma_8(2.33)$	$0.2931^{+0.0088}_{-0.0077}$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.582^{+0.021}_{-0.018}$	$100\theta_{\mathrm{D}}$	$0.16122 \pm 0.00071$	$\sigma_8(2.33)$	$0.300^{+0.010}_{-0.0089}$
$\sigma_8/h^{0.5}$	$0.953^{+0.032}_{-0.027}$	$z_{\mathrm{eq}}$	$3237^{+94}_{-82}$	$\chi^2_{\mathrm{lensing}}$	$9.2 \pm 1.8$
$r_{\mathrm{drag}} h$	$100.4 \pm 1.1$	$k_{\mathrm{eq}}$	$0.00988^{+0.00028}_{-0.00025}$	$\chi^2_{6\mathrm{DF}}$	$0.056 \pm 0.079$
$\langle d^2 \rangle^{1/2}$	$2.526 \pm 0.053$	$100\theta_{\mathrm{eq}}$	$0.844^{+0.015}_{-0.020}$	$\chi^2_{\mathrm{MGS}}$	$1.72 \pm 0.69$
$z_{\mathrm{re}}$	$7.72 \pm 0.11$	$100\theta_{\mathrm{s,eq}}$	$0.4658^{+0.0079}_{-0.010}$	$\chi^2_{\mathrm{DR12BAO}}$	$4.3 \pm 1.4$
$10^9 A_{\mathrm{s}}$	$2.41^{+0.17}_{-0.24}$	$H(0.15)$	$72.51 \pm 0.76$	$\chi^2_{\mathrm{prior}}$	$3.0 \pm 2.4$
$10^9 A_{\mathrm{s}} e^{-2\tau}$	$2.16^{+0.15}_{-0.22}$	$D_{\mathrm{M}}(0.15)$	$644.3 \pm 7.2$	$\chi^2_{\mathrm{BAO}}$	$6.1 \pm 1.4$
$D_{40}$	$1439^{+110}_{-130}$	$H(0.38)$	$82.44 \pm 0.69$		
$D_{220}$	$6792^{+530}_{-760}$	$D_{\mathrm{M}}(0.38)$	$1538 \pm 16$		
$\bar{\chi}^2_{\mathrm{eff}} = 18.22; R - 1 = 0.00182$					



# 6.121 base\_mnu\_lensing\_lenspriors\_BAO\_theta\_post\_agr2takahashi

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00049$	$D_{810}$	$2984^{+260}_{-310}$	$H(0.51)$	$88.86 \pm 0.69$
$\Omega_{\mathrm{c}}h^2$	$0.1120 \pm 0.0035$	$D_{1420}$	$951^{+86}_{-100}$	$D_{\mathrm{M}}(0.51)$	$1997 \pm 19$
$100\theta_{\mathrm{MC}}$	$1.04090 \pm 0.00062$	$D_{2000}$	$267^{+25}_{-30}$	$H(0.61)$	$94.37 \pm 0.69$
$\Sigma m_{\nu} [\mathrm{eV}]$	$0.38 \pm 0.18$	$n_{\mathrm{s},0.002}$	$0.960 \pm 0.020$	$D_{\mathrm{M}}(0.61)$	$2324 \pm 22$
$\ln(10^{10}A_{\mathrm{s}})$	$3.195 \pm 0.087$	$Y_{\mathrm{P}}$	$0.24531^{+0.00023}_{-0.00020}$	$H(2.33)$	$232.9 \pm 1.7$
$n_{\mathrm{s}}$	$0.960 \pm 0.020$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00023}_{-0.00020}$	$D_{\mathrm{M}}(2.33)$	$5824 \pm 41$
$H_0$	$67.20 \pm 0.82$	$10^5\mathrm{D}/\mathrm{H}$	$2.623^{+0.088}_{-0.098}$	$f\sigma_8(0.15)$	$0.433 \pm 0.012$
$\Omega_{\Lambda}$	$0.6937 \pm 0.0088$	Age/Gyr	$13.945 \pm 0.097$	$\sigma_8(0.15)$	$0.710 \pm 0.023$
$\Omega_{\mathrm{m}}$	$0.3063 \pm 0.0088$	$z_*$	$1089.52 \pm 0.64$	$f\sigma_8(0.38)$	$0.452 \pm 0.012$
$\Omega_{\mathrm{m}}h^2$	$0.1383 \pm 0.0022$	$r_*$	$146.6 \pm 1.0$	$\sigma_8(0.38)$	$0.631 \pm 0.020$
$\Omega_{\nu}h^2$	$0.0041 \pm 0.0019$	$100\theta_*$	$1.04127 \pm 0.00063$	$f\sigma_8(0.51)$	$0.452 \pm 0.012$
$\Omega_{\mathrm{m}}h^3$	$0.0929 \pm 0.0018$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.079 \pm 0.096$	$\sigma_8(0.51)$	$0.591 \pm 0.019$
$\sigma_8$	$0.767 \pm 0.025$	$z_{\mathrm{drag}}$	$1059.0 \pm 1.2$	$f\sigma_8(0.61)$	$0.448 \pm 0.012$
$S_8$	$0.775 \pm 0.024$	$r_{\mathrm{drag}}$	$149.4 \pm 1.1$	$\sigma_8(0.61)$	$0.563 \pm 0.018$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.424 \pm 0.013$	$k_{\mathrm{D}}$	$0.1384 \pm 0.0014$	$f\sigma_8(2.33)$	$0.2884 \pm 0.0078$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.571 \pm 0.018$	$100\theta_{\mathrm{D}}$	$0.16123 \pm 0.00071$	$\sigma_8(2.33)$	$0.2950 \pm 0.0090$
$\sigma_8/h^{0.5}$	$0.936 \pm 0.027$	$z_{\mathrm{eq}}$	$3207 \pm 86$	$\chi_{\mathrm{lensing}}^2$	$11.8 \pm 1.9$
$r_{\mathrm{drag}}h$	$100.4 \pm 1.1$	$k_{\mathrm{eq}}$	$0.00979 \pm 0.00026$	$\chi_{6\mathrm{DF}}^2$	$0.055 \pm 0.077$
$\langle d^2 \rangle^{1/2}$	$2.530 \pm 0.055$	$100\theta_{\mathrm{eq}}$	$0.851 \pm 0.017$	$\chi_{\mathrm{MGS}}^2$	$1.73 \pm 0.69$
$z_{\mathrm{re}}$	$7.71 \pm 0.11$	$100\theta_{\mathrm{s,eq}}$	$0.4690 \pm 0.0090$	$\chi_{\mathrm{DR12BAO}}^2$	$4.3 \pm 1.4$
$10^9A_{\mathrm{s}}$	$2.45^{+0.20}_{-0.23}$	$H(0.15)$	$72.37 \pm 0.76$	$\chi_{\mathrm{prior}}^2$	$3.0 \pm 2.4$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$2.19^{+0.18}_{-0.21}$	$D_{\mathrm{M}}(0.15)$	$645.6 \pm 7.3$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.4$
$D_{40}$	$1469 \pm 110$	$H(0.38)$	$82.27 \pm 0.70$		
$D_{220}$	$6952 \pm 660$	$D_{\mathrm{M}}(0.38)$	$1541 \pm 16$		
$\bar{\chi}_{\mathrm{eff}}^2 = 20.91; R - 1 = 0.00288$					



## 6.122 base\_mnu\_lensing\_lenspriors\_BAO\_theta\_post\_Apr6

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02217 \pm 0.00049$	$D_{810}$	$2893^{+200}_{-310}$	$H(0.51)$	$89.12^{+0.70}_{-0.63}$
$\Omega_c h^2$	$0.1139^{+0.0038}_{-0.0031}$	$D_{1420}$	$925^{+66}_{-100}$	$D_M(0.51)$	$1991 \pm 19$
$100\theta_{MC}$	$1.04091 \pm 0.00061$	$D_{2000}$	$260^{+19}_{-29}$	$H(0.61)$	$94.65^{+0.72}_{-0.62}$
$\Sigma m_\nu$ [eV]	$0.28^{+0.13}_{-0.22}$	$n_{s,0.002}$	$0.963 \pm 0.019$	$D_M(0.61)$	$2318^{+20}_{-22}$
$\ln(10^{10} A_s)$	$3.166^{+0.073}_{-0.094}$	$Y_P$	$0.24530^{+0.00023}_{-0.00019}$	$H(2.33)$	$233.6 \pm 1.7$
$n_s$	$0.963 \pm 0.019$	$Y_P^{BBN}$	$0.24663^{+0.00023}_{-0.00020}$	$D_M(2.33)$	$5807^{+36}_{-43}$
$H_0$	$67.40 \pm 0.80$	$10^5 D/H$	$2.625^{+0.087}_{-0.098}$	$f\sigma_8(0.15)$	$0.443^{+0.013}_{-0.012}$
$\Omega_\Lambda$	$0.6936 \pm 0.0088$	Age/Gyr	$13.903^{+0.084}_{-0.10}$	$\sigma_8(0.15)$	$0.728^{+0.025}_{-0.021}$
$\Omega_m$	$0.3064 \pm 0.0088$	$z_*$	$1089.68 \pm 0.64$	$f\sigma_8(0.38)$	$0.463^{+0.014}_{-0.011}$
$\Omega_m h^2$	$0.1391 \pm 0.0021$	$r_*$	$146.13^{+0.92}_{-1.0}$	$\sigma_8(0.38)$	$0.647^{+0.022}_{-0.018}$
$\Omega_\nu h^2$	$0.0030^{+0.0014}_{-0.0024}$	$100\theta_*$	$1.04123 \pm 0.00062$	$f\sigma_8(0.51)$	$0.462^{+0.013}_{-0.011}$
$\Omega_m h^3$	$0.0938^{+0.0019}_{-0.0017}$	$D_M(z_*)/\text{Gpc}$	$14.034^{+0.089}_{-0.10}$	$\sigma_8(0.51)$	$0.606^{+0.021}_{-0.017}$
$\sigma_8$	$0.787^{+0.027}_{-0.022}$	$z_{\text{drag}}$	$1059.1 \pm 1.2$	$f\sigma_8(0.61)$	$0.458^{+0.013}_{-0.011}$
$S_8$	$0.795^{+0.027}_{-0.023}$	$r_{\text{drag}}$	$148.9^{+1.0}_{-1.2}$	$\sigma_8(0.61)$	$0.577^{+0.020}_{-0.016}$
$\sigma_8 \Omega_m^{0.5}$	$0.436^{+0.015}_{-0.013}$	$k_D$	$0.1389 \pm 0.0014$	$f\sigma_8(2.33)$	$0.2944^{+0.0082}_{-0.0072}$
$\sigma_8 \Omega_m^{0.25}$	$0.586^{+0.020}_{-0.016}$	$100\theta_D$	$0.16121 \pm 0.00071$	$\sigma_8(2.33)$	$0.3019^{+0.0097}_{-0.0082}$
$\sigma_8/h^{0.5}$	$0.959^{+0.030}_{-0.025}$	$z_{\text{eq}}$	$3252^{+92}_{-77}$	$\chi^2_{\text{lensing}}$	$8.0 \pm 1.8$
$r_{\text{drag}} h$	$100.3 \pm 1.1$	$k_{\text{eq}}$	$0.00993^{+0.00028}_{-0.00023}$	$\chi^2_{6\text{DF}}$	$0.056 \pm 0.079$
$\langle d^2 \rangle^{1/2}$	$2.515^{+0.049}_{-0.055}$	$100\theta_{\text{eq}}$	$0.841^{+0.014}_{-0.019}$	$\chi^2_{\text{MGS}}$	$1.71 \pm 0.69$
$z_{\text{re}}$	$7.73 \pm 0.11$	$100\theta_{s,\text{eq}}$	$0.4642^{+0.0073}_{-0.0098}$	$\chi^2_{\text{DR12BAO}}$	$4.4 \pm 1.4$
$10^9 A_s$	$2.38^{+0.15}_{-0.24}$	$H(0.15)$	$72.58 \pm 0.74$	$\chi^2_{\text{prior}}$	$2.9 \pm 2.4$
$10^9 A_s e^{-2\tau}$	$2.13^{+0.14}_{-0.21}$	$D_M(0.15)$	$643.7 \pm 7.1$	$\chi^2_{\text{BAO}}$	$6.1 \pm 1.4$
$D_{40}$	$1416^{+100}_{-120}$	$H(0.38)$	$82.51 \pm 0.67$		
$D_{220}$	$6672^{+480}_{-730}$	$D_M(0.38)$	$1536 \pm 15$		
$\bar{\chi}^2_{\text{eff}} = 17.02; R - 1 = 0.00149$					



### 6.123 base\_mnu\_lensing\_lenspriors\_pttagr2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02220	$0.02220 \pm 0.00051$	$D_{40}$	2016	$1359^{+300}_{-400}$	$H(0.15)$	92.8	$76^{+10}_{-20}$
$\Omega_c h^2$	0.1046	$0.143^{+0.031}_{-0.040}$	$D_{220}$	9220	$6093^{+1000}_{-2000}$	$D_M(0.15)$	495	$658^{+80}_{-200}$
$100\theta_{MC}$	1.096	$1.094^{+0.078}_{-0.065}$	$D_{810}$	3677	$2457^{+700}_{-900}$	$H(0.38)$	100.3	$89^{+10}_{-20}$
$\Sigma m_\nu$ [eV]	0.45	$< 2.60$	$D_{1420}$	1066	$733^{+200}_{-300}$	$D_M(0.38)$	1211	$1529^{+200}_{-500}$
$\ln(10^{10} A_s)$	3.458	$3.15^{+0.22}_{-0.20}$	$D_{2000}$	305	$221^{+50}_{-100}$	$H(0.51)$	105.5	$97 \pm 10$
$n_s$	0.9609	$0.959 \pm 0.019$	$n_{s,0.002}$	0.9609	$0.959 \pm 0.019$	$D_M(0.51)$	1590	$1959^{+200}_{-500}$
$H_0$	89.0	—	$Y_P$	0.245327	$0.24531^{+0.00023}_{-0.00020}$	$H(0.61)$	110.0	$104 \pm 10$
$\Omega_\Lambda$	0.834	$0.521^{+0.33}_{-0.092}$	$Y_P^{BBN}$	0.246653	$0.24664^{+0.00023}_{-0.00020}$	$D_M(0.61)$	1869	$2264^{+300}_{-600}$
$\Omega_m$	0.166	$0.479^{+0.092}_{-0.33}$	$10^5 D/H$	2.617	$2.620^{+0.089}_{-0.10}$	$H(2.33)$	235.0	$267 \pm 30$
$\Omega_m h^2$	0.1316	$0.187^{+0.039}_{-0.060}$	Age/Gyr	12.40	$13.0^{+1.3}_{-2.2}$	$D_M(2.33)$	5134	$5411^{+540}_{-920}$
$\Omega_\nu h^2$	0.0048	$< 0.0279$	$z_*$	1088.83	$1092.9^{+3.3}_{-4.3}$	$f\sigma_8(0.15)$	0.3623	$0.427^{+0.050}_{-0.027}$
$\Omega_m h^3$	0.1171	$0.129^{+0.033}_{-0.060}$	$r_*$	148.6	$138.2 \pm 8.7$	$\sigma_8(0.15)$	0.807	$0.63 \pm 0.11$
$\sigma_8$	0.853	$0.684 \pm 0.099$	$100\theta_*$	1.097	$1.095^{+0.078}_{-0.065}$	$f\sigma_8(0.38)$	0.4134	$0.421^{+0.023}_{-0.015}$
$S_8$	0.635	$0.796^{+0.098}_{-0.14}$	$D_M(z_*)/\text{Gpc}$	13.55	$12.7^{+1.2}_{-1.8}$	$\sigma_8(0.38)$	0.738	$0.55 \pm 0.11$
$\sigma_8 \Omega_m^{0.5}$	0.348	$0.436^{+0.054}_{-0.077}$	$z_{\text{drag}}$	1058.48	$1061.8 \pm 3.1$	$f\sigma_8(0.51)$	0.4317	$0.412^{+0.035}_{-0.015}$
$\sigma_8 \Omega_m^{0.25}$	0.5445	$0.541 \pm 0.018$	$r_{\text{drag}}$	151.4	$140.7^{+9.1}_{-10}$	$\sigma_8(0.51)$	0.701	$0.51 \pm 0.11$
$\sigma_8/h^{0.5}$	0.904	$0.831^{+0.051}_{-0.082}$	$k_D$	0.1363	$0.149^{+0.011}_{-0.012}$	$f\sigma_8(0.61)$	0.4412	$0.404^{+0.046}_{-0.020}$
$r_{\text{drag}} h$	134.7	$97^{+20}_{-30}$	$100\theta_D$	0.1701	$0.168^{+0.011}_{-0.0095}$	$\sigma_8(0.61)$	0.674	$0.49^{+0.10}_{-0.12}$
$\langle d^2 \rangle^{1/2}$	2.627	$2.598 \pm 0.074$	$z_{\text{eq}}$	3030	$3950^{+700}_{-1000}$	$f\sigma_8(2.33)$	0.355	$0.252^{+0.057}_{-0.068}$
$z_{\text{re}}$	7.71	$8.48 \pm 0.76$	$k_{\text{eq}}$	0.00925	$0.0121^{+0.0023}_{-0.0031}$	$\sigma_8(2.33)$	0.376	$0.256^{+0.057}_{-0.079}$
$10^9 A_s$	3.174	$2.38^{+0.41}_{-0.55}$	$100\theta_{\text{eq}}$	0.935	$0.789^{+0.072}_{-0.11}$	$\chi^2_{\text{lensing}}$	15.50	$18.6 \pm 2.2$
$10^9 A_s e^{-2\tau}$	2.843	$2.13^{+0.37}_{-0.50}$	$100\theta_{s,\text{eq}}$	0.5141	$0.438^{+0.038}_{-0.054}$	$\chi^2_{\text{prior}}$	0.00	$2.0 \pm 2.0$

Best-fit  $\chi^2_{\text{eff}} = 15.50$ ;  $\bar{\chi}^2_{\text{eff}} = 20.55$ ;  $R - 1 = 0.00794$

$\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpttptt\_p\_teb\_agr2\_CMBmarged: 15.50



# 6.124 base\_mnu\_lensing\_lenspriors\_pttagr2\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022203	$0.02221 \pm 0.00049$	$D_{40}$	1858	$1373^{+200}_{-500}$	$H(0.15)$	76.7	$64.1^{+4.8}_{-12}$
$\Omega_c h^2$	0.0991	$0.128 \pm 0.022$	$D_{220}$	8962	$6521^{+1000}_{-3000}$	$D_M(0.15)$	604	$768 \pm 100$
$100\theta_{MC}$	1.04090	$1.04090 \pm 0.00060$	$D_{810}$	3670	$2894^{+400}_{-800}$	$H(0.38)$	85.29	$77.4^{+1.9}_{-5.9}$
$\Sigma m_\nu$ [eV]	0.36	$< 1.96$	$D_{1420}$	1155	$935^{+100}_{-200}$	$D_M(0.38)$	1458	$1758^{+300}_{-100}$
$\ln(10^{10} A_s)$	3.393	$3.15^{+0.19}_{-0.23}$	$D_{2000}$	322	$264^{+40}_{-60}$	$H(0.51)$	91.08	$85.79^{+0.63}_{-3.6}$
$n_s$	0.9596	$0.959 \pm 0.020$	$n_{s,0.002}$	0.9596	$0.959 \pm 0.020$	$D_M(0.51)$	1900	$2238^{+300}_{-200}$
$H_0$	72.4	$< 62.1$	$Y_P$	0.245327	$0.24532^{+0.00023}_{-0.00020}$	$H(0.61)$	95.97	$92.61^{+0.31}_{-2.5}$
$\Omega_\Lambda$	0.761	$0.38^{+0.45}_{-0.18}$	$Y_P^{BBN}$	0.246653	$0.24664^{+0.00023}_{-0.00020}$	$D_M(0.61)$	2221	$2574^{+400}_{-200}$
$\Omega_m$	0.239	$0.62^{+0.18}_{-0.45}$	$10^5 D/H$	2.617	$2.619 \pm 0.094$	$H(2.33)$	224.1	$250 \pm 20$
$\Omega_m h^2$	0.1252	$0.166 \pm 0.031$	Age/Gyr	13.862	$14.30^{+0.39}_{-0.15}$	$D_M(2.33)$	5776	$5957^{+150}_{-41}$
$\Omega_\nu h^2$	0.0039	$< 0.0211$	$z_*$	1088.28	$1091.4 \pm 2.4$	$f\sigma_8(0.15)$	0.3977	$0.443^{+0.042}_{-0.016}$
$\Omega_m h^3$	0.09058	$0.0902 \pm 0.0017$	$r_*$	150.3	$141.9^{+5.4}_{-8.5}$	$\sigma_8(0.15)$	0.736	$0.582^{+0.071}_{-0.16}$
$\sigma_8$	0.788	$0.644^{+0.068}_{-0.15}$	$100\theta_*$	1.04129	$1.04143 \pm 0.00062$	$f\sigma_8(0.38)$	0.4318	$0.417^{+0.030}_{-0.018}$
$S_8$	0.703	$0.85^{+0.14}_{-0.11}$	$D_M(z_*)/\text{Gpc}$	14.43	$13.63^{+0.52}_{-0.82}$	$\sigma_8(0.38)$	0.662	$0.506^{+0.069}_{-0.16}$
$\sigma_8 \Omega_m^{0.5}$	0.385	$0.467^{+0.078}_{-0.062}$	$z_{\text{drag}}$	1058.03	$1060.6 \pm 2.3$	$f\sigma_8(0.51)$	0.4395	$0.401^{+0.048}_{-0.027}$
$\sigma_8 \Omega_m^{0.25}$	0.5508	$0.542 \pm 0.017$	$r_{\text{drag}}$	153.1	$144.6^{+5.6}_{-8.6}$	$\sigma_8(0.51)$	0.624	$0.470^{+0.066}_{-0.15}$
$\sigma_8/h^{0.5}$	0.926	$0.855^{+0.049}_{-0.069}$	$k_D$	0.1346	$0.1442 \pm 0.0074$	$f\sigma_8(0.61)$	0.441	$0.388 \pm 0.044$
$r_{\text{drag}} h$	110.8	$82^{+10}_{-30}$	$100\theta_D$	0.16171	$0.1602^{+0.0013}_{-0.0015}$	$\sigma_8(0.61)$	0.596	$0.445^{+0.063}_{-0.15}$
$\langle d^2 \rangle^{1/2}$	2.632	$2.623 \pm 0.063$	$z_{\text{eq}}$	2898	$3581 \pm 500$	$f\sigma_8(2.33)$	0.309	$0.227^{+0.036}_{-0.081}$
$z_{\text{re}}$	7.49	$8.10^{+0.57}_{-0.48}$	$k_{\text{eq}}$	0.00885	$0.0110 \pm 0.0017$	$\sigma_8(2.33)$	0.320	$0.229^{+0.035}_{-0.087}$
$10^9 A_s$	2.974	$2.39^{+0.33}_{-0.62}$	$100\theta_{\text{eq}}$	0.918	$0.800^{+0.060}_{-0.12}$	$\chi^2_{\text{lensing}}$	15.72	$18.3 \pm 2.0$
$10^9 A_s e^{-2\tau}$	2.665	$2.14^{+0.30}_{-0.56}$	$100\theta_{s,\text{eq}}$	0.5037	$0.442^{+0.032}_{-0.061}$	$\chi^2_{\text{prior}}$	0.00	$3.0 \pm 2.4$

Best-fit  $\chi^2_{\text{eff}} = 15.72$ ;  $\bar{\chi}^2_{\text{eff}} = 21.22$ ;  $R - 1 = 0.00948$

$\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpttptt\_p\_teb\_agr2\_CMBmarged: 15.72



## 6.125 base\_mnu\_lensing\_lenspriors\_pttagr2\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022177	$0.02221 \pm 0.00049$	$D_{810}$	2869	$2561 \pm 600$	$H(0.51)$	94.3	$96.9^{+4.9}_{-5.8}$
$\Omega_c h^2$	0.1326	$0.144^{+0.020}_{-0.025}$	$D_{1420}$	869	$750^{+200}_{-200}$	$D_M(0.51)$	1918	$1882 \pm 77$
$100\theta_{MC}$	1.0894	$1.103^{+0.037}_{-0.031}$	$D_{2000}$	253	$216 \pm 60$	$H(0.61)$	100.7	$103.6^{+5.6}_{-6.5}$
$\Sigma m_\nu$ [eV]	1.50	$1.93^{+0.68}_{-1.0}$	$n_{s,0.002}$	0.9604	$0.959 \pm 0.020$	$D_M(0.61)$	2225	$2182 \pm 94$
$\ln(10^{10} A_s)$	3.224	$3.16 \pm 0.12$	$Y_P$	0.245316	$0.24532^{+0.00023}_{-0.00019}$	$H(2.33)$	257.2	$267 \pm 21$
$n_s$	0.9604	$0.959 \pm 0.020$	$Y_P^{BBN}$	0.246643	$0.24664^{+0.00023}_{-0.00019}$	$D_M(2.33)$	5438	$5300^{+300}_{-340}$
$H_0$	68.65	$69.6^{+1.8}_{-2.2}$	$10^5 D/H$	2.622	$2.620^{+0.086}_{-0.098}$	$f\sigma_8(0.15)$	0.4292	$0.431 \pm 0.015$
$\Omega_\Lambda$	0.6374	$0.617 \pm 0.045$	Age/Gyr	13.01	$12.68^{+0.72}_{-0.83}$	$\sigma_8(0.15)$	0.6449	$0.635^{+0.030}_{-0.036}$
$\Omega_m$	0.3626	$0.383 \pm 0.045$	$z_*$	1091.88	$1093.0^{+2.2}_{-2.6}$	$f\sigma_8(0.38)$	0.4364	$0.434 \pm 0.014$
$\Omega_m h^2$	0.1709	$0.187^{+0.027}_{-0.035}$	$r_*$	140.4	$137.7 \pm 5.8$	$\sigma_8(0.38)$	0.5684	$0.559^{+0.029}_{-0.035}$
$\Omega_\nu h^2$	0.0161	$0.0207^{+0.0074}_{-0.011}$	$100\theta_*$	1.0900	$1.104^{+0.038}_{-0.031}$	$f\sigma_8(0.51)$	0.4308	$0.427 \pm 0.015$
$\Omega_m h^3$	0.1173	$0.130^{+0.021}_{-0.029}$	$D_M(z_*)/\text{Gpc}$	12.89	$12.50^{+0.82}_{-1.0}$	$\sigma_8(0.51)$	0.5308	$0.521^{+0.028}_{-0.034}$
$\sigma_8$	0.7015	$0.693^{+0.031}_{-0.036}$	$z_{\text{drag}}$	1060.89	$1061.9 \pm 2.2$	$f\sigma_8(0.61)$	0.4236	$0.419 \pm 0.016$
$S_8$	0.7712	$0.779 \pm 0.032$	$r_{\text{drag}}$	143.1	$140.3 \pm 5.9$	$\sigma_8(0.61)$	0.5044	$0.495^{+0.027}_{-0.034}$
$\sigma_8 \Omega_m^{0.5}$	0.4224	$0.427 \pm 0.017$	$k_D$	0.1456	$0.1491^{+0.0068}_{-0.0078}$	$f\sigma_8(2.33)$	0.2618	$0.256 \pm 0.016$
$\sigma_8 \Omega_m^{0.25}$	0.5443	$0.544 \pm 0.018$	$100\theta_D$	0.16746	$0.1692^{+0.0047}_{-0.0040}$	$\sigma_8(2.33)$	0.2627	$0.257^{+0.016}_{-0.020}$
$\sigma_8/h^{0.5}$	0.8466	$0.831^{+0.043}_{-0.052}$	$z_{\text{eq}}$	3698	$3964^{+500}_{-600}$	$\chi^2_{\text{lensing}}$	16.01	$18.4 \pm 2.1$
$r_{\text{drag}} h$	98.21	$97.5 \pm 1.9$	$k_{\text{eq}}$	0.01134	$0.0122^{+0.0015}_{-0.0019}$	$\chi^2_{6\text{DF}}$	0.139	$0.35 \pm 0.35$
$\langle d^2 \rangle^{1/2}$	2.621	$2.598 \pm 0.063$	$100\theta_{\text{eq}}$	0.804	$0.784^{+0.047}_{-0.057}$	$\chi^2_{\text{MGS}}$	0.820	$0.79 \pm 0.67$
$z_{\text{re}}$	8.29	$8.51 \pm 0.50$	$100\theta_{s,\text{eq}}$	0.4460	$0.435^{+0.024}_{-0.029}$	$\chi^2_{\text{DR12BAO}}$	2.09	$3.6 \pm 1.5$
$10^9 A_s$	2.514	$2.38^{+0.26}_{-0.33}$	$H(0.15)$	74.85	$76.2^{+2.6}_{-3.1}$	$\chi^2_{\text{prior}}$	0.00	$2.0 \pm 1.9$
$10^9 A_s e^{-2\tau}$	2.252	$2.13^{+0.24}_{-0.29}$	$D_M(0.15)$	628.0	$619 \pm 20$	$\chi^2_{\text{BAO}}$	3.05	$4.7 \pm 1.7$
$D_{40}$	1429	$1340^{+200}_{-200}$	$H(0.38)$	86.57	$88.7^{+4.0}_{-4.8}$			
$D_{220}$	6538	$5992^{+1000}_{-1000}$	$D_M(0.38)$	1486	$1460 \pm 56$			

Best-fit  $\chi^2_{\text{eff}} = 19.07$ ;  $\bar{\chi}^2_{\text{eff}} = 25.07$ ;  $R - 1 = 0.00956$

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.14 MGS: 0.82 DR12BAO: 2.10 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpttptt\_p\_teb\_agr2\_CMBmargd: 16.01



### 6.126 base\_mnu\_lensing\_lenspriors\_pttagr2\_BAO\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022188	$0.02218 \pm 0.00049$	$D_{810}$	3439	$3410 \pm 320$	$H(0.51)$	88.14	$88.18^{+0.62}_{-0.71}$
$\Omega_{\mathrm{c}}h^2$	0.10695	$0.1074^{+0.0030}_{-0.0036}$	$D_{1420}$	1092	$1083 \pm 110$	$D_{\mathrm{M}}(0.51)$	2012.8	$2013 \pm 19$
$100\theta_{\mathrm{MC}}$	1.04088	$1.04090 \pm 0.00060$	$D_{2000}$	305.9	$304 \pm 31$	$H(0.61)$	93.61	$93.66^{+0.61}_{-0.70}$
$\Sigma m_{\nu}$ [eV]	0.639	$0.62^{+0.19}_{-0.16}$	$n_{\mathrm{s},0.002}$	0.9595	$0.959 \pm 0.020$	$D_{\mathrm{M}}(0.61)$	2342.9	$2343 \pm 22$
$\ln(10^{10}A_{\mathrm{s}})$	3.334	$3.322^{+0.093}_{-0.077}$	$Y_{\mathrm{P}}$	0.245321	$0.24531^{+0.00023}_{-0.00019}$	$H(2.33)$	230.95	$231.2 \pm 1.6$
$n_{\mathrm{s}}$	0.9595	$0.959 \pm 0.020$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246647	$0.24663^{+0.00023}_{-0.00019}$	$D_{\mathrm{M}}(2.33)$	5871.0	$5868^{+42}_{-37}$
$H_0$	66.67	$66.67 \pm 0.81$	$10^5\mathrm{D}/\mathrm{H}$	2.620	$2.623^{+0.087}_{-0.099}$	$f\sigma_8(0.15)$	0.4197	$0.420 \pm 0.013$
$\Omega_{\Lambda}$	0.6940	$0.6933 \pm 0.0088$	Age/Gyr	14.058	$14.050^{+0.099}_{-0.087}$	$\sigma_8(0.15)$	0.6854	$0.686 \pm 0.024$
$\Omega_{\mathrm{m}}$	0.3060	$0.3067 \pm 0.0088$	$z_{*}$	1089.14	$1089.20 \pm 0.63$	$f\sigma_8(0.38)$	0.4389	$0.439 \pm 0.013$
$\Omega_{\mathrm{m}}h^2$	0.13600	$0.1363^{+0.0019}_{-0.0022}$	$r_{*}$	147.83	$147.7^{+1.0}_{-0.89}$	$\sigma_8(0.38)$	0.6093	$0.610 \pm 0.021$
$\Omega_{\nu}h^2$	0.00687	$0.0067^{+0.0020}_{-0.0017}$	$100\theta_{*}$	1.04136	$1.04137 \pm 0.00061$	$f\sigma_8(0.51)$	0.4388	$0.439 \pm 0.013$
$\Omega_{\mathrm{m}}h^3$	0.09068	$0.0909^{+0.0015}_{-0.0019}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	14.196	$14.185^{+0.096}_{-0.085}$	$\sigma_8(0.51)$	0.5711	$0.571 \pm 0.020$
$\sigma_8$	0.7403	$0.741 \pm 0.025$	$z_{\mathrm{drag}}$	1058.67	$1058.7 \pm 1.2$	$f\sigma_8(0.61)$	0.4350	$0.435 \pm 0.013$
$S_8$	0.7476	$0.749 \pm 0.025$	$r_{\mathrm{drag}}$	150.63	$150.5 \pm 1.1$	$\sigma_8(0.61)$	0.5440	$0.544 \pm 0.019$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4095	$0.410 \pm 0.014$	$k_{\mathrm{D}}$	0.13721	$0.1373 \pm 0.0013$	$f\sigma_8(2.33)$	0.2820	$0.2818 \pm 0.0085$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.5506	$0.551 \pm 0.018$	$100\theta_{\mathrm{D}}$	0.16129	$0.16129 \pm 0.00071$	$\sigma_8(2.33)$	0.2867	$0.2866 \pm 0.0096$
$\sigma_8/h^{0.5}$	0.9067	$0.908 \pm 0.028$	$z_{\mathrm{eq}}$	3086	$3096^{+75}_{-88}$	$\chi^2_{\mathrm{lensing}}$	15.79	$17.8 \pm 1.9$
$r_{\mathrm{drag}}h$	100.43	$100.4 \pm 1.1$	$k_{\mathrm{eq}}$	0.009430	$0.00946^{+0.00022}_{-0.00026}$	$\chi^2_{6\mathrm{DF}}$	0.0001	$0.055 \pm 0.079$
$\langle d^2 \rangle^{1/2}$	2.637	$2.630 \pm 0.065$	$100\theta_{\mathrm{eq}}$	0.8758	$0.874 \pm 0.018$	$\chi^2_{\mathrm{MGS}}$	1.68	$1.71 \pm 0.68$
$z_{\mathrm{re}}$	7.661	$7.67 \pm 0.11$	$100\theta_{\mathrm{s,eq}}$	0.4821	$0.4812 \pm 0.0094$	$\chi^2_{\mathrm{DR12BAO}}$	3.40	$4.3 \pm 1.4$
$10^9A_{\mathrm{s}}$	2.806	$2.78 \pm 0.24$	$H(0.15)$	71.79	$71.80 \pm 0.75$	$\chi^2_{\mathrm{prior}}$	0.00	$3.0 \pm 2.4$
$10^9A_{\mathrm{s}}e^{-2\tau}$	2.514	$2.49 \pm 0.21$	$D_{\mathrm{M}}(0.15)$	650.6	$650.7 \pm 7.3$	$\chi^2_{\mathrm{BAO}}$	5.08	$6.1 \pm 1.4$
$D_{40}$	1694	$1677 \pm 130$	$H(0.38)$	81.61	$81.64^{+0.64}_{-0.72}$			
$D_{220}$	8161	$8082 \pm 760$	$D_{\mathrm{M}}(0.38)$	1553.1	$1553 \pm 16$			

Best-fit  $\chi^2_{\mathrm{eff}} = 20.88$ ;  $\bar{\chi}^2_{\mathrm{eff}} = 26.80$ ;  $R - 1 = 0.01217$

$\chi^2_{\mathrm{eff}}$ : BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.40 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpttptt\_p\_teb\_agr2\_CMBmargd: 15.79

### 6.127 base\_mnu\_lensing\_DESpriors

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{m}}$	0.311	$0.325^{+0.056}_{-0.089}$	$\Omega_{\mathrm{b}}h^2$	0.0250	$0.0256^{+0.0054}_{-0.012}$	$S_8$	0.802	$0.804 \pm 0.056$
$\Omega_{\mathrm{b}}$	0.0540	—	$\Omega_{\mathrm{c}}h^2$	0.1137	$0.126^{+0.019}_{-0.027}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4391	$0.440 \pm 0.031$
$H_0$	68.1	$< 76.1$	$\Omega_{\Lambda}$	0.689	$0.675^{+0.089}_{-0.056}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.5880	$0.586 \pm 0.020$
$\Sigma m_{\nu}$ [eV]	0.513	—	$\Omega_{\nu}h^2$	0.00551	$0.0058^{+0.0045}_{-0.0021}$	$\chi^2_{\mathrm{lensing}}$	7.25	$9.5 \pm 2.0$
$10^9A_{\mathrm{s}}$	2.677	$2.42^{+0.35}_{-0.53}$	$\ln(10^{10}A_{\mathrm{s}})$	3.287	$3.17 \pm 0.18$			
$n_{\mathrm{s}}$	1.017	—	$\sigma_8$	0.787	$0.782 \pm 0.048$			

Best-fit  $\chi^2_{\mathrm{eff}} = 7.25$ ;  $\bar{\chi}^2_{\mathrm{eff}} = 9.49$ ;  $R - 1 = 0.00994$

$\chi^2_{\mathrm{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmargd: 7.25



6.128     base\_mnu\_lensing\_DESpriors\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.3615	$0.334^{+0.027}_{-0.034}$	$\Omega_{\text{c}}h^2$	0.1352	$0.133^{+0.021}_{-0.029}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.5830	$0.588 \pm 0.020$
$\Omega_{\text{b}}$	0.0445	$0.0472^{+0.0079}_{-0.015}$	$\Omega_{\Lambda}$	0.6385	$0.666^{+0.034}_{-0.027}$	$\chi^2_{\text{lensing}}$	7.59	$9.6 \pm 2.0$
$H_0$	67.8	$69.9^{+5.0}_{-11}$	$\Omega_{\nu}h^2$	0.01071	$0.0067^{+0.0038}_{-0.0015}$	$\chi^2_{6\text{DF}}$	0.139	$0.12 \pm 0.16$
$\Sigma m_{\nu}$ [eV]	0.996	$> 0.506$	$\ln(10^{10}A_{\text{s}})$	3.125	$3.12^{+0.15}_{-0.20}$	$\chi^2_{\text{MGS}}$	0.82	$1.34 \pm 0.73$
$10^9 A_{\text{s}}$	2.277	$2.29^{+0.27}_{-0.50}$	$\sigma_8$	0.7519	$0.775 \pm 0.030$	$\chi^2_{\text{DR12BAO}}$	2.11	$3.7 \pm 1.6$
$n_{\text{s}}$	0.972	$< 0.992$	$S_8$	0.8254	$0.816 \pm 0.035$	$\chi^2_{\text{BAO}}$	3.07	$5.2 \pm 1.8$
$\Omega_{\text{b}}h^2$	0.0205	$0.0244^{+0.0048}_{-0.014}$	$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4521	$0.447 \pm 0.019$			

Best-fit  $\chi^2_{\text{eff}} = 10.66$ ;  $\bar{\chi}^2_{\text{eff}} = 14.70$ ;  $R - 1 = 0.01029$   
 $\chi^2_{\text{eff}}$ : BAO - 6DF: 0.14 MGS: 0.82 DR12BAO: 2.11 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 7.59

6.129     base\_mnu\_lensing\_DESpriors\_CookeDH

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.287	$0.335^{+0.079}_{-0.10}$	$\Omega_{\text{b}}h^2$	0.02219	$0.02220 \pm 0.00051$	$S_8$	0.788	$0.809 \pm 0.063$
$\Omega_{\text{b}}$	0.0478	—	$\Omega_{\text{c}}h^2$	0.1069	$0.121^{+0.015}_{-0.021}$	$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4318	$0.443 \pm 0.035$
$H_0$	68.2	$67.9^{+4.5}_{-12}$	$\Omega_{\Lambda}$	0.713	$0.665^{+0.10}_{-0.079}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.5897	$0.586 \pm 0.020$
$\Sigma m_{\nu}$ [eV]	0.412	—	$\Omega_{\nu}h^2$	0.00443	$0.0057 \pm 0.0029$	$\chi^2_{\text{lensing}}$	7.26	$9.4 \pm 2.0$
$10^9 A_{\text{s}}$	2.783	$2.47^{+0.40}_{-0.56}$	$\ln(10^{10}A_{\text{s}})$	3.326	$3.19 \pm 0.19$	$\chi^2_{\text{prior}}$	0.00	$1.0 \pm 1.4$
$n_{\text{s}}$	1.021	—	$\sigma_8$	0.805	$0.778^{+0.047}_{-0.065}$			

Best-fit  $\chi^2_{\text{eff}} = 7.26$ ;  $\bar{\chi}^2_{\text{eff}} = 10.46$ ;  $R - 1 = 0.00663$   
 $\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 7.26

6.130     base\_mnu\_lensing\_DESpriors\_CookeDH\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.3643	$0.336 \pm 0.027$	$\Omega_{\text{c}}h^2$	0.1457	$0.129^{+0.015}_{-0.018}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.5805	$0.588 \pm 0.020$
$\Omega_{\text{b}}$	0.04553	$0.0473 \pm 0.0022$	$\Omega_{\Lambda}$	0.6357	$0.664 \pm 0.027$	$\chi^2_{\text{lensing}}$	7.65	$9.5 \pm 2.0$
$H_0$	69.83	$68.5^{+1.4}_{-1.7}$	$\Omega_{\nu}h^2$	0.00977	$0.0067^{+0.0039}_{-0.0014}$	$\chi^2_{6\text{DF}}$	0.141	$0.12 \pm 0.16$
$\Sigma m_{\nu}$ [eV]	0.908	$> 0.508$	$\ln(10^{10}A_{\text{s}})$	3.015	$3.12^{+0.15}_{-0.18}$	$\chi^2_{\text{MGS}}$	0.82	$1.30 \pm 0.72$
$10^9 A_{\text{s}}$	2.039	$2.30^{+0.28}_{-0.46}$	$\sigma_8$	0.7472	$0.773^{+0.026}_{-0.029}$	$\chi^2_{\text{DR12BAO}}$	2.08	$3.6 \pm 1.6$
$n_{\text{s}}$	0.920	$< 0.991$	$S_8$	0.8234	$0.817 \pm 0.035$	$\chi^2_{\text{prior}}$	0.000	$1.0 \pm 1.4$
$\Omega_{\text{b}}h^2$	0.022204	$0.02218 \pm 0.00050$	$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4510	$0.447 \pm 0.019$	$\chi^2_{\text{BAO}}$	3.04	$5.0 \pm 1.8$

Best-fit  $\chi^2_{\text{eff}} = 10.69$ ;  $\bar{\chi}^2_{\text{eff}} = 15.50$ ;  $R - 1 = 0.01121$   
 $\chi^2_{\text{eff}}$ : BAO - 6DF: 0.14 MGS: 0.82 DR12BAO: 2.08 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 7.65



### 6.131 base\_mnu\_DES\_lenspriors

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.02221	$0.02220 \pm 0.00050$	$\Omega_{\mathrm{m}}h^2$	0.1373	$0.169^{+0.021}_{-0.039}$	$k_{\mathrm{D}}$	0.1381	$0.1454^{+0.0057}_{-0.0090}$
$\Omega_{\mathrm{c}}h^2$	0.1105	$0.135^{+0.018}_{-0.031}$	$\Omega_{\nu}h^2$	0.0046	$0.0110^{+0.0035}_{-0.010}$	$100\theta_{\mathrm{D}}$	0.1631	$0.1697^{+0.0066}_{-0.0090}$
$100\theta_{\mathrm{MC}}$	1.053	$1.102^{+0.048}_{-0.064}$	$\Omega_{\mathrm{m}}h^3$	0.0980	$0.133^{+0.022}_{-0.049}$	$z_{\mathrm{eq}}$	3171	$3766^{+400}_{-700}$
$\Sigma m_{\nu}$ [eV]	0.42	$1.02^{+0.33}_{-0.93}$	$\sigma_8$	0.831	$0.807^{+0.078}_{-0.088}$	$k_{\mathrm{eq}}$	0.00968	$0.0115^{+0.0013}_{-0.0023}$
$\ln(10^{10}A_{\mathrm{s}})$	3.372	$3.22^{+0.18}_{-0.16}$	$S_8$	0.7870	$0.777 \pm 0.025$	$100\theta_{\mathrm{eq}}$	0.868	$0.810 \pm 0.054$
$n_{\mathrm{s}}$	0.9628	$0.962 \pm 0.020$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4311	$0.426 \pm 0.014$	$100\theta_{\mathrm{s,eq}}$	0.4781	$0.449^{+0.030}_{-0.027}$
$b_{\mathrm{DES}}^1$	1.411	$1.47^{+0.15}_{-0.20}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.5985	$0.586 \pm 0.038$	$H(0.15)$	76.3	$82.9^{+7.4}_{-12}$
$b_{\mathrm{DES}}^2$	1.615	$1.68^{+0.16}_{-0.20}$	$\sigma_8/h^{0.5}$	0.983	$0.919^{+0.068}_{-0.078}$	$D_{\mathrm{M}}(0.15)$	610	$570 \pm 70$
$b_{\mathrm{DES}}^3$	1.597	$1.66^{+0.15}_{-0.20}$	$r_{\mathrm{drag}}h$	107.0	$110.4^{+9.4}_{-12}$	$H(0.38)$	85.7	$93.4^{+7.6}_{-13}$
$b_{\mathrm{DES}}^4$	1.926	$2.00^{+0.18}_{-0.23}$	$\langle d^2 \rangle^{1/2}$	2.695	$2.60 \pm 0.16$	$D_{\mathrm{M}}(0.38)$	1465	$1365 \pm 200$
$b_{\mathrm{DES}}^5$	1.989	$2.06^{+0.20}_{-0.25}$	$z_{\mathrm{re}}$	7.71	$8.26^{+0.45}_{-0.68}$	$H(0.51)$	92.0	$100.5^{+7.9}_{-13}$
$m_{\mathrm{DES}}^1$	0.0133	$0.012 \pm 0.023$	$10^9 A_{\mathrm{s}}$	2.914	$2.55^{+0.38}_{-0.47}$	$D_{\mathrm{M}}(0.51)$	1904	$1772 \pm 200$
$m_{\mathrm{DES}}^2$	0.0147	$0.015 \pm 0.022$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	2.611	$2.28^{+0.34}_{-0.43}$	$H(0.61)$	97.3	$106.4^{+8.2}_{-14}$
$m_{\mathrm{DES}}^3$	0.0071	$0.009 \pm 0.021$	$D_{40}$	1760	$1484^{+200}_{-300}$	$D_{\mathrm{M}}(0.61)$	2221	$2066 \pm 200$
$m_{\mathrm{DES}}^4$	0.0094	$0.011 \pm 0.021$	$D_{220}$	8295	$6603^{+1000}_{-2000}$	$H(2.33)$	233.3	$257^{+19}_{-29}$
$A_{\mathrm{IA,DES}}$	0.480	$0.46^{+0.17}_{-0.21}$	$D_{810}$	3548	$2687 \pm 700$	$D_{\mathrm{M}}(2.33)$	5674	$5236^{+570}_{-520}$
$\alpha_{\mathrm{IA,DES}}$	-1.44	$-0.4^{+2.3}_{-2.8}$	$D_{1420}$	1124	$790^{+300}_{-300}$	$f\sigma_8(0.15)$	0.4431	$0.437 \pm 0.016$
$\Delta z_{\mathrm{l,DES}}^1$	0.0040	$0.0042 \pm 0.0075$	$D_{2000}$	318	$228^{+70}_{-100}$	$\sigma_8(0.15)$	0.773	$0.750^{+0.076}_{-0.087}$
$\Delta z_{\mathrm{l,DES}}^2$	0.0018	$0.0018 \pm 0.0066$	$n_{\mathrm{s},0.002}$	0.9628	$0.962 \pm 0.020$	$f\sigma_8(0.38)$	0.4726	$0.464 \pm 0.027$
$\Delta z_{\mathrm{l,DES}}^3$	0.0043	$0.0041 \pm 0.0066$	$Y_{\mathrm{P}}$	0.245331	$0.24531^{+0.00023}_{-0.00020}$	$\sigma_8(0.38)$	0.691	$0.670^{+0.072}_{-0.083}$
$\Delta z_{\mathrm{l,DES}}^4$	0.0029	$0.0020 \pm 0.0091$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246657	$0.24664^{+0.00023}_{-0.00020}$	$f\sigma_8(0.51)$	0.4769	$0.467 \pm 0.032$
$\Delta z_{\mathrm{l,DES}}^5$	0.0010	$0.0012 \pm 0.0099$	$10^5 \mathrm{D}/\mathrm{H}$	2.616	$2.621 \pm 0.096$	$\sigma_8(0.51)$	0.650	$0.629^{+0.070}_{-0.081}$
$\Delta z_{\mathrm{s,DES}}^1$	-0.0013	$-0.004 \pm 0.014$	Age/Gyr	13.60	$12.5^{+1.4}_{-1.2}$	$f\sigma_8(0.61)$	0.4758	$0.465 \pm 0.036$
$\Delta z_{\mathrm{s,DES}}^2$	-0.0286	$-0.030 \pm 0.011$	$z_{\ast}$	1089.34	$1091.8^{+1.8}_{-3.0}$	$\sigma_8(0.61)$	0.620	$0.600^{+0.068}_{-0.079}$
$\Delta z_{\mathrm{s,DES}}^3$	0.0059	$0.0071 \pm 0.0098$	$r_{\ast}$	147.0	$140.6^{+7.4}_{-5.3}$	$f\sigma_8(2.33)$	0.3204	$0.312^{+0.036}_{-0.043}$
$\Delta z_{\mathrm{s,DES}}^4$	-0.0254	$-0.023 \pm 0.019$	$100\theta_{\ast}$	1.053	$1.103^{+0.048}_{-0.064}$	$\sigma_8(2.33)$	0.3293	$0.319^{+0.039}_{-0.047}$
$H_0$	71.4	$77.4^{+7.6}_{-12}$	$D_{\mathrm{M}}(z_{\ast})/\mathrm{Gpc}$	13.95	$12.8^{+1.3}_{-1.2}$	$\chi_{\mathrm{DES}}^2$	500.51	$513.5 \pm 5.2$
$\Omega_{\Lambda}$	0.7310	$0.715^{+0.054}_{-0.037}$	$z_{\mathrm{drag}}$	1058.94	$1060.8^{+2.1}_{-2.5}$	$\chi_{\mathrm{prior}}^2$	1.22	$14.3 \pm 5.2$
$\Omega_{\mathrm{m}}$	0.2690	$0.285^{+0.037}_{-0.054}$	$r_{\mathrm{drag}}$	149.7	$143.3^{+7.6}_{-5.5}$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 501.73$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 527.78$ ;  $R - 1 = 0.00413$   
 $\chi_{\mathrm{eff}}^2$ : WL - DES\_1YR\_final: 500.51



### 6.132 base\_mnu\_DESlens\_lenspriors

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022207	$0.02219 \pm 0.00050$	$\sigma_8/h^{0.5}$	1.006	$0.84^{+0.11}_{-0.14}$	$100\theta_{\text{eq}}$	0.827	$0.703^{+0.083}_{-0.11}$
$\Omega_c h^2$	0.121	$0.192^{+0.040}_{-0.067}$	$r_{\text{drag}} h$	109.1	$112^{+20}_{-10}$	$100\theta_{\text{s,eq}}$	0.457	$0.393^{+0.045}_{-0.060}$
$100\theta_{\text{MC}}$	1.062	$1.163^{+0.074}_{-0.042}$	$\langle d^2 \rangle^{1/2}$	2.511	$2.27^{+0.33}_{-0.48}$	$H(0.15)$	79.1	$92^{+10}_{-6}$
$\Sigma m_\nu$ [eV]	0.08	$< 2.10$	$z_{\text{re}}$	7.84	$9.19^{+0.84}_{-1.0}$	$D_{\text{M}}(0.15)$	588	$519^{+20}_{-84}$
$\ln(10^{10} A_{\text{s}})$	3.13	$2.75 \pm 0.51$	$10^9 A_{\text{s}}$	2.29	$1.78^{+0.37}_{-1.1}$	$H(0.38)$	88.6	$105^{+10}_{-9}$
$n_{\text{s}}$	0.9604	$0.961 \pm 0.020$	$10^9 A_{\text{s}} e^{-2\tau}$	2.05	$1.59^{+0.33}_{-1.0}$	$D_{\text{M}}(0.38)$	1413	$1235^{+56}_{-190}$
$m_{\text{DES}}^1$	0.0157	$0.013 \pm 0.023$	$D_{40}$	1372	$1002^{+200}_{-700}$	$H(0.51)$	95.0	$113^{+20}_{-10}$
$m_{\text{DES}}^2$	0.0133	$0.013 \pm 0.022$	$D_{220}$	6233	$4059^{+800}_{-3000}$	$D_{\text{M}}(0.51)$	1838	$1598^{+78}_{-250}$
$m_{\text{DES}}^3$	0.0014	$0.003 \pm 0.022$	$D_{810}$	2740	$1519^{+300}_{-1000}$	$H(0.61)$	100.4	$120^{+20}_{-10}$
$m_{\text{DES}}^4$	0.0168	$0.018 \pm 0.022$	$D_{1420}$	866	$429^{+70}_{-300}$	$D_{\text{M}}(0.61)$	2145	$1858^{+95}_{-280}$
$A_{\text{IA,DES}}$	1.33	$0.80^{+0.73}_{-0.59}$	$D_{2000}$	247	$125^{+20}_{-100}$	$H(2.33)$	239.2	$298^{+40}_{-50}$
$\alpha_{\text{IA,DES}}$	3.35	$> 0.976$	$n_{\text{s},0.002}$	0.9604	$0.961 \pm 0.020$	$D_{\text{M}}(2.33)$	5504	$4634^{+360}_{-680}$
$\Delta z_{\text{s,DES}}^1$	0.0032	$0.002 \pm 0.015$	$Y_{\text{P}}$	0.245329	$0.24531^{+0.00023}_{-0.00020}$	$f\sigma_8(0.15)$	0.4519	$0.434^{+0.027}_{-0.019}$
$\Delta z_{\text{s,DES}}^2$	-0.0192	$-0.021 \pm 0.012$	$Y_{\text{P}}^{\text{BBN}}$	0.246655	$0.24664^{+0.00023}_{-0.00020}$	$\sigma_8(0.15)$	0.807	$0.71 \pm 0.13$
$\Delta z_{\text{s,DES}}^3$	0.0081	$0.008 \pm 0.011$	$10^5 \text{D/H}$	2.617	$2.622^{+0.088}_{-0.099}$	$f\sigma_8(0.38)$	0.4834	$0.451^{+0.049}_{-0.034}$
$\Delta z_{\text{s,DES}}^4$	-0.0175	$-0.016 \pm 0.021$	Age/Gyr	13.20	$11.11^{+0.87}_{-1.6}$	$\sigma_8(0.38)$	0.721	$0.63^{+0.12}_{-0.13}$
$H_0$	74.2	$> 80.7$	$z_*$	1090.19	$1096.2^{+3.8}_{-5.1}$	$f\sigma_8(0.51)$	0.488	$0.451^{+0.059}_{-0.043}$
$\Omega_{\Lambda}$	0.739	$0.669^{+0.12}_{-0.058}$	$r_*$	144.4	$130 \pm 10$	$\sigma_8(0.51)$	0.678	$0.60^{+0.11}_{-0.13}$
$\Omega_{\text{m}}$	0.261	$0.331^{+0.058}_{-0.12}$	$100\theta_*$	1.063	$1.163^{+0.074}_{-0.042}$	$f\sigma_8(0.61)$	0.488	$0.447^{+0.065}_{-0.050}$
$\Omega_{\text{m}} h^2$	0.144	$0.232^{+0.046}_{-0.081}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.59	$11.2^{+1.1}_{-1.7}$	$\sigma_8(0.61)$	0.647	$0.57^{+0.11}_{-0.13}$
$\Omega_{\nu} h^2$	0.0008	$< 0.0226$	$z_{\text{drag}}$	1059.63	$1064.5^{+3.5}_{-4.1}$	$f\sigma_8(2.33)$	0.329	$0.293^{+0.060}_{-0.069}$
$\Omega_{\text{m}} h^3$	0.107	$0.200^{+0.051}_{-0.086}$	$r_{\text{drag}}$	147.1	$132 \pm 10$	$\sigma_8(2.33)$	0.342	$0.299^{+0.062}_{-0.077}$
$\sigma_8$	0.867	$0.77 \pm 0.13$	$k_{\text{D}}$	0.1408	$0.159^{+0.012}_{-0.016}$	$\chi_{\text{DES}}^2$	228.67	$233.8 \pm 2.9$
$S_8$	0.8088	$0.780^{+0.035}_{-0.029}$	$100\theta_{\text{D}}$	0.1643	$0.178^{+0.010}_{-0.0062}$	$\chi_{\text{prior}}^2$	0.37	$9.5 \pm 4.2$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4430	$0.427^{+0.019}_{-0.016}$	$z_{\text{eq}}$	3417	$5113^{+1000}_{-2000}$			
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.620	$0.572^{+0.060}_{-0.054}$	$k_{\text{eq}}$	0.01043	$0.0157^{+0.0030}_{-0.0050}$			

Best-fit  $\chi_{\text{eff}}^2 = 229.04$ ;  $\bar{\chi}_{\text{eff}}^2 = 243.26$ ;  $R - 1 = 0.00786$   
 $\chi_{\text{eff}}^2$ : WL - DES\_1YR\_final: 228.67



### 6.133 base\_mnu\_DES\_lenspriors\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022219	$0.02220 \pm 0.00049$	$\Omega_m h^2$	0.1469	$0.170^{+0.018}_{-0.038}$	$k_D$	0.1405	$0.1459^{+0.0048}_{-0.0087}$
$\Omega_c h^2$	0.1188	$0.137^{+0.015}_{-0.030}$	$\Omega_\nu h^2$	0.0058	$0.0110^{+0.0037}_{-0.0092}$	$100\theta_D$	0.1645	$0.1696^{+0.0057}_{-0.0078}$
$100\theta_{MC}$	1.0644	$1.102^{+0.041}_{-0.057}$	$\Omega_m h^3$	0.1047	$0.132^{+0.018}_{-0.044}$	$z_{eq}$	3371	$3810^{+360}_{-710}$
$\Sigma m_\nu$ [eV]	0.54	$1.02^{+0.35}_{-0.86}$	$\sigma_8$	0.7890	$0.786 \pm 0.037$	$k_{eq}$	0.01029	$0.0117^{+0.0011}_{-0.0022}$
$\ln(10^{10} A_s)$	3.222	$3.16^{+0.10}_{-0.080}$	$S_8$	0.7747	$0.772 \pm 0.015$	$100\theta_{eq}$	0.8379	$0.802^{+0.057}_{-0.043}$
$n_s$	0.9642	$0.963 \pm 0.020$	$\sigma_8 \Omega_m^{0.5}$	0.4243	$0.4227 \pm 0.0083$	$100\theta_{s,eq}$	0.4629	$0.445^{+0.029}_{-0.021}$
$b_{DES}^1$	1.500	$1.50 \pm 0.11$	$\sigma_8 \Omega_m^{0.25}$	0.5786	$0.576 \pm 0.015$	$H(0.15)$	76.4	$82.1^{+5.6}_{-9.4}$
$b_{DES}^2$	1.713	$1.712 \pm 0.094$	$\sigma_8/h^{0.5}$	0.9346	$0.901^{+0.050}_{-0.045}$	$D_M(0.15)$	610	$573^{+59}_{-51}$
$b_{DES}^3$	1.696	$1.696 \pm 0.084$	$r_{drag} h$	105.0	$108.9^{+5.8}_{-7.7}$	$H(0.38)$	86.4	$92.8^{+6.1}_{-10}$
$b_{DES}^4$	2.050	$2.045 \pm 0.097$	$\langle d^2 \rangle^{1/2}$	2.5473	$2.524 \pm 0.049$	$D_M(0.38)$	1460	$1371^{+140}_{-120}$
$b_{DES}^5$	2.122	$2.12 \pm 0.11$	$z_{re}$	7.88	$8.29^{+0.40}_{-0.64}$	$H(0.51)$	93.1	$99.97^{+6.4}_{-11}$
$m_{DES}^1$	0.0132	$0.012 \pm 0.023$	$10^9 A_s$	2.508	$2.36 \pm 0.22$	$D_M(0.51)$	1894	$1779^{+180}_{-150}$
$m_{DES}^2$	0.0157	$0.015 \pm 0.022$	$10^9 A_s e^{-2\tau}$	2.247	$2.12 \pm 0.20$	$H(0.61)$	98.7	$106.0^{+6.8}_{-12}$
$m_{DES}^3$	0.0097	$0.010 \pm 0.021$	$D_{40}$	1482	$1364^{+200}_{-100}$	$D_M(0.61)$	2207	$2073^{+210}_{-180}$
$m_{DES}^4$	0.0115	$0.012 \pm 0.021$	$D_{220}$	6876	$6065^{+1000}_{-900}$	$H(2.33)$	240.6	$258^{+16}_{-28}$
$A_{IA,DES}$	0.452	$0.44^{+0.17}_{-0.20}$	$D_{810}$	3012	$2521^{+700}_{-400}$	$D_M(2.33)$	5577	$5237^{+510}_{-420}$
$\alpha_{IA,DES}$	-1.49	$-0.3^{+2.3}_{-2.8}$	$D_{1420}$	952	$744^{+300}_{-300}$	$f\sigma_8(0.15)$	0.4352	$0.4338 \pm 0.0080$
$\Delta z_{l,DES}^1$	0.0038	$0.0042 \pm 0.0075$	$D_{2000}$	272	$214^{+80}_{-100}$	$\sigma_8(0.15)$	0.7320	$0.730 \pm 0.037$
$\Delta z_{l,DES}^2$	0.0013	$0.0016 \pm 0.0067$	$n_{s,0.002}$	0.9642	$0.963 \pm 0.020$	$f\sigma_8(0.38)$	0.4590	$0.458 \pm 0.010$
$\Delta z_{l,DES}^3$	0.0041	$0.0039 \pm 0.0066$	$Y_P$	0.245334	$0.24531^{+0.00023}_{-0.00019}$	$\sigma_8(0.38)$	0.6523	$0.650 \pm 0.036$
$\Delta z_{l,DES}^4$	0.0022	$0.0020 \pm 0.0092$	$Y_P^{BBN}$	0.246660	$0.24664^{+0.00023}_{-0.00019}$	$f\sigma_8(0.51)$	0.4608	$0.459 \pm 0.013$
$\Delta z_{l,DES}^5$	0.0007	$0.00099 \pm 0.0097$	$10^5 D/H$	2.614	$2.620^{+0.087}_{-0.098}$	$\sigma_8(0.51)$	0.6120	$0.610 \pm 0.035$
$\Delta z_{s,DES}^1$	-0.0015	$-0.004 \pm 0.014$	Age/Gyr	13.36	$12.5^{+1.2}_{-1.0}$	$f\sigma_8(0.61)$	0.4580	$0.457 \pm 0.014$
$\Delta z_{s,DES}^2$	-0.0287	$-0.029 \pm 0.011$	$z_*$	1090.12	$1091.9^{+1.6}_{-2.8}$	$\sigma_8(0.61)$	0.5834	$0.582 \pm 0.034$
$\Delta z_{s,DES}^3$	0.0072	$0.0078 \pm 0.0097$	$r_*$	144.7	$140.2^{+7.2}_{-4.4}$	$f\sigma_8(2.33)$	0.3016	$0.302^{+0.017}_{-0.019}$
$\Delta z_{s,DES}^4$	-0.0222	$-0.021 \pm 0.018$	$100\theta_*$	1.0648	$1.102^{+0.041}_{-0.057}$	$\sigma_8(2.33)$	0.3083	$0.308^{+0.019}_{-0.021}$
$H_0$	71.3	$76.5^{+5.4}_{-9.0}$	$D_M(z_*)/\text{Gpc}$	13.59	$12.8^{+1.2}_{-0.99}$	$\chi^2_{lensing}$	7.63	$9.2 \pm 1.6$
$\Omega_\Lambda$	0.7108	$0.709^{+0.030}_{-0.025}$	$z_{drag}$	1059.59	$1061.0^{+1.9}_{-2.5}$	$\chi^2_{DES}$	501.56	$513.1 \pm 4.8$
$\Omega_m$	0.2892	$0.291^{+0.025}_{-0.030}$	$r_{drag}$	147.4	$142.8^{+7.3}_{-4.6}$	$\chi^2_{prior}$	1.04	$14.1 \pm 5.2$

Best-fit  $\chi^2_{eff} = 510.24$ ;  $\bar{\chi}^2_{eff} = 536.32$ ;  $R - 1 = 0.00963$

$\chi^2_{eff}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8\_CMBmargd: 7.63 WL - DES\_1YR\_final: 501.56



### 6.134 base\_mnu\_DESlens\_lenspriors\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02220	$0.02221 \pm 0.00050$	$\sigma_8/h^{0.5}$	0.940	$0.889 \pm 0.055$	$100\theta_{\text{eq}}$	0.817	$0.764 \pm 0.059$
$\Omega_c h^2$	0.1248	$0.157^{+0.026}_{-0.040}$	$r_{\text{drag}} h$	104.4	$113.2 \pm 9.0$	$100\theta_{\text{s,eq}}$	0.4523	$0.425 \pm 0.030$
$100\theta_{\text{MC}}$	1.071	$1.135^{+0.069}_{-0.052}$	$\langle d^2 \rangle^{1/2}$	2.512	$2.486 \pm 0.055$	$H(0.15)$	76.9	$88^{+10}_{-10}$
$\Sigma m_\nu$ [eV]	0.53	$< 1.72$	$z_{\text{re}}$	7.99	$8.66^{+0.64}_{-0.76}$	$D_{\text{M}}(0.15)$	607	$536^{+37}_{-86}$
$\ln(10^{10} A_{\text{s}})$	3.159	$3.07^{+0.13}_{-0.11}$	$10^9 A_{\text{s}}$	2.354	$2.17 \pm 0.26$	$H(0.38)$	87.2	$99 \pm 11$
$n_{\text{s}}$	0.9628	$0.960 \pm 0.020$	$10^9 A_{\text{s}} e^{-2\tau}$	2.109	$1.95 \pm 0.23$	$D_{\text{M}}(0.38)$	1450	$1283^{+94}_{-190}$
$m_{\text{DES}}^1$	0.0141	$0.013 \pm 0.023$	$D_{40}$	1382	$1240 \pm 200$	$H(0.51)$	94.1	$107 \pm 11$
$m_{\text{DES}}^2$	0.0151	$0.013 \pm 0.022$	$D_{220}$	6296	$5218^{+1000}_{-1000}$	$D_{\text{M}}(0.51)$	1880	$1665^{+120}_{-250}$
$m_{\text{DES}}^3$	0.0016	$0.004 \pm 0.022$	$D_{810}$	2786	$2041 \pm 700$	$H(0.61)$	99.8	$113 \pm 12$
$m_{\text{DES}}^4$	0.0180	$0.017 \pm 0.021$	$D_{1420}$	875	$582^{+300}_{-300}$	$D_{\text{M}}(0.61)$	2190	$1940^{+150}_{-280}$
$A_{\text{IA,DES}}$	1.23	$0.65^{+0.83}_{-0.56}$	$D_{2000}$	252	$169^{+90}_{-80}$	$H(2.33)$	244.9	$275^{+27}_{-34}$
$\alpha_{\text{IA,DES}}$	2.88	$> 1.00$	$n_{\text{s},0.002}$	0.9628	$0.960 \pm 0.020$	$D_{\text{M}}(2.33)$	5508	$4915^{+420}_{-650}$
$\Delta z_{\text{s,DES}}^1$	0.0029	$0.001 \pm 0.015$	$Y_{\text{P}}$	0.245327	$0.24532^{+0.00023}_{-0.00020}$	$f\sigma_8(0.15)$	0.4443	$0.439^{+0.013}_{-0.010}$
$\Delta z_{\text{s,DES}}^2$	-0.0196	$-0.020 \pm 0.012$	$Y_{\text{P}}^{\text{BBN}}$	0.246653	$0.24664^{+0.00023}_{-0.00020}$	$\sigma_8(0.15)$	0.7370	$0.746^{+0.042}_{-0.050}$
$\Delta z_{\text{s,DES}}^3$	0.0074	$0.008 \pm 0.011$	$10^5 \text{D}/\text{H}$	2.618	$2.619^{+0.088}_{-0.10}$	$f\sigma_8(0.38)$	0.4664	$0.464 \pm 0.013$
$\Delta z_{\text{s,DES}}^4$	-0.0171	$-0.016 \pm 0.021$	Age/Gyr	13.19	$11.8^{+1.0}_{-1.6}$	$\sigma_8(0.38)$	0.6558	$0.666^{+0.040}_{-0.049}$
$H_0$	71.6	$82 \pm 9$	$z_*$	1090.65	$1093.6^{+2.6}_{-3.6}$	$f\sigma_8(0.51)$	0.4670	$0.467 \pm 0.016$
$\Omega_{\Lambda}$	0.7020	$0.714 \pm 0.039$	$r_*$	143.2	$135.8^{+8.2}_{-7.1}$	$\sigma_8(0.51)$	0.6148	$0.625^{+0.039}_{-0.048}$
$\Omega_{\text{m}}$	0.2980	$0.286 \pm 0.039$	$100\theta_*$	1.071	$1.136^{+0.069}_{-0.052}$	$f\sigma_8(0.61)$	0.4635	$0.464 \pm 0.017$
$\Omega_{\text{m}} h^2$	0.1527	$0.194^{+0.031}_{-0.053}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.37	$12.0^{+1.1}_{-1.5}$	$\sigma_8(0.61)$	0.5858	$0.596^{+0.038}_{-0.047}$
$\Omega_{\nu} h^2$	0.0057	$< 0.0185$	$z_{\text{drag}}$	1059.97	$1062.4^{+2.4}_{-3.0}$	$f\sigma_8(2.33)$	0.3020	$0.309^{+0.021}_{-0.026}$
$\Omega_{\text{m}} h^3$	0.109	$0.162^{+0.037}_{-0.064}$	$r_{\text{drag}}$	145.9	$138.3^{+8.4}_{-7.3}$	$\sigma_8(2.33)$	0.3085	$0.316^{+0.022}_{-0.029}$
$\sigma_8$	0.7954	$0.804^{+0.042}_{-0.050}$	$k_{\text{D}}$	0.1421	$0.1513^{+0.0078}_{-0.011}$	$\chi_{\text{lensing}}^2$	7.48	$9.7 \pm 2.0$
$S_8$	0.7927	$0.781^{+0.027}_{-0.019}$	$100\theta_{\text{D}}$	0.1653	$0.1743^{+0.0095}_{-0.0072}$	$\chi_{\text{DES}}^2$	228.82	$232.8 \pm 2.5$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4342	$0.428^{+0.015}_{-0.011}$	$z_{\text{eq}}$	3512	$4278^{+600}_{-900}$	$\chi_{\text{prior}}^2$	0.40	$9.4 \pm 4.2$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5877	$0.586 \pm 0.019$	$k_{\text{eq}}$	0.01073	$0.0131^{+0.0019}_{-0.0029}$			

Best-fit  $\chi_{\text{eff}}^2 = 236.70$ ;  $\bar{\chi}_{\text{eff}}^2 = 251.99$ ;  $R - 1 = 0.00519$

$\chi_{\text{eff}}^2$ : CMB - smicadx12-Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8-CMBmarged: 7.48 WL - DES\_1YR\_final: 228.82



### 6.135 base\_mnu\_DES\_lenspriors\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02221	$0.02219 \pm 0.00050$	$\Omega_\nu h^2$	0.00862	$0.0104^{+0.0042}_{-0.0055}$	$z_{\text{eq}}$	3377	$3531^{+290}_{-380}$
$\Omega_c h^2$	0.1191	$0.126^{+0.012}_{-0.016}$	$\Omega_m h^3$	0.1016	$0.108^{+0.012}_{-0.017}$	$k_{\text{eq}}$	0.01032	$0.01080^{+0.00088}_{-0.0012}$
$100\theta_{\text{MC}}$	1.0606	$1.070 \pm 0.025$	$\sigma_8$	0.7395	$0.720^{+0.039}_{-0.044}$	$100\theta_{\text{eq}}$	0.8347	$0.819 \pm 0.039$
$\Sigma m_\nu$ [eV]	0.802	$0.97^{+0.39}_{-0.51}$	$S_8$	0.7714	$0.762 \pm 0.022$	$100\theta_{\text{s,eq}}$	0.4612	$0.453 \pm 0.020$
$\ln(10^{10} A_s)$	3.237	$3.15 \pm 0.16$	$\sigma_8 \Omega_m^{0.5}$	0.4225	$0.417 \pm 0.012$	$H(0.15)$	73.31	$74.1^{+1.6}_{-2.0}$
$n_s$	0.9611	$0.961 \pm 0.020$	$\sigma_8 \Omega_m^{0.25}$	0.5590	$0.548 \pm 0.022$	$D_M(0.15)$	638.7	$633^{+15}_{-13}$
$b_{\text{DES}}^1$	1.599	$1.65 \pm 0.12$	$\sigma_8/h^{0.5}$	0.898	$0.871^{+0.053}_{-0.059}$	$H(0.38)$	83.87	$85.1^{+2.4}_{-3.0}$
$b_{\text{DES}}^2$	1.820	$1.87 \pm 0.12$	$r_{\text{drag}} h$	99.71	$99.3 \pm 1.5$	$D_M(0.38)$	1519.7	$1504^{+41}_{-36}$
$b_{\text{DES}}^3$	1.793	$1.85 \pm 0.11$	$\langle d^2 \rangle^{1/2}$	2.579	$2.51 \pm 0.14$	$H(0.51)$	90.86	$92.3^{+2.9}_{-3.6}$
$b_{\text{DES}}^4$	2.162	$2.22 \pm 0.14$	$z_{\text{re}}$	7.918	$8.06^{+0.31}_{-0.37}$	$D_M(0.51)$	1966	$1945^{+56}_{-50}$
$b_{\text{DES}}^5$	2.224	$2.29^{+0.15}_{-0.16}$	$10^9 A_s$	2.545	$2.37^{+0.32}_{-0.40}$	$H(0.61)$	96.70	$98.3^{+3.4}_{-4.2}$
$m_{\text{DES}}^1$	0.0129	$0.011 \pm 0.023$	$10^9 A_s e^{-2\tau}$	2.280	$2.12^{+0.28}_{-0.36}$	$D_M(0.61)$	2286	$2260^{+68}_{-61}$
$m_{\text{DES}}^2$	0.0152	$0.014 \pm 0.022$	$D_{40}$	1494	$1376^{+200}_{-300}$	$H(2.33)$	241.8	$248^{+12}_{-15}$
$m_{\text{DES}}^3$	0.0055	$0.008 \pm 0.021$	$D_{220}$	7005	$6389^{+1000}_{-1000}$	$D_M(2.33)$	5674	$5585 \pm 220$
$m_{\text{DES}}^4$	0.0099	$0.012 \pm 0.021$	$D_{810}$	3067	$2781 \pm 500$	$f\sigma_8(0.15)$	0.4316	$0.425 \pm 0.013$
$A_{\text{IA,DES}}$	0.415	$0.40^{+0.15}_{-0.18}$	$D_{1420}$	974	$865 \pm 200$	$\sigma_8(0.15)$	0.6829	$0.664^{+0.038}_{-0.043}$
$\alpha_{\text{IA,DES}}$	-2.02	$-0.7^{+2.0}_{-3.1}$	$D_{2000}$	277.2	$248 \pm 50$	$f\sigma_8(0.38)$	0.4466	$0.437 \pm 0.016$
$\Delta z_{\text{l,DES}}^1$	0.0032	$0.0038 \pm 0.0075$	$n_{\text{s},0.002}$	0.9611	$0.961 \pm 0.020$	$\sigma_8(0.38)$	0.6051	$0.587^{+0.036}_{-0.041}$
$\Delta z_{\text{l,DES}}^2$	0.0008	$0.0012 \pm 0.0066$	$Y_{\text{P}}$	0.245330	$0.24531^{+0.00023}_{-0.00020}$	$f\sigma_8(0.51)$	0.4443	$0.434 \pm 0.018$
$\Delta z_{\text{l,DES}}^3$	0.0037	$0.0036 \pm 0.0066$	$Y_{\text{P}}^{\text{BBN}}$	0.246656	$0.24664^{+0.00023}_{-0.00020}$	$\sigma_8(0.51)$	0.5663	$0.549^{+0.034}_{-0.039}$
$\Delta z_{\text{l,DES}}^4$	0.0015	$0.0014 \pm 0.0091$	$10^5 \text{D/H}$	2.616	$2.622^{+0.089}_{-0.10}$	$f\sigma_8(0.61)$	0.4391	$0.428 \pm 0.020$
$\Delta z_{\text{l,DES}}^5$	0.0001	$0.0002 \pm 0.0098$	Age/Gyr	13.58	$13.37 \pm 0.54$	$\sigma_8(0.61)$	0.5390	$0.523^{+0.033}_{-0.038}$
$\Delta z_{\text{s,DES}}^1$	-0.0013	$-0.005 \pm 0.014$	$z_*$	1090.28	$1091.0^{+1.3}_{-1.7}$	$f\sigma_8(2.33)$	0.2791	$0.270 \pm 0.018$
$\Delta z_{\text{s,DES}}^2$	-0.0287	$-0.029 \pm 0.011$	$r_*$	144.43	$142.8^{+4.1}_{-3.6}$	$\sigma_8(2.33)$	0.2826	$0.273^{+0.019}_{-0.021}$
$\Delta z_{\text{s,DES}}^3$	0.0064	$0.0076 \pm 0.0098$	$100\theta_*$	1.0611	$1.070 \pm 0.025$	$\chi_{\text{6DF}}^2$	0.014	$0.11 \pm 0.15$
$\Delta z_{\text{s,DES}}^4$	-0.0238	$-0.020 \pm 0.019$	$D_M(z_*)/\text{Gpc}$	13.61	$13.36 \pm 0.66$	$\chi_{\text{MGS}}^2$	1.41	$1.34 \pm 0.71$
$H_0$	67.77	$68.3^{+1.3}_{-1.5}$	$z_{\text{drag}}$	1059.70	$1060.2 \pm 1.7$	$\chi_{\text{DR12BAO}}^2$	2.57	$3.5 \pm 1.4$
$\Omega_\Lambda$	0.6736	$0.662^{+0.032}_{-0.028}$	$r_{\text{drag}}$	147.14	$145.5^{+4.3}_{-3.7}$	$\chi_{\text{DES}}^2$	502.02	$514.1 \pm 5.1$
$\Omega_m$	0.3264	$0.338^{+0.028}_{-0.032}$	$k_{\text{D}}$	0.14090	$0.1428^{+0.0040}_{-0.0050}$	$\chi_{\text{prior}}^2$	1.07	$14.1 \pm 5.2$
$\Omega_m h^2$	0.1499	$0.158^{+0.016}_{-0.021}$	$100\theta_{\text{D}}$	0.16380	$0.1650 \pm 0.0032$	$\chi_{\text{BAO}}^2$	3.99	$4.9 \pm 1.7$

Best-fit  $\chi_{\text{eff}}^2 = 507.09$ ;  $\bar{\chi}_{\text{eff}}^2 = 533.11$ ;  $R - 1 = 0.00572$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 2.57 WL - DES\_1YR\_final: 502.02



### 6.136 base\_mnu\_DESlens\_lenspriors\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022167	$0.02220 \pm 0.00049$	$r_{\text{drag}} h$	98.86	$97.4 \pm 2.0$	$H(0.15)$	75.35	$78.2^{+3.1}_{-3.9}$
$\Omega_c h^2$	0.1388	$0.165^{+0.027}_{-0.037}$	$\langle d^2 \rangle^{1/2}$	2.247	$2.14^{+0.24}_{-0.30}$	$D_M(0.15)$	622.7	$604 \pm 24$
$100\theta_{\text{MC}}$	1.0753	$1.107 \pm 0.034$	$z_{\text{re}}$	8.21	$8.69^{+0.52}_{-0.60}$	$H(0.38)$	86.7	$91.1^{+4.6}_{-5.7}$
$\Sigma m_\nu$ [eV]	0.48	$1.04^{+0.34}_{-0.93}$	$10^9 A_s$	1.71	$1.52^{+0.33}_{-0.67}$	$D_M(0.38)$	1477	$1424 \pm 65$
$\ln(10^{10} A_s)$	2.838	$2.65 \pm 0.37$	$10^9 A_s e^{-2\tau}$	1.530	$1.36^{+0.30}_{-0.60}$	$H(0.51)$	94.2	$99.5^{+5.5}_{-6.9}$
$n_s$	0.9605	$0.960 \pm 0.020$	$D_{40}$	981	$854^{+200}_{-400}$	$D_M(0.51)$	1909	$1835 \pm 89$
$m_{\text{DES}}^1$	0.0144	$0.013 \pm 0.023$	$D_{220}$	4330	$3690^{+800}_{-2000}$	$H(0.61)$	100.4	$106.5^{+6.2}_{-7.8}$
$m_{\text{DES}}^2$	0.0128	$0.012 \pm 0.022$	$D_{810}$	1979	$1618^{+400}_{-900}$	$D_M(0.61)$	2217	$2128 \pm 110$
$m_{\text{DES}}^3$	0.0009	$0.002 \pm 0.021$	$D_{1420}$	622	$478^{+100}_{-300}$	$H(2.33)$	254.0	$275^{+22}_{-26}$
$m_{\text{DES}}^4$	0.0186	$0.018 \pm 0.021$	$D_{2000}$	180	$138^{+40}_{-90}$	$D_M(2.33)$	5457	$5162 \pm 350$
$A_{\text{IA,DES}}$	1.31	$0.96 \pm 0.60$	$n_{\text{s},0.002}$	0.9605	$0.960 \pm 0.020$	$f\sigma_8(0.15)$	0.4362	$0.423 \pm 0.016$
$\alpha_{\text{IA,DES}}$	2.68	$> 0.854$	$Y_{\text{P}}$	0.245312	$0.24531^{+0.00023}_{-0.00020}$	$\sigma_8(0.15)$	0.676	$0.625^{+0.046}_{-0.055}$
$\Delta z_{\text{s,DES}}^1$	0.0036	$0.003 \pm 0.015$	$Y_{\text{P}}^{\text{BBN}}$	0.246639	$0.24664^{+0.00023}_{-0.00020}$	$f\sigma_8(0.38)$	0.4467	$0.426 \pm 0.022$
$\Delta z_{\text{s,DES}}^2$	-0.0201	$-0.021 \pm 0.012$	$10^5 \text{D/H}$	2.624	$2.620^{+0.088}_{-0.098}$	$\sigma_8(0.38)$	0.5965	$0.549^{+0.043}_{-0.052}$
$\Delta z_{\text{s,DES}}^3$	0.0074	$0.008 \pm 0.011$	Age/Gyr	13.06	$12.35 \pm 0.83$	$f\sigma_8(0.51)$	0.4423	$0.418 \pm 0.024$
$\Delta z_{\text{s,DES}}^4$	-0.0164	$-0.016 \pm 0.020$	$z_*$	1091.86	$1094.1^{+2.4}_{-2.9}$	$\sigma_8(0.51)$	0.5574	$0.512^{+0.041}_{-0.050}$
$H_0$	69.37	$71.3^{+2.3}_{-2.9}$	$r_*$	139.9	$134.4 \pm 6.7$	$f\sigma_8(0.61)$	0.4356	$0.410 \pm 0.026$
$\Omega_\Lambda$	0.6549	$0.613^{+0.049}_{-0.043}$	$100\theta_*$	1.0756	$1.107 \pm 0.034$	$\sigma_8(0.61)$	0.5299	$0.486^{+0.039}_{-0.048}$
$\Omega_{\text{m}}$	0.3451	$0.387^{+0.043}_{-0.049}$	$D_M(z_*)/\text{Gpc}$	13.01	$12.16^{+0.92}_{-1.0}$	$f\sigma_8(2.33)$	0.2706	$0.248^{+0.021}_{-0.025}$
$\Omega_{\text{m}} h^2$	0.1660	$0.198^{+0.029}_{-0.042}$	$z_{\text{drag}}$	1060.85	$1062.8 \pm 2.5$	$\sigma_8(2.33)$	0.2752	$0.251^{+0.022}_{-0.027}$
$\Omega_\nu h^2$	0.0051	$0.0111^{+0.0036}_{-0.010}$	$r_{\text{drag}}$	142.5	$136.9 \pm 6.9$	$\chi_{6\text{DF}}^2$	0.072	$0.36 \pm 0.37$
$\Omega_{\text{m}} h^3$	0.1152	$0.142^{+0.023}_{-0.036}$	$k_{\text{D}}$	0.1457	$0.1527^{+0.0076}_{-0.0091}$	$\chi_{\text{MGS}}^2$	1.039	$0.77 \pm 0.65$
$\sigma_8$	0.734	$0.681^{+0.047}_{-0.056}$	$100\theta_{\text{D}}$	0.16576	$0.1700 \pm 0.0046$	$\chi_{\text{DR12BAO}}^2$	2.27	$3.6 \pm 1.6$
$S_8$	0.7869	$0.769 \pm 0.027$	$z_{\text{eq}}$	3846	$4473^{+600}_{-900}$	$\chi_{\text{DES}}^2$	229.02	$233.7 \pm 2.8$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4310	$0.421 \pm 0.015$	$k_{\text{eq}}$	0.01174	$0.0137^{+0.0020}_{-0.0027}$	$\chi_{\text{prior}}^2$	0.45	$9.4 \pm 4.2$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5623	$0.535 \pm 0.027$	$100\theta_{\text{eq}}$	0.767	$0.721^{+0.063}_{-0.075}$	$\chi_{\text{BAO}}^2$	3.38	$4.8 \pm 1.7$
$\sigma_8/h^{0.5}$	0.881	$0.808^{+0.066}_{-0.078}$	$100\theta_{\text{s,eq}}$	0.4262	$0.402^{+0.034}_{-0.039}$			

Best-fit  $\chi_{\text{eff}}^2 = 232.86$ ;  $\bar{\chi}_{\text{eff}}^2 = 247.92$ ;  $R - 1 = 0.00929$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.07 MGS: 1.04 DR12BAO: 2.27 WL - DES\_1YR\_final: 229.02



### 6.137 base\_mnu\_DES\_lenspriors\_lensing\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02222	$0.02221 \pm 0.00051$	$\Omega_m h^3$	0.0984	$0.1022^{+0.0085}_{-0.013}$	$100\theta_{\text{eq}}$	0.8402	$0.833^{+0.031}_{-0.028}$
$\Omega_c h^2$	0.1165	$0.1199^{+0.0085}_{-0.012}$	$\sigma_8$	0.7567	$0.748 \pm 0.028$	$100\theta_{\text{s,eq}}$	0.4639	$0.460^{+0.016}_{-0.014}$
$100\theta_{\text{MC}}$	1.0535	$1.059^{+0.020}_{-0.023}$	$S_8$	0.7783	$0.776 \pm 0.015$	$H(0.15)$	73.07	$73.5^{+1.3}_{-1.7}$
$\Sigma m_\nu$ [eV]	0.626	$0.75^{+0.33}_{-0.46}$	$\sigma_8 \Omega_m^{0.5}$	0.4263	$0.4252 \pm 0.0081$	$D_{\text{M}}(0.15)$	640.1	$637^{+13}_{-11}$
$\ln(10^{10} A_s)$	3.231	$3.208 \pm 0.070$	$\sigma_8 \Omega_m^{0.25}$	0.5680	$0.564 \pm 0.013$	$H(0.38)$	83.37	$84.1^{+1.9}_{-2.5}$
$n_s$	0.9644	$0.963 \pm 0.020$	$\sigma_8/h^{0.5}$	0.9197	$0.908 \pm 0.038$	$D_{\text{M}}(0.38)$	1525.1	$1516^{+34}_{-30}$
$b_{\text{DES}}^1$	1.573	$1.589 \pm 0.096$	$r_{\text{drag}} h$	100.16	$99.98 \pm 1.3$	$H(0.51)$	90.20	$91.0^{+2.2}_{-3.0}$
$b_{\text{DES}}^2$	1.787	$1.802 \pm 0.082$	$\langle d^2 \rangle^{1/2}$	2.5609	$2.552 \pm 0.044$	$D_{\text{M}}(0.51)$	1974.8	$1962^{+48}_{-41}$
$b_{\text{DES}}^3$	1.765	$1.779 \pm 0.073$	$z_{\text{re}}$	7.832	$7.92^{+0.24}_{-0.31}$	$H(0.61)$	95.90	$96.9^{+2.5}_{-3.5}$
$b_{\text{DES}}^4$	2.129	$2.143 \pm 0.084$	$10^9 A_s$	2.531	$2.48^{+0.16}_{-0.18}$	$D_{\text{M}}(0.61)$	2297	$2281^{+58}_{-49}$
$b_{\text{DES}}^5$	2.198	$2.21 \pm 0.10$	$10^9 A_s e^{-2\tau}$	2.267	$2.22^{+0.14}_{-0.16}$	$H(2.33)$	238.4	$241.8^{+9.1}_{-13}$
$m_{\text{DES}}^1$	0.0127	$0.011 \pm 0.023$	$D_{40}$	1488	$1450 \pm 100$	$D_{\text{M}}(2.33)$	5725	$5672^{+200}_{-170}$
$m_{\text{DES}}^2$	0.0154	$0.013 \pm 0.022$	$D_{220}$	7020	$6800 \pm 640$	$f\sigma_8(0.15)$	0.4355	$0.4335 \pm 0.0078$
$m_{\text{DES}}^3$	0.0044	$0.004 \pm 0.020$	$D_{810}$	3072	$2960 \pm 270$	$\sigma_8(0.15)$	0.6995	$0.691 \pm 0.028$
$m_{\text{DES}}^4$	0.0081	$0.008 \pm 0.021$	$D_{1420}$	981	$932^{+100}_{-90}$	$f\sigma_8(0.38)$	0.4526	$0.4492 \pm 0.0091$
$A_{\text{IA,DES}}$	0.417	$0.42^{+0.15}_{-0.18}$	$D_{2000}$	277.7	$266^{+29}_{-26}$	$\sigma_8(0.38)$	0.6205	$0.613 \pm 0.027$
$\alpha_{\text{IA,DES}}$	-2.11	$-0.8^{+1.9}_{-3.0}$	$n_{\text{s},0.002}$	0.9644	$0.963 \pm 0.020$	$f\sigma_8(0.51)$	0.4511	$0.447^{+0.011}_{-0.0098}$
$\Delta z_{\text{l,DES}}^1$	0.0034	$0.0039 \pm 0.0075$	$Y_{\text{P}}$	0.245334	$0.24532^{+0.00023}_{-0.00020}$	$\sigma_8(0.51)$	0.5811	$0.574 \pm 0.026$
$\Delta z_{\text{l,DES}}^2$	0.0011	$0.0012 \pm 0.0066$	$Y_{\text{P}}^{\text{BBN}}$	0.246660	$0.24664^{+0.00023}_{-0.00020}$	$f\sigma_8(0.61)$	0.4464	$0.442^{+0.012}_{-0.011}$
$\Delta z_{\text{l,DES}}^3$	0.0037	$0.0036 \pm 0.0066$	$10^5 \text{D/H}$	2.614	$2.619 \pm 0.096$	$\sigma_8(0.61)$	0.5532	$0.546 \pm 0.025$
$\Delta z_{\text{l,DES}}^4$	0.0014	$0.0014 \pm 0.0091$	Age/Gyr	13.705	$13.58^{+0.49}_{-0.41}$	$f\sigma_8(2.33)$	0.2857	$0.282^{+0.013}_{-0.010}$
$\Delta z_{\text{l,DES}}^5$	0.0000	$0.0001 \pm 0.0098$	$z_*$	1089.95	$1090.3^{+1.0}_{-1.4}$	$\sigma_8(2.33)$	0.2903	$0.286 \pm 0.014$
$\Delta z_{\text{s,DES}}^1$	-0.0013	$-0.004 \pm 0.014$	$r_*$	145.24	$144.3^{+3.4}_{-2.6}$	$\chi_{\text{lensing}}^2$	8.22	$9.7 \pm 1.8$
$\Delta z_{\text{s,DES}}^2$	-0.0289	$-0.030 \pm 0.011$	$100\theta_*$	1.0539	$1.060^{+0.020}_{-0.023}$	$\chi_{6\text{DF}}^2$	0.0018	$0.070 \pm 0.098$
$\Delta z_{\text{s,DES}}^3$	0.0059	$0.0064 \pm 0.0097$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.78	$13.63^{+0.61}_{-0.51}$	$\chi_{\text{MGS}}^2$	1.61	$1.64 \pm 0.71$
$\Delta z_{\text{s,DES}}^4$	-0.0242	$-0.024 \pm 0.018$	$z_{\text{drag}}$	1059.44	$1059.7 \pm 1.5$	$\chi_{\text{DR12BAO}}^2$	2.79	$3.7 \pm 1.4$
$H_0$	67.69	$68.0^{+1.1}_{-1.3}$	$r_{\text{drag}}$	147.97	$147.0^{+3.6}_{-2.7}$	$\chi_{\text{DES}}^2$	501.86	$512.2 \pm 4.5$
$\Omega_\Lambda$	0.6826	$0.676^{+0.028}_{-0.021}$	$k_{\text{D}}$	0.13997	$0.1410^{+0.0030}_{-0.0041}$	$\chi_{\text{prior}}^2$	1.23	$14.3 \pm 5.2$
$\Omega_{\text{m}}$	0.3174	$0.324^{+0.021}_{-0.028}$	$100\theta_{\text{D}}$	0.16287	$0.1636 \pm 0.0028$	$\chi_{\text{BAO}}^2$	4.40	$5.4 \pm 1.8$
$\Omega_{\text{m}} h^2$	0.1454	$0.150^{+0.011}_{-0.017}$	$z_{\text{eq}}$	3314	$3395^{+210}_{-300}$			
$\Omega_\nu h^2$	0.00673	$0.0080^{+0.0035}_{-0.0050}$	$k_{\text{eq}}$	0.01012	$0.01038^{+0.00063}_{-0.00092}$			

Best-fit  $\chi_{\text{eff}}^2 = 515.71$ ;  $\bar{\chi}_{\text{eff}}^2 = 541.63$ ;  $R - 1 = 0.00588$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.61 DR12BAO: 2.79 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb\_consext8\_CMBmargd: 8.22 WL - DES\_1YR\_final: 501.86



### 6.138 base\_mnu\_DESlens\_lenspriors\_lensing\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022223	$0.02222 \pm 0.00050$	$r_{\text{drag}} h$	99.73	$99.5 \pm 1.5$	$H(0.15)$	73.71	$74.2^{+1.5}_{-2.0}$
$\Omega_c h^2$	0.1227	$0.127^{+0.010}_{-0.016}$	$\langle d^2 \rangle^{1/2}$	2.5286	$2.527 \pm 0.048$	$D_M(0.15)$	635.1	$631^{+15}_{-12}$
$100\theta_{\text{MC}}$	1.0604	$1.067^{+0.021}_{-0.028}$	$z_{\text{re}}$	7.942	$8.04^{+0.26}_{-0.38}$	$H(0.38)$	84.33	$85.1^{+2.1}_{-3.1}$
$\Sigma m_\nu$ [eV]	0.609	$0.78^{+0.27}_{-0.66}$	$10^9 A_s$	2.373	$2.34^{+0.17}_{-0.20}$	$D_M(0.38)$	1511.3	$1501^{+41}_{-33}$
$\ln(10^{10} A_s)$	3.167	$3.150 \pm 0.080$	$10^9 A_s e^{-2\tau}$	2.126	$2.10^{+0.15}_{-0.18}$	$H(0.51)$	91.35	$92.3^{+2.5}_{-3.8}$
$n_s$	0.9617	$0.961 \pm 0.020$	$D_{40}$	1390	$1361 \pm 120$	$D_M(0.51)$	1956	$1941^{+58}_{-45}$
$m_{\text{DES}}^1$	0.0140	$0.013 \pm 0.023$	$D_{220}$	6422	$6266 \pm 700$	$H(0.61)$	97.22	$98.3^{+2.8}_{-4.3}$
$m_{\text{DES}}^2$	0.0131	$0.012 \pm 0.022$	$D_{810}$	2845	$2747^{+300}_{-300}$	$D_M(0.61)$	2274	$2256^{+70}_{-54}$
$m_{\text{DES}}^3$	-0.0034	$-0.005 \pm 0.021$	$D_{1420}$	905	$857^{+100}_{-100}$	$H(2.33)$	243.1	$247^{+10}_{-16}$
$m_{\text{DES}}^4$	0.0148	$0.013 \pm 0.021$	$D_{2000}$	258.2	$245^{+40}_{-30}$	$D_M(2.33)$	5644	$5586^{+250}_{-190}$
$A_{\text{IA,DES}}$	1.32	$1.06 \pm 0.52$	$n_{s,0.002}$	0.9617	$0.961 \pm 0.020$	$f\sigma_8(0.15)$	0.4452	$0.4423 \pm 0.0097$
$\alpha_{\text{IA,DES}}$	2.60	$1.73^{+3.2}_{-0.80}$	$Y_{\text{P}}$	0.245335	$0.24532^{+0.00023}_{-0.00020}$	$\sigma_8(0.15)$	0.7064	$0.696^{+0.036}_{-0.031}$
$\Delta z_{s,\text{DES}}^1$	0.0039	$0.003 \pm 0.015$	$Y_{\text{P}}^{\text{BBN}}$	0.246662	$0.24665^{+0.00023}_{-0.00020}$	$f\sigma_8(0.38)$	0.4605	$0.456^{+0.012}_{-0.010}$
$\Delta z_{s,\text{DES}}^2$	-0.0197	$-0.020 \pm 0.012$	$10^5 \text{D}/\text{H}$	2.614	$2.617 \pm 0.094$	$\sigma_8(0.38)$	0.6258	$0.616^{+0.035}_{-0.029}$
$\Delta z_{s,\text{DES}}^3$	0.0060	$0.006 \pm 0.010$	Age/Gyr	13.51	$13.37^{+0.59}_{-0.45}$	$f\sigma_8(0.51)$	0.4581	$0.453^{+0.014}_{-0.011}$
$\Delta z_{s,\text{DES}}^4$	-0.0197	$-0.020 \pm 0.020$	$z_*$	1090.48	$1090.9^{+1.1}_{-1.7}$	$\sigma_8(0.51)$	0.5856	$0.576^{+0.034}_{-0.027}$
$H_0$	68.15	$68.5^{+1.2}_{-1.5}$	$r_*$	143.65	$142.6^{+4.2}_{-3.0}$	$f\sigma_8(0.61)$	0.4526	$0.447^{+0.015}_{-0.012}$
$\Omega_\Lambda$	0.6739	$0.666^{+0.035}_{-0.022}$	$100\theta_*$	1.0609	$1.068^{+0.021}_{-0.029}$	$\sigma_8(0.61)$	0.5572	$0.548^{+0.033}_{-0.026}$
$\Omega_{\text{m}}$	0.3261	$0.334^{+0.022}_{-0.035}$	$D_M(z_*)/\text{Gpc}$	13.54	$13.38^{+0.72}_{-0.56}$	$f\sigma_8(2.33)$	0.2870	$0.282^{+0.016}_{-0.011}$
$\Omega_{\text{m}} h^2$	0.1514	$0.157^{+0.013}_{-0.022}$	$z_{\text{drag}}$	1059.89	$1060.2 \pm 1.7$	$\sigma_8(2.33)$	0.2915	$0.286^{+0.019}_{-0.014}$
$\Omega_\nu h^2$	0.0065	$0.0084^{+0.0030}_{-0.0071}$	$r_{\text{drag}}$	146.34	$145.3^{+4.3}_{-3.1}$	$\chi^2_{\text{lensing}}$	7.57	$9.3 \pm 1.7$
$\Omega_{\text{m}} h^3$	0.1032	$0.1079^{+0.0096}_{-0.017}$	$k_{\text{D}}$	0.14168	$0.1429^{+0.0034}_{-0.0050}$	$\chi^2_{6\text{DF}}$	0.0139	$0.09 \pm 0.13$
$\sigma_8$	0.7651	$0.755^{+0.037}_{-0.032}$	$100\theta_{\text{D}}$	0.16375	$0.1646^{+0.0028}_{-0.0037}$	$\chi^2_{\text{MGS}}$	1.41	$1.45 \pm 0.71$
$S_8$	0.7977	$0.794 \pm 0.019$	$z_{\text{eq}}$	3463	$3555^{+240}_{-380}$	$\chi^2_{\text{DR12BAO}}$	2.58	$3.5 \pm 1.4$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4369	$0.435 \pm 0.010$	$k_{\text{eq}}$	0.01058	$0.01087^{+0.00074}_{-0.0012}$	$\chi^2_{\text{DES}}$	229.15	$232.7 \pm 2.5$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5782	$0.573 \pm 0.016$	$100\theta_{\text{eq}}$	0.8185	$0.812^{+0.036}_{-0.032}$	$\chi^2_{\text{prior}}$	0.66	$9.6 \pm 4.3$
$\sigma_8/h^{0.5}$	0.9268	$0.912^{+0.051}_{-0.041}$	$100\theta_{s,\text{eq}}$	0.4527	$0.449^{+0.019}_{-0.016}$	$\chi^2_{\text{BAO}}$	4.00	$5.1 \pm 1.7$

Best-fit  $\chi^2_{\text{eff}} = 241.37$ ;  $\bar{\chi}^2_{\text{eff}} = 256.69$ ;  $R - 1 = 0.00980$

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 2.58 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmargd: 7.57 WL - DES\_1YR\_final: 229.15



### 6.139 base\_mnu\_DES\_DESpriors

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.2575	$0.281^{+0.027}_{-0.039}$	$m_{\text{DES}}^3$	0.0072	$0.009 \pm 0.021$	$\Omega_{\text{b}} h^2$	0.0540	$0.0295^{+0.0081}_{-0.015}$
$\Omega_b$	0.0654	$0.0510^{+0.015}_{-0.0094}$	$m_{\text{DES}}^4$	0.0099	$0.011 \pm 0.021$	$\Omega_{\text{c}} h^2$	0.1490	$0.121^{+0.022}_{-0.026}$
$H_0$	90.8	$75^{+10}_{-8}$	$A_{\text{IA,DES}}$	0.506	$0.46^{+0.17}_{-0.21}$	$\Omega_{\Lambda}$	0.7425	$0.719^{+0.039}_{-0.027}$
$\Sigma m_{\nu}$ [eV]	0.877	—	$\alpha_{\text{IA,DES}}$	-1.32	$-0.4^{+2.2}_{-2.8}$	$\Omega_{\nu} h^2$	0.00943	$0.0057^{+0.0042}_{-0.0028}$
$10^9 A_{\text{s}}$	2.88	$2.81^{+0.45}_{-0.68}$	$\Delta z_{\text{l,DES}}^1$	0.0039	$0.0043 \pm 0.0075$	$\ln(10^{10} A_{\text{s}})$	3.362	$3.32 \pm 0.21$
$n_{\text{s}}$	1.069	$> 0.964$	$\Delta z_{\text{l,DES}}^2$	0.0019	$0.0018 \pm 0.0066$	$\sigma_8$	0.863	$0.812 \pm 0.065$
$b_{\text{DES}}^1$	1.388	$1.46^{+0.12}_{-0.16}$	$\Delta z_{\text{l,DES}}^3$	0.0046	$0.0042 \pm 0.0065$	$S_8$	0.8001	$0.780 \pm 0.025$
$b_{\text{DES}}^2$	1.591	$1.67^{+0.12}_{-0.16}$	$\Delta z_{\text{l,DES}}^4$	0.0029	$0.0023 \pm 0.0091$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4382	$0.427 \pm 0.013$
$b_{\text{DES}}^3$	1.580	$1.66^{+0.12}_{-0.15}$	$\Delta z_{\text{l,DES}}^5$	0.0010	$0.0006 \pm 0.0098$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6151	$0.589 \pm 0.031$
$b_{\text{DES}}^4$	1.907	$2.00^{+0.14}_{-0.18}$	$\Delta z_{\text{s,DES}}^1$	-0.0013	$-0.004 \pm 0.014$	$\chi_{\text{DES}}^2$	498.18	$511.6 \pm 5.0$
$b_{\text{DES}}^5$	1.969	$2.06^{+0.16}_{-0.20}$	$\Delta z_{\text{s,DES}}^2$	-0.0292	$-0.030 \pm 0.011$	$\chi_{\text{prior}}^2$	1.30	$12.2 \pm 4.8$
$m_{\text{DES}}^1$	0.0133	$0.012 \pm 0.023$	$\Delta z_{\text{s,DES}}^3$	0.0064	$0.0072 \pm 0.0098$			
$m_{\text{DES}}^2$	0.0148	$0.014 \pm 0.022$	$\Delta z_{\text{s,DES}}^4$	-0.0261	$-0.023 \pm 0.019$			

Best-fit  $\chi_{\text{eff}}^2 = 499.47$ ;  $\bar{\chi}_{\text{eff}}^2 = 523.87$ ;  $R - 1 = 0.00686$   
 $\chi_{\text{eff}}^2$ : WL - DES\_1YR\_final: 498.18

### 6.140 base\_mnu\_DESlens\_DESpriors

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.255	$0.306^{+0.042}_{-0.087}$	$m_{\text{DES}}^4$	0.0174	$0.017 \pm 0.021$	$\Omega_{\Lambda}$	0.745	$0.694^{+0.087}_{-0.042}$
$\Omega_b$	0.0374	$< 0.0544$	$A_{\text{IA,DES}}$	1.36	$0.78^{+0.74}_{-0.60}$	$\Omega_{\nu} h^2$	0.00144	$0.0054^{+0.0028}_{-0.0045}$
$H_0$	73.6	$74^{+20}_{-6}$	$\alpha_{\text{IA,DES}}$	3.51	$> 1.01$	$\ln(10^{10} A_{\text{s}})$	3.196	$3.11^{+0.58}_{-0.34}$
$\Sigma m_{\nu}$ [eV]	0.134	—	$\Delta z_{\text{s,DES}}^1$	0.0029	$0.002 \pm 0.015$	$\sigma_8$	0.878	$0.79 \pm 0.10$
$10^9 A_{\text{s}}$	2.44	$2.47^{+0.76}_{-1.4}$	$\Delta z_{\text{s,DES}}^2$	-0.0192	$-0.020 \pm 0.012$	$S_8$	0.8098	$0.780^{+0.033}_{-0.027}$
$n_{\text{s}}$	0.969	$> 0.947$	$\Delta z_{\text{s,DES}}^3$	0.0079	$0.008 \pm 0.011$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4436	$0.427^{+0.018}_{-0.015}$
$m_{\text{DES}}^1$	0.0149	$0.013 \pm 0.023$	$\Delta z_{\text{s,DES}}^4$	-0.0167	$-0.016 \pm 0.021$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6241	$0.580^{+0.050}_{-0.043}$
$m_{\text{DES}}^2$	0.0139	$0.013 \pm 0.022$	$\Omega_{\text{b}} h^2$	0.0203	$0.0270^{+0.0064}_{-0.012}$	$\chi_{\text{DES}}^2$	228.70	$233.4 \pm 2.8$
$m_{\text{DES}}^3$	0.0021	$0.003 \pm 0.021$	$\Omega_{\text{c}} h^2$	0.1167	$0.133^{+0.022}_{-0.040}$	$\chi_{\text{prior}}^2$	0.34	$7.5 \pm 3.7$

Best-fit  $\chi_{\text{eff}}^2 = 229.04$ ;  $\bar{\chi}_{\text{eff}}^2 = 240.82$ ;  $R - 1 = 0.00860$   
 $\chi_{\text{eff}}^2$ : WL - DES\_1YR\_final: 228.71

### 6.141 base\_mnu\_DESwt\_DESpriors

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.3123	$0.315^{+0.038}_{-0.057}$	$m_{\text{DES}}^3$	0.0194	$0.022 \pm 0.022$	$\Omega_{\text{b}} h^2$	0.0380	$0.0254^{+0.0057}_{-0.013}$
$\Omega_b$	0.0580	$0.0514^{+0.015}_{-0.0087}$	$m_{\text{DES}}^4$	0.0059	$0.008 \pm 0.022$	$\Omega_{\text{c}} h^2$	0.1563	$0.117^{+0.016}_{-0.026}$
$H_0$	80.9	$< 73.6$	$A_{\text{IA,DES}}$	0.323	$0.39^{+0.15}_{-0.19}$	$\Omega_{\Lambda}$	0.6877	$0.685^{+0.057}_{-0.038}$
$\Sigma m_{\nu}$ [eV]	0.936	$> 0.478$	$\alpha_{\text{IA,DES}}$	-3.51	$-0.8^{+1.8}_{-3.5}$	$\Omega_{\nu} h^2$	0.01007	$0.0065^{+0.0041}_{-0.0015}$
$10^9 A_{\text{s}}$	2.23	$2.70^{+0.43}_{-0.72}$	$\Delta z_{\text{l,DES}}^1$	0.0024	$0.0034 \pm 0.0077$	$\ln(10^{10} A_{\text{s}})$	3.106	$3.27 \pm 0.22$
$n_{\text{s}}$	0.898	—	$\Delta z_{\text{l,DES}}^2$	0.0017	$0.0020 \pm 0.0067$	$\sigma_8$	0.766	$0.760^{+0.072}_{-0.082}$
$b_{\text{DES}}^1$	1.495	$1.53^{+0.15}_{-0.19}$	$\Delta z_{\text{l,DES}}^3$	0.0050	$0.0048 \pm 0.0067$	$S_8$	0.7813	$0.771 \pm 0.035$
$b_{\text{DES}}^2$	1.739	$1.78^{+0.16}_{-0.20}$	$\Delta z_{\text{l,DES}}^4$	0.0036	$0.0027 \pm 0.0092$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4279	$0.423 \pm 0.019$
$b_{\text{DES}}^3$	1.720	$1.76^{+0.16}_{-0.20}$	$\Delta z_{\text{l,DES}}^5$	0.0008	$0.0003 \pm 0.0098$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5724	$0.566 \pm 0.038$
$b_{\text{DES}}^4$	2.073	$2.12^{+0.19}_{-0.23}$	$\Delta z_{\text{s,DES}}^1$	0.0005	$-0.004 \pm 0.015$	$\chi_{\text{DES}}^2$	249.29	$260.8 \pm 4.9$
$b_{\text{DES}}^5$	2.127	$2.17^{+0.20}_{-0.25}$	$\Delta z_{\text{s,DES}}^2$	-0.0305	$-0.031 \pm 0.011$	$\chi_{\text{prior}}^2$	1.46	$13.0 \pm 5.0$
$m_{\text{DES}}^1$	0.0127	$0.011 \pm 0.023$	$\Delta z_{\text{s,DES}}^3$	0.0067	$0.0084 \pm 0.0099$			
$m_{\text{DES}}^2$	0.0096	$0.009 \pm 0.023$	$\Delta z_{\text{s,DES}}^4$	-0.0244	$-0.022 \pm 0.019$			



Best-fit  $\chi^2_{\text{eff}} = 250.75$ ;  $\bar{\chi}^2_{\text{eff}} = 273.76$ ;  $R - 1 = 0.00693$   
 $\chi^2_{\text{eff}}$ : WL - DES\_1YR\_final: 249.28

### 6.142 base\_mnu\_DES\_DESpriors\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.2777	$0.284^{+0.021}_{-0.027}$	$m_{\text{DES}}^3$	0.0114	$0.011 \pm 0.021$	$\Omega_{\text{b}} h^2$	0.0440	$0.0303^{+0.0093}_{-0.015}$
$\Omega_b$	0.0621	$0.0513^{+0.014}_{-0.0094}$	$m_{\text{DES}}^4$	0.0128	$0.013 \pm 0.021$	$\Omega_{\text{c}} h^2$	0.1422	$0.126 \pm 0.023$
$H_0$	84.2	$75^{+10}_{-8}$	$A_{\text{IA,DES}}$	0.471	$0.45^{+0.17}_{-0.20}$	$\Omega_{\Lambda}$	0.7223	$0.716^{+0.027}_{-0.021}$
$\Sigma m_{\nu}$ [eV]	0.999	$0.57^{+0.42}_{-0.15}$	$\alpha_{\text{IA,DES}}$	-1.24	$-0.3^{+2.3}_{-2.8}$	$\Omega_{\nu} h^2$	0.01074	$0.0061^{+0.0041}_{-0.0019}$
$10^9 A_{\text{s}}$	2.678	$2.60^{+0.36}_{-0.47}$	$\Delta z_{1,\text{DES}}^1$	0.0038	$0.0043 \pm 0.0075$	$\ln(10^{10} A_{\text{s}})$	3.288	$3.24 \pm 0.16$
$n_{\text{s}}$	1.0699	$> 0.973$	$\Delta z_{1,\text{DES}}^2$	0.0018	$0.0017 \pm 0.0066$	$\sigma_8$	0.8119	$0.798 \pm 0.034$
$b_{\text{DES}}^1$	1.479	$1.487 \pm 0.098$	$\Delta z_{1,\text{DES}}^3$	0.0040	$0.0040 \pm 0.0066$	$S_8$	0.7811	$0.774 \pm 0.015$
$b_{\text{DES}}^2$	1.693	$1.701^{+0.079}_{-0.088}$	$\Delta z_{1,\text{DES}}^4$	0.0021	$0.0022 \pm 0.0090$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4278	$0.4241 \pm 0.0083$
$b_{\text{DES}}^3$	1.681	$1.687 \pm 0.076$	$\Delta z_{1,\text{DES}}^5$	0.0004	$0.0004 \pm 0.0099$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5894	$0.582 \pm 0.015$
$b_{\text{DES}}^4$	2.029	$2.036 \pm 0.088$	$\Delta z_{\text{s,DES}}^1$	-0.0016	$-0.004 \pm 0.014$	$\chi^2_{\text{lensing}}$	7.44	$9.0 \pm 1.6$
$b_{\text{DES}}^5$	2.105	$2.11 \pm 0.10$	$\Delta z_{\text{s,DES}}^2$	-0.0288	$-0.029 \pm 0.011$	$\chi^2_{\text{DES}}$	499.50	$511.3 \pm 4.5$
$m_{\text{DES}}^1$	0.0140	$0.012 \pm 0.023$	$\Delta z_{\text{s,DES}}^3$	0.0077	$0.0077 \pm 0.0097$	$\chi^2_{\text{prior}}$	0.98	$12.0 \pm 4.7$
$m_{\text{DES}}^2$	0.0155	$0.014 \pm 0.022$	$\Delta z_{\text{s,DES}}^4$	-0.0223	$-0.022 \pm 0.018$			

Best-fit  $\chi^2_{\text{eff}} = 507.92$ ;  $\bar{\chi}^2_{\text{eff}} = 532.21$ ;  $R - 1 = 0.00935$

$\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8\_CMBmarged: 7.44 WL - DES\_1YR\_final: 499.50

### 6.143 base\_mnu\_DESlens\_DESpriors\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.2908	$0.289^{+0.029}_{-0.033}$	$A_{\text{IA,DES}}$	1.30	$0.82 \pm 0.73$	$\ln(10^{10} A_{\text{s}})$	3.381	$3.20 \pm 0.17$
$\Omega_b$	0.0565	$0.0488^{+0.0079}_{-0.017}$	$\alpha_{\text{IA,DES}}$	3.15	$> 1.02$	$\sigma_8$	0.8088	$0.803 \pm 0.038$
$H_0$	71.1	$74^{+10}_{-9}$	$\Delta z_{\text{s,DES}}^1$	0.0027	$0.002 \pm 0.015$	$S_8$	0.7963	$0.786^{+0.023}_{-0.019}$
$\Sigma m_{\nu}$ [eV]	0.575	—	$\Delta z_{\text{s,DES}}^2$	-0.0196	$-0.020 \pm 0.012$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4362	$0.430^{+0.013}_{-0.011}$
$10^9 A_{\text{s}}$	2.941	$2.49^{+0.35}_{-0.50}$	$\Delta z_{\text{s,DES}}^3$	0.0082	$0.008 \pm 0.011$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5939	$0.588 \pm 0.017$
$n_{\text{s}}$	1.069	$> 0.957$	$\Delta z_{\text{s,DES}}^4$	-0.0165	$-0.016 \pm 0.021$	$\chi^2_{\text{lensing}}$	7.09	$9.1 \pm 1.6$
$m_{\text{DES}}^1$	0.0147	$0.014 \pm 0.023$	$\Omega_{\text{b}} h^2$	0.0286	$0.0277^{+0.0071}_{-0.013}$	$\chi^2_{\text{DES}}$	228.81	$232.4 \pm 2.4$
$m_{\text{DES}}^2$	0.0137	$0.013 \pm 0.022$	$\Omega_{\text{c}} h^2$	0.1124	$0.127^{+0.022}_{-0.028}$	$\chi^2_{\text{prior}}$	0.35	$7.4 \pm 3.7$
$m_{\text{DES}}^3$	0.0018	$0.003 \pm 0.021$	$\Omega_{\Lambda}$	0.7092	$0.711^{+0.033}_{-0.029}$			
$m_{\text{DES}}^4$	0.0181	$0.017 \pm 0.021$	$\Omega_{\nu} h^2$	0.00618	$0.0054^{+0.0021}_{-0.0043}$			

Best-fit  $\chi^2_{\text{eff}} = 236.25$ ;  $\bar{\chi}^2_{\text{eff}} = 248.87$ ;  $R - 1 = 0.00676$

$\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8\_CMBmarged: 7.09 WL - DES\_1YR\_final: 228.81



### 6.144 base\_mnu\_DESw\_t\_DESpriors\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.2905	$0.301^{+0.026}_{-0.040}$	$m_{\text{DES}}^3$	0.0216	$0.022 \pm 0.021$	$\Omega_{\text{b}} h^2$	0.0352	$0.0274^{+0.0074}_{-0.015}$
$\Omega_{\text{b}}$	0.0578	$0.0508^{+0.015}_{-0.0096}$	$m_{\text{DES}}^4$	0.0075	$0.007 \pm 0.022$	$\Omega_{\text{c}} h^2$	0.1311	$0.122^{+0.020}_{-0.028}$
$H_0$	78.1	$72^{+9}_{-10}$	$A_{\text{IA,DES}}$	0.382	$0.41^{+0.15}_{-0.20}$	$\Omega_{\Lambda}$	0.7095	$0.699^{+0.040}_{-0.026}$
$\Sigma m_{\nu} [\text{eV}]$	0.999	$> 0.437$	$\alpha_{\text{IA,DES}}$	-2.61	$-0.7^{+1.9}_{-3.5}$	$\Omega_{\nu} h^2$	0.01074	$0.0062^{+0.0042}_{-0.0019}$
$10^9 A_{\text{s}}$	2.777	$2.58^{+0.32}_{-0.54}$	$\Delta z_{\text{l,DES}}^1$	0.0026	$0.0034 \pm 0.0077$	$\ln(10^{10} A_{\text{s}})$	3.324	$3.24^{+0.16}_{-0.18}$
$n_{\text{s}}$	1.057	$> 0.949$	$\Delta z_{\text{l,DES}}^2$	0.0016	$0.0019 \pm 0.0067$	$\sigma_8$	0.7922	$0.776 \pm 0.039$
$b_{\text{DES}}^1$	1.478	$1.49^{+0.10}_{-0.11}$	$\Delta z_{\text{l,DES}}^3$	0.0045	$0.0047 \pm 0.0066$	$S_8$	0.7795	$0.774 \pm 0.019$
$b_{\text{DES}}^2$	1.721	$1.740^{+0.087}_{-0.11}$	$\Delta z_{\text{l,DES}}^4$	0.0029	$0.0026 \pm 0.0091$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4270	$0.424 \pm 0.011$
$b_{\text{DES}}^3$	1.712	$1.727^{+0.081}_{-0.095}$	$\Delta z_{\text{l,DES}}^5$	0.0005	$0.0003 \pm 0.0098$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5816	$0.573 \pm 0.016$
$b_{\text{DES}}^4$	2.066	$2.084^{+0.092}_{-0.11}$	$\Delta z_{\text{s,DES}}^1$	-0.0001	$-0.004 \pm 0.015$	$\chi_{\text{lensing}}^2$	7.47	$9.4 \pm 1.8$
$b_{\text{DES}}^5$	2.135	$2.15 \pm 0.11$	$\Delta z_{\text{s,DES}}^2$	-0.0301	$-0.031 \pm 0.011$	$\chi_{\text{DES}}^2$	250.04	$260.4 \pm 4.6$
$m_{\text{DES}}^1$	0.0120	$0.011 \pm 0.023$	$\Delta z_{\text{s,DES}}^3$	0.0081	$0.0084 \pm 0.0098$	$\chi_{\text{prior}}^2$	1.33	$12.8 \pm 4.9$
$m_{\text{DES}}^2$	0.0103	$0.009 \pm 0.023$	$\Delta z_{\text{s,DES}}^4$	-0.0237	$-0.022 \pm 0.019$			

Best-fit  $\chi_{\text{eff}}^2 = 258.84$ ;  $\bar{\chi}_{\text{eff}}^2 = 282.60$ ;  $R - 1 = 0.00944$

$\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmargd: 7.47 WL - DES\_1YR\_final: 250.04

### 6.145 base\_mnu\_DES\_DESpriors\_BAO\_CookeDH

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.3153	$0.315 \pm 0.021$	$m_{\text{DES}}^4$	0.0098	$0.011 \pm 0.021$	$\Omega_{\Lambda}$	0.6847	$0.685 \pm 0.021$
$\Omega_{\text{b}}$	0.04988	$0.0490 \pm 0.0019$	$A_{\text{IA,DES}}$	0.423	$0.42^{+0.16}_{-0.19}$	$\Omega_{\nu} h^2$	0.01061	$0.0071^{+0.0036}_{-0.0012}$
$H_0$	66.80	$67.4^{+1.2}_{-1.4}$	$\alpha_{\text{IA,DES}}$	-1.89	$-0.6^{+2.1}_{-2.9}$	$\ln(10^{10} A_{\text{s}})$	3.464	$3.26 \pm 0.19$
$\Sigma m_{\nu} [\text{eV}]$	0.987	$> 0.561$	$\Delta z_{\text{l,DES}}^1$	0.0037	$0.0040 \pm 0.0074$	$\sigma_8$	0.7587	$0.751^{+0.033}_{-0.040}$
$10^9 A_{\text{s}}$	3.194	$2.65^{+0.40}_{-0.57}$	$\Delta z_{\text{l,DES}}^2$	0.0014	$0.0015 \pm 0.0066$	$S_8$	0.7777	$0.768 \pm 0.022$
$n_{\text{s}}$	1.070	$> 0.951$	$\Delta z_{\text{l,DES}}^3$	0.0038	$0.0038 \pm 0.0066$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4260	$0.421 \pm 0.012$
$b_{\text{DES}}^1$	1.578	$1.58 \pm 0.11$	$\Delta z_{\text{l,DES}}^4$	0.0016	$0.0015 \pm 0.0092$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5685	$0.562 \pm 0.021$
$b_{\text{DES}}^2$	1.797	$1.80 \pm 0.10$	$\Delta z_{\text{l,DES}}^5$	0.0000	$0.0002 \pm 0.0098$	$\chi_{6\text{DF}}^2$	0.0017	$0.064 \pm 0.089$
$b_{\text{DES}}^3$	1.773	$1.778 \pm 0.099$	$\Delta z_{\text{s,DES}}^1$	-0.0018	$-0.004 \pm 0.014$	$\chi_{\text{MGS}}^2$	1.61	$1.69 \pm 0.71$
$b_{\text{DES}}^4$	2.134	$2.14 \pm 0.12$	$\Delta z_{\text{s,DES}}^2$	-0.0289	$-0.030 \pm 0.011$	$\chi_{\text{DR12BAO}}^2$	2.90	$4.0 \pm 1.5$
$b_{\text{DES}}^5$	2.198	$2.21 \pm 0.14$	$\Delta z_{\text{s,DES}}^3$	0.0064	$0.0073 \pm 0.0099$	$\chi_{\text{DES}}^2$	500.53	$512.5 \pm 4.8$
$m_{\text{DES}}^1$	0.0133	$0.011 \pm 0.023$	$\Delta z_{\text{s,DES}}^4$	-0.0234	$-0.021 \pm 0.019$	$\chi_{\text{prior}}^2$	1.10	$13.1 \pm 5.0$
$m_{\text{DES}}^2$	0.0152	$0.014 \pm 0.022$	$\Omega_{\text{b}} h^2$	0.02226	$0.02220 \pm 0.00050$	$\chi_{\text{BAO}}^2$	4.51	$5.7 \pm 1.7$
$m_{\text{DES}}^3$	0.0062	$0.008 \pm 0.021$	$\Omega_{\text{c}} h^2$	0.1078	$0.114^{+0.010}_{-0.013}$			

Best-fit  $\chi_{\text{eff}}^2 = 506.14$ ;  $\bar{\chi}_{\text{eff}}^2 = 531.37$ ;  $R - 1 = 0.00865$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.61 DR12BAO: 2.90 WL - DES\_1YR\_final: 500.53



### 6.146 base\_mnu\_DESlens\_DESpriors\_BAO\_CookeDH

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.3535	$0.347^{+0.033}_{-0.040}$	$\alpha_{\text{IA,DES}}$	2.62	$> 0.967$	$S_8$	0.7856	$0.776^{+0.028}_{-0.024}$
$\Omega_b$	0.04591	$0.0462 \pm 0.0031$	$\Delta z_{\text{s,DES}}^1$	0.0034	$0.002 \pm 0.015$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4303	$0.425^{+0.015}_{-0.013}$
$H_0$	69.53	$69.5^{+2.0}_{-2.6}$	$\Delta z_{\text{s,DES}}^2$	-0.0207	$-0.020 \pm 0.012$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5580	$0.554^{+0.027}_{-0.024}$
$\Sigma m_\nu$ [eV]	0.739	—	$\Delta z_{\text{s,DES}}^3$	0.0074	$0.008 \pm 0.011$	$\chi_{6\text{DF}}^2$	0.091	$0.17 \pm 0.23$
$10^9 A_{\text{s}}$	1.79	$1.86^{+0.42}_{-0.89}$	$\Delta z_{\text{s,DES}}^4$	-0.0163	$-0.016 \pm 0.021$	$\chi_{\text{MGS}}^2$	0.98	$1.19 \pm 0.74$
$n_{\text{s}}$	0.987	—	$\Omega_{\text{b}} h^2$	0.022197	$0.02221 \pm 0.00049$	$\chi_{\text{DR12BAO}}^2$	2.12	$3.6 \pm 1.6$
$m_{\text{DES}}^1$	0.0138	$0.014 \pm 0.023$	$\Omega_{\text{c}} h^2$	0.1408	$0.140^{+0.021}_{-0.032}$	$\chi_{\text{DES}}^2$	228.96	$233.2 \pm 2.7$
$m_{\text{DES}}^2$	0.0136	$0.013 \pm 0.022$	$\Omega_{\Lambda}$	0.6465	$0.653^{+0.040}_{-0.033}$	$\chi_{\text{prior}}^2$	0.46	$8.5 \pm 4.0$
$m_{\text{DES}}^3$	0.0004	$0.001 \pm 0.022$	$\Omega_{\nu} h^2$	0.00795	$0.0061^{+0.0043}_{-0.0019}$	$\chi_{\text{BAO}}^2$	3.19	$4.9 \pm 1.8$
$m_{\text{DES}}^4$	0.0184	$0.018 \pm 0.021$	$\ln(10^{10} A_{\text{s}})$	2.882	$2.85 \pm 0.39$			
$A_{\text{IA,DES}}$	1.29	$0.94 \pm 0.67$	$\sigma_8$	0.7237	$0.724 \pm 0.050$			

Best-fit  $\chi_{\text{eff}}^2 = 232.61$ ;  $\bar{\chi}_{\text{eff}}^2 = 246.55$ ;  $R - 1 = 0.00549$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.09 MGS: 0.98 DR12BAO: 2.12 WL - DES\_1YR\_final: 228.96

### 6.147 base\_mnu\_DESwt\_DESpriors\_BAO\_CookeDH

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.3535	$0.322^{+0.022}_{-0.019}$	$m_{\text{DES}}^4$	0.0054	$0.007 \pm 0.022$	$\Omega_{\Lambda}$	0.6465	$0.678^{+0.019}_{-0.022}$
$\Omega_b$	0.04657	$0.0486 \pm 0.0018$	$A_{\text{IA,DES}}$	0.280	$0.38^{+0.15}_{-0.18}$	$\Omega_{\nu} h^2$	0.01074	$0.00761^{+0.0031}_{-0.00092}$
$H_0$	69.06	$67.6 \pm 1.3$	$\alpha_{\text{IA,DES}}$	-4.10	$-0.8^{+1.7}_{-3.6}$	$\ln(10^{10} A_{\text{s}})$	3.097	$3.23 \pm 0.20$
$\Sigma m_\nu$ [eV]	0.999	$> 0.633$	$\Delta z_{\text{l,DES}}^1$	0.0026	$0.0033 \pm 0.0077$	$\sigma_8$	0.7123	$0.742^{+0.041}_{-0.046}$
$10^9 A_{\text{s}}$	2.212	$2.57^{+0.39}_{-0.59}$	$\Delta z_{\text{l,DES}}^2$	0.0018	$0.0021 \pm 0.0067$	$S_8$	0.7732	$0.768 \pm 0.034$
$n_{\text{s}}$	0.878	$< 0.980$	$\Delta z_{\text{l,DES}}^3$	0.0046	$0.0046 \pm 0.0067$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4235	$0.420 \pm 0.018$
$b_{\text{DES}}^1$	1.599	$1.55 \pm 0.12$	$\Delta z_{\text{l,DES}}^4$	0.0032	$0.0027 \pm 0.0091$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5492	$0.559 \pm 0.028$
$b_{\text{DES}}^2$	1.855	$1.80^{+0.11}_{-0.12}$	$\Delta z_{\text{l,DES}}^5$	0.0007	$0.0004 \pm 0.0098$	$\chi_{6\text{DF}}^2$	0.0894	$0.08 \pm 0.11$
$b_{\text{DES}}^3$	1.830	$1.79 \pm 0.11$	$\Delta z_{\text{s,DES}}^1$	0.0014	$-0.004 \pm 0.015$	$\chi_{\text{MGS}}^2$	0.98	$1.51 \pm 0.70$
$b_{\text{DES}}^4$	2.200	$2.15 \pm 0.14$	$\Delta z_{\text{s,DES}}^2$	-0.0304	$-0.031 \pm 0.011$	$\chi_{\text{DR12BAO}}^2$	2.11	$3.8 \pm 1.6$
$b_{\text{DES}}^5$	2.253	$2.21^{+0.14}_{-0.16}$	$\Delta z_{\text{s,DES}}^3$	0.0070	$0.0085 \pm 0.0099$	$\chi_{\text{DES}}^2$	249.66	$260.3 \pm 4.8$
$m_{\text{DES}}^1$	0.0127	$0.011 \pm 0.023$	$\Delta z_{\text{s,DES}}^4$	-0.0229	$-0.022 \pm 0.019$	$\chi_{\text{prior}}^2$	1.37	$13.9 \pm 5.2$
$m_{\text{DES}}^2$	0.0094	$0.009 \pm 0.023$	$\Omega_{\text{b}} h^2$	0.02221	$0.02218 \pm 0.00051$	$\chi_{\text{BAO}}^2$	3.19	$5.4 \pm 1.8$
$m_{\text{DES}}^3$	0.0188	$0.021 \pm 0.022$	$\Omega_{\text{c}} h^2$	0.1356	$0.117 \pm 0.012$			

Best-fit  $\chi_{\text{eff}}^2 = 254.22$ ;  $\bar{\chi}_{\text{eff}}^2 = 279.70$ ;  $R - 1 = 0.00628$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.09 MGS: 0.98 DR12BAO: 2.12 WL - DES\_1YR\_final: 249.66



### 6.148 base\_mnu\_DES\_DESpriors\_lensing\_BAO\_CookeDH

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.3165	$0.310 \pm 0.018$	$m_{\text{DES}}^4$	0.0083	$0.0095 \pm 0.021$	$\Omega_{\Lambda}$	0.6835	$0.690 \pm 0.018$
$\Omega_b$	0.04959	$0.0491 \pm 0.0017$	$A_{\text{IA,DES}}$	0.421	$0.43^{+0.15}_{-0.18}$	$\Omega_{\nu} h^2$	0.01038	$0.0067^{+0.0037}_{-0.0016}$
$H_0$	66.94	$67.3 \pm 1.2$	$\alpha_{\text{IA,DES}}$	-2.11	$-0.7^{+2.0}_{-2.9}$	$\ln(10^{10} A_{\text{s}})$	3.439	$3.29^{+0.16}_{-0.10}$
$\Sigma m_{\nu} [\text{eV}]$	0.965	$> 0.508$	$\Delta z_{\text{l,DES}}^1$	0.0037	$0.0041 \pm 0.0075$	$\sigma_8$	0.7621	$0.765^{+0.022}_{-0.027}$
$10^9 A_{\text{s}}$	3.115	$2.72^{+0.40}_{-0.33}$	$\Delta z_{\text{l,DES}}^2$	0.00099	$0.0014 \pm 0.0066$	$S_8$	0.7829	$0.777 \pm 0.015$
$n_{\text{s}}$	1.070	$> 0.970$	$\Delta z_{\text{l,DES}}^3$	0.0038	$0.0038 \pm 0.0066$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4288	$0.4254 \pm 0.0081$
$b_{\text{DES}}^1$	1.578	$1.557 \pm 0.087$	$\Delta z_{\text{l,DES}}^4$	0.0015	$0.0015 \pm 0.0091$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5717	$0.570 \pm 0.013$
$b_{\text{DES}}^2$	1.793	$1.771 \pm 0.072$	$\Delta z_{\text{l,DES}}^5$	0.0002	$0.0002 \pm 0.0098$	$\chi_{\text{lensing}}^2$	7.78	$9.2 \pm 1.6$
$b_{\text{DES}}^3$	1.773	$1.753 \pm 0.063$	$\Delta z_{\text{s,DES}}^1$	-0.0008	$-0.004 \pm 0.014$	$\chi_{6\text{DF}}^2$	0.0017	$0.057 \pm 0.081$
$b_{\text{DES}}^4$	2.135	$2.113 \pm 0.073$	$\Delta z_{\text{s,DES}}^2$	-0.0293	$-0.030 \pm 0.011$	$\chi_{\text{MGS}}^2$	1.61	$1.80 \pm 0.70$
$b_{\text{DES}}^5$	2.206	$2.182 \pm 0.092$	$\Delta z_{\text{s,DES}}^3$	0.0057	$0.0066 \pm 0.0097$	$\chi_{\text{DR12BAO}}^2$	2.83	$4.1 \pm 1.5$
$m_{\text{DES}}^1$	0.0124	$0.011 \pm 0.023$	$\Delta z_{\text{s,DES}}^4$	-0.0242	$-0.023 \pm 0.018$	$\chi_{\text{DES}}^2$	500.59	$511.3 \pm 4.4$
$m_{\text{DES}}^2$	0.0150	$0.014 \pm 0.022$	$\Omega_{\text{b}} h^2$	0.02222	$0.02220 \pm 0.00050$	$\chi_{\text{prior}}^2$	1.27	$13.1 \pm 4.9$
$m_{\text{DES}}^3$	0.0045	$0.006 \pm 0.020$	$\Omega_{\text{c}} h^2$	0.1093	$0.1117^{+0.0082}_{-0.011}$	$\chi_{\text{BAO}}^2$	4.44	$5.9 \pm 1.7$

Best-fit  $\chi_{\text{eff}}^2 = 514.08$ ;  $\bar{\chi}_{\text{eff}}^2 = 539.54$ ;  $R - 1 = 0.00724$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.61 DR12BAO: 2.83 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmargd: 7.78 WL - DES\_1YR\_final: 500.59

### 6.149 base\_mnu\_DESlens\_DESpriors\_lensing\_BAO\_CookeDH

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.3271	$0.318 \pm 0.020$	$\alpha_{\text{IA,DES}}$	2.56	$> 0.966$	$S_8$	0.7998	$0.794 \pm 0.019$
$\Omega_b$	0.04896	$0.0484 \pm 0.0019$	$\Delta z_{\text{s,DES}}^1$	0.0035	$0.003 \pm 0.014$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4380	$0.435 \pm 0.011$
$H_0$	67.33	$67.7^{+1.2}_{-1.4}$	$\Delta z_{\text{s,DES}}^2$	-0.0199	$-0.020 \pm 0.012$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5792	$0.579 \pm 0.014$
$\Sigma m_{\nu} [\text{eV}]$	0.991	$> 0.424$	$\Delta z_{\text{s,DES}}^3$	0.0062	$0.006 \pm 0.010$	$\chi_{\text{lensing}}^2$	7.38	$9.0 \pm 1.6$
$10^9 A_{\text{s}}$	2.911	$2.51^{+0.33}_{-0.40}$	$\Delta z_{\text{s,DES}}^4$	-0.0194	$-0.019 \pm 0.020$	$\chi_{6\text{DF}}^2$	0.0199	$0.064 \pm 0.090$
$n_{\text{s}}$	1.063	$> 0.950$	$\Omega_{\text{b}} h^2$	0.022193	$0.02219 \pm 0.00050$	$\chi_{\text{MGS}}^2$	1.34	$1.62 \pm 0.69$
$m_{\text{DES}}^1$	0.0146	$0.014 \pm 0.023$	$\Omega_{\text{c}} h^2$	0.1154	$0.118^{+0.010}_{-0.013}$	$\chi_{\text{DR12BAO}}^2$	2.61	$3.9 \pm 1.6$
$m_{\text{DES}}^2$	0.0130	$0.012 \pm 0.022$	$\Omega_{\Lambda}$	0.6729	$0.682 \pm 0.020$	$\chi_{\text{DES}}^2$	228.99	$232.2 \pm 2.4$
$m_{\text{DES}}^3$	-0.0031	$-0.003 \pm 0.021$	$\Omega_{\nu} h^2$	0.01066	$0.0061^{+0.0042}_{-0.0019}$	$\chi_{\text{prior}}^2$	0.61	$8.5 \pm 4.0$
$m_{\text{DES}}^4$	0.0148	$0.014 \pm 0.021$	$\ln(10^{10} A_{\text{s}})$	3.371	$3.21^{+0.16}_{-0.14}$	$\chi_{\text{BAO}}^2$	3.97	$5.6 \pm 1.8$
$A_{\text{IA,DES}}$	1.31	$1.04 \pm 0.55$	$\sigma_8$	0.7659	$0.772^{+0.024}_{-0.028}$			

Best-fit  $\chi_{\text{eff}}^2 = 240.95$ ;  $\bar{\chi}_{\text{eff}}^2 = 255.26$ ;  $R - 1 = 0.00788$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.34 DR12BAO: 2.61 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmargd: 7.38 WL - DES\_1YR\_final: 228.99



# 6.150 base\_mnu\_DESw\_t\_DESpriors\_lensing\_BAO\_CookeDH

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{m}}$	0.3326	$0.320 \pm 0.020$	$m_{\text{DES}}^4$	0.0050	$0.006 \pm 0.021$	$\Omega_{\Lambda}$	0.6674	$0.680 \pm 0.020$
$\Omega_b$	0.04819	$0.0486 \pm 0.0018$	$A_{\text{IA,DES}}$	0.310	$0.39^{+0.14}_{-0.18}$	$\Omega_{\nu} h^2$	0.01075	$0.0072^{+0.0034}_{-0.0011}$
$H_0$	67.85	$67.6 \pm 1.2$	$\alpha_{\text{IA,DES}}$	-3.69	$-0.9^{+1.6}_{-3.6}$	$\ln(10^{10} A_{\text{s}})$	3.290	$3.24 \pm 0.13$
$\Sigma m_{\nu} [\text{eV}]$	0.999	$> 0.579$	$\Delta z_{\text{l,DES}}^1$	0.0023	$0.0034 \pm 0.0077$	$\sigma_8$	0.7443	$0.755^{+0.022}_{-0.027}$
$10^9 A_{\text{s}}$	2.685	$2.58^{+0.30}_{-0.43}$	$\Delta z_{\text{l,DES}}^2$	0.0016	$0.0020 \pm 0.0067$	$S_8$	0.7838	$0.778 \pm 0.018$
$n_{\text{s}}$	1.003	—	$\Delta z_{\text{l,DES}}^3$	0.0046	$0.0047 \pm 0.0067$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4293	$0.4261 \pm 0.0098$
$b_{\text{DES}}^1$	1.564	$1.535 \pm 0.090$	$\Delta z_{\text{l,DES}}^4$	0.0029	$0.0025 \pm 0.0091$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5653	$0.567 \pm 0.013$
$b_{\text{DES}}^2$	1.814	$1.783 \pm 0.072$	$\Delta z_{\text{l,DES}}^5$	0.0004	$0.0002 \pm 0.0098$	$\chi_{\text{lensing}}^2$	8.36	$9.6 \pm 1.8$
$b_{\text{DES}}^3$	1.797	$1.769 \pm 0.063$	$\Delta z_{\text{s,DES}}^1$	0.0009	$-0.004 \pm 0.015$	$\chi_{6\text{DF}}^2$	0.0216	$0.066 \pm 0.091$
$b_{\text{DES}}^4$	2.163	$2.132 \pm 0.074$	$\Delta z_{\text{s,DES}}^2$	-0.0304	$-0.031 \pm 0.011$	$\chi_{\text{MGS}}^2$	1.34	$1.58 \pm 0.68$
$b_{\text{DES}}^5$	2.232	$2.201 \pm 0.092$	$\Delta z_{\text{s,DES}}^3$	0.0064	$0.0077 \pm 0.0097$	$\chi_{\text{DR12BAO}}^2$	2.39	$3.8 \pm 1.5$
$m_{\text{DES}}^1$	0.0128	$0.011 \pm 0.023$	$\Delta z_{\text{s,DES}}^4$	-0.0245	$-0.024 \pm 0.018$	$\chi_{\text{DES}}^2$	250.06	$259.8 \pm 4.5$
$m_{\text{DES}}^2$	0.0095	$0.009 \pm 0.023$	$\Omega_{\text{b}} h^2$	0.02218	$0.02219 \pm 0.00050$	$\chi_{\text{prior}}^2$	1.43	$13.8 \pm 5.2$
$m_{\text{DES}}^3$	0.0190	$0.020 \pm 0.021$	$\Omega_{\text{c}} h^2$	0.1202	$0.117^{+0.010}_{-0.012}$	$\chi_{\text{BAO}}^2$	3.75	$5.4 \pm 1.7$

Best-fit  $\chi_{\text{eff}}^2 = 263.60$ ;  $\bar{\chi}_{\text{eff}}^2 = 288.63$ ;  $R - 1 = 0.00816$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.34 DR12BAO: 2.39 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 8.36 WL - DES\_1YR\_final: 250.06



6.151 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_DES

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022543	$0.02251 \pm 0.00015$	$\Delta z_{l,DES}^1$	0.0034	$0.0035 \pm 0.0075$	$z_{\text{drag}}$	1060.200	$1060.12 \pm 0.31$
$\Omega_c h^2$	0.11794	$0.1180 \pm 0.0011$	$\Delta z_{l,DES}^2$	0.0006	$0.0008 \pm 0.0066$	$r_{\text{drag}}$	147.452	$147.47 \pm 0.26$
$100\theta_{\text{MC}}$	1.041145	$1.04110 \pm 0.00031$	$\Delta z_{l,DES}^3$	0.0036	$0.0034 \pm 0.0065$	$k_D$	0.140609	$0.14058 \pm 0.00030$
$\tau$	0.0554	$0.0545 \pm 0.0080$	$\Delta z_{l,DES}^4$	0.0007	$0.0006 \pm 0.0090$	$100\theta_D$	0.160625	$0.16066 \pm 0.00018$
$\Sigma m_\nu$ [eV]	0.000	$< 0.111$	$\Delta z_{l,DES}^5$	-0.0007	$-0.0006 \pm 0.0098$	$z_{\text{eq}}$	3357.0	$3357 \pm 25$
$\ln(10^{10} A_s)$	3.0423	$3.040 \pm 0.016$	$\Delta z_{s,DES}^1$	0.0000	$-0.004 \pm 0.014$	$k_{\text{eq}}$	0.010246	$0.010245 \pm 0.000078$
$n_s$	0.97063	$0.9694 \pm 0.0042$	$\Delta z_{s,DES}^2$	-0.0300	$-0.031 \pm 0.011$	$100\theta_{\text{eq}}$	0.82207	$0.8221 \pm 0.0049$
$y_{\text{cal}}$	1.00057	$1.0005 \pm 0.0024$	$\Delta z_{s,DES}^3$	0.0035	$0.0042 \pm 0.0096$	$100\theta_{s,\text{eq}}$	0.45383	$0.4539 \pm 0.0025$
$A_{217}^{\text{CIB}}$	46.5	$47 \pm 7$	$\Delta z_{s,DES}^4$	-0.0307	$-0.029 \pm 0.018$	$H(0.15)$	73.95	$73.1^{+1.2}_{-0.40}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.57	—	$H_0$	68.82	$67.9^{+1.4}_{-0.46}$	$D_M(0.15)$	631.0	$638.9^{+3.6}_{-12}$
$A_{143}^{\text{tSZ}}$	7.16	$5.5^{+2.2}_{-1.9}$	$\Omega_\Lambda$	0.7034	$0.692^{+0.017}_{-0.0054}$	$H(0.38)$	83.81	$83.18^{+0.93}_{-0.30}$
$A_{100}^{\text{PS}}$	248.5	$259 \pm 28$	$\Omega_m$	0.2966	$0.3075^{+0.0054}_{-0.017}$	$D_M(0.38)$	1508.4	$1524.7^{+7.4}_{-24}$
$A_{143}^{\text{PS}}$	48.3	$45 \pm 8$	$\Omega_m h^2$	0.14048	$0.1416^{+0.0010}_{-0.0020}$	$H(0.51)$	90.39	$89.85^{+0.78}_{-0.24}$
$A_{143 \times 217}^{\text{PS}}$	50.1	$41 \pm 9$	$\Omega_\nu h^2$	0.00000	$< 0.00120$	$D_M(0.51)$	1956.4	$1975.7^{+8.7}_{-29}$
$A_{217}^{\text{PS}}$	120.0	$114 \pm 10$	$\Omega_m h^3$	0.09668	$0.09614^{+0.00080}_{-0.00025}$	$H(0.61)$	95.899	$95.44^{+0.66}_{-0.20}$
$A^{\text{kSZ}}$	0.00	$< 4.48$	$\sigma_8$	0.8176	$0.795^{+0.026}_{-0.0063}$	$D_M(0.61)$	2278.5	$2299.5^{+9.5}_{-31}$
$A_{100}^{\text{dustTT}}$	8.82	$9.0 \pm 1.8$	$S_8$	0.8129	$0.804^{+0.014}_{-0.013}$	$H(2.33)$	235.07	$235.62^{+0.65}_{-1.1}$
$A_{143}^{\text{dustTT}}$	11.07	$11.0 \pm 1.8$	$\sigma_8 \Omega_m^{0.5}$	0.4453	$0.4403^{+0.0078}_{-0.0069}$	$D_M(2.33)$	5735.7	$5758.6^{+8.5}_{-32}$
$A_{143 \times 217}^{\text{dustTT}}$	20.00	$18.7 \pm 3.3$	$\sigma_8 \Omega_m^{0.25}$	0.6034	$0.591^{+0.014}_{-0.0064}$	$f\sigma_8(0.15)$	0.4503	$0.4456^{+0.0075}_{-0.0065}$
$A_{217}^{\text{dustTT}}$	95.2	$93.6 \pm 7.3$	$\sigma_8/h^{0.5}$	0.9855	$0.964^{+0.025}_{-0.0091}$	$\sigma_8(0.15)$	0.7568	$0.735^{+0.025}_{-0.0057}$
$A_{100}^{\text{dustTE}}$	0.1127	$0.114 \pm 0.038$	$r_{\text{drag}} h$	101.48	$100.2^{+2.1}_{-0.81}$	$f\sigma_8(0.38)$	0.4720	$0.4647^{+0.0094}_{-0.0052}$
$A_{100 \times 143}^{\text{dustTE}}$	0.1337	$0.135 \pm 0.029$	$\langle d^2 \rangle^{1/2}$	2.4189	$2.404 \pm 0.024$	$\sigma_8(0.38)$	0.6723	$0.652^{+0.023}_{-0.0050}$
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.481 \pm 0.085$	$z_{\text{re}}$	7.72	$7.63 \pm 0.80$	$f\sigma_8(0.51)$	0.4722	$0.464^{+0.010}_{-0.0045}$
$A_{143}^{\text{dustTE}}$	0.222	$0.223 \pm 0.054$	$10^9 A_s$	2.0953	$2.090 \pm 0.034$	$\sigma_8(0.51)$	0.6298	$0.611^{+0.022}_{-0.0046}$
$A_{143 \times 217}^{\text{dustTE}}$	0.662	$0.661 \pm 0.080$	$10^9 A_s e^{-2\tau}$	1.8754	$1.874 \pm 0.011$	$f\sigma_8(0.61)$	0.4684	$0.459^{+0.011}_{-0.0040}$
$A_{217}^{\text{dustTE}}$	2.064	$2.06 \pm 0.27$	$D_{40}$	1220.0	$1221 \pm 12$	$\sigma_8(0.61)$	0.5996	$0.581^{+0.021}_{-0.0044}$
$c_{100}$	0.99972	$0.99967 \pm 0.00061$	$D_{220}$	5743.8	$5745 \pm 39$	$f\sigma_8(2.33)$	0.3019	$0.2939^{+0.0095}_{-0.0021}$
$c_{217}$	0.99819	$0.99819 \pm 0.00062$	$D_{810}$	2539.2	$2537 \pm 13$	$\sigma_8(2.33)$	0.3124	$0.303^{+0.011}_{-0.0023}$
$b_{\text{DES}}^1$	1.484	$1.526^{+0.075}_{-0.093}$	$D_{1420}$	819.17	$818.2 \pm 4.7$	$f_{2000}^{143}$	28.15	$29.3 \pm 2.8$
$b_{\text{DES}}^2$	1.682	$1.729^{+0.053}_{-0.081}$	$D_{2000}$	231.80	$231.2 \pm 1.6$	$f_{2000}^{143 \times 217}$	31.49	$32.0 \pm 1.9$
$b_{\text{DES}}^3$	1.671	$1.716^{+0.044}_{-0.074}$	$n_{s,0.002}$	0.97063	$0.9694 \pm 0.0042$	$f_{2000}^{217}$	106.03	$106.8 \pm 1.8$
$b_{\text{DES}}^4$	2.026	$2.080^{+0.051}_{-0.087}$	$Y_P$	0.245460	$0.245447 \pm 0.000057$	$\chi_{\text{small}}^2$	396.08	$397.0 \pm 1.8$
$b_{\text{DES}}^5$	2.130	$2.182^{+0.079}_{-0.10}$	$Y_P^{\text{BBN}}$	0.246786	$0.246774 \pm 0.000058$	$\chi_{\text{lowl}}^2$	22.51	$22.56 \pm 0.78$
$m_{\text{DES}}^1$	0.0137	$0.012 \pm 0.023$	$10^5 D/H$	2.5544	$2.560 \pm 0.027$	$\chi_{\text{plik}}^2$	2346.9	$2364.5 \pm 6.9$
$m_{\text{DES}}^2$	0.0134	$0.013 \pm 0.022$	Age/Gyr	13.7357	$13.788^{+0.019}_{-0.073}$	$\chi_{\text{DES}}^2$	508.94	$518.1 \pm 4.9$
$m_{\text{DES}}^3$	-0.0026	$-0.002 \pm 0.020$	$z_*$	1089.518	$1089.57 \pm 0.26$	$\chi_{\text{prior}}^2$	3.9	$25 \pm 7$
$m_{\text{DES}}^4$	0.0017	$0.003 \pm 0.021$	$r_*$	144.841	$144.85 \pm 0.26$	$\chi_{\text{CMB}}^2$	2765.5	$2784.0 \pm 6.9$
$A_{\text{IA,DES}}$	0.454	$0.46^{+0.15}_{-0.19}$	$100\theta_*$	1.041286	$1.04129 \pm 0.00029$			
$\alpha_{\text{IA,DES}}$	-2.29	$-1.1^{+1.7}_{-2.9}$	$D_M(z_*)/\text{Gpc}$	13.9098	$13.910 \pm 0.025$			

Best-fit  $\chi_{\text{eff}}^2 = 3278.36$ ;  $\bar{\chi}_{\text{eff}}^2 = 3326.78$ ;  $R - 1 = 0.00796$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.07 commander\_dx12\_v3.2\_29: 22.51 plik\_rd12\_HM\_v22b\_TTTEEE: 2346.89 WL - DES\_1YR\_final: 508.94



# 6.152 base\_mnu\_plikHM\_TTTEE\_lowl\_lowE\_DES\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022502	$0.02252 \pm 0.00013$	$\Delta z_{l,DES}^2$	0.0005	$0.0008 \pm 0.0066$	$k_D$	0.140653	$0.14058 \pm 0.00029$
$\Omega_c h^2$	0.11837	$0.11796 \pm 0.00091$	$\Delta z_{l,DES}^3$	0.0034	$0.0034 \pm 0.0066$	$100\theta_D$	0.160663	$0.16066 \pm 0.00017$
$100\theta_{MC}$	1.041136	$1.04112 \pm 0.00028$	$\Delta z_{l,DES}^4$	0.0009	$0.0006 \pm 0.0090$	$z_{eq}$	3366.3	$3357 \pm 21$
$\tau$	0.0538	$0.0542 \pm 0.0079$	$\Delta z_{l,DES}^5$	-0.0008	$-0.0007 \pm 0.0097$	$k_{eq}$	0.010274	$0.010246 \pm 0.000063$
$\Sigma m_\nu$ [eV]	0.0002	$< 0.0866$	$\Delta z_{s,DES}^1$	0.0009	$-0.003 \pm 0.014$	$100\theta_{eq}$	0.82025	$0.8220 \pm 0.0040$
$\ln(10^{10} A_s)$	3.0387	$3.039 \pm 0.016$	$\Delta z_{s,DES}^2$	-0.0303	$-0.031 \pm 0.011$	$100\theta_{s,eq}$	0.45291	$0.4538 \pm 0.0020$
$n_s$	0.96915	$0.9694 \pm 0.0037$	$\Delta z_{s,DES}^3$	0.0025	$0.0040 \pm 0.0095$	$H(0.15)$	73.782	$73.43^{+0.54}_{-0.41}$
$y_{cal}$	0.99999	$1.0005 \pm 0.0025$	$\Delta z_{s,DES}^4$	-0.0314	$-0.030 \pm 0.018$	$D_M(0.15)$	632.60	$636.0^{+3.9}_{-5.3}$
$A_{217}^{CIB}$	47.7	$47 \pm 7$	$H_0$	68.62	$68.23^{+0.62}_{-0.47}$	$H(0.38)$	83.692	$83.40^{+0.43}_{-0.31}$
$\xi^{tSZ \times CIB}$	0.40	—	$\Omega_\Lambda$	0.7009	$0.6965^{+0.0073}_{-0.0057}$	$D_M(0.38)$	1511.7	$1518.8^{+7.9}_{-11}$
$A_{143}^{tSZ}$	7.34	$5.5^{+2.2}_{-1.9}$	$\Omega_m$	0.2991	$0.3035^{+0.0057}_{-0.0073}$	$H(0.51)$	90.293	$90.04^{+0.37}_{-0.26}$
$A_{100}^{PS}$	249.8	$259 \pm 28$	$\Omega_m h^2$	0.14087	$0.14123 \pm 0.00091$	$D_M(0.51)$	1960.2	$1968.7^{+9.3}_{-13}$
$A_{143}^{PS}$	46.2	$45 \pm 8$	$\Omega_\nu h^2$	$0.2 \cdot 10^{-5}$	$< 0.000931$	$H(0.61)$	95.824	$95.60^{+0.32}_{-0.22}$
$A_{143 \times 217}^{PS}$	46.2	$41 \pm 9$	$\Omega_m h^3$	0.096672	$0.09636^{+0.00048}_{-0.00034}$	$D_M(0.61)$	2282.6	$2292^{+10}_{-14}$
$A_{217}^{PS}$	118.3	$114 \pm 10$	$\sigma_8$	0.8173	$0.802^{+0.016}_{-0.0089}$	$H(2.33)$	235.31	$235.43 \pm 0.56$
$A^{kSZ}$	0.00	$< 4.43$	$S_8$	0.8161	$0.807 \pm 0.012$	$D_M(2.33)$	5738.8	$5750^{+10}_{-16}$
$A_{100}^{dustTT}$	8.87	$8.9 \pm 1.8$	$\sigma_8 \Omega_m^{0.5}$	0.4470	$0.4420 \pm 0.0068$	$f\sigma_8(0.15)$	0.4518	$0.4473 \pm 0.0064$
$A_{143}^{dustTT}$	11.02	$11.0 \pm 1.8$	$\sigma_8 \Omega_m^{0.25}$	0.6044	$0.596^{+0.010}_{-0.0072}$	$\sigma_8(0.15)$	0.7563	$0.742^{+0.015}_{-0.0083}$
$A_{143 \times 217}^{dustTT}$	19.74	$18.6 \pm 3.3$	$\sigma_8/h^{0.5}$	0.9866	$0.971^{+0.017}_{-0.011}$	$f\sigma_8(0.38)$	0.4729	$0.4673^{+0.0070}_{-0.0055}$
$A_{217}^{dustTT}$	94.6	$93.6 \pm 7.3$	$r_{drag} h$	101.14	$100.62^{+0.94}_{-0.78}$	$\sigma_8(0.38)$	0.6716	$0.659^{+0.014}_{-0.0074}$
$A_{100}^{dustTE}$	0.1140	$0.114 \pm 0.038$	$\langle d^2 \rangle^{1/2}$	2.4220	$2.408 \pm 0.024$	$f\sigma_8(0.51)$	0.4729	$0.4669^{+0.0072}_{-0.0052}$
$A_{100 \times 143}^{dustTE}$	0.1344	$0.135 \pm 0.029$	$z_{re}$	7.56	$7.59 \pm 0.79$	$\sigma_8(0.51)$	0.6290	$0.617^{+0.013}_{-0.0069}$
$A_{100 \times 217}^{dustTE}$	0.479	$0.481 \pm 0.084$	$10^9 A_s$	2.0877	$2.089 \pm 0.033$	$f\sigma_8(0.61)$	0.4688	$0.4627^{+0.0073}_{-0.0050}$
$A_{143}^{dustTE}$	0.223	$0.223 \pm 0.053$	$10^9 A_s e^{-2\tau}$	1.8748	$1.874 \pm 0.011$	$\sigma_8(0.61)$	0.5987	$0.587^{+0.013}_{-0.0066}$
$A_{143 \times 217}^{dustTE}$	0.664	$0.661 \pm 0.080$	$D_{40}$	1221.3	$1222 \pm 12$	$f\sigma_8(2.33)$	0.30141	$0.2967^{+0.0055}_{-0.0031}$
$A_{217}^{dustTE}$	2.076	$2.06 \pm 0.27$	$D_{220}$	5736.1	$5744 \pm 39$	$\sigma_8(2.33)$	0.31176	$0.3061^{+0.0064}_{-0.0035}$
$c_{100}$	0.99974	$0.99967 \pm 0.00061$	$D_{810}$	2536.1	$2537 \pm 13$	$f_{2000}^{143}$	28.59	$29.2 \pm 2.7$
$c_{217}$	0.99819	$0.99820 \pm 0.00062$	$D_{1420}$	817.61	$818.0 \pm 4.7$	$f_{2000}^{143 \times 217}$	31.78	$31.9 \pm 1.8$
$b_{DES}^1$	1.486	$1.511 \pm 0.076$	$D_{2000}$	231.24	$231.2 \pm 1.6$	$f_{2000}^{217}$	106.33	$106.7 \pm 1.8$
$b_{DES}^2$	1.684	$1.712 \pm 0.058$	$n_{s,0.002}$	0.96915	$0.9694 \pm 0.0037$	$\chi_{small}^2$	395.87	$396.9 \pm 1.7$
$b_{DES}^3$	1.6722	$1.700 \pm 0.050$	$Y_P$	0.2454450	$0.245450 \pm 0.000050$	$\chi_{lowl}^2$	22.73	$22.63 \pm 0.76$
$b_{DES}^4$	2.029	$2.061 \pm 0.059$	$Y_P^{BBN}$	0.2467717	$0.246776 \pm 0.000050$	$\chi_{plik}^2$	2346.2	$2363.3 \pm 6.6$
$b_{DES}^5$	2.133	$2.163 \pm 0.081$	$10^5 D/H$	2.5616	$2.559 \pm 0.024$	$\chi_{6DF}^2$	0.0180	$0.033 \pm 0.047$
$m_{DES}^1$	0.0138	$0.012 \pm 0.023$	Age/Gyr	13.7422	$13.769^{+0.023}_{-0.037}$	$\chi_{MGS}^2$	2.12	$1.84 \pm 0.54$
$m_{DES}^2$	0.0134	$0.013 \pm 0.022$	$z_*$	1089.610	$1089.56 \pm 0.21$	$\chi_{DR12BAO}^2$	3.423	$3.93 \pm 0.87$
$m_{DES}^3$	-0.0046	$-0.003 \pm 0.020$	$r_*$	144.761	$144.85 \pm 0.22$	$\chi_{DES}^2$	509.52	$518.3 \pm 4.9$
$m_{DES}^4$	0.0017	$0.003 \pm 0.021$	$100\theta_*$	1.041274	$1.04130 \pm 0.00028$	$\chi_{prior}^2$	4.2	$25 \pm 7$
$A_{IA,DES}$	0.444	$0.47^{+0.15}_{-0.18}$	$D_M(z_*)/\text{Gpc}$	13.9023	$13.910 \pm 0.021$	$\chi_{BAO}^2$	5.558	$5.81 \pm 0.83$
$\alpha_{IA,DES}$	-2.56	$-1.1^{+1.8}_{-2.9}$	$z_{drag}$	1060.123	$1060.13 \pm 0.29$	$\chi_{CMB}^2$	2764.8	$2782.8 \pm 6.6$
$\Delta z_{l,DES}^1$	0.0033	$0.0036 \pm 0.0075$	$r_{drag}$	147.385	$147.47 \pm 0.23$			

Best-fit  $\chi_{eff}^2 = 3284.12$ ;  $\bar{\chi}_{eff}^2 = 3331.54$ ;  $R - 1 = 0.01000$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.02 MGS: 2.12 DR12BAO: 3.42 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 commander\_dx12\_v3\_2\_29: 22.73 plik\_rd12\_HM\_v22b\_TTTEE: 2346.19 WL - DES\_1YR\_final: 509.52



### 6.153 base\_mnu\_plikHM\_TTTEE\_lowl\_lowE\_DES\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022566	$0.02252 \pm 0.00014$	$\alpha_{\text{IA,DES}}$	-2.38	$-1.2^{+1.7}_{-2.9}$	$100\theta_*$	1.041310	$1.04128 \pm 0.00029$
$\Omega_c h^2$	0.11794	$0.1181 \pm 0.0011$	$\Delta z_{\text{l,DES}}^1$	0.0033	$0.0035 \pm 0.0075$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9076	$13.907 \pm 0.023$
$100\theta_{\text{MC}}$	1.041181	$1.04111 \pm 0.00030$	$\Delta z_{\text{l,DES}}^2$	0.0007	$0.0008 \pm 0.0066$	$z_{\text{drag}}$	1060.238	$1060.15 \pm 0.30$
$\tau$	0.0561	$0.0568^{+0.0070}_{-0.0080}$	$\Delta z_{\text{l,DES}}^3$	0.0035	$0.0034 \pm 0.0066$	$r_{\text{drag}}$	147.426	$147.43 \pm 0.25$
$\Sigma m_\nu [\text{eV}]$	0.0003	$< 0.0705$	$\Delta z_{\text{l,DES}}^4$	0.0008	$0.0005 \pm 0.0090$	$k_{\text{D}}$	0.140656	$0.14062 \pm 0.00029$
$\ln(10^{10} A_{\text{s}})$	3.0445	$3.045 \pm 0.015$	$\Delta z_{\text{l,DES}}^5$	-0.0007	$-0.0006 \pm 0.0097$	$100\theta_{\text{D}}$	0.160597	$0.16064 \pm 0.00017$
$n_{\text{s}}$	0.97075	$0.9690 \pm 0.0040$	$\Delta z_{\text{s,DES}}^1$	0.0009	$-0.003 \pm 0.014$	$z_{\text{eq}}$	3357.7	$3360 \pm 24$
$y_{\text{cal}}$	1.00084	$1.0007 \pm 0.0024$	$\Delta z_{\text{s,DES}}^2$	-0.0303	$-0.031 \pm 0.011$	$k_{\text{eq}}$	0.010248	$0.010256 \pm 0.000073$
$A_{217}^{\text{CIB}}$	45.4	$47 \pm 7$	$\Delta z_{\text{s,DES}}^3$	0.0033	$0.0035 \pm 0.0095$	$100\theta_{\text{eq}}$	0.82202	$0.8215 \pm 0.0046$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.69	—	$\Delta z_{\text{s,DES}}^4$	-0.0301	$-0.031 \pm 0.018$	$100\theta_{\text{s,eq}}$	0.45379	$0.4535 \pm 0.0023$
$A_{143}^{\text{tSZ}}$	7.15	$5.5^{+2.2}_{-1.9}$	$H_0$	68.84	$68.25^{+0.89}_{-0.50}$	$H(0.15)$	73.97	$73.45^{+0.78}_{-0.43}$
$A_{100}^{\text{PS}}$	246.8	$258 \pm 28$	$\Omega_{\Lambda}$	0.7035	$0.696^{+0.011}_{-0.0061}$	$D_{\text{M}}(0.15)$	630.8	$635.9^{+4.1}_{-7.6}$
$A_{143}^{\text{PS}}$	49.7	$45 \pm 8$	$\Omega_{\text{m}}$	0.2965	$0.3035^{+0.0061}_{-0.011}$	$H(0.38)$	83.837	$83.42^{+0.60}_{-0.33}$
$A_{143 \times 217}^{\text{PS}}$	53.2	$42 \pm 9$	$\Omega_{\text{m}} h^2$	0.14051	$0.1413^{+0.0010}_{-0.0014}$	$D_{\text{M}}(0.38)$	1508.0	$1518.4^{+8.3}_{-15}$
$A_{217}^{\text{PS}}$	121.9	$115 \pm 10$	$\Omega_{\nu} h^2$	$0.4 \cdot 10^{-5}$	$< 0.000758$	$H(0.51)$	90.412	$90.06^{+0.50}_{-0.26}$
$A^{\text{kSZ}}$	0.00	$< 4.27$	$\Omega_{\text{m}} h^3$	0.096736	$0.09642^{+0.00049}_{-0.00030}$	$D_{\text{M}}(0.51)$	1955.8	$1968.3^{+9.8}_{-18}$
$A_{100}^{\text{dustTT}}$	8.76	$8.9 \pm 1.8$	$\sigma_8$	0.8185	$0.807^{+0.014}_{-0.0060}$	$H(0.61)$	95.922	$95.62^{+0.42}_{-0.22}$
$A_{143}^{\text{dustTT}}$	11.05	$10.9 \pm 1.8$	$S_8$	0.8136	$0.811 \pm 0.011$	$D_{\text{M}}(0.61)$	2277.8	$2291^{+11}_{-20}$
$A_{143 \times 217}^{\text{dustTT}}$	20.19	$18.6 \pm 3.3$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4456	$0.4443 \pm 0.0058$	$H(2.33)$	235.10	$235.48^{+0.64}_{-0.84}$
$A_{217}^{\text{dustTT}}$	95.8	$93.7 \pm 7.3$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6039	$0.5987^{+0.0078}_{-0.0057}$	$D_{\text{M}}(2.33)$	5734.4	$5749.0^{+9.9}_{-20}$
$A_{100}^{\text{dustTE}}$	0.1125	$0.114 \pm 0.038$	$\sigma_8/h^{0.5}$	0.9864	$0.977^{+0.013}_{-0.0083}$	$f\sigma_8(0.15)$	0.4507	$0.4496 \pm 0.0054$
$A_{100 \times 143}^{\text{dustTE}}$	0.1334	$0.134 \pm 0.029$	$r_{\text{drag}} h$	101.49	$100.6^{+1.4}_{-0.85}$	$\sigma_8(0.15)$	0.7577	$0.746^{+0.014}_{-0.0055}$
$A_{100 \times 217}^{\text{dustTE}}$	0.480	$0.481 \pm 0.084$	$\langle d^2 \rangle^{1/2}$	2.4212	$2.419 \pm 0.020$	$f\sigma_8(0.38)$	0.47241	$0.4696^{+0.0053}_{-0.0046}$
$A_{143}^{\text{dustTE}}$	0.221	$0.223 \pm 0.053$	$z_{\text{re}}$	7.78	$7.85 \pm 0.75$	$\sigma_8(0.38)$	0.6731	$0.662^{+0.013}_{-0.0050}$
$A_{143 \times 217}^{\text{dustTE}}$	0.661	$0.661 \pm 0.080$	$10^9 A_{\text{s}}$	2.1000	$2.102^{+0.029}_{-0.033}$	$f\sigma_8(0.51)$	0.47272	$0.4692^{+0.0056}_{-0.0041}$
$A_{217}^{\text{dustTE}}$	2.059	$2.06 \pm 0.27$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8771	$1.876 \pm 0.010$	$\sigma_8(0.51)$	0.6305	$0.620^{+0.012}_{-0.0047}$
$c_{100}$	0.99973	$0.99969 \pm 0.00061$	$D_{40}$	1221.1	$1225 \pm 11$	$f\sigma_8(0.61)$	0.46888	$0.4649^{+0.0058}_{-0.0038}$
$c_{217}$	0.99818	$0.99819 \pm 0.00062$	$D_{220}$	5749.9	$5750 \pm 38$	$\sigma_8(0.61)$	0.6003	$0.590^{+0.012}_{-0.0045}$
$b_{\text{DES}}^1$	1.483	$1.504 \pm 0.077$	$D_{810}$	2541.4	$2539 \pm 13$	$f\sigma_8(2.33)$	0.30231	$0.2981^{+0.0054}_{-0.0023}$
$b_{\text{DES}}^2$	1.680	$1.703 \pm 0.058$	$D_{1420}$	820.03	$818.4 \pm 4.7$	$\sigma_8(2.33)$	0.31282	$0.3077^{+0.0064}_{-0.0025}$
$b_{\text{DES}}^3$	1.6692	$1.691^{+0.045}_{-0.051}$	$D_{2000}$	232.12	$231.4 \pm 1.6$	$\chi_{\text{lensing}}^2$	8.81	$9.5 \pm 1.1$
$b_{\text{DES}}^4$	2.025	$2.050^{+0.052}_{-0.061}$	$n_{\text{s},0.002}$	0.97075	$0.9690 \pm 0.0040$	$\chi_{\text{simall}}^2$	396.20	$397.3 \pm 2.1$
$b_{\text{DES}}^5$	2.128	$2.153 \pm 0.081$	$Y_{\text{P}}$	0.245468	$0.245452 \pm 0.000054$	$\chi_{\text{lowl}}^2$	22.54	$22.83 \pm 0.77$
$m_{\text{DES}}^1$	0.0133	$0.012 \pm 0.023$	$Y_{\text{P}}^{\text{BBN}}$	0.246795	$0.246779 \pm 0.000054$	$\chi_{\text{plik}}^2$	2346.8	$2362.1 \pm 6.1$
$m_{\text{DES}}^2$	0.0135	$0.012 \pm 0.022$	$10^5 \text{D}/\text{H}$	2.5503	$2.558 \pm 0.026$	$\chi_{\text{DES}}^2$	508.98	$518.5 \pm 5.0$
$m_{\text{DES}}^3$	-0.0031	$-0.004 \pm 0.020$	$\text{Age}/\text{Gyr}$	13.7326	$13.766^{+0.022}_{-0.045}$	$\chi_{\text{prior}}^2$	3.9	$25 \pm 7$
$m_{\text{DES}}^4$	0.0020	$0.002 \pm 0.021$	$z_*$	1089.490	$1089.56 \pm 0.24$	$\chi_{\text{CMB}}^2$	2774.3	$2791.8 \pm 6.6$
$A_{\text{IA,DES}}$	0.453	$0.47^{+0.15}_{-0.18}$	$r_*$	144.821	$144.81 \pm 0.24$			

Best-fit  $\chi_{\text{eff}}^2 = 3287.27$ ;  $\bar{\chi}_{\text{eff}}^2 = 3335.12$ ;  $R - 1 = 0.00852$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.81 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.20 commander\_dx12\_v3.2\_29: 22.54 plik\_rd12\_HM\_v22b\_TTTEEE: 2346.80 WL - DES\_1YR\_final: 508.98



6.154 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_BAO\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022515	$0.02252 \pm 0.00013$	$\Delta z_{l,DES}^2$	0.0005	$0.0007 \pm 0.0066$	$k_D$	0.140697	$0.14063 \pm 0.00028$
$\Omega_c h^2$	0.11843	$0.11818 \pm 0.00085$	$\Delta z_{l,DES}^3$	0.0034	$0.0034 \pm 0.0066$	$100\theta_D$	0.160645	$0.16065 \pm 0.00017$
$100\theta_{MC}$	1.041157	$1.04110 \pm 0.00028$	$\Delta z_{l,DES}^4$	0.0008	$0.0005 \pm 0.0090$	$z_{eq}$	3368.2	$3362 \pm 19$
$\tau$	0.0558	$0.0561^{+0.0068}_{-0.0078}$	$\Delta z_{l,DES}^5$	-0.0005	$-0.0007 \pm 0.0097$	$k_{eq}$	0.010280	$0.010262 \pm 0.000059$
$\Sigma m_\nu$ [eV]	0.0010	$< 0.0661$	$\Delta z_{s,DES}^1$	0.00097	$-0.003 \pm 0.014$	$100\theta_{eq}$	0.81995	$0.8211 \pm 0.0037$
$\ln(10^{10} A_s)$	3.0430	$3.044 \pm 0.015$	$\Delta z_{s,DES}^2$	-0.0303	$-0.031 \pm 0.011$	$100\theta_{s,eq}$	0.45275	$0.4533 \pm 0.0019$
$n_s$	0.96861	$0.9688 \pm 0.0037$	$\Delta z_{s,DES}^3$	0.0024	$0.0034 \pm 0.0095$	$H(0.15)$	73.778	$73.48^{+0.48}_{-0.38}$
$y_{cal}$	0.99998	$1.0007 \pm 0.0024$	$\Delta z_{s,DES}^4$	-0.0323	$-0.031 \pm 0.018$	$D_M(0.15)$	632.66	$635.5^{+3.7}_{-4.7}$
$A_{217}^{CIB}$	48.3	$47 \pm 7$	$H_0$	68.618	$68.29^{+0.55}_{-0.44}$	$H(0.38)$	83.693	$83.45^{+0.38}_{-0.29}$
$\xi^{tSZ \times CIB}$	0.28	—	$\Omega_\Lambda$	0.7006	$0.6970^{+0.0068}_{-0.0054}$	$D_M(0.38)$	1511.8	$1517.7^{+7.5}_{-9.6}$
$A_{143}^{tSZ}$	7.38	$5.5^{+2.2}_{-1.9}$	$\Omega_m$	0.2994	$0.3030^{+0.0054}_{-0.0068}$	$H(0.51)$	90.298	$90.09^{+0.32}_{-0.24}$
$A_{100}^{PS}$	250.6	$258 \pm 28$	$\Omega_m h^2$	0.14096	$0.14128 \pm 0.00089$	$D_M(0.51)$	1960.3	$1967.3^{+8.8}_{-11}$
$A_{143}^{PS}$	44.5	$45 \pm 8$	$\Omega_\nu h^2$	$1.1 \cdot 10^{-5}$	$< 0.000711$	$H(0.61)$	95.832	$95.65^{+0.27}_{-0.21}$
$A_{143 \times 217}^{PS}$	42.8	$42 \pm 9$	$\Omega_m h^3$	0.096722	$0.09647^{+0.00040}_{-0.00032}$	$D_M(0.61)$	2282.6	$2290.4^{+9.6}_{-12}$
$A_{217}^{PS}$	117.0	$115 \pm 10$	$\sigma_8$	0.8190	$0.809^{+0.012}_{-0.0069}$	$H(2.33)$	235.37	$235.48 \pm 0.55$
$A^{kSZ}$	0.00	$< 4.29$	$S_8$	0.8182	$0.8125 \pm 0.0098$	$D_M(2.33)$	5738.2	$5747.6^{+9.7}_{-13}$
$A_{100}^{dustTT}$	8.82	$8.9 \pm 1.8$	$\sigma_8 \Omega_m^{0.5}$	0.4481	$0.4450 \pm 0.0054$	$f\sigma_8(0.15)$	0.4530	$0.4502 \pm 0.0050$
$A_{143}^{dustTT}$	11.03	$10.9 \pm 1.8$	$\sigma_8 \Omega_m^{0.25}$	0.6058	$0.5998^{+0.0072}_{-0.0057}$	$\sigma_8(0.15)$	0.7579	$0.748^{+0.011}_{-0.0064}$
$A_{143 \times 217}^{dustTT}$	19.59	$18.6 \pm 3.3$	$\sigma_8/h^{0.5}$	0.9887	$0.978^{+0.012}_{-0.0087}$	$f\sigma_8(0.38)$	0.47405	$0.4704^{+0.0050}_{-0.0044}$
$A_{217}^{dustTT}$	94.5	$93.7 \pm 7.3$	$r_{drag} h$	101.11	$100.67^{+0.86}_{-0.74}$	$\sigma_8(0.38)$	0.6730	$0.664^{+0.010}_{-0.0058}$
$A_{100}^{dustTE}$	0.1141	$0.114 \pm 0.038$	$\langle d^2 \rangle^{1/2}$	2.4288	$2.420 \pm 0.019$	$f\sigma_8(0.51)$	0.47400	$0.4700^{+0.0051}_{-0.0041}$
$A_{100 \times 143}^{dustTE}$	0.1343	$0.135 \pm 0.029$	$z_{re}$	7.77	$7.78 \pm 0.74$	$\sigma_8(0.51)$	0.6303	$0.6217^{+0.0095}_{-0.0055}$
$A_{100 \times 217}^{dustTE}$	0.482	$0.481 \pm 0.084$	$10^9 A_s$	2.0968	$2.099^{+0.028}_{-0.032}$	$f\sigma_8(0.61)$	0.46992	$0.4658^{+0.0051}_{-0.0039}$
$A_{143}^{dustTE}$	0.223	$0.223 \pm 0.053$	$10^9 A_s e^{-2\tau}$	1.8753	$1.876 \pm 0.010$	$\sigma_8(0.61)$	0.6000	$0.5918^{+0.0091}_{-0.0052}$
$A_{143 \times 217}^{dustTE}$	0.662	$0.661 \pm 0.080$	$D_{40}$	1223.6	$1225 \pm 11$	$f\sigma_8(2.33)$	0.30202	$0.2987^{+0.0040}_{-0.0025}$
$A_{217}^{dustTE}$	2.066	$2.06 \pm 0.27$	$D_{220}$	5739.9	$5749 \pm 38$	$\sigma_8(2.33)$	0.31238	$0.3083^{+0.0047}_{-0.0028}$
$c_{100}$	0.99970	$0.99969 \pm 0.00061$	$D_{810}$	2535.9	$2539 \pm 13$	$f_{2000}^{143}$	28.71	$29.1 \pm 2.7$
$c_{217}$	0.99819	$0.99819 \pm 0.00062$	$D_{1420}$	817.36	$818.2 \pm 4.7$	$f_{2000}^{143 \times 217}$	31.75	$31.8 \pm 1.8$
$b_{DES}^1$	1.485	$1.502 \pm 0.074$	$D_{2000}$	231.20	$231.3 \pm 1.5$	$f_{2000}^{217}$	106.37	$106.7 \pm 1.8$
$b_{DES}^2$	1.680	$1.700 \pm 0.054$	$n_{s,0.002}$	0.96861	$0.9688 \pm 0.0037$	$\chi^2_{lensing}$	8.76	$9.45 \pm 0.97$
$b_{DES}^3$	1.6688	$1.688 \pm 0.046$	$Y_P$	0.2454499	$0.245450 \pm 0.000050$	$\chi^2_{small}$	396.19	$397.2 \pm 1.9$
$b_{DES}^4$	2.025	$2.046 \pm 0.054$	$Y_P^{BBN}$	0.2467766	$0.246776 \pm 0.000050$	$\chi^2_{lowl}$	22.92	$22.86 \pm 0.75$
$b_{DES}^5$	2.127	$2.149 \pm 0.078$	$10^5 D/H$	2.5592	$2.559 \pm 0.024$	$\chi^2_{plik}$	2345.5	$2361.6 \pm 6.0$
$m_{DES}^1$	0.0137	$0.012 \pm 0.023$	Age/Gyr	13.7407	$13.763^{+0.022}_{-0.031}$	$\chi^2_{6DF}$	0.0162	$0.029 \pm 0.042$
$m_{DES}^2$	0.0136	$0.012 \pm 0.022$	$z_*$	1089.598	$1089.58 \pm 0.20$	$\chi^2_{MGS}$	2.12	$1.87 \pm 0.51$
$m_{DES}^3$	-0.0050	$-0.005 \pm 0.020$	$r_*$	144.733	$144.80 \pm 0.21$	$\chi^2_{DR12BAO}$	3.415	$3.85 \pm 0.75$
$m_{DES}^4$	0.0006	$0.001 \pm 0.020$	$100\theta_*$	1.041290	$1.04127 \pm 0.00028$	$\chi^2_{DES}$	509.67	$518.6 \pm 4.9$
$A_{IA,DES}$	0.443	$0.48^{+0.15}_{-0.18}$	$D_M(z_*)/\text{Gpc}$	13.8994	$13.906 \pm 0.020$	$\chi^2_{prior}$	4.5	$25 \pm 7$
$\alpha_{IA,DES}$	-2.62	$-1.2^{+1.7}_{-2.8}$	$z_{drag}$	1060.162	$1060.14 \pm 0.29$	$\chi^2_{CMB}$	2773.4	$2791.0 \pm 6.4$
$\Delta z_{l,DES}^1$	0.0030	$0.0034 \pm 0.0075$	$r_{drag}$	147.352	$147.42 \pm 0.22$	$\chi^2_{BAO}$	5.547	$5.75 \pm 0.74$

Best-fit  $\chi^2_{eff} = 3293.06$ ;  $\bar{\chi}^2_{eff} = 3340.25$ ;  $R - 1 = 0.00952$   
 $\chi^2_{eff}$ : BAO - 6DF: 0.02 MGS: 2.12 DR12BAO: 3.42 CMB - smicadx12.Dec5.ftl.mv2.ndclpp.p.teb.consext8: 8.76 small\_100x143.offlike5\_EE\_Aplanck.B: 396.19 comman-  
der.dx12.v3.2.29: 22.92 plik\_rd12\_HM\_v22b\_TTTEEE: 2345.49 WL - DES.1YR.final: 509.67



6.155 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02251 \pm 0.00015$	$\Delta z_{1,\text{DES}}^1$	$0.0035 \pm 0.0075$	$z_{\text{drag}}$	$1060.12 \pm 0.31$
$\Omega_c h^2$	$0.1179 \pm 0.0011$	$\Delta z_{1,\text{DES}}^2$	$0.0008 \pm 0.0066$	$r_{\text{drag}}$	$147.48 \pm 0.26$
$100\theta_{\text{MC}}$	$1.04110 \pm 0.00031$	$\Delta z_{1,\text{DES}}^3$	$0.0034 \pm 0.0065$	$k_{\text{D}}$	$0.14057 \pm 0.00031$
$\tau$	$0.0558^{+0.0051}_{-0.0085}$	$\Delta z_{1,\text{DES}}^4$	$0.0006 \pm 0.0090$	$100\theta_{\text{D}}$	$0.16065 \pm 0.00018$
$\Sigma m_\nu [\text{eV}]$	$< 0.112$	$\Delta z_{1,\text{DES}}^5$	$-0.0006 \pm 0.0098$	$z_{\text{eq}}$	$3356 \pm 25$
$\ln(10^{10} A_s)$	$3.042^{+0.012}_{-0.016}$	$\Delta z_{s,\text{DES}}^1$	$-0.004 \pm 0.014$	$k_{\text{eq}}$	$0.010242 \pm 0.000077$
$n_s$	$0.9695 \pm 0.0042$	$\Delta z_{s,\text{DES}}^2$	$-0.031 \pm 0.011$	$100\theta_{\text{eq}}$	$0.8223 \pm 0.0048$
$y_{\text{cal}}$	$1.0005 \pm 0.0024$	$\Delta z_{s,\text{DES}}^3$	$0.0042 \pm 0.0096$	$100\theta_{s,\text{eq}}$	$0.4540 \pm 0.0025$
$A_{217}^{\text{CIB}}$	$47 \pm 7$	$\Delta z_{s,\text{DES}}^4$	$-0.029 \pm 0.018$	$H(0.15)$	$73.2^{+1.2}_{-0.39}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$H_0$	$67.9^{+1.4}_{-0.45}$	$D_{\text{M}}(0.15)$	$638.8^{+3.6}_{-12}$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.1}_{-1.9}$	$\Omega_\Lambda$	$0.693^{+0.017}_{-0.0053}$	$H(0.38)$	$83.19^{+0.94}_{-0.30}$
$A_{100}^{\text{PS}}$	$259 \pm 28$	$\Omega_{\text{m}}$	$0.3074^{+0.0053}_{-0.017}$	$D_{\text{M}}(0.38)$	$1524.5^{+7.3}_{-24}$
$A_{143}^{\text{PS}}$	$45 \pm 8$	$\Omega_{\text{m}} h^2$	$0.14157^{+0.00099}_{-0.0020}$	$H(0.51)$	$89.86^{+0.79}_{-0.24}$
$A_{143 \times 217}^{\text{PS}}$	$41 \pm 9$	$\Omega_\nu h^2$	$< 0.00121$	$D_{\text{M}}(0.51)$	$1975.5^{+8.6}_{-29}$
$A_{217}^{\text{PS}}$	$114 \pm 10$	$\Omega_{\text{m}} h^3$	$0.09613^{+0.00081}_{-0.00025}$	$H(0.61)$	$95.44^{+0.67}_{-0.20}$
$A^{\text{kSZ}}$	$< 4.44$	$\sigma_8$	$0.795^{+0.026}_{-0.0058}$	$D_{\text{M}}(0.61)$	$2299.3^{+9.3}_{-31}$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$S_8$	$0.804^{+0.014}_{-0.013}$	$H(2.33)$	$235.60^{+0.64}_{-1.1}$
$A_{143}^{\text{dustTT}}$	$11.0 \pm 1.8$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4405^{+0.0078}_{-0.0069}$	$D_{\text{M}}(2.33)$	$5758.5^{+8.4}_{-33}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.592^{+0.014}_{-0.0061}$	$f\sigma_8(0.15)$	$0.4458^{+0.0075}_{-0.0064}$
$A_{217}^{\text{dustTT}}$	$93.6 \pm 7.3$	$\sigma_8/h^{0.5}$	$0.965^{+0.025}_{-0.0086}$	$\sigma_8(0.15)$	$0.735^{+0.025}_{-0.0053}$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$r_{\text{drag}} h$	$100.2^{+2.1}_{-0.79}$	$f\sigma_8(0.38)$	$0.4650^{+0.0094}_{-0.0050}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.029$	$\langle d^2 \rangle^{1/2}$	$2.406 \pm 0.024$	$\sigma_8(0.38)$	$0.653^{+0.023}_{-0.0046}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.481 \pm 0.085$	$z_{\text{re}}$	$7.76^{+0.57}_{-0.82}$	$f\sigma_8(0.51)$	$0.464^{+0.010}_{-0.0043}$
$A_{143}^{\text{dustTE}}$	$0.223 \pm 0.054$	$10^9 A_s$	$2.095^{+0.024}_{-0.034}$	$\sigma_8(0.51)$	$0.611^{+0.022}_{-0.0043}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.661 \pm 0.080$	$10^9 A_s e^{-2\tau}$	$1.874 \pm 0.011$	$f\sigma_8(0.61)$	$0.460^{+0.011}_{-0.0038}$
$A_{217}^{\text{dustTE}}$	$2.06 \pm 0.27$	$D_{40}$	$1221 \pm 12$	$\sigma_8(0.61)$	$0.582^{+0.021}_{-0.0041}$
$c_{100}$	$0.99966 \pm 0.00061$	$D_{220}$	$5745 \pm 39$	$f\sigma_8(2.33)$	$0.2941^{+0.0095}_{-0.0019}$
$c_{217}$	$0.99819 \pm 0.00062$	$D_{810}$	$2537 \pm 13$	$\sigma_8(2.33)$	$0.303^{+0.011}_{-0.0021}$
$b_{\text{DES}}^1$	$1.525^{+0.075}_{-0.093}$	$D_{1420}$	$818.2 \pm 4.7$	$f_{2000}^{143}$	$29.2 \pm 2.8$
$b_{\text{DES}}^2$	$1.728^{+0.052}_{-0.082}$	$D_{2000}$	$231.2 \pm 1.6$	$f_{2000}^{143 \times 217}$	$31.9 \pm 1.9$
$b_{\text{DES}}^3$	$1.715^{+0.043}_{-0.074}$	$n_{s,0.002}$	$0.9695 \pm 0.0042$	$f_{2000}^{217}$	$106.7 \pm 1.8$
$b_{\text{DES}}^4$	$2.079^{+0.050}_{-0.088}$	$Y_{\text{P}}$	$0.245449 \pm 0.000057$	$\chi_{\text{simall}}^2$	$397.0 \pm 1.8$
$b_{\text{DES}}^5$	$2.180^{+0.079}_{-0.10}$	$Y_{\text{P}}^{\text{BBN}}$	$0.246775 \pm 0.000058$	$\chi_{\text{lowl}}^2$	$22.56 \pm 0.78$
$m_{\text{DES}}^1$	$0.012 \pm 0.023$	$10^5 \text{D/H}$	$2.560 \pm 0.027$	$\chi_{\text{plik}}^2$	$2364.3 \pm 6.9$
$m_{\text{DES}}^2$	$0.013 \pm 0.022$	$\text{Age/Gyr}$	$13.788^{+0.018}_{-0.074}$	$\chi_{\text{DES}}^2$	$518.1 \pm 4.9$
$m_{\text{DES}}^3$	$-0.003 \pm 0.020$	$z_*$	$1089.56 \pm 0.26$	$\chi_{\text{prior}}^2$	$25 \pm 7$
$m_{\text{DES}}^4$	$0.003 \pm 0.021$	$r_*$	$144.85 \pm 0.26$	$\chi_{\text{CMB}}^2$	$2783.8 \pm 6.8$
$A_{\text{IA,DES}}$	$0.46^{+0.15}_{-0.19}$	$100\theta_*$	$1.04130 \pm 0.00029$		
$\alpha_{\text{IA,DES}}$	$-1.1^{+1.7}_{-2.9}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.911 \pm 0.025$		

$$\bar{\chi}_{\text{eff}}^2 = 3326.52; R - 1 = 0.00752$$



6.156 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02252 \pm 0.00013$	$\Delta z_{\text{l,DES}}^2$	$0.0007 \pm 0.0066$	$k_{\text{D}}$	$0.14057 \pm 0.00029$
$\Omega_c h^2$	$0.11793 \pm 0.00090$	$\Delta z_{\text{l,DES}}^3$	$0.0034 \pm 0.0066$	$100\theta_{\text{D}}$	$0.16065 \pm 0.00017$
$100\theta_{\text{MC}}$	$1.04112 \pm 0.00028$	$\Delta z_{\text{l,DES}}^4$	$0.0006 \pm 0.0090$	$z_{\text{eq}}$	$3356 \pm 21$
$\tau$	$0.0555^{+0.0051}_{-0.0082}$	$\Delta z_{\text{l,DES}}^5$	$-0.0007 \pm 0.0097$	$k_{\text{eq}}$	$0.010244 \pm 0.000063$
$\Sigma m_\nu$ [eV]	$< 0.0881$	$\Delta z_{\text{s,DES}}^1$	$-0.003 \pm 0.014$	$100\theta_{\text{eq}}$	$0.8222 \pm 0.0039$
$\ln(10^{10} A_{\text{s}})$	$3.041^{+0.012}_{-0.016}$	$\Delta z_{\text{s,DES}}^2$	$-0.031 \pm 0.011$	$100\theta_{\text{s,eq}}$	$0.4539 \pm 0.0020$
$n_{\text{s}}$	$0.9695 \pm 0.0037$	$\Delta z_{\text{s,DES}}^3$	$0.0039 \pm 0.0095$	$H(0.15)$	$73.43^{+0.55}_{-0.41}$
$y_{\text{cal}}$	$1.0005 \pm 0.0025$	$\Delta z_{\text{s,DES}}^4$	$-0.030 \pm 0.018$	$D_{\text{M}}(0.15)$	$636.0^{+3.9}_{-5.3}$
$A_{217}^{\text{CIB}}$	$47 \pm 7$	$H_0$	$68.24^{+0.62}_{-0.47}$	$H(0.38)$	$83.40^{+0.43}_{-0.31}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$\Omega_{\Lambda}$	$0.6966^{+0.0074}_{-0.0058}$	$D_{\text{M}}(0.38)$	$1518.7^{+7.9}_{-11}$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.2}_{-1.9}$	$\Omega_{\text{m}}$	$0.3034^{+0.0058}_{-0.0074}$	$H(0.51)$	$90.04^{+0.37}_{-0.26}$
$A_{100}^{\text{PS}}$	$258 \pm 28$	$\Omega_{\text{m}} h^2$	$0.14121 \pm 0.00091$	$D_{\text{M}}(0.51)$	$1968.6^{+9.4}_{-13}$
$A_{143}^{\text{PS}}$	$45 \pm 8$	$\Omega_{\nu} h^2$	$< 0.000947$	$H(0.61)$	$95.60^{+0.32}_{-0.22}$
$A_{143 \times 217}^{\text{PS}}$	$41 \pm 9$	$\Omega_{\text{m}} h^3$	$0.09635^{+0.00048}_{-0.00034}$	$D_{\text{M}}(0.61)$	$2292^{+10}_{-14}$
$A_{217}^{\text{PS}}$	$114 \pm 10$	$\sigma_8$	$0.803^{+0.016}_{-0.0086}$	$H(2.33)$	$235.42 \pm 0.56$
$A^{\text{kSZ}}$	$< 4.39$	$S_8$	$0.807 \pm 0.012$	$D_{\text{M}}(2.33)$	$5750^{+10}_{-16}$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4423 \pm 0.0067$	$f\sigma_8(0.15)$	$0.4477 \pm 0.0063$
$A_{143}^{\text{dustTT}}$	$11.0 \pm 1.8$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.596^{+0.010}_{-0.0071}$	$\sigma_8(0.15)$	$0.743^{+0.015}_{-0.0080}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3$	$\sigma_8/h^{0.5}$	$0.972^{+0.017}_{-0.011}$	$f\sigma_8(0.38)$	$0.4677^{+0.0069}_{-0.0055}$
$A_{217}^{\text{dustTT}}$	$93.7 \pm 7.3$	$r_{\text{drag}} h$	$100.63^{+0.94}_{-0.78}$	$\sigma_8(0.38)$	$0.660^{+0.014}_{-0.0071}$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$\langle d^2 \rangle^{1/2}$	$2.410 \pm 0.023$	$f\sigma_8(0.51)$	$0.4673^{+0.0071}_{-0.0051}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134 \pm 0.029$	$z_{\text{re}}$	$7.72^{+0.56}_{-0.80}$	$\sigma_8(0.51)$	$0.618^{+0.013}_{-0.0067}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.481 \pm 0.084$	$10^9 A_{\text{s}}$	$2.094^{+0.024}_{-0.034}$	$f\sigma_8(0.61)$	$0.4630^{+0.0073}_{-0.0049}$
$A_{143}^{\text{dustTE}}$	$0.223 \pm 0.053$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.874 \pm 0.011$	$\sigma_8(0.61)$	$0.588^{+0.012}_{-0.0064}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.660 \pm 0.080$	$D_{40}$	$1222 \pm 12$	$f\sigma_8(2.33)$	$0.2970^{+0.0054}_{-0.0029}$
$A_{217}^{\text{dustTE}}$	$2.06 \pm 0.27$	$D_{220}$	$5744 \pm 39$	$\sigma_8(2.33)$	$0.3064^{+0.0064}_{-0.0033}$
$c_{100}$	$0.99967 \pm 0.00061$	$D_{810}$	$2537 \pm 13$	$f_{2000}^{143}$	$29.2 \pm 2.7$
$c_{217}$	$0.99819 \pm 0.00062$	$D_{1420}$	$818.0 \pm 4.7$	$f_{2000}^{143 \times 217}$	$31.9 \pm 1.8$
$b_{\text{DES}}^1$	$1.510 \pm 0.076$	$D_{2000}$	$231.2 \pm 1.5$	$f_{2000}^{217}$	$106.7 \pm 1.8$
$b_{\text{DES}}^2$	$1.710 \pm 0.058$	$n_{\text{s},0.002}$	$0.9695 \pm 0.0037$	$\chi_{\text{simall}}^2$	$396.9 \pm 1.8$
$b_{\text{DES}}^3$	$1.698 \pm 0.050$	$Y_{\text{P}}$	$0.245451 \pm 0.000050$	$\chi_{\text{lowl}}^2$	$22.64 \pm 0.77$
$b_{\text{DES}}^4$	$2.059^{+0.055}_{-0.061}$	$Y_{\text{P}}^{\text{BBN}}$	$0.246778 \pm 0.000050$	$\chi_{\text{plik}}^2$	$2363.1 \pm 6.6$
$b_{\text{DES}}^5$	$2.162 \pm 0.081$	$10^5 \text{D/H}$	$2.559 \pm 0.024$	$\chi_{6\text{DF}}^2$	$0.033 \pm 0.047$
$m_{\text{DES}}^1$	$0.012 \pm 0.023$	Age/Gyr	$13.769^{+0.023}_{-0.037}$	$\chi_{\text{MGS}}^2$	$1.85 \pm 0.54$
$m_{\text{DES}}^2$	$0.013 \pm 0.022$	$z_*$	$1089.55 \pm 0.21$	$\chi_{\text{DR12BAO}}^2$	$3.93 \pm 0.87$
$m_{\text{DES}}^3$	$-0.003 \pm 0.020$	$r_*$	$144.86 \pm 0.22$	$\chi_{\text{DES}}^2$	$518.3 \pm 4.9$
$m_{\text{DES}}^4$	$0.003 \pm 0.021$	$100\theta_*$	$1.04130 \pm 0.00028$	$\chi_{\text{prior}}^2$	$25 \pm 7$
$A_{\text{IA,DES}}$	$0.47^{+0.15}_{-0.18}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.911 \pm 0.021$	$\chi_{\text{BAO}}^2$	$5.81 \pm 0.83$
$\alpha_{\text{IA,DES}}$	$-1.1^{+1.7}_{-2.9}$	$z_{\text{drag}}$	$1060.13 \pm 0.29$	$\chi_{\text{CMB}}^2$	$2782.6 \pm 6.5$
$\Delta z_{\text{l,DES}}^1$	$0.0036 \pm 0.0075$	$r_{\text{drag}}$	$147.48 \pm 0.23$		

$\bar{\chi}_{\text{eff}}^2 = 3331.28$ ;  $R - 1 = 0.00944$



6.157 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02252 \pm 0.00014$	$\Delta z_{1,\text{DES}}^1$	$0.0035 \pm 0.0075$	$z_{\text{drag}}$	$1060.15 \pm 0.30$
$\Omega_c h^2$	$0.1181 \pm 0.0011$	$\Delta z_{1,\text{DES}}^2$	$0.0007 \pm 0.0066$	$r_{\text{drag}}$	$147.44 \pm 0.25$
$100\theta_{\text{MC}}$	$1.04111 \pm 0.00030$	$\Delta z_{1,\text{DES}}^3$	$0.0034 \pm 0.0066$	$k_{\text{D}}$	$0.14062 \pm 0.00029$
$\tau$	$0.0573^{+0.0059}_{-0.0083}$	$\Delta z_{1,\text{DES}}^4$	$0.0005 \pm 0.0090$	$100\theta_{\text{D}}$	$0.16064 \pm 0.00017$
$\Sigma m_\nu$ [eV]	$< 0.0710$	$\Delta z_{1,\text{DES}}^5$	$-0.0007 \pm 0.0097$	$z_{\text{eq}}$	$3360 \pm 24$
$\ln(10^{10} A_s)$	$3.046^{+0.012}_{-0.016}$	$\Delta z_{s,\text{DES}}^1$	$-0.003 \pm 0.014$	$k_{\text{eq}}$	$0.010254 \pm 0.000072$
$n_s$	$0.9691 \pm 0.0040$	$\Delta z_{s,\text{DES}}^2$	$-0.031 \pm 0.011$	$100\theta_{\text{eq}}$	$0.8216 \pm 0.0045$
$y_{\text{cal}}$	$1.0007 \pm 0.0024$	$\Delta z_{s,\text{DES}}^3$	$0.0035 \pm 0.0095$	$100\theta_{s,\text{eq}}$	$0.4536 \pm 0.0023$
$A_{217}^{\text{CIB}}$	$47 \pm 7$	$\Delta z_{s,\text{DES}}^4$	$-0.031 \pm 0.018$	$H(0.15)$	$73.45^{+0.78}_{-0.43}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$H_0$	$68.26^{+0.90}_{-0.49}$	$D_{\text{M}}(0.15)$	$635.8^{+4.0}_{-7.6}$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.2}_{-1.9}$	$\Omega_\Lambda$	$0.697^{+0.011}_{-0.0060}$	$H(0.38)$	$83.43^{+0.60}_{-0.32}$
$A_{100}^{\text{PS}}$	$258 \pm 28$	$\Omega_{\text{m}}$	$0.3034^{+0.0060}_{-0.011}$	$D_{\text{M}}(0.38)$	$1518.3^{+8.2}_{-16}$
$A_{143}^{\text{PS}}$	$45 \pm 8$	$\Omega_{\text{m}} h^2$	$0.1413^{+0.0010}_{-0.0014}$	$H(0.51)$	$90.07^{+0.50}_{-0.26}$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9$	$\Omega_\nu h^2$	$< 0.000763$	$D_{\text{M}}(0.51)$	$1968.1^{+9.7}_{-18}$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$\Omega_{\text{m}} h^3$	$0.09642^{+0.00050}_{-0.00030}$	$H(0.61)$	$95.63^{+0.42}_{-0.22}$
$A^{\text{kSZ}}$	$< 4.26$	$\sigma_8$	$0.807^{+0.014}_{-0.0058}$	$D_{\text{M}}(0.61)$	$2291^{+11}_{-20}$
$A_{100}^{\text{dust}TT}$	$8.9 \pm 1.8$	$S_8$	$0.811 \pm 0.011$	$H(2.33)$	$235.47^{+0.64}_{-0.84}$
$A_{143}^{\text{dust}TT}$	$10.9 \pm 1.8$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4444 \pm 0.0058$	$D_{\text{M}}(2.33)$	$5748.9^{+9.8}_{-20}$
$A_{143 \times 217}^{\text{dust}TT}$	$18.6 \pm 3.3$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.5988^{+0.0078}_{-0.0057}$	$f\sigma_8(0.15)$	$0.4496 \pm 0.0054$
$A_{217}^{\text{dust}TT}$	$93.7 \pm 7.3$	$\sigma_8/h^{0.5}$	$0.977^{+0.013}_{-0.0081}$	$\sigma_8(0.15)$	$0.747^{+0.014}_{-0.0053}$
$A_{100}^{\text{dust}TE}$	$0.114 \pm 0.038$	$r_{\text{drag}} h$	$100.6^{+1.4}_{-0.85}$	$f\sigma_8(0.38)$	$0.4697^{+0.0053}_{-0.0046}$
$A_{100 \times 143}^{\text{dust}TE}$	$0.134 \pm 0.029$	$\langle d^2 \rangle^{1/2}$	$2.419 \pm 0.019$	$\sigma_8(0.38)$	$0.663^{+0.013}_{-0.0048}$
$A_{100 \times 217}^{\text{dust}TE}$	$0.481 \pm 0.084$	$z_{\text{re}}$	$7.91^{+0.62}_{-0.79}$	$f\sigma_8(0.51)$	$0.4693^{+0.0055}_{-0.0041}$
$A_{143}^{\text{dust}TE}$	$0.223 \pm 0.053$	$10^9 A_s$	$2.104^{+0.025}_{-0.033}$	$\sigma_8(0.51)$	$0.621^{+0.012}_{-0.0045}$
$A_{143 \times 217}^{\text{dust}TE}$	$0.661 \pm 0.080$	$10^9 A_s e^{-2\tau}$	$1.876 \pm 0.010$	$f\sigma_8(0.61)$	$0.4650^{+0.0058}_{-0.0037}$
$A_{217}^{\text{dust}TE}$	$2.06 \pm 0.27$	$D_{40}$	$1225 \pm 11$	$\sigma_8(0.61)$	$0.591^{+0.012}_{-0.0043}$
$c_{100}$	$0.99969 \pm 0.00061$	$D_{220}$	$5750 \pm 38$	$f\sigma_8(2.33)$	$0.2983^{+0.0053}_{-0.0022}$
$c_{217}$	$0.99819 \pm 0.00062$	$D_{810}$	$2539 \pm 13$	$\sigma_8(2.33)$	$0.3078^{+0.0064}_{-0.0024}$
$b_{\text{DES}}^1$	$1.504 \pm 0.077$	$D_{1420}$	$818.4 \pm 4.7$	$f_{2000}^{143}$	$29.0 \pm 2.8$
$b_{\text{DES}}^2$	$1.703 \pm 0.058$	$D_{2000}$	$231.4 \pm 1.6$	$f_{2000}^{143 \times 217}$	$31.8 \pm 1.9$
$b_{\text{DES}}^3$	$1.691^{+0.045}_{-0.051}$	$n_{s,0.002}$	$0.9691 \pm 0.0040$	$f_{2000}^{217}$	$106.7 \pm 1.8$
$b_{\text{DES}}^4$	$2.050^{+0.052}_{-0.061}$	$Y_{\text{P}}$	$0.245453 \pm 0.000054$	$\chi_{\text{lensing}}^2$	$9.5 \pm 1.0$
$b_{\text{DES}}^5$	$2.152 \pm 0.081$	$Y_{\text{P}}^{\text{BBN}}$	$0.246779 \pm 0.000054$	$\chi_{\text{simall}}^2$	$397.3 \pm 2.1$
$m_{\text{DES}}^1$	$0.012 \pm 0.023$	$10^5 \text{D/H}$	$2.558 \pm 0.026$	$\chi_{\text{lowl}}^2$	$22.82 \pm 0.77$
$m_{\text{DES}}^2$	$0.012 \pm 0.022$	$\text{Age/Gyr}$	$13.766^{+0.022}_{-0.046}$	$\chi_{\text{plik}}^2$	$2362.0 \pm 6.1$
$m_{\text{DES}}^3$	$-0.004 \pm 0.020$	$z_*$	$1089.56 \pm 0.24$	$\chi_{\text{DES}}^2$	$518.5 \pm 5.0$
$m_{\text{DES}}^4$	$0.002 \pm 0.021$	$r_*$	$144.82 \pm 0.24$	$\chi_{\text{prior}}^2$	$25 \pm 7$
$A_{\text{IA,DES}}$	$0.47^{+0.15}_{-0.18}$	$100\theta_*$	$1.04128 \pm 0.00029$	$\chi_{\text{CMB}}^2$	$2791.7 \pm 6.6$
$\alpha_{\text{IA,DES}}$	$-1.2^{+1.7}_{-2.9}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.908 \pm 0.023$		

$\bar{\chi}_{\text{eff}}^2 = 3334.99$ ;  $R - 1 = 0.00823$



6.158 base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_DES\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02252 \pm 0.00013$	$\Delta z_{\text{l,DES}}^2$	$0.0007 \pm 0.0066$	$k_{\text{D}}$	$0.14063 \pm 0.00028$
$\Omega_c h^2$	$0.11815 \pm 0.00084$	$\Delta z_{\text{l,DES}}^3$	$0.0034 \pm 0.0066$	$100\theta_{\text{D}}$	$0.16065 \pm 0.00017$
$100\theta_{\text{MC}}$	$1.04111 \pm 0.00028$	$\Delta z_{\text{l,DES}}^4$	$0.0005 \pm 0.0090$	$z_{\text{eq}}$	$3362 \pm 19$
$\tau$	$0.0568^{+0.0056}_{-0.0080}$	$\Delta z_{\text{l,DES}}^5$	$-0.0007 \pm 0.0097$	$k_{\text{eq}}$	$0.010260 \pm 0.000059$
$\Sigma m_\nu$ [eV]	$< 0.0670$	$\Delta z_{\text{s,DES}}^1$	$-0.003 \pm 0.014$	$100\theta_{\text{eq}}$	$0.8212 \pm 0.0037$
$\ln(10^{10} A_{\text{s}})$	$3.045^{+0.012}_{-0.015}$	$\Delta z_{\text{s,DES}}^2$	$-0.031 \pm 0.011$	$100\theta_{\text{s,eq}}$	$0.4534 \pm 0.0019$
$n_{\text{s}}$	$0.9688 \pm 0.0036$	$\Delta z_{\text{s,DES}}^3$	$0.0034 \pm 0.0095$	$H(0.15)$	$73.49^{+0.49}_{-0.38}$
$y_{\text{cal}}$	$1.0007 \pm 0.0024$	$\Delta z_{\text{s,DES}}^4$	$-0.031 \pm 0.018$	$D_{\text{M}}(0.15)$	$635.4^{+3.6}_{-4.7}$
$A_{217}^{\text{CIB}}$	$47 \pm 7$	$H_0$	$68.29^{+0.55}_{-0.44}$	$H(0.38)$	$83.46^{+0.38}_{-0.29}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$\Omega_{\Lambda}$	$0.6971^{+0.0068}_{-0.0054}$	$D_{\text{M}}(0.38)$	$1517.6^{+7.4}_{-9.7}$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.2}_{-1.9}$	$\Omega_{\text{m}}$	$0.3029^{+0.0054}_{-0.0068}$	$H(0.51)$	$90.09^{+0.32}_{-0.24}$
$A_{100}^{\text{PS}}$	$258 \pm 28$	$\Omega_{\text{m}} h^2$	$0.14126 \pm 0.00088$	$D_{\text{M}}(0.51)$	$1967.2^{+8.8}_{-11}$
$A_{143}^{\text{PS}}$	$45 \pm 8$	$\Omega_{\nu} h^2$	$< 0.000720$	$H(0.61)$	$95.65^{+0.28}_{-0.21}$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9$	$\Omega_{\text{m}} h^3$	$0.09647^{+0.00040}_{-0.00032}$	$D_{\text{M}}(0.61)$	$2290.2^{+9.6}_{-13}$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$\sigma_8$	$0.809^{+0.012}_{-0.0067}$	$H(2.33)$	$235.47 \pm 0.55$
$A^{\text{kSZ}}$	$< 4.28$	$S_8$	$0.8126 \pm 0.0098$	$D_{\text{M}}(2.33)$	$5747.6^{+9.7}_{-14}$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4451 \pm 0.0054$	$f\sigma_8(0.15)$	$0.4503 \pm 0.0050$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.6000^{+0.0072}_{-0.0056}$	$\sigma_8(0.15)$	$0.748^{+0.011}_{-0.0062}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3$	$\sigma_8/h^{0.5}$	$0.979^{+0.012}_{-0.0085}$	$f\sigma_8(0.38)$	$0.4706^{+0.0050}_{-0.0044}$
$A_{217}^{\text{dustTT}}$	$93.7 \pm 7.3$	$r_{\text{drag}} h$	$100.68^{+0.87}_{-0.73}$	$\sigma_8(0.38)$	$0.664^{+0.010}_{-0.0056}$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$\langle d^2 \rangle^{1/2}$	$2.420 \pm 0.019$	$f\sigma_8(0.51)$	$0.4702^{+0.0051}_{-0.0041}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.029$	$z_{\text{re}}$	$7.85^{+0.60}_{-0.77}$	$\sigma_8(0.51)$	$0.6219^{+0.0095}_{-0.0053}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.481 \pm 0.084$	$10^9 A_{\text{s}}$	$2.102^{+0.024}_{-0.032}$	$f\sigma_8(0.61)$	$0.4659^{+0.0051}_{-0.0039}$
$A_{143}^{\text{dustTE}}$	$0.223 \pm 0.053$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.876 \pm 0.010$	$\sigma_8(0.61)$	$0.5920^{+0.0091}_{-0.0051}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.661 \pm 0.080$	$D_{40}$	$1225 \pm 11$	$f\sigma_8(2.33)$	$0.2988^{+0.0039}_{-0.0024}$
$A_{217}^{\text{dustTE}}$	$2.06 \pm 0.27$	$D_{220}$	$5749 \pm 38$	$\sigma_8(2.33)$	$0.3084^{+0.0047}_{-0.0027}$
$c_{100}$	$0.99969 \pm 0.00061$	$D_{810}$	$2538 \pm 13$	$f_{2000}^{143}$	$29.1 \pm 2.7$
$c_{217}$	$0.99819 \pm 0.00062$	$D_{1420}$	$818.2 \pm 4.7$	$f_{2000}^{143 \times 217}$	$31.8 \pm 1.8$
$b_{\text{DES}}^1$	$1.501 \pm 0.073$	$D_{2000}$	$231.3 \pm 1.5$	$f_{2000}^{217}$	$106.7 \pm 1.7$
$b_{\text{DES}}^2$	$1.699 \pm 0.054$	$n_{\text{s},0.002}$	$0.9688 \pm 0.0036$	$\chi_{\text{lensing}}^2$	$9.40 \pm 0.92$
$b_{\text{DES}}^3$	$1.687 \pm 0.046$	$Y_{\text{P}}$	$0.245450 \pm 0.000050$	$\chi_{\text{simall}}^2$	$397.2 \pm 2.0$
$b_{\text{DES}}^4$	$2.046 \pm 0.054$	$Y_{\text{P}}^{\text{BBN}}$	$0.246777 \pm 0.000050$	$\chi_{\text{lowl}}^2$	$22.86 \pm 0.75$
$b_{\text{DES}}^5$	$2.148 \pm 0.078$	$10^5 \text{D/H}$	$2.559 \pm 0.024$	$\chi_{\text{plik}}^2$	$2361.5 \pm 6.0$
$m_{\text{DES}}^1$	$0.012 \pm 0.023$	Age/Gyr	$13.763^{+0.022}_{-0.031}$	$\chi_{6\text{DF}}^2$	$0.030 \pm 0.042$
$m_{\text{DES}}^2$	$0.012 \pm 0.022$	$z_*$	$1089.57 \pm 0.20$	$\chi_{\text{MGS}}^2$	$1.88 \pm 0.51$
$m_{\text{DES}}^3$	$-0.005 \pm 0.020$	$r_*$	$144.80 \pm 0.21$	$\chi_{\text{DR12BAO}}^2$	$3.85 \pm 0.74$
$m_{\text{DES}}^4$	$0.001 \pm 0.020$	$100\theta_*$	$1.04128 \pm 0.00028$	$\chi_{\text{DES}}^2$	$518.6 \pm 4.9$
$A_{\text{IA,DES}}$	$0.48^{+0.15}_{-0.18}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.906 \pm 0.020$	$\chi_{\text{prior}}^2$	$25 \pm 7$
$\alpha_{\text{IA,DES}}$	$-1.2^{+1.7}_{-2.8}$	$z_{\text{drag}}$	$1060.14 \pm 0.29$	$\chi_{\text{CMB}}^2$	$2790.9 \pm 6.4$
$\Delta z_{\text{l,DES}}^1$	$0.0035 \pm 0.0075$	$r_{\text{drag}}$	$147.42 \pm 0.22$	$\chi_{\text{BAO}}^2$	$5.76 \pm 0.74$

$\bar{\chi}_{\text{eff}}^2 = 3340.12$ ;  $R - 1 = 0.00912$



**6.159**    **base\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_DESlens**

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022462	$0.02243 \pm 0.00014$	$\Delta z_{s,\text{DES}}^2$	-0.0205	$-0.021 \pm 0.012$	$k_D$	0.140762	$0.14072 \pm 0.00030$
$\Omega_c h^2$	0.11903	$0.1190 \pm 0.0011$	$\Delta z_{s,\text{DES}}^3$	0.0047	$0.004 \pm 0.010$	$100\theta_D$	0.160687	$0.16072 \pm 0.00017$
$100\theta_{\text{MC}}$	1.041074	$1.04100 \pm 0.00031$	$\Delta z_{s,\text{DES}}^4$	-0.0213	$-0.022 \pm 0.020$	$z_{\text{eq}}$	3381.2	$3381 \pm 26$
$\tau$	0.0535	$0.0536 \pm 0.0079$	$H_0$	68.33	$67.6^{+1.1}_{-0.57}$	$k_{\text{eq}}$	0.010320	$0.010318 \pm 0.000079$
$\Sigma m_\nu$ [eV]	0.002	$< 0.100$	$\Omega_\Lambda$	0.6969	$0.688^{+0.014}_{-0.0071}$	$100\theta_{\text{eq}}$	0.81738	$0.8175 \pm 0.0049$
$\ln(10^{10} A_s)$	3.0406	$3.040 \pm 0.016$	$\Omega_m$	0.3031	$0.3119^{+0.0071}_{-0.014}$	$100\theta_{s,\text{eq}}$	0.45144	$0.4515 \pm 0.0025$
$n_s$	0.96824	$0.9672 \pm 0.0041$	$\Omega_m h^2$	0.14152	$0.1424^{+0.0012}_{-0.0016}$	$H(0.15)$	73.53	$72.88^{+0.94}_{-0.49}$
$y_{\text{cal}}$	1.00044	$1.0004 \pm 0.0025$	$\Omega_\nu h^2$	0.00003	$< 0.00108$	$D_M(0.15)$	635.1	$641.5^{+4.7}_{-9.4}$
$A_{217}^{\text{CIB}}$	47.0	$47 \pm 7$	$\Omega_m h^3$	0.096698	$0.09624^{+0.00062}_{-0.00031}$	$H(0.38)$	83.51	$83.00^{+0.72}_{-0.37}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.47	—	$\sigma_8$	0.8200	$0.802^{+0.021}_{-0.0081}$	$D_M(0.38)$	1516.6	$1529.7^{+9.5}_{-19}$
$A_{143}^{\text{tSZ}}$	7.21	$5.5^{+2.2}_{-1.9}$	$S_8$	0.8243	$0.818 \pm 0.014$	$H(0.51)$	90.154	$89.72^{+0.60}_{-0.30}$
$A_{100}^{\text{PS}}$	249.1	$258 \pm 28$	$\sigma_8 \Omega_m^{0.5}$	0.4515	$0.4479 \pm 0.0074$	$D_M(0.51)$	1966.0	$1982^{+11}_{-23}$
$A_{143}^{\text{PS}}$	47.2	$45 \pm 8$	$\sigma_8 \Omega_m^{0.25}$	0.6085	$0.599^{+0.012}_{-0.0074}$	$H(0.61)$	95.717	$95.34^{+0.51}_{-0.25}$
$A_{143 \times 217}^{\text{PS}}$	47.9	$42 \pm 9$	$\sigma_8/h^{0.5}$	0.9921	$0.976^{+0.020}_{-0.011}$	$D_M(0.61)$	2288.8	$2306^{+12}_{-24}$
$A_{217}^{\text{PS}}$	119.5	$114 \pm 10$	$r_{\text{drag}} h$	100.61	$99.6^{+1.7}_{-0.98}$	$H(2.33)$	235.70	$236.13^{+0.72}_{-0.94}$
$A^{\text{kSZ}}$	0.00	$< 4.31$	$\langle d^2 \rangle^{1/2}$	2.4331	$2.423 \pm 0.025$	$D_M(2.33)$	5743.1	$5762^{+11}_{-25}$
$A_{100}^{\text{dustTT}}$	8.86	$8.9 \pm 1.8$	$z_{\text{re}}$	7.55	$7.56 \pm 0.80$	$f\sigma_8(0.15)$	0.4560	$0.4528 \pm 0.0070$
$A_{143}^{\text{dustTT}}$	11.01	$11.0 \pm 1.8$	$10^9 A_s$	2.0918	$2.091 \pm 0.033$	$\sigma_8(0.15)$	0.7585	$0.741^{+0.020}_{-0.0075}$
$A_{143 \times 217}^{\text{dustTT}}$	19.82	$18.7 \pm 3.2$	$10^9 A_s e^{-2\tau}$	1.8796	$1.878 \pm 0.011$	$f\sigma_8(0.38)$	0.4763	$0.4709^{+0.0079}_{-0.0058}$
$A_{217}^{\text{dustTT}}$	95.0	$93.7 \pm 7.2$	$D_{40}$	1224.2	$1226 \pm 12$	$\sigma_8(0.38)$	0.6731	$0.657^{+0.018}_{-0.0066}$
$A_{100}^{\text{dustTE}}$	0.1134	$0.114 \pm 0.038$	$D_{220}$	5735.6	$5736 \pm 39$	$f\sigma_8(0.51)$	0.4758	$0.4696^{+0.0084}_{-0.0052}$
$A_{100 \times 143}^{\text{dustTE}}$	0.1343	$0.135 \pm 0.030$	$D_{810}$	2539.5	$2537 \pm 13$	$\sigma_8(0.51)$	0.6302	$0.615^{+0.017}_{-0.0063}$
$A_{100 \times 217}^{\text{dustTE}}$	0.481	$0.481 \pm 0.085$	$D_{1420}$	818.48	$817.4 \pm 4.7$	$f\sigma_8(0.61)$	0.4714	$0.4647^{+0.0088}_{-0.0049}$
$A_{143}^{\text{dustTE}}$	0.226	$0.224 \pm 0.054$	$D_{2000}$	231.50	$230.9 \pm 1.6$	$\sigma_8(0.61)$	0.5998	$0.585^{+0.017}_{-0.0060}$
$A_{143 \times 217}^{\text{dustTE}}$	0.666	$0.663 \pm 0.080$	$n_{s,0.002}$	0.96824	$0.9672 \pm 0.0041$	$f\sigma_8(2.33)$	0.3018	$0.2956^{+0.0075}_{-0.0028}$
$A_{217}^{\text{dustTE}}$	2.087	$2.07 \pm 0.27$	$Y_P$	0.245431	$0.245418^{+0.000057}_{-0.000052}$	$\sigma_8(2.33)$	0.3120	$0.3045^{+0.0089}_{-0.0032}$
$c_{100}$	0.99972	$0.99967 \pm 0.00061$	$Y_P^{\text{BBN}}$	0.246757	$0.246744^{+0.000057}_{-0.000052}$	$f_{2000}^{143}$	28.43	$29.4 \pm 2.7$
$c_{217}$	0.99818	$0.99820 \pm 0.00062$	$10^5 D/H$	2.5686	$2.575 \pm 0.026$	$f_{2000}^{143 \times 217}$	31.67	$32.1 \pm 1.9$
$m_{\text{DES}}^1$	0.0144	$0.014 \pm 0.023$	Age/Gyr	13.7513	$13.794^{+0.025}_{-0.056}$	$f_{2000}^{217}$	106.30	$106.9 \pm 1.8$
$m_{\text{DES}}^2$	0.0124	$0.012 \pm 0.022$	$z_*$	1089.714	$1089.76 \pm 0.25$	$\chi_{\text{small}}^2$	395.86	$397.0 \pm 1.7$
$m_{\text{DES}}^3$	-0.0067	$-0.008 \pm 0.020$	$r_*$	144.618	$144.63 \pm 0.26$	$\chi_{\text{lowl}}^2$	22.90	$22.99 \pm 0.82$
$m_{\text{DES}}^4$	0.0119	$0.011 \pm 0.021$	$100\theta_*$	1.041214	$1.04119 \pm 0.00030$	$\chi_{\text{plik}}^2$	2344.9	$2361.4 \pm 6.3$
$A_{\text{IA,DES}}$	1.43	$1.24 \pm 0.50$	$D_M(z_*)/\text{Gpc}$	13.8894	$13.891 \pm 0.024$	$\chi_{\text{DES}}^2$	229.21	$232.0 \pm 2.5$
$\alpha_{\text{IA,DES}}$	2.44	$1.8^{+2.8}_{-1.1}$	$z_{\text{drag}}$	1060.085	$1060.01 \pm 0.30$	$\chi_{\text{prior}}^2$	2.7	$19.6 \pm 6.0$
$\Delta z_{s,\text{DES}}^1$	0.0045	$0.005 \pm 0.014$	$r_{\text{drag}}$	147.251	$147.28 \pm 0.26$	$\chi_{\text{CMB}}^2$	2763.6	$2781.4 \pm 6.2$

Best-fit  $\chi_{\text{eff}}^2 = 2995.54$ ;  $\bar{\chi}_{\text{eff}}^2 = 3033.01$ ;  $R - 1 = 0.00759$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5.EE\_Aplanck\_B: 395.86 commander\_dx12\_v3.2\_29: 22.90 plik\_rd12\_HM\_v22b\_TTTEEE: 2344.87 WL - DES\_1YR\_final: 229.21



6.160 base\_mnu\_plikHM\_TTTEE\_lowl\_lowE\_DESlens\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022444	$0.02246 \pm 0.00013$	$\Delta z_{s,DES}^4$	-0.0221	$-0.022 \pm 0.020$	$100\theta_{eq}$	0.81725	$0.8186 \pm 0.0040$
$\Omega_c h^2$	0.11906	$0.11876 \pm 0.00093$	$H_0$	68.29	$67.99^{+0.53}_{-0.47}$	$100\theta_{s,eq}$	0.45139	$0.4521 \pm 0.0021$
$100\theta_{MC}$	1.041040	$1.04105 \pm 0.00029$	$\Omega_\Lambda$	0.6965	$0.6931^{+0.0067}_{-0.0059}$	$H(0.15)$	73.495	$73.23^{+0.47}_{-0.41}$
$\tau$	0.0532	$0.0540 \pm 0.0078$	$\Omega_m$	0.3035	$0.3069^{+0.0059}_{-0.0067}$	$D_M(0.15)$	635.39	$638.0^{+4.0}_{-4.6}$
$\Sigma m_\nu$ [eV]	0.0025	$< 0.0693$	$\Omega_m h^2$	0.14153	$0.14183 \pm 0.00091$	$H(0.38)$	83.481	$83.27^{+0.36}_{-0.31}$
$\ln(10^{10} A_s)$	3.0387	$3.040 \pm 0.016$	$\Omega_\nu h^2$	0.000027	$< 0.000745$	$D_M(0.38)$	1517.3	$1522.6^{+8.1}_{-9.3}$
$n_s$	0.96835	$0.9680 \pm 0.0037$	$\Omega_m h^3$	0.096654	$0.09643^{+0.00040}_{-0.00032}$	$H(0.51)$	90.128	$89.94^{+0.30}_{-0.26}$
$y_{cal}$	0.99984	$1.0004 \pm 0.0025$	$\sigma_8$	0.8194	$0.808^{+0.014}_{-0.0081}$	$D_M(0.51)$	1966.8	$1973.2^{+9.5}_{-11}$
$A_{217}^{CIB}$	46.8	$47 \pm 7$	$S_8$	0.8242	$0.818 \pm 0.012$	$H(0.61)$	95.693	$95.53^{+0.26}_{-0.21}$
$\xi^{tSZ \times CIB}$	0.48	—	$\sigma_8 \Omega_m^{0.5}$	0.4514	$0.4478 \pm 0.0067$	$D_M(0.61)$	2289.7	$2297^{+10}_{-12}$
$A_{143}^{tSZ}$	7.30	$5.6^{+2.2}_{-1.9}$	$\sigma_8 \Omega_m^{0.25}$	0.6082	$0.6017^{+0.0091}_{-0.0070}$	$H(2.33)$	235.70	$235.82 \pm 0.57$
$A_{100}^{PS}$	247.7	$258 \pm 28$	$\sigma_8/h^{0.5}$	0.9916	$0.980^{+0.015}_{-0.011}$	$D_M(2.33)$	5744.3	$5753^{+10}_{-13}$
$A_{143}^{PS}$	47.3	$45 \pm 8$	$r_{drag} h$	100.57	$100.17 \pm 0.82$	$f\sigma_8(0.15)$	0.4559	$0.4527 \pm 0.0063$
$A_{143 \times 217}^{PS}$	48.3	$42 \pm 9$	$\langle d^2 \rangle^{1/2}$	2.4310	$2.423 \pm 0.024$	$\sigma_8(0.15)$	0.7579	$0.748^{+0.013}_{-0.0074}$
$A_{217}^{PS}$	119.7	$115 \pm 10$	$z_{re}$	7.53	$7.59 \pm 0.79$	$f\sigma_8(0.38)$	0.4761	$0.4721^{+0.0064}_{-0.0055}$
$A^{kSZ}$	0.00	$< 4.20$	$10^9 A_s$	2.0877	$2.091 \pm 0.033$	$\sigma_8(0.38)$	0.6725	$0.663^{+0.012}_{-0.0066}$
$A_{100}^{dustTT}$	8.89	$8.9 \pm 1.9$	$10^9 A_s e^{-2\tau}$	1.8769	$1.877 \pm 0.011$	$f\sigma_8(0.51)$	0.4756	$0.4712^{+0.0064}_{-0.0051}$
$A_{143}^{dustTT}$	11.07	$10.9 \pm 1.8$	$D_{40}$	1221.9	$1225 \pm 12$	$\sigma_8(0.51)$	0.6296	$0.621^{+0.011}_{-0.0062}$
$A_{143 \times 217}^{dustTT}$	19.89	$18.6 \pm 3.2$	$D_{220}$	5724.8	$5736 \pm 38$	$f\sigma_8(0.61)$	0.4712	$0.4667^{+0.0064}_{-0.0049}$
$A_{217}^{dustTT}$	95.0	$93.8 \pm 7.2$	$D_{810}$	2536.0	$2537 \pm 13$	$\sigma_8(0.61)$	0.5992	$0.591^{+0.010}_{-0.0059}$
$A_{100}^{dustTE}$	0.1147	$0.114 \pm 0.038$	$D_{1420}$	817.36	$817.6 \pm 4.7$	$f\sigma_8(2.33)$	0.30150	$0.2981^{+0.0046}_{-0.0028}$
$A_{100 \times 143}^{dustTE}$	0.1345	$0.134 \pm 0.030$	$D_{2000}$	231.15	$231.1 \pm 1.6$	$\sigma_8(2.33)$	0.31164	$0.3075^{+0.0053}_{-0.0031}$
$A_{100 \times 217}^{dustTE}$	0.480	$0.479 \pm 0.085$	$n_{s,0.002}$	0.96835	$0.9680 \pm 0.0037$	$f_{2000}^{143}$	28.47	$29.2 \pm 2.7$
$A_{143}^{dustTE}$	0.223	$0.223 \pm 0.054$	$Y_P$	0.2454240	$0.245428 \pm 0.000050$	$f_{2000}^{143 \times 217}$	31.74	$31.9 \pm 1.8$
$A_{143 \times 217}^{dustTE}$	0.663	$0.662 \pm 0.079$	$Y_P^{BBN}$	0.2467506	$0.246754 \pm 0.000050$	$f_{2000}^{217}$	106.27	$106.7 \pm 1.8$
$A_{217}^{dustTE}$	2.072	$2.07 \pm 0.27$	$10^5 D/H$	2.5719	$2.570 \pm 0.024$	$\chi_{simall}^2$	395.84	$397.0 \pm 1.7$
$c_{100}$	0.99970	$0.99968 \pm 0.00061$	Age/Gyr	13.7542	$13.774^{+0.023}_{-0.030}$	$\chi_{lowl}^2$	22.84	$22.92 \pm 0.78$
$c_{217}$	0.99817	$0.99818 \pm 0.00063$	$z_*$	1089.740	$1089.70 \pm 0.21$	$\chi_{plik}^2$	2345.0	$2360.9 \pm 6.1$
$m_{DES}^1$	0.0155	$0.014 \pm 0.023$	$r_*$	144.625	$144.69 \pm 0.22$	$\chi_{6DF}^2$	0.0003	$0.033 \pm 0.048$
$m_{DES}^2$	0.0116	$0.012 \pm 0.022$	$100\theta_*$	1.041185	$1.04123 \pm 0.00029$	$\chi_{MGS}^2$	1.748	$1.57 \pm 0.48$
$m_{DES}^3$	-0.0071	$-0.007 \pm 0.020$	$D_M(z_*)/\text{Gpc}$	13.8904	$13.896 \pm 0.021$	$\chi_{DR12BAO}^2$	3.47	$4.2 \pm 1.1$
$m_{DES}^4$	0.0121	$0.011 \pm 0.021$	$z_{drag}$	1060.047	$1060.05 \pm 0.29$	$\chi_{DES}^2$	229.17	$231.9 \pm 2.4$
$A_{IA,DES}$	1.45	$1.23 \pm 0.51$	$r_{drag}$	147.264	$147.33 \pm 0.23$	$\chi_{prior}^2$	2.8	$19.4 \pm 6.0$
$\alpha_{IA,DES}$	2.51	$1.86^{+2.9}_{-0.94}$	$k_D$	0.140734	$0.14068 \pm 0.00029$	$\chi_{BAO}^2$	5.218	$5.78 \pm 0.83$
$\Delta z_{s,DES}^1$	0.0044	$0.004 \pm 0.014$	$100\theta_D$	0.160707	$0.16070 \pm 0.00017$	$\chi_{CMB}^2$	2763.7	$2780.8 \pm 6.0$
$\Delta z_{s,DES}^2$	-0.0207	$-0.021 \pm 0.012$	$z_{eq}$	3381.5	$3375 \pm 21$			
$\Delta z_{s,DES}^3$	0.0050	$0.005 \pm 0.010$	$k_{eq}$	0.010320	$0.010300 \pm 0.000064$			

Best-fit  $\chi_{eff}^2 = 3000.82$ ;  $\bar{\chi}_{eff}^2 = 3037.89$ ;  $R - 1 = 0.00772$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.47 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.84 commander\_dx12\_v3\_2\_29: 22.84 plik\_rd12\_HM\_v22b\_TTTEE: 2344.98 WL - DES\_1YR\_final: 229.17



6.161 base\_mnu\_plikHM\_TTTEE\_lowl\_lowE\_DESlens\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022472	$0.02244 \pm 0.00014$	$\Delta z_{s,\text{DES}}^3$	0.0048	$0.004 \pm 0.010$	$z_{\text{eq}}$	3380.6	$3382 \pm 24$
$\Omega_c h^2$	0.11899	$0.1191 \pm 0.0011$	$\Delta z_{s,\text{DES}}^4$	-0.0223	$-0.023 \pm 0.020$	$k_{\text{eq}}$	0.010318	$0.010323 \pm 0.000075$
$100\theta_{\text{MC}}$	1.041036	$1.04100 \pm 0.00031$	$H_0$	68.34	$67.71^{+0.94}_{-0.56}$	$100\theta_{\text{eq}}$	0.81750	$0.8172 \pm 0.0047$
$\tau$	0.0540	$0.0549 \pm 0.0076$	$\Omega_{\Lambda}$	0.6971	$0.689^{+0.012}_{-0.0071}$	$100\theta_{s,\text{eq}}$	0.45150	$0.4513 \pm 0.0024$
$\Sigma m_{\nu}$ [eV]	0.0011	$< 0.0846$	$\Omega_{\text{m}}$	0.3029	$0.3106^{+0.0071}_{-0.012}$	$H(0.15)$	73.54	$72.99^{+0.82}_{-0.49}$
$\ln(10^{10} A_s)$	3.0418	$3.043 \pm 0.015$	$\Omega_{\text{m}} h^2$	0.14148	$0.1423^{+0.0011}_{-0.0015}$	$D_{\text{M}}(0.15)$	635.0	$640.4^{+4.7}_{-8.2}$
$n_s$	0.96887	$0.9670 \pm 0.0040$	$\Omega_{\nu} h^2$	0.000012	$< 0.000910$	$H(0.38)$	83.52	$83.09^{+0.63}_{-0.37}$
$y_{\text{cal}}$	1.00052	$1.0006 \pm 0.0024$	$\Omega_{\text{m}} h^3$	0.096690	$0.09635^{+0.00051}_{-0.00031}$	$D_{\text{M}}(0.38)$	1516.4	$1527.6^{+9.4}_{-17}$
$A_{217}^{\text{CIB}}$	45.1	$47 \pm 7$	$\sigma_8$	0.8206	$0.807^{+0.015}_{-0.0068}$	$H(0.51)$	90.160	$89.80^{+0.52}_{-0.30}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.80	—	$S_8$	0.8246	$0.821 \pm 0.011$	$D_{\text{M}}(0.51)$	1965.7	$1979^{+11}_{-20}$
$A_{143}^{\text{tSZ}}$	7.09	$5.5^{+2.1}_{-1.9}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4517	$0.4497 \pm 0.0060$	$H(0.61)$	95.722	$95.41^{+0.44}_{-0.25}$
$A_{100}^{\text{PS}}$	245.9	$258 \pm 28$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6088	$0.6024^{+0.0082}_{-0.0061}$	$D_{\text{M}}(0.61)$	2288.5	$2303^{+12}_{-21}$
$A_{143}^{\text{PS}}$	51.7	$45 \pm 8$	$\sigma_8/h^{0.5}$	0.9927	$0.981^{+0.014}_{-0.0091}$	$H(2.33)$	235.68	$236.10^{+0.70}_{-0.86}$
$A_{143 \times 217}^{\text{PS}}$	56.4	$42 \pm 9$	$r_{\text{drag}} h$	100.64	$99.7^{+1.5}_{-0.96}$	$D_{\text{M}}(2.33)$	5742.9	$5758^{+11}_{-21}$
$A_{217}^{\text{PS}}$	122.9	$115 \pm 10$	$\langle d^2 \rangle^{1/2}$	2.4330	$2.430 \pm 0.020$	$f\sigma_8(0.15)$	0.4562	$0.4545 \pm 0.0056$
$A^{\text{kSZ}}$	0.00	$< 4.21$	$z_{\text{re}}$	7.60	$7.69 \pm 0.76$	$\sigma_8(0.15)$	0.7590	$0.746^{+0.015}_{-0.0063}$
$A_{100}^{\text{dustTT}}$	8.85	$8.9 \pm 1.8$	$10^9 A_s$	2.0944	$2.098 \pm 0.031$	$f\sigma_8(0.38)$	0.4765	$0.4730^{+0.0055}_{-0.0048}$
$A_{143}^{\text{dustTT}}$	10.99	$10.9 \pm 1.8$	$10^9 A_s e^{-2\tau}$	1.8801	$1.879 \pm 0.011$	$\sigma_8(0.38)$	0.6736	$0.661^{+0.014}_{-0.0058}$
$A_{143 \times 217}^{\text{dustTT}}$	20.32	$18.6 \pm 3.2$	$D_{40}$	1223.3	$1228 \pm 11$	$f\sigma_8(0.51)$	0.4761	$0.4718^{+0.0058}_{-0.0044}$
$A_{217}^{\text{dustTT}}$	95.8	$93.8 \pm 7.2$	$D_{220}$	5735.5	$5740 \pm 38$	$\sigma_8(0.51)$	0.6307	$0.619^{+0.013}_{-0.0055}$
$A_{100}^{\text{dustTE}}$	0.1141	$0.114 \pm 0.038$	$D_{810}$	2540.7	$2539 \pm 13$	$f\sigma_8(0.61)$	0.4717	$0.4669^{+0.0061}_{-0.0041}$
$A_{100 \times 143}^{\text{dustTE}}$	0.1344	$0.134 \pm 0.029$	$D_{1420}$	819.16	$817.7 \pm 4.7$	$\sigma_8(0.61)$	0.6002	$0.589^{+0.013}_{-0.0053}$
$A_{100 \times 217}^{\text{dustTE}}$	0.479	$0.480 \pm 0.085$	$D_{2000}$	231.77	$231.1 \pm 1.5$	$f\sigma_8(2.33)$	0.30202	$0.2973^{+0.0057}_{-0.0026}$
$A_{143}^{\text{dustTE}}$	0.224	$0.223 \pm 0.054$	$n_{s,0.002}$	0.96887	$0.9670 \pm 0.0040$	$\sigma_8(2.33)$	0.31221	$0.3064^{+0.0070}_{-0.0030}$
$A_{143 \times 217}^{\text{dustTE}}$	0.665	$0.663 \pm 0.079$	$Y_{\text{P}}$	0.245434	$0.245421^{+0.000056}_{-0.000050}$	$f_{2000}^{143}$	28.08	$29.3 \pm 2.7$
$A_{217}^{\text{dustTE}}$	2.067	$2.07 \pm 0.27$	$Y_{\text{P}}^{\text{BBN}}$	0.246761	$0.246747^{+0.000056}_{-0.000051}$	$f_{2000}^{143 \times 217}$	31.64	$32.0 \pm 1.8$
$c_{100}$	0.99977	$0.99968 \pm 0.00061$	$10^5 D/H$	2.5668	$2.573 \pm 0.026$	$f_{2000}^{217}$	106.07	$106.8 \pm 1.8$
$c_{217}$	0.99818	$0.99819 \pm 0.00064$	Age/Gyr	13.7509	$13.786^{+0.025}_{-0.048}$	$\chi_{\text{lensing}}^2$	8.835	$9.29 \pm 0.76$
$m_{\text{DES}}^1$	0.0151	$0.014 \pm 0.023$	$z_*$	1089.699	$1089.75 \pm 0.24$	$\chi_{\text{small}}^2$	395.92	$397.1 \pm 1.8$
$m_{\text{DES}}^2$	0.0128	$0.011 \pm 0.022$	$r_*$	144.620	$144.61 \pm 0.25$	$\chi_{\text{lowl}}^2$	22.80	$23.13 \pm 0.79$
$m_{\text{DES}}^3$	-0.0069	$-0.009 \pm 0.020$	$100\theta_*$	1.041183	$1.04118 \pm 0.00030$	$\chi_{\text{plik}}^2$	2345.2	$2360.4 \pm 5.8$
$m_{\text{DES}}^4$	0.0129	$0.010 \pm 0.021$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8900	$13.889 \pm 0.023$	$\chi_{\text{DES}}^2$	229.17	$232.1 \pm 2.6$
$A_{\text{IA,DES}}$	1.46	$1.26 \pm 0.49$	$z_{\text{drag}}$	1060.085	$1060.03 \pm 0.29$	$\chi_{\text{prior}}^2$	2.5	$19.6 \pm 6.0$
$\alpha_{\text{IA,DES}}$	2.50	$1.8^{+2.7}_{-1.1}$	$r_{\text{drag}}$	147.252	$147.25 \pm 0.25$	$\chi_{\text{CMB}}^2$	2772.7	$2789.9 \pm 6.0$
$\Delta z_{s,\text{DES}}^1$	0.0050	$0.005 \pm 0.015$	$k_{\text{D}}$	0.140771	$0.14075 \pm 0.00029$			
$\Delta z_{s,\text{DES}}^2$	-0.0205	$-0.021 \pm 0.011$	$100\theta_{\text{D}}$	0.160670	$0.16071 \pm 0.00017$			

Best-fit  $\chi_{\text{eff}}^2 = 3004.39$ ;  $\bar{\chi}_{\text{eff}}^2 = 3041.59$ ;  $R - 1 = 0.00745$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.84 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.92 commander\_dx12\_v3.2\_29: 22.80 plik\_rd12\_HM\_v22b\_TTTEE: 2345.16 WL - DES\_1YR\_final: 229.17



6.162 base\_mnu\_plikHM\_TTTEE\_lowl\_lowE\_DESlens\_post\_BAO\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022459	$0.02246 \pm 0.00013$	$\Delta z_{s,DES}^4$	-0.0219	$-0.022 \pm 0.020$	$100\theta_{eq}$	0.81709	$0.8182 \pm 0.0037$
$\Omega_c h^2$	0.11909	$0.11885 \pm 0.00087$	$H_0$	68.299	$68.01 \pm 0.50$	$100\theta_{s,eq}$	0.45130	$0.4519 \pm 0.0019$
$100\theta_{MC}$	1.041046	$1.04104 \pm 0.00029$	$\Omega_\Lambda$	0.6965	$0.6933^{+0.0065}_{-0.0058}$	$H(0.15)$	73.504	$73.25^{+0.45}_{-0.40}$
$\tau$	0.0539	$0.0551 \pm 0.0074$	$\Omega_m$	0.3035	$0.3067^{+0.0058}_{-0.0065}$	$D_M(0.15)$	635.32	$637.8^{+3.9}_{-4.4}$
$\Sigma m_\nu$ [eV]	0.0003	$< 0.0619$	$\Omega_m h^2$	0.14156	$0.14185 \pm 0.00089$	$H(0.38)$	83.492	$83.29^{+0.34}_{-0.30}$
$\ln(10^{10} A_s)$	3.0415	$3.043 \pm 0.015$	$\Omega_\nu h^2$	$0.4 \cdot 10^{-5}$	$< 0.000665$	$D_M(0.38)$	1517.1	$1522.2^{+7.9}_{-9.0}$
$n_s$	0.96838	$0.9676 \pm 0.0036$	$\Omega_m h^3$	0.096682	$0.09647^{+0.00036}_{-0.00031}$	$H(0.51)$	90.139	$89.96^{+0.29}_{-0.25}$
$y_{cal}$	1.00034	$1.0005 \pm 0.0024$	$\sigma_8$	0.8208	$0.811^{+0.011}_{-0.0069}$	$D_M(0.51)$	1966.6	$1972.7^{+9.3}_{-11}$
$A_{217}^{CIB}$	45.6	$47 \pm 7$	$S_8$	0.8255	$0.820 \pm 0.010$	$H(0.61)$	95.705	$95.55^{+0.25}_{-0.21}$
$\xi^{tSZ \times CIB}$	0.71	—	$\sigma_8 \Omega_m^{0.5}$	0.4522	$0.4492 \pm 0.0055$	$D_M(0.61)$	2289.4	$2296^{+10}_{-12}$
$A_{143}^{tSZ}$	7.08	$5.6^{+2.1}_{-1.9}$	$\sigma_8 \Omega_m^{0.25}$	0.6092	$0.6036^{+0.0069}_{-0.0058}$	$H(2.33)$	235.73	$235.84 \pm 0.55$
$A_{100}^{PS}$	246.5	$257 \pm 28$	$\sigma_8/h^{0.5}$	0.9932	$0.984^{+0.011}_{-0.0088}$	$D_M(2.33)$	5743.6	$5752^{+10}_{-12}$
$A_{143}^{PS}$	50.7	$45 \pm 8$	$r_{drag} h$	100.56	$100.19 \pm 0.80$	$f\sigma_8(0.15)$	0.4567	$0.4541 \pm 0.0051$
$A_{143 \times 217}^{PS}$	54.0	$42 \pm 9$	$\langle d^2 \rangle^{1/2}$	2.4346	$2.429 \pm 0.019$	$\sigma_8(0.15)$	0.7591	$0.750^{+0.010}_{-0.0064}$
$A_{217}^{PS}$	122.1	$115 \pm 10$	$z_{re}$	7.59	$7.71 \pm 0.74$	$f\sigma_8(0.38)$	0.47687	$0.4735 \pm 0.0048$
$A^{kSZ}$	0.00	$< 4.14$	$10^9 A_s$	2.0936	$2.097 \pm 0.031$	$\sigma_8(0.38)$	0.6736	$0.6653^{+0.0092}_{-0.0057}$
$A_{100}^{dustTT}$	8.80	$8.9 \pm 1.8$	$10^9 A_s e^{-2\tau}$	1.8798	$1.878 \pm 0.010$	$f\sigma_8(0.51)$	0.47633	$0.4727^{+0.0049}_{-0.0042}$
$A_{143}^{dustTT}$	11.06	$10.9 \pm 1.8$	$D_{40}$	1223.9	$1226 \pm 11$	$\sigma_8(0.51)$	0.6306	$0.6229^{+0.0087}_{-0.0054}$
$A_{143 \times 217}^{dustTT}$	20.23	$18.6 \pm 3.2$	$D_{220}$	5733.8	$5740 \pm 38$	$f\sigma_8(0.61)$	0.47190	$0.4681^{+0.0049}_{-0.0040}$
$A_{217}^{dustTT}$	95.5	$93.8 \pm 7.2$	$D_{810}$	2539.7	$2538 \pm 13$	$\sigma_8(0.61)$	0.6002	$0.5928^{+0.0084}_{-0.0052}$
$A_{100}^{dustTE}$	0.1158	$0.114 \pm 0.038$	$D_{1420}$	818.61	$817.8 \pm 4.7$	$f\sigma_8(2.33)$	0.30197	$0.2990^{+0.0037}_{-0.0025}$
$A_{100 \times 143}^{dustTE}$	0.1341	$0.134 \pm 0.030$	$D_{2000}$	231.57	$231.2 \pm 1.5$	$\sigma_8(2.33)$	0.31213	$0.3085^{+0.0044}_{-0.0028}$
$A_{100 \times 217}^{dustTE}$	0.482	$0.479 \pm 0.085$	$n_{s,0.002}$	0.96838	$0.9676 \pm 0.0036$	$f_{2000}^{143}$	28.26	$29.1 \pm 2.7$
$A_{143}^{dustTE}$	0.223	$0.223 \pm 0.055$	$Y_P$	0.2454297	$0.245428 \pm 0.000050$	$f_{2000}^{143 \times 217}$	31.66	$31.9 \pm 1.8$
$A_{143 \times 217}^{dustTE}$	0.664	$0.662 \pm 0.079$	$Y_P^{BBN}$	0.2467563	$0.246755 \pm 0.000050$	$f_{2000}^{217}$	106.16	$106.7 \pm 1.8$
$A_{217}^{dustTE}$	2.066	$2.07 \pm 0.27$	$10^5 D/H$	2.5692	$2.569 \pm 0.024$	$\chi^2_{lensing}$	8.846	$9.24 \pm 0.68$
$c_{100}$	0.99972	$0.99968 \pm 0.00061$	Age/Gyr	13.7524	$13.771^{+0.023}_{-0.028}$	$\chi^2_{small}$	395.93	$397.0 \pm 1.7$
$c_{217}$	0.99818	$0.99818 \pm 0.00064$	$z_*$	1089.724	$1089.71 \pm 0.21$	$\chi^2_{lowl}$	22.90	$23.04 \pm 0.75$
$m_{DES}^1$	0.0150	$0.014 \pm 0.023$	$r_*$	144.604	$144.66 \pm 0.21$	$\chi^2_{plik}$	2344.9	$2360.1 \pm 5.7$
$m_{DES}^2$	0.0128	$0.011 \pm 0.022$	$100\theta_*$	1.041192	$1.04121 \pm 0.00029$	$\chi^2_{6DF}$	0.0002	$0.031 \pm 0.045$
$m_{DES}^3$	-0.0081	$-0.008 \pm 0.020$	$D_M(z_*)/\text{Gpc}$	13.8883	$13.894 \pm 0.020$	$\chi^2_{MGS}$	1.748	$1.58 \pm 0.47$
$m_{DES}^4$	0.0117	$0.011 \pm 0.021$	$z_{drag}$	1060.085	$1060.06 \pm 0.29$	$\chi^2_{DR12BAO}$	3.476	$4.1 \pm 1.0$
$A_{IA,DES}$	1.46	$1.25 \pm 0.50$	$r_{drag}$	147.238	$147.30 \pm 0.22$	$\chi^2_{DES}$	229.18	$232.0 \pm 2.5$
$\alpha_{IA,DES}$	2.52	$1.9^{+2.8}_{-1.0}$	$k_D$	0.140774	$0.14071 \pm 0.00028$	$\chi^2_{prior}$	2.6	$19.4 \pm 6.0$
$\Delta z_{s,DES}^1$	0.0049	$0.004 \pm 0.015$	$100\theta_D$	0.160686	$0.16069 \pm 0.00017$	$\chi^2_{CMB}$	2772.6	$2789.4 \pm 5.9$
$\Delta z_{s,DES}^2$	-0.0209	$-0.021 \pm 0.011$	$z_{eq}$	3382.7	$3377 \pm 20$	$\chi^2_{BAO}$	5.224	$5.75 \pm 0.78$
$\Delta z_{s,DES}^3$	0.0049	$0.004 \pm 0.010$	$k_{eq}$	0.010324	$0.010307 \pm 0.000060$			

Best-fit  $\chi^2_{eff} = 3009.63$ ;  $\bar{\chi}^2_{eff} = 3046.60$ ;  $R - 1 = 0.00939$

$\chi^2_{eff}$ : BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.48 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.85 small\_100x143.offlike5\_EE\_Aplanck\_B: 395.93 commander\_dx12.v3.2.29: 22.90 plik\_r12\_HM\_v22b\_TTTEE: 2344.91 WL - DES\_1YR\_final: 229.18



# 6.163 base\_mnu\_plikHM\_TTTEE\_lowl\_lowE\_DESlens\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02244 \pm 0.00014$	$\Delta z_{\mathrm{s,DES}}^2$	$-0.021 \pm 0.012$	$k_{\mathrm{D}}$	$0.14071 \pm 0.00030$
$\Omega_{\mathrm{c}} h^2$	$0.1190 \pm 0.0011$	$\Delta z_{\mathrm{s,DES}}^3$	$0.004 \pm 0.010$	$100\theta_{\mathrm{D}}$	$0.16071 \pm 0.00017$
$100\theta_{\mathrm{MC}}$	$1.04101 \pm 0.00031$	$\Delta z_{\mathrm{s,DES}}^4$	$-0.023 \pm 0.020$	$z_{\mathrm{eq}}$	$3379 \pm 26$
$\tau$	$0.0550^{+0.0052}_{-0.0083}$	$H_0$	$67.6^{+1.1}_{-0.56}$	$k_{\mathrm{eq}}$	$0.010314 \pm 0.000078$
$\Sigma m_{\nu} [\mathrm{eV}]$	$< 0.101$	$\Omega_{\Lambda}$	$0.688^{+0.014}_{-0.0071}$	$100\theta_{\mathrm{eq}}$	$0.8177 \pm 0.0049$
$\ln(10^{10} A_{\mathrm{s}})$	$3.043^{+0.012}_{-0.016}$	$\Omega_{\mathrm{m}}$	$0.3117^{+0.0071}_{-0.014}$	$100\theta_{\mathrm{s,eq}}$	$0.4516 \pm 0.0025$
$n_{\mathrm{s}}$	$0.9674 \pm 0.0041$	$\Omega_{\mathrm{m}} h^2$	$0.1424^{+0.0011}_{-0.0016}$	$H(0.15)$	$72.90^{+0.95}_{-0.49}$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$\Omega_{\nu} h^2$	$< 0.00109$	$D_{\mathrm{M}}(0.15)$	$641.3^{+4.6}_{-9.4}$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$\Omega_{\mathrm{m}} h^3$	$0.09624^{+0.00063}_{-0.00031}$	$H(0.38)$	$83.01^{+0.73}_{-0.36}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$\sigma_8$	$0.803^{+0.021}_{-0.0076}$	$D_{\mathrm{M}}(0.38)$	$1529.4^{+9.4}_{-19}$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.1}_{-1.9}$	$S_8$	$0.818 \pm 0.014$	$H(0.51)$	$89.73^{+0.61}_{-0.30}$
$A_{100}^{\mathrm{PS}}$	$258 \pm 28$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4481 \pm 0.0074$	$D_{\mathrm{M}}(0.51)$	$1981^{+11}_{-23}$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.600^{+0.012}_{-0.0072}$	$H(0.61)$	$95.35^{+0.51}_{-0.24}$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9$	$\sigma_8 / h^{0.5}$	$0.977^{+0.020}_{-0.010}$	$D_{\mathrm{M}}(0.61)$	$2305^{+12}_{-25}$
$A_{217}^{\mathrm{PS}}$	$114 \pm 10$	$r_{\mathrm{drag}} h$	$99.6^{+1.7}_{-0.97}$	$H(2.33)$	$236.11^{+0.72}_{-0.95}$
$A^{\mathrm{kSZ}}$	$< 4.27$	$\langle d^2 \rangle^{1/2}$	$2.425 \pm 0.024$	$D_{\mathrm{M}}(2.33)$	$5761^{+11}_{-25}$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8$	$z_{\mathrm{re}}$	$7.71^{+0.57}_{-0.81}$	$f\sigma_8(0.15)$	$0.4530 \pm 0.0070$
$A_{143}^{\mathrm{dustTT}}$	$11.0 \pm 1.8$	$10^9 A_{\mathrm{s}}$	$2.096^{+0.025}_{-0.033}$	$\sigma_8(0.15)$	$0.742^{+0.020}_{-0.0070}$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.7 \pm 3.2$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878 \pm 0.011$	$f\sigma_8(0.38)$	$0.4713^{+0.0079}_{-0.0057}$
$A_{217}^{\mathrm{dustTT}}$	$93.7 \pm 7.2$	$D_{40}$	$1226 \pm 12$	$\sigma_8(0.38)$	$0.658^{+0.018}_{-0.0063}$
$A_{100}^{\mathrm{dustTE}}$	$0.114 \pm 0.038$	$D_{220}$	$5735 \pm 39$	$f\sigma_8(0.51)$	$0.4699^{+0.0084}_{-0.0051}$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.134 \pm 0.030$	$D_{810}$	$2537 \pm 13$	$\sigma_8(0.51)$	$0.616^{+0.017}_{-0.0059}$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.481 \pm 0.085$	$D_{1420}$	$817.4 \pm 4.7$	$f\sigma_8(0.61)$	$0.4650^{+0.0087}_{-0.0047}$
$A_{143}^{\mathrm{dustTE}}$	$0.224 \pm 0.054$	$D_{2000}$	$231.0 \pm 1.6$	$\sigma_8(0.61)$	$0.586^{+0.017}_{-0.0056}$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.663 \pm 0.080$	$n_{\mathrm{s},0.002}$	$0.9674 \pm 0.0041$	$f\sigma_8(2.33)$	$0.2959^{+0.0074}_{-0.0026}$
$A_{217}^{\mathrm{dustTE}}$	$2.07 \pm 0.27$	$Y_{\mathrm{P}}$	$0.245419 \pm 0.000055$	$\sigma_8(2.33)$	$0.3048^{+0.0088}_{-0.0030}$
$c_{100}$	$0.99967 \pm 0.00061$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246746 \pm 0.000055$	$f_{2000}^{143}$	$29.4 \pm 2.7$
$c_{217}$	$0.99820 \pm 0.00063$	$10^5 \mathrm{D}/\mathrm{H}$	$2.574 \pm 0.026$	$f_{2000}^{143 \times 217}$	$32.1 \pm 1.9$
$m_{\mathrm{DES}}^1$	$0.014 \pm 0.023$	$\mathrm{Age}/\mathrm{Gyr}$	$13.794^{+0.025}_{-0.057}$	$f_{2000}^{217}$	$106.8 \pm 1.8$
$m_{\mathrm{DES}}^2$	$0.012 \pm 0.022$	$z_*$	$1089.75 \pm 0.25$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.7$
$m_{\mathrm{DES}}^3$	$-0.008 \pm 0.020$	$r_*$	$144.64 \pm 0.26$	$\chi_{\mathrm{lowl}}^2$	$22.99 \pm 0.83$
$m_{\mathrm{DES}}^4$	$0.011 \pm 0.021$	$100\theta_*$	$1.04120 \pm 0.00030$	$\chi_{\mathrm{plik}}^2$	$2361.2 \pm 6.2$
$A_{\mathrm{IA,DES}}$	$1.25 \pm 0.50$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.892 \pm 0.024$	$\chi_{\mathrm{DES}}^2$	$232.1 \pm 2.5$
$\alpha_{\mathrm{IA,DES}}$	$1.8^{+2.8}_{-1.1}$	$z_{\mathrm{drag}}$	$1060.02 \pm 0.30$	$\chi_{\mathrm{prior}}^2$	$19.6 \pm 6.0$
$\Delta z_{\mathrm{s,DES}}^1$	$0.005 \pm 0.014$	$r_{\mathrm{drag}}$	$147.29 \pm 0.26$	$\chi_{\mathrm{CMB}}^2$	$2781.1 \pm 6.1$

$\bar{\chi}_{\mathrm{eff}}^2 = 3032.75$ ;  $R - 1 = 0.00988$



## 6.164 base\_mnu\_plikHM\_TTTEE\_lowl\_lowE\_DESlens\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02246 \pm 0.00013$	$\Delta z_{\mathrm{s,DES}}^4$	$-0.022 \pm 0.020$	$100\theta_{\mathrm{eq}}$	$0.8187 \pm 0.0040$
$\Omega_{\mathrm{c}}h^2$	$0.11873 \pm 0.00092$	$H_0$	$68.00^{+0.54}_{-0.47}$	$100\theta_{\mathrm{s,eq}}$	$0.4522 \pm 0.0020$
$100\theta_{\mathrm{MC}}$	$1.04106 \pm 0.00029$	$\Omega_{\Lambda}$	$0.6933^{+0.0068}_{-0.0059}$	$H(0.15)$	$73.24^{+0.47}_{-0.41}$
$\tau$	$0.0553^{+0.0052}_{-0.0079}$	$\Omega_{\mathrm{m}}$	$0.3067^{+0.0059}_{-0.0068}$	$D_{\mathrm{M}}(0.15)$	$637.9^{+4.0}_{-4.6}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$< 0.0703$	$\Omega_{\mathrm{m}}h^2$	$0.14180 \pm 0.00091$	$H(0.38)$	$83.27^{+0.36}_{-0.31}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.012}_{-0.016}$	$\Omega_{\nu}h^2$	$< 0.000755$	$D_{\mathrm{M}}(0.38)$	$1522.5^{+8.1}_{-9.4}$
$n_{\mathrm{s}}$	$0.9681 \pm 0.0037$	$\Omega_{\mathrm{m}}h^3$	$0.09643^{+0.00041}_{-0.00032}$	$H(0.51)$	$89.95^{+0.31}_{-0.26}$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$\sigma_8$	$0.809^{+0.014}_{-0.0077}$	$D_{\mathrm{M}}(0.51)$	$1973.0^{+9.5}_{-11}$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$S_8$	$0.818 \pm 0.012$	$H(0.61)$	$95.53^{+0.26}_{-0.22}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4481 \pm 0.0066$	$D_{\mathrm{M}}(0.61)$	$2296^{+10}_{-12}$
$A_{143}^{\mathrm{tSZ}}$	$5.6^{+2.1}_{-1.9}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6021^{+0.0090}_{-0.0069}$	$H(2.33)$	$235.80 \pm 0.57$
$A_{100}^{\mathrm{PS}}$	$257 \pm 28$	$\sigma_8/h^{0.5}$	$0.981^{+0.015}_{-0.010}$	$D_{\mathrm{M}}(2.33)$	$5753^{+10}_{-13}$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8$	$r_{\mathrm{drag}}h$	$100.19 \pm 0.83$	$f\sigma_8(0.15)$	$0.4531 \pm 0.0062$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9$	$\langle d^2 \rangle^{1/2}$	$2.425 \pm 0.023$	$\sigma_8(0.15)$	$0.748^{+0.013}_{-0.0070}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$z_{\mathrm{re}}$	$7.72^{+0.56}_{-0.79}$	$f\sigma_8(0.38)$	$0.4724^{+0.0063}_{-0.0054}$
$A^{\mathrm{kSZ}}$	$< 4.16$	$10^9 A_{\mathrm{s}}$	$2.096^{+0.025}_{-0.033}$	$\sigma_8(0.38)$	$0.664^{+0.011}_{-0.0062}$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.9$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.011$	$f\sigma_8(0.51)$	$0.4716^{+0.0063}_{-0.0050}$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8$	$D_{40}$	$1224 \pm 12$	$\sigma_8(0.51)$	$0.621^{+0.011}_{-0.0058}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.7 \pm 3.2$	$D_{220}$	$5736 \pm 38$	$f\sigma_8(0.61)$	$0.4670^{+0.0063}_{-0.0047}$
$A_{217}^{\mathrm{dust}TT}$	$93.8 \pm 7.2$	$D_{810}$	$2537 \pm 13$	$\sigma_8(0.61)$	$0.591^{+0.010}_{-0.0055}$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.038$	$D_{1420}$	$817.6 \pm 4.7$	$f\sigma_8(2.33)$	$0.2984^{+0.0045}_{-0.0026}$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.030$	$D_{2000}$	$231.1 \pm 1.5$	$\sigma_8(2.33)$	$0.3078^{+0.0053}_{-0.0028}$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.479 \pm 0.085$	$n_{\mathrm{s},0.002}$	$0.9681 \pm 0.0037$	$f_{2000}^{143}$	$29.1 \pm 2.7$
$A_{143}^{\mathrm{dust}TE}$	$0.223 \pm 0.055$	$Y_{\mathrm{P}}$	$0.245429 \pm 0.000050$	$f_{2000}^{143 \times 217}$	$31.9 \pm 1.8$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.662 \pm 0.079$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246755 \pm 0.000050$	$f_{2000}^{217}$	$106.7 \pm 1.8$
$A_{217}^{\mathrm{dust}TE}$	$2.07 \pm 0.27$	$10^5 \mathrm{D}/\mathrm{H}$	$2.569 \pm 0.024$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.7$
$c_{100}$	$0.99968 \pm 0.00061$	$\mathrm{Age}/\mathrm{Gyr}$	$13.774^{+0.023}_{-0.030}$	$\chi_{\mathrm{lowl}}^2$	$22.92 \pm 0.78$
$c_{217}$	$0.99819 \pm 0.00063$	$z_{*}$	$1089.69 \pm 0.21$	$\chi_{\mathrm{plik}}^2$	$2360.7 \pm 6.0$
$m_{\mathrm{DES}}^1$	$0.014 \pm 0.023$	$r_{*}$	$144.70 \pm 0.22$	$\chi_{6\mathrm{DF}}^2$	$0.032 \pm 0.047$
$m_{\mathrm{DES}}^2$	$0.011 \pm 0.022$	$100\theta_{*}$	$1.04123 \pm 0.00029$	$\chi_{\mathrm{MGS}}^2$	$1.58 \pm 0.49$
$m_{\mathrm{DES}}^3$	$-0.007 \pm 0.020$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.897 \pm 0.021$	$\chi_{\mathrm{DR12BAO}}^2$	$4.2 \pm 1.1$
$m_{\mathrm{DES}}^4$	$0.011 \pm 0.021$	$z_{\mathrm{drag}}$	$1060.05 \pm 0.29$	$\chi_{\mathrm{DES}}^2$	$231.9 \pm 2.5$
$A_{\mathrm{IA,DES}}$	$1.24 \pm 0.50$	$r_{\mathrm{drag}}$	$147.33 \pm 0.23$	$\chi_{\mathrm{prior}}^2$	$19.4 \pm 6.0$
$\alpha_{\mathrm{IA,DES}}$	$1.85^{+2.9}_{-0.96}$	$k_{\mathrm{D}}$	$0.14068 \pm 0.00029$	$\chi_{\mathrm{BAO}}^2$	$5.77 \pm 0.82$
$\Delta z_{\mathrm{s,DES}}^1$	$0.004 \pm 0.014$	$100\theta_{\mathrm{D}}$	$0.16070 \pm 0.00017$	$\chi_{\mathrm{CMB}}^2$	$2780.5 \pm 5.9$
$\Delta z_{\mathrm{s,DES}}^2$	$-0.021 \pm 0.012$	$z_{\mathrm{eq}}$	$3374 \pm 21$		
$\Delta z_{\mathrm{s,DES}}^3$	$0.005 \pm 0.010$	$k_{\mathrm{eq}}$	$0.010297 \pm 0.000064$		

 $\bar{\chi}_{\mathrm{eff}}^2 = 3037.64; R - 1 = 0.00834$



6.165 base\_mnu\_plikHM\_TTTEE\_lowl\_lowE\_DESlens\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02244 \pm 0.00014$	$\Delta z_{s,\text{DES}}^3$	$0.004 \pm 0.010$	$z_{\text{eq}}$	$3381 \pm 24$
$\Omega_c h^2$	$0.1190 \pm 0.0011$	$\Delta z_{s,\text{DES}}^4$	$-0.023 \pm 0.020$	$k_{\text{eq}}$	$0.010319 \pm 0.000074$
$100\theta_{\text{MC}}$	$1.04100 \pm 0.00031$	$H_0$	$67.73^{+0.95}_{-0.56}$	$100\theta_{\text{eq}}$	$0.8174 \pm 0.0046$
$\tau$	$0.0558^{+0.0055}_{-0.0080}$	$\Omega_{\Lambda}$	$0.690^{+0.012}_{-0.0070}$	$100\theta_{s,\text{eq}}$	$0.4515 \pm 0.0023$
$\Sigma m_{\nu} [\text{eV}]$	$< 0.0857$	$\Omega_{\text{m}}$	$0.3103^{+0.0070}_{-0.012}$	$H(0.15)$	$73.00^{+0.83}_{-0.49}$
$\ln(10^{10} A_s)$	$3.045^{+0.012}_{-0.015}$	$\Omega_{\text{m}} h^2$	$0.1423^{+0.0011}_{-0.0015}$	$D_{\text{M}}(0.15)$	$640.3^{+4.6}_{-8.2}$
$n_s$	$0.9671 \pm 0.0040$	$\Omega_{\nu} h^2$	$< 0.000922$	$H(0.38)$	$83.09^{+0.63}_{-0.36}$
$y_{\text{cal}}$	$1.0006 \pm 0.0024$	$\Omega_{\text{m}} h^3$	$0.09634^{+0.00052}_{-0.00031}$	$D_{\text{M}}(0.38)$	$1527.3^{+9.4}_{-17}$
$A_{217}^{\text{CIB}}$	$47 \pm 7$	$\sigma_8$	$0.808^{+0.015}_{-0.0066}$	$H(0.51)$	$89.80^{+0.53}_{-0.30}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$S_8$	$0.821 \pm 0.011$	$D_{\text{M}}(0.51)$	$1979^{+11}_{-20}$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.1}_{-1.9}$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4497 \pm 0.0060$	$H(0.61)$	$95.41^{+0.44}_{-0.25}$
$A_{100}^{\text{PS}}$	$258 \pm 28$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.6026^{+0.0082}_{-0.0061}$	$D_{\text{M}}(0.61)$	$2303^{+12}_{-21}$
$A_{143}^{\text{PS}}$	$45 \pm 8$	$\sigma_8/h^{0.5}$	$0.981^{+0.014}_{-0.0090}$	$H(2.33)$	$236.07^{+0.69}_{-0.86}$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9$	$r_{\text{drag}} h$	$99.7^{+1.5}_{-0.95}$	$D_{\text{M}}(2.33)$	$5758^{+11}_{-21}$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$\langle d^2 \rangle^{1/2}$	$2.431 \pm 0.019$	$f\sigma_8(0.15)$	$0.4546 \pm 0.0056$
$A^{\text{kSZ}}$	$< 4.18$	$z_{\text{re}}$	$7.79^{+0.59}_{-0.77}$	$\sigma_8(0.15)$	$0.746^{+0.015}_{-0.0061}$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$10^9 A_s$	$2.101^{+0.024}_{-0.032}$	$f\sigma_8(0.38)$	$0.4732^{+0.0055}_{-0.0048}$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8$	$10^9 A_s e^{-2\tau}$	$1.879 \pm 0.010$	$\sigma_8(0.38)$	$0.662^{+0.014}_{-0.0056}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.2$	$D_{40}$	$1227 \pm 11$	$f\sigma_8(0.51)$	$0.4719^{+0.0058}_{-0.0044}$
$A_{217}^{\text{dustTT}}$	$93.8 \pm 7.2$	$D_{220}$	$5740 \pm 38$	$\sigma_8(0.51)$	$0.619^{+0.013}_{-0.0053}$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$D_{810}$	$2538 \pm 13$	$f\sigma_8(0.61)$	$0.4671^{+0.0061}_{-0.0040}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134 \pm 0.029$	$D_{1420}$	$817.7 \pm 4.7$	$\sigma_8(0.61)$	$0.589^{+0.013}_{-0.0051}$
$A_{100 \times 217}^{\text{dustTE}}$	$0.480 \pm 0.085$	$D_{2000}$	$231.1 \pm 1.5$	$f\sigma_8(2.33)$	$0.2975^{+0.0058}_{-0.0025}$
$A_{143}^{\text{dustTE}}$	$0.224 \pm 0.054$	$n_{s,0.002}$	$0.9671 \pm 0.0040$	$\sigma_8(2.33)$	$0.3066^{+0.0070}_{-0.0028}$
$A_{143 \times 217}^{\text{dustTE}}$	$0.663 \pm 0.079$	$Y_{\text{P}}$	$0.245422^{+0.000056}_{-0.000050}$	$f_{2000}^{143}$	$29.2 \pm 2.7$
$A_{217}^{\text{dustTE}}$	$2.07 \pm 0.27$	$Y_{\text{P}}^{\text{BBN}}$	$0.246749^{+0.000056}_{-0.000050}$	$f_{2000}^{143 \times 217}$	$32.0 \pm 1.8$
$c_{100}$	$0.99968 \pm 0.00061$	$10^5 \text{D}/\text{H}$	$2.572 \pm 0.026$	$f_{2000}^{217}$	$106.8 \pm 1.8$
$c_{217}$	$0.99819 \pm 0.00064$	$\text{Age}/\text{Gyr}$	$13.786^{+0.025}_{-0.049}$	$\chi_{\text{lensing}}^2$	$9.25 \pm 0.72$
$m_{\text{DES}}^1$	$0.014 \pm 0.023$	$z_*$	$1089.74 \pm 0.24$	$\chi_{\text{small}}^2$	$397.0 \pm 1.8$
$m_{\text{DES}}^2$	$0.011 \pm 0.022$	$r_*$	$144.62 \pm 0.24$	$\chi_{\text{lowl}}^2$	$23.12 \pm 0.80$
$m_{\text{DES}}^3$	$-0.009 \pm 0.020$	$100\theta_*$	$1.04119 \pm 0.00030$	$\chi_{\text{plik}}^2$	$2360.3 \pm 5.8$
$m_{\text{DES}}^4$	$0.010 \pm 0.021$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.890 \pm 0.023$	$\chi_{\text{DES}}^2$	$232.1 \pm 2.6$
$A_{\text{IA,DES}}$	$1.26 \pm 0.50$	$z_{\text{drag}}$	$1060.04 \pm 0.30$	$\chi_{\text{prior}}^2$	$19.5 \pm 6.0$
$\alpha_{\text{IA,DES}}$	$1.8^{+2.7}_{-1.1}$	$r_{\text{drag}}$	$147.26 \pm 0.25$	$\chi_{\text{CMB}}^2$	$2789.7 \pm 6.0$
$\Delta z_{s,\text{DES}}^1$	$0.005 \pm 0.015$	$k_{\text{D}}$	$0.14074 \pm 0.00029$		
$\Delta z_{s,\text{DES}}^2$	$-0.021 \pm 0.011$	$100\theta_{\text{D}}$	$0.16070 \pm 0.00017$		
$\bar{\chi}_{\text{eff}}^2 = 3041.41; R - 1 = 0.00879$					



## 6.166 base\_mnu\_plikHM\_TTTEE\_lowl\_lowE\_DESlens\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02246 \pm 0.00013$	$\Delta z_{\mathrm{s,DES}}^4$	$-0.023 \pm 0.020$	$100\theta_{\mathrm{eq}}$	$0.8183 \pm 0.0037$
$\Omega_{\mathrm{c}}h^2$	$0.11881 \pm 0.00086$	$H_0$	$68.02^{+0.52}_{-0.46}$	$100\theta_{\mathrm{s,eq}}$	$0.4519 \pm 0.0019$
$100\theta_{\mathrm{MC}}$	$1.04104 \pm 0.00029$	$\Omega_{\Lambda}$	$0.6934^{+0.0066}_{-0.0058}$	$H(0.15)$	$73.26^{+0.45}_{-0.40}$
$\tau$	$0.0559^{+0.0055}_{-0.0077}$	$\Omega_{\mathrm{m}}$	$0.3066^{+0.0058}_{-0.0066}$	$D_{\mathrm{M}}(0.15)$	$637.7^{+3.9}_{-4.5}$
$\Sigma m_{\nu} [\mathrm{eV}]$	$< 0.0628$	$\Omega_{\mathrm{m}}h^2$	$0.14182 \pm 0.00088$	$H(0.38)$	$83.29^{+0.35}_{-0.30}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.012}_{-0.015}$	$\Omega_{\nu}h^2$	$< 0.000675$	$D_{\mathrm{M}}(0.38)$	$1522.1^{+7.8}_{-9.1}$
$n_{\mathrm{s}}$	$0.9678 \pm 0.0036$	$\Omega_{\mathrm{m}}h^3$	$0.09647^{+0.00037}_{-0.00031}$	$H(0.51)$	$89.96^{+0.29}_{-0.25}$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0024$	$\sigma_8$	$0.812^{+0.011}_{-0.0067}$	$D_{\mathrm{M}}(0.51)$	$1972.5^{+9.3}_{-11}$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$S_8$	$0.820 \pm 0.010$	$H(0.61)$	$95.55^{+0.25}_{-0.21}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4493 \pm 0.0055$	$D_{\mathrm{M}}(0.61)$	$2296^{+10}_{-12}$
$A_{143}^{\mathrm{tSZ}}$	$5.6^{+2.1}_{-1.9}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6038^{+0.0070}_{-0.0058}$	$H(2.33)$	$235.82 \pm 0.55$
$A_{100}^{\mathrm{PS}}$	$257 \pm 28$	$\sigma_8/h^{0.5}$	$0.984^{+0.011}_{-0.0087}$	$D_{\mathrm{M}}(2.33)$	$5752^{+10}_{-12}$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8$	$r_{\mathrm{drag}}h$	$100.20 \pm 0.80$	$f\sigma_8(0.15)$	$0.4542 \pm 0.0051$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9$	$\langle d^2 \rangle^{1/2}$	$2.430 \pm 0.019$	$\sigma_8(0.15)$	$0.750^{+0.010}_{-0.0061}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$z_{\mathrm{re}}$	$7.79^{+0.58}_{-0.75}$	$f\sigma_8(0.38)$	$0.4737^{+0.0050}_{-0.0045}$
$A^{\mathrm{kSZ}}$	$< 4.12$	$10^9 A_{\mathrm{s}}$	$2.101^{+0.024}_{-0.031}$	$\sigma_8(0.38)$	$0.6657^{+0.0092}_{-0.0055}$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.9$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878 \pm 0.010$	$f\sigma_8(0.51)$	$0.4728^{+0.0049}_{-0.0042}$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8$	$D_{40}$	$1226 \pm 11$	$\sigma_8(0.51)$	$0.6232^{+0.0087}_{-0.0052}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.6 \pm 3.2$	$D_{220}$	$5740 \pm 38$	$f\sigma_8(0.61)$	$0.4682^{+0.0049}_{-0.0039}$
$A_{217}^{\mathrm{dust}TT}$	$93.8 \pm 7.2$	$D_{810}$	$2538 \pm 13$	$\sigma_8(0.61)$	$0.5931^{+0.0084}_{-0.0049}$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.038$	$D_{1420}$	$817.7 \pm 4.7$	$f\sigma_8(2.33)$	$0.2991^{+0.0037}_{-0.0024}$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.134 \pm 0.030$	$D_{2000}$	$231.2 \pm 1.5$	$\sigma_8(2.33)$	$0.3086^{+0.0043}_{-0.0026}$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.479 \pm 0.085$	$n_{\mathrm{s},0.002}$	$0.9678 \pm 0.0036$	$f_{2000}^{143}$	$29.1 \pm 2.7$
$A_{143}^{\mathrm{dust}TE}$	$0.223 \pm 0.055$	$Y_{\mathrm{P}}$	$0.245429 \pm 0.000050$	$f_{2000}^{143 \times 217}$	$31.8 \pm 1.8$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.662 \pm 0.079$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246756 \pm 0.000050$	$f_{2000}^{217}$	$106.7 \pm 1.8$
$A_{217}^{\mathrm{dust}TE}$	$2.07 \pm 0.27$	$10^5 \mathrm{D}/\mathrm{H}$	$2.569 \pm 0.024$	$\chi_{\mathrm{lensing}}^2$	$9.21 \pm 0.63$
$c_{100}$	$0.99968 \pm 0.00061$	$\mathrm{Age}/\mathrm{Gyr}$	$13.771^{+0.023}_{-0.028}$	$\chi_{\mathrm{small}}^2$	$397.0 \pm 1.8$
$c_{217}$	$0.99818 \pm 0.00064$	$z_*$	$1089.70 \pm 0.20$	$\chi_{\mathrm{lowl}}^2$	$23.04 \pm 0.75$
$m_{\mathrm{DES}}^1$	$0.014 \pm 0.023$	$r_*$	$144.67 \pm 0.21$	$\chi_{\mathrm{plik}}^2$	$2360.0 \pm 5.7$
$m_{\mathrm{DES}}^2$	$0.011 \pm 0.022$	$100\theta_*$	$1.04121 \pm 0.00029$	$\chi_{6\mathrm{DF}}^2$	$0.030 \pm 0.045$
$m_{\mathrm{DES}}^3$	$-0.008 \pm 0.020$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.895 \pm 0.020$	$\chi_{\mathrm{MGS}}^2$	$1.59 \pm 0.47$
$m_{\mathrm{DES}}^4$	$0.011 \pm 0.021$	$z_{\mathrm{drag}}$	$1060.06 \pm 0.29$	$\chi_{\mathrm{DR12BAO}}^2$	$4.1 \pm 1.0$
$A_{\mathrm{IA,DES}}$	$1.25 \pm 0.50$	$r_{\mathrm{drag}}$	$147.31 \pm 0.22$	$\chi_{\mathrm{DES}}^2$	$232.0 \pm 2.5$
$\alpha_{\mathrm{IA,DES}}$	$1.8^{+2.8}_{-1.0}$	$k_{\mathrm{D}}$	$0.14071 \pm 0.00027$	$\chi_{\mathrm{prior}}^2$	$19.4 \pm 6.0$
$\Delta z_{\mathrm{s,DES}}^1$	$0.004 \pm 0.014$	$100\theta_{\mathrm{D}}$	$0.16069 \pm 0.00017$	$\chi_{\mathrm{CMB}}^2$	$2789.3 \pm 5.8$
$\Delta z_{\mathrm{s,DES}}^2$	$-0.021 \pm 0.011$	$z_{\mathrm{eq}}$	$3376 \pm 20$	$\chi_{\mathrm{BAO}}^2$	$5.74 \pm 0.78$
$\Delta z_{\mathrm{s,DES}}^3$	$0.004 \pm 0.010$	$k_{\mathrm{eq}}$	$0.010304 \pm 0.000060$		

 $\bar{\chi}_{\mathrm{eff}}^2 = 3046.43; R - 1 = 0.00976$



6.167     base\_mnu\_BAO\_Cooke17

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022172	$0.02223 \pm 0.00050$	Age/Gyr	12.18	$12.7^{+1.0}_{-1.3}$	$D_{\text{M}}(0.15)$	594.2	$620 \pm 39$
$\Omega_{\text{c}}h^2$	0.1755	$0.143^{+0.042}_{-0.057}$	$z_*$	1094.65	$1093.2^{+3.3}_{-3.9}$	$H(0.38)$	92.1	$89.0^{+6.5}_{-7.7}$
$100\theta_{\text{MC}}$	1.1021	$1.107^{+0.042}_{-0.035}$	$r_*$	132.3	$138 \pm 10$	$D_{\text{M}}(0.38)$	1403	$1462 \pm 100$
$\Sigma m_{\nu}$ [eV]	0.06	—	$100\theta_*$	1.1023	$1.108^{+0.042}_{-0.035}$	$H(0.51)$	100.5	$97.3^{+7.6}_{-9.1}$
$H_0$	72.43	$69.6^{+3.6}_{-4.3}$	$D_{\text{M}}(z_*)/\text{Gpc}$	12.00	$12.5^{+1.2}_{-1.5}$	$D_{\text{M}}(0.51)$	1808	$1884 \pm 140$
$\Omega_{\Lambda}$	0.622	$0.611 \pm 0.053$	$z_{\text{drag}}$	1063.14	$1062.1 \pm 3.2$	$H(0.61)$	107.4	$104.2^{+8.5}_{-10}$
$\Omega_{\text{m}}$	0.378	$0.389 \pm 0.053$	$r_{\text{drag}}$	134.8	$140 \pm 10$	$D_{\text{M}}(0.61)$	2097	$2184 \pm 160$
$\Omega_{\text{m}}h^2$	0.1983	$0.192^{+0.036}_{-0.052}$	$k_{\text{D}}$	0.1546	$0.150^{+0.011}_{-0.012}$	$H(2.33)$	276.6	$270^{+28}_{-33}$
$\Omega_{\nu}h^2$	0.0007	$< 0.0359$	$100\theta_{\text{D}}$	0.1693	$0.1695 \pm 0.0054$	$D_{\text{M}}(2.33)$	5093	$5299^{+440}_{-530}$
$\Omega_{\text{m}}h^3$	0.1436	$0.135^{+0.028}_{-0.046}$	$z_{\text{eq}}$	4724	$3943^{+1000}_{-1000}$	$\chi^2_{\text{Cooke17}}$	0.003	$1.0 \pm 1.4$
$r_{\text{drag}}h$	97.60	$97.3 \pm 2.2$	$k_{\text{eq}}$	0.01442	$0.0122^{+0.0029}_{-0.0041}$	$\chi^2_{6\text{DF}}$	0.225	$0.41 \pm 0.42$
$Y_{\text{P}}$	0.245314	$0.24533 \pm 0.00021$	$100\theta_{\text{eq}}$	0.677	$0.842^{+0.096}_{-0.22}$	$\chi^2_{\text{MGS}}$	0.625	$0.74 \pm 0.70$
$Y_{\text{P}}^{\text{BBN}}$	0.246640	$0.24665 \pm 0.00022$	$100\theta_{\text{s,eq}}$	0.379	$0.464^{+0.053}_{-0.11}$	$\chi^2_{\text{DR12BAO}}$	2.13	$3.9 \pm 1.8$
$10^5\text{D}/\text{H}$	2.623	$2.614 \pm 0.094$	$H(0.15)$	79.2	$76.3^{+4.6}_{-5.5}$	$\chi^2_{\text{BAO}}$	2.98	$5.1 \pm 2.0$

Best-fit  $\chi^2_{\text{eff}} = 2.98$ ;  $\bar{\chi}^2_{\text{eff}} = 6.05$ ;  $R - 1 = 0.01904$   
 $\chi^2_{\text{eff}}$ : Abund - D.Cooke2017: 0.00 BAO - 6DF: 0.23 MGS: 0.62 DR12BAO: 2.13

6.168     base\_mnu\_BAO\_Cooke17\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02218	$0.02223 \pm 0.00050$	$z_*$	1089.93	$1088.4^{+1.6}_{-1.9}$	$D_{\text{M}}(0.38)$	1526	$1593 \pm 65$
$\Omega_{\text{c}}h^2$	0.1168	$0.084^{+0.026}_{-0.031}$	$r_*$	145.3	$151.8 \pm 6.1$	$H(0.51)$	89.94	$86.4^{+3.7}_{-4.4}$
$100\theta_{\text{MC}}$	1.0478	$1.050 \pm 0.020$	$100\theta_*$	1.0481	$1.051 \pm 0.020$	$D_{\text{M}}(0.51)$	1976	$2064 \pm 86$
$\Sigma m_{\nu}$ [eV]	0.38	—	$D_{\text{M}}(z_*)/\text{Gpc}$	13.87	$14.46 \pm 0.80$	$H(0.61)$	95.57	$91.8^{+4.1}_{-4.8}$
$H_0$	67.77	$65.0^{+2.2}_{-2.8}$	$z_{\text{drag}}$	1059.32	$1058.2^{+1.8}_{-2.0}$	$D_{\text{M}}(0.61)$	2300	$2401 \pm 100$
$\Omega_{\Lambda}$	0.6885	$0.686 \pm 0.020$	$r_{\text{drag}}$	148.1	$154.7 \pm 6.3$	$H(2.33)$	236.7	$228^{+12}_{-14}$
$\Omega_{\text{m}}$	0.3115	$0.314 \pm 0.020$	$k_{\text{D}}$	0.1397	$0.1345^{+0.0052}_{-0.0062}$	$D_{\text{M}}(2.33)$	5748	$5997 \pm 290$
$\Omega_{\text{m}}h^2$	0.1431	$0.133^{+0.014}_{-0.018}$	$100\theta_{\text{D}}$	0.16213	$0.1619 \pm 0.0026$	$\chi^2_{\text{Cooke17}}$	0.00	$1.0 \pm 1.4$
$\Omega_{\nu}h^2$	0.0041	$0.027 \pm 0.015$	$z_{\text{eq}}$	3321	$2534^{+600}_{-700}$	$\chi^2_{\text{JLA}}$	1035.06	$1036.0 \pm 1.7$
$\Omega_{\text{m}}h^3$	0.0969	$0.087^{+0.011}_{-0.016}$	$k_{\text{eq}}$	0.01014	$0.0079^{+0.0016}_{-0.0021}$	$\chi^2_{6\text{DF}}$	0.0002	$0.052 \pm 0.076$
$r_{\text{drag}}h$	100.34	$100.3 \pm 1.2$	$100\theta_{\text{eq}}$	0.834	$1.09^{+0.13}_{-0.30}$	$\chi^2_{\text{MGS}}$	1.68	$1.75 \pm 0.67$
$Y_{\text{P}}$	0.245318	$0.24533 \pm 0.00022$	$100\theta_{\text{s,eq}}$	0.460	$0.592^{+0.071}_{-0.15}$	$\chi^2_{\text{DR12BAO}}$	3.03	$4.0 \pm 1.5$
$Y_{\text{P}}^{\text{BBN}}$	0.246644	$0.24665 \pm 0.00022$	$H(0.15)$	73.06	$70.1^{+2.6}_{-3.2}$	$\chi^2_{\text{BAO}}$	4.71	$5.8 \pm 1.8$
$10^5\text{D}/\text{H}$	2.622	$2.614 \pm 0.095$	$D_{\text{M}}(0.15)$	639.8	$668 \pm 26$			
Age/Gyr	13.76	$14.36 \pm 0.71$	$H(0.38)$	83.20	$79.9^{+3.3}_{-3.9}$			

Best-fit  $\chi^2_{\text{eff}} = 1039.77$ ;  $\bar{\chi}^2_{\text{eff}} = 1042.80$ ;  $R - 1 = 0.00676$   
 $\chi^2_{\text{eff}}$ : Abund - D.Cooke2017: 0.00 BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.03 SN - JLA Pantheon18: 1035.06



6.169    base\_mnu\_BAO\_Cooke17\_Pantheon18\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022192	$0.02226^{+0.00046}_{-0.00052}$	$z_*$	1089.37	$1087.77^{+0.90}_{-1.4}$	$D_{\text{M}}(0.38)$	1544.4	$1611^{+64}_{-35}$
$\Omega_{\text{c}}h^2$	0.1104	$0.078 \pm 0.023$	$r_*$	147.00	$153.5^{+6.2}_{-3.0}$	$H(0.51)$	88.63	$85.0^{+1.6}_{-3.4}$
$100\theta_{\text{MC}}$	1.04093	$1.04090 \pm 0.00062$	$100\theta_*$	1.04134	$1.04165 \pm 0.00066$	$D_{\text{M}}(0.51)$	2002	$2088^{+83}_{-45}$
$\Sigma m_\nu$ [eV]	0.46	—	$D_{\text{M}}(z_*)/\text{Gpc}$	14.12	$14.73 \pm 0.42$	$H(0.61)$	94.13	$90.3^{+1.6}_{-3.6}$
$H_0$	67.05	$64.3^{+1.4}_{-2.6}$	$z_{\text{drag}}$	1058.90	$1057.8 \pm 1.4$	$D_{\text{M}}(0.61)$	2330	$2431^{+97}_{-51}$
$\Omega_\Lambda$	0.6941	$0.6944 \pm 0.0082$	$r_{\text{drag}}$	149.78	$156.4^{+6.3}_{-3.2}$	$H(2.33)$	232.2	$222.7^{+4.3}_{-8.9}$
$\Omega_{\text{m}}$	0.3059	$0.3056 \pm 0.0082$	$k_{\text{D}}$	0.13801	$0.1327^{+0.0024}_{-0.0049}$	$D_{\text{M}}(2.33)$	5838	$6092 \pm 170$
$\Omega_{\text{m}}h^2$	0.1375	$0.1265^{+0.0049}_{-0.010}$	$100\theta_{\text{D}}$	0.16125	$0.16076 \pm 0.00079$	$\chi^2_{\text{Cooke17}}$	0.000	$0.99 \pm 1.4$
$\Omega_\nu h^2$	0.0050	$< 0.0359$	$z_{\text{eq}}$	3168	$2397 \pm 500$	$\chi^2_{\text{JLA}}$	1034.833	$1034.96 \pm 0.30$
$\Omega_{\text{m}}h^3$	0.0922	$0.0815^{+0.0042}_{-0.0097}$	$k_{\text{eq}}$	0.00967	$0.0075 \pm 0.0015$	$\chi^2_{6\text{DF}}$	0.0001	$0.048 \pm 0.071$
$r_{\text{drag}}h$	100.43	$100.5 \pm 1.1$	$100\theta_{\text{eq}}$	0.858	$1.12^{+0.18}_{-0.30}$	$\chi^2_{\text{MGS}}$	1.68	$1.80 \pm 0.66$
$Y_{\text{P}}$	0.245323	$0.24534 \pm 0.00021$	$100\theta_{\text{s,eq}}$	0.473	$0.606^{+0.091}_{-0.15}$	$\chi^2_{\text{DR12BAO}}$	3.416	$4.1 \pm 1.2$
$Y_{\text{P}}^{\text{BBN}}$	0.246649	$0.24667 \pm 0.00021$	$H(0.15)$	72.20	$69.3^{+1.4}_{-2.8}$	$\chi^2_{\text{prior}}$	0.00	$1.1 \pm 1.5$
$10^5\text{D}/\text{H}$	2.619	$2.609 \pm 0.093$	$D_{\text{M}}(0.15)$	647.0	$675^{+27}_{-15}$	$\chi^2_{\text{BAO}}$	5.09	$6.0 \pm 1.3$
Age/Gyr	13.98	$14.59 \pm 0.42$	$H(0.38)$	82.07	$78.7^{+1.5}_{-3.2}$			

Best-fit  $\chi^2_{\text{eff}} = 1039.93$ ;  $\bar{\chi}^2_{\text{eff}} = 1042.99$ ;  $R - 1 = 0.01446$   
 $\chi^2_{\text{eff}}$ : Abund - D.Cooke2017: 0.00 BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.42 SN - JLA Pantheon18: 1034.83

6.170    base\_mnu\_BAO\_Cooke17\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022191	$0.02221 \pm 0.00050$	$z_*$	1089.18	$1087.77^{+0.93}_{-1.3}$	$D_{\text{M}}(0.38)$	1553.1	$1616^{+60}_{-34}$
$\Omega_{\text{c}}h^2$	0.1075	$0.077^{+0.020}_{-0.028}$	$r_*$	147.69	$153.8^{+5.6}_{-3.1}$	$H(0.51)$	88.18	$84.8^{+1.6}_{-3.1}$
$100\theta_{\text{MC}}$	1.04093	$1.04092 \pm 0.00060$	$100\theta_*$	1.04139	$1.04170 \pm 0.00063$	$D_{\text{M}}(0.51)$	2013	$2095^{+78}_{-44}$
$\Sigma m_\nu$ [eV]	0.62	—	$D_{\text{M}}(z_*)/\text{Gpc}$	14.182	$14.76^{+0.53}_{-0.30}$	$H(0.61)$	93.66	$90.1^{+1.7}_{-3.3}$
$H_0$	66.66	$64.1^{+1.4}_{-2.4}$	$z_{\text{drag}}$	1058.71	$1057.6^{+1.3}_{-1.5}$	$D_{\text{M}}(0.61)$	2343	$2438^{+90}_{-50}$
$\Omega_\Lambda$	0.6931	$0.6931 \pm 0.0088$	$r_{\text{drag}}$	150.49	$156.7^{+5.7}_{-3.3}$	$H(2.33)$	231.2	$222.3^{+4.4}_{-8.1}$
$\Omega_{\text{m}}$	0.3069	$0.3069 \pm 0.0088$	$k_{\text{D}}$	0.13735	$0.1324^{+0.0024}_{-0.0045}$	$D_{\text{M}}(2.33)$	5868	$6107^{+220}_{-120}$
$\Omega_{\text{m}}h^2$	0.1363	$0.1261^{+0.0050}_{-0.0093}$	$100\theta_{\text{D}}$	0.16128	$0.16081 \pm 0.00082$	$\chi^2_{\text{Cooke17}}$	0.000	$1.0 \pm 1.5$
$\Omega_\nu h^2$	0.0067	$0.027 \pm 0.015$	$z_{\text{eq}}$	3099	$2363^{+500}_{-700}$	$\chi^2_{6\text{DF}}$	0.0011	$0.055 \pm 0.077$
$\Omega_{\text{m}}h^3$	0.0909	$0.0810^{+0.0043}_{-0.0089}$	$k_{\text{eq}}$	0.00947	$0.0074^{+0.0012}_{-0.0019}$	$\chi^2_{\text{MGS}}$	1.61	$1.72 \pm 0.69$
$r_{\text{drag}}h$	100.31	$100.4 \pm 1.1$	$100\theta_{\text{eq}}$	0.873	$1.13^{+0.22}_{-0.29}$	$\chi^2_{\text{DR12BAO}}$	3.47	$4.3 \pm 1.4$
$Y_{\text{P}}$	0.245322	$0.24532^{+0.00023}_{-0.00019}$	$100\theta_{\text{s,eq}}$	0.481	$0.61^{+0.11}_{-0.14}$	$\chi^2_{\text{prior}}$	0.002	$0.99 \pm 1.4$
$Y_{\text{P}}^{\text{BBN}}$	0.246648	$0.24665^{+0.00023}_{-0.00020}$	$H(0.15)$	71.79	$69.0^{+1.4}_{-2.6}$	$\chi^2_{\text{BAO}}$	5.08	$6.1 \pm 1.4$
$10^5\text{D}/\text{H}$	2.620	$2.618 \pm 0.094$	$D_{\text{M}}(0.15)$	650.7	$677^{+25}_{-15}$			
Age/Gyr	14.049	$14.62^{+0.53}_{-0.29}$	$H(0.38)$	81.63	$78.5^{+1.5}_{-2.9}$			

Best-fit  $\chi^2_{\text{eff}} = 5.08$ ;  $\bar{\chi}^2_{\text{eff}} = 8.05$ ;  $R - 1 = 0.07129$   
 $\chi^2_{\text{eff}}$ : Abund - D.Cooke2017: 0.00 BAO - 6DF: 0.00 MGS: 1.61 DR12BAO: 3.47



## 7 nnu

### 7.1 base\_nnu\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022023	$0.02207 \pm 0.00031$	$\sigma_8 \Omega_m^{0.5}$	0.4621	$0.460 \pm 0.013$	$100\theta_{s,eq}$	0.4460	$0.4476 \pm 0.0061$
$\Omega_c h^2$	0.11884	$0.1200 \pm 0.0040$	$\sigma_8 \Omega_m^{0.25}$	0.6108	$0.610 \pm 0.012$	$H(0.15)$	71.12	$71.9 \pm 2.2$
$100\theta_{MC}$	1.04093	$1.04086 \pm 0.00058$	$\sigma_8/h^{0.5}$	0.9958	$0.993 \pm 0.016$	$D_M(0.15)$	658.4	$652 \pm 21$
$\tau$	0.0519	$0.0514 \pm 0.0080$	$r_{drag}h$	97.65	$98.2 \pm 2.1$	$H(0.38)$	81.40	$82.2 \pm 2.2$
$N_{eff}$	2.895	$3.00 \pm 0.28$	$\langle d^2 \rangle^{1/2}$	2.4673	$2.457 \pm 0.045$	$D_M(0.38)$	1566.3	$1551 \pm 47$
$\ln(10^{10} A_s)$	3.0355	$3.037 \pm 0.021$	$z_{re}$	7.47	$7.41 \pm 0.84$	$H(0.51)$	88.20	$89.0 \pm 2.1$
$n_s$	0.9575	$0.961 \pm 0.013$	$10^9 A_s$	2.0811	$2.085 \pm 0.043$	$D_M(0.51)$	2026	$2007 \pm 59$
$y_{cal}$	1.00046	$1.0005 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8760	$1.881 \pm 0.022$	$H(0.61)$	93.88	$94.7 \pm 2.1$
$A_{217}^{CIB}$	46.8	$48 \pm 7$	$D_{40}$	1239.8	$1237 \pm 22$	$D_M(0.61)$	2356	$2334 \pm 66$
$\xi^{tSZ \times CIB}$	0.55	—	$D_{220}$	5710.2	$5713 \pm 41$	$H(2.33)$	234.95	$236.1 \pm 3.6$
$A_{143}^{tSZ}$	6.95	$5.1 \pm 2.0$	$D_{810}$	2536.8	$2536 \pm 14$	$D_M(2.33)$	5844	$5801 \pm 120$
$A_{100}^{PS}$	249.8	$262 \pm 29$	$D_{1420}$	816.5	$814.8 \pm 5.2$	$f\sigma_8(0.15)$	0.4653	$0.464 \pm 0.012$
$A_{143}^{PS}$	50.6	$49 \pm 9$	$D_{2000}$	230.89	$229.9 \pm 2.3$	$\sigma_8(0.15)$	0.7445	$0.747 \pm 0.013$
$A_{143 \times 217}^{PS}$	51.5	$44 \pm 9$	$n_{s,0.002}$	0.9575	$0.961 \pm 0.013$	$f\sigma_8(0.38)$	0.4800	$0.4793 \pm 0.0095$
$A_{217}^{PS}$	121.2	$115 \pm 10$	$Y_P$	0.24321	$0.2446 \pm 0.0039$	$\sigma_8(0.38)$	0.6582	$0.661 \pm 0.012$
$A^{kSZ}$	0.00	$< 4.72$	$Y_P^{BBN}$	0.24453	$0.2459 \pm 0.0039$	$f\sigma_8(0.51)$	0.4767	$0.4766 \pm 0.0084$
$A_{100}^{dustTT}$	8.77	$8.9 \pm 1.8$	$10^5 D/H$	2.599	$2.625 \pm 0.069$	$\sigma_8(0.51)$	0.6153	$0.618 \pm 0.012$
$A_{143}^{dustTT}$	10.74	$10.7 \pm 1.8$	Age/Gyr	13.986	$13.89 \pm 0.30$	$f\sigma_8(0.61)$	0.4705	$0.4707 \pm 0.0079$
$A_{143 \times 217}^{dustTT}$	19.66	$18.2 \pm 3.3$	$z_*$	1090.110	$1090.25 \pm 0.49$	$\sigma_8(0.61)$	0.5850	$0.588 \pm 0.012$
$A_{217}^{dustTT}$	95.2	$93.3 \pm 7.4$	$r_*$	145.76	$144.9 \pm 2.5$	$f\sigma_8(2.33)$	0.2944	$0.2959 \pm 0.0062$
$c_{100}$	0.99966	$0.99960 \pm 0.00062$	$100\theta_*$	1.04126	$1.04110 \pm 0.00072$	$\sigma_8(2.33)$	0.3028	$0.3047 \pm 0.0069$
$c_{217}$	0.99824	$0.99825 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	13.999	$13.92 \pm 0.23$	$f_{2000}^{143}$	29.17	$31 \pm 4$
$H_0$	65.73	$66.5 \pm 2.3$	$z_{drag}$	1058.94	$1059.2 \pm 1.1$	$f_{2000}^{143 \times 217}$	32.43	$33.3 \pm 2.6$
$\Omega_\Lambda$	0.6725	$0.677^{+0.019}_{-0.017}$	$r_{drag}$	148.56	$147.7 \pm 2.6$	$f_{2000}^{217}$	106.89	$107.9 \pm 2.3$
$\Omega_m$	0.3275	$0.323^{+0.017}_{-0.019}$	$k_D$	0.13965	$0.1402 \pm 0.0019$	$\chi_{small}^2$	395.85	$396.9 \pm 1.6$
$\Omega_m h^2$	0.14151	$0.1428 \pm 0.0041$	$100\theta_D$	0.16071	$0.16097 \pm 0.00065$	$\chi_{lowl}^2$	24.50	$24.4 \pm 2.2$
$\Omega_m h^3$	0.0930	$0.0950^{+0.0051}_{-0.0058}$	$z_{eq}$	3436	$3419 \pm 63$	$\chi_{plik}^2$	757.7	$771.7 \pm 5.8$
$\sigma_8$	0.8074	$0.810 \pm 0.014$	$k_{eq}$	0.010379	$0.01040 \pm 0.00016$	$\chi_{prior}^2$	1.26	$7.3 \pm 3.6$
$S_8$	0.8436	$0.840 \pm 0.024$	$100\theta_{eq}$	0.8063	$0.810 \pm 0.012$	$\chi_{CMB}^2$	1178.0	$1192.9 \pm 5.6$

Best-fit  $\chi_{eff}^2 = 1179.27$ ;  $\bar{\chi}_{eff}^2 = 1200.18$ ;  $R - 1 = 0.00449$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.85 commander\_dx12\_v3.2\_29: 24.50 plik\_rd12\_HM\_v22\_TT: 757.66



## 7.2 base\_nnu\_plikHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022013	$0.02206 \pm 0.00029$	$\sigma_8 \Omega_m^{0.25}$	0.6060	$0.6073 \pm 0.0084$	$D_M(0.15)$	660.8	$653 \pm 20$
$\Omega_c h^2$	0.11746	$0.1190 \pm 0.0038$	$\sigma_8/h^{0.5}$	0.9906	$0.990 \pm 0.010$	$H(0.38)$	81.07	$81.9 \pm 2.0$
$100\theta_{MC}$	1.04110	$1.04096 \pm 0.00058$	$r_{drag}h$	97.78	$98.3 \pm 1.7$	$D_M(0.38)$	1572.1	$1555 \pm 44$
$\tau$	0.0503	$0.0512 \pm 0.0079$	$\langle d^2 \rangle^{1/2}$	2.4593	$2.454 \pm 0.031$	$H(0.51)$	87.84	$88.7 \pm 2.0$
$N_{eff}$	2.831	$2.95 \pm 0.27$	$z_{re}$	7.28	$7.38 \pm 0.82$	$D_M(0.51)$	2034	$2013 \pm 54$
$\ln(10^{10} A_s)$	3.0283	$3.034 \pm 0.020$	$10^9 A_s$	2.0663	$2.078 \pm 0.042$	$H(0.61)$	93.48	$94.3 \pm 2.0$
$n_s$	0.9559	$0.959 \pm 0.012$	$10^9 A_s e^{-2\tau}$	1.8685	$1.876 \pm 0.022$	$D_M(0.61)$	2365	$2341 \pm 62$
$y_{cal}$	1.00025	$1.0005 \pm 0.0025$	$D_{40}$	1240.1	$1237 \pm 19$	$H(2.33)$	233.82	$235.2 \pm 3.5$
$A_{217}^{CIB}$	46.8	$47 \pm 7$	$D_{220}$	5711.8	$5715 \pm 41$	$D_M(2.33)$	5869	$5821 \pm 120$
$\xi^{tSZ \times CIB}$	0.53	—	$D_{810}$	2534.5	$2535 \pm 14$	$f\sigma_8(0.15)$	0.4615	$0.4612 \pm 0.0081$
$A_{143}^{tSZ}$	6.99	$5.2_{-2.0}^{+2.2}$	$D_{1420}$	816.7	$815.1 \pm 5.2$	$\sigma_8(0.15)$	0.7393	$0.744 \pm 0.013$
$A_{100}^{PS}$	248.4	$261 \pm 28$	$D_{2000}$	231.20	$230.1 \pm 2.3$	$f\sigma_8(0.38)$	0.4762	$0.4770 \pm 0.0066$
$A_{143}^{PS}$	49.2	$48 \pm 9$	$n_{s,0.002}$	0.9559	$0.959 \pm 0.012$	$\sigma_8(0.38)$	0.6538	$0.658 \pm 0.012$
$A_{143 \times 217}^{PS}$	50.2	$43 \pm 9$	$Y_P$	0.24233	$0.2439 \pm 0.0038$	$f\sigma_8(0.51)$	0.4731	$0.4744 \pm 0.0064$
$A_{217}^{PS}$	120.4	$115 \pm 10$	$Y_P^{BBN}$	0.24364	$0.2452 \pm 0.0038$	$\sigma_8(0.51)$	0.6112	$0.616 \pm 0.012$
$A^{kSZ}$	0.01	$< 4.66$	$10^5 D/H$	2.578	$2.609 \pm 0.068$	$f\sigma_8(0.61)$	0.4670	$0.4686 \pm 0.0063$
$A_{100}^{dustTT}$	8.82	$9.0 \pm 1.8$	Age/Gyr	14.047	$13.93 \pm 0.29$	$\sigma_8(0.61)$	0.5812	$0.585 \pm 0.011$
$A_{143}^{dustTT}$	10.70	$10.7 \pm 1.8$	$z_*$	1089.935	$1090.12 \pm 0.47$	$f\sigma_8(2.33)$	0.2925	$0.2948 \pm 0.0062$
$A_{143 \times 217}^{dustTT}$	19.43	$18.2 \pm 3.3$	$r_*$	146.47	$145.5 \pm 2.5$	$\sigma_8(2.33)$	0.3009	$0.3035 \pm 0.0068$
$A_{217}^{dustTT}$	94.7	$93.4 \pm 7.4$	$100\theta_*$	1.04145	$1.04124 \pm 0.00072$	$f_{2000}^{143}$	28.72	$30 \pm 4$
$c_{100}$	0.99964	$0.99960 \pm 0.00063$	$D_M(z_*)/\text{Gpc}$	14.064	$13.97 \pm 0.23$	$f_{2000}^{143 \times 217}$	31.99	$33.0 \pm 2.5$
$c_{217}$	0.99821	$0.99824 \pm 0.00061$	$z_{drag}$	1058.75	$1059.1 \pm 1.1$	$f_{2000}^{217}$	106.46	$107.6 \pm 2.3$
$H_0$	65.50	$66.3 \pm 2.1$	$r_{drag}$	149.28	$148.3 \pm 2.6$	$\chi_{lensing}^2$	8.61	$9.37 \pm 0.98$
$\Omega_\Lambda$	0.6734	$0.678 \pm 0.015$	$k_D$	0.13915	$0.1398 \pm 0.0018$	$\chi_{small}^2$	395.69	$396.8 \pm 1.5$
$\Omega_m$	0.3266	$0.322 \pm 0.015$	$100\theta_D$	0.16054	$0.16084 \pm 0.00064$	$\chi_{lowl}^2$	24.61	$24.4 \pm 1.9$
$\Omega_m h^2$	0.14012	$0.1417 \pm 0.0040$	$z_{eq}$	3432	$3416 \pm 50$	$\chi_{plik}^2$	757.8	$771.1 \pm 5.5$
$\Omega_m h^3$	0.0918	$0.0941_{-0.0056}^{+0.0049}$	$k_{eq}$	0.010323	$0.01035 \pm 0.00014$	$\chi_{prior}^2$	1.28	$7.3 \pm 3.6$
$\sigma_8$	0.8017	$0.806 \pm 0.013$	$100\theta_{eq}$	0.8070	$0.8101 \pm 0.0095$	$\chi_{CMB}^2$	1186.7	$1201.7 \pm 5.6$
$S_8$	0.8365	$0.835 \pm 0.016$	$100\theta_{s,eq}$	0.44635	$0.4479 \pm 0.0048$			
$\sigma_8 \Omega_m^{0.5}$	0.4582	$0.4576 \pm 0.0089$	$H(0.15)$	70.86	$71.7 \pm 2.1$			

Best-fit  $\chi_{eff}^2 = 1188.03$ ;  $\bar{\chi}_{eff}^2 = 1208.98$ ;  $R - 1 = 0.00963$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.62 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.69 commander\_dx12\_v3.2.29: 24.61 plik\_rd12\_HM.v22.TT: 757.83



### 7.3 base\_nnu\_plikHM\_TT\_lowl\_lowE\_post\_Cooke17\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022020	$0.02205 \pm 0.00026$	$\sigma_8 \Omega_m^{0.5}$	0.4611	$0.461 \pm 0.013$	$100\theta_{s,eq}$	0.4464	$0.4470 \pm 0.0053$
$\Omega_c h^2$	0.11889	$0.1196 \pm 0.0029$	$\sigma_8 \Omega_m^{0.25}$	0.6101	$0.610 \pm 0.011$	$H(0.15)$	71.24	$71.6 \pm 1.6$
$100\theta_{MC}$	1.04095	$1.04089 \pm 0.00051$	$\sigma_8/h^{0.5}$	0.9947	$0.994 \pm 0.016$	$D_M(0.15)$	657.2	$654 \pm 16$
$\tau$	0.0518	$0.0511 \pm 0.0079$	$r_{drag}h$	97.79	$98.0 \pm 1.9$	$H(0.38)$	81.50	$81.9 \pm 1.5$
$N_{eff}$	2.908	$2.96 \pm 0.19$	$\langle d^2 \rangle^{1/2}$	2.4642	$2.461 \pm 0.041$	$D_M(0.38)$	1563.7	$1557 \pm 35$
$\ln(10^{10} A_s)$	3.0351	$3.035 \pm 0.018$	$z_{re}$	7.47	$7.38 \pm 0.82$	$H(0.51)$	88.30	$88.7 \pm 1.5$
$n_s$	0.9580	$0.9590 \pm 0.0099$	$10^9 A_s$	2.0803	$2.081 \pm 0.038$	$D_M(0.51)$	2023.3	$2015 \pm 43$
$y_{cal}$	1.00035	$1.0005 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8756	$1.879 \pm 0.018$	$H(0.61)$	93.98	$94.4 \pm 1.5$
$A_{217}^{CIB}$	48.1	$47 \pm 7$	$D_{40}$	1238.6	$1239 \pm 19$	$D_M(0.61)$	2352.5	$2342 \pm 48$
$\xi^{tSZ \times CIB}$	0.38	—	$D_{220}$	5708.1	$5713 \pm 40$	$H(2.33)$	235.02	$235.7 \pm 2.5$
$A_{143}^{tSZ}$	7.04	$5.2_{-2.0}^{+2.2}$	$D_{810}$	2535.6	$2536 \pm 14$	$D_M(2.33)$	5838	$5817 \pm 86$
$A_{100}^{PS}$	252.2	$261 \pm 28$	$D_{1420}$	815.9	$815.0 \pm 5.0$	$f\sigma_8(0.15)$	0.4645	$0.464 \pm 0.012$
$A_{143}^{PS}$	48.6	$48 \pm 8$	$D_{2000}$	230.61	$230.0 \pm 1.9$	$\sigma_8(0.15)$	0.7444	$0.746 \pm 0.010$
$A_{143 \times 217}^{PS}$	47.2	$44 \pm 9$	$n_{s,0.002}$	0.9580	$0.9590 \pm 0.0099$	$f\sigma_8(0.38)$	0.4794	$0.4793 \pm 0.0093$
$A_{217}^{PS}$	119.1	$115 \pm 10$	$Y_P$	0.24338	$0.2440 \pm 0.0026$	$\sigma_8(0.38)$	0.6583	$0.6595 \pm 0.0093$
$A^{kSZ}$	0.00	$< 4.60$	$Y_P^{BBN}$	0.24470	$0.2454 \pm 0.0026$	$f\sigma_8(0.51)$	0.4763	$0.4764 \pm 0.0080$
$A_{100}^{dustTT}$	8.79	$9.0 \pm 1.8$	$10^5 D/H$	2.6035	$2.617 \pm 0.049$	$\sigma_8(0.51)$	0.6154	$0.6166 \pm 0.0089$
$A_{143}^{dustTT}$	10.80	$10.7 \pm 1.8$	Age/Gyr	13.973	$13.92 \pm 0.20$	$f\sigma_8(0.61)$	0.4701	$0.4704 \pm 0.0073$
$A_{143 \times 217}^{dustTT}$	19.45	$18.3 \pm 3.3$	$z_*$	1090.130	$1090.21 \pm 0.40$	$\sigma_8(0.61)$	0.5852	$0.5864 \pm 0.0086$
$A_{217}^{dustTT}$	94.7	$93.5 \pm 7.4$	$r_*$	145.69	$145.3 \pm 1.7$	$f\sigma_8(2.33)$	0.29450	$0.2952 \pm 0.0046$
$c_{100}$	0.99964	$0.99960 \pm 0.00063$	$100\theta_*$	1.04126	$1.04116 \pm 0.00057$	$\sigma_8(2.33)$	0.3030	$0.3038 \pm 0.0051$
$c_{217}$	0.99825	$0.99824 \pm 0.00061$	$D_M(z_*)/\text{Gpc}$	13.992	$13.95 \pm 0.16$	$\chi_{small}^2$	395.84	$396.8 \pm 1.6$
$H_0$	65.86	$66.2 \pm 1.7$	$z_{drag}$	1058.94	$1059.08 \pm 0.83$	$\chi_{lowl}^2$	24.40	$24.5 \pm 1.9$
$\Omega_\Lambda$	0.6736	$0.675 \pm 0.016$	$r_{drag}$	148.48	$148.0 \pm 1.8$	$\chi_{plik}^2$	757.7	$770.9 \pm 5.5$
$\Omega_m$	0.3264	$0.325 \pm 0.016$	$k_D$	0.13967	$0.1400 \pm 0.0013$	$\chi_{Aver15}^2$	0.002	$0.44 \pm 0.62$
$\Omega_m h^2$	0.14156	$0.1423 \pm 0.0030$	$100\theta_D$	0.160758	$0.16089 \pm 0.00044$	$\chi_{Cooke17}^2$	0.024	$0.27 \pm 0.39$
$\Omega_m h^3$	0.09322	$0.0942 \pm 0.0037$	$z_{eq}$	3431	$3425 \pm 56$	$\chi_{prior}^2$	1.37	$7.2 \pm 3.6$
$\sigma_8$	0.8072	$0.808 \pm 0.011$	$k_{eq}$	0.010374	$0.01039 \pm 0.00015$	$\chi_{CMB}^2$	1177.9	$1192.2 \pm 5.4$
$S_8$	0.8419	$0.841 \pm 0.024$	$100\theta_{eq}$	0.8072	$0.808 \pm 0.010$	$\chi_{Abund}^2$	0.026	$0.71 \pm 0.84$

Best-fit  $\chi_{eff}^2 = 1179.31$ ;  $\bar{\chi}_{eff}^2 = 1200.19$ ;  $R - 1 = 0.00823$

$\chi_{eff}^2$ : Abund - Yp\_Aver2015: 0.00 D\_Cooke2017: 0.02 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.84 commander\_dx12\_v3.2\_29: 24.40 plik\_rd12\_HM\_v22\_TT: 757.67



## 7.4 base\_nnu\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02210 \pm 0.00030$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.460 \pm 0.013$	$100\theta_{\text{s,eq}}$	$0.4480 \pm 0.0060$
$\Omega_{\text{c}}h^2$	$0.1202 \pm 0.0040$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.611 \pm 0.012$	$H(0.15)$	$72.1 \pm 2.2$
$100\theta_{\text{MC}}$	$1.04084 \pm 0.00058$	$\sigma_8/h^{0.5}$	$0.994 \pm 0.016$	$D_{\text{M}}(0.15)$	$650 \pm 21$
$\tau$	$0.0533^{+0.0044}_{-0.0082}$	$r_{\text{drag}}h$	$98.4 \pm 2.1$	$H(0.38)$	$82.3 \pm 2.1$
$N_{\text{eff}}$	$3.02 \pm 0.28$	$\langle d^2 \rangle^{1/2}$	$2.459 \pm 0.044$	$D_{\text{M}}(0.38)$	$1548 \pm 47$
$\ln(10^{10}A_{\text{s}})$	$3.041^{+0.016}_{-0.019}$	$z_{\text{re}}$	$7.63^{+0.48}_{-0.86}$	$H(0.51)$	$89.1 \pm 2.1$
$n_{\text{s}}$	$0.962 \pm 0.013$	$10^9 A_{\text{s}}$	$2.094^{+0.033}_{-0.041}$	$D_{\text{M}}(0.51)$	$2003 \pm 58$
$y_{\text{cal}}$	$1.0005 \pm 0.0025$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.882 \pm 0.022$	$H(0.61)$	$94.8 \pm 2.1$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{40}$	$1235 \pm 22$	$D_{\text{M}}(0.61)$	$2330 \pm 65$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{220}$	$5713 \pm 41$	$H(2.33)$	$236.3 \pm 3.6$
$A_{143}^{\text{tSZ}}$	$5.1 \pm 2.0$	$D_{810}$	$2536 \pm 14$	$D_{\text{M}}(2.33)$	$5793 \pm 120$
$A_{100}^{\text{PS}}$	$262 \pm 29$	$D_{1420}$	$814.8 \pm 5.2$	$f\sigma_8(0.15)$	$0.464 \pm 0.012$
$A_{143}^{\text{PS}}$	$49 \pm 9$	$D_{2000}$	$229.8 \pm 2.3$	$\sigma_8(0.15)$	$0.749 \pm 0.012$
$A_{143 \times 217}^{\text{PS}}$	$44 \pm 9$	$n_{\text{s},0.002}$	$0.962 \pm 0.013$	$f\sigma_8(0.38)$	$0.4799 \pm 0.0094$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$Y_{\text{P}}$	$0.2448 \pm 0.0038$	$\sigma_8(0.38)$	$0.663 \pm 0.012$
$A^{\text{kSZ}}$	$< 4.73$	$Y_{\text{P}}^{\text{BBN}}$	$0.2461 \pm 0.0038$	$f\sigma_8(0.51)$	$0.4773 \pm 0.0083$
$A_{100}^{\text{dust}TT}$	$8.9 \pm 1.8$	$10^5 \text{D}/\text{H}$	$2.626 \pm 0.069$	$\sigma_8(0.51)$	$0.620 \pm 0.011$
$A_{143}^{\text{dust}TT}$	$10.7 \pm 1.8$	$\text{Age}/\text{Gyr}$	$13.87 \pm 0.29$	$f\sigma_8(0.61)$	$0.4715 \pm 0.0077$
$A_{143 \times 217}^{\text{dust}TT}$	$18.2 \pm 3.3$	$z_*$	$1090.25 \pm 0.49$	$\sigma_8(0.61)$	$0.589 \pm 0.011$
$A_{217}^{\text{dust}TT}$	$93.3 \pm 7.4$	$r_*$	$144.8 \pm 2.5$	$f\sigma_8(2.33)$	$0.2968 \pm 0.0059$
$c_{100}$	$0.99960 \pm 0.00062$	$100\theta_*$	$1.04108 \pm 0.00071$	$\sigma_8(2.33)$	$0.3056 \pm 0.0066$
$c_{217}$	$0.99825 \pm 0.00062$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.91 \pm 0.23$	$f_{2000}^{143}$	$31 \pm 4$
$H_0$	$66.7 \pm 2.3$	$z_{\text{drag}}$	$1059.3 \pm 1.1$	$f_{2000}^{143 \times 217}$	$33.3 \pm 2.6$
$\Omega_{\Lambda}$	$0.678^{+0.019}_{-0.017}$	$r_{\text{drag}}$	$147.6 \pm 2.6$	$f_{2000}^{217}$	$107.9 \pm 2.4$
$\Omega_{\text{m}}$	$0.322^{+0.017}_{-0.019}$	$k_{\text{D}}$	$0.1403 \pm 0.0018$	$\chi_{\text{simall}}^2$	$396.7 \pm 1.5$
$\Omega_{\text{m}}h^2$	$0.1429 \pm 0.0041$	$100\theta_{\text{D}}$	$0.16100 \pm 0.00065$	$\chi_{\text{lowl}}^2$	$24.2 \pm 2.2$
$\Omega_{\text{m}}h^3$	$0.0954^{+0.0051}_{-0.0057}$	$z_{\text{eq}}$	$3415 \pm 63$	$\chi_{\text{plik}}^2$	$771.7 \pm 5.8$
$\sigma_8$	$0.811 \pm 0.013$	$k_{\text{eq}}$	$0.01040 \pm 0.00016$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.6$
$S_8$	$0.840 \pm 0.024$	$100\theta_{\text{eq}}$	$0.810 \pm 0.012$	$\chi_{\text{CMB}}^2$	$1192.7 \pm 5.5$

$\bar{\chi}_{\text{eff}}^2 = 1199.93$ ;  $R - 1 = 0.00341$



## 7.5 base\_nnu\_plikHM\_TT\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02209 \pm 0.00029$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6077 \pm 0.0083$	$D_{\mathrm{M}}(0.15)$	$651 \pm 19$
$\Omega_{\mathrm{c}}h^2$	$0.1191 \pm 0.0038$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.010$	$H(0.38)$	$82.1 \pm 2.0$
$100\theta_{\mathrm{MC}}$	$1.04095 \pm 0.00058$	$r_{\mathrm{drag}}h$	$98.5 \pm 1.7$	$D_{\mathrm{M}}(0.38)$	$1551 \pm 43$
$\tau$	$0.0532^{+0.0043}_{-0.0081}$	$\langle d^2 \rangle^{1/2}$	$2.454 \pm 0.031$	$H(0.51)$	$88.9 \pm 2.0$
$N_{\mathrm{eff}}$	$2.97 \pm 0.27$	$z_{\mathrm{re}}$	$7.59^{+0.45}_{-0.86}$	$D_{\mathrm{M}}(0.51)$	$2008 \pm 53$
$\ln(10^{10}A_{\mathrm{s}})$	$3.038^{+0.016}_{-0.019}$	$10^9 A_{\mathrm{s}}$	$2.087^{+0.033}_{-0.040}$	$H(0.61)$	$94.5 \pm 2.0$
$n_{\mathrm{s}}$	$0.961 \pm 0.012$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.876 \pm 0.022$	$D_{\mathrm{M}}(0.61)$	$2335 \pm 60$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$D_{40}$	$1236 \pm 18$	$H(2.33)$	$235.4 \pm 3.5$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$D_{220}$	$5716 \pm 41$	$D_{\mathrm{M}}(2.33)$	$5811 \pm 120$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2535 \pm 14$	$f\sigma_8(0.15)$	$0.4610 \pm 0.0081$
$A_{143}^{\mathrm{tSZ}}$	$5.2 \pm 2.0$	$D_{1420}$	$815.0 \pm 5.3$	$\sigma_8(0.15)$	$0.746 \pm 0.012$
$A_{100}^{\mathrm{PS}}$	$261 \pm 28$	$D_{2000}$	$230.1 \pm 2.3$	$f\sigma_8(0.38)$	$0.4773 \pm 0.0066$
$A_{143}^{\mathrm{PS}}$	$48 \pm 9$	$n_{\mathrm{s},0.002}$	$0.961 \pm 0.012$	$\sigma_8(0.38)$	$0.660 \pm 0.012$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}$	$0.2442 \pm 0.0037$	$f\sigma_8(0.51)$	$0.4748 \pm 0.0063$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2455 \pm 0.0037$	$\sigma_8(0.51)$	$0.617 \pm 0.011$
$A^{\mathrm{kSZ}}$	$< 4.66$	$10^5 \mathrm{D}/\mathrm{H}$	$2.611 \pm 0.069$	$f\sigma_8(0.61)$	$0.4692 \pm 0.0062$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	$\mathrm{Age}/\mathrm{Gyr}$	$13.91 \pm 0.28$	$\sigma_8(0.61)$	$0.587 \pm 0.011$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$z_*$	$1090.11 \pm 0.47$	$f\sigma_8(2.33)$	$0.2957 \pm 0.0059$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.2 \pm 3.3$	$r_*$	$145.3 \pm 2.5$	$\sigma_8(2.33)$	$0.3045 \pm 0.0065$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.4$	$100\theta_*$	$1.04121 \pm 0.00071$	$f_{2000}^{143}$	$31 \pm 4$
$c_{100}$	$0.99960 \pm 0.00063$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.96 \pm 0.23$	$f_{2000}^{143 \times 217}$	$33.0 \pm 2.5$
$c_{217}$	$0.99825 \pm 0.00061$	$z_{\mathrm{drag}}$	$1059.2 \pm 1.0$	$f_{2000}^{217}$	$107.7 \pm 2.3$
$H_0$	$66.6 \pm 2.0$	$r_{\mathrm{drag}}$	$148.1 \pm 2.6$	$\chi_{\mathrm{lensing}}^2$	$9.38 \pm 0.99$
$\Omega_{\Lambda}$	$0.679 \pm 0.014$	$k_{\mathrm{D}}$	$0.1399 \pm 0.0018$	$\chi_{\mathrm{simall}}^2$	$396.7 \pm 1.5$
$\Omega_{\mathrm{m}}$	$0.321 \pm 0.014$	$100\theta_{\mathrm{D}}$	$0.16088 \pm 0.00064$	$\chi_{\mathrm{lowl}}^2$	$24.2 \pm 1.9$
$\Omega_{\mathrm{m}}h^2$	$0.1418 \pm 0.0040$	$z_{\mathrm{eq}}$	$3410 \pm 48$	$\chi_{\mathrm{plik}}^2$	$771.2 \pm 5.5$
$\Omega_{\mathrm{m}}h^3$	$0.0944^{+0.0049}_{-0.0055}$	$k_{\mathrm{eq}}$	$0.01035 \pm 0.00013$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.6$
$\sigma_8$	$0.808 \pm 0.012$	$100\theta_{\mathrm{eq}}$	$0.8113 \pm 0.0091$	$\chi_{\mathrm{CMB}}^2$	$1201.4 \pm 5.6$
$S_8$	$0.835 \pm 0.016$	$100\theta_{\mathrm{s,eq}}$	$0.4485 \pm 0.0046$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4572 \pm 0.0089$	$H(0.15)$	$71.9 \pm 2.0$		
$\bar{\chi}_{\mathrm{eff}}^2 = 1208.73$ ; $R - 1 = 0.01118$					



## 7.6 base\_nnu\_plikHM\_TT\_lowl\_lowE\_post\_Cooke17\_Aver15\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02206 \pm 0.00026$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.611 \pm 0.011$	$D_{\mathrm{M}}(0.15)$	$653 \pm 16$
$\Omega_{\mathrm{c}}h^2$	$0.1196 \pm 0.0029$	$\sigma_8/h^{0.5}$	$0.995 \pm 0.016$	$H(0.38)$	$82.0 \pm 1.5$
$100\theta_{\mathrm{MC}}$	$1.04089 \pm 0.00051$	$r_{\mathrm{drag}}h$	$98.1 \pm 1.9$	$D_{\mathrm{M}}(0.38)$	$1555 \pm 34$
$\tau$	$0.0531^{+0.0043}_{-0.0081}$	$\langle d^2 \rangle^{1/2}$	$2.463 \pm 0.041$	$H(0.51)$	$88.8 \pm 1.5$
$N_{\mathrm{eff}}$	$2.97 \pm 0.19$	$z_{\mathrm{re}}$	$7.59^{+0.45}_{-0.86}$	$D_{\mathrm{M}}(0.51)$	$2012 \pm 42$
$\ln(10^{10}A_{\mathrm{s}})$	$3.040^{+0.014}_{-0.017}$	$10^9 A_{\mathrm{s}}$	$2.090^{+0.028}_{-0.037}$	$H(0.61)$	$94.4 \pm 1.5$
$n_{\mathrm{s}}$	$0.9596 \pm 0.0098$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879 \pm 0.018$	$D_{\mathrm{M}}(0.61)$	$2339 \pm 48$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{40}$	$1238 \pm 19$	$H(2.33)$	$235.7 \pm 2.5$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$D_{220}$	$5713 \pm 40$	$D_{\mathrm{M}}(2.33)$	$5812 \pm 85$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2536 \pm 14$	$f\sigma_8(0.15)$	$0.464 \pm 0.012$
$A_{143}^{\mathrm{tSZ}}$	$5.2 \pm 2.0$	$D_{1420}$	$815.0 \pm 5.0$	$\sigma_8(0.15)$	$0.7471 \pm 0.0095$
$A_{100}^{\mathrm{PS}}$	$261 \pm 28$	$D_{2000}$	$230.1 \pm 1.9$	$f\sigma_8(0.38)$	$0.4799 \pm 0.0092$
$A_{143}^{\mathrm{PS}}$	$48 \pm 8$	$n_{\mathrm{s},0.002}$	$0.9596 \pm 0.0098$	$\sigma_8(0.38)$	$0.6610 \pm 0.0087$
$A_{143 \times 217}^{\mathrm{PS}}$	$44 \pm 9$	$Y_{\mathrm{P}}$	$0.2442 \pm 0.0026$	$f\sigma_8(0.51)$	$0.4770 \pm 0.0079$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2455 \pm 0.0026$	$\sigma_8(0.51)$	$0.6180^{+0.0078}_{-0.0087}$
$A^{\mathrm{kSZ}}$	$< 4.56$	$10^5 \mathrm{D}/\mathrm{H}$	$2.617 \pm 0.049$	$f\sigma_8(0.61)$	$0.4711 \pm 0.0071$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	$\mathrm{Age}/\mathrm{Gyr}$	$13.91 \pm 0.20$	$\sigma_8(0.61)$	$0.5878^{+0.0075}_{-0.0085}$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$z_*$	$1090.20 \pm 0.40$	$f\sigma_8(2.33)$	$0.2959^{+0.0040}_{-0.0045}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$r_*$	$145.2 \pm 1.7$	$\sigma_8(2.33)$	$0.3046^{+0.0044}_{-0.0050}$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.4$	$100\theta_*$	$1.04115 \pm 0.00057$	$f_{2000}^{143}$	$30.5 \pm 3.1$
$c_{100}$	$0.99961 \pm 0.00063$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.94 \pm 0.16$	$f_{2000}^{143 \times 217}$	$33.1 \pm 2.2$
$c_{217}$	$0.99825 \pm 0.00061$	$z_{\mathrm{drag}}$	$1059.13 \pm 0.82$	$f_{2000}^{217}$	$107.7 \pm 2.1$
$H_0$	$66.3 \pm 1.7$	$r_{\mathrm{drag}}$	$148.0 \pm 1.8$	$\chi_{\mathrm{simall}}^2$	$396.7 \pm 1.5$
$\Omega_{\Lambda}$	$0.676 \pm 0.016$	$k_{\mathrm{D}}$	$0.1400 \pm 0.0013$	$\chi_{\mathrm{lowl}}^2$	$24.5 \pm 1.9$
$\Omega_{\mathrm{m}}$	$0.324 \pm 0.016$	$100\theta_{\mathrm{D}}$	$0.16090 \pm 0.00044$	$\chi_{\mathrm{plik}}^2$	$770.8 \pm 5.5$
$\Omega_{\mathrm{m}}h^2$	$0.1423 \pm 0.0030$	$z_{\mathrm{eq}}$	$3422 \pm 56$	$\chi_{\mathrm{Aver15}}^2$	$0.44 \pm 0.62$
$\Omega_{\mathrm{m}}h^3$	$0.0944 \pm 0.0037$	$k_{\mathrm{eq}}$	$0.01039 \pm 0.00015$	$\chi_{\mathrm{Cooke17}}^2$	$0.28 \pm 0.39$
$\sigma_8$	$0.810 \pm 0.010$	$100\theta_{\mathrm{eq}}$	$0.809 \pm 0.010$	$\chi_{\mathrm{prior}}^2$	$7.2 \pm 3.6$
$S_8$	$0.842 \pm 0.024$	$100\theta_{\mathrm{s,eq}}$	$0.4473 \pm 0.0053$	$\chi_{\mathrm{CMB}}^2$	$1191.9 \pm 5.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.461 \pm 0.013$	$H(0.15)$	$71.7 \pm 1.6$	$\chi_{\mathrm{Abund}}^2$	$0.72 \pm 0.85$

$$\bar{\chi}_{\mathrm{eff}}^2 = 1199.89; R - 1 = 0.00918$$



## 7.7 base\_nnu\_plikHM\_TTTEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022194	$0.02225 \pm 0.00022$ (+0.6 $\sigma$ )	$\Omega_m h^2$	0.14008	$0.1413 \pm 0.0030$ (−0.4 $\sigma$ )	$k_{\text{eq}}$	0.010317	$0.01035 \pm 0.00012$ (−0.3 $\sigma$ )
$\Omega_c h^2$	0.11725	$0.1184 \pm 0.0029$ (−0.4 $\sigma$ )	$\Omega_m h^3$	0.09221	$0.0938 \pm 0.0037$ (−0.2 $\sigma$ )	$100\theta_{\text{eq}}$	0.8082	$0.8099 \pm 0.0068$ (+0.0 $\sigma$ )
$100\theta_{\text{MC}}$	1.041225	$1.04111 \pm 0.00043$ (+0.4 $\sigma$ )	$\sigma_8$	0.8040	$0.806 \pm 0.011$ (−0.3 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.44683	$0.4477 \pm 0.0034$ (+0.0 $\sigma$ )
$\tau$	0.0538	$0.0532 \pm 0.0077$ (+0.2 $\sigma$ )	$S_8$	0.8347	$0.833 \pm 0.016$ (−0.3 $\sigma$ )	$H(0.15)$	71.15	$71.7 \pm 1.4$ (−0.1 $\sigma$ )
$N_{\text{eff}}$	2.836	$2.92 \pm 0.19$ (−0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4572	$0.4565 \pm 0.0086$ (−0.3 $\sigma$ )	$D_{\text{M}}(0.15)$	657.8	$653 \pm 13$ (+0.0 $\sigma$ )
$\ln(10^{10} A_s)$	3.0365	$3.038 \pm 0.018$ (+0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6063	$0.6066 \pm 0.0087$ (−0.3 $\sigma$ )	$H(0.38)$	81.33	$81.9 \pm 1.4$ (−0.1 $\sigma$ )
$n_s$	0.9579	$0.9597 \pm 0.0085$ (−0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9910	$0.989 \pm 0.012$ (−0.2 $\sigma$ )	$D_{\text{M}}(0.38)$	1565.8	$1554 \pm 30$ (+0.1 $\sigma$ )
$y_{\text{cal}}$	1.00052	$1.0008 \pm 0.0025$ (+0.1 $\sigma$ )	$r_{\text{drag}} h$	98.15	$98.5 \pm 1.2$ (+0.1 $\sigma$ )	$H(0.51)$	88.07	$88.7 \pm 1.4$ (−0.1 $\sigma$ )
$A_{217}^{\text{CIB}}$	43.5	$46 \pm 7$ (−0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4604	$2.456 \pm 0.030$ (−0.0 $\sigma$ )	$D_{\text{M}}(0.51)$	2026.5	$2012 \pm 37$ (+0.1 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.962	$> 0.385$ (+0.1 $\sigma$ )	$z_{\text{re}}$	7.60	$7.54 \pm 0.79$ (+0.1 $\sigma$ )	$H(0.61)$	93.70	$94.3 \pm 1.4$ (−0.2 $\sigma$ )
$A_{143}^{\text{tSZ}}$	6.85	$5.6_{-1.9}^{+2.1}$ (+0.2 $\sigma$ )	$10^9 A_s$	2.0831	$2.086 \pm 0.038$ (+0.0 $\sigma$ )	$D_{\text{M}}(0.61)$	2356.6	$2340 \pm 42$ (+0.1 $\sigma$ )
$A_{100}^{\text{PS}}$	243.7	$256 \pm 28$ (−0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8707	$1.876 \pm 0.018$ (−0.2 $\sigma$ )	$H(2.33)$	233.89	$234.9 \pm 2.6$ (−0.3 $\sigma$ )
$A_{143}^{\text{PS}}$	52.4	$45 \pm 8$ (−0.5 $\sigma$ )	$D_{40}$	1239.7	$1239 \pm 16$ (+0.1 $\sigma$ )	$D_{\text{M}}(2.33)$	5857	$5822 \pm 84$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	58.7	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{220}$	5729.7	$5734 \pm 38$ (+0.5 $\sigma$ )	$f\sigma_8(0.15)$	0.4608	$0.4603 \pm 0.0081$ (−0.3 $\sigma$ )
$A_{217}^{\text{PS}}$	124.4	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{810}$	2539.3	$2539 \pm 14$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7418	$0.744 \pm 0.010$ (−0.2 $\sigma$ )
$A^{\text{kSZ}}$	0.00	$< 3.89$ (−0.2 $\sigma$ )	$D_{1420}$	819.67	$818.0 \pm 4.8$ (+0.6 $\sigma$ )	$f\sigma_8(0.38)$	0.4763	$0.4764 \pm 0.0069$ (−0.3 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.70	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$D_{2000}$	232.48	$231.6 \pm 1.8$ (+0.8 $\sigma$ )	$\sigma_8(0.38)$	0.6563	$0.6585 \pm 0.0096$ (−0.2 $\sigma$ )
$A_{143}^{\text{dustTT}}$	10.90	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	$n_{\text{s},0.002}$	0.9579	$0.9597 \pm 0.0085$ (−0.1 $\sigma$ )	$f\sigma_8(0.51)$	0.4736	$0.4740 \pm 0.0065$ (−0.3 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	20.22	$18.4 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\text{P}}$	0.24247	$0.2436 \pm 0.0026$ (−0.3 $\sigma$ )	$\sigma_8(0.51)$	0.6137	$0.6159 \pm 0.0091$ (−0.2 $\sigma$ )
$A_{217}^{\text{dustTT}}$	96.0	$93.6 \pm 7.4$ (+0.0 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.24378	$0.2449 \pm 0.0026$ (−0.3 $\sigma$ )	$f\sigma_8(0.61)$	0.4677	$0.4683 \pm 0.0063$ (−0.3 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1143	$0.114 \pm 0.038$	$10^5 \text{D/H}$	2.5456	$2.564 \pm 0.044$ (−0.9 $\sigma$ )	$\sigma_8(0.61)$	0.5836	$0.5858 \pm 0.0088$ (−0.2 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1342	$0.135 \pm 0.030$	Age/Gyr	14.018	$13.94 \pm 0.20$ (+0.2 $\sigma$ )	$f\sigma_8(2.33)$	0.29383	$0.2950 \pm 0.0046$ (−0.1 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.481 \pm 0.085$	$z_*$	1089.693	$1089.81 \pm 0.34$ (−0.9 $\sigma$ )	$\sigma_8(2.33)$	0.30242	$0.3038 \pm 0.0050$ (−0.1 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.225	$0.225 \pm 0.053$	$r_*$	146.36	$145.6 \pm 1.8$ (+0.3 $\sigma$ )	$f_{2000}^{143}$	27.19	$28.7 \pm 3.0$ (−0.6 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.668	$0.666 \pm 0.080$	$100\theta_*$	1.04156	$1.04139 \pm 0.00054$ (+0.4 $\sigma$ )	$f_{2000}^{143 \times 217}$	30.88	$31.6 \pm 2.1$ (−0.7 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.087	$2.09 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.052	$13.98 \pm 0.17$ (+0.3 $\sigma$ )	$f_{2000}^{217}$	105.44	$106.5 \pm 1.9$ (−0.6 $\sigma$ )
$c_{100}$	0.99976	$0.99968 \pm 0.00061$ (+0.1 $\sigma$ )	$z_{\text{drag}}$	1059.17	$1059.42 \pm 0.78$ (+0.2 $\sigma$ )	$\chi_{\text{small}}^2$	396.03	$397.0 \pm 1.7$ (+0.1 $\sigma$ )
$c_{217}$	0.99816	$0.99817 \pm 0.00062$ (−0.1 $\sigma$ )	$r_{\text{drag}}$	149.11	$148.3 \pm 1.9$ (+0.2 $\sigma$ )	$\chi_{\text{lowl}}^2$	24.41	$24.3 \pm 1.5$ (−0.0 $\sigma$ )
$H_0$	65.82	$66.4 \pm 1.4$ (−0.1 $\sigma$ )	$k_{\text{D}}$	0.13944	$0.1400 \pm 0.0014$ (−0.1 $\sigma$ )	$\chi_{\text{plik}}^2$	2343.0	$2359.2 \pm 6.0$ (+271.5 $\sigma$ )
$\Omega_{\Lambda}$	0.6767	$0.679 \pm 0.010$ (+0.1 $\sigma$ )	$100\theta_{\text{D}}$	0.160328	$0.16052 \pm 0.00040$ (−0.7 $\sigma$ )	$\chi_{\text{prior}}^2$	1.33	$11.6 \pm 4.6$ (+1.2 $\sigma$ )
$\Omega_{\text{m}}$	0.3233	$0.321 \pm 0.010$ (−0.1 $\sigma$ )	$z_{\text{eq}}$	3428.9	$3420 \pm 36$ (+0.0 $\sigma$ )	$\chi_{\text{CMB}}^2$	2763.4	$2780.5 \pm 6.0$ (+284.4 $\sigma$ )

Best-fit  $\chi_{\text{eff}}^2 = 2764.72$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.45$ ;  $\bar{\chi}_{\text{eff}}^2 = 2792.10$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.92$ ;  $R - 1 = 0.01315$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.03 ( $\Delta$  0.17) commander\_dx12\_v3.2.29: 24.41 ( $\Delta$  -0.09) plik\_rd12\_HM\_v22b\_TTTEE: 2342.95



## 7.8 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022195	$0.02224 \pm 0.00022$ (+0.6 $\sigma$ )	$\Omega_m h^3$	0.09181	$0.0933 \pm 0.0037$ (-0.1 $\sigma$ )	$100\theta_{s,eq}$	0.44715	$0.4478 \pm 0.0031$ (-0.0 $\sigma$ )
$\Omega_c h^2$	0.11671	$0.1179 \pm 0.0028$ (-0.3 $\sigma$ )	$\sigma_8$	0.8018	$0.8044 \pm 0.0099$ (-0.1 $\sigma$ )	$H(0.15)$	71.10	$71.6 \pm 1.4$ (-0.0 $\sigma$ )
$100\theta_{MC}$	1.041296	$1.04116 \pm 0.00043$ (+0.3 $\sigma$ )	$S_8$	0.8312	$0.831 \pm 0.013$ (-0.2 $\sigma$ )	$D_M(0.15)$	658.2	$654 \pm 13$ (+0.0 $\sigma$ )
$\tau$	0.0533	$0.0530 \pm 0.0072$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4553	$0.4554 \pm 0.0069$ (-0.2 $\sigma$ )	$H(0.38)$	81.25	$81.8 \pm 1.4$ (-0.1 $\sigma$ )
$N_{eff}$	2.815	$2.89 \pm 0.19$ (-0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6042	$0.6052 \pm 0.0070$ (-0.3 $\sigma$ )	$D_M(0.38)$	1567.0	$1557 \pm 29$ (+0.0 $\sigma$ )
$\ln(10^{10} A_s)$	3.0339	$3.036 \pm 0.017$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9885	$0.9880 \pm 0.0089$ (-0.2 $\sigma$ )	$H(0.51)$	87.97	$88.5 \pm 1.4$ (-0.1 $\sigma$ )
$n_s$	0.9577	$0.9589 \pm 0.0084$ (-0.0 $\sigma$ )	$r_{drag} h$	98.27	$98.5 \pm 1.1$ (+0.1 $\sigma$ )	$D_M(0.51)$	2028.1	$2015 \pm 37$ (+0.0 $\sigma$ )
$y_{cal}$	1.00049	$1.0007 \pm 0.0025$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4559	$2.454 \pm 0.024$ (+0.0 $\sigma$ )	$H(0.61)$	93.59	$94.1 \pm 1.4$ (-0.1 $\sigma$ )
$A_{217}^{CIB}$	43.4	$46 \pm 7$ (-0.2 $\sigma$ )	$z_{re}$	7.53	$7.50 \pm 0.74$ (+0.2 $\sigma$ )	$D_M(0.61)$	2358.6	$2344 \pm 42$ (+0.0 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.984	$> 0.391$ (+0.1 $\sigma$ )	$10^9 A_s$	2.0778	$2.083 \pm 0.035$ (+0.1 $\sigma$ )	$H(2.33)$	233.46	$234.5 \pm 2.6$ (-0.2 $\sigma$ )
$A_{143}^{tSZ}$	6.95	$5.6_{-1.9}^{+2.2}$ (+0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8679	$1.873 \pm 0.017$ (-0.1 $\sigma$ )	$D_M(2.33)$	5864	$5832 \pm 84$ (+0.1 $\sigma$ )
$A_{100}^{PS}$	242.3	$256 \pm 28$ (-0.2 $\sigma$ )	$D_{40}$	1239.1	$1240 \pm 15$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4589	$0.4592 \pm 0.0064$ (-0.3 $\sigma$ )
$A_{143}^{PS}$	52.0	$44 \pm 8$ (-0.4 $\sigma$ )	$D_{220}$	5730.4	$5736 \pm 38$ (+0.5 $\sigma$ )	$\sigma_8(0.15)$	0.7399	$0.7424 \pm 0.0095$ (-0.1 $\sigma$ )
$A_{143 \times 217}^{PS}$	59.1	$42 \pm 9$ (-0.1 $\sigma$ )	$D_{810}$	2538.8	$2538 \pm 13$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.4747	$0.4753 \pm 0.0055$ (-0.2 $\sigma$ )
$A_{217}^{PS}$	124.4	$115 \pm 10$ (-0.0 $\sigma$ )	$D_{1420}$	819.91	$818.1 \pm 4.8$ (+0.6 $\sigma$ )	$\sigma_8(0.38)$	0.6547	$0.6571 \pm 0.0090$ (-0.1 $\sigma$ )
$A^{kSZ}$	0.01	$< 3.94$ (-0.2 $\sigma$ )	$D_{2000}$	232.64	$231.7 \pm 1.8$ (+0.7 $\sigma$ )	$f\sigma_8(0.51)$	0.4720	$0.4729 \pm 0.0053$ (-0.2 $\sigma$ )
$A_{100}^{dustTT}$	8.69	$8.9 \pm 1.8$ (-0.1 $\sigma$ )	$n_{s,0.002}$	0.9577	$0.9589 \pm 0.0084$ (-0.0 $\sigma$ )	$\sigma_8(0.51)$	0.6122	$0.6146 \pm 0.0087$ (-0.1 $\sigma$ )
$A_{143}^{dustTT}$	10.89	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P$	0.24218	$0.2433 \pm 0.0026$ (-0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.4662	$0.4673 \pm 0.0052$ (-0.2 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.32	$18.4 \pm 3.3$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.24349	$0.2446 \pm 0.0026$ (-0.2 $\sigma$ )	$\sigma_8(0.61)$	0.5822	$0.5845 \pm 0.0084$ (-0.1 $\sigma$ )
$A_{217}^{dustTT}$	96.1	$93.6 \pm 7.4$ (+0.0 $\sigma$ )	$10^5 D/H$	2.5380	$2.558 \pm 0.043$ (-0.8 $\sigma$ )	$f\sigma_8(2.33)$	0.29318	$0.2944 \pm 0.0044$ (-0.1 $\sigma$ )
$A_{100}^{dustTE}$	0.1135	$0.114 \pm 0.038$	Age/Gyr	14.036	$13.96 \pm 0.20$ (+0.1 $\sigma$ )	$\sigma_8(2.33)$	0.30178	$0.3031 \pm 0.0049$ (-0.1 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1357	$0.135 \pm 0.029$	$z_*$	1089.620	$1089.75 \pm 0.32$ (-0.8 $\sigma$ )	$f_{2000}^{143}$	26.90	$28.6 \pm 3.0$ (-0.5 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.482	$0.480 \pm 0.086$	$r_*$	146.61	$145.9 \pm 1.8$ (+0.2 $\sigma$ )	$f_{2000}^{143 \times 217}$	30.75	$31.5 \pm 2.0$ (-0.6 $\sigma$ )
$A_{143}^{dustTE}$	0.228	$0.225 \pm 0.053$	$100\theta_*$	1.04165	$1.04145 \pm 0.00053$ (+0.3 $\sigma$ )	$f_{2000}^{217}$	105.29	$106.4 \pm 1.9$ (-0.5 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.669	$0.667 \pm 0.081$	$D_M(z_*)/\text{Gpc}$	14.075	$14.01 \pm 0.17$ (+0.2 $\sigma$ )	$\chi_{lensing}^2$	8.501	$9.02 \pm 0.70$ (-0.4 $\sigma$ )
$A_{217}^{dustTE}$	2.090	$2.08 \pm 0.27$	$z_{drag}$	1059.09	$1059.35 \pm 0.79$ (+0.3 $\sigma$ )	$\chi_{small}^2$	395.95	$396.8 \pm 1.5$ (+0.0 $\sigma$ )
$c_{100}$	0.99976	$0.99969 \pm 0.00061$ (+0.1 $\sigma$ )	$r_{drag}$	149.36	$148.6 \pm 1.9$ (+0.1 $\sigma$ )	$\chi_{lowl}^2$	24.36	$24.4 \pm 1.5$ (+0.0 $\sigma$ )
$c_{217}$	0.99816	$0.99817 \pm 0.00062$ (-0.1 $\sigma$ )	$k_D$	0.13926	$0.1398 \pm 0.0014$ (-0.0 $\sigma$ )	$\chi_{plik}^2$	2343.0	$2359.1 \pm 5.9$ (+288.2 $\sigma$ )
$H_0$	65.79	$66.3 \pm 1.4$ (-0.0 $\sigma$ )	$100\theta_D$	0.160274	$0.16046 \pm 0.00040$ (-0.6 $\sigma$ )	$\chi_{prior}^2$	1.43	$11.6 \pm 4.6$ (+1.2 $\sigma$ )
$\Omega_\Lambda$	0.6776	$0.6794 \pm 0.0097$ (+0.1 $\sigma$ )	$z_{eq}$	3425.7	$3419 \pm 33$ (+0.1 $\sigma$ )	$\chi_{CMB}^2$	2771.9	$2789.3 \pm 6.0$ (+282.1 $\sigma$ )
$\Omega_m$	0.3224	$0.3206 \pm 0.0097$ (-0.1 $\sigma$ )	$k_{eq}$	0.010292	$0.01033 \pm 0.00011$ (-0.2 $\sigma$ )			
$\Omega_m h^2$	0.13955	$0.1408 \pm 0.0030$ (-0.2 $\sigma$ )	$100\theta_{eq}$	0.8088	$0.8101 \pm 0.0062$ (+0.0 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2773.28$ ;  $\Delta\chi_{eff}^2 = 1585.25$ ;  $\bar{\chi}_{eff}^2 = 2800.86$ ;  $\Delta\bar{\chi}_{eff}^2 = 1591.88$ ;  $R - 1 = 0.01957$   
 $\chi_{eff}^2$ : CMB - smicadx12.Dec5.ftl.mv2.ndclpp.p.teb.consext8: 8.50 ( $\Delta$  -0.11) simall.100x143.offlike5.EE.Aplanck.B: 395.95 ( $\Delta$  0.25) commander.dx12.v3.2.29: 24.36 ( $\Delta$  -0.24) plik.rd12.HM.v22b.TTTEEE: 2343.04



## 7.9 base\_nnu\_plikHM\_TTTEE\_lowl\_lowE\_post\_Cooke17\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022210	$0.02225^{+0.00019}_{-0.00021}$ (+0.8 $\sigma$ )	$\Omega_{\text{m}}h^2$	0.14107	$0.1417 \pm 0.0025$ (−0.2 $\sigma$ )	$k_{\text{eq}}$	0.010350	$0.01036 \pm 0.00011$ (−0.2 $\sigma$ )
$\Omega_{\text{c}}h^2$	0.11821	$0.1188 \pm 0.0024$ (−0.3 $\sigma$ )	$\Omega_{\text{m}}h^3$	0.09326	$0.0943 \pm 0.0030$ (+0.0 $\sigma$ )	$100\theta_{\text{eq}}$	0.8085	$0.8100 \pm 0.0065$ (+0.2 $\sigma$ )
$100\theta_{\text{MC}}$	1.041133	$1.04105 \pm 0.00039$ (+0.3 $\sigma$ )	$\sigma_8$	0.8069	$0.8074 \pm 0.0096$ (−0.1 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.44698	$0.4478 \pm 0.0033$ (+0.1 $\sigma$ )
$\tau$	0.0538	$0.0531 \pm 0.0075$ (+0.2 $\sigma$ )	$S_8$	0.8371	$0.835 \pm 0.016$ (−0.3 $\sigma$ )	$H(0.15)$	71.45	$71.8 \pm 1.2$ (+0.1 $\sigma$ )
$N_{\text{eff}}$	2.891	$2.94 \pm 0.15$ (−0.1 $\sigma$ )	$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4585	$0.4572 \pm 0.0086$ (−0.3 $\sigma$ )	$D_{\text{M}}(0.15)$	655.0	$651 \pm 11$ (−0.2 $\sigma$ )
$\ln(10^{10}A_{\text{s}})$	3.0389	$3.039 \pm 0.017$ (+0.2 $\sigma$ )	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6082	$0.6075 \pm 0.0083$ (−0.2 $\sigma$ )	$H(0.38)$	81.66	$82.0 \pm 1.1$ (+0.1 $\sigma$ )
$n_{\text{s}}$	0.9596	$0.9604 \pm 0.0073$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9925	$0.990 \pm 0.011$ (−0.2 $\sigma$ )	$D_{\text{M}}(0.38)$	1559.3	$1551 \pm 25$ (−0.2 $\sigma$ )
$y_{\text{cal}}$	1.00050	$1.0008 \pm 0.0025$ (+0.1 $\sigma$ )	$r_{\text{drag}}h$	98.19	$98.5 \pm 1.2$ (+0.2 $\sigma$ )	$H(0.51)$	88.42	$88.8 \pm 1.1$ (+0.1 $\sigma$ )
$A_{217}^{\text{CIB}}$	44.2	$46 \pm 7$ (−0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4600	$2.455 \pm 0.029$ (−0.1 $\sigma$ )	$D_{\text{M}}(0.51)$	2018.2	$2008 \pm 31$ (−0.1 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.88	—	$z_{\text{re}}$	7.62	$7.53 \pm 0.77$ (+0.2 $\sigma$ )	$H(0.61)$	94.07	$94.5 \pm 1.1$ (+0.1 $\sigma$ )
$A_{143}^{\text{tSZ}}$	6.95	$5.5^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$10^9 A_{\text{s}}$	2.0882	$2.088 \pm 0.036$ (+0.2 $\sigma$ )	$D_{\text{M}}(0.61)$	2346.9	$2336 \pm 35$ (−0.1 $\sigma$ )
$A_{100}^{\text{PS}}$	244.8	$257 \pm 28$ (−0.1 $\sigma$ )	$10^9 A_{\text{s}}e^{-2\tau}$	1.8752	$1.878 \pm 0.015$ (−0.1 $\sigma$ )	$H(2.33)$	234.72	$235.3 \pm 2.1$ (−0.1 $\sigma$ )
$A_{143}^{\text{PS}}$	52.2	$45 \pm 8$ (−0.4 $\sigma$ )	$D_{40}$	1237.6	$1238 \pm 15$ (−0.0 $\sigma$ )	$D_{\text{M}}(2.33)$	5834	$5812 \pm 67$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	57.6	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{220}$	5726.5	$5733 \pm 38$ (+0.5 $\sigma$ )	$f\sigma_8(0.15)$	0.4621	$0.4610 \pm 0.0080$ (−0.3 $\sigma$ )
$A_{217}^{\text{PS}}$	124.0	$115 \pm 10$ (−0.0 $\sigma$ )	$D_{810}$	2539.8	$2539 \pm 14$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7446	$0.7452 \pm 0.0090$ (−0.0 $\sigma$ )
$A^{\text{kSZ}}$	0.01	$< 4.00$ (−0.2 $\sigma$ )	$D_{1420}$	819.10	$817.8 \pm 4.8$ (+0.6 $\sigma$ )	$f\sigma_8(0.38)$	0.4778	$0.4772 \pm 0.0067$ (−0.2 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.70	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$D_{2000}$	232.06	$231.4 \pm 1.7$ (+0.7 $\sigma$ )	$\sigma_8(0.38)$	0.6588	$0.6596 \pm 0.0082$ (+0.0 $\sigma$ )
$A_{143}^{\text{dustTT}}$	10.89	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	$n_{\text{s},0.002}$	0.9596	$0.9604 \pm 0.0073$ (+0.1 $\sigma$ )	$f\sigma_8(0.51)$	0.4751	$0.4747 \pm 0.0061$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	20.25	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\text{P}}$	0.24323	$0.2439 \pm 0.0021$ (−0.0 $\sigma$ )	$\sigma_8(0.51)$	0.6160	$0.6169 \pm 0.0078$ (+0.0 $\sigma$ )
$A_{217}^{\text{dustTT}}$	96.0	$93.7 \pm 7.4$ (+0.0 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.24455	$0.2452 \pm 0.0021$ (−0.0 $\sigma$ )	$f\sigma_8(0.61)$	0.4693	$0.4690 \pm 0.0058$ (−0.2 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1156	$0.114 \pm 0.039$	$10^5 \text{D}/\text{H}$	2.5618	$2.573 \pm 0.037$ (−0.9 $\sigma$ )	$\sigma_8(0.61)$	0.5859	$0.5867 \pm 0.0075$ (+0.0 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1356	$0.135 \pm 0.029$	Age/Gyr	13.964	$13.91 \pm 0.16$ (−0.1 $\sigma$ )	$f\sigma_8(2.33)$	0.29497	$0.2955 \pm 0.0039$ (+0.1 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.485	$0.480 \pm 0.085$	$z_*$	1089.811	$1089.87 \pm 0.30$ (−0.9 $\sigma$ )	$\sigma_8(2.33)$	0.30362	$0.3043 \pm 0.0042$ (+0.1 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.227	$0.225 \pm 0.053$	$r_*$	145.81	$145.4 \pm 1.4$ (+0.1 $\sigma$ )	$\chi_{\text{small}}^2$	396.04	$396.9 \pm 1.7$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.668	$0.667 \pm 0.080$	$100\theta_*$	1.041426	$1.04132 \pm 0.00046$ (+0.3 $\sigma$ )	$\chi_{\text{lowl}}^2$	24.18	$24.2 \pm 1.4$ (−0.2 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.087	$2.09 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.001	$13.96 \pm 0.13$ (+0.1 $\sigma$ )	$\chi_{\text{plik}}^2$	2343.2	$2359.2 \pm 5.9$ (+289.8 $\sigma$ )
$c_{100}$	0.99974	$0.99968 \pm 0.00061$ (+0.1 $\sigma$ )	$z_{\text{drag}}$	1059.32	$1059.48 \pm 0.67$ (+0.5 $\sigma$ )	$\chi_{\text{Aver15}}^2$	0.008	$0.28 \pm 0.40$ (−0.3 $\sigma$ )
$c_{217}$	0.99817	$0.99818 \pm 0.00062$ (−0.1 $\sigma$ )	$r_{\text{drag}}$	148.54	$148.1 \pm 1.5$ (+0.0 $\sigma$ )	$\chi_{\text{Cooke17}}^2$	0.359	$0.38 \pm 0.43$ (+0.3 $\sigma$ )
$H_0$	66.11	$66.5 \pm 1.2$ (+0.2 $\sigma$ )	$k_{\text{D}}$	0.13983	$0.1401 \pm 0.0011$ (+0.1 $\sigma$ )	$\chi_{\text{prior}}^2$	1.43	$11.6 \pm 4.6$ (+1.2 $\sigma$ )
$\Omega_{\Lambda}$	0.6772	$0.6793 \pm 0.0098$ (+0.3 $\sigma$ )	$100\theta_{\text{D}}$	0.160473	$0.16059 \pm 0.00032$ (−0.7 $\sigma$ )	$\chi_{\text{CMB}}^2$	2763.4	$2780.3 \pm 5.8$ (+294.2 $\sigma$ )
$\Omega_{\text{m}}$	0.3228	$0.3207 \pm 0.0098$ (−0.3 $\sigma$ )	$z_{\text{eq}}$	3427.1	$3419 \pm 34$ (−0.1 $\sigma$ )	$\chi_{\text{Abund}}^2$	0.366	$0.67 \pm 0.62$ (−0.1 $\sigma$ )

Best-fit  $\chi_{\text{eff}}^2 = 2765.22$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.91$ ;  $\bar{\chi}_{\text{eff}}^2 = 2792.58$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1592.39$ ;  $R - 1 = 0.01890$   
 $\chi_{\text{eff}}^2$ : Abund - Yp\_Aver2015: 0.01 ( $\Delta$  0.01) D.Cooke2017: 0.36 ( $\Delta$  0.33) CMB - simall\_100x143\_offlike5.EE\_Aplanck\_B: 396.04 ( $\Delta$  0.19) commander\_dx12\_v3.2.29: 24.18  
( $\Delta$  -0.21) plik\_rd12\_HM\_v22b\_TTTEE: 2343.20



## 7.10 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02225 \pm 0.00022 \quad (+0.5\sigma)$	$\Omega_{\text{m}}h^2$	$0.1413 \pm 0.0030 \quad (-0.4\sigma)$	$k_{\text{eq}}$	$0.01035 \pm 0.00012 \quad (-0.3\sigma)$
$\Omega_{\text{c}}h^2$	$0.1184 \pm 0.0029 \quad (-0.4\sigma)$	$\Omega_{\text{m}}h^3$	$0.0939 \pm 0.0037 \quad (-0.3\sigma)$	$100\theta_{\text{eq}}$	$0.8102 \pm 0.0068 \quad (-0.0\sigma)$
$100\theta_{\text{MC}}$	$1.04111 \pm 0.00043 \quad (+0.5\sigma)$	$\sigma_8$	$0.807 \pm 0.010 \quad (-0.3\sigma)$	$100\theta_{\text{s,eq}}$	$0.4479 \pm 0.0034 \quad (-0.0\sigma)$
$\tau$	$0.0546^{+0.0049}_{-0.0079} \quad (+0.2\sigma)$	$S_8$	$0.834 \pm 0.016 \quad (-0.3\sigma)$	$H(0.15)$	$71.8 \pm 1.4 \quad (-0.1\sigma)$
$N_{\text{eff}}$	$2.92 \pm 0.19 \quad (-0.3\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4569 \pm 0.0086 \quad (-0.3\sigma)$	$D_{\text{M}}(0.15)$	$652 \pm 13 \quad (+0.1\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.041^{+0.014}_{-0.018} \quad (-0.0\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6073 \pm 0.0085 \quad (-0.3\sigma)$	$H(0.38)$	$82.0 \pm 1.4 \quad (-0.2\sigma)$
$n_{\text{s}}$	$0.9600 \pm 0.0085 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.991 \pm 0.011 \quad (-0.2\sigma)$	$D_{\text{M}}(0.38)$	$1553 \pm 30 \quad (+0.1\sigma)$
$y_{\text{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$r_{\text{drag}}h$	$98.5 \pm 1.2 \quad (+0.1\sigma)$	$H(0.51)$	$88.7 \pm 1.4 \quad (-0.2\sigma)$
$A_{217}^{\text{CIB}}$	$46 \pm 7 \quad (-0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.458 \pm 0.029 \quad (-0.0\sigma)$	$D_{\text{M}}(0.51)$	$2011 \pm 37 \quad (+0.1\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	$> 0.385 \quad (+0.1\sigma)$	$z_{\text{re}}$	$7.69^{+0.55}_{-0.78} \quad (+0.1\sigma)$	$H(0.61)$	$94.3 \pm 1.4 \quad (-0.2\sigma)$
$A_{143}^{\text{tSZ}}$	$5.6^{+2.1}_{-1.8} \quad (+0.2\sigma)$	$10^9 A_{\text{s}}$	$2.092^{+0.030}_{-0.038} \quad (-0.0\sigma)$	$D_{\text{M}}(0.61)$	$2338 \pm 42 \quad (+0.1\sigma)$
$A_{100}^{\text{PS}}$	$256 \pm 28 \quad (-0.2\sigma)$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.876 \pm 0.018 \quad (-0.3\sigma)$	$H(2.33)$	$235.0 \pm 2.6 \quad (-0.4\sigma)$
$A_{143}^{\text{PS}}$	$45 \pm 8 \quad (-0.5\sigma)$	$D_{40}$	$1239 \pm 16 \quad (+0.1\sigma)$	$D_{\text{M}}(2.33)$	$5819 \pm 83 \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{220}$	$5734 \pm 38 \quad (+0.5\sigma)$	$f\sigma_8(0.15)$	$0.4607 \pm 0.0080 \quad (-0.3\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{810}$	$2538 \pm 14 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.7451 \pm 0.0099 \quad (-0.3\sigma)$
$A^{\text{kSZ}}$	$< 3.87 \quad (-0.2\sigma)$	$D_{1420}$	$818.0 \pm 4.8 \quad (+0.6\sigma)$	$f\sigma_8(0.38)$	$0.4770 \pm 0.0068 \quad (-0.3\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$D_{2000}$	$231.6 \pm 1.8 \quad (+0.8\sigma)$	$\sigma_8(0.38)$	$0.6596 \pm 0.0091 \quad (-0.3\sigma)$
$A_{143}^{\text{dustTT}}$	$10.8 \pm 1.8 \quad (+0.1\sigma)$	$n_{\text{s},0.002}$	$0.9600 \pm 0.0085 \quad (-0.1\sigma)$	$f\sigma_8(0.51)$	$0.4746 \pm 0.0063 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.4 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.2437 \pm 0.0026 \quad (-0.3\sigma)$	$\sigma_8(0.51)$	$0.6169 \pm 0.0087 \quad (-0.3\sigma)$
$A_{217}^{\text{dustTT}}$	$93.6 \pm 7.3 \quad (+0.0\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.2450 \pm 0.0026 \quad (-0.3\sigma)$	$f\sigma_8(0.61)$	$0.4689 \pm 0.0060 \quad (-0.3\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$10^5 \text{D/H}$	$2.565 \pm 0.044 \quad (-0.9\sigma)$	$\sigma_8(0.61)$	$0.5867 \pm 0.0084 \quad (-0.2\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	Age/Gyr	$13.93 \pm 0.20 \quad (+0.2\sigma)$	$f\sigma_8(2.33)$	$0.2955 \pm 0.0044 \quad (-0.2\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.480 \pm 0.085$	$z_*$	$1089.81 \pm 0.34 \quad (-0.9\sigma)$	$\sigma_8(2.33)$	$0.3043 \pm 0.0048 \quad (-0.2\sigma)$
$A_{143}^{\text{dustTE}}$	$0.225 \pm 0.053$	$r_*$	$145.6 \pm 1.8 \quad (+0.3\sigma)$	$f_{2000}^{143}$	$28.7 \pm 3.0 \quad (-0.6\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.666 \pm 0.080$	$100\theta_*$	$1.04138 \pm 0.00054 \quad (+0.4\sigma)$	$f_{2000}^{143 \times 217}$	$31.6 \pm 2.1 \quad (-0.7\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.98 \pm 0.17 \quad (+0.3\sigma)$	$f_{2000}^{217}$	$106.5 \pm 1.9 \quad (-0.6\sigma)$
$c_{100}$	$0.99968 \pm 0.00061 \quad (+0.1\sigma)$	$z_{\text{drag}}$	$1059.45 \pm 0.78 \quad (+0.2\sigma)$	$\chi_{\text{small}}^2$	$396.9 \pm 1.8 \quad (+0.1\sigma)$
$c_{217}$	$0.99817 \pm 0.00063 \quad (-0.1\sigma)$	$r_{\text{drag}}$	$148.3 \pm 1.9 \quad (+0.3\sigma)$	$\chi_{\text{lowl}}^2$	$24.3 \pm 1.5 \quad (+0.0\sigma)$
$H_0$	$66.4 \pm 1.4 \quad (-0.1\sigma)$	$k_{\text{D}}$	$0.1400 \pm 0.0014 \quad (-0.2\sigma)$	$\chi_{\text{plik}}^2$	$2359.1 \pm 6.0 \quad (+271.7\sigma)$
$\Omega_{\Lambda}$	$0.680 \pm 0.010 \quad (+0.1\sigma)$	$100\theta_{\text{D}}$	$0.16053 \pm 0.00040 \quad (-0.7\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.6 \quad (+1.2\sigma)$
$\Omega_{\text{m}}$	$0.320 \pm 0.010 \quad (-0.1\sigma)$	$z_{\text{eq}}$	$3418 \pm 36 \quad (+0.1\sigma)$	$\chi_{\text{CMB}}^2$	$2780.3 \pm 5.9 \quad (+287.1\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 2791.81; \Delta\bar{\chi}_{\text{eff}}^2 = 1591.88; R - 1 = 0.01491$$



### 7.11 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02224 \pm 0.00022 \quad (+0.5\sigma)$	$\Omega_{\text{m}}h^3$	$0.0934 \pm 0.0037 \quad (-0.2\sigma)$	$100\theta_{\text{s,eq}}$	$0.4480 \pm 0.0031 \quad (-0.1\sigma)$
$\Omega_{\text{c}}h^2$	$0.1179 \pm 0.0028 \quad (-0.3\sigma)$	$\sigma_8$	$0.8052 \pm 0.0096 \quad (-0.2\sigma)$	$H(0.15)$	$71.7 \pm 1.4 \quad (-0.1\sigma)$
$100\theta_{\text{MC}}$	$1.04116 \pm 0.00043 \quad (+0.4\sigma)$	$S_8$	$0.831 \pm 0.013 \quad (-0.2\sigma)$	$D_{\text{M}}(0.15)$	$653 \pm 13 \quad (+0.1\sigma)$
$\tau$	$0.0542^{+0.0048}_{-0.0074} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4554 \pm 0.0069 \quad (-0.2\sigma)$	$H(0.38)$	$81.8 \pm 1.4 \quad (-0.1\sigma)$
$N_{\text{eff}}$	$2.90 \pm 0.19 \quad (-0.3\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6056 \pm 0.0069 \quad (-0.3\sigma)$	$D_{\text{M}}(0.38)$	$1555 \pm 29 \quad (+0.1\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.038^{+0.014}_{-0.017} \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.9886 \pm 0.0088 \quad (-0.2\sigma)$	$H(0.51)$	$88.6 \pm 1.4 \quad (-0.2\sigma)$
$n_{\text{s}}$	$0.9593 \pm 0.0084 \quad (-0.1\sigma)$	$r_{\text{drag}}h$	$98.6 \pm 1.1 \quad (+0.0\sigma)$	$D_{\text{M}}(0.51)$	$2014 \pm 37 \quad (+0.1\sigma)$
$y_{\text{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.455 \pm 0.024 \quad (+0.0\sigma)$	$H(0.61)$	$94.2 \pm 1.4 \quad (-0.2\sigma)$
$A_{217}^{\text{CIB}}$	$46 \pm 7 \quad (-0.2\sigma)$	$z_{\text{re}}$	$7.63^{+0.53}_{-0.74} \quad (+0.1\sigma)$	$D_{\text{M}}(0.61)$	$2342 \pm 42 \quad (+0.1\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	$> 0.391 \quad (+0.1\sigma)$	$10^9 A_{\text{s}}$	$2.087^{+0.028}_{-0.035} \quad (+0.0\sigma)$	$H(2.33)$	$234.6 \pm 2.6 \quad (-0.2\sigma)$
$A_{143}^{\text{tSZ}}$	$5.6^{+2.2}_{-1.9} \quad (+0.2\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.873 \pm 0.017 \quad (-0.2\sigma)$	$D_{\text{M}}(2.33)$	$5829 \pm 83 \quad (+0.2\sigma)$
$A_{100}^{\text{PS}}$	$256 \pm 28 \quad (-0.2\sigma)$	$D_{40}$	$1239 \pm 15 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4593 \pm 0.0064 \quad (-0.2\sigma)$
$A_{143}^{\text{PS}}$	$44 \pm 8 \quad (-0.4\sigma)$	$D_{220}$	$5735 \pm 38 \quad (+0.5\sigma)$	$\sigma_8(0.15)$	$0.7433 \pm 0.0092 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{810}$	$2538 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4756 \pm 0.0055 \quad (-0.3\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (-0.0\sigma)$	$D_{1420}$	$818.0 \pm 4.8 \quad (+0.6\sigma)$	$\sigma_8(0.38)$	$0.6580 \pm 0.0087 \quad (-0.2\sigma)$
$A^{\text{kSZ}}$	$< 3.91 \quad (-0.2\sigma)$	$D_{2000}$	$231.6 \pm 1.8 \quad (+0.7\sigma)$	$f\sigma_8(0.51)$	$0.4732 \pm 0.0052 \quad (-0.3\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.1\sigma)$	$n_{\text{s},0.002}$	$0.9593 \pm 0.0084 \quad (-0.1\sigma)$	$\sigma_8(0.51)$	$0.6154 \pm 0.0083 \quad (-0.2\sigma)$
$A_{143}^{\text{dustTT}}$	$10.8 \pm 1.8 \quad (+0.0\sigma)$	$Y_{\text{P}}$	$0.2433 \pm 0.0026 \quad (-0.2\sigma)$	$f\sigma_8(0.61)$	$0.4676 \pm 0.0051 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.4 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.2446 \pm 0.0026 \quad (-0.2\sigma)$	$\sigma_8(0.61)$	$0.5853 \pm 0.0081 \quad (-0.2\sigma)$
$A_{217}^{\text{dustTT}}$	$93.6 \pm 7.3 \quad (+0.0\sigma)$	$10^5 \text{D}/\text{H}$	$2.558 \pm 0.043 \quad (-0.8\sigma)$	$f\sigma_8(2.33)$	$0.2948 \pm 0.0043 \quad (-0.2\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.039$	$\text{Age}/\text{Gyr}$	$13.95 \pm 0.20 \quad (+0.2\sigma)$	$\sigma_8(2.33)$	$0.3036 \pm 0.0047 \quad (-0.1\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.029$	$z_*$	$1089.75 \pm 0.32 \quad (-0.8\sigma)$	$f_{2000}^{143}$	$28.6 \pm 3.0 \quad (-0.6\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.480 \pm 0.087$	$r_*$	$145.9 \pm 1.8 \quad (+0.2\sigma)$	$f_{2000}^{143 \times 217}$	$31.5 \pm 2.0 \quad (-0.6\sigma)$
$A_{143}^{\text{dustTE}}$	$0.224 \pm 0.053$	$100\theta_*$	$1.04145 \pm 0.00053 \quad (+0.3\sigma)$	$f_{2000}^{217}$	$106.4 \pm 1.9 \quad (-0.6\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.666 \pm 0.081$	$D_{\text{M}}(z_*)/\text{Gpc}$	$14.01 \pm 0.17 \quad (+0.2\sigma)$	$\chi_{\text{lensing}}^2$	$9.01 \pm 0.70 \quad (-0.4\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.27$	$z_{\text{drag}}$	$1059.37 \pm 0.79 \quad (+0.2\sigma)$	$\chi_{\text{small}}^2$	$396.8 \pm 1.5 \quad (+0.1\sigma)$
$c_{100}$	$0.99969 \pm 0.00061 \quad (+0.1\sigma)$	$r_{\text{drag}}$	$148.6 \pm 1.9 \quad (+0.2\sigma)$	$\chi_{\text{lowl}}^2$	$24.4 \pm 1.5 \quad (+0.1\sigma)$
$c_{217}$	$0.99817 \pm 0.00062 \quad (-0.1\sigma)$	$k_{\text{D}}$	$0.1398 \pm 0.0014 \quad (-0.1\sigma)$	$\chi_{\text{plik}}^2$	$2358.9 \pm 5.9 \quad (+287.8\sigma)$
$H_0$	$66.3 \pm 1.4 \quad (-0.1\sigma)$	$100\theta_{\text{D}}$	$0.16047 \pm 0.00040 \quad (-0.6\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.6 \quad (+1.2\sigma)$
$\Omega_{\Lambda}$	$0.6800 \pm 0.0095 \quad (+0.0\sigma)$	$z_{\text{eq}}$	$3417 \pm 32 \quad (+0.1\sigma)$	$\chi_{\text{CMB}}^2$	$2789.1 \pm 5.9 \quad (+284.3\sigma)$
$\Omega_{\text{m}}$	$0.3200 \pm 0.0095 \quad (-0.0\sigma)$	$k_{\text{eq}}$	$0.01032 \pm 0.00011 \quad (-0.2\sigma)$		
$\Omega_{\text{m}}h^2$	$0.1408 \pm 0.0029 \quad (-0.3\sigma)$	$100\theta_{\text{eq}}$	$0.8105 \pm 0.0062 \quad (-0.1\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2800.61; \Delta\bar{\chi}_{\text{eff}}^2 = 1591.88; R - 1 = 0.02136$$



## 7.12 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_post\_Cooke17\_Aver15\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02225 \pm 0.00020$ (+0.7 $\sigma$ )	$\Omega_m h^3$	$0.0943 \pm 0.0030$ (−0.0 $\sigma$ )	$100\theta_{s,eq}$	$0.4479 \pm 0.0033$ (+0.1 $\sigma$ )
$\Omega_c h^2$	$0.1188 \pm 0.0024$ (−0.3 $\sigma$ )	$\sigma_8$	$0.8084 \pm 0.0092$ (−0.1 $\sigma$ )	$H(0.15)$	$71.9 \pm 1.2$ (+0.1 $\sigma$ )
$100\theta_{MC}$	$1.04105 \pm 0.00039$ (+0.3 $\sigma$ )	$S_8$	$0.835 \pm 0.016$ (−0.3 $\sigma$ )	$D_M(0.15)$	$651 \pm 11$ (−0.1 $\sigma$ )
$\tau$	$0.0544^{+0.0050}_{-0.0075}$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	$0.4575 \pm 0.0086$ (−0.3 $\sigma$ )	$H(0.38)$	$82.1 \pm 1.1$ (+0.1 $\sigma$ )
$N_{eff}$	$2.94 \pm 0.15$ (−0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	$0.6081 \pm 0.0082$ (−0.2 $\sigma$ )	$D_M(0.38)$	$1551 \pm 25$ (−0.1 $\sigma$ )
$\ln(10^{10} A_s)$	$3.041^{+0.013}_{-0.017}$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	$0.991 \pm 0.011$ (−0.2 $\sigma$ )	$H(0.51)$	$88.8 \pm 1.1$ (+0.0 $\sigma$ )
$n_s$	$0.9606 \pm 0.0074$ (+0.1 $\sigma$ )	$r_{drag} h$	$98.5 \pm 1.2$ (+0.2 $\sigma$ )	$D_M(0.51)$	$2007 \pm 31$ (−0.1 $\sigma$ )
$y_{cal}$	$1.0007 \pm 0.0025$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	$2.458 \pm 0.029$ (−0.1 $\sigma$ )	$H(0.61)$	$94.5 \pm 1.1$ (+0.0 $\sigma$ )
$A_{217}^{CIB}$	$46 \pm 7$ (−0.1 $\sigma$ )	$z_{re}$	$7.68^{+0.54}_{-0.77}$ (+0.1 $\sigma$ )	$D_M(0.61)$	$2335 \pm 35$ (−0.1 $\sigma$ )
$\xi^{tSZ \times CIB}$	—	$10^9 A_s$	$2.094^{+0.028}_{-0.036}$ (+0.1 $\sigma$ )	$H(2.33)$	$235.3 \pm 2.1$ (−0.2 $\sigma$ )
$A_{143}^{tSZ}$	$5.5^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	$1.878 \pm 0.015$ (−0.1 $\sigma$ )	$D_M(2.33)$	$5811 \pm 67$ (−0.0 $\sigma$ )
$A_{100}^{PS}$	$257 \pm 28$ (−0.1 $\sigma$ )	$D_{40}$	$1238 \pm 15$ (−0.0 $\sigma$ )	$f\sigma_8(0.15)$	$0.4613 \pm 0.0079$ (−0.3 $\sigma$ )
$A_{143}^{PS}$	$45 \pm 8$ (−0.4 $\sigma$ )	$D_{220}$	$5732 \pm 38$ (+0.5 $\sigma$ )	$\sigma_8(0.15)$	$0.7462 \pm 0.0085$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{PS}$	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{810}$	$2539 \pm 14$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	$0.4776 \pm 0.0066$ (−0.2 $\sigma$ )
$A_{217}^{PS}$	$115 \pm 10$ (−0.0 $\sigma$ )	$D_{1420}$	$817.7 \pm 4.8$ (+0.5 $\sigma$ )	$\sigma_8(0.38)$	$0.6605 \pm 0.0078$ (−0.1 $\sigma$ )
$A^{kSZ}$	$< 3.98$ (−0.2 $\sigma$ )	$D_{2000}$	$231.4 \pm 1.7$ (+0.7 $\sigma$ )	$f\sigma_8(0.51)$	$0.4752 \pm 0.0060$ (−0.2 $\sigma$ )
$A_{100}^{dustTT}$	$8.9 \pm 1.9$ (−0.1 $\sigma$ )	$n_{s,0.002}$	$0.9606 \pm 0.0074$ (+0.1 $\sigma$ )	$\sigma_8(0.51)$	$0.6177 \pm 0.0074$ (−0.0 $\sigma$ )
$A_{143}^{dustTT}$	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P$	$0.2440 \pm 0.0021$ (−0.1 $\sigma$ )	$f\sigma_8(0.61)$	$0.4696 \pm 0.0056$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	$0.2453 \pm 0.0021$ (−0.1 $\sigma$ )	$\sigma_8(0.61)$	$0.5875^{+0.0066}_{-0.0074}$ (−0.0 $\sigma$ )
$A_{217}^{dustTT}$	$93.7 \pm 7.4$ (+0.0 $\sigma$ )	$10^5 D/H$	$2.573 \pm 0.037$ (−0.9 $\sigma$ )	$f\sigma_8(2.33)$	$0.2959 \pm 0.0037$ (+0.0 $\sigma$ )
$A_{100}^{dustTE}$	$0.114 \pm 0.039$	Age/Gyr	$13.91 \pm 0.16$ (−0.0 $\sigma$ )	$\sigma_8(2.33)$	$0.3047 \pm 0.0040$ (+0.0 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	$0.135 \pm 0.029$	$z_*$	$1089.86 \pm 0.30$ (−0.8 $\sigma$ )	$f_{2000}^{143}$	$29.0 \pm 2.9$ (−0.5 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	$0.479 \pm 0.086$	$r_*$	$145.4 \pm 1.4$ (+0.1 $\sigma$ )	$f_{2000}^{143 \times 217}$	$31.8 \pm 1.9$ (−0.6 $\sigma$ )
$A_{143}^{dustTE}$	$0.225 \pm 0.053$	$100\theta_*$	$1.04132 \pm 0.00046$ (+0.3 $\sigma$ )	$f_{2000}^{217}$	$106.6 \pm 1.9$ (−0.5 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	$0.667 \pm 0.080$	$D_M(z_*)/\text{Gpc}$	$13.96 \pm 0.13$ (+0.1 $\sigma$ )	$\chi_{small}^2$	$396.9 \pm 1.7$ (+0.1 $\sigma$ )
$A_{217}^{dustTE}$	$2.08 \pm 0.27$	$z_{drag}$	$1059.49 \pm 0.67$ (+0.4 $\sigma$ )	$\chi_{lowl}^2$	$24.2 \pm 1.4$ (−0.1 $\sigma$ )
$c_{100}$	$0.99968 \pm 0.00061$ (+0.1 $\sigma$ )	$r_{drag}$	$148.1 \pm 1.5$ (+0.1 $\sigma$ )	$\chi_{plik}^2$	$2359.0 \pm 5.9$ (+290.9 $\sigma$ )
$c_{217}$	$0.99818 \pm 0.00062$ (−0.1 $\sigma$ )	$k_D$	$0.1402 \pm 0.0011$ (+0.1 $\sigma$ )	$\chi_{Aver15}^2$	$0.28 \pm 0.40$ (−0.3 $\sigma$ )
$H_0$	$66.5 \pm 1.2$ (+0.1 $\sigma$ )	$100\theta_D$	$0.16059 \pm 0.00032$ (−0.7 $\sigma$ )	$\chi_{Cooke17}^2$	$0.39 \pm 0.43$ (+0.3 $\sigma$ )
$\Omega_\Lambda$	$0.6796 \pm 0.0098$ (+0.2 $\sigma$ )	$z_{eq}$	$3418 \pm 34$ (−0.1 $\sigma$ )	$\chi_{prior}^2$	$11.6 \pm 4.6$ (+1.2 $\sigma$ )
$\Omega_m$	$0.3204 \pm 0.0098$ (−0.2 $\sigma$ )	$k_{eq}$	$0.01036 \pm 0.00011$ (−0.2 $\sigma$ )	$\chi_{CMB}^2$	$2780.1 \pm 5.8$ (+297.7 $\sigma$ )
$\Omega_m h^2$	$0.1417 \pm 0.0025$ (−0.2 $\sigma$ )	$100\theta_{eq}$	$0.8102 \pm 0.0065$ (+0.1 $\sigma$ )	$\chi_{Abund}^2$	$0.67 \pm 0.61$ (−0.1 $\sigma$ )

$$\bar{\chi}_{eff}^2 = 2792.34; \Delta\bar{\chi}_{eff}^2 = 1592.45; R - 1 = 0.02177$$



### 7.13 base\_nnu\_CamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.021990	$0.02204 \pm 0.00032$	$\sigma_8 \Omega_m^{0.5}$	0.4606	$0.460 \pm 0.014$	$H(0.15)$	71.08	$71.5 \pm 2.3$
$\Omega_c h^2$	0.11868	$0.1192 \pm 0.0041$	$\sigma_8 \Omega_m^{0.25}$	0.6089	$0.609 \pm 0.012$	$D_M(0.15)$	658.8	$655 \pm 23$
$100\theta_{MC}$	1.04101	$1.04099 \pm 0.00059$	$\sigma_8/h^{0.5}$	0.9931	$0.992 \pm 0.017$	$H(0.38)$	81.35	$81.8 \pm 2.3$
$\tau$	0.0502	$0.0514 \pm 0.0082$	$r_{drag}h$	97.67	$98.1 \pm 2.2$	$D_M(0.38)$	1567.2	$1559 \pm 50$
$N_{eff}$	2.888	$2.94 \pm 0.29$	$\langle d^2 \rangle^{1/2}$	2.4615	$2.457 \pm 0.046$	$H(0.51)$	88.14	$88.6 \pm 2.2$
$\ln(10^{10} A_s)$	3.0298	$3.033 \pm 0.021$	$z_{re}$	7.30	$7.40 \pm 0.85$	$D_M(0.51)$	2028	$2017 \pm 62$
$n_s$	0.9569	$0.959 \pm 0.014$	$10^9 A_s$	2.0694	$2.077 \pm 0.044$	$H(0.61)$	93.82	$94.3 \pm 2.2$
$y_{cal}$	1.00028	$1.0004 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8717	$1.874 \pm 0.023$	$D_M(0.61)$	2357	$2346 \pm 70$
$A_{100}^{PS}$	234.0	$240 \pm 26$	$D_{40}$	1238.2	$1236 \pm 23$	$H(2.33)$	234.79	$235.3 \pm 3.7$
$A_{143}^{PS}$	39.3	$40 \pm 9$	$D_{220}$	5699.7	$5702 \pm 42$	$D_M(2.33)$	5848	$5826 \pm 130$
$A_{217}^{PS}$	101.3	$102 \pm 10$	$D_{810}$	2531.6	$2532 \pm 14$	$f\sigma_8(0.15)$	0.4638	$0.463 \pm 0.013$
$A_{217}^{CIB}$	45.0	$40 \pm 8$	$D_{1420}$	814.7	$814.6 \pm 5.2$	$\sigma_8(0.15)$	0.7422	$0.744 \pm 0.013$
$A_{143}^{tSZ}$	6.61	$3.8_{-2.6}^{+1.9}$	$D_{2000}$	230.25	$230.1 \pm 2.3$	$f\sigma_8(0.38)$	0.4785	$0.4783 \pm 0.0097$
$r_{143 \times 217}^{PS}$	0.592	$0.65 \pm 0.13$	$n_{s,0.002}$	0.9569	$0.959 \pm 0.014$	$\sigma_8(0.38)$	0.6562	$0.658 \pm 0.013$
$r_{143 \times 217}^{CIB}$	0.780	$0.57_{-0.15}^{+0.41}$	$Y_P$	0.24309	$0.2438 \pm 0.0041$	$f\sigma_8(0.51)$	0.4752	$0.4754 \pm 0.0086$
$\xi^{tSZ \times CIB}$	0.08	—	$Y_P^{BBN}$	0.24441	$0.2451 \pm 0.0041$	$\sigma_8(0.51)$	0.6134	$0.616 \pm 0.012$
$A^{kSZ}$	0.00	$4.8_{-3.6}^{+2.7}$	$10^5 D/H$	2.602	$2.611 \pm 0.071$	$f\sigma_8(0.61)$	0.4690	$0.4694 \pm 0.0080$
$A_{100}^{dust}$	1.006	$1.01 \pm 0.20$	Age/Gyr	13.995	$13.94 \pm 0.31$	$\sigma_8(0.61)$	0.5833	$0.585 \pm 0.012$
$A_{143}^{dust}$	0.989	$0.97 \pm 0.18$	$z_*$	1090.13	$1090.16 \pm 0.50$	$f\sigma_8(2.33)$	0.2935	$0.2947 \pm 0.0064$
$A_{217}^{dust}$	0.967	$0.97 \pm 0.10$	$r_*$	145.87	$145.5 \pm 2.6$	$\sigma_8(2.33)$	0.3019	$0.3034 \pm 0.0072$
$A_{143 \times 217}^{dust}$	1.011	$1.03 \pm 0.16$	$100\theta_*$	1.04133	$1.04127 \pm 0.00074$	$f_{2000}^{143}$	30.05	$30 \pm 4$
$c_{100}$	0.99758	$0.9975 \pm 0.0010$	$D_M(z_*)/\text{Gpc}$	14.008	$13.97 \pm 0.24$	$f_{2000}^{217}$	106.85	$107.1 \pm 2.5$
$c_{217}$	1.00132	$1.0011 \pm 0.0016$	$z_{drag}$	1058.83	$1059.0 \pm 1.1$	$f_{2000}^{143 \times 217}$	32.18	$32.4 \pm 2.7$
$H_0$	65.69	$66.2 \pm 2.4$	$r_{drag}$	148.68	$148.3 \pm 2.7$	$\chi_{small}^2$	395.70	$396.9 \pm 1.7$
$\Omega_\Lambda$	0.6725	$0.675_{-0.018}^{+0.020}$	$k_D$	0.13952	$0.1398 \pm 0.0019$	$\chi_{lowl}^2$	24.43	$24.4 \pm 2.3$
$\Omega_m$	0.3275	$0.325 \pm 0.019$	$100\theta_D$	0.16074	$0.16084 \pm 0.00068$	$\chi_{CamSpec}^2$	7049.2	$7063.3 \pm 5.7$
$\Omega_m h^2$	0.14132	$0.1419 \pm 0.0042$	$z_{eq}$	3435	$3425 \pm 67$	$\chi_{prior}^2$	2.08	$7.6 \pm 3.4$
$\Omega_m h^3$	0.0928	$0.0939_{-0.0059}^{+0.0053}$	$k_{eq}$	0.010371	$0.01037 \pm 0.00016$	$\chi_{CMB}^2$	7469.3	$7484.6 \pm 5.6$
$\sigma_8$	0.8049	$0.807 \pm 0.014$	$100\theta_{eq}$	0.8065	$0.809 \pm 0.012$			
$S_8$	0.8410	$0.839 \pm 0.025$	$100\theta_{s,eq}$	0.4461	$0.4472 \pm 0.0063$			

Best-fit  $\chi_{eff}^2 = 7471.42$ ;  $\bar{\chi}_{eff}^2 = 7492.17$ ;  $R - 1 = 0.00609$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.70 commander\_dx12\_v3.2.29: 24.43 CamSpec like\_10.7HM: 7049.22



## 7.14 base\_nnu\_CamSpecHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02202 \pm 0.00030$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4580 \pm 0.0092$	$H(0.15)$	$71.3 \pm 2.1$
$\Omega_{\mathrm{c}}h^2$	$0.1182 \pm 0.0039$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6067 \pm 0.0084$	$D_{\mathrm{M}}(0.15)$	$658 \pm 21$
$100\theta_{\mathrm{MC}}$	$1.04108 \pm 0.00058$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.011$	$H(0.38)$	$81.5 \pm 2.1$
$\tau$	$0.0514 \pm 0.0081$	$r_{\mathrm{drag}}h$	$98.0 \pm 1.8$	$D_{\mathrm{M}}(0.38)$	$1565 \pm 46$
$N_{\mathrm{eff}}$	$2.89 \pm 0.28$	$\langle d^2 \rangle^{1/2}$	$2.457 \pm 0.032$	$H(0.51)$	$88.2 \pm 2.1$
$\ln(10^{10}A_{\mathrm{s}})$	$3.031 \pm 0.021$	$z_{\mathrm{re}}$	$7.38 \pm 0.84$	$D_{\mathrm{M}}(0.51)$	$2025 \pm 57$
$n_{\mathrm{s}}$	$0.958 \pm 0.012$	$10^9 A_{\mathrm{s}}$	$2.072 \pm 0.043$	$H(0.61)$	$93.9 \pm 2.1$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.869 \pm 0.023$	$D_{\mathrm{M}}(0.61)$	$2355 \pm 65$
$A_{100}^{\mathrm{PS}}$	$239 \pm 26$	$D_{40}$	$1237 \pm 19$	$H(2.33)$	$234.5 \pm 3.6$
$A_{143}^{\mathrm{PS}}$	$39 \pm 9$	$D_{220}$	$5705 \pm 41$	$D_{\mathrm{M}}(2.33)$	$5848 \pm 130$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{810}$	$2532 \pm 14$	$f\sigma_8(0.15)$	$0.4614 \pm 0.0083$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7$	$D_{1420}$	$815.0 \pm 5.2$	$\sigma_8(0.15)$	$0.742 \pm 0.013$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.6}$	$D_{2000}$	$230.4 \pm 2.3$	$f\sigma_8(0.38)$	$0.4766 \pm 0.0067$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.958 \pm 0.012$	$\sigma_8(0.38)$	$0.656 \pm 0.012$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.57^{+0.41}_{-0.16}$	$Y_{\mathrm{P}}$	$0.2430 \pm 0.0039$	$f\sigma_8(0.51)$	$0.4737 \pm 0.0064$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2443 \pm 0.0039$	$\sigma_8(0.51)$	$0.613 \pm 0.012$
$A^{\mathrm{kSZ}}$	$4.7^{+2.1}_{-4.2}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.596 \pm 0.069$	$f\sigma_8(0.61)$	$0.4678 \pm 0.0064$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	$14.00 \pm 0.30$	$\sigma_8(0.61)$	$0.583 \pm 0.012$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	$z_*$	$1090.04 \pm 0.47$	$f\sigma_8(2.33)$	$0.2936 \pm 0.0063$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$r_*$	$146.0 \pm 2.6$	$\sigma_8(2.33)$	$0.3022 \pm 0.0070$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04141 \pm 0.00073$	$f_{2000}^{143}$	$30 \pm 4$
$c_{100}$	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.02 \pm 0.24$	$f_{2000}^{217}$	$106.8 \pm 2.5$
$c_{217}$	$1.0011 \pm 0.0016$	$z_{\mathrm{drag}}$	$1058.9 \pm 1.1$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.7$
$H_0$	$65.9 \pm 2.2$	$r_{\mathrm{drag}}$	$148.8 \pm 2.7$	$\chi_{\mathrm{lensing}}^2$	$9.33 \pm 0.99$
$\Omega_{\Lambda}$	$0.675 \pm 0.015$	$k_{\mathrm{D}}$	$0.1394 \pm 0.0019$	$\chi_{\mathrm{simall}}^2$	$396.8 \pm 1.6$
$\Omega_{\mathrm{m}}$	$0.325 \pm 0.015$	$100\theta_{\mathrm{D}}$	$0.16071 \pm 0.00066$	$\chi_{\mathrm{lowl}}^2$	$24.5 \pm 2.0$
$\Omega_{\mathrm{m}}h^2$	$0.1408 \pm 0.0041$	$z_{\mathrm{eq}}$	$3425 \pm 53$	$\chi_{\mathrm{CamSpec}}^2$	$7062.7 \pm 5.4$
$\Omega_{\mathrm{m}}h^3$	$0.0929 \pm 0.0054$	$k_{\mathrm{eq}}$	$0.01034 \pm 0.00014$	$\chi_{\mathrm{prior}}^2$	$7.5 \pm 3.4$
$\sigma_8$	$0.804 \pm 0.013$	$100\theta_{\mathrm{eq}}$	$0.808 \pm 0.010$	$\chi_{\mathrm{CMB}}^2$	$7493.4 \pm 5.6$
$S_8$	$0.836 \pm 0.017$	$100\theta_{\mathrm{s,eq}}$	$0.4471 \pm 0.0051$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7500.99; R - 1 = 0.00870$$



### 7.15 base\_nnu\_CamSpecHM\_TT\_lowl\_lowE\_post\_Cooke17\_Aver15

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02203 \pm 0.00027$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.609 \pm 0.012$	$H(0.38)$	$81.8 \pm 1.6$
$\Omega_{\mathrm{c}}h^2$	$0.1192 \pm 0.0030$	$\sigma_8/h^{0.5}$	$0.993 \pm 0.016$	$D_{\mathrm{M}}(0.38)$	$1559 \pm 36$
$100\theta_{\mathrm{MC}}$	$1.04098 \pm 0.00052$	$r_{\mathrm{drag}}h$	$98.0 \pm 2.0$	$H(0.51)$	$88.6 \pm 1.5$
$\tau$	$0.0513 \pm 0.0080$	$\langle d^2 \rangle^{1/2}$	$2.458 \pm 0.042$	$D_{\mathrm{M}}(0.51)$	$2017 \pm 44$
$N_{\mathrm{eff}}$	$2.94 \pm 0.19$	$z_{\mathrm{re}}$	$7.39 \pm 0.83$	$H(0.61)$	$94.2 \pm 1.5$
$\ln(10^{10}A_{\mathrm{s}})$	$3.033 \pm 0.018$	$10^9 A_{\mathrm{s}}$	$2.077 \pm 0.038$	$D_{\mathrm{M}}(0.61)$	$2346 \pm 50$
$n_{\mathrm{s}}$	$0.959 \pm 0.010$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.874 \pm 0.018$	$H(2.33)$	$235.3 \pm 2.5$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$D_{40}$	$1236 \pm 19$	$D_{\mathrm{M}}(2.33)$	$5826 \pm 88$
$A_{100}^{\mathrm{PS}}$	$240 \pm 25$	$D_{220}$	$5701 \pm 41$	$f\sigma_8(0.15)$	$0.463 \pm 0.012$
$A_{143}^{\mathrm{PS}}$	$40 \pm 9$	$D_{810}$	$2532 \pm 14$	$\sigma_8(0.15)$	$0.744 \pm 0.010$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{1420}$	$814.5 \pm 5.0$	$f\sigma_8(0.38)$	$0.4785 \pm 0.0094$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7$	$D_{2000}$	$230.0 \pm 1.9$	$\sigma_8(0.38)$	$0.6584 \pm 0.0093$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.9}_{-2.6}$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.010$	$f\sigma_8(0.51)$	$0.4756 \pm 0.0081$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	$0.2438 \pm 0.0027$	$\sigma_8(0.51)$	$0.6156 \pm 0.0089$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.57^{+0.41}_{-0.15}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2451 \pm 0.0027$	$f\sigma_8(0.61)$	$0.4696 \pm 0.0074$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.611 \pm 0.049$	$\sigma_8(0.61)$	$0.5854 \pm 0.0086$
$A^{\mathrm{kSZ}}$	$4.8^{+2.5}_{-3.8}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.94 \pm 0.21$	$f\sigma_8(2.33)$	$0.2947 \pm 0.0046$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$z_*$	$1090.17 \pm 0.40$	$\sigma_8(2.33)$	$0.3033 \pm 0.0051$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	$r_*$	$145.5 \pm 1.7$	$f_{2000}^{143}$	$30.1 \pm 3.2$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04126 \pm 0.00058$	$f_{2000}^{217}$	$107.1 \pm 2.1$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.97 \pm 0.16$	$f_{2000}^{143 \times 217}$	$32.4 \pm 2.3$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.00 \pm 0.84$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.6$
$c_{217}$	$1.0011 \pm 0.0016$	$r_{\mathrm{drag}}$	$148.3 \pm 1.8$	$\chi_{\mathrm{lowl}}^2$	$24.3 \pm 1.9$
$H_0$	$66.1 \pm 1.8$	$k_{\mathrm{D}}$	$0.1398 \pm 0.0013$	$\chi_{\mathrm{CamSpec}}^2$	$7062.8 \pm 5.4$
$\Omega_{\Lambda}$	$0.675^{+0.017}_{-0.016}$	$100\theta_{\mathrm{D}}$	$0.16085 \pm 0.00044$	$\chi_{\mathrm{Aver15}}^2$	$0.45 \pm 0.63$
$\Omega_{\mathrm{m}}$	$0.325 \pm 0.017$	$z_{\mathrm{eq}}$	$3426 \pm 58$	$\chi_{\mathrm{Cooke17}}^2$	$0.28 \pm 0.39$
$\Omega_{\mathrm{m}}h^2$	$0.1419 \pm 0.0030$	$k_{\mathrm{eq}}$	$0.01038 \pm 0.00015$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.4$
$\Omega_{\mathrm{m}}h^3$	$0.0938 \pm 0.0037$	$100\theta_{\mathrm{eq}}$	$0.808 \pm 0.011$	$\chi_{\mathrm{CMB}}^2$	$7484.0 \pm 5.4$
$\sigma_8$	$0.807 \pm 0.011$	$100\theta_{\mathrm{s,eq}}$	$0.4470 \pm 0.0055$	$\chi_{\mathrm{Abund}}^2$	$0.73 \pm 0.85$
$S_8$	$0.840 \pm 0.025$	$H(0.15)$	$71.5 \pm 1.7$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.460 \pm 0.014$	$D_{\mathrm{M}}(0.15)$	$655 \pm 17$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7492.26; R - 1 = 0.00836$$



## 7.16 base\_nnu\_CamSpecHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02206 \pm 0.00031$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.460 \pm 0.014$	$H(0.15)$	$71.7 \pm 2.3$
$\Omega_{\mathrm{c}}h^2$	$0.1193 \pm 0.0041$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.610 \pm 0.012$	$D_{\mathrm{M}}(0.15)$	$653 \pm 22$
$100\theta_{\mathrm{MC}}$	$1.04098 \pm 0.00059$	$\sigma_8/h^{0.5}$	$0.993 \pm 0.017$	$H(0.38)$	$82.0 \pm 2.2$
$\tau$	$0.0534^{+0.0044}_{-0.0084}$	$r_{\mathrm{drag}}h$	$98.2 \pm 2.2$	$D_{\mathrm{M}}(0.38)$	$1555 \pm 49$
$N_{\mathrm{eff}}$	$2.96 \pm 0.29$	$\langle d^2 \rangle^{1/2}$	$2.458 \pm 0.046$	$H(0.51)$	$88.7 \pm 2.2$
$\ln(10^{10}A_{\mathrm{s}})$	$3.038^{+0.016}_{-0.020}$	$z_{\mathrm{re}}$	$7.62^{+0.48}_{-0.87}$	$D_{\mathrm{M}}(0.51)$	$2013 \pm 61$
$n_{\mathrm{s}}$	$0.960 \pm 0.013$	$10^9 A_{\mathrm{s}}$	$2.086^{+0.033}_{-0.041}$	$H(0.61)$	$94.4 \pm 2.2$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.875 \pm 0.023$	$D_{\mathrm{M}}(0.61)$	$2340 \pm 69$
$A_{100}^{\mathrm{PS}}$	$240 \pm 26$	$D_{40}$	$1234 \pm 22$	$H(2.33)$	$235.5 \pm 3.7$
$A_{143}^{\mathrm{PS}}$	$40 \pm 9$	$D_{220}$	$5702 \pm 41$	$D_{\mathrm{M}}(2.33)$	$5817 \pm 130$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{810}$	$2532 \pm 14$	$f\sigma_8(0.15)$	$0.463 \pm 0.013$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 8$	$D_{1420}$	$814.5 \pm 5.2$	$\sigma_8(0.15)$	$0.746 \pm 0.013$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.9}_{-2.6}$	$D_{2000}$	$230.0 \pm 2.3$	$f\sigma_8(0.38)$	$0.4788 \pm 0.0097$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.960 \pm 0.013$	$\sigma_8(0.38)$	$0.660 \pm 0.012$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.57^{+0.41}_{-0.15}$	$Y_{\mathrm{P}}$	$0.2440 \pm 0.0040$	$f\sigma_8(0.51)$	$0.4760 \pm 0.0085$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2453 \pm 0.0040$	$\sigma_8(0.51)$	$0.617 \pm 0.012$
$A^{\mathrm{kSZ}}$	$4.8^{+2.7}_{-3.6}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.613 \pm 0.071$	$f\sigma_8(0.61)$	$0.4702 \pm 0.0079$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.92 \pm 0.31$	$\sigma_8(0.61)$	$0.587 \pm 0.011$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.18$	$z_*$	$1090.16 \pm 0.50$	$f\sigma_8(2.33)$	$0.2956 \pm 0.0061$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$r_*$	$145.3 \pm 2.6$	$\sigma_8(2.33)$	$0.3043 \pm 0.0068$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04125 \pm 0.00073$	$f_{2000}^{143}$	$30 \pm 4$
$c_{100}$	$0.9975 \pm 0.0010$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.96 \pm 0.24$	$f_{2000}^{217}$	$107.1 \pm 2.5$
$c_{217}$	$1.0012 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.1 \pm 1.1$	$f_{2000}^{143 \times 217}$	$32.4 \pm 2.7$
$H_0$	$66.4 \pm 2.4$	$r_{\mathrm{drag}}$	$148.1 \pm 2.7$	$\chi_{\mathrm{simall}}^2$	$396.8 \pm 1.6$
$\Omega_{\Lambda}$	$0.677 \pm 0.019$	$k_{\mathrm{D}}$	$0.1399 \pm 0.0019$	$\chi_{\mathrm{lowl}}^2$	$24.3 \pm 2.3$
$\Omega_{\mathrm{m}}$	$0.323 \pm 0.019$	$100\theta_{\mathrm{D}}$	$0.16087 \pm 0.00067$	$\chi_{\mathrm{CamSpec}}^2$	$7063.2 \pm 5.7$
$\Omega_{\mathrm{m}}h^2$	$0.1420 \pm 0.0042$	$z_{\mathrm{eq}}$	$3420 \pm 65$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.4$
$\Omega_{\mathrm{m}}h^3$	$0.0943^{+0.0053}_{-0.0059}$	$k_{\mathrm{eq}}$	$0.01037 \pm 0.00016$	$\chi_{\mathrm{CMB}}^2$	$7484.3 \pm 5.5$
$\sigma_8$	$0.809 \pm 0.013$	$100\theta_{\mathrm{eq}}$	$0.810 \pm 0.012$		
$S_8$	$0.839 \pm 0.025$	$100\theta_{\mathrm{s,eq}}$	$0.4477 \pm 0.0062$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7491.86; R - 1 = 0.00538$$



### 7.17 base\_nnu\_CamSpecHM\_TT\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02205 \pm 0.00029$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4575 \pm 0.0092$	$H(0.15)$	$71.5 \pm 2.1$
$\Omega_{\mathrm{c}} h^2$	$0.1183 \pm 0.0039$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.6071 \pm 0.0084$	$D_{\mathrm{M}}(0.15)$	$655 \pm 20$
$100\theta_{\mathrm{MC}}$	$1.04108 \pm 0.00058$	$\sigma_8/h^{0.5}$	$0.991 \pm 0.011$	$H(0.38)$	$81.7 \pm 2.1$
$\tau$	$0.0535^{+0.0045}_{-0.0081}$	$r_{\mathrm{drag}} h$	$98.3 \pm 1.7$	$D_{\mathrm{M}}(0.38)$	$1560 \pm 45$
$N_{\mathrm{eff}}$	$2.91 \pm 0.28$	$\langle d^2 \rangle^{1/2}$	$2.456 \pm 0.032$	$H(0.51)$	$88.4 \pm 2.1$
$\ln(10^{10} A_{\mathrm{s}})$	$3.035^{+0.016}_{-0.019}$	$z_{\mathrm{re}}$	$7.61^{+0.48}_{-0.85}$	$D_{\mathrm{M}}(0.51)$	$2019 \pm 56$
$n_{\mathrm{s}}$	$0.959 \pm 0.012$	$10^9 A_{\mathrm{s}}$	$2.081^{+0.033}_{-0.040}$	$H(0.61)$	$94.1 \pm 2.1$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.870 \pm 0.022$	$D_{\mathrm{M}}(0.61)$	$2348 \pm 63$
$A_{100}^{\mathrm{PS}}$	$239 \pm 26$	$D_{40}$	$1236 \pm 19$	$H(2.33)$	$234.6 \pm 3.6$
$A_{143}^{\mathrm{PS}}$	$39 \pm 9$	$D_{220}$	$5705 \pm 41$	$D_{\mathrm{M}}(2.33)$	$5837 \pm 120$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{810}$	$2532 \pm 14$	$f\sigma_8(0.15)$	$0.4611 \pm 0.0083$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 8$	$D_{1420}$	$814.9 \pm 5.2$	$\sigma_8(0.15)$	$0.743 \pm 0.012$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.6}$	$D_{2000}$	$230.4 \pm 2.3$	$f\sigma_8(0.38)$	$0.4768 \pm 0.0067$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.012$	$\sigma_8(0.38)$	$0.658 \pm 0.012$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.57^{+0.42}_{-0.15}$	$Y_{\mathrm{P}}$	$0.2433 \pm 0.0039$	$f\sigma_8(0.51)$	$0.4742 \pm 0.0063$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2446 \pm 0.0039$	$\sigma_8(0.51)$	$0.615 \pm 0.011$
$A^{\mathrm{kSZ}}$	$4.7^{+2.2}_{-4.1}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.598 \pm 0.069$	$f\sigma_8(0.61)$	$0.4684 \pm 0.0063$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.97 \pm 0.29$	$\sigma_8(0.61)$	$0.585 \pm 0.011$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	$z_*$	$1090.03 \pm 0.47$	$f\sigma_8(2.33)$	$0.2946 \pm 0.0060$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$r_*$	$145.9 \pm 2.6$	$\sigma_8(2.33)$	$0.3033 \pm 0.0066$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04139 \pm 0.00072$	$f_{2000}^{143}$	$30 \pm 4$
$c_{100}$	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.01 \pm 0.24$	$f_{2000}^{217}$	$106.8 \pm 2.4$
$c_{217}$	$1.0011 \pm 0.0016$	$z_{\mathrm{drag}}$	$1058.9 \pm 1.1$	$f_{2000}^{143 \times 217}$	$32.1 \pm 2.7$
$H_0$	$66.1 \pm 2.1$	$r_{\mathrm{drag}}$	$148.7 \pm 2.7$	$\chi_{\mathrm{lensing}}^2$	$9.34 \pm 0.99$
$\Omega_{\Lambda}$	$0.677 \pm 0.015$	$k_{\mathrm{D}}$	$0.1395 \pm 0.0019$	$\chi_{\mathrm{simall}}^2$	$396.7 \pm 1.6$
$\Omega_{\mathrm{m}}$	$0.323 \pm 0.015$	$100\theta_{\mathrm{D}}$	$0.16075 \pm 0.00065$	$\chi_{\mathrm{lowl}}^2$	$24.3 \pm 1.9$
$\Omega_{\mathrm{m}} h^2$	$0.1410 \pm 0.0041$	$z_{\mathrm{eq}}$	$3418 \pm 51$	$\chi_{\mathrm{CamSpec}}^2$	$7062.7 \pm 5.4$
$\Omega_{\mathrm{m}} h^3$	$0.0933 \pm 0.0054$	$k_{\mathrm{eq}}$	$0.01033 \pm 0.00014$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.4$
$\sigma_8$	$0.806 \pm 0.012$	$100\theta_{\mathrm{eq}}$	$0.8098 \pm 0.0095$	$\chi_{\mathrm{CMB}}^2$	$7493.2 \pm 5.5$
$S_8$	$0.835 \pm 0.017$	$100\theta_{\mathrm{s,eq}}$	$0.4478 \pm 0.0048$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7500.70; R - 1 = 0.00702$$



### 7.18 base\_nnu\_CamSpecHM\_TT\_lowl\_lowE\_post\_Cooke17\_Aver15\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02205 \pm 0.00027$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.610 \pm 0.011$	$H(0.38)$	$81.9 \pm 1.6$
$\Omega_{\mathrm{c}}h^2$	$0.1192 \pm 0.0030$	$\sigma_8/h^{0.5}$	$0.994 \pm 0.016$	$D_{\mathrm{M}}(0.38)$	$1557 \pm 36$
$100\theta_{\mathrm{MC}}$	$1.04098 \pm 0.00052$	$r_{\mathrm{drag}}h$	$98.1 \pm 1.9$	$H(0.51)$	$88.6 \pm 1.5$
$\tau$	$0.0532^{+0.0044}_{-0.0080}$	$\langle d^2 \rangle^{1/2}$	$2.460 \pm 0.042$	$D_{\mathrm{M}}(0.51)$	$2014 \pm 44$
$N_{\mathrm{eff}}$	$2.95 \pm 0.19$	$z_{\mathrm{re}}$	$7.60^{+0.48}_{-0.84}$	$H(0.61)$	$94.3 \pm 1.5$
$\ln(10^{10}A_{\mathrm{s}})$	$3.037^{+0.013}_{-0.017}$	$10^9 A_{\mathrm{s}}$	$2.085^{+0.027}_{-0.036}$	$D_{\mathrm{M}}(0.61)$	$2342 \pm 49$
$n_{\mathrm{s}}$	$0.960 \pm 0.010$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.875 \pm 0.018$	$H(2.33)$	$235.4 \pm 2.5$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$D_{40}$	$1235 \pm 19$	$D_{\mathrm{M}}(2.33)$	$5820 \pm 88$
$A_{100}^{\mathrm{PS}}$	$240 \pm 25$	$D_{220}$	$5701 \pm 41$	$f\sigma_8(0.15)$	$0.464 \pm 0.012$
$A_{143}^{\mathrm{PS}}$	$40 \pm 9$	$D_{810}$	$2532 \pm 14$	$\sigma_8(0.15)$	$0.7459 \pm 0.0095$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{1420}$	$814.6 \pm 5.0$	$f\sigma_8(0.38)$	$0.4790 \pm 0.0094$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7$	$D_{2000}$	$230.1 \pm 1.9$	$\sigma_8(0.38)$	$0.6599 \pm 0.0087$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.9}_{-2.6}$	$n_{\mathrm{s},0.002}$	$0.960 \pm 0.010$	$f\sigma_8(0.51)$	$0.4762 \pm 0.0080$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	$0.2439 \pm 0.0026$	$\sigma_8(0.51)$	$0.6170 \pm 0.0083$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.57^{+0.41}_{-0.15}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2452 \pm 0.0027$	$f\sigma_8(0.61)$	$0.4702 \pm 0.0072$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.612 \pm 0.049$	$\sigma_8(0.61)$	$0.5868 \pm 0.0081$
$A^{\mathrm{kSZ}}$	$4.8^{+2.4}_{-3.9}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.93 \pm 0.21$	$f\sigma_8(2.33)$	$0.2954 \pm 0.0043$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$z_*$	$1090.16 \pm 0.40$	$\sigma_8(2.33)$	$0.3041 \pm 0.0048$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.18$	$r_*$	$145.4 \pm 1.7$	$f_{2000}^{143}$	$30.0 \pm 3.2$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04126 \pm 0.00058$	$f_{2000}^{217}$	$107.1 \pm 2.1$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.96 \pm 0.16$	$f_{2000}^{143 \times 217}$	$32.4 \pm 2.3$
$c_{100}$	$0.9975 \pm 0.0010$	$z_{\mathrm{drag}}$	$1059.05 \pm 0.84$	$\chi_{\mathrm{simall}}^2$	$396.7 \pm 1.6$
$c_{217}$	$1.0011 \pm 0.0015$	$r_{\mathrm{drag}}$	$148.2 \pm 1.8$	$\chi_{\mathrm{lowl}}^2$	$24.2 \pm 1.9$
$H_0$	$66.2 \pm 1.8$	$k_{\mathrm{D}}$	$0.1399 \pm 0.0013$	$\chi_{\mathrm{CamSpec}}^2$	$7062.7 \pm 5.4$
$\Omega_{\Lambda}$	$0.676^{+0.017}_{-0.015}$	$100\theta_{\mathrm{D}}$	$0.16086 \pm 0.00044$	$\chi_{\mathrm{Aver15}}^2$	$0.45 \pm 0.62$
$\Omega_{\mathrm{m}}$	$0.324^{+0.015}_{-0.017}$	$z_{\mathrm{eq}}$	$3422 \pm 57$	$\chi_{\mathrm{Cooke17}}^2$	$0.28 \pm 0.39$
$\Omega_{\mathrm{m}}h^2$	$0.1419 \pm 0.0030$	$k_{\mathrm{eq}}$	$0.01037 \pm 0.00015$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.4$
$\Omega_{\mathrm{m}}h^3$	$0.0940 \pm 0.0037$	$100\theta_{\mathrm{eq}}$	$0.809 \pm 0.011$	$\chi_{\mathrm{CMB}}^2$	$7483.7 \pm 5.3$
$\sigma_8$	$0.808 \pm 0.010$	$100\theta_{\mathrm{s,eq}}$	$0.4474 \pm 0.0055$	$\chi_{\mathrm{Abund}}^2$	$0.73 \pm 0.85$
$S_8$	$0.840 \pm 0.025$	$H(0.15)$	$71.6 \pm 1.7$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.460 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$654 \pm 16$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7491.99; R - 1 = 0.00722$$



### 7.19 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022177	$0.02220 \pm 0.00023$ (+0.5 $\sigma$ )	$\sigma_8$	0.8020	$0.803 \pm 0.012$ (−0.3 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8118	$0.8124 \pm 0.0077$ (+0.3 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11735	$0.1179 \pm 0.0034$ (−0.3 $\sigma$ )	$S_8$	0.8267	$0.826 \pm 0.016$ (−0.5 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.44874	$0.4490 \pm 0.0039$ (+0.3 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.041117	$1.04108 \pm 0.00047$ (+0.2 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4528	$0.4527 \pm 0.0090$ (−0.5 $\sigma$ )	$H(0.15)$	71.61	$71.8 \pm 1.6$ (+0.1 $\sigma$ )
$\tau$	0.0527	$0.0520 \pm 0.0079$ (+0.1 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6026	$0.6028 \pm 0.0091$ (−0.5 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	653.2	$651 \pm 16$ (−0.2 $\sigma$ )
$N_{\mathrm{eff}}$	2.885	$2.92 \pm 0.22$ (−0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9848	$0.984 \pm 0.012$ (−0.5 $\sigma$ )	$H(0.38)$	81.74	$82.0 \pm 1.6$ (+0.1 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0322	$3.032 \pm 0.019$ (−0.1 $\sigma$ )	$r_{\mathrm{drag}}h$	98.70	$98.8 \pm 1.4$ (+0.3 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1556.1	$1552 \pm 35$ (−0.1 $\sigma$ )
$n_{\mathrm{s}}$	0.9607	$0.9613 \pm 0.0095$ (+0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4422	$2.440 \pm 0.031$ (−0.4 $\sigma$ )	$H(0.51)$	88.45	$88.7 \pm 1.6$ (+0.1 $\sigma$ )
$y_{\mathrm{cal}}$	1.00022	$1.0005 \pm 0.0025$ (+0.0 $\sigma$ )	$z_{\mathrm{re}}$	7.50	$7.41 \pm 0.82$ (+0.0 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	2014.6	$2009 \pm 44$ (−0.1 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	230.1	$236 \pm 25$ (−0.1 $\sigma$ )	$10^9 A_{\mathrm{s}}$	2.0743	$2.074 \pm 0.040$ (−0.1 $\sigma$ )	$H(0.61)$	94.07	$94.3 \pm 1.7$ (+0.0 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	42.7	$38 \pm 9$ (−0.2 $\sigma$ )	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8666	$1.869 \pm 0.020$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2343.3	$2337 \pm 50$ (−0.1 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	105.0	$103 \pm 10$ (+0.1 $\sigma$ )	$D_{40}$	1230.9	$1231 \pm 16$ (−0.2 $\sigma$ )	$H(2.33)$	234.09	$234.6 \pm 3.1$ (−0.2 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	41.1	$39 \pm 7$ (−0.2 $\sigma$ )	$D_{220}$	5711.7	$5715 \pm 38$ (+0.3 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5836	$5823 \pm 99$ (−0.0 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	5.90	$3.9^{+1.9}_{-2.5}$ (+0.1 $\sigma$ )	$D_{810}$	2532.6	$2533 \pm 14$ (+0.0 $\sigma$ )	$f\sigma_8(0.15)$	0.4568	$0.4567 \pm 0.0084$ (−0.5 $\sigma$ )
$r_{143 \times 217}^{\mathrm{PS}}$	0.687	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$D_{1420}$	816.89	$816.4 \pm 5.0$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7404	$0.741 \pm 0.011$ (−0.2 $\sigma$ )
$r_{143 \times 217}^{\mathrm{CIB}}$	0.754	$0.54^{+0.38}_{-0.21}$ (−0.1 $\sigma$ )	$D_{2000}$	231.28	$230.9 \pm 2.1$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4733	$0.4733 \pm 0.0073$ (−0.5 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.51	—	$n_{\mathrm{s},0.002}$	0.9607	$0.9613 \pm 0.0095$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6555	$0.656 \pm 0.011$ (−0.2 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.80	$< 5.98$ (−0.1 $\sigma$ )	$Y_{\mathrm{P}}$	0.24314	$0.2436 \pm 0.0031$ (−0.0 $\sigma$ )	$f\sigma_8(0.51)$	0.4711	$0.4712 \pm 0.0069$ (−0.5 $\sigma$ )
$A_{100}^{\mathrm{dust}}$	1.017	$1.01 \pm 0.20$ (−0.0 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24446	$0.2449 \pm 0.0031$ (−0.0 $\sigma$ )	$\sigma_8(0.51)$	0.6132	$0.614 \pm 0.010$ (−0.1 $\sigma$ )
$A_{143}^{\mathrm{dust}}$	0.973	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	$10^5 \mathrm{D}/\mathrm{H}$	2.566	$2.575 \pm 0.057$ (−0.5 $\sigma$ )	$f\sigma_8(0.61)$	0.4656	$0.4658 \pm 0.0067$ (−0.5 $\sigma$ )
$A_{217}^{\mathrm{dust}}$	0.979	$0.98 \pm 0.10$ (+0.1 $\sigma$ )	Age/Gyr	13.970	$13.94 \pm 0.23$ (−0.0 $\sigma$ )	$\sigma_8(0.61)$	0.5832	$0.5840 \pm 0.0099$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dust}}$	1.011	$1.02 \pm 0.16$ (−0.0 $\sigma$ )	$z_*$	1089.771	$1089.83 \pm 0.41$ (−0.7 $\sigma$ )	$f\sigma_8(2.33)$	0.2938	$0.2942 \pm 0.0052$ (−0.1 $\sigma$ )
$c_{100}$	0.99769	$0.9975 \pm 0.0011$ (+0.0 $\sigma$ )	$r_*$	146.09	$145.8 \pm 2.1$ (+0.1 $\sigma$ )	$\sigma_8(2.33)$	0.3026	$0.3031 \pm 0.0057$ (−0.0 $\sigma$ )
$c_{217}$	1.00117	$1.0011 \pm 0.0016$ (−0.0 $\sigma$ )	$100\theta_*$	1.04143	$1.04137 \pm 0.00060$ (+0.1 $\sigma$ )	$f_{2000}^{143}$	28.51	$29 \pm 3$ (−0.4 $\sigma$ )
$c_{TE}$	0.9956	$0.9959 \pm 0.0052$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	14.028	$14.00 \pm 0.20$ (+0.1 $\sigma$ )	$f_{2000}^{217}$	105.81	$106.2 \pm 2.3$ (−0.3 $\sigma$ )
$c_{EE}$	0.9902	$0.9906 \pm 0.0057$	$z_{\mathrm{drag}}$	1059.17	$1059.27 \pm 0.85$ (+0.2 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.09	$31.4 \pm 2.5$ (−0.4 $\sigma$ )
$H_0$	66.32	$66.5 \pm 1.7$ (+0.2 $\sigma$ )	$r_{\mathrm{drag}}$	148.84	$148.5 \pm 2.2$ (+0.1 $\sigma$ )	$\chi_{\mathrm{small}}^2$	395.87	$396.8 \pm 1.6$ (−0.0 $\sigma$ )
$\Omega_{\Lambda}$	0.6813	$0.682 \pm 0.011$ (+0.4 $\sigma$ )	$k_{\mathrm{D}}$	0.13951	$0.1397 \pm 0.0016$ (−0.0 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	23.68	$23.8 \pm 1.5$ (−0.3 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3187	$0.318 \pm 0.011$ (−0.4 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.16053	$0.16061 \pm 0.00053$ (−0.3 $\sigma$ )	$\chi_{\mathrm{CamSpec}}^2$	11498.6	$11514.5 \pm 5.9$ (+774.7 $\sigma$ )
$\Omega_{\mathrm{m}}h^2$	0.14017	$0.1407 \pm 0.0035$ (−0.3 $\sigma$ )	$z_{\mathrm{eq}}$	3407.9	$3405 \pm 41$ (−0.3 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	2.07	$7.9 \pm 3.4$ (+0.1 $\sigma$ )
$\Omega_{\mathrm{m}}h^3$	0.09296	$0.0937^{+0.0041}_{-0.0046}$ (−0.0 $\sigma$ )	$k_{\mathrm{eq}}$	0.010288	$0.01030 \pm 0.00013$ (−0.4 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	11918.2	$11935.2 \pm 5.9$ (+792.2 $\sigma$ )

Best-fit  $\chi_{\mathrm{eff}}^2 = 11920.27$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 4448.85$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 11943.05$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.88$ ;  $R - 1 = 0.00888$

$\chi_{\mathrm{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 ( $\Delta$  0.17) commander\_dx12\_v3.2.29: 23.68 ( $\Delta$  -0.76) CamSpec like\_10.7HM\_1400\_unified: 11498.65



## 7.20 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02217 \pm 0.00022 \quad (+0.5\sigma)$	$S_8$	$0.828 \pm 0.013 \quad (-0.5\sigma)$	$H(0.15)$	$71.5 \pm 1.6 \quad (+0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1175 \pm 0.0033 \quad (-0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4537 \pm 0.0070 \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.15)$	$654 \pm 15 \quad (-0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04113 \pm 0.00047 \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6033 \pm 0.0073 \quad (-0.4\sigma)$	$H(0.38)$	$81.7 \pm 1.6 \quad (+0.1\sigma)$
$\tau$	$0.0527 \pm 0.0074 \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.9859 \pm 0.0091 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.38)$	$1558 \pm 34 \quad (-0.1\sigma)$
$N_{\mathrm{eff}}$	$2.88 \pm 0.22 \quad (-0.0\sigma)$	$r_{\mathrm{drag}}h$	$98.6 \pm 1.3 \quad (+0.3\sigma)$	$H(0.51)$	$88.4 \pm 1.6 \quad (+0.1\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.033 \pm 0.018 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.447 \pm 0.025 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.51)$	$2017 \pm 43 \quad (-0.1\sigma)$
$n_{\mathrm{s}}$	$0.9595 \pm 0.0093 \quad (+0.2\sigma)$	$z_{\mathrm{re}}$	$7.48 \pm 0.76 \quad (+0.1\sigma)$	$H(0.61)$	$94.0 \pm 1.6 \quad (+0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0024 \quad (+0.1\sigma)$	$10^9 A_{\mathrm{s}}$	$2.075 \pm 0.037 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2346 \pm 49 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$236 \pm 25 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.868 \pm 0.019 \quad (-0.1\sigma)$	$H(2.33)$	$234.1 \pm 3.0 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$37 \pm 9 \quad (-0.2\sigma)$	$D_{40}$	$1235 \pm 16 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5840 \pm 98 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$104 \pm 10 \quad (+0.1\sigma)$	$D_{220}$	$5718 \pm 38 \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4576 \pm 0.0065 \quad (-0.5\sigma)$
$A_{217}^{\mathrm{CIB}}$	$38 \pm 7 \quad (-0.2\sigma)$	$D_{810}$	$2533 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.741 \pm 0.011 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9_{-2.5}^{+1.9} \quad (+0.0\sigma)$	$D_{1420}$	$816.8 \pm 5.0 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4739 \pm 0.0057 \quad (-0.4\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.67 \pm 0.13 \quad (+0.1\sigma)$	$D_{2000}$	$231.2 \pm 2.1 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.656 \pm 0.010 \quad (-0.0\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.54_{-0.21}^{+0.39} \quad (-0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9595 \pm 0.0093 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4715 \pm 0.0056 \quad (-0.3\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.2431 \pm 0.0031 \quad (+0.0\sigma)$	$\sigma_8(0.51)$	$0.6132 \pm 0.0098 \quad (-0.0\sigma)$
$A^{\mathrm{kSZ}}$	$< 5.88 \quad (-0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2444 \pm 0.0031 \quad (+0.0\sigma)$	$f\sigma_8(0.61)$	$0.4659 \pm 0.0056 \quad (-0.3\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.00 \pm 0.20 \quad (-0.0\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.567 \pm 0.055 \quad (-0.4\sigma)$	$\sigma_8(0.61)$	$0.5832 \pm 0.0095 \quad (-0.0\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.18 \quad (-0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.98 \pm 0.23 \quad (-0.1\sigma)$	$f\sigma_8(2.33)$	$0.2938 \pm 0.0050 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$z_*$	$1089.79 \pm 0.39 \quad (-0.5\sigma)$	$\sigma_8(2.33)$	$0.3025 \pm 0.0055 \quad (+0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16 \quad (-0.0\sigma)$	$r_*$	$146.1 \pm 2.1 \quad (+0.0\sigma)$	$f_{2000}^{143}$	$28 \pm 3 \quad (-0.3\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.1\sigma)$	$100\theta_*$	$1.04144 \pm 0.00060 \quad (+0.0\sigma)$	$f_{2000}^{217}$	$106.1 \pm 2.3 \quad (-0.3\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.03 \pm 0.19 \quad (+0.0\sigma)$	$f_{2000}^{143 \times 217}$	$31.1 \pm 2.4 \quad (-0.3\sigma)$
$c_{TE}$	$0.9956 \pm 0.0051$	$z_{\mathrm{drag}}$	$1059.14 \pm 0.84 \quad (+0.3\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.08 \pm 0.76 \quad (-0.3\sigma)$
$c_{EE}$	$0.9902 \pm 0.0056$	$r_{\mathrm{drag}}$	$148.9 \pm 2.2 \quad (+0.0\sigma)$	$\chi_{\mathrm{small}}^2$	$396.8 \pm 1.5 \quad (-0.0\sigma)$
$H_0$	$66.2 \pm 1.6 \quad (+0.2\sigma)$	$k_{\mathrm{D}}$	$0.1395 \pm 0.0015 \quad (+0.0\sigma)$	$\chi_{\mathrm{lowl}}^2$	$24.1 \pm 1.5 \quad (-0.2\sigma)$
$\Omega_{\Lambda}$	$0.680 \pm 0.011 \quad (+0.3\sigma)$	$100\theta_{\mathrm{D}}$	$0.16052 \pm 0.00052 \quad (-0.3\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11513.8 \pm 5.7 \quad (+829.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.320 \pm 0.011 \quad (-0.3\sigma)$	$z_{\mathrm{eq}}$	$3412 \pm 37 \quad (-0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.9 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1403 \pm 0.0034 \quad (-0.1\sigma)$	$k_{\mathrm{eq}}$	$0.01030 \pm 0.00011 \quad (-0.3\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11943.8 \pm 6.0 \quad (+798.8\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.0930_{-0.0045}^{+0.0040} \quad (+0.0\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8111 \pm 0.0070 \quad (+0.3\sigma)$		
$\sigma_8$	$0.802 \pm 0.011 \quad (-0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4484 \pm 0.0035 \quad (+0.2\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11951.65; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.66; R - 1 = 0.01144$$



**7.21 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Cooke17\_Aver15**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02220 \pm 0.00020 \quad (+0.6\sigma)$	$S_8$	$0.827 \pm 0.016 \quad (-0.5\sigma)$	$H(0.15)$	$72.0 \pm 1.3 \quad (+0.3\sigma)$
$\Omega_{\text{c}}h^2$	$0.1183 \pm 0.0026 \quad (-0.3\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4532 \pm 0.0089 \quad (-0.5\sigma)$	$D_{\text{M}}(0.15)$	$650 \pm 12 \quad (-0.3\sigma)$
$100\theta_{\text{MC}}$	$1.04103 \pm 0.00040 \quad (+0.1\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6036 \pm 0.0086 \quad (-0.5\sigma)$	$H(0.38)$	$82.1 \pm 1.3 \quad (+0.2\sigma)$
$\tau$	$0.0519 \pm 0.0079 \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.985 \pm 0.012 \quad (-0.5\sigma)$	$D_{\text{M}}(0.38)$	$1549 \pm 27 \quad (-0.3\sigma)$
$N_{\text{eff}}$	$2.95 \pm 0.17 \quad (+0.0\sigma)$	$r_{\text{drag}}h$	$98.8 \pm 1.3 \quad (+0.4\sigma)$	$H(0.51)$	$88.8 \pm 1.3 \quad (+0.2\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.033 \pm 0.018 \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.440 \pm 0.030 \quad (-0.4\sigma)$	$D_{\text{M}}(0.51)$	$2005 \pm 34 \quad (-0.3\sigma)$
$n_{\text{s}}$	$0.9620 \pm 0.0078 \quad (+0.3\sigma)$	$z_{\text{re}}$	$7.42 \pm 0.82 \quad (+0.0\sigma)$	$H(0.61)$	$94.5 \pm 1.3 \quad (+0.2\sigma)$
$y_{\text{cal}}$	$1.0004 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_{\text{s}}$	$2.076 \pm 0.037 \quad (-0.0\sigma)$	$D_{\text{M}}(0.61)$	$2333 \pm 39 \quad (-0.3\sigma)$
$A_{100}^{\text{PS}}$	$237 \pm 25 \quad (-0.1\sigma)$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.871 \pm 0.016 \quad (-0.2\sigma)$	$H(2.33)$	$234.9 \pm 2.3 \quad (-0.2\sigma)$
$A_{143}^{\text{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$D_{40}$	$1230 \pm 15 \quad (-0.3\sigma)$	$D_{\text{M}}(2.33)$	$5813 \pm 74 \quad (-0.1\sigma)$
$A_{217}^{\text{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$D_{220}$	$5714 \pm 38 \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4572 \pm 0.0083 \quad (-0.5\sigma)$
$A_{217}^{\text{CIB}}$	$39 \pm 7 \quad (-0.2\sigma)$	$D_{810}$	$2533 \pm 14 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7423 \pm 0.0095 \quad (-0.2\sigma)$
$A_{143}^{\text{tSZ}}$	$3.9_{-2.6}^{+1.8} \quad (+0.0\sigma)$	$D_{1420}$	$816.1 \pm 4.8 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4740 \pm 0.0069 \quad (-0.5\sigma)$
$r_{143 \times 217}^{\text{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$D_{2000}$	$230.7 \pm 1.8 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6573 \pm 0.0088 \quad (-0.1\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	$0.55_{-0.17}^{+0.42} \quad (-0.1\sigma)$	$n_{\text{s},0.002}$	$0.9620 \pm 0.0078 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4719 \pm 0.0064 \quad (-0.5\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}$	$0.2439 \pm 0.0023 \quad (+0.1\sigma)$	$\sigma_8(0.51)$	$0.6149 \pm 0.0083 \quad (-0.1\sigma)$
$A^{\text{kSZ}}$	$< 6.01 \quad (-0.1\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.2453 \pm 0.0023 \quad (+0.1\sigma)$	$f\sigma_8(0.61)$	$0.4664 \pm 0.0061 \quad (-0.4\sigma)$
$A_{100}^{\text{dust}}$	$1.00 \pm 0.20 \quad (-0.0\sigma)$	$10^5 \text{D/H}$	$2.583 \pm 0.043 \quad (-0.6\sigma)$	$\sigma_8(0.61)$	$0.5849 \pm 0.0081 \quad (-0.1\sigma)$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$\text{Age/Gyr}$	$13.91 \pm 0.18 \quad (-0.1\sigma)$	$f\sigma_8(2.33)$	$0.2947 \pm 0.0042 \quad (+0.0\sigma)$
$A_{217}^{\text{dust}}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$z_*$	$1089.89 \pm 0.33 \quad (-0.7\sigma)$	$\sigma_8(2.33)$	$0.3036 \pm 0.0046 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16 \quad (+0.0\sigma)$	$r_*$	$145.5 \pm 1.6 \quad (+0.0\sigma)$	$f_{2000}^{143}$	$29.1 \pm 3.1 \quad (-0.3\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$100\theta_*$	$1.04129 \pm 0.00048 \quad (+0.1\sigma)$	$f_{2000}^{217}$	$106.4 \pm 2.1 \quad (-0.3\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (+0.0\sigma)$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.98 \pm 0.15 \quad (+0.0\sigma)$	$f_{2000}^{143 \times 217}$	$31.6 \pm 2.2 \quad (-0.4\sigma)$
$c_{TE}$	$0.9962 \pm 0.0050$	$z_{\text{drag}}$	$1059.32 \pm 0.69 \quad (+0.4\sigma)$	$\chi_{\text{small}}^2$	$396.8 \pm 1.6 \quad (-0.0\sigma)$
$c_{EE}$	$0.9911 \pm 0.0053$	$r_{\text{drag}}$	$148.3 \pm 1.6 \quad (+0.0\sigma)$	$\chi_{\text{lowl}}^2$	$23.7 \pm 1.3 \quad (-0.4\sigma)$
$H_0$	$66.7 \pm 1.3 \quad (+0.3\sigma)$	$k_{\text{D}}$	$0.1399 \pm 0.0012 \quad (+0.1\sigma)$	$\chi_{\text{CamSpec}}^2$	$11514.2 \pm 5.8 \quad (+817.5\sigma)$
$\Omega_{\Lambda}$	$0.682 \pm 0.010 \quad (+0.4\sigma)$	$100\theta_{\text{D}}$	$0.16068 \pm 0.00039 \quad (-0.4\sigma)$	$\chi_{\text{Aver15}}^2$	$0.35 \pm 0.48 \quad (-0.2\sigma)$
$\Omega_{\text{m}}$	$0.318 \pm 0.010 \quad (-0.4\sigma)$	$z_{\text{eq}}$	$3404 \pm 37 \quad (-0.4\sigma)$	$\chi_{\text{Cooke17}}^2$	$0.35 \pm 0.45 \quad (+0.2\sigma)$
$\Omega_{\text{m}}h^2$	$0.1411 \pm 0.0027 \quad (-0.2\sigma)$	$k_{\text{eq}}$	$0.01032 \pm 0.00011 \quad (-0.4\sigma)$	$\chi_{\text{prior}}^2$	$7.9 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_{\text{m}}h^3$	$0.0941 \pm 0.0033 \quad (+0.1\sigma)$	$100\theta_{\text{eq}}$	$0.8126 \pm 0.0070 \quad (+0.4\sigma)$	$\chi_{\text{CMB}}^2$	$11934.7 \pm 5.9 \quad (+821.9\sigma)$
$\sigma_8$	$0.804 \pm 0.010 \quad (-0.3\sigma)$	$100\theta_{\text{s,eq}}$	$0.4491 \pm 0.0036 \quad (+0.4\sigma)$	$\chi_{\text{Abund}}^2$	$0.69 \pm 0.73 \quad (-0.0\sigma)$
$\bar{\chi}_{\text{eff}}^2 = 11943.28; \Delta\bar{\chi}_{\text{eff}}^2 = 4451.02; R - 1 = 0.01315$					



## 7.22 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02221 \pm 0.00023 \quad (+0.5\sigma)$	$\sigma_8$	$0.804 \pm 0.011 \quad (-0.3\sigma)$	$100\theta_{\text{eq}}$	$0.8127 \pm 0.0076 \quad (+0.3\sigma)$
$\Omega_{\text{c}}h^2$	$0.1179 \pm 0.0034 \quad (-0.3\sigma)$	$S_8$	$0.827 \pm 0.016 \quad (-0.5\sigma)$	$100\theta_{\text{s,eq}}$	$0.4492 \pm 0.0039 \quad (+0.3\sigma)$
$100\theta_{\text{MC}}$	$1.04108 \pm 0.00047 \quad (+0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4531 \pm 0.0089 \quad (-0.5\sigma)$	$H(0.15)$	$71.9 \pm 1.6 \quad (+0.1\sigma)$
$\tau$	$0.0538^{+0.0043}_{-0.0082} \quad (+0.1\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6036 \pm 0.0089 \quad (-0.5\sigma)$	$D_{\text{M}}(0.15)$	$651 \pm 16 \quad (-0.1\sigma)$
$N_{\text{eff}}$	$2.93 \pm 0.22 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.985 \pm 0.012 \quad (-0.5\sigma)$	$H(0.38)$	$82.1 \pm 1.6 \quad (+0.0\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.036^{+0.014}_{-0.019} \quad (-0.1\sigma)$	$r_{\text{drag}}h$	$98.9 \pm 1.4 \quad (+0.3\sigma)$	$D_{\text{M}}(0.38)$	$1550 \pm 35 \quad (-0.1\sigma)$
$n_{\text{s}}$	$0.9618 \pm 0.0094 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.443 \pm 0.031 \quad (-0.3\sigma)$	$H(0.51)$	$88.8 \pm 1.6 \quad (+0.0\sigma)$
$y_{\text{cal}}$	$1.0005 \pm 0.0025 \quad (+0.0\sigma)$	$z_{\text{re}}$	$7.60^{+0.47}_{-0.85} \quad (-0.0\sigma)$	$D_{\text{M}}(0.51)$	$2007 \pm 43 \quad (-0.1\sigma)$
$A_{100}^{\text{PS}}$	$236 \pm 25 \quad (-0.1\sigma)$	$10^9 A_{\text{s}}$	$2.082^{+0.029}_{-0.039} \quad (-0.1\sigma)$	$H(0.61)$	$94.4 \pm 1.7 \quad (-0.0\sigma)$
$A_{143}^{\text{PS}}$	$38 \pm 9 \quad (-0.2\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.869 \pm 0.020 \quad (-0.2\sigma)$	$D_{\text{M}}(0.61)$	$2335 \pm 49 \quad (-0.1\sigma)$
$A_{217}^{\text{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$D_{40}$	$1231 \pm 16 \quad (-0.1\sigma)$	$H(2.33)$	$234.6 \pm 3.0 \quad (-0.2\sigma)$
$A_{217}^{\text{CIB}}$	$39 \pm 7 \quad (-0.2\sigma)$	$D_{220}$	$5715 \pm 38 \quad (+0.3\sigma)$	$D_{\text{M}}(2.33)$	$5819 \pm 98 \quad (+0.0\sigma)$
$A_{143}^{\text{tSZ}}$	$3.9^{+1.9}_{-2.5} \quad (+0.0\sigma)$	$D_{810}$	$2533 \pm 14 \quad (+0.0\sigma)$	$f\sigma_8(0.15)$	$0.4571 \pm 0.0083 \quad (-0.5\sigma)$
$r_{143 \times 217}^{\text{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$D_{1420}$	$816.4 \pm 5.0 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.743 \pm 0.011 \quad (-0.3\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	$0.54^{+0.38}_{-0.21} \quad (-0.1\sigma)$	$D_{2000}$	$230.9 \pm 2.1 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4740 \pm 0.0071 \quad (-0.5\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$n_{\text{s},0.002}$	$0.9618 \pm 0.0094 \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.658 \pm 0.010 \quad (-0.2\sigma)$
$A^{\text{kSZ}}$	$< 5.97 \quad (-0.1\sigma)$	$Y_{\text{P}}$	$0.2437 \pm 0.0031 \quad (-0.1\sigma)$	$f\sigma_8(0.51)$	$0.4719 \pm 0.0066 \quad (-0.5\sigma)$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.2450 \pm 0.0031 \quad (-0.1\sigma)$	$\sigma_8(0.51)$	$0.6152 \pm 0.0097 \quad (-0.2\sigma)$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$10^5 \text{D}/\text{H}$	$2.576 \pm 0.057 \quad (-0.5\sigma)$	$f\sigma_8(0.61)$	$0.4665 \pm 0.0064 \quad (-0.5\sigma)$
$A_{217}^{\text{dust}}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$\text{Age}/\text{Gyr}$	$13.93 \pm 0.23 \quad (+0.0\sigma)$	$\sigma_8(0.61)$	$0.5852 \pm 0.0094 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.16 \quad (-0.0\sigma)$	$z_*$	$1089.83 \pm 0.41 \quad (-0.7\sigma)$	$f\sigma_8(2.33)$	$0.2949 \pm 0.0049 \quad (-0.1\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$r_*$	$145.7 \pm 2.1 \quad (+0.1\sigma)$	$\sigma_8(2.33)$	$0.3038 \pm 0.0054 \quad (-0.1\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$100\theta_*$	$1.04136 \pm 0.00060 \quad (+0.2\sigma)$	$f_{2000}^{143}$	$29 \pm 3 \quad (-0.4\sigma)$
$c_{TE}$	$0.9959 \pm 0.0051$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.99 \pm 0.20 \quad (+0.1\sigma)$	$f_{2000}^{217}$	$106.2 \pm 2.3 \quad (-0.4\sigma)$
$c_{EE}$	$0.9906 \pm 0.0057$	$z_{\text{drag}}$	$1059.31 \pm 0.84 \quad (+0.2\sigma)$	$f_{2000}^{143 \times 217}$	$31.3 \pm 2.5 \quad (-0.4\sigma)$
$H_0$	$66.6 \pm 1.7 \quad (+0.1\sigma)$	$r_{\text{drag}}$	$148.5 \pm 2.2 \quad (+0.1\sigma)$	$\chi_{\text{small}}^2$	$396.7 \pm 1.6 \quad (-0.0\sigma)$
$\Omega_{\Lambda}$	$0.682 \pm 0.011 \quad (+0.3\sigma)$	$k_{\text{D}}$	$0.1398 \pm 0.0015 \quad (-0.1\sigma)$	$\chi_{\text{lowl}}^2$	$23.7 \pm 1.5 \quad (-0.2\sigma)$
$\Omega_{\text{m}}$	$0.318 \pm 0.011 \quad (-0.3\sigma)$	$100\theta_{\text{D}}$	$0.16062 \pm 0.00053 \quad (-0.4\sigma)$	$\chi_{\text{CamSpec}}^2$	$11514.4 \pm 5.9 \quad (+775.8\sigma)$
$\Omega_{\text{m}}h^2$	$0.1408 \pm 0.0035 \quad (-0.3\sigma)$	$z_{\text{eq}}$	$3403 \pm 40 \quad (-0.2\sigma)$	$\chi_{\text{prior}}^2$	$7.9 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_{\text{m}}h^3$	$0.0938 \pm 0.0044 \quad (-0.1\sigma)$	$k_{\text{eq}}$	$0.01030 \pm 0.00013 \quad (-0.4\sigma)$	$\chi_{\text{CMB}}^2$	$11934.9 \pm 5.8 \quad (+808.0\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 11942.78; \Delta\bar{\chi}_{\text{eff}}^2 = 4450.92; R - 1 = 0.01065$$



### 7.23 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02218 \pm 0.00022 \quad (+0.4\sigma)$	$S_8$	$0.828 \pm 0.013 \quad (-0.4\sigma)$	$H(0.15)$	$71.6 \pm 1.6 \quad (+0.1\sigma)$
$\Omega_c h^2$	$0.1175 \pm 0.0033 \quad (-0.2\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4538 \pm 0.0070 \quad (-0.4\sigma)$	$D_M(0.15)$	$653 \pm 15 \quad (-0.1\sigma)$
$100\theta_{MC}$	$1.04113 \pm 0.00047 \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6038 \pm 0.0072 \quad (-0.4\sigma)$	$H(0.38)$	$81.8 \pm 1.6 \quad (+0.0\sigma)$
$\tau$	$0.0540^{+0.0047}_{-0.0077} \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9865 \pm 0.0089 \quad (-0.4\sigma)$	$D_M(0.38)$	$1556 \pm 34 \quad (-0.1\sigma)$
$N_{\text{eff}}$	$2.89 \pm 0.22 \quad (-0.1\sigma)$	$r_{\text{drag}} h$	$98.7 \pm 1.2 \quad (+0.2\sigma)$	$H(0.51)$	$88.5 \pm 1.6 \quad (+0.0\sigma)$
$\ln(10^{10} A_s)$	$3.035^{+0.014}_{-0.018} \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.448 \pm 0.025 \quad (-0.3\sigma)$	$D_M(0.51)$	$2015 \pm 43 \quad (-0.1\sigma)$
$n_s$	$0.9601 \pm 0.0092 \quad (+0.1\sigma)$	$z_{\text{re}}$	$7.62^{+0.50}_{-0.79} \quad (+0.0\sigma)$	$H(0.61)$	$94.1 \pm 1.6 \quad (+0.0\sigma)$
$y_{\text{cal}}$	$1.0006 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_s$	$2.081^{+0.028}_{-0.037} \quad (-0.0\sigma)$	$D_M(0.61)$	$2344 \pm 48 \quad (-0.1\sigma)$
$A_{100}^{\text{PS}}$	$236 \pm 25 \quad (-0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.868 \pm 0.019 \quad (-0.1\sigma)$	$H(2.33)$	$234.2 \pm 3.0 \quad (-0.1\sigma)$
$A_{143}^{\text{PS}}$	$38 \pm 9 \quad (-0.2\sigma)$	$D_{40}$	$1234 \pm 15 \quad (-0.1\sigma)$	$D_M(2.33)$	$5836 \pm 97 \quad (-0.0\sigma)$
$A_{217}^{\text{PS}}$	$104 \pm 10 \quad (+0.1\sigma)$	$D_{220}$	$5718 \pm 39 \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4577 \pm 0.0065 \quad (-0.4\sigma)$
$A_{217}^{\text{CIB}}$	$38 \pm 7 \quad (-0.2\sigma)$	$D_{810}$	$2533 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.742 \pm 0.010 \quad (-0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$3.9^{+1.9}_{-2.5} \quad (+0.0\sigma)$	$D_{1420}$	$816.8 \pm 5.0 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4742 \pm 0.0057 \quad (-0.4\sigma)$
$r_{143 \times 217}^{\text{PS}}$	$0.67 \pm 0.13 \quad (+0.1\sigma)$	$D_{2000}$	$231.2 \pm 2.1 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6566^{+0.0091}_{-0.010} \quad (-0.1\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	$0.54^{+0.38}_{-0.21} \quad (-0.1\sigma)$	$n_{s,0.002}$	$0.9601 \pm 0.0092 \quad (+0.1\sigma)$	$f\sigma_8(0.51)$	$0.4719 \pm 0.0055 \quad (-0.4\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.2432 \pm 0.0031 \quad (-0.0\sigma)$	$\sigma_8(0.51)$	$0.6141^{+0.0088}_{-0.0099} \quad (-0.1\sigma)$
$A^{\text{kSZ}}$	$< 5.90 \quad (-0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.2445 \pm 0.0031 \quad (-0.0\sigma)$	$f\sigma_8(0.61)$	$0.4664 \pm 0.0055 \quad (-0.3\sigma)$
$A_{100}^{\text{dust}}$	$1.00 \pm 0.20 \quad (-0.0\sigma)$	$10^5 \text{D/H}$	$2.567 \pm 0.056 \quad (-0.4\sigma)$	$\sigma_8(0.61)$	$0.5842^{+0.0085}_{-0.0096} \quad (-0.1\sigma)$
$A_{143}^{\text{dust}}$	$0.95 \pm 0.18 \quad (-0.1\sigma)$	$\text{Age/Gyr}$	$13.97 \pm 0.23 \quad (-0.0\sigma)$	$f\sigma_8(2.33)$	$0.2943^{+0.0045}_{-0.0051} \quad (-0.1\sigma)$
$A_{217}^{\text{dust}}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$z_*$	$1089.79 \pm 0.39 \quad (-0.5\sigma)$	$\sigma_8(2.33)$	$0.3031^{+0.0050}_{-0.0056} \quad (-0.0\sigma)$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.16 \quad (-0.0\sigma)$	$r_*$	$146.1 \pm 2.1 \quad (+0.1\sigma)$	$f_{2000}^{143}$	$28 \pm 3 \quad (-0.3\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$100\theta_*$	$1.04144 \pm 0.00060 \quad (+0.1\sigma)$	$f_{2000}^{217}$	$106.1 \pm 2.3 \quad (-0.3\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$D_M(z_*)/\text{Gpc}$	$14.03 \pm 0.19 \quad (+0.1\sigma)$	$f_{2000}^{143 \times 217}$	$31.1 \pm 2.4 \quad (-0.4\sigma)$
$c_{TE}$	$0.9956 \pm 0.0051$	$z_{\text{drag}}$	$1059.18 \pm 0.84 \quad (+0.2\sigma)$	$\chi_{\text{lensing}}^2$	$9.05 \pm 0.72 \quad (-0.3\sigma)$
$c_{EE}$	$0.9902 \pm 0.0056$	$r_{\text{drag}}$	$148.8 \pm 2.2 \quad (+0.1\sigma)$	$\chi_{\text{small}}^2$	$396.7 \pm 1.5 \quad (+0.0\sigma)$
$H_0$	$66.3 \pm 1.6 \quad (+0.1\sigma)$	$k_D$	$0.1396 \pm 0.0015 \quad (+0.0\sigma)$	$\chi_{\text{lowl}}^2$	$24.0 \pm 1.5 \quad (-0.2\sigma)$
$\Omega_\Lambda$	$0.681 \pm 0.010 \quad (+0.2\sigma)$	$100\theta_D$	$0.16054 \pm 0.00052 \quad (-0.3\sigma)$	$\chi_{\text{CamSpec}}^2$	$11513.8 \pm 5.7 \quad (+828.3\sigma)$
$\Omega_m$	$0.319 \pm 0.010 \quad (-0.2\sigma)$	$z_{\text{eq}}$	$3409 \pm 36 \quad (-0.2\sigma)$	$\chi_{\text{prior}}^2$	$7.9 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_m h^2$	$0.1403 \pm 0.0034 \quad (-0.2\sigma)$	$k_{\text{eq}}$	$0.01029 \pm 0.00011 \quad (-0.3\sigma)$	$\chi_{\text{CMB}}^2$	$11943.5 \pm 5.9 \quad (+812.5\sigma)$
$\Omega_m h^3$	$0.0931^{+0.0040}_{-0.0045} \quad (-0.0\sigma)$	$100\theta_{\text{eq}}$	$0.8116 \pm 0.0069 \quad (+0.2\sigma)$		
$\sigma_8$	$0.803 \pm 0.011 \quad (-0.2\sigma)$	$100\theta_{s,\text{eq}}$	$0.4486 \pm 0.0035 \quad (+0.2\sigma)$		

$\bar{\chi}_{\text{eff}}^2 = 11951.41$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4450.71$ ;  $R - 1 = 0.01353$



## 7.24 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Cooke17\_Aver15\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00020 \quad (+0.6\sigma)$	$S_8$	$0.828 \pm 0.016 \quad (-0.5\sigma)$	$H(0.15)$	$72.0 \pm 1.3 \quad (+0.3\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1183 \pm 0.0026 \quad (-0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4536 \pm 0.0088 \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.15)$	$650 \pm 12 \quad (-0.3\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04103 \pm 0.00040 \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6044 \pm 0.0084 \quad (-0.5\sigma)$	$H(0.38)$	$82.2 \pm 1.3 \quad (+0.2\sigma)$
$\tau$	$0.0537^{+0.0043}_{-0.0081} \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.986 \pm 0.011 \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.38)$	$1548 \pm 27 \quad (-0.3\sigma)$
$N_{\mathrm{eff}}$	$2.95 \pm 0.17 \quad (+0.0\sigma)$	$r_{\mathrm{drag}}h$	$98.9 \pm 1.3 \quad (+0.4\sigma)$	$H(0.51)$	$88.9 \pm 1.3 \quad (+0.2\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.037^{+0.013}_{-0.018} \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.443 \pm 0.030 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.51)$	$2004 \pm 34 \quad (-0.2\sigma)$
$n_{\mathrm{s}}$	$0.9625 \pm 0.0078 \quad (+0.3\sigma)$	$z_{\mathrm{re}}$	$7.60^{+0.46}_{-0.84} \quad (+0.0\sigma)$	$H(0.61)$	$94.5 \pm 1.3 \quad (+0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0024 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.084^{+0.026}_{-0.037} \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2331 \pm 38 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$237 \pm 25 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.871 \pm 0.016 \quad (-0.2\sigma)$	$H(2.33)$	$235.0 \pm 2.3 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.1\sigma)$	$D_{40}$	$1230 \pm 15 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(2.33)$	$5810 \pm 74 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$D_{220}$	$5713 \pm 38 \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4577 \pm 0.0082 \quad (-0.5\sigma)$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7 \quad (-0.2\sigma)$	$D_{810}$	$2533 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7437^{+0.0082}_{-0.0093} \quad (-0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.8}_{-2.6} \quad (+0.0\sigma)$	$D_{1420}$	$816.1 \pm 4.8 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4746 \pm 0.0068 \quad (-0.5\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$D_{2000}$	$230.7 \pm 1.8 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6586^{+0.0075}_{-0.0086} \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.41}_{-0.19} \quad (-0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9625 \pm 0.0078 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4725 \pm 0.0061 \quad (-0.5\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.2440 \pm 0.0023 \quad (+0.0\sigma)$	$\sigma_8(0.51)$	$0.6161^{+0.0072}_{-0.0082} \quad (-0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 6.01 \quad (-0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2453 \pm 0.0023 \quad (+0.0\sigma)$	$f\sigma_8(0.61)$	$0.4672 \pm 0.0058 \quad (-0.4\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.00 \pm 0.20 \quad (-0.0\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.584 \pm 0.043 \quad (-0.6\sigma)$	$\sigma_8(0.61)$	$0.5861^{+0.0069}_{-0.0079} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.18 \quad (-0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.91 \pm 0.18 \quad (-0.1\sigma)$	$f\sigma_8(2.33)$	$0.2953^{+0.0037}_{-0.0041} \quad (-0.0\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$z_*$	$1089.89 \pm 0.33 \quad (-0.7\sigma)$	$\sigma_8(2.33)$	$0.3042^{+0.0040}_{-0.0045} \quad (+0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (+0.0\sigma)$	$r_*$	$145.5 \pm 1.6 \quad (+0.1\sigma)$	$f_{2000}^{143}$	$29.0 \pm 3.1 \quad (-0.3\sigma)$
$c_{100}$	$0.9975 \pm 0.0010 \quad (+0.0\sigma)$	$100\theta_*$	$1.04129 \pm 0.00048 \quad (+0.1\sigma)$	$f_{2000}^{217}$	$106.4 \pm 2.1 \quad (-0.3\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.97 \pm 0.15 \quad (+0.1\sigma)$	$f_{2000}^{143 \times 217}$	$31.5 \pm 2.2 \quad (-0.4\sigma)$
$c_{TE}$	$0.9961 \pm 0.0050$	$z_{\mathrm{drag}}$	$1059.35 \pm 0.69 \quad (+0.4\sigma)$	$\chi_{\mathrm{small}}^2$	$396.7 \pm 1.6 \quad (-0.0\sigma)$
$c_{EE}$	$0.9911 \pm 0.0052$	$r_{\mathrm{drag}}$	$148.2 \pm 1.6 \quad (+0.0\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.6 \pm 1.3 \quad (-0.3\sigma)$
$H_0$	$66.7 \pm 1.3 \quad (+0.3\sigma)$	$k_{\mathrm{D}}$	$0.1399 \pm 0.0012 \quad (+0.0\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11514.1 \pm 5.8 \quad (+821.1\sigma)$
$\Omega_{\Lambda}$	$0.683 \pm 0.010 \quad (+0.4\sigma)$	$100\theta_{\mathrm{D}}$	$0.16069 \pm 0.00039 \quad (-0.4\sigma)$	$\chi_{\mathrm{Aver15}}^2$	$0.35 \pm 0.49 \quad (-0.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.317 \pm 0.010 \quad (-0.4\sigma)$	$z_{\mathrm{eq}}$	$3402 \pm 37 \quad (-0.3\sigma)$	$\chi_{\mathrm{Cooke17}}^2$	$0.35 \pm 0.45 \quad (+0.2\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1412 \pm 0.0027 \quad (-0.2\sigma)$	$k_{\mathrm{eq}}$	$0.01032 \pm 0.00011 \quad (-0.4\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.0942 \pm 0.0033 \quad (+0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8129 \pm 0.0070 \quad (+0.4\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11934.5 \pm 5.8 \quad (+837.1\sigma)$
$\sigma_8$	$0.8054^{+0.0088}_{-0.0099} \quad (-0.3\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4493 \pm 0.0036 \quad (+0.3\sigma)$	$\chi_{\mathrm{Abund}}^2$	$0.70 \pm 0.72 \quad (-0.0\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 11943.02; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4451.03; R - 1 = 0.01235$$



## 7.25 base\_nnu\_plikHM\_TE\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022426	$0.02247 \pm 0.00040$	$r_{\text{drag}} h$	100.71	$100.9 \pm 2.4$	$100\theta_{\text{s,eq}}$	0.4539	$0.4543 \pm 0.0070$
$\Omega_c h^2$	0.1162	$0.1175^{+0.0064}_{-0.0075}$	$\langle d^2 \rangle^{1/2}$	2.390	$2.387 \pm 0.054$	$H(0.15)$	72.96	$73.5^{+3.2}_{-3.7}$
$100\theta_{\text{MC}}$	1.04154	$1.04149 \pm 0.00097$	$z_{\text{re}}$	7.07	$7.10^{+0.93}_{-0.74}$	$D_{\text{M}}(0.15)$	640.0	$637 \pm 32$
$\tau$	0.0491	$0.0495^{+0.0085}_{-0.0075}$	$10^9 A_{\text{s}}$	2.0369	$2.042 \pm 0.050$	$H(0.38)$	82.86	$83.4^{+3.2}_{-3.8}$
$N_{\text{eff}}$	2.949	$3.03^{+0.45}_{-0.54}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8463	$1.849 \pm 0.030$	$D_{\text{M}}(0.38)$	1528	$1521 \pm 71$
$\ln(10^{10} A_{\text{s}})$	3.0140	$3.016 \pm 0.024$	$D_{40}$	1218.2	$1214 \pm 33$	$H(0.51)$	89.45	$90.0^{+3.3}_{-3.8}$
$n_{\text{s}}$	0.9633	$0.966 \pm 0.019$	$D_{220}$	5701	$5693 \pm 58$	$D_{\text{M}}(0.51)$	1981	$1972 \pm 90$
$A_{100}^{\text{dustTE}}$	0.1144	$0.113 \pm 0.038$	$D_{810}$	2507.7	$2507 \pm 26$	$H(0.61)$	94.97	$95.5^{+3.3}_{-3.9}$
$A_{100 \times 143}^{\text{dustTE}}$	0.1350	$0.136 \pm 0.029$	$D_{1420}$	808.3	$808 \pm 15$	$D_{\text{M}}(0.61)$	2307	$2296 \pm 100$
$A_{100 \times 217}^{\text{dustTE}}$	0.475	$0.477 \pm 0.085$	$D_{2000}$	228.4	$228.1 \pm 6.6$	$H(2.33)$	233.9	$234.9^{+6.1}_{-6.9}$
$A_{143}^{\text{dustTE}}$	0.220	$0.221 \pm 0.054$	$n_{\text{s},0.002}$	0.9633	$0.966 \pm 0.019$	$D_{\text{M}}(2.33)$	5788	$5763 \pm 210$
$A_{143 \times 217}^{\text{dustTE}}$	0.661	$0.657 \pm 0.080$	$Y_{\text{P}}$	0.2441	$0.2450 \pm 0.0068$	$f\sigma_8(0.15)$	0.4395	$0.440 \pm 0.012$
$A_{217}^{\text{dustTE}}$	2.042	$2.04 \pm 0.27$	$Y_{\text{P}}^{\text{BBN}}$	0.2454	$0.2463 \pm 0.0068$	$\sigma_8(0.15)$	0.7300	$0.733 \pm 0.019$
$c_{100}$	1.00017	$1.00017 \pm 0.00069$	$10^5 \text{D}/\text{H}$	2.542	$2.56^{+0.11}_{-0.13}$	$f\sigma_8(0.38)$	0.4592	$0.460 \pm 0.011$
$c_{217}$	0.99800	$0.99800 \pm 0.00065$	Age/Gyr	13.86	$13.80 \pm 0.50$	$\sigma_8(0.38)$	0.6480	$0.651 \pm 0.018$
$y_{\text{cal}}$	0.99998	$0.99997 \pm 0.0025$	$z_*$	1089.42	$1089.54^{+0.75}_{-0.84}$	$f\sigma_8(0.51)$	0.4588	$0.460 \pm 0.010$
$H_0$	67.80	$68.3^{+3.2}_{-3.8}$	$r_*$	145.87	$145.3 \pm 4.5$	$\sigma_8(0.51)$	0.6068	$0.610 \pm 0.017$
$\Omega_{\Lambda}$	0.6970	$0.698^{+0.020}_{-0.018}$	$100\theta_*$	1.04178	$1.0417 \pm 0.0013$	$f\sigma_8(0.61)$	0.4547	$0.456 \pm 0.010$
$\Omega_{\text{m}}$	0.3030	$0.302^{+0.018}_{-0.020}$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.002	$13.95 \pm 0.42$	$\sigma_8(0.61)$	0.5776	$0.580 \pm 0.017$
$\Omega_{\text{m}} h^2$	0.1393	$0.1406^{+0.0067}_{-0.0078}$	$z_{\text{drag}}$	1059.70	$1060.0 \pm 1.7$	$f\sigma_8(2.33)$	0.2916	$0.2930^{+0.0084}_{-0.0093}$
$\Omega_{\text{m}} h^3$	0.0944	$0.0962^{+0.0083}_{-0.011}$	$r_{\text{drag}}$	148.54	$147.9 \pm 4.7$	$\sigma_8(2.33)$	0.3010	$0.3025^{+0.0093}_{-0.010}$
$\sigma_8$	0.7891	$0.792 \pm 0.019$	$k_{\text{D}}$	0.13977	$0.1403 \pm 0.0033$	$\chi_{\text{small}}^2$	395.65	$396.8 \pm 1.6$
$S_8$	0.7931	$0.795 \pm 0.024$	$100\theta_{\text{D}}$	0.16053	$0.1607^{+0.0011}_{-0.0012}$	$\chi_{\text{plikTE}}^2$	852.89	$860.8 \pm 3.9$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4344	$0.435 \pm 0.013$	$z_{\text{eq}}$	3357	$3355 \pm 72$	$\chi_{\text{prior}}^2$	0.36	$7.4 \pm 3.6$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5855	$0.587 \pm 0.013$	$k_{\text{eq}}$	0.010180	$0.01022 \pm 0.00022$	$\chi_{\text{CMB}}^2$	1248.54	$1257.6 \pm 4.2$
$\sigma_8/h^{0.5}$	0.9583	$0.959 \pm 0.018$	$100\theta_{\text{eq}}$	0.8220	$0.823 \pm 0.014$			

Best-fit  $\chi_{\text{eff}}^2 = 1248.90$ ;  $\bar{\chi}_{\text{eff}}^2 = 1264.95$ ;  $R - 1 = 0.00876$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.65 plik\_rd12\_HM\_v22\_TE: 852.89



## 7.26 base\_nnu\_plikHM\_TE\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02249 \pm 0.00040$	$r_{\text{drag}} h$	$101.0 \pm 2.4$	$100\theta_{\text{s,eq}}$	$0.4547 \pm 0.0070$
$\Omega_c h^2$	$0.1177^{+0.0065}_{-0.0076}$	$\langle d^2 \rangle^{1/2}$	$2.391 \pm 0.053$	$H(0.15)$	$73.7^{+3.2}_{-3.8}$
$100\theta_{\text{MC}}$	$1.04146^{+0.00091}_{-0.0010}$	$z_{\text{re}}$	$7.46^{+0.33}_{-0.85}$	$D_{\text{M}}(0.15)$	$635 \pm 32$
$\tau$	$0.0528^{+0.0038}_{-0.0075}$	$10^9 A_{\text{s}}$	$2.057^{+0.038}_{-0.044}$	$H(0.38)$	$83.6^{+3.3}_{-3.8}$
$N_{\text{eff}}$	$3.06^{+0.45}_{-0.54}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.850^{+0.031}_{-0.028}$	$D_{\text{M}}(0.38)$	$1517 \pm 71$
$\ln(10^{10} A_{\text{s}})$	$3.024^{+0.019}_{-0.021}$	$D_{40}$	$1212 \pm 33$	$H(0.51)$	$90.2^{+3.3}_{-3.9}$
$n_{\text{s}}$	$0.968 \pm 0.018$	$D_{220}$	$5691 \pm 58$	$D_{\text{M}}(0.51)$	$1967 \pm 89$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$D_{810}$	$2508 \pm 26$	$H(0.61)$	$95.7^{+3.4}_{-3.9}$
$A_{100 \times 143}^{\text{dustTE}}$	$0.136 \pm 0.029$	$D_{1420}$	$808 \pm 15$	$D_{\text{M}}(0.61)$	$2290 \pm 100$
$A_{100 \times 217}^{\text{dustTE}}$	$0.477 \pm 0.085$	$D_{2000}$	$228.1 \pm 6.6$	$H(2.33)$	$235.2^{+6.1}_{-6.9}$
$A_{143}^{\text{dustTE}}$	$0.221 \pm 0.055$	$n_{\text{s},0.002}$	$0.968 \pm 0.018$	$D_{\text{M}}(2.33)$	$5752 \pm 210$
$A_{143 \times 217}^{\text{dustTE}}$	$0.657 \pm 0.080$	$Y_{\text{P}}$	$0.2453 \pm 0.0068$	$f\sigma_8(0.15)$	$0.442 \pm 0.012$
$A_{217}^{\text{dustTE}}$	$2.04 \pm 0.27$	$Y_{\text{P}}^{\text{BBN}}$	$0.2467 \pm 0.0068$	$\sigma_8(0.15)$	$0.736 \pm 0.018$
$c_{100}$	$1.00017 \pm 0.00069$	$10^5 \text{D/H}$	$2.56^{+0.11}_{-0.13}$	$f\sigma_8(0.38)$	$0.462 \pm 0.010$
$c_{217}$	$0.99800 \pm 0.00065$	$\text{Age/Gyr}$	$13.77 \pm 0.50$	$\sigma_8(0.38)$	$0.654 \pm 0.017$
$y_{\text{cal}}$	$0.99997 \pm 0.0025$	$z_*$	$1089.56 \pm 0.81$	$f\sigma_8(0.51)$	$0.4618 \pm 0.0098$
$H_0$	$68.5^{+3.3}_{-3.8}$	$r_*$	$145.1 \pm 4.5$	$\sigma_8(0.51)$	$0.613 \pm 0.017$
$\Omega_{\Lambda}$	$0.699^{+0.020}_{-0.018}$	$100\theta_*$	$1.0416 \pm 0.0013$	$f\sigma_8(0.61)$	$0.4578 \pm 0.0096$
$\Omega_{\text{m}}$	$0.301^{+0.018}_{-0.020}$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.93 \pm 0.42$	$\sigma_8(0.61)$	$0.583 \pm 0.016$
$\Omega_{\text{m}} h^2$	$0.1409^{+0.0068}_{-0.0079}$	$z_{\text{drag}}$	$1060.0 \pm 1.7$	$f\sigma_8(2.33)$	$0.2945^{+0.0082}_{-0.0091}$
$\Omega_{\text{m}} h^3$	$0.0967^{+0.0084}_{-0.011}$	$r_{\text{drag}}$	$147.7 \pm 4.7$	$\sigma_8(2.33)$	$0.3041^{+0.0090}_{-0.010}$
$\sigma_8$	$0.796 \pm 0.019$	$k_{\text{D}}$	$0.1404 \pm 0.0033$	$\chi_{\text{simall}}^2$	$396.4 \pm 1.1$
$S_8$	$0.797 \pm 0.024$	$100\theta_{\text{D}}$	$0.1607^{+0.0011}_{-0.0012}$	$\chi_{\text{plikTE}}^2$	$860.9 \pm 3.9$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.436 \pm 0.013$	$z_{\text{eq}}$	$3351 \pm 72$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.6$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.589 \pm 0.013$	$k_{\text{eq}}$	$0.01022 \pm 0.00022$	$\chi_{\text{CMB}}^2$	$1257.2 \pm 4.1$
$\sigma_8/h^{0.5}$	$0.962 \pm 0.018$	$100\theta_{\text{eq}}$	$0.824 \pm 0.014$		

$\bar{\chi}_{\text{eff}}^2 = 1264.59$ ;  $R - 1 = 0.01129$



## 7.27 base\_nnu\_plikHM\_EE\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}} h^2$	0.02145	$0.0228^{+0.0025}_{-0.0030}$	$D_{40}$	1247.8	$1234^{+38}_{-33}$	$D_{\mathrm{M}}(0.15)$	740	$684^{+100}_{-100}$
$\Omega_{\mathrm{c}} h^2$	0.0958	$0.108^{+0.014}_{-0.025}$	$D_{220}$	5741	$5844 \pm 280$	$H(0.38)$	73.0	$80.0^{+8.4}_{-15}$
$100\theta_{\mathrm{MC}}$	1.04375	$1.0421^{+0.0031}_{-0.0047}$	$D_{810}$	2585.1	$2583 \pm 39$	$D_{\mathrm{M}}(0.38)$	1755	$1627^{+200}_{-300}$
$\tau$	0.0511	$0.0512 \pm 0.0092$	$D_{1420}$	861.7	$850 \pm 25$	$H(0.51)$	79.3	$86.4^{+8.4}_{-15}$
$N_{\mathrm{eff}}$	1.57	$2.47^{+0.90}_{-2.1}$	$D_{2000}$	252.6	$246^{+14}_{-12}$	$D_{\mathrm{M}}(0.51)$	2268	$2105^{+300}_{-400}$
$\ln(10^{10} A_{\mathrm{s}})$	2.982	$3.010^{+0.089}_{-0.060}$	$n_{\mathrm{s},0.002}$	0.9366	$0.960^{+0.042}_{-0.050}$	$H(0.61)$	84.6	$91.8^{+8.6}_{-15}$
$n_{\mathrm{s}}$	0.9366	$0.960^{+0.042}_{-0.050}$	$Y_{\mathrm{P}}$	0.2228	$0.235 \pm 0.022$	$D_{\mathrm{M}}(0.61)$	2634	$2447^{+400}_{-400}$
$y_{\mathrm{cal}}$	1.00000	$0.9999 \pm 0.0025$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.2240	$0.236 \pm 0.023$	$H(2.33)$	214.0	$226^{+17}_{-26}$
$H_0$	58.4	$65^{+9}_{-10}$	$10^5 \mathrm{D}/\mathrm{H}$	2.220	$2.29^{+0.19}_{-0.23}$	$D_{\mathrm{M}}(2.33)$	6480	$6088^{+700}_{-800}$
$\Omega_{\Lambda}$	0.654	$0.680^{+0.077}_{-0.055}$	Age/Gyr	15.51	$14.6^{+1.8}_{-2.0}$	$f\sigma_8(0.15)$	0.4406	$0.436 \pm 0.030$
$\Omega_{\mathrm{m}}$	0.346	$0.320^{+0.055}_{-0.077}$	$z_*$	1087.27	$1087.7^{+1.6}_{-1.8}$	$\sigma_8(0.15)$	0.686	$0.714^{+0.047}_{-0.062}$
$\Omega_{\mathrm{m}} h^2$	0.1179	$0.131^{+0.016}_{-0.028}$	$r_*$	161.1	$153^{+16}_{-18}$	$f\sigma_8(0.38)$	0.4503	$0.452 \pm 0.024$
$\Omega_{\mathrm{m}} h^3$	0.0688	$0.088^{+0.014}_{-0.040}$	$100\theta_*$	1.0451	$1.0428^{+0.0042}_{-0.0061}$	$\sigma_8(0.38)$	0.605	$0.633^{+0.045}_{-0.062}$
$\sigma_8$	0.746	$0.773^{+0.048}_{-0.061}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	15.42	$14.6 \pm 1.5$	$f\sigma_8(0.51)$	0.4453	$0.450 \pm 0.023$
$S_8$	0.801	$0.791^{+0.056}_{-0.066}$	$z_{\mathrm{drag}}$	1054.7	$1059.1 \pm 8.6$	$\sigma_8(0.51)$	0.565	$0.592^{+0.043}_{-0.061}$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	0.4390	$0.433^{+0.031}_{-0.036}$	$r_{\mathrm{drag}}$	164.4	$155^{+17}_{-19}$	$f\sigma_8(0.61)$	0.4383	$0.446 \pm 0.024$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	0.5723	$0.578 \pm 0.030$	$k_{\mathrm{D}}$	0.1296	$0.137^{+0.011}_{-0.015}$	$\sigma_8(0.61)$	0.537	$0.564^{+0.042}_{-0.061}$
$\sigma_8/h^{0.5}$	0.9766	$0.963^{+0.043}_{-0.049}$	$100\theta_{\mathrm{D}}$	0.15718	$0.1583^{+0.0018}_{-0.0023}$	$f\sigma_8(2.33)$	0.2697	$0.284^{+0.022}_{-0.033}$
$r_{\mathrm{drag}} h$	95.9	$99.6^{+6.7}_{-8.3}$	$z_{\mathrm{eq}}$	3496	$3420 \pm 180$	$\sigma_8(2.33)$	0.2767	$0.294^{+0.024}_{-0.038}$
$\langle d^2 \rangle^{1/2}$	2.456	$2.41 \pm 0.11$	$k_{\mathrm{eq}}$	0.00955	$0.00992^{+0.00058}_{-0.00077}$	$\chi_{\mathrm{simall}}^2$	395.57	$396.7 \pm 1.5$
$z_{\mathrm{re}}$	6.96	$6.97 \pm 0.90$	$100\theta_{\mathrm{eq}}$	0.7954	$0.814^{+0.035}_{-0.041}$	$\chi_{\mathrm{plikEE}}^2$	737.95	$744.0 \pm 3.5$
$10^9 A_{\mathrm{s}}$	1.973	$2.03^{+0.17}_{-0.14}$	$100\theta_{\mathrm{s},\mathrm{eq}}$	0.4407	$0.449^{+0.017}_{-0.019}$	$\chi_{\mathrm{prior}}^2$	0.000	$0.99 \pm 1.4$
$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.781	$1.84^{+0.15}_{-0.094}$	$H(0.15)$	63.4	$70^{+8}_{-10}$	$\chi_{\mathrm{CMB}}^2$	1133.52	$1140.8 \pm 3.8$

Best-fit  $\chi_{\mathrm{eff}}^2 = 1133.52$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1141.76$ ;  $R - 1 = 0.00807$

$\chi_{\mathrm{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.57 plik\_rd12\_HM\_v22\_EE: 737.95



## 7.28 base\_nnu\_plikHM\_EE\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.0231 \pm 0.0027$	$D_{40}$	$1231^{+39}_{-33}$	$D_{\mathrm{M}}(0.15)$	$669^{+100}_{-100}$
$\Omega_{\mathrm{c}}h^2$	$0.111^{+0.016}_{-0.025}$	$D_{220}$	$5861^{+300}_{-270}$	$H(0.38)$	$82^{+10}_{-10}$
$100\theta_{\mathrm{MC}}$	$1.0416^{+0.0028}_{-0.0046}$	$D_{810}$	$2583 \pm 39$	$D_{\mathrm{M}}(0.38)$	$1593^{+200}_{-300}$
$\tau$	$0.0553^{+0.0047}_{-0.0082}$	$D_{1420}$	$847 \pm 25$	$H(0.51)$	$88.0^{+9.7}_{-15}$
$N_{\mathrm{eff}}$	$2.7^{+1.1}_{-2.0}$	$D_{2000}$	$244 \pm 13$	$D_{\mathrm{M}}(0.51)$	$2062^{+300}_{-400}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.026^{+0.085}_{-0.052}$	$n_{\mathrm{s},0.002}$	$0.966 \pm 0.045$	$H(0.61)$	$93.4^{+9.9}_{-15}$
$n_{\mathrm{s}}$	$0.966 \pm 0.045$	$Y_{\mathrm{P}}$	$0.238 \pm 0.023$	$D_{\mathrm{M}}(0.61)$	$2399^{+300}_{-400}$
$y_{\mathrm{cal}}$	$0.9999 \pm 0.0025$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.239 \pm 0.023$	$H(2.33)$	$229^{+19}_{-25}$
$H_0$	$67^{+10}_{-10}$	$10^5 D/H$	$2.32^{+0.20}_{-0.23}$	$D_{\mathrm{M}}(2.33)$	$5987^{+700}_{-900}$
$\Omega_{\Lambda}$	$0.687^{+0.078}_{-0.051}$	Age/Gyr	$14.3^{+1.6}_{-2.1}$	$f\sigma_8(0.15)$	$0.438 \pm 0.030$
$\Omega_{\mathrm{m}}$	$0.313^{+0.051}_{-0.078}$	$z_*$	$1087.8^{+1.6}_{-1.8}$	$\sigma_8(0.15)$	$0.724^{+0.050}_{-0.059}$
$\Omega_{\mathrm{m}}h^2$	$0.135^{+0.018}_{-0.028}$	$r_*$	$151^{+15}_{-19}$	$f\sigma_8(0.38)$	$0.455 \pm 0.023$
$\Omega_{\mathrm{m}}h^3$	$0.093^{+0.018}_{-0.041}$	$100\theta_*$	$1.0421^{+0.0039}_{-0.0061}$	$\sigma_8(0.38)$	$0.643^{+0.048}_{-0.059}$
$\sigma_8$	$0.783^{+0.050}_{-0.058}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.4^{+1.4}_{-1.7}$	$f\sigma_8(0.51)$	$0.454 \pm 0.023$
$S_8$	$0.792^{+0.056}_{-0.066}$	$z_{\mathrm{drag}}$	$1060.1 \pm 8.7$	$\sigma_8(0.51)$	$0.602^{+0.047}_{-0.058}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.434^{+0.031}_{-0.036}$	$r_{\mathrm{drag}}$	$153^{+15}_{-20}$	$f\sigma_8(0.61)$	$0.450 \pm 0.023$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.582 \pm 0.029$	$k_{\mathrm{D}}$	$0.139^{+0.012}_{-0.014}$	$\sigma_8(0.61)$	$0.573^{+0.046}_{-0.057}$
$\sigma_8/h^{0.5}$	$0.964^{+0.043}_{-0.048}$	$100\theta_{\mathrm{D}}$	$0.1586^{+0.0018}_{-0.0023}$	$f\sigma_8(2.33)$	$0.289^{+0.025}_{-0.031}$
$r_{\mathrm{drag}}h$	$100.4^{+7.0}_{-8.2}$	$z_{\mathrm{eq}}$	$3400^{+170}_{-190}$	$\sigma_8(2.33)$	$0.299^{+0.027}_{-0.036}$
$\langle d^2 \rangle^{1/2}$	$2.41 \pm 0.11$	$k_{\mathrm{eq}}$	$0.01001^{+0.00062}_{-0.00076}$	$\chi_{\mathrm{simall}}^2$	$396.5 \pm 1.4$
$z_{\mathrm{re}}$	$< 7.62$	$100\theta_{\mathrm{eq}}$	$0.818^{+0.036}_{-0.041}$	$\chi_{\mathrm{plikEE}}^2$	$744.1 \pm 3.5$
$10^9 A_{\mathrm{s}}$	$2.07^{+0.17}_{-0.12}$	$100\theta_{\mathrm{s,eq}}$	$0.451 \pm 0.018$	$\chi_{\mathrm{prior}}^2$	$1.0 \pm 1.4$
$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.85^{+0.15}_{-0.085}$	$H(0.15)$	$72^{+10}_{-10}$	$\chi_{\mathrm{CMB}}^2$	$1140.6 \pm 3.7$

$\bar{\chi}_{\mathrm{eff}}^2 = 1141.65$ ;  $R - 1 = 0.00915$



## 7.29 base\_nnu\_plikHM\_TE\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022391	$0.02240 \pm 0.00029$	$\langle d^2 \rangle^{1/2}$	2.3895	$2.393 \pm 0.033$	$D_M(0.15)$	644.6	$642 \pm 20$
$\Omega_c h^2$	0.1152	$0.1165^{+0.0056}_{-0.0067}$	$z_{\text{re}}$	7.06	$7.01^{+0.95}_{-0.73}$	$H(0.38)$	82.35	$82.7 \pm 2.3$
$100\theta_{\text{MC}}$	1.04169	$1.04161 \pm 0.00089$	$10^9 A_s$	2.0347	$2.035 \pm 0.048$	$D_M(0.38)$	1538.9	$1533 \pm 46$
$\tau$	0.0493	$0.0488^{+0.0088}_{-0.0075}$	$10^9 A_s e^{-2\tau}$	1.8437	$1.846 \pm 0.029$	$H(0.51)$	88.93	$89.3 \pm 2.5$
$N_{\text{eff}}$	2.873	$2.94^{+0.34}_{-0.39}$	$D_{40}$	1213.7	$1218 \pm 25$	$D_M(0.51)$	1995	$1987 \pm 59$
$\ln(10^{10} A_s)$	3.0129	$3.013^{+0.025}_{-0.022}$	$D_{220}$	5690	$5695 \pm 58$	$H(0.61)$	94.44	$94.9^{+2.4}_{-2.7}$
$n_s$	0.9643	$0.963 \pm 0.013$	$D_{810}$	2513.2	$2508 \pm 26$	$D_M(0.61)$	2322	$2313 \pm 67$
$y_{\text{cal}}$	0.99998	$1.0000 \pm 0.0025$	$D_{1420}$	812.6	$809 \pm 14$	$H(2.33)$	232.9	$233.9^{+5.1}_{-5.8}$
$A_{100}^{\text{dustTE}}$	0.1131	$0.113 \pm 0.038$	$D_{2000}$	230.2	$228.7 \pm 6.0$	$D_M(2.33)$	5820	$5798 \pm 150$
$A_{100 \times 143}^{\text{dustTE}}$	0.1357	$0.136 \pm 0.030$	$n_{s,0.002}$	0.9643	$0.963 \pm 0.013$	$f\sigma_8(0.15)$	0.4404	$0.441 \pm 0.010$
$A_{100 \times 217}^{\text{dustTE}}$	0.473	$0.477 \pm 0.086$	$Y_{\text{P}}$	0.2431	$0.2439 \pm 0.0051$	$\sigma_8(0.15)$	0.7288	$0.730 \pm 0.017$
$A_{143}^{\text{dustTE}}$	0.219	$0.221 \pm 0.054$	$Y_{\text{P}}^{\text{BBN}}$	0.2444	$0.2452 \pm 0.0052$	$f\sigma_8(0.38)$	0.4596	$0.460 \pm 0.010$
$A_{143 \times 217}^{\text{dustTE}}$	0.659	$0.658 \pm 0.080$	$10^5 D/H$	2.522	$2.543^{+0.099}_{-0.11}$	$\sigma_8(0.38)$	0.6467	$0.648 \pm 0.016$
$A_{217}^{\text{dustTE}}$	2.030	$2.04 \pm 0.27$	Age/Gyr	13.934	$13.88 \pm 0.36$	$f\sigma_8(0.51)$	0.4589	$0.460 \pm 0.010$
$c_{100}$	1.00017	$1.00017 \pm 0.00070$	$z_*$	1089.30	$1089.46^{+0.72}_{-0.81}$	$\sigma_8(0.51)$	0.6055	$0.607 \pm 0.015$
$c_{217}$	0.99795	$0.99799 \pm 0.00065$	$r_*$	146.55	$146.0 \pm 3.7$	$f\sigma_8(0.61)$	0.4546	$0.455 \pm 0.010$
$H_0$	67.30	$67.6 \pm 2.1$	$100\theta_*$	1.04199	$1.0419 \pm 0.0011$	$\sigma_8(0.61)$	0.5763	$0.578 \pm 0.014$
$\Omega_\Lambda$	0.6947	$0.6948 \pm 0.0086$	$D_M(z_*)/\text{Gpc}$	14.065	$14.01 \pm 0.34$	$f\sigma_8(2.33)$	0.2909	$0.2915 \pm 0.0074$
$\Omega_{\text{m}}$	0.3053	$0.3052 \pm 0.0086$	$z_{\text{drag}}$	1059.51	$1059.7 \pm 1.3$	$\sigma_8(2.33)$	0.3001	$0.3008 \pm 0.0078$
$\Omega_{\text{m}} h^2$	0.1383	$0.1395^{+0.0058}_{-0.0069}$	$r_{\text{drag}}$	149.24	$148.7 \pm 3.8$	$\chi_{\text{simall}}^2$	395.67	$396.8 \pm 1.6$
$\Omega_{\text{m}} h^3$	0.0930	$0.0945^{+0.0063}_{-0.0078}$	$k_{\text{D}}$	0.13931	$0.1397 \pm 0.0027$	$\chi_{\text{plikTE}}^2$	852.90	$860.0 \pm 3.8$
$\sigma_8$	0.7881	$0.790 \pm 0.019$	$100\theta_{\text{D}}$	0.16034	$0.16052^{+0.00088}_{-0.00098}$	$\chi_{6\text{DF}}^2$	0.0001	$0.048 \pm 0.068$
$S_8$	0.7950	$0.796 \pm 0.019$	$z_{\text{eq}}$	3366.6	$3366 \pm 34$	$\chi_{\text{MGS}}^2$	1.68	$1.76 \pm 0.65$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4354	$0.436 \pm 0.010$	$k_{\text{eq}}$	0.010155	$0.01020^{+0.00020}_{-0.00024}$	$\chi_{\text{DR12BAO}}^2$	3.460	$4.2 \pm 1.2$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5858	$0.587 \pm 0.013$	$100\theta_{\text{eq}}$	0.8202	$0.8203 \pm 0.0063$	$\chi_{\text{prior}}^2$	0.41	$7.4 \pm 3.7$
$\sigma_8/h^{0.5}$	0.9607	$0.960 \pm 0.014$	$100\theta_{\text{s,eq}}$	0.45301	$0.4530 \pm 0.0032$	$\chi_{\text{BAO}}^2$	5.14	$6.0 \pm 1.2$
$r_{\text{drag}} h$	100.44	$100.4 \pm 1.1$	$H(0.15)$	72.45	$72.8 \pm 2.2$	$\chi_{\text{CMB}}^2$	1248.57	$1256.9 \pm 4.2$

Best-fit  $\chi_{\text{eff}}^2 = 1254.11$ ;  $\bar{\chi}_{\text{eff}}^2 = 1270.28$ ;  $R - 1 = 0.00797$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.46 CMB - simall\_100x143.offlike5\_EE\_Aplanck\_B: 395.67 plik\_rd12\_HM\_v22\_TE: 852.90



### 7.30 base\_nnu\_plikHM\_TE\_lowE\_BAO\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02240 \pm 0.00028$	$z_{\mathrm{re}}$	$7.59 \pm 0.75$	$D_{\mathrm{M}}(0.38)$	$1550 \pm 43$
$\Omega_{\mathrm{c}}h^2$	$0.1154^{+0.0051}_{-0.0061}$	$10^9 A_{\mathrm{s}}$	$2.071 \pm 0.039$	$H(0.51)$	$88.5 \pm 2.3$
$100\theta_{\mathrm{MC}}$	$1.04179 \pm 0.00086$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.856 \pm 0.026$	$D_{\mathrm{M}}(0.51)$	$2008 \pm 55$
$\tau$	$0.0547 \pm 0.0075$	$D_{40}$	$1225 \pm 25$	$H(0.61)$	$94.1 \pm 2.3$
$N_{\mathrm{eff}}$	$2.83^{+0.31}_{-0.35}$	$D_{220}$	$5724 \pm 55$	$D_{\mathrm{M}}(0.61)$	$2337 \pm 63$
$\ln(10^{10}A_{\mathrm{s}})$	$3.030 \pm 0.019$	$D_{810}$	$2533 \pm 21$	$H(2.33)$	$232.8^{+4.6}_{-5.3}$
$n_{\mathrm{s}}$	$0.963 \pm 0.012$	$D_{1420}$	$820 \pm 12$	$D_{\mathrm{M}}(2.33)$	$5843 \pm 140$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{2000}$	$233.1 \pm 5.3$	$f\sigma_8(0.15)$	$0.4485 \pm 0.0078$
$A_{100}^{\mathrm{dustTE}}$	$0.113 \pm 0.038$	$n_{\mathrm{s},0.002}$	$0.963 \pm 0.012$	$\sigma_8(0.15)$	$0.736 \pm 0.015$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.138 \pm 0.030$	$Y_{\mathrm{P}}$	$0.2424 \pm 0.0047$	$f\sigma_8(0.38)$	$0.4667 \pm 0.0081$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.479 \pm 0.087$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2437 \pm 0.0048$	$\sigma_8(0.38)$	$0.653 \pm 0.014$
$A_{143}^{\mathrm{dustTE}}$	$0.224 \pm 0.054$	$10^5 \mathrm{D}/\mathrm{H}$	$2.505^{+0.089}_{-0.10}$	$f\sigma_8(0.51)$	$0.4654 \pm 0.0083$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.661 \pm 0.081$	$\mathrm{Age}/\mathrm{Gyr}$	$13.99 \pm 0.34$	$\sigma_8(0.51)$	$0.611 \pm 0.013$
$A_{217}^{\mathrm{dustTE}}$	$2.06 \pm 0.27$	$z_{*}$	$1089.25^{+0.64}_{-0.74}$	$f\sigma_8(0.61)$	$0.4606 \pm 0.0084$
$c_{100}$	$1.00020 \pm 0.00071$	$r_{*}$	$146.8 \pm 3.4$	$\sigma_8(0.61)$	$0.581 \pm 0.013$
$c_{217}$	$0.99800 \pm 0.00065$	$100\theta_{*}$	$1.0421 \pm 0.0011$	$f\sigma_8(2.33)$	$0.2931 \pm 0.0065$
$H_0$	$66.8 \pm 2.0$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$14.09 \pm 0.32$	$\sigma_8(2.33)$	$0.3022 \pm 0.0070$
$\Omega_{\Lambda}$	$0.6893 \pm 0.0083$	$z_{\mathrm{drag}}$	$1059.5 \pm 1.2$	$\chi_{\mathrm{lensing}}^2$	$10.2 \pm 1.9$
$\Omega_{\mathrm{m}}$	$0.3107 \pm 0.0083$	$r_{\mathrm{drag}}$	$149.5 \pm 3.5$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.9$
$\Omega_{\mathrm{m}}h^2$	$0.1384^{+0.0052}_{-0.0062}$	$k_{\mathrm{D}}$	$0.1393 \pm 0.0025$	$\chi_{\mathrm{plikTE}}^2$	$860.5 \pm 3.8$
$\Omega_{\mathrm{m}}h^3$	$0.0925^{+0.0058}_{-0.0069}$	$100\theta_{\mathrm{D}}$	$0.16015 \pm 0.00085$	$\chi_{6\mathrm{DF}}^2$	$0.063 \pm 0.084$
$\sigma_8$	$0.797 \pm 0.016$	$z_{\mathrm{eq}}$	$3391 \pm 31$	$\chi_{\mathrm{MGS}}^2$	$1.35 \pm 0.55$
$S_8$	$0.810 \pm 0.014$	$k_{\mathrm{eq}}$	$0.01020^{+0.00018}_{-0.00022}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.7$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4439 \pm 0.0079$	$100\theta_{\mathrm{eq}}$	$0.8159 \pm 0.0058$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.8$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.595 \pm 0.010$	$100\theta_{\mathrm{s,eq}}$	$0.4507 \pm 0.0029$	$\chi_{\mathrm{CMB}}^2$	$1267.6 \pm 4.3$
$\sigma_8/h^{0.5}$	$0.975 \pm 0.010$	$H(0.15)$	$72.0 \pm 2.0$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.4$
$r_{\mathrm{drag}}h$	$99.8 \pm 1.0$	$D_{\mathrm{M}}(0.15)$	$650 \pm 19$		
$\langle d^2 \rangle^{1/2}$	$2.422 \pm 0.029$	$H(0.38)$	$81.9 \pm 2.2$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1281.35; R - 1 = 0.02891$$



### 7.31 base\_nnu\_plikHM\_TE\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02242 \pm 0.00029$	$\langle d^2 \rangle^{1/2}$	$2.401 \pm 0.031$	$D_M(0.15)$	$642 \pm 20$
$\Omega_c h^2$	$0.1166^{+0.0056}_{-0.0067}$	$z_{\text{re}}$	$7.41^{+0.31}_{-0.83}$	$H(0.38)$	$82.8^{+2.2}_{-2.4}$
$100\theta_{\text{MC}}$	$1.04160 \pm 0.00089$	$10^9 A_s$	$2.052^{+0.037}_{-0.042}$	$D_M(0.38)$	$1532 \pm 46$
$\tau$	$0.0526^{+0.0038}_{-0.0072}$	$10^9 A_s e^{-2\tau}$	$1.847 \pm 0.029$	$H(0.51)$	$89.4^{+2.3}_{-2.6}$
$N_{\text{eff}}$	$2.95^{+0.33}_{-0.39}$	$D_{40}$	$1217 \pm 25$	$D_M(0.51)$	$1985 \pm 58$
$\ln(10^{10} A_s)$	$3.021 \pm 0.020$	$D_{220}$	$5694 \pm 58$	$H(0.61)$	$94.9^{+2.4}_{-2.7}$
$n_s$	$0.964 \pm 0.013$	$D_{810}$	$2509 \pm 26$	$D_M(0.61)$	$2311 \pm 67$
$y_{\text{cal}}$	$1.0000 \pm 0.0025$	$D_{1420}$	$809 \pm 14$	$H(2.33)$	$234.0^{+5.0}_{-5.8}$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$D_{2000}$	$228.9 \pm 5.9$	$D_M(2.33)$	$5793 \pm 150$
$A_{100 \times 143}^{\text{dustTE}}$	$0.136 \pm 0.030$	$n_{s,0.002}$	$0.964 \pm 0.013$	$f\sigma_8(0.15)$	$0.4429 \pm 0.0097$
$A_{100 \times 217}^{\text{dustTE}}$	$0.477 \pm 0.086$	$Y_{\text{P}}$	$0.2440 \pm 0.0051$	$\sigma_8(0.15)$	$0.734 \pm 0.017$
$A_{143}^{\text{dustTE}}$	$0.221 \pm 0.054$	$Y_{\text{P}}^{\text{BBN}}$	$0.2453 \pm 0.0051$	$f\sigma_8(0.38)$	$0.4624 \pm 0.0098$
$A_{143 \times 217}^{\text{dustTE}}$	$0.658 \pm 0.080$	$10^5 \text{D/H}$	$2.544^{+0.098}_{-0.11}$	$\sigma_8(0.38)$	$0.651 \pm 0.015$
$A_{217}^{\text{dustTE}}$	$2.04 \pm 0.27$	Age/Gyr	$13.87 \pm 0.36$	$f\sigma_8(0.51)$	$0.4618 \pm 0.0098$
$c_{100}$	$1.00017 \pm 0.00070$	$z_*$	$1089.46^{+0.71}_{-0.80}$	$\sigma_8(0.51)$	$0.610 \pm 0.014$
$c_{217}$	$0.99798 \pm 0.00065$	$r_*$	$145.9 \pm 3.7$	$f\sigma_8(0.61)$	$0.4574 \pm 0.0098$
$H_0$	$67.7 \pm 2.1$	$100\theta_*$	$1.0418 \pm 0.0011$	$\sigma_8(0.61)$	$0.580 \pm 0.014$
$\Omega_\Lambda$	$0.6951 \pm 0.0087$	$D_M(z_*)/\text{Gpc}$	$14.00 \pm 0.34$	$f\sigma_8(2.33)$	$0.2928 \pm 0.0071$
$\Omega_{\text{m}}$	$0.3049 \pm 0.0087$	$z_{\text{drag}}$	$1059.7 \pm 1.3$	$\sigma_8(2.33)$	$0.3022 \pm 0.0075$
$\Omega_{\text{m}} h^2$	$0.1397^{+0.0057}_{-0.0068}$	$r_{\text{drag}}$	$148.6 \pm 3.8$	$\chi_{\text{simall}}^2$	$396.4 \pm 1.2$
$\Omega_{\text{m}} h^3$	$0.0947^{+0.0063}_{-0.0078}$	$k_{\text{D}}$	$0.1398 \pm 0.0027$	$\chi_{\text{plikTE}}^2$	$860.1 \pm 3.8$
$\sigma_8$	$0.793 \pm 0.018$	$100\theta_{\text{D}}$	$0.16053^{+0.00087}_{-0.00097}$	$\chi_{6\text{DF}}^2$	$0.048 \pm 0.070$
$S_8$	$0.800 \pm 0.018$	$z_{\text{eq}}$	$3366 \pm 34$	$\chi_{\text{MGS}}^2$	$1.78 \pm 0.65$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4379 \pm 0.0098$	$k_{\text{eq}}$	$0.01020^{+0.00020}_{-0.00024}$	$\chi_{\text{DR12BAO}}^2$	$4.2 \pm 1.2$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.589 \pm 0.013$	$100\theta_{\text{eq}}$	$0.8205 \pm 0.0063$	$\chi_{\text{prior}}^2$	$7.5 \pm 3.7$
$\sigma_8/h^{0.5}$	$0.964 \pm 0.013$	$100\theta_{\text{s,eq}}$	$0.4531 \pm 0.0032$	$\chi_{\text{BAO}}^2$	$6.0 \pm 1.2$
$r_{\text{drag}} h$	$100.5 \pm 1.1$	$H(0.15)$	$72.9^{+2.1}_{-2.3}$	$\chi_{\text{CMB}}^2$	$1256.5 \pm 4.1$

$\bar{\chi}_{\text{eff}}^2 = 1269.92$ ;  $R - 1 = 0.01050$



### 7.32 base\_nnu\_plikHM\_TE\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02241 \pm 0.00028$	$z_{\text{re}}$	$7.71^{+0.56}_{-0.74}$	$D_{\text{M}}(0.38)$	$1550 \pm 43$
$\Omega_c h^2$	$0.1154^{+0.0051}_{-0.0060}$	$10^9 A_s$	$2.075^{+0.034}_{-0.039}$	$H(0.51)$	$88.6 \pm 2.3$
$100\theta_{\text{MC}}$	$1.04179 \pm 0.00086$	$10^9 A_s e^{-2\tau}$	$1.856 \pm 0.026$	$D_{\text{M}}(0.51)$	$2008 \pm 55$
$\tau$	$0.0558^{+0.0054}_{-0.0072}$	$D_{40}$	$1225 \pm 25$	$H(0.61)$	$94.1 \pm 2.3$
$N_{\text{eff}}$	$2.83^{+0.31}_{-0.35}$	$D_{220}$	$5722 \pm 55$	$D_{\text{M}}(0.61)$	$2336 \pm 63$
$\ln(10^{10} A_s)$	$3.033^{+0.016}_{-0.018}$	$D_{810}$	$2532 \pm 21$	$H(2.33)$	$232.8^{+4.7}_{-5.3}$
$n_s$	$0.963 \pm 0.012$	$D_{1420}$	$820 \pm 12$	$D_{\text{M}}(2.33)$	$5842 \pm 140$
$y_{\text{cal}}$	$1.0005 \pm 0.0025$	$D_{2000}$	$233.0 \pm 5.3$	$f\sigma_8(0.15)$	$0.4487^{+0.0072}_{-0.0080}$
$A_{100}^{\text{dustTE}}$	$0.113 \pm 0.038$	$n_{\text{s},0.002}$	$0.963 \pm 0.012$	$\sigma_8(0.15)$	$0.737 \pm 0.015$
$A_{100 \times 143}^{\text{dustTE}}$	$0.138 \pm 0.029$	$Y_{\text{P}}$	$0.2424 \pm 0.0048$	$f\sigma_8(0.38)$	$0.4670 \pm 0.0081$
$A_{100 \times 217}^{\text{dustTE}}$	$0.479 \pm 0.087$	$Y_{\text{P}}^{\text{BBN}}$	$0.2437 \pm 0.0048$	$\sigma_8(0.38)$	$0.653 \pm 0.014$
$A_{143}^{\text{dustTE}}$	$0.224 \pm 0.054$	$10^5 \text{D/H}$	$2.506^{+0.090}_{-0.10}$	$f\sigma_8(0.51)$	$0.4658 \pm 0.0082$
$A_{143 \times 217}^{\text{dustTE}}$	$0.661 \pm 0.081$	Age/Gyr	$13.99 \pm 0.34$	$\sigma_8(0.51)$	$0.611 \pm 0.013$
$A_{217}^{\text{dustTE}}$	$2.06 \pm 0.27$	$z_*$	$1089.25^{+0.65}_{-0.74}$	$f\sigma_8(0.61)$	$0.4610 \pm 0.0083$
$c_{100}$	$1.00020 \pm 0.00071$	$r_*$	$146.8 \pm 3.4$	$\sigma_8(0.61)$	$0.582 \pm 0.013$
$c_{217}$	$0.99799 \pm 0.00065$	$100\theta_*$	$1.0421 \pm 0.0011$	$f\sigma_8(2.33)$	$0.2934 \pm 0.0065$
$H_0$	$66.8 \pm 2.0$	$D_{\text{M}}(z_*)/\text{Gpc}$	$14.09 \pm 0.32$	$\sigma_8(2.33)$	$0.3026 \pm 0.0069$
$\Omega_{\Lambda}$	$0.6896 \pm 0.0083$	$z_{\text{drag}}$	$1059.5 \pm 1.2$	$\chi_{\text{lensing}}^2$	$10.1 \pm 1.8$
$\Omega_{\text{m}}$	$0.3104 \pm 0.0083$	$r_{\text{drag}}$	$149.5 \pm 3.5$	$\chi_{\text{simall}}^2$	$396.9 \pm 1.9$
$\Omega_{\text{m}} h^2$	$0.1384^{+0.0053}_{-0.0062}$	$k_{\text{D}}$	$0.1393 \pm 0.0025$	$\chi_{\text{plikTE}}^2$	$860.4 \pm 3.7$
$\Omega_{\text{m}} h^3$	$0.0926^{+0.0058}_{-0.0070}$	$100\theta_{\text{D}}$	$0.16016 \pm 0.00085$	$\chi_{6\text{DF}}^2$	$0.061 \pm 0.081$
$\sigma_8$	$0.797 \pm 0.016$	$z_{\text{eq}}$	$3390 \pm 31$	$\chi_{\text{MGS}}^2$	$1.37 \pm 0.55$
$S_8$	$0.811^{+0.013}_{-0.015}$	$k_{\text{eq}}$	$0.01019^{+0.00018}_{-0.00022}$	$\chi_{\text{DR12BAO}}^2$	$4.7 \pm 1.6$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4441^{+0.0072}_{-0.0080}$	$100\theta_{\text{eq}}$	$0.8161 \pm 0.0058$	$\chi_{\text{prior}}^2$	$7.5 \pm 3.8$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.595 \pm 0.010$	$100\theta_{\text{s,eq}}$	$0.4508 \pm 0.0029$	$\chi_{\text{CMB}}^2$	$1267.4 \pm 4.2$
$\sigma_8/h^{0.5}$	$0.9756 \pm 0.0097$	$H(0.15)$	$72.0 \pm 2.0$	$\chi_{\text{BAO}}^2$	$6.1 \pm 1.3$
$r_{\text{drag}} h$	$99.79 \pm 0.99$	$D_{\text{M}}(0.15)$	$650 \pm 19$		
$\langle d^2 \rangle^{1/2}$	$2.424 \pm 0.028$	$H(0.38)$	$82.0 \pm 2.2$		

$$\bar{\chi}_{\text{eff}}^2 = 1281.05; R - 1 = 0.03229$$



### 7.33 base\_nnu\_plikHM\_EE\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.02342	$0.02296^{+0.00095}_{-0.00082}$	$D_{810}$	2611.9	$2589 \pm 36$	$D_{\mathrm{M}}(0.51)$	2052	$2075^{+140}_{-160}$
$\Omega_{\mathrm{c}}h^2$	0.1056	$0.106^{+0.014}_{-0.017}$	$D_{1420}$	862.6	$854 \pm 26$	$H(0.61)$	91.7	$91.3 \pm 6.3$
$100\theta_{\mathrm{MC}}$	1.04152	$1.0421^{+0.0022}_{-0.0033}$	$D_{2000}$	250.4	$248 \pm 13$	$D_{\mathrm{M}}(0.61)$	2389	$2415^{+160}_{-190}$
$\tau$	0.0522	$0.0514^{+0.0085}_{-0.0077}$	$n_{\mathrm{s},0.002}$	0.9643	$0.962 \pm 0.020$	$H(2.33)$	225.7	$225 \pm 14$
$N_{\mathrm{eff}}$	2.37	$2.37^{+0.81}_{-0.97}$	$Y_{\mathrm{P}}$	0.2363	$0.235 \pm 0.014$	$D_{\mathrm{M}}(2.33)$	5996	$6051^{+370}_{-450}$
$\ln(10^{10}A_{\mathrm{s}})$	3.0317	$3.015^{+0.051}_{-0.038}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.2376	$0.236 \pm 0.014$	$f\sigma_8(0.15)$	0.4293	$0.429 \pm 0.023$
$n_{\mathrm{s}}$	0.9643	$0.962 \pm 0.020$	$10^5\mathrm{D}/\mathrm{H}$	2.182	$2.25^{+0.21}_{-0.24}$	$\sigma_8(0.15)$	0.7136	$0.709 \pm 0.043$
$y_{\mathrm{cal}}$	1.00042	$0.99997 \pm 0.0025$	Age/Gyr	14.36	$14.49^{+0.89}_{-1.1}$	$f\sigma_8(0.38)$	0.4487	$0.447 \pm 0.024$
$H_0$	65.49	$65.0 \pm 4.9$	$z_*$	1086.77	$1087.2^{+1.6}_{-1.9}$	$\sigma_8(0.38)$	0.6336	$0.629 \pm 0.039$
$\Omega_{\Lambda}$	0.6976	$0.694^{+0.013}_{-0.011}$	$r_*$	151.2	$152.5^{+9.4}_{-11}$	$f\sigma_8(0.51)$	0.4484	$0.447 \pm 0.025$
$\Omega_{\mathrm{m}}$	0.3024	$0.306^{+0.011}_{-0.013}$	$100\theta_*$	1.04203	$1.0427^{+0.0028}_{-0.0040}$	$\sigma_8(0.51)$	0.5933	$0.589 \pm 0.037$
$\Omega_{\mathrm{m}}h^2$	0.1297	$0.130^{+0.015}_{-0.018}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	14.51	$14.62^{+0.87}_{-1.0}$	$f\sigma_8(0.61)$	0.4444	$0.442 \pm 0.025$
$\Omega_{\mathrm{m}}h^3$	0.0849	$0.085^{+0.014}_{-0.019}$	$z_{\mathrm{drag}}$	1060.77	$1059.6^{+3.8}_{-3.4}$	$\sigma_8(0.61)$	0.5648	$0.561 \pm 0.035$
$\sigma_8$	0.7713	$0.767 \pm 0.046$	$r_{\mathrm{drag}}$	153.6	$155.1^{+9.6}_{-12}$	$f\sigma_8(2.33)$	0.2852	$0.283 \pm 0.018$
$S_8$	0.7744	$0.774 \pm 0.040$	$k_{\mathrm{D}}$	0.1376	$0.1366 \pm 0.0074$	$\sigma_8(2.33)$	0.2944	$0.292 \pm 0.019$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4242	$0.424 \pm 0.022$	$100\theta_{\mathrm{D}}$	0.15735	$0.1579^{+0.0019}_{-0.0022}$	$\chi_{\mathrm{small}}^2$	395.54	$396.7 \pm 1.6$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.5720	$0.570 \pm 0.032$	$z_{\mathrm{eq}}$	3391.6	$3390^{+39}_{-44}$	$\chi_{\mathrm{plikEE}}^2$	738.76	$743.5 \pm 3.2$
$\sigma_8/h^{0.5}$	0.9531	$0.951^{+0.028}_{-0.023}$	$k_{\mathrm{eq}}$	0.00987	$0.00984 \pm 0.00060$	$\chi_{6\mathrm{DF}}^2$	0.0003	$0.064 \pm 0.088$
$r_{\mathrm{drag}}h$	100.58	$100.3 \pm 1.2$	$100\theta_{\mathrm{eq}}$	0.8181	$0.8175 \pm 0.0075$	$\chi_{\mathrm{MGS}}^2$	1.75	$1.70 \pm 0.73$
$\langle d^2 \rangle^{1/2}$	2.3977	$2.390 \pm 0.038$	$100\theta_{\mathrm{s,eq}}$	0.45109	$0.4511 \pm 0.0036$	$\chi_{\mathrm{DR12BAO}}^2$	3.56	$4.5 \pm 1.5$
$z_{\mathrm{re}}$	6.95	$6.92^{+0.88}_{-0.76}$	$H(0.15)$	70.5	$70.0 \pm 5.2$	$\chi_{\mathrm{prior}}^2$	0.028	$0.98 \pm 1.4$
$10^9A_{\mathrm{s}}$	2.073	$2.04^{+0.10}_{-0.081}$	$D_{\mathrm{M}}(0.15)$	662.6	$671^{+45}_{-55}$	$\chi_{\mathrm{BAO}}^2$	5.30	$6.2 \pm 1.4$
$10^9A_{\mathrm{s}}e^{-2\tau}$	1.868	$1.842^{+0.087}_{-0.064}$	$H(0.38)$	80.0	$79.6 \pm 5.7$	$\chi_{\mathrm{CMB}}^2$	1134.30	$1140.2 \pm 3.5$
$D_{40}$	1246.9	$1235 \pm 31$	$D_{\mathrm{M}}(0.38)$	1583	$1601^{+110}_{-130}$			
$D_{220}$	5969	$5880 \pm 130$	$H(0.51)$	86.4	$85.9 \pm 6.0$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 1139.64$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1147.36$ ;  $R - 1 = 0.00877$

$\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.56 CMB - small\_100x143.offlike5\_EE\_Aplanck\_B: 395.54 plik\_rd12\_HM\_v22\_EE: 738.76



### 7.34 base\_nnu\_plikHM\_EE\_lowE\_BAO\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02296 \pm 0.00073$	$D_{810}$	$2586 \pm 29$	$D_{\mathrm{M}}(0.51)$	$2065^{+110}_{-120}$
$\Omega_{\mathrm{c}}h^2$	$0.106^{+0.011}_{-0.012}$	$D_{1420}$	$852 \pm 21$	$H(0.61)$	$91.5 \pm 4.8$
$100\theta_{\mathrm{MC}}$	$1.0418^{+0.0018}_{-0.0025}$	$D_{2000}$	$247 \pm 10$	$D_{\mathrm{M}}(0.61)$	$2404^{+120}_{-140}$
$\tau$	$0.0513^{+0.0081}_{-0.0072}$	$n_{\mathrm{s},0.002}$	$0.963 \pm 0.015$	$H(2.33)$	$226 \pm 11$
$N_{\mathrm{eff}}$	$2.40^{+0.62}_{-0.71}$	$Y_{\mathrm{P}}$	$0.236 \pm 0.010$	$D_{\mathrm{M}}(2.33)$	$6023^{+290}_{-330}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.018^{+0.033}_{-0.028}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.237 \pm 0.010$	$f\sigma_8(0.15)$	$0.430 \pm 0.016$
$n_{\mathrm{s}}$	$0.963 \pm 0.015$	$10^5\mathrm{D}/\mathrm{H}$	$2.26 \pm 0.17$	$\sigma_8(0.15)$	$0.712 \pm 0.030$
$y_{\mathrm{cal}}$	$0.9999 \pm 0.0024$	Age/Gyr	$14.42^{+0.68}_{-0.78}$	$f\sigma_8(0.38)$	$0.449 \pm 0.017$
$H_0$	$65.2 \pm 3.8$	$z_*$	$1087.3 \pm 1.3$	$\sigma_8(0.38)$	$0.632 \pm 0.028$
$\Omega_{\Lambda}$	$0.694^{+0.012}_{-0.010}$	$r_*$	$151.7^{+7.1}_{-8.2}$	$f\sigma_8(0.51)$	$0.448 \pm 0.017$
$\Omega_{\mathrm{m}}$	$0.306^{+0.010}_{-0.012}$	$100\theta_*$	$1.0424^{+0.0023}_{-0.0030}$	$\sigma_8(0.51)$	$0.591 \pm 0.026$
$\Omega_{\mathrm{m}}h^2$	$0.130^{+0.011}_{-0.013}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.55^{+0.65}_{-0.74}$	$f\sigma_8(0.61)$	$0.444 \pm 0.017$
$\Omega_{\mathrm{m}}h^3$	$0.085^{+0.011}_{-0.014}$	$z_{\mathrm{drag}}$	$1059.7 \pm 2.8$	$\sigma_8(0.61)$	$0.563 \pm 0.025$
$\sigma_8$	$0.770 \pm 0.032$	$r_{\mathrm{drag}}$	$154.3^{+7.3}_{-8.5}$	$f\sigma_8(2.33)$	$0.284 \pm 0.013$
$S_8$	$0.776 \pm 0.028$	$k_{\mathrm{D}}$	$0.1369 \pm 0.0055$	$\sigma_8(2.33)$	$0.293 \pm 0.014$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.425 \pm 0.015$	$100\theta_{\mathrm{D}}$	$0.1580 \pm 0.0016$	$\chi^2_{\mathrm{lensing}}$	$9.2 \pm 1.2$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.572 \pm 0.022$	$z_{\mathrm{eq}}$	$3387 \pm 36$	$\chi^2_{\mathrm{simall}}$	$396.6 \pm 1.4$
$\sigma_8/h^{0.5}$	$0.953^{+0.018}_{-0.016}$	$k_{\mathrm{eq}}$	$0.00986 \pm 0.00043$	$\chi^2_{\mathrm{plikEE}}$	$742.5 \pm 2.7$
$r_{\mathrm{drag}}h$	$100.3 \pm 1.2$	$100\theta_{\mathrm{eq}}$	$0.8179 \pm 0.0068$	$\chi^2_{6\mathrm{DF}}$	$0.061 \pm 0.085$
$\langle d^2 \rangle^{1/2}$	$2.391 \pm 0.031$	$100\theta_{\mathrm{s,eq}}$	$0.4514 \pm 0.0032$	$\chi^2_{\mathrm{MGS}}$	$1.68 \pm 0.71$
$z_{\mathrm{re}}$	$6.94^{+0.83}_{-0.71}$	$H(0.15)$	$70.2 \pm 4.0$	$\chi^2_{\mathrm{DR12BAO}}$	$4.4 \pm 1.4$
$10^9A_{\mathrm{s}}$	$2.047^{+0.067}_{-0.060}$	$D_{\mathrm{M}}(0.15)$	$668^{+35}_{-41}$	$\chi^2_{\mathrm{prior}}$	$0.96 \pm 1.4$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.847^{+0.059}_{-0.048}$	$H(0.38)$	$79.8 \pm 4.3$	$\chi^2_{\mathrm{CMB}}$	$1148.2 \pm 3.5$
$D_{40}$	$1234 \pm 28$	$D_{\mathrm{M}}(0.38)$	$1593^{+83}_{-95}$	$\chi^2_{\mathrm{BAO}}$	$6.2 \pm 1.3$
$D_{220}$	$5873 \pm 110$	$H(0.51)$	$86.2 \pm 4.6$		

$\bar{\chi}^2_{\mathrm{eff}} = 1155.37$ ;  $R - 1 = 0.00317$



### 7.35 base\_nnu\_plikHM\_EE\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02301^{+0.00093}_{-0.00082}$	$D_{810}$	$2586 \pm 36$	$D_{\mathrm{M}}(0.51)$	$2058^{+130}_{-160}$
$\Omega_{\mathrm{c}}h^2$	$0.108^{+0.014}_{-0.017}$	$D_{1420}$	$851 \pm 26$	$H(0.61)$	$92.0 \pm 6.2$
$100\theta_{\mathrm{MC}}$	$1.0418^{+0.0021}_{-0.0032}$	$D_{2000}$	$246 \pm 12$	$D_{\mathrm{M}}(0.61)$	$2395^{+150}_{-180}$
$\tau$	$0.0553^{+0.0044}_{-0.0070}$	$n_{\mathrm{s},0.002}$	$0.964 \pm 0.019$	$H(2.33)$	$227 \pm 14$
$N_{\mathrm{eff}}$	$2.47^{+0.81}_{-0.96}$	$Y_{\mathrm{P}}$	$0.237 \pm 0.013$	$D_{\mathrm{M}}(2.33)$	$6004^{+360}_{-440}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.028^{+0.046}_{-0.034}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.238 \pm 0.013$	$f\sigma_8(0.15)$	$0.433 \pm 0.022$
$n_{\mathrm{s}}$	$0.964 \pm 0.019$	$10^5\mathrm{D}/\mathrm{H}$	$2.27^{+0.20}_{-0.24}$	$\sigma_8(0.15)$	$0.717 \pm 0.042$
$y_{\mathrm{cal}}$	$0.99995 \pm 0.0025$	$\mathrm{Age}/\mathrm{Gyr}$	$14.38^{+0.87}_{-1.0}$	$f\sigma_8(0.38)$	$0.452 \pm 0.024$
$H_0$	$65.6 \pm 4.9$	$z_*$	$1087.4^{+1.6}_{-1.8}$	$\sigma_8(0.38)$	$0.636 \pm 0.038$
$\Omega_{\Lambda}$	$0.695^{+0.012}_{-0.011}$	$r_*$	$151.3^{+9.1}_{-11}$	$f\sigma_8(0.51)$	$0.451 \pm 0.024$
$\Omega_{\mathrm{m}}$	$0.305^{+0.011}_{-0.012}$	$100\theta_*$	$1.0423^{+0.0027}_{-0.0039}$	$\sigma_8(0.51)$	$0.596 \pm 0.035$
$\Omega_{\mathrm{m}}h^2$	$0.131^{+0.015}_{-0.018}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.51^{+0.84}_{-1.0}$	$f\sigma_8(0.61)$	$0.447 \pm 0.024$
$\Omega_{\mathrm{m}}h^3$	$0.087^{+0.014}_{-0.019}$	$z_{\mathrm{drag}}$	$1060.0^{+3.8}_{-3.3}$	$\sigma_8(0.61)$	$0.567 \pm 0.034$
$\sigma_8$	$0.775 \pm 0.044$	$r_{\mathrm{drag}}$	$153.8^{+9.4}_{-11}$	$f\sigma_8(2.33)$	$0.286 \pm 0.017$
$S_8$	$0.781 \pm 0.039$	$k_{\mathrm{D}}$	$0.1374 \pm 0.0073$	$\sigma_8(2.33)$	$0.295 \pm 0.018$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.428 \pm 0.021$	$100\theta_{\mathrm{D}}$	$0.1581^{+0.0019}_{-0.0021}$	$\chi_{\mathrm{simall}}^2$	$396.4 \pm 1.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.576 \pm 0.030$	$z_{\mathrm{eq}}$	$3387^{+38}_{-43}$	$\chi_{\mathrm{plikEE}}^2$	$743.4 \pm 3.1$
$\sigma_8/h^{0.5}$	$0.957^{+0.025}_{-0.021}$	$k_{\mathrm{eq}}$	$0.00991 \pm 0.00059$	$\chi_{6\mathrm{DF}}^2$	$0.063 \pm 0.087$
$r_{\mathrm{drag}}h$	$100.4 \pm 1.2$	$100\theta_{\mathrm{eq}}$	$0.8181 \pm 0.0074$	$\chi_{\mathrm{MGS}}^2$	$1.73 \pm 0.73$
$\langle d^2 \rangle^{1/2}$	$2.401 \pm 0.035$	$100\theta_{\mathrm{s,eq}}$	$0.4514 \pm 0.0035$	$\chi_{\mathrm{DR12BAO}}^2$	$4.5 \pm 1.4$
$z_{\mathrm{re}}$	$< 7.55$	$H(0.15)$	$70.6 \pm 5.1$	$\chi_{\mathrm{prior}}^2$	$0.97 \pm 1.4$
$10^9A_{\mathrm{s}}$	$2.066^{+0.092}_{-0.074}$	$D_{\mathrm{M}}(0.15)$	$665^{+44}_{-53}$	$\chi_{\mathrm{BAO}}^2$	$6.3 \pm 1.4$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.850^{+0.085}_{-0.063}$	$H(0.38)$	$80.2 \pm 5.6$	$\chi_{\mathrm{CMB}}^2$	$1139.8 \pm 3.4$
$D_{40}$	$1234 \pm 31$	$D_{\mathrm{M}}(0.38)$	$1588^{+100}_{-120}$		
$D_{220}$	$5875 \pm 130$	$H(0.51)$	$86.6 \pm 5.9$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1147.01$ ;  $R - 1 = 0.00611$



### 7.36 base\_nnu\_plikHM\_EE\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02292 \pm 0.00073$	$D_{810}$	$2582 \pm 28$	$D_{\mathrm{M}}(0.51)$	$2060^{+110}_{-120}$
$\Omega_{\mathrm{c}}h^2$	$0.107^{+0.011}_{-0.013}$	$D_{1420}$	$850 \pm 21$	$H(0.61)$	$91.7 \pm 4.8$
$100\theta_{\mathrm{MC}}$	$1.0417^{+0.0018}_{-0.0025}$	$D_{2000}$	$246 \pm 10$	$D_{\mathrm{M}}(0.61)$	$2398^{+120}_{-140}$
$\tau$	$0.0549^{+0.0039}_{-0.0067}$	$n_{\mathrm{s},0.002}$	$0.964 \pm 0.016$	$H(2.33)$	$226 \pm 11$
$N_{\mathrm{eff}}$	$2.44 \pm 0.69$	$Y_{\mathrm{P}}$	$0.237 \pm 0.010$	$D_{\mathrm{M}}(2.33)$	$6009^{+290}_{-330}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.025^{+0.032}_{-0.026}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.238 \pm 0.010$	$f\sigma_8(0.15)$	$0.432 \pm 0.016$
$n_{\mathrm{s}}$	$0.964 \pm 0.016$	$10^5\mathrm{D}/\mathrm{H}$	$2.28 \pm 0.17$	$\sigma_8(0.15)$	$0.715 \pm 0.030$
$y_{\mathrm{cal}}$	$0.9998 \pm 0.0024$	Age/Gyr	$14.39^{+0.69}_{-0.80}$	$f\sigma_8(0.38)$	$0.451 \pm 0.017$
$H_0$	$65.4 \pm 3.9$	$z_*$	$1087.5 \pm 1.3$	$\sigma_8(0.38)$	$0.635 \pm 0.028$
$\Omega_{\Lambda}$	$0.695^{+0.012}_{-0.010}$	$r_*$	$151.4^{+7.2}_{-8.4}$	$f\sigma_8(0.51)$	$0.450 \pm 0.017$
$\Omega_{\mathrm{m}}$	$0.305^{+0.010}_{-0.012}$	$100\theta_*$	$1.0423^{+0.0023}_{-0.0030}$	$\sigma_8(0.51)$	$0.594 \pm 0.026$
$\Omega_{\mathrm{m}}h^2$	$0.131^{+0.011}_{-0.013}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.52^{+0.66}_{-0.76}$	$f\sigma_8(0.61)$	$0.446 \pm 0.017$
$\Omega_{\mathrm{m}}h^3$	$0.086^{+0.011}_{-0.014}$	$z_{\mathrm{drag}}$	$1059.7 \pm 2.8$	$\sigma_8(0.61)$	$0.566 \pm 0.025$
$\sigma_8$	$0.773 \pm 0.032$	$r_{\mathrm{drag}}$	$154.0^{+7.4}_{-8.7}$	$f\sigma_8(2.33)$	$0.286 \pm 0.013$
$S_8$	$0.780 \pm 0.028$	$k_{\mathrm{D}}$	$0.1371 \pm 0.0056$	$\sigma_8(2.33)$	$0.295 \pm 0.014$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.427 \pm 0.015$	$100\theta_{\mathrm{D}}$	$0.1581 \pm 0.0016$	$\chi^2_{\mathrm{lensing}}$	$9.1 \pm 1.2$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.575 \pm 0.022$	$z_{\mathrm{eq}}$	$3383^{+34}_{-38}$	$\chi^2_{\mathrm{simall}}$	$396.3 \pm 1.2$
$\sigma_8/h^{0.5}$	$0.957 \pm 0.017$	$k_{\mathrm{eq}}$	$0.00988 \pm 0.00044$	$\chi^2_{\mathrm{plikEE}}$	$742.4 \pm 2.6$
$r_{\mathrm{drag}}h$	$100.4 \pm 1.2$	$100\theta_{\mathrm{eq}}$	$0.8185 \pm 0.0068$	$\chi^2_{6\mathrm{DF}}$	$0.061 \pm 0.086$
$\langle d^2 \rangle^{1/2}$	$2.398 \pm 0.029$	$100\theta_{\mathrm{s,eq}}$	$0.4517 \pm 0.0032$	$\chi^2_{\mathrm{MGS}}$	$1.72 \pm 0.71$
$z_{\mathrm{re}}$	$< 7.51$	$H(0.15)$	$70.4 \pm 4.0$	$\chi^2_{\mathrm{DR12BAO}}$	$4.4 \pm 1.4$
$10^9 A_{\mathrm{s}}$	$2.061^{+0.065}_{-0.055}$	$D_{\mathrm{M}}(0.15)$	$666^{+36}_{-42}$	$\chi^2_{\mathrm{prior}}$	$0.9 \pm 1.3$
$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.847^{+0.060}_{-0.049}$	$H(0.38)$	$80.0 \pm 4.4$	$\chi^2_{\mathrm{CMB}}$	$1147.9 \pm 3.4$
$D_{40}$	$1232 \pm 27$	$D_{\mathrm{M}}(0.38)$	$1589^{+84}_{-97}$	$\chi^2_{\mathrm{BAO}}$	$6.2 \pm 1.4$
$D_{220}$	$5860 \pm 110$	$H(0.51)$	$86.4 \pm 4.6$		

$\bar{\chi}^2_{\mathrm{eff}} = 1155.01$ ;  $R - 1 = 0.00359$



### 7.37 base\_nnu\_plikHM\_TT\_lowl\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022244	$0.02227 \pm 0.00023$	$\sigma_8/h^{0.5}$	0.9823	$0.983 \pm 0.012$	$D_{\mathrm{M}}(0.38)$	1525.5	$1518 \pm 30$
$\Omega_{\mathrm{c}}h^2$	0.11934	$0.1206 \pm 0.0039$	$r_{\mathrm{drag}}h$	99.87	$99.96 \pm 1.0$	$H(0.51)$	89.87	$90.3 \pm 1.6$
$100\theta_{\mathrm{MC}}$	1.04094	$1.04085 \pm 0.00056$	$\langle d^2 \rangle^{1/2}$	2.4251	$2.426 \pm 0.028$	$D_{\mathrm{M}}(0.51)$	1976.5	$1967 \pm 38$
$\tau$	0.0545	$0.0539 \pm 0.0080$	$z_{\mathrm{re}}$	7.72	$7.67 \pm 0.83$	$H(0.61)$	95.47	$96.0 \pm 1.6$
$N_{\mathrm{eff}}$	3.075	$3.15 \pm 0.23$	$10^9 A_{\mathrm{s}}$	2.0950	$2.100 \pm 0.042$	$D_{\mathrm{M}}(0.61)$	2300.2	$2289 \pm 43$
$\ln(10^{10} A_{\mathrm{s}})$	3.0421	$3.044 \pm 0.020$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8787	$1.885 \pm 0.021$	$H(2.33)$	236.10	$237.1 \pm 3.4$
$n_{\mathrm{s}}$	0.9686	$0.9696 \pm 0.0084$	$D_{40}$	1221.3	$1222 \pm 15$	$D_{\mathrm{M}}(2.33)$	5754	$5728 \pm 93$
$y_{\mathrm{cal}}$	1.00034	$1.0006 \pm 0.0025$	$D_{220}$	5713.9	$5719 \pm 40$	$f\sigma_8(0.15)$	0.4546	$0.4557 \pm 0.0085$
$A_{217}^{\mathrm{CIB}}$	49.7	$48 \pm 7$	$D_{810}$	2536.1	$2537 \pm 14$	$\sigma_8(0.15)$	0.7477	$0.750 \pm 0.013$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.19	—	$D_{1420}$	815.8	$814.9 \pm 5.2$	$f\sigma_8(0.38)$	0.4734	$0.4748 \pm 0.0081$
$A_{143}^{\mathrm{tSZ}}$	7.05	$4.9 \pm 2.0$	$D_{2000}$	230.01	$229.4 \pm 2.2$	$\sigma_8(0.38)$	0.6630	$0.666 \pm 0.012$
$A_{100}^{\mathrm{PS}}$	256.6	$266 \pm 29$	$n_{\mathrm{s},0.002}$	0.9686	$0.9696 \pm 0.0084$	$f\sigma_8(0.51)$	0.4723	$0.4737 \pm 0.0079$
$A_{143}^{\mathrm{PS}}$	47.6	$50 \pm 9$	$Y_{\mathrm{P}}$	0.24573	$0.2466 \pm 0.0031$	$\sigma_8(0.51)$	0.6206	$0.623 \pm 0.011$
$A_{143 \times 217}^{\mathrm{PS}}$	43.4	$44_{-10}^{+9}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24706	$0.2480 \pm 0.0031$	$f\sigma_8(0.61)$	0.4675	$0.4690 \pm 0.0077$
$A_{217}^{\mathrm{PS}}$	117.6	$115 \pm 10$	$10^5 D/H$	2.620	$2.640 \pm 0.067$	$\sigma_8(0.61)$	0.5906	$0.593 \pm 0.010$
$A^{\mathrm{kSZ}}$	0.00	$< 5.15$	Age/Gyr	13.777	$13.71 \pm 0.22$	$f\sigma_8(2.33)$	0.2979	$0.2991 \pm 0.0054$
$A_{100}^{\mathrm{dustTT}}$	8.86	$9.0 \pm 1.8$	$z_*$	1090.051	$1090.19 \pm 0.49$	$\sigma_8(2.33)$	0.3072	$0.3085 \pm 0.0057$
$A_{143}^{\mathrm{dustTT}}$	10.81	$10.8 \pm 1.8$	$r_*$	144.55	$143.9 \pm 2.2$	$f_{2000}^{143}$	30.47	$31.7 \pm 3.4$
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.15	$18.3 \pm 3.3$	$100\theta_*$	1.04111	$1.04098 \pm 0.00067$	$f_{2000}^{143 \times 217}$	33.22	$33.9 \pm 2.5$
$A_{217}^{\mathrm{dustTT}}$	94.1	$93.2 \pm 7.4$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.884	$13.82 \pm 0.20$	$f_{2000}^{217}$	107.69	$108.5 \pm 2.3$
$c_{100}$	0.99965	$0.99961 \pm 0.00061$	$z_{\mathrm{drag}}$	1059.63	$1059.81 \pm 0.86$	$\chi_{\mathrm{small}}^2$	396.05	$397.1 \pm 1.9$
$c_{217}$	0.99825	$0.99828 \pm 0.00062$	$r_{\mathrm{drag}}$	147.26	$146.6 \pm 2.3$	$\chi_{\mathrm{lowl}}^2$	22.69	$22.8 \pm 1.1$
$H_0$	67.82	$68.2 \pm 1.5$	$k_{\mathrm{D}}$	0.14048	$0.1410 \pm 0.0017$	$\chi_{\mathrm{plik}}^2$	760.2	$773.2 \pm 5.7$
$\Omega_{\Lambda}$	0.6908	$0.6914 \pm 0.0083$	$100\theta_{\mathrm{D}}$	0.16107	$0.16125 \pm 0.00058$	$\chi_{6\mathrm{DF}}^2$	0.0157	$0.057 \pm 0.076$
$\Omega_{\mathrm{m}}$	0.3092	$0.3086 \pm 0.0083$	$z_{\mathrm{eq}}$	3370.5	$3368 \pm 31$	$\chi_{\mathrm{MGS}}^2$	1.34	$1.47 \pm 0.60$
$\Omega_{\mathrm{m}}h^2$	0.14223	$0.1435 \pm 0.0040$	$k_{\mathrm{eq}}$	0.010307	$0.01035 \pm 0.00015$	$\chi_{\mathrm{DR12BAO}}^2$	4.05	$4.7 \pm 1.6$
$\Omega_{\mathrm{m}}h^3$	0.09646	$0.0979_{-0.0048}^{+0.0043}$	$100\theta_{\mathrm{eq}}$	0.8187	$0.8192 \pm 0.0059$	$\chi_{\mathrm{prior}}^2$	1.38	$7.3 \pm 3.7$
$\sigma_8$	0.8089	$0.812 \pm 0.014$	$100\theta_{\mathrm{s,eq}}$	0.45229	$0.4525 \pm 0.0030$	$\chi_{\mathrm{BAO}}^2$	5.41	$6.2 \pm 1.3$
$S_8$	0.8213	$0.823 \pm 0.016$	$H(0.15)$	73.08	$73.5 \pm 1.5$	$\chi_{\mathrm{CMB}}^2$	1178.9	$1193.0 \pm 5.6$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4498	$0.4509 \pm 0.0088$	$D_{\mathrm{M}}(0.15)$	639.4	$636 \pm 13$			
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6032	$0.605 \pm 0.010$	$H(0.38)$	83.17	$83.6 \pm 1.5$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 1185.72$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1206.54$ ;  $R - 1 = 0.01083$

$\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.34 DR12BAO: 4.05 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.05 commander\_dx12\_v3.2.29: 22.69 plik\_rd12\_HM\_v22\_TT: 760.20



### 7.38 base\_nnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_lensing\_JLA

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022247	$0.02227 \pm 0.00023$	$\sigma_8/h^{0.5}$	0.9834	$0.9844 \pm 0.0092$	$D_M(0.38)$	1527.8	$1520 \pm 29$
$\Omega_c h^2$	0.11922	$0.1202 \pm 0.0036$	$r_{\text{drag}} h$	99.76	$99.90 \pm 0.97$	$H(0.51)$	89.76	$90.2 \pm 1.5$
$100\theta_{\text{MC}}$	1.04096	$1.04087 \pm 0.00054$	$\langle d^2 \rangle^{1/2}$	2.4284	$2.431 \pm 0.023$	$D_M(0.51)$	1979.4	$1970 \pm 37$
$\tau$	0.0545	$0.0553 \pm 0.0075$	$z_{\text{re}}$	7.72	$7.80 \pm 0.75$	$H(0.61)$	95.37	$95.8 \pm 1.5$
$N_{\text{eff}}$	3.060	$3.12 \pm 0.22$	$10^9 A_s$	2.0965	$2.105 \pm 0.036$	$D_M(0.61)$	2303.5	$2293 \pm 42$
$\ln(10^{10} A_s)$	3.0429	$3.047 \pm 0.017$	$10^9 A_s e^{-2\tau}$	1.8801	$1.884 \pm 0.019$	$H(2.33)$	235.97	$236.9 \pm 3.2$
$n_s$	0.9680	$0.9687 \pm 0.0082$	$D_{40}$	1223.3	$1225 \pm 14$	$D_M(2.33)$	5760	$5736 \pm 90$
$y_{\text{cal}}$	1.00062	$1.0007 \pm 0.0025$	$D_{220}$	5720.2	$5725 \pm 40$	$f\sigma_8(0.15)$	0.4552	$0.4562 \pm 0.0066$
$A_{217}^{\text{CIB}}$	48.0	$48 \pm 7$	$D_{810}$	2538.8	$2538 \pm 14$	$\sigma_8(0.15)$	0.7478	$0.751 \pm 0.011$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.42	—	$D_{1420}$	816.9	$815.3 \pm 5.2$	$f\sigma_8(0.38)$	0.4739	$0.4751 \pm 0.0064$
$A_{143}^{\text{tSZ}}$	6.90	$5.0 \pm 2.0$	$D_{2000}$	230.45	$229.6 \pm 2.2$	$\sigma_8(0.38)$	0.6630	$0.666 \pm 0.010$
$A_{100}^{\text{PS}}$	253.3	$265 \pm 28$	$n_{s,0.002}$	0.9680	$0.9687 \pm 0.0082$	$f\sigma_8(0.51)$	0.4726	$0.4740 \pm 0.0063$
$A_{143}^{\text{PS}}$	50.5	$49 \pm 8$	$Y_{\text{P}}$	0.24553	$0.2464 \pm 0.0030$	$\sigma_8(0.51)$	0.6205	$0.6231 \pm 0.0097$
$A_{143 \times 217}^{\text{PS}}$	49.1	$43 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	0.24686	$0.2477 \pm 0.0030$	$f\sigma_8(0.61)$	0.4678	$0.4693 \pm 0.0063$
$A_{217}^{\text{PS}}$	120.3	$115 \pm 10$	$10^5 D/H$	2.614	$2.632 \pm 0.065$	$\sigma_8(0.61)$	0.5905	$0.5930 \pm 0.0094$
$A^{\text{kSZ}}$	0.04	$< 5.05$	Age/Gyr	13.791	$13.73 \pm 0.21$	$f\sigma_8(2.33)$	0.29779	$0.2991 \pm 0.0049$
$A_{100}^{\text{dustTT}}$	8.89	$9.0 \pm 1.8$	$z_*$	1090.023	$1090.14 \pm 0.46$	$\sigma_8(2.33)$	0.3071	$0.3085 \pm 0.0052$
$A_{143}^{\text{dustTT}}$	10.81	$10.7 \pm 1.8$	$r_*$	144.66	$144.1 \pm 2.1$	$f_{2000}^{143}$	30.02	$31.4 \pm 3.4$
$A_{143 \times 217}^{\text{dustTT}}$	19.47	$18.3 \pm 3.3$	$100\theta_*$	1.04115	$1.04102 \pm 0.00065$	$f_{2000}^{143 \times 217}$	33.02	$33.7 \pm 2.4$
$A_{217}^{\text{dustTT}}$	94.7	$93.2 \pm 7.3$	$D_M(z_*)/\text{Gpc}$	13.894	$13.84 \pm 0.19$	$f_{2000}^{217}$	107.48	$108.3 \pm 2.2$
$c_{100}$	0.99967	$0.99962 \pm 0.00062$	$z_{\text{drag}}$	1059.59	$1059.77 \pm 0.83$	$\chi_{\text{lensing}}^2$	8.92	$9.45 \pm 0.82$
$c_{217}$	0.99825	$0.99827 \pm 0.00062$	$r_{\text{drag}}$	147.37	$146.8 \pm 2.1$	$\chi_{\text{small}}^2$	396.08	$397.1 \pm 1.9$
$H_0$	67.70	$68.1 \pm 1.4$	$k_{\text{D}}$	0.14043	$0.1408 \pm 0.0016$	$\chi_{\text{lowl}}^2$	22.79	$23.0 \pm 1.1$
$\Omega_{\Lambda}$	0.6899	$0.6910 \pm 0.0078$	$100\theta_{\text{D}}$	0.16101	$0.16118 \pm 0.00056$	$\chi_{\text{plik}}^2$	760.1	$772.5 \pm 5.5$
$\Omega_{\text{m}}$	0.3101	$0.3090 \pm 0.0078$	$z_{\text{eq}}$	3374.5	$3370 \pm 29$	$\chi_{\text{JLA}}^2$	706.709	$706.73 \pm 0.21$
$\Omega_{\text{m}} h^2$	0.14211	$0.1432 \pm 0.0037$	$k_{\text{eq}}$	0.010309	$0.01034 \pm 0.00013$	$\chi_{\text{6DF}}^2$	0.0217	$0.053 \pm 0.071$
$\Omega_{\text{m}} h^3$	0.09621	$0.0975 \pm 0.0043$	$100\theta_{\text{eq}}$	0.8180	$0.8188 \pm 0.0054$	$\chi_{\text{MGS}}^2$	1.28	$1.43 \pm 0.55$
$\sigma_8$	0.8091	$0.812 \pm 0.012$	$100\theta_{s,\text{eq}}$	0.45192	$0.4523 \pm 0.0028$	$\chi_{\text{DR12BAO}}^2$	4.20	$4.6 \pm 1.5$
$S_8$	0.8226	$0.824 \pm 0.013$	$H(0.15)$	72.97	$73.4 \pm 1.4$	$\chi_{\text{prior}}^2$	1.29	$7.3 \pm 3.6$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4506	$0.4514 \pm 0.0069$	$D_M(0.15)$	640.5	$637 \pm 13$	$\chi_{\text{CMB}}^2$	1187.9	$1202.0 \pm 5.6$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6038	$0.6055 \pm 0.0081$	$H(0.38)$	83.05	$83.5 \pm 1.5$	$\chi_{\text{BAO}}^2$	5.50	$6.1 \pm 1.2$

Best-fit  $\chi_{\text{eff}}^2 = 1901.41$ ;  $\bar{\chi}_{\text{eff}}^2 = 1922.14$ ;  $R - 1 = 0.01097$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.28 DR12BAO: 4.20 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p.teb\_consext8: 8.92 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.08 commander\_dx12.v3.2.29: 22.79 plik\_rd12\_HM.v22\_TT: 760.13 SN - JLA December\_2013: 706.71



### 7.39 base\_nnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022279	$0.02228 \pm 0.00023$	$\sigma_8/h^{0.5}$	0.9832	$0.9842 \pm 0.0092$	$D_M(0.38)$	1523.2	$1519 \pm 28$
$\Omega_c h^2$	0.11969	$0.1203 \pm 0.0036$	$r_{\text{drag}} h$	99.88	$99.96 \pm 0.94$	$H(0.51)$	90.00	$90.2 \pm 1.5$
$100\theta_{\text{MC}}$	1.04093	$1.04087 \pm 0.00054$	$\langle d^2 \rangle^{1/2}$	2.4272	$2.430 \pm 0.022$	$D_M(0.51)$	1973.6	$1968 \pm 36$
$\tau$	0.0545	$0.0554 \pm 0.0074$	$z_{\text{re}}$	7.72	$7.81 \pm 0.75$	$H(0.61)$	95.61	$95.9 \pm 1.5$
$N_{\text{eff}}$	3.092	$3.13 \pm 0.22$	$10^9 A_s$	2.0992	$2.106 \pm 0.036$	$D_M(0.61)$	2296.8	$2291 \pm 41$
$\ln(10^{10} A_s)$	3.0441	$3.047 \pm 0.017$	$10^9 A_s e^{-2\tau}$	1.8823	$1.885 \pm 0.019$	$H(2.33)$	236.42	$236.9 \pm 3.1$
$n_s$	0.9689	$0.9691 \pm 0.0080$	$D_{40}$	1222.7	$1224 \pm 14$	$D_M(2.33)$	5746	$5733 \pm 89$
$y_{\text{cal}}$	1.00071	$1.0007 \pm 0.0025$	$D_{220}$	5722.4	$5725 \pm 40$	$f\sigma_8(0.15)$	0.4553	$0.4561 \pm 0.0066$
$A_{217}^{\text{CIB}}$	49.2	$48 \pm 7$	$D_{810}$	2539.1	$2538 \pm 14$	$\sigma_8(0.15)$	0.7490	$0.751 \pm 0.011$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.25	—	$D_{1420}$	816.6	$815.3 \pm 5.2$	$f\sigma_8(0.38)$	0.4742	$0.4751 \pm 0.0064$
$A_{143}^{\text{tSZ}}$	7.08	$5.0 \pm 2.0$	$D_{2000}$	230.24	$229.6 \pm 2.2$	$\sigma_8(0.38)$	0.6642	$0.666 \pm 0.010$
$A_{100}^{\text{PS}}$	256.0	$265 \pm 28$	$n_{s,0.002}$	0.9689	$0.9691 \pm 0.0080$	$f\sigma_8(0.51)$	0.4731	$0.4740 \pm 0.0063$
$A_{143}^{\text{PS}}$	48.4	$49 \pm 8$	$Y_{\text{P}}$	0.24597	$0.2464 \pm 0.0029$	$\sigma_8(0.51)$	0.6217	$0.6234 \pm 0.0096$
$A_{143 \times 217}^{\text{PS}}$	45.1	$43_{-10}^{+9}$	$Y_{\text{P}}^{\text{BBN}}$	0.24730	$0.2478 \pm 0.0029$	$f\sigma_8(0.61)$	0.4683	$0.4693 \pm 0.0063$
$A_{217}^{\text{PS}}$	118.5	$115 \pm 10$	$10^5 D/H$	2.619	$2.633 \pm 0.064$	$\sigma_8(0.61)$	0.5916	$0.5933 \pm 0.0093$
$A^{\text{kSZ}}$	0.00	$< 5.07$	Age/Gyr	13.758	$13.73 \pm 0.21$	$f\sigma_8(2.33)$	0.29839	$0.2993 \pm 0.0048$
$A_{100}^{\text{dustTT}}$	8.89	$9.0 \pm 1.8$	$z_*$	1090.052	$1090.15 \pm 0.46$	$\sigma_8(2.33)$	0.3077	$0.3087 \pm 0.0052$
$A_{143}^{\text{dustTT}}$	10.78	$10.7 \pm 1.8$	$r_*$	144.35	$144.0 \pm 2.1$	$f_{2000}^{143}$	30.41	$31.5 \pm 3.4$
$A_{143 \times 217}^{\text{dustTT}}$	19.37	$18.3 \pm 3.3$	$100\theta_*$	1.04109	$1.04101 \pm 0.00065$	$f_{2000}^{143 \times 217}$	33.22	$33.7 \pm 2.4$
$A_{217}^{\text{dustTT}}$	94.6	$93.2 \pm 7.3$	$D_M(z_*)/\text{Gpc}$	13.865	$13.84 \pm 0.19$	$f_{2000}^{217}$	107.74	$108.3 \pm 2.2$
$c_{100}$	0.99967	$0.99962 \pm 0.00062$	$z_{\text{drag}}$	1059.74	$1059.80 \pm 0.82$	$\chi_{\text{lensing}}^2$	8.98	$9.45 \pm 0.82$
$c_{217}$	0.99827	$0.99827 \pm 0.00062$	$r_{\text{drag}}$	147.04	$146.7 \pm 2.1$	$\chi_{\text{small}}^2$	396.05	$397.2 \pm 1.9$
$H_0$	67.92	$68.1 \pm 1.4$	$k_{\text{D}}$	0.14067	$0.1409 \pm 0.0016$	$\chi_{\text{lowl}}^2$	22.70	$22.9 \pm 1.1$
$\Omega_{\Lambda}$	0.6909	$0.6914 \pm 0.0075$	$100\theta_{\text{D}}$	0.16107	$0.16119 \pm 0.00056$	$\chi_{\text{plik}}^2$	760.1	$772.6 \pm 5.5$
$\Omega_{\text{m}}$	0.3091	$0.3086 \pm 0.0075$	$z_{\text{eq}}$	3372.0	$3369 \pm 28$	$\chi_{\text{JLA}}^2$	1034.948	$1035.04 \pm 0.34$
$\Omega_{\text{m}} h^2$	0.14262	$0.1432 \pm 0.0037$	$k_{\text{eq}}$	0.010323	$0.01034 \pm 0.00013$	$\chi_{6\text{DF}}^2$	0.0156	$0.048 \pm 0.065$
$\Omega_{\text{m}} h^3$	0.09687	$0.0976 \pm 0.0043$	$100\theta_{\text{eq}}$	0.8185	$0.8191 \pm 0.0053$	$\chi_{\text{MGS}}^2$	1.34	$1.45 \pm 0.54$
$\sigma_8$	0.8103	$0.812 \pm 0.012$	$100\theta_{s,\text{eq}}$	0.45218	$0.4525 \pm 0.0027$	$\chi_{\text{DR12BAO}}^2$	4.05	$4.5 \pm 1.4$
$S_8$	0.8226	$0.824 \pm 0.012$	$H(0.15)$	73.19	$73.4 \pm 1.4$	$\chi_{\text{prior}}^2$	1.42	$7.3 \pm 3.6$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4506	$0.4512 \pm 0.0068$	$D_M(0.15)$	638.4	$637 \pm 12$	$\chi_{\text{CMB}}^2$	1187.9	$1202.1 \pm 5.6$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6042	$0.6054 \pm 0.0081$	$H(0.38)$	83.29	$83.5 \pm 1.4$	$\chi_{\text{BAO}}^2$	5.41	$6.0 \pm 1.1$

Best-fit  $\chi_{\text{eff}}^2 = 2229.65$ ;  $\bar{\chi}_{\text{eff}}^2 = 2250.41$ ;  $R - 1 = 0.01118$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.34 DR12BAO: 4.05 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p.teb\_consext8: 8.98 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.06 commander\_dx12.v3.2.29: 22.70 plik\_rd12\_HM.v22\_TT: 760.14 SN - JLA Pantheon18: 1034.95



#### 7.40 base\_nnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022244	$0.02225 \pm 0.00023$	$\sigma_8/h^{0.5}$	0.9835	$0.9847 \pm 0.0092$	$D_M(0.38)$	1529.9	$1523 \pm 29$
$\Omega_c h^2$	0.11919	$0.1201 \pm 0.0036$	$r_{\text{drag}} h$	99.65	$99.80 \pm 0.99$	$H(0.51)$	89.67	$90.1 \pm 1.5$
$100\theta_{\text{MC}}$	1.04095	$1.04088 \pm 0.00054$	$\langle d^2 \rangle^{1/2}$	2.4306	$2.432 \pm 0.023$	$D_M(0.51)$	1981.9	$1973 \pm 37$
$\tau$	0.0544	$0.0551 \pm 0.0075$	$z_{\text{re}}$	7.70	$7.78 \pm 0.75$	$H(0.61)$	95.29	$95.7 \pm 1.6$
$N_{\text{eff}}$	3.050	$3.11 \pm 0.22$	$10^9 A_s$	2.0947	$2.103 \pm 0.036$	$D_M(0.61)$	2306.3	$2296 \pm 42$
$\ln(10^{10} A_s)$	3.0420	$3.046 \pm 0.017$	$10^9 A_s e^{-2\tau}$	1.8789	$1.884 \pm 0.020$	$H(2.33)$	235.92	$236.7 \pm 3.2$
$n_s$	0.9671	$0.9681 \pm 0.0083$	$D_{40}$	1224.7	$1225 \pm 14$	$D_M(2.33)$	5765	$5742 \pm 91$
$y_{\text{cal}}$	1.00054	$1.0007 \pm 0.0025$	$D_{220}$	5719.9	$5724 \pm 40$	$f\sigma_8(0.15)$	0.4555	$0.4565 \pm 0.0066$
$A_{217}^{\text{CIB}}$	49.2	$48 \pm 7$	$D_{810}$	2537.2	$2538 \pm 14$	$\sigma_8(0.15)$	0.7472	$0.750 \pm 0.011$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.23	—	$D_{1420}$	816.3	$815.3 \pm 5.2$	$f\sigma_8(0.38)$	0.4740	$0.4752 \pm 0.0064$
$A_{143}^{\text{tSZ}}$	7.15	$5.0 \pm 2.0$	$D_{2000}$	230.29	$229.7 \pm 2.2$	$\sigma_8(0.38)$	0.6624	$0.665 \pm 0.010$
$A_{100}^{\text{PS}}$	253.8	$265 \pm 28$	$n_{\text{s},0.002}$	0.9671	$0.9681 \pm 0.0083$	$f\sigma_8(0.51)$	0.4726	$0.4740 \pm 0.0063$
$A_{143}^{\text{PS}}$	47.5	$49 \pm 8$	$Y_{\text{P}}$	0.24540	$0.2462 \pm 0.0030$	$\sigma_8(0.51)$	0.6199	$0.6226 \pm 0.0098$
$A_{143 \times 217}^{\text{PS}}$	44.2	$43 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	0.24673	$0.2475 \pm 0.0030$	$f\sigma_8(0.61)$	0.4677	$0.4692 \pm 0.0063$
$A_{217}^{\text{PS}}$	118.0	$115 \pm 10$	$10^5 D/H$	2.611	$2.630 \pm 0.065$	$\sigma_8(0.61)$	0.5899	$0.5925 \pm 0.0094$
$A^{\text{kSZ}}$	0.06	$< 5.02$	Age/Gyr	13.802	$13.75 \pm 0.22$	$f\sigma_8(2.33)$	0.29746	$0.2988 \pm 0.0049$
$A_{100}^{\text{dustTT}}$	9.00	$9.0 \pm 1.8$	$z_*$	1090.014	$1090.14 \pm 0.46$	$\sigma_8(2.33)$	0.3067	$0.3081 \pm 0.0053$
$A_{143}^{\text{dustTT}}$	10.76	$10.7 \pm 1.8$	$r_*$	144.72	$144.2 \pm 2.1$	$f_{2000}^{143}$	30.21	$31.4 \pm 3.4$
$A_{143 \times 217}^{\text{dustTT}}$	19.28	$18.3 \pm 3.3$	$100\theta_*$	1.04113	$1.04104 \pm 0.00065$	$f_{2000}^{143 \times 217}$	33.07	$33.7 \pm 2.4$
$A_{217}^{\text{dustTT}}$	94.5	$93.3 \pm 7.3$	$D_M(z_*)/\text{Gpc}$	13.900	$13.85 \pm 0.19$	$f_{2000}^{217}$	107.57	$108.3 \pm 2.2$
$c_{100}$	0.99968	$0.99962 \pm 0.00062$	$z_{\text{drag}}$	1059.59	$1059.72 \pm 0.84$	$\chi_{\text{lensing}}^2$	8.90	$9.42 \pm 0.81$
$c_{217}$	0.99825	$0.99827 \pm 0.00062$	$r_{\text{drag}}$	147.43	$146.9 \pm 2.2$	$\chi_{\text{small}}^2$	396.08	$397.1 \pm 1.9$
$H_0$	67.59	$68.0 \pm 1.4$	$k_{\text{D}}$	0.14040	$0.1408 \pm 0.0016$	$\chi_{\text{lowl}}^2$	22.94	$23.0 \pm 1.2$
$\Omega_{\Lambda}$	0.6890	$0.6902 \pm 0.0080$	$100\theta_{\text{D}}$	0.16098	$0.16115 \pm 0.00056$	$\chi_{\text{plik}}^2$	759.7	$772.4 \pm 5.5$
$\Omega_{\text{m}}$	0.3110	$0.3098 \pm 0.0080$	$z_{\text{eq}}$	3377.8	$3373 \pm 29$	$\chi_{6\text{DF}}^2$	0.0293	$0.060 \pm 0.079$
$\Omega_{\text{m}} h^2$	0.14208	$0.1430 \pm 0.0037$	$k_{\text{eq}}$	0.010313	$0.01034 \pm 0.00013$	$\chi_{\text{MGS}}^2$	1.22	$1.37 \pm 0.55$
$\Omega_{\text{m}} h^3$	0.09603	$0.0973 \pm 0.0044$	$100\theta_{\text{eq}}$	0.8173	$0.8183 \pm 0.0056$	$\chi_{\text{DR12BAO}}^2$	4.38	$4.8 \pm 1.6$
$\sigma_8$	0.8086	$0.812 \pm 0.012$	$100\theta_{\text{s,eq}}$	0.45159	$0.4521 \pm 0.0028$	$\chi_{\text{prior}}^2$	1.45	$7.3 \pm 3.6$
$S_8$	0.8233	$0.825 \pm 0.013$	$H(0.15)$	72.87	$73.2 \pm 1.4$	$\chi_{\text{CMB}}^2$	1187.6	$1201.9 \pm 5.6$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4509	$0.4518 \pm 0.0069$	$D_M(0.15)$	641.4	$638 \pm 13$	$\chi_{\text{BAO}}^2$	5.63	$6.2 \pm 1.3$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6038	$0.6055 \pm 0.0081$	$H(0.38)$	82.96	$83.4 \pm 1.5$			

Best-fit  $\chi_{\text{eff}}^2 = 1194.71$ ;  $\bar{\chi}_{\text{eff}}^2 = 1215.41$ ;  $R - 1 = 0.01056$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.03 MGS: 1.22 DR12BAO: 4.38 CMB - smicadx12\_Dec5.ftl\_mv2.ndclpp\_p.teb\_consext8: 8.90 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.08 commander\_dx12.v3.2.29: 22.94 plik\_rd12\_HM.v22\_TT: 759.72



# 7.41 base\_nnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_Aver15

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02222 \pm 0.00022$	$\sigma_8/h^{0.5}$	$0.982 \pm 0.012$	$D_{\mathrm{M}}(0.38)$	$1528 \pm 24$
$\Omega_{\mathrm{c}} h^2$	$0.1192 \pm 0.0031$	$r_{\mathrm{drag}} h$	$99.8 \pm 1.0$	$H(0.51)$	$89.8 \pm 1.2$
$100\theta_{\mathrm{MC}}$	$1.04098 \pm 0.00051$	$\langle d^2 \rangle^{1/2}$	$2.428 \pm 0.028$	$D_{\mathrm{M}}(0.51)$	$1980 \pm 31$
$\tau$	$0.0537 \pm 0.0080$	$z_{\mathrm{re}}$	$7.62 \pm 0.82$	$H(0.61)$	$95.4 \pm 1.3$
$N_{\mathrm{eff}}$	$3.06 \pm 0.18$	$10^9 A_{\mathrm{s}}$	$2.092 \pm 0.039$	$D_{\mathrm{M}}(0.61)$	$2304 \pm 35$
$\ln(10^{10} A_{\mathrm{s}})$	$3.040 \pm 0.019$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878 \pm 0.018$	$H(2.33)$	$235.9 \pm 2.7$
$n_{\mathrm{s}}$	$0.9669 \pm 0.0071$	$D_{40}$	$1225 \pm 14$	$D_{\mathrm{M}}(2.33)$	$5762 \pm 75$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{220}$	$5720 \pm 40$	$f\sigma_8(0.15)$	$0.4544 \pm 0.0082$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2536 \pm 14$	$\sigma_8(0.15)$	$0.747 \pm 0.011$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815.4 \pm 5.1$	$f\sigma_8(0.38)$	$0.4730 \pm 0.0075$
$A_{143}^{\mathrm{tSZ}}$	$5.0 \pm 2.0$	$D_{2000}$	$229.9 \pm 2.1$	$\sigma_8(0.38)$	$0.6619 \pm 0.0098$
$A_{100}^{\mathrm{PS}}$	$264 \pm 28$	$n_{\mathrm{s},0.002}$	$0.9669 \pm 0.0071$	$f\sigma_8(0.51)$	$0.4718 \pm 0.0072$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}$	$0.2455 \pm 0.0024$	$\sigma_8(0.51)$	$0.6195 \pm 0.0093$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2468 \pm 0.0024$	$f\sigma_8(0.61)$	$0.4669 \pm 0.0069$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.619 \pm 0.058$	$\sigma_8(0.61)$	$0.5895 \pm 0.0089$
$A^{\mathrm{kSZ}}$	$< 4.85$	$\mathrm{Age}/\mathrm{Gyr}$	$13.80 \pm 0.18$	$f\sigma_8(2.33)$	$0.2973 \pm 0.0045$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	$z_*$	$1090.05 \pm 0.43$	$\sigma_8(2.33)$	$0.3066 \pm 0.0048$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$r_*$	$144.7 \pm 1.7$	$f_{2000}^{143}$	$31.0 \pm 3.2$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04117 \pm 0.00059$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.3$
$A_{217}^{\mathrm{dust}TT}$	$93.3 \pm 7.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.90 \pm 0.16$	$f_{2000}^{217}$	$108.0 \pm 2.1$
$c_{100}$	$0.99962 \pm 0.00061$	$z_{\mathrm{drag}}$	$1059.54 \pm 0.72$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.9$
$c_{217}$	$0.99827 \pm 0.00062$	$r_{\mathrm{drag}}$	$147.4 \pm 1.8$	$\chi_{\mathrm{lowl}}^2$	$23.0 \pm 1.1$
$H_0$	$67.7 \pm 1.2$	$k_{\mathrm{D}}$	$0.1404 \pm 0.0013$	$\chi_{\mathrm{plik}}^2$	$772.6 \pm 5.6$
$\Omega_{\Lambda}$	$0.6899 \pm 0.0080$	$100\theta_{\mathrm{D}}$	$0.16105 \pm 0.00048$	$\chi_{\mathrm{Aver15}}^2$	$0.60 \pm 0.79$
$\Omega_{\mathrm{m}}$	$0.3101 \pm 0.0080$	$z_{\mathrm{eq}}$	$3373 \pm 30$	$\chi_{6\mathrm{DF}}^2$	$0.062 \pm 0.080$
$\Omega_{\mathrm{m}} h^2$	$0.1421 \pm 0.0032$	$k_{\mathrm{eq}}$	$0.01030 \pm 0.00013$	$\chi_{\mathrm{MGS}}^2$	$1.37 \pm 0.56$
$\Omega_{\mathrm{m}} h^3$	$0.0962 \pm 0.0035$	$100\theta_{\mathrm{eq}}$	$0.8182 \pm 0.0057$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.7$
$\sigma_8$	$0.808 \pm 0.012$	$100\theta_{\mathrm{s,eq}}$	$0.4521 \pm 0.0029$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.6$
$S_8$	$0.821 \pm 0.016$	$H(0.15)$	$73.0 \pm 1.2$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.4$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4497 \pm 0.0086$	$D_{\mathrm{M}}(0.15)$	$641 \pm 11$	$\chi_{\mathrm{CMB}}^2$	$1192.7 \pm 5.5$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.6027 \pm 0.0095$	$H(0.38)$	$83.0 \pm 1.2$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1206.79$ ;  $R - 1 = 0.01271$



## 7.42 base\_nnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_Cooke17\_Aver15

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02222 \pm 0.00022$	$r_{\mathrm{drag}}h$	$99.8 \pm 1.0$	$D_{\mathrm{M}}(0.51)$	$1980 \pm 29$
$\Omega_{\mathrm{c}}h^2$	$0.1191 \pm 0.0029$	$\langle d^2 \rangle^{1/2}$	$2.428 \pm 0.028$	$H(0.61)$	$95.3 \pm 1.2$
$100\theta_{\mathrm{MC}}$	$1.04098 \pm 0.00049$	$z_{\mathrm{re}}$	$7.62 \pm 0.82$	$D_{\mathrm{M}}(0.61)$	$2304 \pm 33$
$\tau$	$0.0538 \pm 0.0080$	$10^9 A_{\mathrm{s}}$	$2.092 \pm 0.039$	$H(2.33)$	$235.9 \pm 2.5$
$N_{\mathrm{eff}}$	$3.06 \pm 0.16$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878 \pm 0.017$	$D_{\mathrm{M}}(2.33)$	$5763 \pm 70$
$\ln(10^{10} A_{\mathrm{s}})$	$3.040 \pm 0.019$	$D_{40}$	$1225 \pm 14$	$f\sigma_8(0.15)$	$0.4544 \pm 0.0080$
$n_{\mathrm{s}}$	$0.9669 \pm 0.0069$	$D_{220}$	$5720 \pm 40$	$\sigma_8(0.15)$	$0.746 \pm 0.010$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{810}$	$2536 \pm 14$	$f\sigma_8(0.38)$	$0.4730 \pm 0.0073$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{1420}$	$815.4 \pm 5.0$	$\sigma_8(0.38)$	$0.6618 \pm 0.0093$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{2000}$	$229.9 \pm 1.9$	$f\sigma_8(0.51)$	$0.4717 \pm 0.0069$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$n_{\mathrm{s},0.002}$	$0.9669 \pm 0.0069$	$\sigma_8(0.51)$	$0.6194 \pm 0.0088$
$A_{100}^{\mathrm{PS}}$	$264 \pm 28$	$Y_{\mathrm{P}}$	$0.2455 \pm 0.0022$	$f\sigma_8(0.61)$	$0.4669 \pm 0.0066$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2468 \pm 0.0023$	$\sigma_8(0.61)$	$0.5894 \pm 0.0084$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$10^5 \mathrm{D}/\mathrm{H}$	$2.618 \pm 0.049$	$f\sigma_8(2.33)$	$0.2973 \pm 0.0043$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$\mathrm{Age}/\mathrm{Gyr}$	$13.80 \pm 0.17$	$\sigma_8(2.33)$	$0.3065 \pm 0.0046$
$A^{\mathrm{kSZ}}$	$< 4.82$	$z_*$	$1090.04 \pm 0.37$	$f_{2000}^{143}$	$31.0 \pm 3.1$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	$r_*$	$144.7 \pm 1.6$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.2$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$100\theta_*$	$1.04118 \pm 0.00056$	$f_{2000}^{217}$	$108.0 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.90 \pm 0.15$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.9$
$A_{217}^{\mathrm{dust}TT}$	$93.3 \pm 7.3$	$z_{\mathrm{drag}}$	$1059.53 \pm 0.72$	$\chi_{\mathrm{lowl}}^2$	$23.1 \pm 1.1$
$c_{100}$	$0.99962 \pm 0.00061$	$r_{\mathrm{drag}}$	$147.5 \pm 1.7$	$\chi_{\mathrm{plik}}^2$	$772.4 \pm 5.5$
$c_{217}$	$0.99827 \pm 0.00062$	$k_{\mathrm{D}}$	$0.1403 \pm 0.0013$	$\chi_{\mathrm{Aver15}}^2$	$0.54 \pm 0.69$
$H_0$	$67.7 \pm 1.1$	$100\theta_{\mathrm{D}}$	$0.16105 \pm 0.00042$	$\chi_{\mathrm{Cooke17}}^2$	$0.27 \pm 0.39$
$\Omega_{\Lambda}$	$0.6899 \pm 0.0080$	$z_{\mathrm{eq}}$	$3373 \pm 30$	$\chi_{6\mathrm{DF}}^2$	$0.062 \pm 0.081$
$\Omega_{\mathrm{m}}$	$0.3101 \pm 0.0080$	$k_{\mathrm{eq}}$	$0.01030 \pm 0.00012$	$\chi_{\mathrm{MGS}}^2$	$1.37 \pm 0.56$
$\Omega_{\mathrm{m}}h^2$	$0.1420 \pm 0.0030$	$100\theta_{\mathrm{eq}}$	$0.8182 \pm 0.0057$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.7$
$\Omega_{\mathrm{m}}h^3$	$0.0961 \pm 0.0033$	$100\theta_{\mathrm{s,eq}}$	$0.4521 \pm 0.0029$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.6$
$\sigma_8$	$0.808 \pm 0.011$	$H(0.15)$	$73.0 \pm 1.1$	$\chi_{\mathrm{BAO}}^2$	$6.3 \pm 1.4$
$S_8$	$0.821 \pm 0.015$	$D_{\mathrm{M}}(0.15)$	$641 \pm 10$	$\chi_{\mathrm{CMB}}^2$	$1192.5 \pm 5.5$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4497 \pm 0.0084$	$H(0.38)$	$83.0 \pm 1.1$	$\chi_{\mathrm{Abund}}^2$	$0.81 \pm 0.90$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6026 \pm 0.0091$	$D_{\mathrm{M}}(0.38)$	$1528 \pm 23$		
$\sigma_8/h^{0.5}$	$0.982 \pm 0.012$	$H(0.51)$	$89.7 \pm 1.2$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1206.80; R - 1 = 0.01238$$



### 7.43 base\_nnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02227 \pm 0.00023$	$\sigma_8/h^{0.5}$	$0.984 \pm 0.012$	$D_{\mathrm{M}}(0.38)$	$1517 \pm 30$
$\Omega_{\mathrm{c}}h^2$	$0.1206 \pm 0.0039$	$r_{\mathrm{drag}}h$	$99.99 \pm 1.0$	$H(0.51)$	$90.4 \pm 1.6$
$100\theta_{\mathrm{MC}}$	$1.04084 \pm 0.00056$	$\langle d^2 \rangle^{1/2}$	$2.428 \pm 0.027$	$D_{\mathrm{M}}(0.51)$	$1965 \pm 38$
$\tau$	$0.0552^{+0.0053}_{-0.0082}$	$z_{\mathrm{re}}$	$7.80^{+0.60}_{-0.82}$	$H(0.61)$	$96.0 \pm 1.6$
$N_{\mathrm{eff}}$	$3.15 \pm 0.23$	$10^9 A_{\mathrm{s}}$	$2.105^{+0.033}_{-0.041}$	$D_{\mathrm{M}}(0.61)$	$2287 \pm 43$
$\ln(10^{10} A_{\mathrm{s}})$	$3.047^{+0.016}_{-0.019}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.885 \pm 0.021$	$H(2.33)$	$237.2 \pm 3.4$
$n_{\mathrm{s}}$	$0.9699 \pm 0.0084$	$D_{40}$	$1222 \pm 15$	$D_{\mathrm{M}}(2.33)$	$5725 \pm 93$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{220}$	$5719 \pm 40$	$f\sigma_8(0.15)$	$0.4562 \pm 0.0084$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2537 \pm 14$	$\sigma_8(0.15)$	$0.752 \pm 0.012$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$814.9 \pm 5.2$	$f\sigma_8(0.38)$	$0.4753 \pm 0.0079$
$A_{143}^{\mathrm{tSZ}}$	$4.9 \pm 2.0$	$D_{2000}$	$229.4 \pm 2.2$	$\sigma_8(0.38)$	$0.667 \pm 0.011$
$A_{100}^{\mathrm{PS}}$	$266 \pm 29$	$n_{\mathrm{s},0.002}$	$0.9699 \pm 0.0084$	$f\sigma_8(0.51)$	$0.4743 \pm 0.0076$
$A_{143}^{\mathrm{PS}}$	$50 \pm 9$	$Y_{\mathrm{P}}$	$0.2467 \pm 0.0031$	$\sigma_8(0.51)$	$0.624 \pm 0.010$
$A_{143 \times 217}^{\mathrm{PS}}$	$44^{+9}_{-10}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2480 \pm 0.0031$	$f\sigma_8(0.61)$	$0.4696 \pm 0.0075$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.641 \pm 0.067$	$\sigma_8(0.61)$	$0.594 \pm 0.010$
$A^{\mathrm{kSZ}}$	$< 5.13$	$\mathrm{Age}/\mathrm{Gyr}$	$13.71 \pm 0.22$	$f\sigma_8(2.33)$	$0.2995 \pm 0.0052$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	$z_*$	$1090.20 \pm 0.49$	$\sigma_8(2.33)$	$0.3090 \pm 0.0055$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.8$	$r_*$	$143.9 \pm 2.2$	$f_{2000}^{143}$	$31.7 \pm 3.4$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04097 \pm 0.00067$	$f_{2000}^{143 \times 217}$	$33.9 \pm 2.5$
$A_{217}^{\mathrm{dust}TT}$	$93.2 \pm 7.4$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.82 \pm 0.20$	$f_{2000}^{217}$	$108.4 \pm 2.3$
$c_{100}$	$0.99961 \pm 0.00061$	$z_{\mathrm{drag}}$	$1059.84 \pm 0.85$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.9$
$c_{217}$	$0.99828 \pm 0.00062$	$r_{\mathrm{drag}}$	$146.6 \pm 2.3$	$\chi_{\mathrm{lowl}}^2$	$22.8 \pm 1.1$
$H_0$	$68.2 \pm 1.5$	$k_{\mathrm{D}}$	$0.1410 \pm 0.0017$	$\chi_{\mathrm{plik}}^2$	$773.0 \pm 5.7$
$\Omega_{\Lambda}$	$0.6917 \pm 0.0083$	$100\theta_{\mathrm{D}}$	$0.16126 \pm 0.00058$	$\chi_{6\mathrm{DF}}^2$	$0.056 \pm 0.075$
$\Omega_{\mathrm{m}}$	$0.3083 \pm 0.0083$	$z_{\mathrm{eq}}$	$3368 \pm 31$	$\chi_{\mathrm{MGS}}^2$	$1.48 \pm 0.60$
$\Omega_{\mathrm{m}}h^2$	$0.1436 \pm 0.0040$	$k_{\mathrm{eq}}$	$0.01035 \pm 0.00015$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.5$
$\Omega_{\mathrm{m}}h^3$	$0.0980^{+0.0043}_{-0.0048}$	$100\theta_{\mathrm{eq}}$	$0.8193 \pm 0.0059$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8$	$0.813 \pm 0.013$	$100\theta_{\mathrm{s,eq}}$	$0.4526 \pm 0.0030$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.3$
$S_8$	$0.824 \pm 0.016$	$H(0.15)$	$73.5 \pm 1.5$	$\chi_{\mathrm{CMB}}^2$	$1192.8 \pm 5.5$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4514 \pm 0.0087$	$D_{\mathrm{M}}(0.15)$	$636 \pm 13$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.606 \pm 0.010$	$H(0.38)$	$83.6 \pm 1.5$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1206.29; R - 1 = 0.01028$$



#### 7.44 base\_nnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_lensing\_JLA\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02227 \pm 0.00023$	$\sigma_8/h^{0.5}$	$0.9848 \pm 0.0090$	$D_{\mathrm{M}}(0.38)$	$1520 \pm 29$
$\Omega_{\mathrm{c}}h^2$	$0.1202 \pm 0.0036$	$r_{\mathrm{drag}}h$	$99.93 \pm 0.96$	$H(0.51)$	$90.2 \pm 1.5$
$100\theta_{\mathrm{MC}}$	$1.04087 \pm 0.00054$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.022$	$D_{\mathrm{M}}(0.51)$	$1969 \pm 36$
$\tau$	$0.0560^{+0.0057}_{-0.0078}$	$z_{\mathrm{re}}$	$7.87^{+0.61}_{-0.76}$	$H(0.61)$	$95.8 \pm 1.5$
$N_{\mathrm{eff}}$	$3.13 \pm 0.22$	$10^9 A_{\mathrm{s}}$	$2.108^{+0.031}_{-0.036}$	$D_{\mathrm{M}}(0.61)$	$2292 \pm 42$
$\ln(10^{10} A_{\mathrm{s}})$	$3.048^{+0.015}_{-0.017}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.884 \pm 0.019$	$H(2.33)$	$236.9 \pm 3.2$
$n_{\mathrm{s}}$	$0.9689 \pm 0.0081$	$D_{40}$	$1224 \pm 14$	$D_{\mathrm{M}}(2.33)$	$5735 \pm 90$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025$	$D_{220}$	$5724 \pm 40$	$f\sigma_8(0.15)$	$0.4563 \pm 0.0066$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2538 \pm 14$	$\sigma_8(0.15)$	$0.751 \pm 0.011$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815.3 \pm 5.2$	$f\sigma_8(0.38)$	$0.4753 \pm 0.0063$
$A_{143}^{\mathrm{tSZ}}$	$5.0 \pm 2.0$	$D_{2000}$	$229.6 \pm 2.2$	$\sigma_8(0.38)$	$0.666 \pm 0.010$
$A_{100}^{\mathrm{PS}}$	$265 \pm 28$	$n_{\mathrm{s},0.002}$	$0.9689 \pm 0.0081$	$f\sigma_8(0.51)$	$0.4743 \pm 0.0062$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}$	$0.2464 \pm 0.0029$	$\sigma_8(0.51)$	$0.6236 \pm 0.0095$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2477 \pm 0.0030$	$f\sigma_8(0.61)$	$0.4695 \pm 0.0062$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.632 \pm 0.065$	$\sigma_8(0.61)$	$0.5934 \pm 0.0092$
$A^{\mathrm{kSZ}}$	$< 5.04$	$\mathrm{Age}/\mathrm{Gyr}$	$13.73 \pm 0.21$	$f\sigma_8(2.33)$	$0.2993 \pm 0.0048$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	$z_*$	$1090.14 \pm 0.46$	$\sigma_8(2.33)$	$0.3087 \pm 0.0051$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$r_*$	$144.1 \pm 2.1$	$f_{2000}^{143}$	$31.4 \pm 3.4$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04102 \pm 0.00065$	$f_{2000}^{143 \times 217}$	$33.7 \pm 2.5$
$A_{217}^{\mathrm{dust}TT}$	$93.2 \pm 7.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.84 \pm 0.19$	$f_{2000}^{217}$	$108.3 \pm 2.2$
$c_{100}$	$0.99962 \pm 0.00062$	$z_{\mathrm{drag}}$	$1059.79 \pm 0.83$	$\chi_{\mathrm{lensing}}^2$	$9.41 \pm 0.78$
$c_{217}$	$0.99827 \pm 0.00061$	$r_{\mathrm{drag}}$	$146.8 \pm 2.1$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.9$
$H_0$	$68.1 \pm 1.4$	$k_{\mathrm{D}}$	$0.1409 \pm 0.0016$	$\chi_{\mathrm{lowl}}^2$	$22.9 \pm 1.1$
$\Omega_{\Lambda}$	$0.6912 \pm 0.0077$	$100\theta_{\mathrm{D}}$	$0.16118 \pm 0.00056$	$\chi_{\mathrm{plik}}^2$	$772.4 \pm 5.5$
$\Omega_{\mathrm{m}}$	$0.3088 \pm 0.0077$	$z_{\mathrm{eq}}$	$3370 \pm 29$	$\chi_{\mathrm{JLA}}^2$	$706.72 \pm 0.20$
$\Omega_{\mathrm{m}}h^2$	$0.1432 \pm 0.0037$	$k_{\mathrm{eq}}$	$0.01034 \pm 0.00013$	$\chi_{6\mathrm{DF}}^2$	$0.051 \pm 0.068$
$\Omega_{\mathrm{m}}h^3$	$0.0975 \pm 0.0043$	$100\theta_{\mathrm{eq}}$	$0.8190^{+0.0050}_{-0.0056}$	$\chi_{\mathrm{MGS}}^2$	$1.44 \pm 0.55$
$\sigma_8$	$0.813 \pm 0.011$	$100\theta_{\mathrm{s,eq}}$	$0.4524 \pm 0.0027$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.4$
$S_8$	$0.824 \pm 0.013$	$H(0.15)$	$73.4 \pm 1.4$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.6$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4515 \pm 0.0069$	$D_{\mathrm{M}}(0.15)$	$637 \pm 13$	$\chi_{\mathrm{CMB}}^2$	$1201.9 \pm 5.6$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6057 \pm 0.0080$	$H(0.38)$	$83.5 \pm 1.5$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.2$

$\bar{\chi}_{\mathrm{eff}}^2 = 1921.98$ ;  $R - 1 = 0.01169$



**7.45 base\_nnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02228 \pm 0.00023$	$\sigma_8/h^{0.5}$	$0.9846 \pm 0.0090$	$D_M(0.38)$	$1519 \pm 28$
$\Omega_c h^2$	$0.1203 \pm 0.0036$	$r_{\text{drag}} h$	$99.98 \pm 0.93$	$H(0.51)$	$90.3 \pm 1.5$
$100\theta_{\text{MC}}$	$1.04087 \pm 0.00054$	$\langle d^2 \rangle^{1/2}$	$2.431 \pm 0.022$	$D_M(0.51)$	$1968 \pm 36$
$\tau$	$0.0561^{+0.0057}_{-0.0077}$	$z_{\text{re}}$	$7.88^{+0.62}_{-0.76}$	$H(0.61)$	$95.9 \pm 1.5$
$N_{\text{eff}}$	$3.13 \pm 0.22$	$10^9 A_s$	$2.108^{+0.031}_{-0.036}$	$D_M(0.61)$	$2290 \pm 41$
$\ln(10^{10} A_s)$	$3.048^{+0.015}_{-0.017}$	$10^9 A_s e^{-2\tau}$	$1.885 \pm 0.019$	$H(2.33)$	$236.9 \pm 3.1$
$n_s$	$0.9692 \pm 0.0080$	$D_{40}$	$1224 \pm 14$	$D_M(2.33)$	$5732 \pm 89$
$y_{\text{cal}}$	$1.0007 \pm 0.0025$	$D_{220}$	$5725 \pm 40$	$f\sigma_8(0.15)$	$0.4562 \pm 0.0066$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{810}$	$2538 \pm 14$	$\sigma_8(0.15)$	$0.751 \pm 0.011$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$815.3 \pm 5.2$	$f\sigma_8(0.38)$	$0.4753 \pm 0.0063$
$A_{143}^{\text{tSZ}}$	$5.0 \pm 2.0$	$D_{2000}$	$229.6 \pm 2.2$	$\sigma_8(0.38)$	$0.6665 \pm 0.0099$
$A_{100}^{\text{PS}}$	$265 \pm 28$	$n_{s,0.002}$	$0.9692 \pm 0.0080$	$f\sigma_8(0.51)$	$0.4743 \pm 0.0062$
$A_{143}^{\text{PS}}$	$49 \pm 8$	$Y_{\text{P}}$	$0.2465 \pm 0.0029$	$\sigma_8(0.51)$	$0.6239 \pm 0.0094$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	$0.2478 \pm 0.0029$	$f\sigma_8(0.61)$	$0.4695 \pm 0.0062$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$10^5 \text{D}/\text{H}$	$2.633 \pm 0.065$	$\sigma_8(0.61)$	$0.5937 \pm 0.0091$
$A^{\text{kSZ}}$	$< 5.06$	$\text{Age}/\text{Gyr}$	$13.72 \pm 0.21$	$f\sigma_8(2.33)$	$0.2995 \pm 0.0047$
$A_{100}^{\text{dustTT}}$	$9.0 \pm 1.8$	$z_*$	$1090.14 \pm 0.46$	$\sigma_8(2.33)$	$0.3089 \pm 0.0051$
$A_{143}^{\text{dustTT}}$	$10.7 \pm 1.8$	$r_*$	$144.0 \pm 2.1$	$f_{2000}^{143}$	$31.5 \pm 3.4$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04101 \pm 0.00065$	$f_{2000}^{143 \times 217}$	$33.7 \pm 2.5$
$A_{217}^{\text{dustTT}}$	$93.2 \pm 7.3$	$D_M(z_*)/\text{Gpc}$	$13.84 \pm 0.19$	$f_{2000}^{217}$	$108.3 \pm 2.2$
$c_{100}$	$0.99962 \pm 0.00062$	$z_{\text{drag}}$	$1059.81 \pm 0.82$	$\chi_{\text{lensing}}^2$	$9.42 \pm 0.78$
$c_{217}$	$0.99827 \pm 0.00062$	$r_{\text{drag}}$	$146.7 \pm 2.1$	$\chi_{\text{simall}}^2$	$397.1 \pm 1.9$
$H_0$	$68.2 \pm 1.4$	$k_{\text{D}}$	$0.1409 \pm 0.0016$	$\chi_{\text{lowl}}^2$	$22.9 \pm 1.1$
$\Omega_{\Lambda}$	$0.6916 \pm 0.0074$	$100\theta_{\text{D}}$	$0.16119 \pm 0.00056$	$\chi_{\text{plik}}^2$	$772.5 \pm 5.5$
$\Omega_{\text{m}}$	$0.3084 \pm 0.0074$	$z_{\text{eq}}$	$3368 \pm 28$	$\chi_{\text{JLA}}^2$	$1035.03 \pm 0.32$
$\Omega_{\text{m}} h^2$	$0.1432 \pm 0.0037$	$k_{\text{eq}}$	$0.01034 \pm 0.00013$	$\chi_{6\text{DF}}^2$	$0.047 \pm 0.063$
$\Omega_{\text{m}} h^3$	$0.0977^{+0.0040}_{-0.0045}$	$100\theta_{\text{eq}}$	$0.8192^{+0.0049}_{-0.0054}$	$\chi_{\text{MGS}}^2$	$1.47 \pm 0.53$
$\sigma_8$	$0.813 \pm 0.011$	$100\theta_{\text{s,eq}}$	$0.4525 \pm 0.0027$	$\chi_{\text{DR12BAO}}^2$	$4.5 \pm 1.3$
$S_8$	$0.824 \pm 0.012$	$H(0.15)$	$73.4 \pm 1.4$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.6$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4513 \pm 0.0068$	$D_M(0.15)$	$636 \pm 12$	$\chi_{\text{CMB}}^2$	$1202.0 \pm 5.6$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.6057 \pm 0.0080$	$H(0.38)$	$83.5 \pm 1.4$	$\chi_{\text{BAO}}^2$	$6.0 \pm 1.1$

$\bar{\chi}_{\text{eff}}^2 = 2250.26$ ;  $R - 1 = 0.01176$



# 7.46 base\_nnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02226 \pm 0.00023$	$\sigma_8/h^{0.5}$	$0.9851 \pm 0.0090$	$D_{\mathrm{M}}(0.38)$	$1522 \pm 29$
$\Omega_{\mathrm{c}}h^2$	$0.1201 \pm 0.0036$	$r_{\mathrm{drag}}h$	$99.84 \pm 0.98$	$H(0.51)$	$90.1 \pm 1.5$
$100\theta_{\mathrm{MC}}$	$1.04088 \pm 0.00054$	$\langle d^2 \rangle^{1/2}$	$2.433 \pm 0.023$	$D_{\mathrm{M}}(0.51)$	$1972 \pm 37$
$\tau$	$0.0558^{+0.0056}_{-0.0078}$	$z_{\mathrm{re}}$	$7.85^{+0.61}_{-0.76}$	$H(0.61)$	$95.7 \pm 1.6$
$N_{\mathrm{eff}}$	$3.11 \pm 0.22$	$10^9 A_{\mathrm{s}}$	$2.106^{+0.031}_{-0.036}$	$D_{\mathrm{M}}(0.61)$	$2295 \pm 42$
$\ln(10^{10} A_{\mathrm{s}})$	$3.047^{+0.015}_{-0.017}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.884 \pm 0.020$	$H(2.33)$	$236.8 \pm 3.2$
$n_{\mathrm{s}}$	$0.9683 \pm 0.0083$	$D_{40}$	$1225 \pm 14$	$D_{\mathrm{M}}(2.33)$	$5741 \pm 91$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025$	$D_{220}$	$5724 \pm 40$	$f\sigma_8(0.15)$	$0.4566 \pm 0.0066$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2538 \pm 14$	$\sigma_8(0.15)$	$0.751 \pm 0.011$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815.3 \pm 5.2$	$f\sigma_8(0.38)$	$0.4754 \pm 0.0063$
$A_{143}^{\mathrm{tSZ}}$	$5.0 \pm 2.0$	$D_{2000}$	$229.7 \pm 2.2$	$\sigma_8(0.38)$	$0.666 \pm 0.010$
$A_{100}^{\mathrm{PS}}$	$265 \pm 28$	$n_{\mathrm{s},0.002}$	$0.9683 \pm 0.0083$	$f\sigma_8(0.51)$	$0.4743 \pm 0.0062$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}$	$0.2462 \pm 0.0030$	$\sigma_8(0.51)$	$0.6231 \pm 0.0096$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2475 \pm 0.0030$	$f\sigma_8(0.61)$	$0.4694 \pm 0.0062$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.631 \pm 0.065$	$\sigma_8(0.61)$	$0.5930 \pm 0.0092$
$A^{\mathrm{kSZ}}$	$< 5.00$	$\mathrm{Age}/\mathrm{Gyr}$	$13.74 \pm 0.22$	$f\sigma_8(2.33)$	$0.2991 \pm 0.0048$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	$z_*$	$1090.14 \pm 0.46$	$\sigma_8(2.33)$	$0.3084 \pm 0.0052$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$r_*$	$144.2 \pm 2.1$	$f_{2000}^{143}$	$31.4 \pm 3.4$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04104 \pm 0.00065$	$f_{2000}^{143 \times 217}$	$33.6 \pm 2.5$
$A_{217}^{\mathrm{dust}TT}$	$93.3 \pm 7.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.85 \pm 0.19$	$f_{2000}^{217}$	$108.2 \pm 2.2$
$c_{100}$	$0.99962 \pm 0.00062$	$z_{\mathrm{drag}}$	$1059.74 \pm 0.83$	$\chi_{\mathrm{lensing}}^2$	$9.39 \pm 0.77$
$c_{217}$	$0.99827 \pm 0.00061$	$r_{\mathrm{drag}}$	$146.9 \pm 2.2$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.9$
$H_0$	$68.0 \pm 1.4$	$k_{\mathrm{D}}$	$0.1408 \pm 0.0016$	$\chi_{\mathrm{lowl}}^2$	$23.0 \pm 1.2$
$\Omega_{\Lambda}$	$0.6904 \pm 0.0079$	$100\theta_{\mathrm{D}}$	$0.16116 \pm 0.00056$	$\chi_{\mathrm{plik}}^2$	$772.3 \pm 5.5$
$\Omega_{\mathrm{m}}$	$0.3096 \pm 0.0079$	$z_{\mathrm{eq}}$	$3372 \pm 29$	$\chi_{6\mathrm{DF}}^2$	$0.058 \pm 0.076$
$\Omega_{\mathrm{m}}h^2$	$0.1430 \pm 0.0037$	$k_{\mathrm{eq}}$	$0.01034 \pm 0.00013$	$\chi_{\mathrm{MGS}}^2$	$1.39 \pm 0.55$
$\Omega_{\mathrm{m}}h^3$	$0.0973 \pm 0.0044$	$100\theta_{\mathrm{eq}}$	$0.8184 \pm 0.0055$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.6$
$\sigma_8$	$0.812 \pm 0.011$	$100\theta_{\mathrm{s,eq}}$	$0.4521 \pm 0.0028$	$\chi_{\mathrm{prior}}^2$	$7.2 \pm 3.6$
$S_8$	$0.825 \pm 0.013$	$H(0.15)$	$73.3 \pm 1.4$	$\chi_{\mathrm{CMB}}^2$	$1201.8 \pm 5.6$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4519 \pm 0.0069$	$D_{\mathrm{M}}(0.15)$	$638 \pm 13$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6058 \pm 0.0080$	$H(0.38)$	$83.4 \pm 1.5$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1215.24$ ;  $R - 1 = 0.01151$



7.47 base\_nnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_Aver15\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02223 \pm 0.00022$	$\sigma_8/h^{0.5}$	$0.983 \pm 0.011$	$D_{\mathrm{M}}(0.38)$	$1528 \pm 24$
$\Omega_{\mathrm{c}}h^2$	$0.1192 \pm 0.0031$	$r_{\mathrm{drag}}h$	$99.8 \pm 1.0$	$H(0.51)$	$89.8 \pm 1.2$
$100\theta_{\mathrm{MC}}$	$1.04098 \pm 0.00051$	$\langle d^2 \rangle^{1/2}$	$2.430 \pm 0.027$	$D_{\mathrm{M}}(0.51)$	$1979 \pm 30$
$\tau$	$0.0551^{+0.0052}_{-0.0083}$	$z_{\mathrm{re}}$	$7.77^{+0.58}_{-0.83}$	$H(0.61)$	$95.4 \pm 1.3$
$N_{\mathrm{eff}}$	$3.06 \pm 0.18$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.030}_{-0.039}$	$D_{\mathrm{M}}(0.61)$	$2303 \pm 35$
$\ln(10^{10} A_{\mathrm{s}})$	$3.043^{+0.014}_{-0.018}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878 \pm 0.018$	$H(2.33)$	$236.0 \pm 2.7$
$n_{\mathrm{s}}$	$0.9672 \pm 0.0071$	$D_{40}$	$1225 \pm 14$	$D_{\mathrm{M}}(2.33)$	$5760 \pm 74$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{220}$	$5720 \pm 40$	$f\sigma_8(0.15)$	$0.4549 \pm 0.0081$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2536 \pm 14$	$\sigma_8(0.15)$	$0.748 \pm 0.010$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815.4 \pm 5.1$	$f\sigma_8(0.38)$	$0.4736 \pm 0.0073$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{2000}$	$229.9 \pm 2.1$	$\sigma_8(0.38)$	$0.6629 \pm 0.0093$
$A_{100}^{\mathrm{PS}}$	$264 \pm 28$	$n_{\mathrm{s},0.002}$	$0.9672 \pm 0.0071$	$f\sigma_8(0.51)$	$0.4724 \pm 0.0070$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}$	$0.2455 \pm 0.0024$	$\sigma_8(0.51)$	$0.6204 \pm 0.0088$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2469 \pm 0.0024$	$f\sigma_8(0.61)$	$0.4676 \pm 0.0067$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.619 \pm 0.058$	$\sigma_8(0.61)$	$0.5904 \pm 0.0084$
$A^{\mathrm{kSZ}}$	$< 4.81$	$\mathrm{Age}/\mathrm{Gyr}$	$13.79 \pm 0.18$	$f\sigma_8(2.33)$	$0.2978 \pm 0.0043$
$A_{100}^{\mathrm{dustTT}}$	$9.0 \pm 1.8$	$z_*$	$1090.05 \pm 0.43$	$\sigma_8(2.33)$	$0.3071 \pm 0.0046$
$A_{143}^{\mathrm{dustTT}}$	$10.7 \pm 1.8$	$r_*$	$144.7 \pm 1.7$	$f_{2000}^{143}$	$31.0 \pm 3.2$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04117 \pm 0.00059$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.3$
$A_{217}^{\mathrm{dustTT}}$	$93.3 \pm 7.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.90 \pm 0.16$	$f_{2000}^{217}$	$108.0 \pm 2.1$
$c_{100}$	$0.99961 \pm 0.00061$	$z_{\mathrm{drag}}$	$1059.56 \pm 0.72$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.9$
$c_{217}$	$0.99826 \pm 0.00061$	$r_{\mathrm{drag}}$	$147.4 \pm 1.8$	$\chi_{\mathrm{lowl}}^2$	$23.0 \pm 1.1$
$H_0$	$67.7 \pm 1.2$	$k_{\mathrm{D}}$	$0.1404 \pm 0.0013$	$\chi_{\mathrm{plik}}^2$	$772.4 \pm 5.5$
$\Omega_{\Lambda}$	$0.6902 \pm 0.0079$	$100\theta_{\mathrm{D}}$	$0.16106 \pm 0.00048$	$\chi_{\mathrm{Aver15}}^2$	$0.61 \pm 0.80$
$\Omega_{\mathrm{m}}$	$0.3098 \pm 0.0079$	$z_{\mathrm{eq}}$	$3372 \pm 30$	$\chi_{6\mathrm{DF}}^2$	$0.060 \pm 0.079$
$\Omega_{\mathrm{m}}h^2$	$0.1421 \pm 0.0032$	$k_{\mathrm{eq}}$	$0.01030 \pm 0.00013$	$\chi_{\mathrm{MGS}}^2$	$1.39 \pm 0.56$
$\Omega_{\mathrm{m}}h^3$	$0.0963 \pm 0.0035$	$100\theta_{\mathrm{eq}}$	$0.8184 \pm 0.0056$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.6$
$\sigma_8$	$0.809 \pm 0.011$	$100\theta_{\mathrm{s,eq}}$	$0.4522 \pm 0.0029$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.6$
$S_8$	$0.822 \pm 0.015$	$H(0.15)$	$73.0 \pm 1.2$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4502 \pm 0.0085$	$D_{\mathrm{M}}(0.15)$	$640 \pm 11$	$\chi_{\mathrm{CMB}}^2$	$1192.4 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6034 \pm 0.0092$	$H(0.38)$	$83.1 \pm 1.2$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1206.51$ ;  $R - 1 = 0.01186$



7.48 base\_nnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_Cooke17\_Aver15\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02223 \pm 0.00021$	$r_{\text{drag}} h$	$99.8 \pm 1.0$	$D_{\text{M}}(0.51)$	$1979 \pm 29$
$\Omega_c h^2$	$0.1192 \pm 0.0029$	$\langle d^2 \rangle^{1/2}$	$2.430 \pm 0.027$	$H(0.61)$	$95.4 \pm 1.2$
$100\theta_{\text{MC}}$	$1.04098 \pm 0.00049$	$z_{\text{re}}$	$7.77^{+0.58}_{-0.83}$	$D_{\text{M}}(0.61)$	$2303 \pm 33$
$\tau$	$0.0551^{+0.0052}_{-0.0083}$	$10^9 A_{\text{s}}$	$2.097^{+0.029}_{-0.039}$	$H(2.33)$	$235.9 \pm 2.5$
$N_{\text{eff}}$	$3.06 \pm 0.16$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.878 \pm 0.017$	$D_{\text{M}}(2.33)$	$5761 \pm 70$
$\ln(10^{10} A_{\text{s}})$	$3.043^{+0.014}_{-0.018}$	$D_{40}$	$1225 \pm 14$	$f\sigma_8(0.15)$	$0.4549 \pm 0.0079$
$n_{\text{s}}$	$0.9671 \pm 0.0069$	$D_{220}$	$5720 \pm 40$	$\sigma_8(0.15)$	$0.7475 \pm 0.0098$
$y_{\text{cal}}$	$1.0006 \pm 0.0025$	$D_{810}$	$2536 \pm 14$	$f\sigma_8(0.38)$	$0.4735 \pm 0.0071$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{1420}$	$815.5 \pm 5.0$	$\sigma_8(0.38)$	$0.6628 \pm 0.0088$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{2000}$	$229.9 \pm 1.9$	$f\sigma_8(0.51)$	$0.4723 \pm 0.0067$
$A_{143}^{\text{tSZ}}$	$5.1 \pm 2.0$	$n_{\text{s},0.002}$	$0.9671 \pm 0.0069$	$\sigma_8(0.51)$	$0.6204 \pm 0.0083$
$A_{100}^{\text{PS}}$	$264 \pm 28$	$Y_{\text{P}}$	$0.2455 \pm 0.0022$	$f\sigma_8(0.61)$	$0.4675 \pm 0.0064$
$A_{143}^{\text{PS}}$	$49 \pm 8$	$Y_{\text{P}}^{\text{BBN}}$	$0.2468 \pm 0.0022$	$\sigma_8(0.61)$	$0.5903 \pm 0.0080$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9$	$10^5 \text{D/H}$	$2.618 \pm 0.049$	$f\sigma_8(2.33)$	$0.2977 \pm 0.0041$
$A_{217}^{\text{PS}}$	$115 \pm 10$	Age/Gyr	$13.79 \pm 0.17$	$\sigma_8(2.33)$	$0.3070 \pm 0.0044$
$A^{\text{kSZ}}$	$< 4.78$	$z_*$	$1090.04 \pm 0.37$	$f_{2000}^{143}$	$31.0 \pm 3.1$
$A_{100}^{\text{dustTT}}$	$9.0 \pm 1.8$	$r_*$	$144.7 \pm 1.6$	$f_{2000}^{143 \times 217}$	$33.3 \pm 2.2$
$A_{143}^{\text{dustTT}}$	$10.7 \pm 1.8$	$100\theta_*$	$1.04117 \pm 0.00055$	$f_{2000}^{217}$	$107.9 \pm 2.0$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3 \pm 3.3$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.90 \pm 0.15$	$\chi_{\text{simall}}^2$	$397.0 \pm 1.9$
$A_{217}^{\text{dustTT}}$	$93.3 \pm 7.3$	$z_{\text{drag}}$	$1059.55 \pm 0.72$	$\chi_{\text{lowl}}^2$	$23.1 \pm 1.1$
$c_{100}$	$0.99961 \pm 0.00061$	$r_{\text{drag}}$	$147.4 \pm 1.7$	$\chi_{\text{plik}}^2$	$772.2 \pm 5.4$
$c_{217}$	$0.99826 \pm 0.00061$	$k_{\text{D}}$	$0.1404 \pm 0.0013$	$\chi_{\text{Aver15}}^2$	$0.55 \pm 0.70$
$H_0$	$67.7 \pm 1.1$	$100\theta_{\text{D}}$	$0.16105 \pm 0.00042$	$\chi_{\text{Cooke17}}^2$	$0.27 \pm 0.39$
$\Omega_{\Lambda}$	$0.6902 \pm 0.0079$	$z_{\text{eq}}$	$3372 \pm 30$	$\chi_{6\text{DF}}^2$	$0.060 \pm 0.079$
$\Omega_{\text{m}}$	$0.3098 \pm 0.0079$	$k_{\text{eq}}$	$0.01030 \pm 0.00012$	$\chi_{\text{MGS}}^2$	$1.39 \pm 0.56$
$\Omega_{\text{m}} h^2$	$0.1420 \pm 0.0030$	$100\theta_{\text{eq}}$	$0.8184 \pm 0.0056$	$\chi_{\text{DR12BAO}}^2$	$4.8 \pm 1.7$
$\Omega_{\text{m}} h^3$	$0.0962 \pm 0.0033$	$100\theta_{\text{s,eq}}$	$0.4521 \pm 0.0029$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.6$
$\sigma_8$	$0.809 \pm 0.011$	$H(0.15)$	$73.0 \pm 1.1$	$\chi_{\text{BAO}}^2$	$6.2 \pm 1.4$
$S_8$	$0.822 \pm 0.015$	$D_{\text{M}}(0.15)$	$640 \pm 10$	$\chi_{\text{CMB}}^2$	$1192.2 \pm 5.4$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4502 \pm 0.0083$	$H(0.38)$	$83.1 \pm 1.1$	$\chi_{\text{Abund}}^2$	$0.82 \pm 0.91$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.6034 \pm 0.0088$	$D_{\text{M}}(0.38)$	$1528 \pm 23$		
$\sigma_8/h^{0.5}$	$0.983 \pm 0.011$	$H(0.51)$	$89.8 \pm 1.2$		

$$\bar{\chi}_{\text{eff}}^2 = 1206.53; R - 1 = 0.01138$$



# 7.49 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022382	$0.02239 \pm 0.00018$ (+0.5 $\sigma$ )	$\sigma_8$	0.8060	$0.808 \pm 0.012$ (−0.3 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	645.7	$643 \pm 11$ (+0.5 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11790	$0.1186 \pm 0.0031$ (−0.5 $\sigma$ )	$S_8$	0.8229	$0.823 \pm 0.014$ (−0.0 $\sigma$ )	$H(0.38)$	82.48	$82.8 \pm 1.2$ (−0.5 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.041192	$1.04110 \pm 0.00044$ (+0.4 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4507	$0.4509 \pm 0.0075$ (−0.0 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1539.6	$1534 \pm 24$ (+0.5 $\sigma$ )
$\tau$	0.0551	$0.0556 \pm 0.0080$ (+0.2 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6027	$0.6035 \pm 0.0087$ (−0.2 $\sigma$ )	$H(0.51)$	89.17	$89.5 \pm 1.2$ (−0.5 $\sigma$ )
$N_{\mathrm{eff}}$	2.956	$3.01 \pm 0.18$ (−0.6 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9837	$0.984 \pm 0.011$ (+0.0 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1994.2	$1987 \pm 30$ (+0.5 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0415	$3.043 \pm 0.019$ (−0.0 $\sigma$ )	$r_{\mathrm{drag}}h$	99.43	$99.56 \pm 0.85$ (−0.4 $\sigma$ )	$H(0.61)$	94.77	$95.1 \pm 1.3$ (−0.5 $\sigma$ )
$n_{\mathrm{s}}$	0.9652	$0.9655 \pm 0.0070$ (−0.5 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4359	$2.436 \pm 0.025$ (+0.4 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2320.4	$2312 \pm 35$ (+0.5 $\sigma$ )
$y_{\mathrm{cal}}$	1.00061	$1.0007 \pm 0.0025$ (+0.1 $\sigma$ )	$z_{\mathrm{re}}$	7.72	$7.76 \pm 0.80$ (+0.1 $\sigma$ )	$H(2.33)$	234.91	$235.5 \pm 2.7$ (−0.5 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	44.0	$46 \pm 7$ (−0.3 $\sigma$ )	$10^9A_{\mathrm{s}}$	2.0936	$2.098^{+0.036}_{-0.041}$ (−0.0 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5795	$5777 \pm 75$ (+0.5 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.89	—	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8751	$1.877 \pm 0.018$ (−0.4 $\sigma$ )	$f\sigma_8(0.15)$	0.4552	$0.4554 \pm 0.0073$ (−0.0 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	7.01	$5.6^{+2.1}_{-1.9}$ (+0.3 $\sigma$ )	$D_{40}$	1228.4	$1229 \pm 13$ (+0.5 $\sigma$ )	$\sigma_8(0.15)$	0.7447	$0.746 \pm 0.011$ (−0.3 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	244.3	$257 \pm 28$ (−0.3 $\sigma$ )	$D_{220}$	5735.9	$5737 \pm 39$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4732	$0.4737 \pm 0.0069$ (−0.1 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	52.0	$45 \pm 8$ (−0.6 $\sigma$ )	$D_{810}$	2541.0	$2539 \pm 14$ (+0.1 $\sigma$ )	$\sigma_8(0.38)$	0.6600	$0.6616 \pm 0.0097$ (−0.3 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	57.7	$42 \pm 9$ (−0.2 $\sigma$ )	$D_{1420}$	820.11	$818.1 \pm 4.9$ (+0.6 $\sigma$ )	$f\sigma_8(0.51)$	0.4716	$0.4723 \pm 0.0067$ (−0.2 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	124.0	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	232.28	$231.4 \pm 1.9$ (+0.9 $\sigma$ )	$\sigma_8(0.51)$	0.6176	$0.6191 \pm 0.0092$ (−0.4 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.01	$< 4.05$ (−0.3 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.9652	$0.9655 \pm 0.0070$ (−0.5 $\sigma$ )	$f\sigma_8(0.61)$	0.4666	$0.4673 \pm 0.0066$ (−0.2 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.76	$8.9 \pm 1.8$ (−0.1 $\sigma$ )	$Y_{\mathrm{P}}$	0.24418	$0.2448 \pm 0.0025$ (−0.6 $\sigma$ )	$\sigma_8(0.61)$	0.5876	$0.5891 \pm 0.0088$ (−0.4 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	11.02	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24551	$0.2461 \pm 0.0025$ (−0.6 $\sigma$ )	$f\sigma_8(2.33)$	0.29624	$0.2970 \pm 0.0045$ (−0.4 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	20.45	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$10^5\mathrm{D}/\mathrm{H}$	2.5521	$2.569 \pm 0.046$ (−1.1 $\sigma$ )	$\sigma_8(2.33)$	0.30535	$0.3062 \pm 0.0048$ (−0.4 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	96.2	$93.8 \pm 7.3$ (+0.1 $\sigma$ )	Age/Gyr	13.874	$13.83 \pm 0.18$ (+0.5 $\sigma$ )	$f_{2000}^{143}$	27.52	$29.0 \pm 3.0$ (−0.8 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1135	$0.114 \pm 0.038$	$z_*$	1089.632	$1089.74 \pm 0.35$ (−0.9 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.16	$31.8 \pm 2.1$ (−0.9 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1351	$0.135 \pm 0.029$	$r_*$	145.42	$145.0 \pm 1.8$ (+0.5 $\sigma$ )	$f_{2000}^{217}$	105.72	$106.7 \pm 2.0$ (−0.8 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.479	$0.482 \pm 0.085$	$100\theta_*$	1.04144	$1.04131 \pm 0.00054$ (+0.5 $\sigma$ )	$\chi_{\mathrm{small}}^2$	396.16	$397.3 \pm 2.1$ (+0.1 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.225	$0.224 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.964	$13.93 \pm 0.16$ (+0.5 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	23.21	$23.3 \pm 1.1$ (+0.5 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.666	$0.664 \pm 0.080$	$z_{\mathrm{drag}}$	1059.74	$1059.84 \pm 0.70$ (+0.0 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2344.8	$2360.4 \pm 6.2$ (+278.9 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.070	$2.08 \pm 0.27$	$r_{\mathrm{drag}}$	148.10	$147.7 \pm 1.8$ (+0.5 $\sigma$ )	$\chi_{6\mathrm{DF}}^2$	0.0470	$0.066 \pm 0.077$ (+0.1 $\sigma$ )
$c_{100}$	0.99975	$0.99966 \pm 0.00061$ (+0.1 $\sigma$ )	$k_{\mathrm{D}}$	0.14017	$0.1404 \pm 0.0013$ (−0.3 $\sigma$ )	$\chi_{\mathrm{MGS}}^2$	1.097	$1.23 \pm 0.46$ (−0.4 $\sigma$ )
$c_{217}$	0.99816	$0.99818 \pm 0.00062$ (−0.2 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160506	$0.16065 \pm 0.00040$ (−1.0 $\sigma$ )	$\chi_{\mathrm{DR12BAO}}^2$	4.79	$5.0 \pm 1.6$ (+0.2 $\sigma$ )
$H_0$	67.14	$67.4 \pm 1.2$ (−0.5 $\sigma$ )	$z_{\mathrm{eq}}$	3393.6	$3389 \pm 25$ (+0.7 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.47	$11.6 \pm 4.6$ (+1.2 $\sigma$ )
$\Omega_{\Lambda}$	0.6873	$0.6883 \pm 0.0069$ (−0.4 $\sigma$ )	$k_{\mathrm{eq}}$	0.010295	$0.01031 \pm 0.00012$ (−0.2 $\sigma$ )	$\chi_{\mathrm{BAO}}^2$	5.93	$6.3 \pm 1.3$ (+0.1 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3127	$0.3117 \pm 0.0069$ (+0.4 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.81501	$0.8159 \pm 0.0047$ (−0.6 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	2764.2	$2781.0 \pm 6.0$ (+282.2 $\sigma$ )
$\Omega_{\mathrm{m}}h^2$	0.14093	$0.1417 \pm 0.0032$ (−0.5 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.45027	$0.4507 \pm 0.0024$ (−0.6 $\sigma$ )			
$\Omega_{\mathrm{m}}h^3$	0.09462	$0.0956 \pm 0.0035$ (−0.5 $\sigma$ )	$H(0.15)$	72.40	$72.7 \pm 1.2$ (−0.5 $\sigma$ )			

Best-fit  $\chi_{\mathrm{eff}}^2 = 2771.61$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1585.89$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2798.95$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.41$ ;  $R - 1 = 0.01038$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.05 ( $\Delta$  0.03) MGS: 1.10 ( $\Delta$  -0.25) DR12BAO: 4.79 ( $\Delta$  0.74) CMB - simall\_100x143.offlike5\_EE\_Aplanck\_B: 396.16 ( $\Delta$  0.11) commander\_dx12.v3.2.29: 23.21 ( $\Delta$  0.52) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.84



## 7.50 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_JLA

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022382	$0.02238 \pm 0.00018$ (+0.5 $\sigma$ )	$\sigma_8$	0.8061	$0.8082^{+0.0091}_{-0.010}$ (−0.3 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	645.5	$643 \pm 10$ (+0.5 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11760	$0.1185 \pm 0.0028$ (−0.5 $\sigma$ )	$S_8$	0.8218	$0.824 \pm 0.011$ (−0.0 $\sigma$ )	$H(0.38)$	82.47	$82.7 \pm 1.1$ (−0.5 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.041191	$1.04110 \pm 0.00041$ (+0.4 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4501	$0.4511 \pm 0.0060$ (−0.0 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1539.5	$1534 \pm 23$ (+0.5 $\sigma$ )
$\tau$	0.0566	$0.0565^{+0.0068}_{-0.0076}$ (+0.2 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6023	$0.6038 \pm 0.0070$ (−0.2 $\sigma$ )	$H(0.51)$	89.15	$89.4 \pm 1.2$ (−0.5 $\sigma$ )
$N_{\mathrm{eff}}$	2.948	$3.00 \pm 0.17$ (−0.6 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9836	$0.9845 \pm 0.0085$ (+0.0 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1994.2	$1988 \pm 29$ (+0.5 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0438	$3.045 \pm 0.016$ (−0.1 $\sigma$ )	$r_{\mathrm{drag}}h$	99.54	$99.56 \pm 0.80$ (−0.4 $\sigma$ )	$H(0.61)$	94.74	$95.1 \pm 1.2$ (−0.5 $\sigma$ )
$n_{\mathrm{s}}$	0.9649	$0.9654 \pm 0.0067$ (−0.4 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4377	$2.439 \pm 0.021$ (+0.3 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2320.5	$2313 \pm 33$ (+0.5 $\sigma$ )
$y_{\mathrm{cal}}$	1.00079	$1.0008 \pm 0.0025$ (+0.1 $\sigma$ )	$z_{\mathrm{re}}$	7.86	$7.86 \pm 0.74$ (+0.1 $\sigma$ )	$H(2.33)$	234.68	$235.4 \pm 2.5$ (−0.5 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	45.2	$47 \pm 7$ (−0.2 $\sigma$ )	$10^9 A_{\mathrm{s}}$	2.0986	$2.102^{+0.031}_{-0.035}$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5798	$5780 \pm 71$ (+0.5 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.75	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8740	$1.877 \pm 0.016$ (−0.4 $\sigma$ )	$f\sigma_8(0.15)$	0.4547	$0.4557 \pm 0.0057$ (−0.1 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	7.06	$5.6^{+2.2}_{-1.9}$ (+0.3 $\sigma$ )	$D_{40}$	1229.7	$1230 \pm 13$ (+0.4 $\sigma$ )	$\sigma_8(0.15)$	0.7448	$0.7468^{+0.0086}_{-0.0096}$ (−0.4 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	245.9	$256 \pm 28$ (−0.3 $\sigma$ )	$D_{220}$	5740.1	$5739 \pm 38$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4728	$0.4739 \pm 0.0055$ (−0.2 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	50.0	$45 \pm 8$ (−0.6 $\sigma$ )	$D_{810}$	2540.7	$2539 \pm 14$ (+0.1 $\sigma$ )	$\sigma_8(0.38)$	0.6602	$0.6620^{+0.0079}_{-0.0089}$ (−0.4 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	54.1	$42 \pm 9$ (−0.2 $\sigma$ )	$D_{1420}$	819.97	$818.5 \pm 4.9$ (+0.6 $\sigma$ )	$f\sigma_8(0.51)$	0.4714	$0.4725 \pm 0.0054$ (−0.2 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	122.2	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	232.26	$231.5 \pm 1.9$ (+0.9 $\sigma$ )	$\sigma_8(0.51)$	0.6178	$0.6195^{+0.0075}_{-0.0085}$ (−0.4 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.00	$< 4.09$ (−0.3 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.9649	$0.9654 \pm 0.0067$ (−0.4 $\sigma$ )	$f\sigma_8(0.61)$	0.4664	$0.4676 \pm 0.0054$ (−0.3 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.82	$8.8 \pm 1.8$ (−0.1 $\sigma$ )	$Y_{\mathrm{P}}$	0.24408	$0.2447 \pm 0.0023$ (−0.6 $\sigma$ )	$\sigma_8(0.61)$	0.5879	$0.5895^{+0.0072}_{-0.0082}$ (−0.4 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	11.01	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24540	$0.2460 \pm 0.0023$ (−0.6 $\sigma$ )	$f\sigma_8(2.33)$	0.29640	$0.2972^{+0.0037}_{-0.0042}$ (−0.4 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	20.16	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 \mathrm{D}/\mathrm{H}$	2.5494	$2.567 \pm 0.043$ (−1.0 $\sigma$ )	$\sigma_8(2.33)$	0.30555	$0.3064^{+0.0040}_{-0.0046}$ (−0.4 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	95.5	$93.6 \pm 7.4$ (+0.1 $\sigma$ )	Age/Gyr	13.881	$13.84 \pm 0.17$ (+0.5 $\sigma$ )	$f_{2000}^{143}$	27.68	$28.8 \pm 3.0$ (−0.8 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1133	$0.114 \pm 0.038$	$z_*$	1089.599	$1089.72 \pm 0.32$ (−0.9 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.23	$31.7 \pm 2.1$ (−0.8 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1346	$0.135 \pm 0.030$	$r_*$	145.54	$145.1 \pm 1.6$ (+0.5 $\sigma$ )	$f_{2000}^{217}$	105.87	$106.6 \pm 2.0$ (−0.7 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.481	$0.481 \pm 0.085$	$100\theta_*$	1.04144	$1.04132 \pm 0.00050$ (+0.5 $\sigma$ )	$\chi_{\mathrm{lensing}}^2$	8.580	$9.06 \pm 0.64$ (−0.5 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.226	$0.225 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.975	$13.93 \pm 0.15$ (+0.5 $\sigma$ )	$\chi_{\mathrm{small}}^2$	396.47	$397.4 \pm 2.1$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.666	$0.665 \pm 0.079$	$z_{\mathrm{drag}}$	1059.70	$1059.82 \pm 0.67$ (+0.1 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	23.29	$23.4 \pm 1.0$ (+0.4 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.075	$2.07 \pm 0.26$	$r_{\mathrm{drag}}$	148.22	$147.8 \pm 1.7$ (+0.4 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2344.5	$2359.6 \pm 5.9$ (+287.3 $\sigma$ )
$c_{100}$	0.99975	$0.99966 \pm 0.00062$ (+0.1 $\sigma$ )	$k_{\mathrm{D}}$	0.14007	$0.1404 \pm 0.0013$ (−0.3 $\sigma$ )	$\chi_{\mathrm{JLA}}^2$	706.758	$706.79 \pm 0.20$ (+0.3 $\sigma$ )
$c_{217}$	0.99816	$0.99818 \pm 0.00061$ (−0.1 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160487	$0.16063 \pm 0.00038$ (−1.0 $\sigma$ )	$\chi_{\mathrm{6DF}}^2$	0.0376	$0.063 \pm 0.071$ (+0.1 $\sigma$ )
$H_0$	67.16	$67.4 \pm 1.1$ (−0.5 $\sigma$ )	$z_{\mathrm{eq}}$	3389.7	$3388 \pm 23$ (+0.6 $\sigma$ )	$\chi_{\mathrm{MGS}}^2$	1.156	$1.23 \pm 0.43$ (−0.4 $\sigma$ )
$\Omega_{\Lambda}$	0.6882	$0.6884 \pm 0.0065$ (−0.3 $\sigma$ )	$k_{\mathrm{eq}}$	0.010278	$0.01031 \pm 0.00011$ (−0.2 $\sigma$ )	$\chi_{\mathrm{DR12BAO}}^2$	4.58	$5.0 \pm 1.5$ (+0.2 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3118	$0.3116 \pm 0.0065$ (+0.3 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.81571	$0.8160 \pm 0.0044$ (−0.5 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.59	$11.6 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_{\mathrm{m}}h^2$	0.14063	$0.1415 \pm 0.0029$ (−0.4 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.45064	$0.4508 \pm 0.0022$ (−0.6 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	2772.9	$2789.4 \pm 6.0$ (+281.6 $\sigma$ )
$\Omega_{\mathrm{m}}h^3$	0.09444	$0.0954^{+0.0031}_{-0.0035}$ (−0.5 $\sigma$ )	$H(0.15)$	72.41	$72.7 \pm 1.1$ (−0.5 $\sigma$ )	$\chi_{\mathrm{BAO}}^2$	5.77	$6.3 \pm 1.2$ (+0.1 $\sigma$ )

Best-fit  $\chi_{\mathrm{eff}}^2 = 3486.99$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1585.58$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 3514.05$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.91$ ;  $R - 1 = 0.03296$

$\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.04 ( $\Delta$  0.02) MGS: 1.16 ( $\Delta$  0.12) DR12BAO: 4.58 ( $\Delta$  0.38) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.58 ( $\Delta$  -0.34) simall\_100x143\_offlike5\_EE\_Aplanck: 396.47 ( $\Delta$  0.39) commander\_dx12.v3.2.29: 23.29 ( $\Delta$  0.50) plik\_rd12\_HM.v22b\_TTTEEE: 2344.53 SN - JLA December\_2013: 706.76 ( $\Delta$  0.05)



7.51 base\_nnu\_plikHM\_TTTEE\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022397	$0.02239 \pm 0.00018$ (+0.5 $\sigma$ )	$\sigma_8$	0.8068	$0.808 \pm 0.010$ (−0.4 $\sigma$ )	$D_M(0.15)$	644.4	$643 \pm 10$ (+0.5 $\sigma$ )
$\Omega_c h^2$	0.11805	$0.1185 \pm 0.0029$ (−0.5 $\sigma$ )	$S_8$	0.8225	$0.823 \pm 0.011$ (−0.1 $\sigma$ )	$H(0.38)$	82.60	$82.8 \pm 1.2$ (−0.5 $\sigma$ )
$100\theta_{MC}$	1.041150	$1.04111 \pm 0.00043$ (+0.4 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4505	$0.4507 \pm 0.0060$ (−0.1 $\sigma$ )	$D_M(0.38)$	1536.9	$1534 \pm 23$ (+0.5 $\sigma$ )
$\tau$	0.0559	$0.0566 \pm 0.0074$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6029	$0.6035 \pm 0.0071$ (−0.2 $\sigma$ )	$H(0.51)$	89.30	$89.5 \pm 1.2$ (−0.5 $\sigma$ )
$N_{\text{eff}}$	2.971	$3.00 \pm 0.17$ (−0.6 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9837	$0.9840 \pm 0.0086$ (−0.0 $\sigma$ )	$D_M(0.51)$	1990.8	$1987 \pm 29$ (+0.5 $\sigma$ )
$\ln(10^{10} A_s)$	3.0437	$3.045 \pm 0.016$ (−0.1 $\sigma$ )	$r_{\text{drag}} h$	99.53	$99.62 \pm 0.79$ (−0.4 $\sigma$ )	$H(0.61)$	94.89	$95.1 \pm 1.2$ (−0.5 $\sigma$ )
$n_s$	0.9653	$0.9655 \pm 0.0067$ (−0.4 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4371	$2.438 \pm 0.021$ (+0.4 $\sigma$ )	$D_M(0.61)$	2316.6	$2312 \pm 34$ (+0.5 $\sigma$ )
$y_{\text{cal}}$	1.00085	$1.0008 \pm 0.0025$ (+0.0 $\sigma$ )	$z_{\text{re}}$	7.80	$7.86 \pm 0.73$ (+0.1 $\sigma$ )	$H(2.33)$	235.07	$235.4 \pm 2.5$ (−0.5 $\sigma$ )
$A_{217}^{\text{CIB}}$	46.4	$46 \pm 7$ (−0.3 $\sigma$ )	$10^9 A_s$	2.0982	$2.102 \pm 0.034$ (−0.1 $\sigma$ )	$D_M(2.33)$	5788	$5778 \pm 72$ (+0.5 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.50	—	$10^9 A_s e^{-2\tau}$	1.8762	$1.877 \pm 0.017$ (−0.4 $\sigma$ )	$f\sigma_8(0.15)$	0.4550	$0.4553 \pm 0.0058$ (−0.1 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.18	$5.6^{+2.2}_{-1.8}$ (+0.3 $\sigma$ )	$D_{40}$	1229.6	$1230 \pm 13$ (+0.4 $\sigma$ )	$\sigma_8(0.15)$	0.7455	$0.7467 \pm 0.0094$ (−0.4 $\sigma$ )
$A_{100}^{\text{PS}}$	248.7	$257 \pm 28$ (−0.3 $\sigma$ )	$D_{220}$	5741.1	$5740 \pm 38$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4732	$0.4737 \pm 0.0056$ (−0.2 $\sigma$ )
$A_{143}^{\text{PS}}$	46.9	$45 \pm 8$ (−0.6 $\sigma$ )	$D_{810}$	2541.0	$2539 \pm 14$ (+0.1 $\sigma$ )	$\sigma_8(0.38)$	0.6608	$0.6620 \pm 0.0086$ (−0.4 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	48.3	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{1420}$	819.67	$818.4 \pm 4.9$ (+0.6 $\sigma$ )	$f\sigma_8(0.51)$	0.4718	$0.4723 \pm 0.0055$ (−0.3 $\sigma$ )
$A_{217}^{\text{PS}}$	120.1	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	232.05	$231.5 \pm 1.9$ (+0.9 $\sigma$ )	$\sigma_8(0.51)$	0.6184	$0.6195 \pm 0.0082$ (−0.4 $\sigma$ )
$A^{\text{kSZ}}$	0.00	$< 3.98$ (−0.3 $\sigma$ )	$n_{s,0.002}$	0.9653	$0.9655 \pm 0.0067$ (−0.4 $\sigma$ )	$f\sigma_8(0.61)$	0.4668	$0.4674 \pm 0.0055$ (−0.3 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.79	$8.9 \pm 1.8$ (−0.1 $\sigma$ )	$Y_P$	0.24440	$0.2448 \pm 0.0024$ (−0.6 $\sigma$ )	$\sigma_8(0.61)$	0.5884	$0.5895 \pm 0.0079$ (−0.4 $\sigma$ )
$A_{143}^{\text{dustTT}}$	11.00	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{\text{BBN}}$	0.24573	$0.2461 \pm 0.0024$ (−0.6 $\sigma$ )	$f\sigma_8(2.33)$	0.29667	$0.2973 \pm 0.0041$ (−0.4 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	19.74	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 \text{D/H}$	2.5548	$2.565 \pm 0.044$ (−1.1 $\sigma$ )	$\sigma_8(2.33)$	0.30583	$0.3065 \pm 0.0044$ (−0.4 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.1	$93.8 \pm 7.4$ (+0.1 $\sigma$ )	Age/Gyr	13.858	$13.83 \pm 0.17$ (+0.5 $\sigma$ )	$f_{2000}^{143}$	27.99	$28.8 \pm 3.0$ (−0.8 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1142	$0.114 \pm 0.038$	$z_*$	1089.642	$1089.71 \pm 0.33$ (−1.0 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.35	$31.7 \pm 2.1$ (−0.8 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1346	$0.135 \pm 0.030$	$r_*$	145.29	$145.1 \pm 1.7$ (+0.5 $\sigma$ )	$f_{2000}^{217}$	106.12	$106.6 \pm 2.0$ (−0.8 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.481	$0.482 \pm 0.085$	$100\theta_*$	1.04138	$1.04132 \pm 0.00052$ (+0.5 $\sigma$ )	$\chi_{\text{lensing}}^2$	8.619	$9.06 \pm 0.65$ (−0.5 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.225	$0.224 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	13.952	$13.93 \pm 0.16$ (+0.5 $\sigma$ )	$\chi_{\text{small}}^2$	396	$230 \pm 200$ (−87.8 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.666	$0.664 \pm 0.080$	$z_{\text{drag}}$	1059.78	$1059.84 \pm 0.68$ (+0.0 $\sigma$ )	$\chi_{\text{lowl}}^2$	23	$191 \pm 200$ (+150.5 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.078	$2.07 \pm 0.27$	$r_{\text{drag}}$	147.96	$147.7 \pm 1.8$ (+0.5 $\sigma$ )	$\chi_{\text{plik}}^2$	2344.6	$2359.9 \pm 6.0$ (+287.6 $\sigma$ )
$c_{100}$	0.99973	$0.99968 \pm 0.00061$ (+0.1 $\sigma$ )	$k_D$	0.14026	$0.1404 \pm 0.0013$ (−0.3 $\sigma$ )	$\chi_{\text{JLA}}^2$	1035.072	$1035.12 \pm 0.34$ (+0.2 $\sigma$ )
$c_{217}$	0.99815	$0.99817 \pm 0.00062$ (−0.2 $\sigma$ )	$100\theta_D$	0.160536	$0.16062 \pm 0.00039$ (−1.0 $\sigma$ )	$\chi_{\text{6DF}}^2$	0.038	$0.59 \pm 0.66$ (+8.4 $\sigma$ )
$H_0$	67.27	$67.4 \pm 1.1$ (−0.5 $\sigma$ )	$z_{\text{eq}}$	3390.1	$3387 \pm 23$ (+0.6 $\sigma$ )	$\chi_{\text{MGS}}^2$	1.16	$0.72 \pm 0.68$ (−1.4 $\sigma$ )
$\Omega_\Lambda$	0.6882	$0.6889 \pm 0.0064$ (−0.3 $\sigma$ )	$k_{\text{eq}}$	0.010295	$0.01030 \pm 0.00011$ (−0.3 $\sigma$ )	$\chi_{\text{DR12BAO}}^2$	4.60	$4.9 \pm 1.4$ (+0.2 $\sigma$ )
$\Omega_m$	0.3118	$0.3111 \pm 0.0064$ (+0.3 $\sigma$ )	$100\theta_{\text{eq}}$	0.81566	$0.8163 \pm 0.0044$ (−0.5 $\sigma$ )	$\chi_{\text{prior}}^2$	1.72	$11.6 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_m h^2$	0.14109	$0.1415 \pm 0.0030$ (−0.5 $\sigma$ )	$100\theta_{s,\text{eq}}$	0.45060	$0.4509 \pm 0.0022$ (−0.6 $\sigma$ )	$\chi_{\text{CMB}}^2$	2772.8	$2789.7 \pm 6.0$ (+281.9 $\sigma$ )
$\Omega_m h^3$	0.09491	$0.0955 \pm 0.0034$ (−0.5 $\sigma$ )	$H(0.15)$	72.53	$72.7 \pm 1.1$ (−0.5 $\sigma$ )	$\chi_{\text{BAO}}^2$	5.79	$6.2 \pm 1.1$ (+0.1 $\sigma$ )

Best-fit  $\chi_{\text{eff}}^2 = 3815.38$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.73$ ;  $\bar{\chi}_{\text{eff}}^2 = 3842.56$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1592.15$ ;  $R - 1 = 0.01451$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.04 ( $\Delta$  0.02) MGS: 1.16 ( $\Delta$  -0.19) DR12BAO: 4.60 ( $\Delta$  0.54) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.62 ( $\Delta$  -0.36) simall\_100x143\_offlike5\_EE\_Aplanck 396.33 ( $\Delta$  0.27) commander\_dx12.v3.2.29: 23.25 ( $\Delta$  0.55) plik\_rd12\_HM.v22b\_TTTEE: 2344.60 SN - JLA Pantheon18: 1035.07 ( $\Delta$  0.12)



## 7.52 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022341	$0.02237 \pm 0.00018$ (+0.5 $\sigma$ )	$\sigma_8$	0.8047	$0.8076 \pm 0.0099$ (−0.4 $\sigma$ )	$D_M(0.15)$	648.2	$644 \pm 10$ (+0.5 $\sigma$ )
$\Omega_c h^2$	0.11726	$0.1183 \pm 0.0029$ (−0.5 $\sigma$ )	$S_8$	0.8229	$0.824 \pm 0.011$ (−0.1 $\sigma$ )	$H(0.38)$	82.19	$82.7 \pm 1.2$ (−0.5 $\sigma$ )
$100\theta_{MC}$	1.041259	$1.04112 \pm 0.00043$ (+0.4 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4507	$0.4512 \pm 0.0061$ (−0.1 $\sigma$ )	$D_M(0.38)$	1545.4	$1537 \pm 24$ (+0.5 $\sigma$ )
$\tau$	0.0558	$0.0563 \pm 0.0074$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6022	$0.6036 \pm 0.0071$ (−0.2 $\sigma$ )	$H(0.51)$	88.88	$89.4 \pm 1.2$ (−0.5 $\sigma$ )
$N_{\text{eff}}$	2.914	$2.99 \pm 0.17$ (−0.6 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9841	$0.9844 \pm 0.0086$ (−0.0 $\sigma$ )	$D_M(0.51)$	2001.6	$1990 \pm 30$ (+0.5 $\sigma$ )
$\ln(10^{10} A_s)$	3.0412	$3.044 \pm 0.016$ (−0.1 $\sigma$ )	$r_{\text{drag}} h$	99.31	$99.49 \pm 0.82$ (−0.3 $\sigma$ )	$H(0.61)$	94.46	$95.0 \pm 1.2$ (−0.5 $\sigma$ )
$n_s$	0.9635	$0.9647 \pm 0.0069$ (−0.4 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4400	$2.440 \pm 0.021$ (+0.3 $\sigma$ )	$D_M(0.61)$	2328.9	$2316 \pm 34$ (+0.5 $\sigma$ )
$y_{\text{cal}}$	1.00056	$1.0008 \pm 0.0025$ (+0.0 $\sigma$ )	$z_{\text{re}}$	7.78	$7.83 \pm 0.73$ (+0.1 $\sigma$ )	$H(2.33)$	234.31	$235.3 \pm 2.5$ (−0.5 $\sigma$ )
$A_{217}^{\text{CIB}}$	44.0	$46 \pm 7$ (−0.2 $\sigma$ )	$10^9 A_s$	2.0929	$2.100 \pm 0.034$ (−0.1 $\sigma$ )	$D_M(2.33)$	5814	$5785 \pm 73$ (+0.5 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.92	—	$10^9 A_s e^{-2\tau}$	1.8719	$1.876 \pm 0.017$ (−0.4 $\sigma$ )	$f\sigma_8(0.15)$	0.4551	$0.4557 \pm 0.0058$ (−0.1 $\sigma$ )
$A_{143}^{\text{tSZ}}$	6.98	$5.6_{-1.8}^{+2.2}$ (+0.3 $\sigma$ )	$D_{40}$	1230.9	$1231 \pm 13$ (+0.4 $\sigma$ )	$\sigma_8(0.15)$	0.7434	$0.7462 \pm 0.0094$ (−0.4 $\sigma$ )
$A_{100}^{\text{PS}}$	243.4	$256 \pm 28$ (−0.3 $\sigma$ )	$D_{220}$	5736.4	$5739 \pm 38$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4728	$0.4738 \pm 0.0056$ (−0.2 $\sigma$ )
$A_{143}^{\text{PS}}$	51.9	$45 \pm 8$ (−0.6 $\sigma$ )	$D_{810}$	2540.1	$2539 \pm 14$ (+0.1 $\sigma$ )	$\sigma_8(0.38)$	0.6587	$0.6613 \pm 0.0086$ (−0.4 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	58.2	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{1420}$	820.08	$818.4 \pm 4.9$ (+0.6 $\sigma$ )	$f\sigma_8(0.51)$	0.4712	$0.4724 \pm 0.0055$ (−0.3 $\sigma$ )
$A_{217}^{\text{PS}}$	123.9	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	232.41	$231.5 \pm 1.9$ (+0.9 $\sigma$ )	$\sigma_8(0.51)$	0.6163	$0.6189 \pm 0.0082$ (−0.4 $\sigma$ )
$A^{\text{kSZ}}$	0.01	$< 3.94$ (−0.3 $\sigma$ )	$n_{s,0.002}$	0.9635	$0.9647 \pm 0.0069$ (−0.4 $\sigma$ )	$f\sigma_8(0.61)$	0.4660	$0.4673 \pm 0.0054$ (−0.3 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.73	$8.9 \pm 1.8$ (−0.1 $\sigma$ )	$Y_P$	0.24360	$0.2445 \pm 0.0024$ (−0.5 $\sigma$ )	$\sigma_8(0.61)$	0.5864	$0.5889 \pm 0.0079$ (−0.4 $\sigma$ )
$A_{143}^{\text{dustTT}}$	10.94	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{\text{BBN}}$	0.24492	$0.2459 \pm 0.0024$ (−0.5 $\sigma$ )	$f\sigma_8(2.33)$	0.29559	$0.2969 \pm 0.0041$ (−0.4 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	20.27	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 \text{D/H}$	2.5452	$2.564 \pm 0.044$ (−1.0 $\sigma$ )	$\sigma_8(2.33)$	0.30464	$0.3061 \pm 0.0044$ (−0.4 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.8	$93.7 \pm 7.4$ (+0.1 $\sigma$ )	Age/Gyr	13.918	$13.85 \pm 0.17$ (+0.5 $\sigma$ )	$f_{2000}^{143}$	27.26	$28.8 \pm 3.0$ (−0.8 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1141	$0.114 \pm 0.038$	$z_*$	1089.587	$1089.71 \pm 0.33$ (−0.9 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.03	$31.6 \pm 2.1$ (−0.8 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1351	$0.135 \pm 0.030$	$r_*$	145.84	$145.2 \pm 1.7$ (+0.5 $\sigma$ )	$f_{2000}^{217}$	105.56	$106.6 \pm 2.0$ (−0.8 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.482 \pm 0.085$	$100\theta_*$	1.04153	$1.04135 \pm 0.00053$ (+0.5 $\sigma$ )	$\chi_{\text{lensing}}^2$	8.540	$9.05 \pm 0.65$ (−0.5 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.225	$0.224 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	14.002	$13.94 \pm 0.16$ (+0.5 $\sigma$ )	$\chi_{\text{small}}^2$	396	$229 \pm 200$ (−90.0 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.666	$0.664 \pm 0.080$	$z_{\text{drag}}$	1059.55	$1059.78 \pm 0.69$ (+0.1 $\sigma$ )	$\chi_{\text{lowl}}^2$	23	$192 \pm 200$ (+143.8 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.076	$2.07 \pm 0.27$	$r_{\text{drag}}$	148.53	$147.9 \pm 1.8$ (+0.4 $\sigma$ )	$\chi_{\text{plik}}^2$	2344.3	$2359.7 \pm 6.0$ (+287.6 $\sigma$ )
$c_{100}$	0.99977	$0.99968 \pm 0.00061$ (+0.1 $\sigma$ )	$k_D$	0.13985	$0.1403 \pm 0.0013$ (−0.3 $\sigma$ )	$\chi_{6\text{DF}}^2$	0.057	$0.57 \pm 0.63$ (+6.5 $\sigma$ )
$c_{217}$	0.99816	$0.99817 \pm 0.00062$ (−0.2 $\sigma$ )	$100\theta_D$	0.160431	$0.16060 \pm 0.00039$ (−1.0 $\sigma$ )	$\chi_{\text{MGS}}^2$	1.04	$0.69 \pm 0.65$ (−1.2 $\sigma$ )
$H_0$	66.86	$67.3 \pm 1.1$ (−0.5 $\sigma$ )	$z_{\text{eq}}$	3396.3	$3391 \pm 24$ (+0.6 $\sigma$ )	$\chi_{\text{DR12BAO}}^2$	5.00	$5.1 \pm 1.6$ (+0.2 $\sigma$ )
$\Omega_\Lambda$	0.6863	$0.6878 \pm 0.0067$ (−0.3 $\sigma$ )	$k_{\text{eq}}$	0.010274	$0.01031 \pm 0.00011$ (−0.3 $\sigma$ )	$\chi_{\text{prior}}^2$	1.42	$11.6 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_m$	0.3137	$0.3122 \pm 0.0067$ (+0.3 $\sigma$ )	$100\theta_{\text{eq}}$	0.81444	$0.8155 \pm 0.0045$ (−0.5 $\sigma$ )	$\chi_{\text{CMB}}^2$	2772.7	$2789.5 \pm 6.0$ (+282.0 $\sigma$ )
$\Omega_m h^2$	0.14025	$0.1414 \pm 0.0030$ (−0.5 $\sigma$ )	$100\theta_{s,\text{eq}}$	0.45000	$0.4505 \pm 0.0023$ (−0.5 $\sigma$ )	$\chi_{\text{BAO}}^2$	6.09	$6.4 \pm 1.3$ (+0.1 $\sigma$ )
$\Omega_m h^3$	0.09378	$0.0952_{-0.0036}^{+0.0032}$ (−0.5 $\sigma$ )	$H(0.15)$	72.12	$72.6 \pm 1.1$ (−0.5 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 2780.19$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.47$ ;  $\bar{\chi}_{\text{eff}}^2 = 2807.45$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1592.04$ ;  $R - 1 = 0.01513$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.06 ( $\Delta$  0.03) MGS: 1.04 ( $\Delta$  -0.18) DR12BAO: 5.00 ( $\Delta$  0.61) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.54 ( $\Delta$  -0.36) simall\_100x143\_offlike5\_EE\_Aplanck  
396.33 ( $\Delta$  0.25) commander\_dx12.v3.2.29: 23.47 ( $\Delta$  0.53) plik\_rd12\_HM.v22b\_TTTEEE: 2344.34



### 7.53 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Aver15

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02237 \pm 0.00017 \quad (+0.7\sigma)$	$\sigma_8$	$0.807 \pm 0.010 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$644.5 \pm 9.2 \quad (+0.4\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1182 \pm 0.0026 \quad (-0.3\sigma)$	$S_8$	$0.823 \pm 0.013 \quad (+0.1\sigma)$	$H(0.38)$	$82.6 \pm 1.0 \quad (-0.4\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04114 \pm 0.00040 \quad (+0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4506 \pm 0.0073 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1537 \pm 21 \quad (+0.4\sigma)$
$\tau$	$0.0554 \pm 0.0079 \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6028 \pm 0.0082 \quad (+0.0\sigma)$	$H(0.51)$	$89.3 \pm 1.0 \quad (-0.3\sigma)$
$N_{\mathrm{eff}}$	$2.98 \pm 0.15 \quad (-0.4\sigma)$	$\sigma_8/h^{0.5}$	$0.983 \pm 0.011 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1991 \pm 26 \quad (+0.4\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.042 \pm 0.018 \quad (+0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.50 \pm 0.83 \quad (-0.3\sigma)$	$H(0.61)$	$94.9 \pm 1.1 \quad (-0.3\sigma)$
$n_{\mathrm{s}}$	$0.9648 \pm 0.0062 \quad (-0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.437 \pm 0.025 \quad (+0.3\sigma)$	$D_{\mathrm{M}}(0.61)$	$2317 \pm 30 \quad (+0.4\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$z_{\mathrm{re}}$	$7.74 \pm 0.80 \quad (+0.1\sigma)$	$H(2.33)$	$235.2 \pm 2.3 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.095 \pm 0.038 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5787 \pm 64 \quad (+0.3\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.875 \pm 0.016 \quad (-0.2\sigma)$	$f\sigma_8(0.15)$	$0.4551 \pm 0.0070 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.6_{-1.8}^{+2.1} \quad (+0.3\sigma)$	$D_{40}$	$1230 \pm 13 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7452 \pm 0.0097 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$256 \pm 28 \quad (-0.3\sigma)$	$D_{220}$	$5737 \pm 39 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4732 \pm 0.0065 \quad (+0.0\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.5\sigma)$	$D_{810}$	$2538 \pm 14 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6605 \pm 0.0087 \quad (-0.1\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$818.3 \pm 4.9 \quad (+0.6\sigma)$	$f\sigma_8(0.51)$	$0.4717 \pm 0.0063 \quad (-0.0\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$231.5 \pm 1.8 \quad (+0.8\sigma)$	$\sigma_8(0.51)$	$0.6181 \pm 0.0082 \quad (-0.2\sigma)$
$A^{\mathrm{kSZ}}$	$< 3.94 \quad (-0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.9648 \pm 0.0062 \quad (-0.3\sigma)$	$f\sigma_8(0.61)$	$0.4667 \pm 0.0061 \quad (-0.0\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8 \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.2445 \pm 0.0021 \quad (-0.4\sigma)$	$\sigma_8(0.61)$	$0.5881 \pm 0.0079 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2458 \pm 0.0021 \quad (-0.4\sigma)$	$f\sigma_8(2.33)$	$0.2965 \pm 0.0040 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.564 \pm 0.041 \quad (-1.0\sigma)$	$\sigma_8(2.33)$	$0.3057 \pm 0.0043 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.8 \pm 7.4 \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.85 \pm 0.15 \quad (+0.3\sigma)$	$f_{2000}^{143}$	$28.8 \pm 2.9 \quad (-0.7\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.038$	$z_*$	$1089.70 \pm 0.32 \quad (-0.8\sigma)$	$f_{2000}^{143 \times 217}$	$31.6 \pm 2.0 \quad (-0.8\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.030$	$r_*$	$145.2 \pm 1.5 \quad (+0.3\sigma)$	$f_{2000}^{217}$	$106.5 \pm 1.9 \quad (-0.7\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.482 \pm 0.085$	$100\theta_*$	$1.04137 \pm 0.00048 \quad (+0.3\sigma)$	$\chi_{\mathrm{small}}^2$	$228 \pm 200 \quad (-90.6\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.224 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.95 \pm 0.14 \quad (+0.3\sigma)$	$\chi_{\mathrm{lowl}}^2$	$192 \pm 200 \quad (+153.8\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.664 \pm 0.080$	$z_{\mathrm{drag}}$	$1059.75 \pm 0.61 \quad (+0.3\sigma)$	$\chi_{\mathrm{plik}}^2$	$2359.9 \pm 6.1 \quad (+285.4\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.07 \pm 0.27$	$r_{\mathrm{drag}}$	$147.9 \pm 1.6 \quad (+0.3\sigma)$	$\chi_{\mathrm{Aver15}}^2$	$0.32 \pm 0.45 \quad (-0.4\sigma)$
$c_{100}$	$0.99967 \pm 0.00062 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.1403 \pm 0.0011 \quad (-0.1\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.58 \pm 0.63 \quad (+6.4\sigma)$
$c_{217}$	$0.99818 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16060 \pm 0.00035 \quad (-0.9\sigma)$	$\chi_{\mathrm{MGS}}^2$	$0.69 \pm 0.65 \quad (-1.2\sigma)$
$H_0$	$67.3 \pm 1.0 \quad (-0.4\sigma)$	$z_{\mathrm{eq}}$	$3390 \pm 24 \quad (+0.6\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$5.1 \pm 1.6 \quad (+0.2\sigma)$
$\Omega_{\Lambda}$	$0.6878 \pm 0.0067 \quad (-0.3\sigma)$	$k_{\mathrm{eq}}$	$0.01030 \pm 0.00011 \quad (-0.0\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.6 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.3122 \pm 0.0067 \quad (+0.3\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8156 \pm 0.0046 \quad (-0.5\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.4 \pm 1.4 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1413 \pm 0.0027 \quad (-0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4506 \pm 0.0023 \quad (-0.5\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2780.6 \pm 6.0 \quad (+287.3\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.0950 \pm 0.0030 \quad (-0.3\sigma)$	$H(0.15)$	$72.5 \pm 1.0 \quad (-0.4\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2798.91; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.13; R - 1 = 0.01423$$



### 7.54 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Cooke17\_Aver15

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02237 \pm 0.00017 \quad (+0.7\sigma)$	$S_8$	$0.824 \pm 0.013 \quad (+0.2\sigma)$	$D_M(0.38)$	$1534 \pm 20 \quad (+0.2\sigma)$
$\Omega_c h^2$	$0.1187 \pm 0.0025 \quad (-0.2\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4513 \pm 0.0072 \quad (+0.2\sigma)$	$H(0.51)$	$89.5 \pm 1.0 \quad (-0.2\sigma)$
$100\theta_{MC}$	$1.04108 \pm 0.00039 \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6038 \pm 0.0080 \quad (+0.1\sigma)$	$D_M(0.51)$	$1987 \pm 25 \quad (+0.2\sigma)$
$\tau$	$0.0554 \pm 0.0080 \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.984 \pm 0.011 \quad (+0.2\sigma)$	$H(0.61)$	$95.1 \pm 1.0 \quad (-0.2\sigma)$
$N_{\text{eff}}$	$3.01 \pm 0.14 \quad (-0.3\sigma)$	$r_{\text{drag}} h$	$99.50 \pm 0.83 \quad (-0.3\sigma)$	$D_M(0.61)$	$2313 \pm 29 \quad (+0.2\sigma)$
$\ln(10^{10} A_s)$	$3.043 \pm 0.018 \quad (+0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.437 \pm 0.025 \quad (+0.3\sigma)$	$H(2.33)$	$235.6 \pm 2.2 \quad (-0.1\sigma)$
$n_s$	$0.9655 \pm 0.0061 \quad (-0.2\sigma)$	$z_{\text{re}}$	$7.75 \pm 0.80 \quad (+0.1\sigma)$	$D_M(2.33)$	$5778 \pm 61 \quad (+0.2\sigma)$
$y_{\text{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$10^9 A_s$	$2.097 \pm 0.038 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4558 \pm 0.0069 \quad (+0.2\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_s e^{-2\tau}$	$1.877 \pm 0.016 \quad (-0.0\sigma)$	$\sigma_8(0.15)$	$0.7465 \pm 0.0094 \quad (+0.0\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{40}$	$1229 \pm 13 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4740 \pm 0.0064 \quad (+0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$5.6_{-1.9}^{+2.2} \quad (+0.3\sigma)$	$D_{220}$	$5735 \pm 38 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6616 \pm 0.0084 \quad (-0.0\sigma)$
$A_{100}^{\text{PS}}$	$257 \pm 28 \quad (-0.2\sigma)$	$D_{810}$	$2539 \pm 14 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4725 \pm 0.0061 \quad (+0.1\sigma)$
$A_{143}^{\text{PS}}$	$45 \pm 8 \quad (-0.5\sigma)$	$D_{1420}$	$818.0 \pm 4.8 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.6192 \pm 0.0080 \quad (-0.0\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{2000}$	$231.3 \pm 1.7 \quad (+0.7\sigma)$	$f\sigma_8(0.61)$	$0.4675 \pm 0.0059 \quad (+0.1\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$n_{s,0.002}$	$0.9655 \pm 0.0061 \quad (-0.2\sigma)$	$\sigma_8(0.61)$	$0.5891 \pm 0.0076 \quad (-0.0\sigma)$
$A^{\text{kSZ}}$	$< 4.05 \quad (-0.2\sigma)$	$Y_P$	$0.2448 \pm 0.0020 \quad (-0.3\sigma)$	$f\sigma_8(2.33)$	$0.2970 \pm 0.0039 \quad (-0.1\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.2462 \pm 0.0020 \quad (-0.3\sigma)$	$\sigma_8(2.33)$	$0.3062_{-0.0043}^{+0.0039} \quad (-0.1\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$10^5 \text{D/H}$	$2.572 \pm 0.038 \quad (-0.9\sigma)$	$f_{2000}^{143}$	$29.1 \pm 2.9 \quad (-0.6\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$\text{Age/Gyr}$	$13.83 \pm 0.15 \quad (+0.2\sigma)$	$f_{2000}^{143 \times 217}$	$31.8 \pm 2.0 \quad (-0.7\sigma)$
$A_{217}^{\text{dustTT}}$	$93.8 \pm 7.4 \quad (+0.1\sigma)$	$z_*$	$1089.77 \pm 0.29 \quad (-0.8\sigma)$	$f_{2000}^{217}$	$106.7 \pm 1.9 \quad (-0.6\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$r_*$	$145.0 \pm 1.4 \quad (+0.2\sigma)$	$\chi_{\text{small}}^2$	$230 \pm 200 \quad (-89.7\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$100\theta_*$	$1.04129 \pm 0.00046 \quad (+0.2\sigma)$	$\chi_{\text{lowl}}^2$	$190 \pm 200 \quad (+154.5\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.482 \pm 0.085$	$D_M(z_*)/\text{Gpc}$	$13.92 \pm 0.13 \quad (+0.2\sigma)$	$\chi_{\text{plik}}^2$	$2359.9 \pm 6.1 \quad (+288.0\sigma)$
$A_{143}^{\text{dustTE}}$	$0.224 \pm 0.054$	$z_{\text{drag}}$	$1059.80 \pm 0.61 \quad (+0.4\sigma)$	$\chi_{\text{Aver15}}^2$	$0.34 \pm 0.46 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.665 \pm 0.080$	$r_{\text{drag}}$	$147.7 \pm 1.5 \quad (+0.1\sigma)$	$\chi_{\text{Cooke17}}^2$	$0.40 \pm 0.45 \quad (+0.3\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.27$	$k_D$	$0.1404 \pm 0.0011 \quad (+0.1\sigma)$	$\chi_{6\text{DF}}^2$	$0.57 \pm 0.63 \quad (+6.3\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_D$	$0.16067 \pm 0.00032 \quad (-0.9\sigma)$	$\chi_{\text{MGS}}^2$	$0.69 \pm 0.65 \quad (-1.2\sigma)$
$c_{217}$	$0.99818 \pm 0.00062 \quad (-0.1\sigma)$	$z_{\text{eq}}$	$3390 \pm 24 \quad (+0.5\sigma)$	$\chi_{\text{DR12BAO}}^2$	$5.1 \pm 1.7 \quad (+0.2\sigma)$
$H_0$	$67.39 \pm 0.98 \quad (-0.3\sigma)$	$k_{\text{eq}}$	$0.01032 \pm 0.00010 \quad (+0.1\sigma)$	$\chi_{\text{prior}}^2$	$11.6 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_\Lambda$	$0.6879 \pm 0.0067 \quad (-0.3\sigma)$	$100\theta_{\text{eq}}$	$0.8157 \pm 0.0046 \quad (-0.5\sigma)$	$\chi_{\text{BAO}}^2$	$6.4 \pm 1.4 \quad (+0.1\sigma)$
$\Omega_m$	$0.3121 \pm 0.0067 \quad (+0.3\sigma)$	$100\theta_{s,\text{eq}}$	$0.4506 \pm 0.0023 \quad (-0.5\sigma)$	$\chi_{\text{CMB}}^2$	$2780.5 \pm 5.9 \quad (+290.0\sigma)$
$\Omega_m h^2$	$0.1417 \pm 0.0026 \quad (-0.1\sigma)$	$H(0.15)$	$72.67 \pm 0.97 \quad (-0.3\sigma)$	$\chi_{\text{Abund}}^2$	$0.74 \pm 0.57 \quad (-0.1\sigma)$
$\Omega_m h^3$	$0.0955 \pm 0.0029 \quad (-0.2\sigma)$	$D_M(0.15)$	$643.4 \pm 9.0 \quad (+0.3\sigma)$		
$\sigma_8$	$0.808 \pm 0.010 \quad (+0.0\sigma)$	$H(0.38)$	$82.77 \pm 0.99 \quad (-0.2\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2799.26; \Delta\bar{\chi}_{\text{eff}}^2 = 1592.46; R - 1 = 0.01400$$



### 7.55 base\_nnu\_plikHM\_TTTEE\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02239 \pm 0.00018 \quad (+0.5\sigma)$	$\sigma_8$	$0.809 \pm 0.011 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.15)$	$643 \pm 11 \quad (+0.6\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1186 \pm 0.0031 \quad (-0.5\sigma)$	$S_8$	$0.824 \pm 0.013 \quad (-0.0\sigma)$	$H(0.38)$	$82.8 \pm 1.2 \quad (-0.6\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04110 \pm 0.00044 \quad (+0.5\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4512 \pm 0.0074 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1533 \pm 24 \quad (+0.6\sigma)$
$\tau$	$0.0565^{+0.0056}_{-0.0083} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6040 \pm 0.0085 \quad (-0.2\sigma)$	$H(0.51)$	$89.5 \pm 1.2 \quad (-0.6\sigma)$
$N_{\mathrm{eff}}$	$3.01 \pm 0.18 \quad (-0.6\sigma)$	$\sigma_8/h^{0.5}$	$0.984 \pm 0.010 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1986 \pm 30 \quad (+0.6\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.015}_{-0.019} \quad (-0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.57 \pm 0.85 \quad (-0.4\sigma)$	$H(0.61)$	$95.1 \pm 1.3 \quad (-0.5\sigma)$
$n_{\mathrm{s}}$	$0.9657 \pm 0.0069 \quad (-0.5\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.438 \pm 0.024 \quad (+0.4\sigma)$	$D_{\mathrm{M}}(0.61)$	$2311 \pm 35 \quad (+0.6\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$z_{\mathrm{re}}$	$7.86^{+0.61}_{-0.82} \quad (+0.1\sigma)$	$H(2.33)$	$235.6 \pm 2.7 \quad (-0.5\sigma)$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7 \quad (-0.3\sigma)$	$10^9 A_{\mathrm{s}}$	$2.102^{+0.031}_{-0.040} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5776 \pm 75 \quad (+0.5\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.877 \pm 0.018 \quad (-0.4\sigma)$	$f\sigma_8(0.15)$	$0.4558 \pm 0.0071 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.2}_{-1.9} \quad (+0.3\sigma)$	$D_{40}$	$1229 \pm 13 \quad (+0.5\sigma)$	$\sigma_8(0.15)$	$0.747 \pm 0.010 \quad (-0.4\sigma)$
$A_{100}^{\mathrm{PS}}$	$257 \pm 28 \quad (-0.3\sigma)$	$D_{220}$	$5737 \pm 39 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4741 \pm 0.0067 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.6\sigma)$	$D_{810}$	$2539 \pm 14 \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.6623 \pm 0.0094 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.2\sigma)$	$D_{1420}$	$818.1 \pm 4.9 \quad (+0.6\sigma)$	$f\sigma_8(0.51)$	$0.4727 \pm 0.0065 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$231.4 \pm 1.9 \quad (+0.9\sigma)$	$\sigma_8(0.51)$	$0.6198 \pm 0.0089 \quad (-0.4\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.04 \quad (-0.3\sigma)$	$n_{\mathrm{s},0.002}$	$0.9657 \pm 0.0069 \quad (-0.5\sigma)$	$f\sigma_8(0.61)$	$0.4677 \pm 0.0064 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.2449 \pm 0.0025 \quad (-0.6\sigma)$	$\sigma_8(0.61)$	$0.5897^{+0.0079}_{-0.0088} \quad (-0.4\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2462 \pm 0.0025 \quad (-0.6\sigma)$	$f\sigma_8(2.33)$	$0.2974^{+0.0040}_{-0.0045} \quad (-0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.569 \pm 0.046 \quad (-1.1\sigma)$	$\sigma_8(2.33)$	$0.3066^{+0.0043}_{-0.0048} \quad (-0.4\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.8 \pm 7.3 \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.83 \pm 0.18 \quad (+0.5\sigma)$	$f_{2000}^{143}$	$29.0 \pm 3.0 \quad (-0.8\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.114 \pm 0.038$	$z_*$	$1089.74 \pm 0.35 \quad (-0.9\sigma)$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.1 \quad (-0.9\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.029$	$r_*$	$145.0 \pm 1.8 \quad (+0.5\sigma)$	$f_{2000}^{217}$	$106.6 \pm 2.0 \quad (-0.8\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.482 \pm 0.085$	$100\theta_*$	$1.04131 \pm 0.00054 \quad (+0.5\sigma)$	$\chi_{\mathrm{small}}^2$	$397.3 \pm 2.2 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.224 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.92 \pm 0.16 \quad (+0.5\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.3 \pm 1.1 \quad (+0.5\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.664 \pm 0.080$	$z_{\mathrm{drag}}$	$1059.85 \pm 0.70 \quad (+0.0\sigma)$	$\chi_{\mathrm{plik}}^2$	$2360.2 \pm 6.2 \quad (+280.8\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.27$	$r_{\mathrm{drag}}$	$147.7 \pm 1.8 \quad (+0.5\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.065 \pm 0.076 \quad (+0.1\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.1405 \pm 0.0013 \quad (-0.3\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.24 \pm 0.46 \quad (-0.4\sigma)$
$c_{217}$	$0.99818 \pm 0.00062 \quad (-0.2\sigma)$	$100\theta_{\mathrm{D}}$	$0.16065 \pm 0.00040 \quad (-1.0\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$5.0 \pm 1.6 \quad (+0.2\sigma)$
$H_0$	$67.4 \pm 1.2 \quad (-0.6\sigma)$	$z_{\mathrm{eq}}$	$3388 \pm 25 \quad (+0.7\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.6 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\Lambda}$	$0.6885 \pm 0.0069 \quad (-0.4\sigma)$	$k_{\mathrm{eq}}$	$0.01031 \pm 0.00012 \quad (-0.2\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.3 \pm 1.3 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3115 \pm 0.0069 \quad (+0.4\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8160 \pm 0.0047 \quad (-0.6\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2780.8 \pm 6.0 \quad (+286.6\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1417 \pm 0.0032 \quad (-0.5\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4508 \pm 0.0024 \quad (-0.6\sigma)$		
$\Omega_{\mathrm{m}}h^3$	$0.0956 \pm 0.0035 \quad (-0.5\sigma)$	$H(0.15)$	$72.7 \pm 1.2 \quad (-0.6\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2798.76; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.46; R - 1 = 0.01049$$



**7.56 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_JLA\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02239 \pm 0.00018 \quad (+0.5\sigma)$	$\sigma_8$	$0.8085^{+0.0089}_{-0.010} \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.15)$	$643 \pm 10 \quad (+0.5\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1185 \pm 0.0028 \quad (-0.5\sigma)$	$S_8$	$0.824 \pm 0.011 \quad (-0.0\sigma)$	$H(0.38)$	$82.8 \pm 1.1 \quad (-0.5\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04110 \pm 0.00041 \quad (+0.4\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4512 \pm 0.0059 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1534 \pm 23 \quad (+0.5\sigma)$
$\tau$	$0.0571^{+0.0058}_{-0.0077} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6040 \pm 0.0069 \quad (-0.2\sigma)$	$H(0.51)$	$89.5 \pm 1.2 \quad (-0.5\sigma)$
$N_{\mathrm{eff}}$	$3.00 \pm 0.17 \quad (-0.6\sigma)$	$\sigma_8/h^{0.5}$	$0.9848 \pm 0.0084 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1987 \pm 29 \quad (+0.5\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046^{+0.014}_{-0.017} \quad (-0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.58 \pm 0.80 \quad (-0.4\sigma)$	$H(0.61)$	$95.1 \pm 1.2 \quad (-0.5\sigma)$
$n_{\mathrm{s}}$	$0.9655 \pm 0.0066 \quad (-0.4\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.440 \pm 0.020 \quad (+0.3\sigma)$	$D_{\mathrm{M}}(0.61)$	$2313 \pm 33 \quad (+0.5\sigma)$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0025 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.91^{+0.61}_{-0.75} \quad (+0.1\sigma)$	$H(2.33)$	$235.4 \pm 2.5 \quad (-0.5\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.104^{+0.028}_{-0.035} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5779 \pm 71 \quad (+0.5\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.877 \pm 0.016 \quad (-0.4\sigma)$	$f\sigma_8(0.15)$	$0.4558 \pm 0.0057 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.6^{+2.2}_{-1.9} \quad (+0.3\sigma)$	$D_{40}$	$1230 \pm 13 \quad (+0.4\sigma)$	$\sigma_8(0.15)$	$0.7472^{+0.0083}_{-0.0096} \quad (-0.4\sigma)$
$A_{100}^{\mathrm{PS}}$	$256 \pm 28 \quad (-0.3\sigma)$	$D_{220}$	$5738 \pm 38 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4741 \pm 0.0054 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.6\sigma)$	$D_{810}$	$2539 \pm 14 \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.6623^{+0.0076}_{-0.0088} \quad (-0.4\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.2\sigma)$	$D_{1420}$	$818.4 \pm 4.9 \quad (+0.6\sigma)$	$f\sigma_8(0.51)$	$0.4727 \pm 0.0053 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$231.5 \pm 1.9 \quad (+0.9\sigma)$	$\sigma_8(0.51)$	$0.6198^{+0.0072}_{-0.0084} \quad (-0.4\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.10 \quad (-0.3\sigma)$	$n_{\mathrm{s},0.002}$	$0.9655 \pm 0.0066 \quad (-0.4\sigma)$	$f\sigma_8(0.61)$	$0.4677 \pm 0.0053 \quad (-0.3\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.8 \pm 1.8 \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.2447 \pm 0.0023 \quad (-0.6\sigma)$	$\sigma_8(0.61)$	$0.5898^{+0.0070}_{-0.0081} \quad (-0.4\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2461 \pm 0.0023 \quad (-0.6\sigma)$	$f\sigma_8(2.33)$	$0.2974^{+0.0036}_{-0.0042} \quad (-0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.567 \pm 0.043 \quad (-1.0\sigma)$	$\sigma_8(2.33)$	$0.3066^{+0.0038}_{-0.0045} \quad (-0.4\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.6 \pm 7.4 \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.84 \pm 0.17 \quad (+0.5\sigma)$	$f_{2000}^{143}$	$28.8 \pm 3.0 \quad (-0.8\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.038$	$z_*$	$1089.72 \pm 0.32 \quad (-0.9\sigma)$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.1 \quad (-0.8\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.030$	$r_*$	$145.1 \pm 1.6 \quad (+0.5\sigma)$	$f_{2000}^{217}$	$106.6 \pm 2.0 \quad (-0.7\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.480 \pm 0.085$	$100\theta_*$	$1.04131 \pm 0.00050 \quad (+0.5\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.04 \pm 0.61 \quad (-0.5\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.224 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.93 \pm 0.15 \quad (+0.5\sigma)$	$\chi_{\mathrm{small}}^2$	$397.4 \pm 2.1 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.665 \pm 0.079$	$z_{\mathrm{drag}}$	$1059.82 \pm 0.67 \quad (+0.0\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.4 \pm 1.0 \quad (+0.4\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.07 \pm 0.26$	$r_{\mathrm{drag}}$	$147.7 \pm 1.7 \quad (+0.5\sigma)$	$\chi_{\mathrm{plik}}^2$	$2359.6 \pm 5.8 \quad (+288.2\sigma)$
$c_{100}$	$0.99966 \pm 0.00062 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.1404 \pm 0.0013 \quad (-0.3\sigma)$	$\chi_{\mathrm{JLA}}^2$	$706.78 \pm 0.19 \quad (+0.3\sigma)$
$c_{217}$	$0.99818 \pm 0.00061 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16063 \pm 0.00038 \quad (-1.0\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.061 \pm 0.069 \quad (+0.1\sigma)$
$H_0$	$67.4 \pm 1.1 \quad (-0.5\sigma)$	$z_{\mathrm{eq}}$	$3388 \pm 23 \quad (+0.6\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.24 \pm 0.43 \quad (-0.4\sigma)$
$\Omega_{\Lambda}$	$0.6885 \pm 0.0065 \quad (-0.3\sigma)$	$k_{\mathrm{eq}}$	$0.01031 \pm 0.00011 \quad (-0.2\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 \pm 1.5 \quad (+0.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.3115 \pm 0.0065 \quad (+0.3\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8161 \pm 0.0044 \quad (-0.5\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.6 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1415 \pm 0.0029 \quad (-0.4\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4508 \pm 0.0022 \quad (-0.6\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2789.3 \pm 5.9 \quad (+284.2\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.0954^{+0.0031}_{-0.0036} \quad (-0.5\sigma)$	$H(0.15)$	$72.7 \pm 1.1 \quad (-0.5\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.2 \quad (+0.1\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 3513.91; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.94; R - 1 = 0.03578$$



**7.57 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02240 \pm 0.00018 \quad (+0.5\sigma)$	$\sigma_8$	$0.8084 \pm 0.0098 \quad (-0.4\sigma)$	$D_{\text{M}}(0.15)$	$643 \pm 10 \quad (+0.5\sigma)$
$\Omega_{\text{c}}h^2$	$0.1184 \pm 0.0029 \quad (-0.5\sigma)$	$S_8$	$0.823 \pm 0.011 \quad (-0.1\sigma)$	$H(0.38)$	$82.8 \pm 1.2 \quad (-0.5\sigma)$
$100\theta_{\text{MC}}$	$1.04111 \pm 0.00043 \quad (+0.4\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4508 \pm 0.0060 \quad (-0.1\sigma)$	$D_{\text{M}}(0.38)$	$1533 \pm 23 \quad (+0.5\sigma)$
$\tau$	$0.0572^{+0.0058}_{-0.0077} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6037 \pm 0.0070 \quad (-0.3\sigma)$	$H(0.51)$	$89.5 \pm 1.2 \quad (-0.5\sigma)$
$N_{\text{eff}}$	$3.00 \pm 0.17 \quad (-0.6\sigma)$	$\sigma_8/h^{0.5}$	$0.9843 \pm 0.0084 \quad (-0.0\sigma)$	$D_{\text{M}}(0.51)$	$1986 \pm 29 \quad (+0.5\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.046^{+0.014}_{-0.017} \quad (-0.1\sigma)$	$r_{\text{drag}}h$	$99.64 \pm 0.78 \quad (-0.4\sigma)$	$H(0.61)$	$95.1 \pm 1.2 \quad (-0.5\sigma)$
$n_{\text{s}}$	$0.9656 \pm 0.0067 \quad (-0.5\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.439 \pm 0.020 \quad (+0.4\sigma)$	$D_{\text{M}}(0.61)$	$2311 \pm 34 \quad (+0.5\sigma)$
$y_{\text{cal}}$	$1.0008 \pm 0.0025 \quad (+0.0\sigma)$	$z_{\text{re}}$	$7.92^{+0.61}_{-0.75} \quad (+0.1\sigma)$	$H(2.33)$	$235.4 \pm 2.5 \quad (-0.5\sigma)$
$A_{217}^{\text{CIB}}$	$46 \pm 7 \quad (-0.3\sigma)$	$10^9 A_{\text{s}}$	$2.104^{+0.029}_{-0.035} \quad (-0.1\sigma)$	$D_{\text{M}}(2.33)$	$5778 \pm 72 \quad (+0.5\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_{\text{s}} e^{-2\tau}$	$1.877 \pm 0.017 \quad (-0.4\sigma)$	$f\sigma_8(0.15)$	$0.4554 \pm 0.0058 \quad (-0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$5.6^{+2.2}_{-1.8} \quad (+0.3\sigma)$	$D_{40}$	$1230 \pm 13 \quad (+0.4\sigma)$	$\sigma_8(0.15)$	$0.7471 \pm 0.0093 \quad (-0.4\sigma)$
$A_{100}^{\text{PS}}$	$257 \pm 28 \quad (-0.3\sigma)$	$D_{220}$	$5740 \pm 38 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4738 \pm 0.0055 \quad (-0.2\sigma)$
$A_{143}^{\text{PS}}$	$45 \pm 8 \quad (-0.6\sigma)$	$D_{810}$	$2539 \pm 14 \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.6623 \pm 0.0085 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$818.4 \pm 4.9 \quad (+0.6\sigma)$	$f\sigma_8(0.51)$	$0.4725 \pm 0.0054 \quad (-0.3\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$231.5 \pm 1.9 \quad (+0.9\sigma)$	$\sigma_8(0.51)$	$0.6198 \pm 0.0081 \quad (-0.4\sigma)$
$A^{\text{kSZ}}$	$< 3.99 \quad (-0.3\sigma)$	$n_{\text{s},0.002}$	$0.9656 \pm 0.0067 \quad (-0.5\sigma)$	$f\sigma_8(0.61)$	$0.4676 \pm 0.0054 \quad (-0.3\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.1\sigma)$	$Y_{\text{P}}$	$0.2448 \pm 0.0024 \quad (-0.6\sigma)$	$\sigma_8(0.61)$	$0.5898 \pm 0.0078 \quad (-0.4\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.2461 \pm 0.0024 \quad (-0.6\sigma)$	$f\sigma_8(2.33)$	$0.2974 \pm 0.0040 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \text{D}/\text{H}$	$2.565 \pm 0.044 \quad (-1.1\sigma)$	$\sigma_8(2.33)$	$0.3066 \pm 0.0043 \quad (-0.4\sigma)$
$A_{217}^{\text{dustTT}}$	$93.8 \pm 7.4 \quad (+0.1\sigma)$	$\text{Age}/\text{Gyr}$	$13.83 \pm 0.17 \quad (+0.5\sigma)$	$f_{2000}^{143}$	$28.8 \pm 3.0 \quad (-0.8\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$z_*$	$1089.70 \pm 0.33 \quad (-1.0\sigma)$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.1 \quad (-0.8\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$r_*$	$145.1 \pm 1.7 \quad (+0.5\sigma)$	$f_{2000}^{217}$	$106.6 \pm 2.0 \quad (-0.8\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.482 \pm 0.085$	$100\theta_*$	$1.04132 \pm 0.00052 \quad (+0.5\sigma)$	$\chi_{\text{lensing}}^2$	$9.03 \pm 0.62 \quad (-0.5\sigma)$
$A_{143}^{\text{dustTE}}$	$0.224 \pm 0.054$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.93 \pm 0.16 \quad (+0.5\sigma)$	$\chi_{\text{small}}^2$	$230 \pm 200 \quad (-86.2\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.664 \pm 0.080$	$z_{\text{drag}}$	$1059.85 \pm 0.68 \quad (+0.0\sigma)$	$\chi_{\text{lowl}}^2$	$190 \pm 200 \quad (+150.0\sigma)$
$A_{217}^{\text{dustTE}}$	$2.07 \pm 0.27$	$r_{\text{drag}}$	$147.7 \pm 1.8 \quad (+0.5\sigma)$	$\chi_{\text{plik}}^2$	$2359.8 \pm 6.0 \quad (+288.5\sigma)$
$c_{100}$	$0.99967 \pm 0.00062 \quad (+0.1\sigma)$	$k_{\text{D}}$	$0.1404 \pm 0.0013 \quad (-0.3\sigma)$	$\chi_{\text{JLA}}^2$	$1035.11 \pm 0.33 \quad (+0.3\sigma)$
$c_{217}$	$0.99817 \pm 0.00062 \quad (-0.2\sigma)$	$100\theta_{\text{D}}$	$0.16063 \pm 0.00039 \quad (-1.0\sigma)$	$\chi_{6\text{DF}}^2$	$0.59 \pm 0.66 \quad (+8.7\sigma)$
$H_0$	$67.5 \pm 1.1 \quad (-0.5\sigma)$	$z_{\text{eq}}$	$3386 \pm 23 \quad (+0.7\sigma)$	$\chi_{\text{MGS}}^2$	$0.73 \pm 0.68 \quad (-1.4\sigma)$
$\Omega_{\Lambda}$	$0.6890 \pm 0.0063 \quad (-0.4\sigma)$	$k_{\text{eq}}$	$0.01030 \pm 0.00011 \quad (-0.3\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.8 \pm 1.4 \quad (+0.3\sigma)$
$\Omega_{\text{m}}$	$0.3110 \pm 0.0063 \quad (+0.4\sigma)$	$100\theta_{\text{eq}}$	$0.8163 \pm 0.0043 \quad (-0.6\sigma)$	$\chi_{\text{prior}}^2$	$11.6 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\text{m}}h^2$	$0.1415 \pm 0.0030 \quad (-0.5\sigma)$	$100\theta_{\text{s,eq}}$	$0.4510 \pm 0.0022 \quad (-0.6\sigma)$	$\chi_{\text{CMB}}^2$	$2789.6 \pm 6.0 \quad (+284.5\sigma)$
$\Omega_{\text{m}}h^3$	$0.0955 \pm 0.0034 \quad (-0.5\sigma)$	$H(0.15)$	$72.7 \pm 1.1 \quad (-0.5\sigma)$	$\chi_{\text{BAO}}^2$	$6.1 \pm 1.1 \quad (+0.1\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 3842.41; \Delta\bar{\chi}_{\text{eff}}^2 = 1592.15; R - 1 = 0.01464$$



7.58 base\_nnu\_plikHM\_TTTEE\_lowl\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02238 \pm 0.00018 \quad (+0.5\sigma)$	$\sigma_8$	$0.8080 \pm 0.0098 \quad (-0.4\sigma)$	$D_M(0.15)$	$644 \pm 10 \quad (+0.5\sigma)$
$\Omega_c h^2$	$0.1183 \pm 0.0029 \quad (-0.5\sigma)$	$S_8$	$0.824 \pm 0.011 \quad (-0.1\sigma)$	$H(0.38)$	$82.7 \pm 1.2 \quad (-0.5\sigma)$
$100\theta_{MC}$	$1.04113 \pm 0.00043 \quad (+0.4\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4513 \pm 0.0060 \quad (-0.1\sigma)$	$D_M(0.38)$	$1536 \pm 24 \quad (+0.5\sigma)$
$\tau$	$0.0569^{+0.0057}_{-0.0077} \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6039 \pm 0.0070 \quad (-0.2\sigma)$	$H(0.51)$	$89.4 \pm 1.2 \quad (-0.5\sigma)$
$N_{\text{eff}}$	$2.99 \pm 0.17 \quad (-0.6\sigma)$	$\sigma_8/h^{0.5}$	$0.9848 \pm 0.0084 \quad (-0.0\sigma)$	$D_M(0.51)$	$1990 \pm 30 \quad (+0.5\sigma)$
$\ln(10^{10} A_s)$	$3.045^{+0.014}_{-0.017} \quad (-0.1\sigma)$	$r_{\text{drag}} h$	$99.51 \pm 0.81 \quad (-0.3\sigma)$	$H(0.61)$	$95.0 \pm 1.2 \quad (-0.5\sigma)$
$n_s$	$0.9648 \pm 0.0068 \quad (-0.4\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.441 \pm 0.021 \quad (+0.3\sigma)$	$D_M(0.61)$	$2315 \pm 34 \quad (+0.5\sigma)$
$y_{\text{cal}}$	$1.0008 \pm 0.0025 \quad (+0.0\sigma)$	$z_{\text{re}}$	$7.89^{+0.61}_{-0.75} \quad (+0.1\sigma)$	$H(2.33)$	$235.3 \pm 2.5 \quad (-0.5\sigma)$
$A_{217}^{\text{CIB}}$	$46 \pm 7 \quad (-0.2\sigma)$	$10^9 A_s$	$2.102^{+0.029}_{-0.035} \quad (-0.1\sigma)$	$D_M(2.33)$	$5785 \pm 73 \quad (+0.5\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.876 \pm 0.017 \quad (-0.4\sigma)$	$f\sigma_8(0.15)$	$0.4558 \pm 0.0058 \quad (-0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$5.6^{+2.2}_{-1.8} \quad (+0.3\sigma)$	$D_{40}$	$1231 \pm 13 \quad (+0.4\sigma)$	$\sigma_8(0.15)$	$0.7466 \pm 0.0092 \quad (-0.4\sigma)$
$A_{100}^{\text{PS}}$	$256 \pm 28 \quad (-0.3\sigma)$	$D_{220}$	$5739 \pm 38 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4740 \pm 0.0055 \quad (-0.2\sigma)$
$A_{143}^{\text{PS}}$	$45 \pm 8 \quad (-0.6\sigma)$	$D_{810}$	$2539 \pm 14 \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.6617 \pm 0.0085 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$818.4 \pm 4.9 \quad (+0.6\sigma)$	$f\sigma_8(0.51)$	$0.4725 \pm 0.0054 \quad (-0.3\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$231.5 \pm 1.9 \quad (+0.9\sigma)$	$\sigma_8(0.51)$	$0.6192 \pm 0.0081 \quad (-0.4\sigma)$
$A^{\text{kSZ}}$	$< 3.95 \quad (-0.3\sigma)$	$n_{s,0.002}$	$0.9648 \pm 0.0068 \quad (-0.4\sigma)$	$f\sigma_8(0.61)$	$0.4675 \pm 0.0054 \quad (-0.3\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.1\sigma)$	$Y_P$	$0.2446 \pm 0.0024 \quad (-0.6\sigma)$	$\sigma_8(0.61)$	$0.5892 \pm 0.0078 \quad (-0.4\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.2459 \pm 0.0024 \quad (-0.6\sigma)$	$f\sigma_8(2.33)$	$0.2971 \pm 0.0040 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \text{D/H}$	$2.564 \pm 0.044 \quad (-1.0\sigma)$	$\sigma_8(2.33)$	$0.3062^{+0.0040}_{-0.0045} \quad (-0.4\sigma)$
$A_{217}^{\text{dustTT}}$	$93.7 \pm 7.4 \quad (+0.1\sigma)$	Age/Gyr	$13.85 \pm 0.17 \quad (+0.5\sigma)$	$f_{2000}^{143}$	$28.8 \pm 3.0 \quad (-0.8\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$z_*$	$1089.71 \pm 0.33 \quad (-0.9\sigma)$	$f_{2000}^{143 \times 217}$	$31.6 \pm 2.1 \quad (-0.8\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$r_*$	$145.2 \pm 1.7 \quad (+0.5\sigma)$	$f_{2000}^{217}$	$106.5 \pm 2.0 \quad (-0.8\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.482 \pm 0.085$	$100\theta_*$	$1.04135 \pm 0.00053 \quad (+0.5\sigma)$	$\chi_{\text{lensing}}^2$	$9.02 \pm 0.61 \quad (-0.5\sigma)$
$A_{143}^{\text{dustTE}}$	$0.224 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	$13.94 \pm 0.16 \quad (+0.5\sigma)$	$\chi_{\text{small}}^2$	$230 \pm 200 \quad (-88.2\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.664 \pm 0.080$	$z_{\text{drag}}$	$1059.78 \pm 0.69 \quad (+0.1\sigma)$	$\chi_{\text{lowl}}^2$	$191 \pm 200 \quad (+143.5\sigma)$
$A_{217}^{\text{dustTE}}$	$2.07 \pm 0.27$	$r_{\text{drag}}$	$147.9 \pm 1.8 \quad (+0.5\sigma)$	$\chi_{\text{plik}}^2$	$2359.6 \pm 6.0 \quad (+288.4\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$k_D$	$0.1403 \pm 0.0013 \quad (-0.3\sigma)$	$\chi_{6\text{DF}}^2$	$0.57 \pm 0.63 \quad (+6.8\sigma)$
$c_{217}$	$0.99817 \pm 0.00062 \quad (-0.2\sigma)$	$100\theta_D$	$0.16060 \pm 0.00039 \quad (-1.0\sigma)$	$\chi_{\text{MGS}}^2$	$0.69 \pm 0.65 \quad (-1.3\sigma)$
$H_0$	$67.3 \pm 1.1 \quad (-0.5\sigma)$	$z_{\text{eq}}$	$3390 \pm 24 \quad (+0.6\sigma)$	$\chi_{\text{DR12BAO}}^2$	$5.1 \pm 1.6 \quad (+0.2\sigma)$
$\Omega_\Lambda$	$0.6879 \pm 0.0066 \quad (-0.3\sigma)$	$k_{\text{eq}}$	$0.01030 \pm 0.00011 \quad (-0.3\sigma)$	$\chi_{\text{prior}}^2$	$11.6 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_m$	$0.3121 \pm 0.0066 \quad (+0.3\sigma)$	$100\theta_{\text{eq}}$	$0.8156 \pm 0.0045 \quad (-0.5\sigma)$	$\chi_{\text{CMB}}^2$	$2789.4 \pm 6.0 \quad (+284.6\sigma)$
$\Omega_m h^2$	$0.1414 \pm 0.0030 \quad (-0.5\sigma)$	$100\theta_{s,\text{eq}}$	$0.4506 \pm 0.0023 \quad (-0.6\sigma)$	$\chi_{\text{BAO}}^2$	$6.3 \pm 1.3 \quad (+0.1\sigma)$
$\Omega_m h^3$	$0.0952^{+0.0032}_{-0.0036} \quad (-0.5\sigma)$	$H(0.15)$	$72.6 \pm 1.1 \quad (-0.5\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2807.29; \Delta \bar{\chi}_{\text{eff}}^2 = 1592.05; R - 1 = 0.01488$$



**7.59 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Aver15\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02237 \pm 0.00017 \quad (+0.7\sigma)$	$\sigma_8$	$0.807 \pm 0.010 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$644.4 \pm 9.2 \quad (+0.4\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1182 \pm 0.0026 \quad (-0.3\sigma)$	$S_8$	$0.823 \pm 0.013 \quad (+0.1\sigma)$	$H(0.38)$	$82.6 \pm 1.0 \quad (-0.4\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04114 \pm 0.00041 \quad (+0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4509 \pm 0.0072 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1537 \pm 21 \quad (+0.4\sigma)$
$\tau$	$0.0564^{+0.0055}_{-0.0083} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6033 \pm 0.0080 \quad (-0.0\sigma)$	$H(0.51)$	$89.3 \pm 1.0 \quad (-0.4\sigma)$
$N_{\mathrm{eff}}$	$2.98 \pm 0.15 \quad (-0.5\sigma)$	$\sigma_8/h^{0.5}$	$0.984 \pm 0.010 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1990 \pm 26 \quad (+0.4\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044^{+0.014}_{-0.018} \quad (+0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.52 \pm 0.82 \quad (-0.3\sigma)$	$H(0.61)$	$94.9 \pm 1.1 \quad (-0.4\sigma)$
$n_{\mathrm{s}}$	$0.9649 \pm 0.0062 \quad (-0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.439 \pm 0.024 \quad (+0.3\sigma)$	$D_{\mathrm{M}}(0.61)$	$2316 \pm 30 \quad (+0.4\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.84^{+0.60}_{-0.82} \quad (+0.1\sigma)$	$H(2.33)$	$235.2 \pm 2.3 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.099^{+0.030}_{-0.038} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5787 \pm 64 \quad (+0.4\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.875 \pm 0.016 \quad (-0.2\sigma)$	$f\sigma_8(0.15)$	$0.4555 \pm 0.0069 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.6^{+2.2}_{-1.8} \quad (+0.3\sigma)$	$D_{40}$	$1230 \pm 13 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7459 \pm 0.0093 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$256 \pm 28 \quad (-0.3\sigma)$	$D_{220}$	$5736 \pm 39 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4736 \pm 0.0064 \quad (+0.0\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.5\sigma)$	$D_{810}$	$2538 \pm 14 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6612^{+0.0078}_{-0.0087} \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$818.3 \pm 4.9 \quad (+0.6\sigma)$	$f\sigma_8(0.51)$	$0.4722 \pm 0.0061 \quad (-0.0\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$231.5 \pm 1.8 \quad (+0.8\sigma)$	$\sigma_8(0.51)$	$0.6187^{+0.0073}_{-0.0082} \quad (-0.2\sigma)$
$A^{\mathrm{kSZ}}$	$< 3.95 \quad (-0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.9649 \pm 0.0062 \quad (-0.3\sigma)$	$f\sigma_8(0.61)$	$0.4672 \pm 0.0059 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.2445 \pm 0.0021 \quad (-0.4\sigma)$	$\sigma_8(0.61)$	$0.5887^{+0.0070}_{-0.0079} \quad (-0.2\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2458 \pm 0.0021 \quad (-0.4\sigma)$	$f\sigma_8(2.33)$	$0.2968^{+0.0036}_{-0.0041} \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.564 \pm 0.041 \quad (-1.0\sigma)$	$\sigma_8(2.33)$	$0.3060^{+0.0038}_{-0.0043} \quad (-0.2\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.8 \pm 7.4 \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.85 \pm 0.15 \quad (+0.4\sigma)$	$f_{2000}^{143}$	$28.8 \pm 2.9 \quad (-0.7\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.114 \pm 0.038$	$z_*$	$1089.70 \pm 0.32 \quad (-0.8\sigma)$	$f_{2000}^{143 \times 217}$	$31.6 \pm 2.0 \quad (-0.8\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.030$	$r_*$	$145.2 \pm 1.5 \quad (+0.3\sigma)$	$f_{2000}^{217}$	$106.5 \pm 1.9 \quad (-0.7\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.482 \pm 0.085$	$100\theta_*$	$1.04137 \pm 0.00048 \quad (+0.3\sigma)$	$\chi_{\mathrm{small}}^2$	$229 \pm 200 \quad (-88.7\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.224 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.95 \pm 0.14 \quad (+0.3\sigma)$	$\chi_{\mathrm{lowl}}^2$	$191 \pm 200 \quad (+152.4\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.664 \pm 0.080$	$z_{\mathrm{drag}}$	$1059.76 \pm 0.61 \quad (+0.3\sigma)$	$\chi_{\mathrm{plik}}^2$	$2359.7 \pm 6.1 \quad (+289.0\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.07 \pm 0.27$	$r_{\mathrm{drag}}$	$147.9 \pm 1.6 \quad (+0.3\sigma)$	$\chi_{\mathrm{Aver15}}^2$	$0.32 \pm 0.45 \quad (-0.4\sigma)$
$c_{100}$	$0.99967 \pm 0.00062 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.1403 \pm 0.0011 \quad (-0.1\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.58 \pm 0.64 \quad (+6.6\sigma)$
$c_{217}$	$0.99817 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16060 \pm 0.00035 \quad (-0.9\sigma)$	$\chi_{\mathrm{MGS}}^2$	$0.69 \pm 0.66 \quad (-1.2\sigma)$
$H_0$	$67.3 \pm 1.0 \quad (-0.4\sigma)$	$z_{\mathrm{eq}}$	$3390 \pm 24 \quad (+0.6\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$5.1 \pm 1.6 \quad (+0.2\sigma)$
$\Omega_{\Lambda}$	$0.6880 \pm 0.0066 \quad (-0.3\sigma)$	$k_{\mathrm{eq}}$	$0.01030 \pm 0.00011 \quad (-0.0\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.6 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.3120 \pm 0.0066 \quad (+0.3\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8157 \pm 0.0046 \quad (-0.5\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.3 \pm 1.3 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1413 \pm 0.0027 \quad (-0.3\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4506 \pm 0.0023 \quad (-0.5\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2780.4 \pm 5.9 \quad (+294.1\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.0951 \pm 0.0030 \quad (-0.3\sigma)$	$H(0.15)$	$72.6 \pm 1.0 \quad (-0.4\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2798.70; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.19; R - 1 = 0.01387$$



7.60 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Cooke17\_Aver15\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02237 \pm 0.00017 \quad (+0.7\sigma)$	$S_8$	$0.825 \pm 0.013 \quad (+0.2\sigma)$	$D_M(0.38)$	$1534 \pm 20 \quad (+0.3\sigma)$
$\Omega_c h^2$	$0.1187 \pm 0.0025 \quad (-0.2\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4517 \pm 0.0071 \quad (+0.2\sigma)$	$H(0.51)$	$89.5 \pm 1.0 \quad (-0.2\sigma)$
$100\theta_{MC}$	$1.04108 \pm 0.00039 \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6044 \pm 0.0078 \quad (+0.1\sigma)$	$D_M(0.51)$	$1987 \pm 25 \quad (+0.3\sigma)$
$\tau$	$0.0564^{+0.0055}_{-0.0083} \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.985 \pm 0.010 \quad (+0.2\sigma)$	$H(0.61)$	$95.1 \pm 1.0 \quad (-0.2\sigma)$
$N_{\text{eff}}$	$3.01 \pm 0.14 \quad (-0.3\sigma)$	$r_{\text{drag}} h$	$99.51 \pm 0.83 \quad (-0.3\sigma)$	$D_M(0.61)$	$2312 \pm 29 \quad (+0.3\sigma)$
$\ln(10^{10} A_s)$	$3.045^{+0.014}_{-0.018} \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.439 \pm 0.024 \quad (+0.3\sigma)$	$H(2.33)$	$235.6 \pm 2.2 \quad (-0.1\sigma)$
$n_s$	$0.9656 \pm 0.0061 \quad (-0.2\sigma)$	$z_{\text{re}}$	$7.85^{+0.60}_{-0.82} \quad (+0.1\sigma)$	$D_M(2.33)$	$5777 \pm 61 \quad (+0.2\sigma)$
$y_{\text{cal}}$	$1.0007 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_s$	$2.101^{+0.029}_{-0.038} \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4562 \pm 0.0068 \quad (+0.2\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_s e^{-2\tau}$	$1.877 \pm 0.016 \quad (-0.1\sigma)$	$\sigma_8(0.15)$	$0.7472^{+0.0084}_{-0.0094} \quad (-0.0\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{40}$	$1229 \pm 13 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4744 \pm 0.0062 \quad (+0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$5.6^{+2.2}_{-1.9} \quad (+0.2\sigma)$	$D_{220}$	$5734 \pm 39 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6623^{+0.0075}_{-0.0085} \quad (-0.1\sigma)$
$A_{100}^{\text{PS}}$	$257 \pm 28 \quad (-0.2\sigma)$	$D_{810}$	$2538 \pm 14 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4729 \pm 0.0059 \quad (+0.1\sigma)$
$A_{143}^{\text{PS}}$	$45 \pm 8 \quad (-0.5\sigma)$	$D_{1420}$	$817.9 \pm 4.9 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.6198^{+0.0070}_{-0.0081} \quad (-0.1\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{2000}$	$231.3 \pm 1.7 \quad (+0.7\sigma)$	$f\sigma_8(0.61)$	$0.4679 \pm 0.0057 \quad (+0.1\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$n_{s,0.002}$	$0.9656 \pm 0.0061 \quad (-0.2\sigma)$	$\sigma_8(0.61)$	$0.5897^{+0.0067}_{-0.0077} \quad (-0.1\sigma)$
$A^{\text{kSZ}}$	$< 4.05 \quad (-0.2\sigma)$	$Y_P$	$0.2449 \pm 0.0020 \quad (-0.3\sigma)$	$f\sigma_8(2.33)$	$0.2973^{+0.0034}_{-0.0040} \quad (-0.1\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.2462 \pm 0.0020 \quad (-0.3\sigma)$	$\sigma_8(2.33)$	$0.3065^{+0.0036}_{-0.0042} \quad (-0.1\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$10^5 \text{D/H}$	$2.572 \pm 0.037 \quad (-0.9\sigma)$	$f_{2000}^{143}$	$29.0 \pm 2.9 \quad (-0.6\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$\text{Age/Gyr}$	$13.83 \pm 0.15 \quad (+0.2\sigma)$	$f_{2000}^{143 \times 217}$	$31.8 \pm 2.0 \quad (-0.7\sigma)$
$A_{217}^{\text{dustTT}}$	$93.8 \pm 7.4 \quad (+0.1\sigma)$	$z_*$	$1089.77 \pm 0.29 \quad (-0.8\sigma)$	$f_{2000}^{217}$	$106.7 \pm 1.9 \quad (-0.6\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$r_*$	$145.0 \pm 1.4 \quad (+0.2\sigma)$	$\chi_{\text{small}}^2$	$231 \pm 200 \quad (-87.8\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$100\theta_*$	$1.04129 \pm 0.00046 \quad (+0.2\sigma)$	$\chi_{\text{lowl}}^2$	$190 \pm 200 \quad (+153.2\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.482 \pm 0.085$	$D_M(z_*)/\text{Gpc}$	$13.92 \pm 0.13 \quad (+0.2\sigma)$	$\chi_{\text{plik}}^2$	$2359.7 \pm 6.0 \quad (+291.6\sigma)$
$A_{143}^{\text{dustTE}}$	$0.224 \pm 0.054$	$z_{\text{drag}}$	$1059.81 \pm 0.61 \quad (+0.4\sigma)$	$\chi_{\text{Aver15}}^2$	$0.34 \pm 0.47 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.665 \pm 0.080$	$r_{\text{drag}}$	$147.7 \pm 1.5 \quad (+0.1\sigma)$	$\chi_{\text{Cooke17}}^2$	$0.40 \pm 0.45 \quad (+0.3\sigma)$
$A_{217}^{\text{dustTE}}$	$2.07 \pm 0.27$	$k_D$	$0.1404 \pm 0.0011 \quad (+0.1\sigma)$	$\chi_{6\text{DF}}^2$	$0.57 \pm 0.64 \quad (+6.5\sigma)$
$c_{100}$	$0.99966 \pm 0.00062 \quad (+0.1\sigma)$	$100\theta_D$	$0.16067 \pm 0.00032 \quad (-0.9\sigma)$	$\chi_{\text{MGS}}^2$	$0.70 \pm 0.66 \quad (-1.2\sigma)$
$c_{217}$	$0.99817 \pm 0.00062 \quad (-0.1\sigma)$	$z_{\text{eq}}$	$3389 \pm 24 \quad (+0.6\sigma)$	$\chi_{\text{DR12BAO}}^2$	$5.1 \pm 1.6 \quad (+0.2\sigma)$
$H_0$	$67.41 \pm 0.98 \quad (-0.3\sigma)$	$k_{\text{eq}}$	$0.01032 \pm 0.00010 \quad (+0.1\sigma)$	$\chi_{\text{prior}}^2$	$11.6 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_\Lambda$	$0.6880 \pm 0.0067 \quad (-0.3\sigma)$	$100\theta_{\text{eq}}$	$0.8158 \pm 0.0046 \quad (-0.5\sigma)$	$\chi_{\text{BAO}}^2$	$6.4 \pm 1.3 \quad (+0.1\sigma)$
$\Omega_m$	$0.3120 \pm 0.0067 \quad (+0.3\sigma)$	$100\theta_{s,\text{eq}}$	$0.4507 \pm 0.0023 \quad (-0.5\sigma)$	$\chi_{\text{CMB}}^2$	$2780.3 \pm 5.9 \quad (+296.7\sigma)$
$\Omega_m h^2$	$0.1417 \pm 0.0026 \quad (-0.1\sigma)$	$H(0.15)$	$72.68 \pm 0.97 \quad (-0.3\sigma)$	$\chi_{\text{Abund}}^2$	$0.74 \pm 0.57 \quad (-0.1\sigma)$
$\Omega_m h^3$	$0.0955 \pm 0.0029 \quad (-0.2\sigma)$	$D_M(0.15)$	$643.3 \pm 9.0 \quad (+0.3\sigma)$		
$\sigma_8$	$0.8087^{+0.0090}_{-0.010} \quad (-0.0\sigma)$	$H(0.38)$	$82.78 \pm 0.99 \quad (-0.3\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2799.05; \Delta\bar{\chi}_{\text{eff}}^2 = 1592.52; R - 1 = 0.01367$$



# 7.61 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022321	$0.02231 \pm 0.00019$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4481	$0.4476 \pm 0.0074$	$H(0.38)$	82.89	$82.8 \pm 1.4$
$\Omega_{\mathrm{c}}h^2$	0.11858	$0.1182 \pm 0.0034$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6006	$0.5999 \pm 0.0087$	$D_{\mathrm{M}}(0.38)$	1530.8	$1534 \pm 27$
$100\theta_{\mathrm{MC}}$	1.040988	$1.04106 \pm 0.00047$	$\sigma_8/h^{0.5}$	0.9791	$0.979 \pm 0.011$	$H(0.51)$	89.59	$89.4 \pm 1.4$
$\tau$	0.0533	$0.0536 \pm 0.0077$	$r_{\mathrm{drag}}h$	99.76	$99.77 \pm 0.91$	$D_{\mathrm{M}}(0.51)$	1983.2	$1987 \pm 35$
$N_{\mathrm{eff}}$	3.023	$3.00 \pm 0.20$	$\langle d^2 \rangle^{1/2}$	2.4232	$2.423 \pm 0.025$	$H(0.61)$	95.18	$95.0 \pm 1.4$
$\ln(10^{10}A_{\mathrm{s}})$	3.0368	$3.036 \pm 0.018$	$z_{\mathrm{re}}$	7.57	$7.57 \pm 0.78$	$D_{\mathrm{M}}(0.61)$	2307.9	$2312 \pm 40$
$n_{\mathrm{s}}$	0.9667	$0.9662 \pm 0.0076$	$10^9A_{\mathrm{s}}$	2.0838	$2.083 \pm 0.038$	$H(2.33)$	235.50	$235.1 \pm 3.0$
$y_{\mathrm{cal}}$	1.00020	$1.0005 \pm 0.0025$	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8729	$1.871 \pm 0.019$	$D_{\mathrm{M}}(2.33)$	5772	$5782 \pm 85$
$A_{100}^{\mathrm{PS}}$	233.9	$238 \pm 25$	$D_{40}$	1222.9	$1224 \pm 14$	$f\sigma_8(0.15)$	0.4528	$0.4523 \pm 0.0072$
$A_{143}^{\mathrm{PS}}$	45.4	$38 \pm 9$	$D_{220}$	5718.2	$5720 \pm 38$	$\sigma_8(0.15)$	0.7439	$0.743 \pm 0.011$
$A_{217}^{\mathrm{PS}}$	101.0	$102 \pm 10$	$D_{810}$	2532.9	$2534 \pm 14$	$f\sigma_8(0.38)$	0.4714	$0.4708 \pm 0.0068$
$A_{217}^{\mathrm{CIB}}$	43.3	$39_{-8}^{+7}$	$D_{1420}$	815.81	$816.4 \pm 5.0$	$\sigma_8(0.38)$	0.6596	$0.659 \pm 0.010$
$A_{143}^{\mathrm{tSZ}}$	5.94	$4.0_{-2.5}^{+1.9}$	$D_{2000}$	230.39	$230.7 \pm 2.0$	$f\sigma_8(0.51)$	0.4701	$0.4696 \pm 0.0067$
$r_{143 \times 217}^{\mathrm{PS}}$	0.641	$0.66 \pm 0.13$	$n_{\mathrm{s},0.002}$	0.9667	$0.9662 \pm 0.0076$	$\sigma_8(0.51)$	0.6173	$0.6166 \pm 0.0096$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.903	$0.56_{-0.17}^{+0.40}$	$Y_{\mathrm{P}}$	0.24507	$0.2447 \pm 0.0028$	$f\sigma_8(0.61)$	0.4653	$0.4648 \pm 0.0066$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.55	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24639	$0.2460 \pm 0.0028$	$\sigma_8(0.61)$	0.5874	$0.5867 \pm 0.0092$
$A^{\mathrm{kSZ}}$	1.32	$< 6.09$	$10^5\mathrm{D}/\mathrm{H}$	2.587	$2.581 \pm 0.056$	$f\sigma_8(2.33)$	0.29624	$0.2959 \pm 0.0048$
$A_{100}^{\mathrm{dust}}$	1.012	$1.01 \pm 0.19$	$\mathrm{Age}/\mathrm{Gyr}$	13.818	$13.84 \pm 0.20$	$\sigma_8(2.33)$	0.3055	$0.3051 \pm 0.0051$
$A_{143}^{\mathrm{dust}}$	0.998	$0.96 \pm 0.17$	$z_*$	1089.833	$1089.79 \pm 0.40$	$f_{2000}^{143}$	30.15	$29 \pm 3$
$A_{217}^{\mathrm{dust}}$	0.981	$0.98 \pm 0.10$	$r_*$	144.95	$145.2 \pm 2.0$	$f_{2000}^{217}$	106.63	$106.5 \pm 2.2$
$A_{143 \times 217}^{\mathrm{dust}}$	0.974	$1.02 \pm 0.16$	$100\theta_*$	1.04120	$1.04128 \pm 0.00059$	$f_{2000}^{143 \times 217}$	31.93	$31.7 \pm 2.4$
$c_{100}$	0.99766	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.922	$13.95 \pm 0.18$	$\chi_{\mathrm{small}}^2$	395.88	$396.9 \pm 1.7$
$c_{217}$	1.00145	$1.0011 \pm 0.0016$	$z_{\mathrm{drag}}$	1059.70	$1059.62 \pm 0.75$	$\chi_{\mathrm{lowl}}^2$	22.86	$23.0 \pm 1.1$
$c_{TE}$	0.9966	$0.9966 \pm 0.0051$	$r_{\mathrm{drag}}$	147.64	$147.9 \pm 2.0$	$\chi_{\mathrm{CamSpec}}^2$	11500.0	$11515.3 \pm 6.0$
$c_{EE}$	0.9922	$0.9919 \pm 0.0054$	$k_{\mathrm{D}}$	0.14034	$0.1402 \pm 0.0015$	$\chi_{6\mathrm{DF}}^2$	0.0220	$0.056 \pm 0.071$
$H_0$	67.57	$67.5 \pm 1.3$	$100\theta_{\mathrm{D}}$	0.160795	$0.16074 \pm 0.00049$	$\chi_{\mathrm{MGS}}^2$	1.279	$1.35 \pm 0.51$
$\Omega_{\Lambda}$	0.6900	$0.6899 \pm 0.0074$	$z_{\mathrm{eq}}$	3377.4	$3378 \pm 27$	$\chi_{\mathrm{DR12BAO}}^2$	4.22	$4.7 \pm 1.5$
$\Omega_{\mathrm{m}}$	0.3100	$0.3101 \pm 0.0074$	$k_{\mathrm{eq}}$	0.010292	$0.01028 \pm 0.00012$	$\chi_{\mathrm{prior}}^2$	2.31	$7.8 \pm 3.4$
$\Omega_{\mathrm{m}}h^2$	0.14154	$0.1411 \pm 0.0035$	$100\theta_{\mathrm{eq}}$	0.8176	$0.8177 \pm 0.0051$	$\chi_{\mathrm{BAO}}^2$	5.52	$6.1 \pm 1.2$
$\Omega_{\mathrm{m}}h^3$	0.09564	$0.0952_{-0.0042}^{+0.0037}$	$100\theta_{\mathrm{s,eq}}$	0.45169	$0.4517 \pm 0.0026$	$\chi_{\mathrm{CMB}}^2$	11918.7	$11935.2 \pm 5.9$
$\sigma_8$	0.8049	$0.804 \pm 0.012$	$H(0.15)$	72.83	$72.7 \pm 1.3$			
$S_8$	0.8182	$0.817 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	641.7	$643 \pm 12$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 11926.54$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 11949.07$ ;  $R - 1 = 0.00571$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.28 DR12BAO: 4.22 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.88 commander\_dx12\_v3\_2\_29: 22.86 CamSpec like\_10.7HM\_1400\_unified: 11499.97



## 7.62 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_JLA

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02230 \pm 0.00019$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4494 \pm 0.0061$	$H(0.38)$	$82.7 \pm 1.3$
$\Omega_{\mathrm{c}}h^2$	$0.1181 \pm 0.0032$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6017 \pm 0.0072$	$D_{\mathrm{M}}(0.38)$	$1536 \pm 27$
$100\theta_{\mathrm{MC}}$	$1.04108 \pm 0.00047$	$\sigma_8/h^{0.5}$	$0.9819 \pm 0.0085$	$H(0.51)$	$89.3 \pm 1.4$
$\tau$	$0.0553 \pm 0.0070$	$r_{\mathrm{drag}}h$	$99.63 \pm 0.86$	$D_{\mathrm{M}}(0.51)$	$1990 \pm 34$
$N_{\mathrm{eff}}$	$2.99^{+0.18}_{-0.21}$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.022$	$H(0.61)$	$94.9 \pm 1.4$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041 \pm 0.016$	$z_{\mathrm{re}}$	$7.75 \pm 0.70$	$D_{\mathrm{M}}(0.61)$	$2316 \pm 38$
$n_{\mathrm{s}}$	$0.9654 \pm 0.0073$	$10^9 A_{\mathrm{s}}$	$2.092 \pm 0.034$	$H(2.33)$	$235.1^{+2.7}_{-3.0}$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0024$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.873 \pm 0.018$	$D_{\mathrm{M}}(2.33)$	$5788 \pm 82$
$A_{100}^{\mathrm{PS}}$	$238 \pm 24$	$D_{40}$	$1227 \pm 13$	$f\sigma_8(0.15)$	$0.4540 \pm 0.0059$
$A_{143}^{\mathrm{PS}}$	$38 \pm 9$	$D_{220}$	$5726 \pm 37$	$\sigma_8(0.15)$	$0.7445 \pm 0.0099$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10$	$D_{810}$	$2536 \pm 13$	$f\sigma_8(0.38)$	$0.4723 \pm 0.0057$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7$	$D_{1420}$	$817.1 \pm 5.1$	$\sigma_8(0.38)$	$0.6600 \pm 0.0091$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+1.9}_{-2.4}$	$D_{2000}$	$231.0 \pm 2.1$	$f\sigma_8(0.51)$	$0.4710 \pm 0.0056$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.14$	$n_{\mathrm{s},0.002}$	$0.9654 \pm 0.0073$	$\sigma_8(0.51)$	$0.6177 \pm 0.0087$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.41}_{-0.18}$	$Y_{\mathrm{P}}$	$0.2446 \pm 0.0027$	$f\sigma_8(0.61)$	$0.4660 \pm 0.0056$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2459 \pm 0.0027$	$\sigma_8(0.61)$	$0.5878 \pm 0.0084$
$A^{\mathrm{kSZ}}$	$< 5.77$	$10^5 \mathrm{D}/\mathrm{H}$	$2.578 \pm 0.054$	$f\sigma_8(2.33)$	$0.2964 \pm 0.0044$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$\mathrm{Age}/\mathrm{Gyr}$	$13.86 \pm 0.20$	$\sigma_8(2.33)$	$0.3056 \pm 0.0047$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.17$	$z_*$	$1089.78 \pm 0.39$	$f_{2000}^{143}$	$29 \pm 3$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$r_*$	$145.3 \pm 1.9$	$f_{2000}^{217}$	$106.4 \pm 2.2$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$100\theta_*$	$1.04131 \pm 0.00058$	$f_{2000}^{143 \times 217}$	$31.5 \pm 2.5$
$c_{100}$	$0.9976 \pm 0.0010$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.95 \pm 0.18$	$\chi_{\mathrm{lensing}}^2$	$9.29 \pm 0.86$
$c_{217}$	$1.0011 \pm 0.0015$	$z_{\mathrm{drag}}$	$1059.60 \pm 0.73$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.7$
$c_{TE}$	$0.9964 \pm 0.0052$	$r_{\mathrm{drag}}$	$148.0 \pm 2.0$	$\chi_{\mathrm{lowl}}^2$	$23.2 \pm 1.1$
$c_{EE}$	$0.9917 \pm 0.0053$	$k_{\mathrm{D}}$	$0.1401 \pm 0.0014$	$\chi_{\mathrm{CamSpec}}^2$	$11514.6 \pm 5.9$
$H_0$	$67.3 \pm 1.3$	$100\theta_{\mathrm{D}}$	$0.16071 \pm 0.00048$	$\chi_{\mathrm{JLA}}^2$	$706.78 \pm 0.21$
$\Omega_{\Lambda}$	$0.6888^{+0.0074}_{-0.0066}$	$z_{\mathrm{eq}}$	$3382 \pm 25$	$\chi_{6\mathrm{DF}}^2$	$0.061 \pm 0.076$
$\Omega_{\mathrm{m}}$	$0.3112^{+0.0066}_{-0.0074}$	$k_{\mathrm{eq}}$	$0.01028 \pm 0.00012$	$\chi_{\mathrm{MGS}}^2$	$1.27 \pm 0.46$
$\Omega_{\mathrm{m}}h^2$	$0.1411^{+0.0031}_{-0.0035}$	$100\theta_{\mathrm{eq}}$	$0.8168 \pm 0.0048$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 \pm 1.6$
$\Omega_{\mathrm{m}}h^3$	$0.0950^{+0.0035}_{-0.0041}$	$100\theta_{\mathrm{s,eq}}$	$0.4513 \pm 0.0024$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.3$
$\sigma_8$	$0.806 \pm 0.010$	$H(0.15)$	$72.6 \pm 1.3$	$\chi_{\mathrm{CMB}}^2$	$11944.1 \pm 6.0$
$S_8$	$0.821 \pm 0.011$	$D_{\mathrm{M}}(0.15)$	$644 \pm 12$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.3$

$$\bar{\chi}_{\mathrm{eff}}^2 = 12664.75; R - 1 = 0.04059$$



### 7.63 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022296	$0.02232 \pm 0.00019$	$\sigma_8 \Omega_m^{0.5}$	0.4488	$0.4490 \pm 0.0061$	$H(0.38)$	82.61	$82.8 \pm 1.3$
$\Omega_c h^2$	0.11795	$0.1182 \pm 0.0032$	$\sigma_8 \Omega_m^{0.25}$	0.6009	$0.6016 \pm 0.0073$	$D_M(0.38)$	1536.4	$1534 \pm 26$
$100\theta_{MC}$	1.041050	$1.04106 \pm 0.00046$	$\sigma_8/h^{0.5}$	0.9809	$0.9816 \pm 0.0085$	$H(0.51)$	89.29	$89.4 \pm 1.3$
$\tau$	0.0546	$0.0558 \pm 0.0071$	$r_{drag}h$	99.64	$99.73 \pm 0.83$	$D_M(0.51)$	1990.4	$1987 \pm 33$
$N_{eff}$	2.981	$3.00 \pm 0.19$	$\langle d^2 \rangle^{1/2}$	2.4288	$2.431 \pm 0.021$	$H(0.61)$	94.88	$95.0 \pm 1.4$
$\ln(10^{10} A_s)$	3.0388	$3.042 \pm 0.016$	$z_{re}$	7.69	$7.79 \pm 0.71$	$D_M(0.61)$	2316.1	$2312 \pm 38$
$n_s$	0.9657	$0.9660 \pm 0.0073$	$10^9 A_s$	2.0881	$2.094 \pm 0.034$	$H(2.33)$	234.93	$235.2 \pm 2.8$
$y_{cal}$	1.00064	$1.0007 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8721	$1.873 \pm 0.018$	$D_M(2.33)$	5789	$5782 \pm 81$
$A_{100}^{PS}$	231.1	$238 \pm 25$	$D_{40}$	1225.3	$1226 \pm 13$	$f\sigma_8(0.15)$	0.4534	$0.4537 \pm 0.0059$
$A_{143}^{PS}$	41.8	$38 \pm 9$	$D_{220}$	5723.0	$5726 \pm 38$	$\sigma_8(0.15)$	0.7436	$0.7450 \pm 0.0099$
$A_{217}^{PS}$	104.0	$103 \pm 10$	$D_{810}$	2535.5	$2535 \pm 13$	$f\sigma_8(0.38)$	0.4717	$0.4722 \pm 0.0057$
$A_{217}^{CIB}$	42.9	$39 \pm 7$	$D_{1420}$	817.27	$816.9 \pm 5.0$	$\sigma_8(0.38)$	0.6592	$0.6605 \pm 0.0091$
$A_{143}^{tSZ}$	6.57	$4.0^{+1.9}_{-2.5}$	$D_{2000}$	231.05	$230.9 \pm 2.0$	$f\sigma_8(0.51)$	0.4704	$0.4709 \pm 0.0057$
$r_{143 \times 217}^{PS}$	0.650	$0.66 \pm 0.14$	$n_{s,0.002}$	0.9657	$0.9660 \pm 0.0073$	$\sigma_8(0.51)$	0.6169	$0.6182 \pm 0.0087$
$r_{143 \times 217}^{CIB}$	0.795	$0.55^{+0.41}_{-0.17}$	$Y_P$	0.24449	$0.2447 \pm 0.0027$	$f\sigma_8(0.61)$	0.4655	$0.4661 \pm 0.0056$
$\xi^{tSZ \times CIB}$	0.33	—	$Y_P^{BBN}$	0.24582	$0.2460 \pm 0.0027$	$\sigma_8(0.61)$	0.5870	$0.5883 \pm 0.0084$
$A^{kSZ}$	0.01	$< 6.01$	$10^5 D/H$	2.577	$2.580 \pm 0.054$	$f\sigma_8(2.33)$	0.29602	$0.2967 \pm 0.0044$
$A_{100}^{dust}$	1.008	$1.01 \pm 0.20$	Age/Gyr	13.860	$13.84 \pm 0.19$	$\sigma_8(2.33)$	0.30520	$0.3059 \pm 0.0047$
$A_{143}^{dust}$	0.968	$0.95 \pm 0.17$	$z_*$	1089.770	$1089.78 \pm 0.39$	$f_{2000}^{143}$	29.13	$29 \pm 3$
$A_{217}^{dust}$	0.975	$0.98 \pm 0.10$	$r_*$	145.35	$145.2 \pm 1.9$	$f_{2000}^{217}$	106.27	$106.5 \pm 2.2$
$A_{143 \times 217}^{dust}$	1.002	$1.02 \pm 0.16$	$100\theta_*$	1.04129	$1.04128 \pm 0.00057$	$f_{2000}^{143 \times 217}$	31.47	$31.6 \pm 2.4$
$c_{100}$	0.99776	$0.9976 \pm 0.0011$	$D_M(z_*)/\text{Gpc}$	13.959	$13.94 \pm 0.17$	$\chi_{lensing}^2$	8.94	$9.32 \pm 0.85$
$c_{217}$	1.00120	$1.0011 \pm 0.0016$	$z_{drag}$	1059.55	$1059.64 \pm 0.72$	$\chi_{small}^2$	396.09	$397.1 \pm 1.8$
$c_{TE}$	0.9964	$0.9964 \pm 0.0051$	$r_{drag}$	148.05	$147.9 \pm 2.0$	$\chi_{lowl}^2$	23.00	$23.1 \pm 1.1$
$c_{EE}$	0.9918	$0.9919 \pm 0.0054$	$k_D$	0.14005	$0.1402 \pm 0.0014$	$\chi_{CamSpec}^2$	11499.7	$11514.7 \pm 5.8$
$H_0$	67.30	$67.5 \pm 1.2$	$100\theta_D$	0.160698	$0.16073 \pm 0.00047$	$\chi_{JLA}^2$	1035.034	$1035.09 \pm 0.34$
$\Omega_\Lambda$	0.6890	$0.6896 \pm 0.0068$	$z_{eq}$	3380.9	$3379 \pm 25$	$\chi_{6DF}^2$	0.0297	$0.053 \pm 0.065$
$\Omega_m$	0.3110	$0.3104 \pm 0.0068$	$k_{eq}$	0.010274	$0.01028 \pm 0.00012$	$\chi_{MGS}^2$	1.217	$1.32 \pm 0.46$
$\Omega_m h^2$	0.14089	$0.1412 \pm 0.0033$	$100\theta_{eq}$	0.81697	$0.8174 \pm 0.0047$	$\chi_{DR12BAO}^2$	4.39	$4.7 \pm 1.4$
$\Omega_m h^3$	0.09482	$0.0953 \pm 0.0038$	$100\theta_{s,eq}$	0.45136	$0.4516 \pm 0.0024$	$\chi_{prior}^2$	2.04	$7.7 \pm 3.4$
$\sigma_8$	0.8047	$0.806 \pm 0.010$	$H(0.15)$	72.55	$72.7 \pm 1.3$	$\chi_{CMB}^2$	11927.7	$11944.3 \pm 5.9$
$S_8$	0.8194	$0.820 \pm 0.011$	$D_M(0.15)$	644.2	$643 \pm 11$	$\chi_{BAO}^2$	5.64	$6.1 \pm 1.1$

Best-fit  $\chi_{eff}^2 = 12970.39$ ;  $\bar{\chi}_{eff}^2 = 12993.15$ ;  $R - 1 = 0.01037$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.03 MGS: 1.22 DR12BAO: 4.39 CMB - smicadx12\_Dec5.ftl\_mv2.ndclpp.p.teb\_consext8: 8.94 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.09 comman-  
der\_dx12\_v3\_2\_29: 23.00 CamSpec like\_10.7HM\_1400\_unified: 11499.66 SN - JLA Pantheon18: 1035.03



## 7.64 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02230 \pm 0.00019$	$\sigma_8 \Omega_m^{0.5}$	$0.4495 \pm 0.0061$	$H(0.38)$	$82.6 \pm 1.3$
$\Omega_c h^2$	$0.1180 \pm 0.0032$	$\sigma_8 \Omega_m^{0.25}$	$0.6017 \pm 0.0073$	$D_M(0.38)$	$1537 \pm 27$
$100\theta_{MC}$	$1.04108 \pm 0.00046$	$\sigma_8/h^{0.5}$	$0.9820 \pm 0.0086$	$H(0.51)$	$89.3 \pm 1.4$
$\tau$	$0.0554 \pm 0.0071$	$r_{\text{drag}} h$	$99.59 \pm 0.87$	$D_M(0.51)$	$1991 \pm 34$
$N_{\text{eff}}$	$2.98 \pm 0.20$	$\langle d^2 \rangle^{1/2}$	$2.433 \pm 0.021$	$H(0.61)$	$94.9 \pm 1.4$
$\ln(10^{10} A_s)$	$3.040 \pm 0.016$	$z_{\text{re}}$	$7.76 \pm 0.71$	$D_M(0.61)$	$2317 \pm 39$
$n_s$	$0.9651 \pm 0.0074$	$10^9 A_s$	$2.092 \pm 0.034$	$H(2.33)$	$235.0 \pm 2.8$
$y_{\text{cal}}$	$1.0007 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.872 \pm 0.018$	$D_M(2.33)$	$5791 \pm 83$
$A_{100}^{\text{PS}}$	$238 \pm 25$	$D_{40}$	$1227 \pm 13$	$f\sigma_8(0.15)$	$0.4541 \pm 0.0059$
$A_{143}^{\text{PS}}$	$38 \pm 9$	$D_{220}$	$5725 \pm 38$	$\sigma_8(0.15)$	$0.744 \pm 0.010$
$A_{217}^{\text{PS}}$	$103 \pm 10$	$D_{810}$	$2535 \pm 13$	$f\sigma_8(0.38)$	$0.4723 \pm 0.0057$
$A_{217}^{\text{CIB}}$	$39 \pm 7$	$D_{1420}$	$816.9 \pm 5.0$	$\sigma_8(0.38)$	$0.6598 \pm 0.0092$
$A_{143}^{\text{tSZ}}$	$4.0^{+1.9}_{-2.5}$	$D_{2000}$	$230.9 \pm 2.0$	$f\sigma_8(0.51)$	$0.4709 \pm 0.0057$
$r_{143 \times 217}^{\text{PS}}$	$0.66 \pm 0.14$	$n_{s,0.002}$	$0.9651 \pm 0.0074$	$\sigma_8(0.51)$	$0.6174 \pm 0.0088$
$r_{143 \times 217}^{\text{CIB}}$	$0.55^{+0.41}_{-0.17}$	$Y_P$	$0.2445 \pm 0.0027$	$f\sigma_8(0.61)$	$0.4660 \pm 0.0056$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.2458 \pm 0.0027$	$\sigma_8(0.61)$	$0.5875 \pm 0.0085$
$A^{\text{kSZ}}$	$< 5.97$	$10^5 \text{D/H}$	$2.577 \pm 0.054$	$f\sigma_8(2.33)$	$0.2962 \pm 0.0044$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.20$	$\text{Age/Gyr}$	$13.86 \pm 0.20$	$\sigma_8(2.33)$	$0.3054 \pm 0.0048$
$A_{143}^{\text{dust}}$	$0.95 \pm 0.17$	$z_*$	$1089.78 \pm 0.39$	$f_{2000}^{143}$	$29 \pm 3$
$A_{217}^{\text{dust}}$	$0.98 \pm 0.10$	$r_*$	$145.4 \pm 1.9$	$f_{2000}^{217}$	$106.4 \pm 2.2$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.16$	$100\theta_*$	$1.04131 \pm 0.00058$	$f_{2000}^{143 \times 217}$	$31.5 \pm 2.4$
$c_{100}$	$0.9976 \pm 0.0010$	$D_M(z_*)/\text{Gpc}$	$13.96 \pm 0.18$	$\chi_{\text{lensing}}^2$	$9.27 \pm 0.84$
$c_{217}$	$1.0011 \pm 0.0015$	$z_{\text{drag}}$	$1059.57 \pm 0.73$	$\chi_{\text{simall}}^2$	$397.1 \pm 1.8$
$c_{TE}$	$0.9963 \pm 0.0051$	$r_{\text{drag}}$	$148.1 \pm 2.0$	$\chi_{\text{lowl}}^2$	$23.2 \pm 1.1$
$c_{EE}$	$0.9916 \pm 0.0054$	$k_D$	$0.1401 \pm 0.0014$	$\chi_{\text{CamSpec}}^2$	$11514.5 \pm 5.8$
$H_0$	$67.3 \pm 1.3$	$100\theta_D$	$0.16070 \pm 0.00048$	$\chi_{6\text{DF}}^2$	$0.065 \pm 0.077$
$\Omega_\Lambda$	$0.6885 \pm 0.0071$	$z_{\text{eq}}$	$3383 \pm 26$	$\chi_{\text{MGS}}^2$	$1.25 \pm 0.47$
$\Omega_m$	$0.3115 \pm 0.0071$	$k_{\text{eq}}$	$0.01028 \pm 0.00012$	$\chi_{\text{DR12BAO}}^2$	$5.0 \pm 1.6$
$\Omega_m h^2$	$0.1410 \pm 0.0033$	$100\theta_{\text{eq}}$	$0.8166 \pm 0.0049$	$\chi_{\text{prior}}^2$	$7.7 \pm 3.4$
$\Omega_m h^3$	$0.0949^{+0.0036}_{-0.0040}$	$100\theta_{s,\text{eq}}$	$0.4512 \pm 0.0025$	$\chi_{\text{CMB}}^2$	$11944.1 \pm 5.9$
$\sigma_8$	$0.805 \pm 0.011$	$H(0.15)$	$72.5 \pm 1.3$	$\chi_{\text{BAO}}^2$	$6.3 \pm 1.3$
$S_8$	$0.821 \pm 0.011$	$D_M(0.15)$	$645 \pm 12$		

$$\bar{\chi}_{\text{eff}}^2 = 11958.08; R - 1 = 0.01000$$



**7.65 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Aver15**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02229 \pm 0.00018$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4472 \pm 0.0073$	$H(0.38)$	$82.6 \pm 1.1$
$\Omega_{\mathrm{c}}h^2$	$0.1177 \pm 0.0028$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5991 \pm 0.0082$	$D_{\mathrm{M}}(0.38)$	$1537 \pm 23$
$100\theta_{\mathrm{MC}}$	$1.04111 \pm 0.00042$	$\sigma_8/h^{0.5}$	$0.978 \pm 0.011$	$H(0.51)$	$89.2 \pm 1.1$
$\tau$	$0.0536 \pm 0.0077$	$r_{\mathrm{drag}}h$	$99.71 \pm 0.87$	$D_{\mathrm{M}}(0.51)$	$1992 \pm 29$
$N_{\mathrm{eff}}$	$2.97 \pm 0.17$	$\langle d^2 \rangle^{1/2}$	$2.424 \pm 0.025$	$H(0.61)$	$94.8 \pm 1.2$
$\ln(10^{10}A_{\mathrm{s}})$	$3.035 \pm 0.018$	$z_{\mathrm{re}}$	$7.56 \pm 0.78$	$D_{\mathrm{M}}(0.61)$	$2318 \pm 33$
$n_{\mathrm{s}}$	$0.9652 \pm 0.0066$	$10^9 A_{\mathrm{s}}$	$2.081 \pm 0.037$	$H(2.33)$	$234.7 \pm 2.4$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.869 \pm 0.017$	$D_{\mathrm{M}}(2.33)$	$5794 \pm 70$
$A_{100}^{\mathrm{PS}}$	$238 \pm 25$	$D_{40}$	$1225 \pm 13$	$f\sigma_8(0.15)$	$0.4519 \pm 0.0070$
$A_{143}^{\mathrm{PS}}$	$38 \pm 8$	$D_{220}$	$5720 \pm 38$	$\sigma_8(0.15)$	$0.7417 \pm 0.0098$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{810}$	$2533 \pm 14$	$f\sigma_8(0.38)$	$0.4702 \pm 0.0065$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7$	$D_{1420}$	$816.6 \pm 5.0$	$\sigma_8(0.38)$	$0.6575 \pm 0.0089$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+1.9}_{-2.5}$	$D_{2000}$	$230.9 \pm 1.9$	$f\sigma_8(0.51)$	$0.4689 \pm 0.0063$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.14$	$n_{\mathrm{s},0.002}$	$0.9652 \pm 0.0066$	$\sigma_8(0.51)$	$0.6154 \pm 0.0084$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.42}_{-0.16}$	$Y_{\mathrm{P}}$	$0.2443 \pm 0.0023$	$f\sigma_8(0.61)$	$0.4641 \pm 0.0061$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2456 \pm 0.0023$	$\sigma_8(0.61)$	$0.5856 \pm 0.0081$
$A^{\mathrm{kSZ}}$	$< 6.07$	$10^5 \mathrm{D}/\mathrm{H}$	$2.574 \pm 0.048$	$f\sigma_8(2.33)$	$0.2953 \pm 0.0041$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.87 \pm 0.17$	$\sigma_8(2.33)$	$0.3045 \pm 0.0044$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$z_*$	$1089.74 \pm 0.36$	$f_{2000}^{143}$	$28.9 \pm 3.1$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$r_*$	$145.5 \pm 1.6$	$f_{2000}^{217}$	$106.3 \pm 2.1$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$100\theta_*$	$1.04135 \pm 0.00051$	$f_{2000}^{143 \times 217}$	$31.5 \pm 2.3$
$c_{100}$	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.97 \pm 0.15$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.7$
$c_{217}$	$1.0011 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.53 \pm 0.63$	$\chi_{\mathrm{lowl}}^2$	$23.1 \pm 1.0$
$c_{TE}$	$0.9964 \pm 0.0051$	$r_{\mathrm{drag}}$	$148.2 \pm 1.7$	$\chi_{\mathrm{CamSpec}}^2$	$11514.9 \pm 5.8$
$c_{EE}$	$0.9916 \pm 0.0053$	$k_{\mathrm{D}}$	$0.1399 \pm 0.0012$	$\chi_{\mathrm{Aver15}}^2$	$0.36 \pm 0.51$
$H_0$	$67.3 \pm 1.1$	$100\theta_{\mathrm{D}}$	$0.16068 \pm 0.00042$	$\chi_{6\mathrm{DF}}^2$	$0.056 \pm 0.070$
$\Omega_{\Lambda}$	$0.6894 \pm 0.0069$	$z_{\mathrm{eq}}$	$3379 \pm 26$	$\chi_{\mathrm{MGS}}^2$	$1.32 \pm 0.48$
$\Omega_{\mathrm{m}}$	$0.3106 \pm 0.0069$	$k_{\mathrm{eq}}$	$0.01026 \pm 0.00011$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.5$
$\Omega_{\mathrm{m}}h^2$	$0.1406 \pm 0.0029$	$100\theta_{\mathrm{eq}}$	$0.8173 \pm 0.0048$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4$
$\Omega_{\mathrm{m}}h^3$	$0.0946 \pm 0.0032$	$100\theta_{\mathrm{s,eq}}$	$0.4515 \pm 0.0025$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.2$
$\sigma_8$	$0.803 \pm 0.011$	$H(0.15)$	$72.5 \pm 1.1$	$\chi_{\mathrm{CMB}}^2$	$11934.9 \pm 5.8$
$S_8$	$0.817 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$645 \pm 10$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11949.20; R - 1 = 0.00729$$



**7.66 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Cooke17\_Aver15**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02229 \pm 0.00018$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6000 \pm 0.0080$	$H(0.51)$	$89.4 \pm 1.1$
$\Omega_{\mathrm{c}}h^2$	$0.1181 \pm 0.0026$	$\sigma_8/h^{0.5}$	$0.979 \pm 0.010$	$D_{\mathrm{M}}(0.51)$	$1988 \pm 27$
$100\theta_{\mathrm{MC}}$	$1.04106 \pm 0.00040$	$r_{\mathrm{drag}}h$	$99.73 \pm 0.87$	$H(0.61)$	$95.0 \pm 1.1$
$\tau$	$0.0535 \pm 0.0077$	$\langle d^2 \rangle^{1/2}$	$2.424 \pm 0.025$	$D_{\mathrm{M}}(0.61)$	$2314 \pm 31$
$N_{\mathrm{eff}}$	$3.00 \pm 0.15$	$z_{\mathrm{re}}$	$7.56 \pm 0.78$	$H(2.33)$	$235.1 \pm 2.3$
$\ln(10^{10}A_{\mathrm{s}})$	$3.036 \pm 0.018$	$10^9 A_{\mathrm{s}}$	$2.082 \pm 0.037$	$D_{\mathrm{M}}(2.33)$	$5784 \pm 66$
$n_{\mathrm{s}}$	$0.9659 \pm 0.0063$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.871 \pm 0.016$	$f\sigma_8(0.15)$	$0.4525 \pm 0.0069$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{40}$	$1224 \pm 13$	$\sigma_8(0.15)$	$0.7428 \pm 0.0095$
$A_{100}^{\mathrm{PS}}$	$238 \pm 25$	$D_{220}$	$5719 \pm 38$	$f\sigma_8(0.38)$	$0.4709 \pm 0.0063$
$A_{143}^{\mathrm{PS}}$	$38 \pm 8$	$D_{810}$	$2533 \pm 14$	$\sigma_8(0.38)$	$0.6586 \pm 0.0085$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{1420}$	$816.2 \pm 4.9$	$f\sigma_8(0.51)$	$0.4696 \pm 0.0061$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7$	$D_{2000}$	$230.6 \pm 1.8$	$\sigma_8(0.51)$	$0.6164 \pm 0.0081$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5}$	$n_{\mathrm{s},0.002}$	$0.9659 \pm 0.0063$	$f\sigma_8(0.61)$	$0.4648 \pm 0.0059$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$Y_{\mathrm{P}}$	$0.2447 \pm 0.0021$	$\sigma_8(0.61)$	$0.5865 \pm 0.0077$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.42}_{-0.15}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2460 \pm 0.0021$	$f\sigma_8(2.33)$	$0.2958 \pm 0.0040$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.583 \pm 0.043$	$\sigma_8(2.33)$	$0.3050 \pm 0.0042$
$A^{\mathrm{kSZ}}$	$4.6^{+1.7}_{-4.4}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.85 \pm 0.16$	$f_{2000}^{143}$	$29.3 \pm 3.1$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$z_*$	$1089.80 \pm 0.32$	$f_{2000}^{217}$	$106.5 \pm 2.1$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$r_*$	$145.3 \pm 1.5$	$f_{2000}^{143 \times 217}$	$31.8 \pm 2.2$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04128 \pm 0.00048$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.6$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.95 \pm 0.14$	$\chi_{\mathrm{lowl}}^2$	$23.00 \pm 0.99$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.57 \pm 0.62$	$\chi_{\mathrm{CamSpec}}^2$	$11514.9 \pm 5.8$
$c_{217}$	$1.0011 \pm 0.0016$	$r_{\mathrm{drag}}$	$148.0 \pm 1.6$	$\chi_{\mathrm{Aver15}}^2$	$0.36 \pm 0.49$
$c_{TE}$	$0.9966 \pm 0.0051$	$k_{\mathrm{D}}$	$0.1401 \pm 0.0011$	$\chi_{\mathrm{Cooke17}}^2$	$0.35 \pm 0.45$
$c_{EE}$	$0.9920 \pm 0.0051$	$100\theta_{\mathrm{D}}$	$0.16075 \pm 0.00038$	$\chi_{6\mathrm{DF}}^2$	$0.055 \pm 0.069$
$H_0$	$67.4 \pm 1.1$	$z_{\mathrm{eq}}$	$3378 \pm 26$	$\chi_{\mathrm{MGS}}^2$	$1.32 \pm 0.48$
$\Omega_{\Lambda}$	$0.6895 \pm 0.0069$	$k_{\mathrm{eq}}$	$0.01027 \pm 0.00010$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.5$
$\Omega_{\mathrm{m}}$	$0.3105 \pm 0.0069$	$100\theta_{\mathrm{eq}}$	$0.8175 \pm 0.0048$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.5$
$\Omega_{\mathrm{m}}h^2$	$0.1410 \pm 0.0027$	$100\theta_{\mathrm{s,eq}}$	$0.4516 \pm 0.0025$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.2$
$\Omega_{\mathrm{m}}h^3$	$0.0951 \pm 0.0030$	$H(0.15)$	$72.7 \pm 1.0$	$\chi_{\mathrm{CMB}}^2$	$11934.8 \pm 5.8$
$\sigma_8$	$0.804 \pm 0.010$	$D_{\mathrm{M}}(0.15)$	$643.3 \pm 9.6$	$\chi_{\mathrm{Abund}}^2$	$0.71 \pm 0.65$
$S_8$	$0.818 \pm 0.013$	$H(0.38)$	$82.7 \pm 1.1$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4478 \pm 0.0072$	$D_{\mathrm{M}}(0.38)$	$1535 \pm 22$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11949.40; R - 1 = 0.00827$$



**7.67 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02231 \pm 0.00019$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4481 \pm 0.0073$	$H(0.38)$	$82.8 \pm 1.4$
$\Omega_{\mathrm{c}}h^2$	$0.1182 \pm 0.0034$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6006 \pm 0.0084$	$D_{\mathrm{M}}(0.38)$	$1533 \pm 27$
$100\theta_{\mathrm{MC}}$	$1.04106 \pm 0.00047$	$\sigma_8/h^{0.5}$	$0.980 \pm 0.010$	$H(0.51)$	$89.5 \pm 1.4$
$\tau$	$0.0549^{+0.0050}_{-0.0079}$	$r_{\mathrm{drag}}h$	$99.79 \pm 0.91$	$D_{\mathrm{M}}(0.51)$	$1986 \pm 35$
$N_{\mathrm{eff}}$	$3.00 \pm 0.20$	$\langle d^2 \rangle^{1/2}$	$2.426 \pm 0.024$	$H(0.61)$	$95.1 \pm 1.4$
$\ln(10^{10}A_{\mathrm{s}})$	$3.039^{+0.015}_{-0.018}$	$z_{\mathrm{re}}$	$7.70^{+0.55}_{-0.80}$	$D_{\mathrm{M}}(0.61)$	$2312 \pm 40$
$n_{\mathrm{s}}$	$0.9664 \pm 0.0076$	$10^9 A_{\mathrm{s}}$	$2.089^{+0.031}_{-0.038}$	$H(2.33)$	$235.1 \pm 3.0$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.871 \pm 0.019$	$D_{\mathrm{M}}(2.33)$	$5781 \pm 85$
$A_{100}^{\mathrm{PS}}$	$238 \pm 25$	$D_{40}$	$1224 \pm 14$	$f\sigma_8(0.15)$	$0.4528 \pm 0.0070$
$A_{143}^{\mathrm{PS}}$	$38 \pm 9$	$D_{220}$	$5720 \pm 38$	$\sigma_8(0.15)$	$0.744 \pm 0.011$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{810}$	$2534 \pm 14$	$f\sigma_8(0.38)$	$0.4713 \pm 0.0066$
$A_{217}^{\mathrm{CIB}}$	$39^{+7}_{-8}$	$D_{1420}$	$816.4 \pm 5.0$	$\sigma_8(0.38)$	$0.6597 \pm 0.0098$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+1.9}_{-2.4}$	$D_{2000}$	$230.7 \pm 2.1$	$f\sigma_8(0.51)$	$0.4701 \pm 0.0065$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9664 \pm 0.0076$	$\sigma_8(0.51)$	$0.6174 \pm 0.0093$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.40}_{-0.17}$	$Y_{\mathrm{P}}$	$0.2448 \pm 0.0028$	$f\sigma_8(0.61)$	$0.4653 \pm 0.0064$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2461 \pm 0.0028$	$\sigma_8(0.61)$	$0.5875 \pm 0.0089$
$A^{\mathrm{kSZ}}$	$< 6.07$	$10^5 \mathrm{D}/\mathrm{H}$	$2.581 \pm 0.056$	$f\sigma_8(2.33)$	$0.2963 \pm 0.0046$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$\mathrm{Age}/\mathrm{Gyr}$	$13.84 \pm 0.20$	$\sigma_8(2.33)$	$0.3056 \pm 0.0049$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.17$	$z_*$	$1089.78 \pm 0.41$	$f_{2000}^{143}$	$29 \pm 3$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$r_*$	$145.2 \pm 2.0$	$f_{2000}^{217}$	$106.5 \pm 2.2$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$100\theta_*$	$1.04128 \pm 0.00059$	$f_{2000}^{143 \times 217}$	$31.6 \pm 2.4$
$c_{100}$	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.94 \pm 0.18$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.7$
$c_{217}$	$1.0011 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.64 \pm 0.75$	$\chi_{\mathrm{lowl}}^2$	$23.0 \pm 1.1$
$c_{TE}$	$0.9965 \pm 0.0051$	$r_{\mathrm{drag}}$	$147.9 \pm 2.0$	$\chi_{\mathrm{CamSpec}}^2$	$11515.1 \pm 5.9$
$c_{EE}$	$0.9919 \pm 0.0055$	$k_{\mathrm{D}}$	$0.1402 \pm 0.0015$	$\chi_{6\mathrm{DF}}^2$	$0.054 \pm 0.070$
$H_0$	$67.5 \pm 1.3$	$100\theta_{\mathrm{D}}$	$0.16074 \pm 0.00049$	$\chi_{\mathrm{MGS}}^2$	$1.36 \pm 0.51$
$\Omega_{\Lambda}$	$0.6901 \pm 0.0073$	$z_{\mathrm{eq}}$	$3377 \pm 27$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.5$
$\Omega_{\mathrm{m}}$	$0.3099 \pm 0.0073$	$k_{\mathrm{eq}}$	$0.01028 \pm 0.00012$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.4$
$\Omega_{\mathrm{m}}h^2$	$0.1411 \pm 0.0035$	$100\theta_{\mathrm{eq}}$	$0.8178 \pm 0.0051$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.2$
$\Omega_{\mathrm{m}}h^3$	$0.0953^{+0.0037}_{-0.0042}$	$100\theta_{\mathrm{s,eq}}$	$0.4518 \pm 0.0026$	$\chi_{\mathrm{CMB}}^2$	$11935.0 \pm 5.8$
$\sigma_8$	$0.805 \pm 0.011$	$H(0.15)$	$72.7 \pm 1.3$		
$S_8$	$0.818 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$643 \pm 12$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11948.82; R - 1 = 0.00628$$



7.68 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_JLA\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02231 \pm 0.00019$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4495 \pm 0.0061$	$H(0.38)$	$82.7 \pm 1.3$
$\Omega_{\mathrm{c}}h^2$	$0.1181 \pm 0.0032$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6020 \pm 0.0071$	$D_{\mathrm{M}}(0.38)$	$1536 \pm 27$
$100\theta_{\mathrm{MC}}$	$1.04108 \pm 0.00047$	$\sigma_8/h^{0.5}$	$0.9823 \pm 0.0083$	$H(0.51)$	$89.3 \pm 1.4$
$\tau$	$0.0560^{+0.0056}_{-0.0070}$	$r_{\mathrm{drag}}h$	$99.65 \pm 0.85$	$D_{\mathrm{M}}(0.51)$	$1990 \pm 34$
$N_{\mathrm{eff}}$	$2.99^{+0.18}_{-0.21}$	$\langle d^2 \rangle^{1/2}$	$2.433 \pm 0.021$	$H(0.61)$	$94.9 \pm 1.4$
$\ln(10^{10}A_{\mathrm{s}})$	$3.042 \pm 0.015$	$z_{\mathrm{re}}$	$7.82^{+0.59}_{-0.70}$	$D_{\mathrm{M}}(0.61)$	$2315 \pm 38$
$n_{\mathrm{s}}$	$0.9655 \pm 0.0073$	$10^9 A_{\mathrm{s}}$	$2.095^{+0.030}_{-0.034}$	$H(2.33)$	$235.0 \pm 2.8$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0024$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.873 \pm 0.018$	$D_{\mathrm{M}}(2.33)$	$5787 \pm 82$
$A_{100}^{\mathrm{PS}}$	$237 \pm 24$	$D_{40}$	$1227 \pm 13$	$f\sigma_8(0.15)$	$0.4541 \pm 0.0058$
$A_{143}^{\mathrm{PS}}$	$38 \pm 9$	$D_{220}$	$5725 \pm 37$	$\sigma_8(0.15)$	$0.7449 \pm 0.0097$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10$	$D_{810}$	$2536 \pm 13$	$f\sigma_8(0.38)$	$0.4725 \pm 0.0056$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7$	$D_{1420}$	$817.1 \pm 5.1$	$\sigma_8(0.38)$	$0.6604 \pm 0.0090$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+1.9}_{-2.4}$	$D_{2000}$	$231.0 \pm 2.1$	$f\sigma_8(0.51)$	$0.4712 \pm 0.0055$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.14$	$n_{\mathrm{s},0.002}$	$0.9655 \pm 0.0073$	$\sigma_8(0.51)$	$0.6180 \pm 0.0085$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.40}_{-0.18}$	$Y_{\mathrm{P}}$	$0.2446 \pm 0.0027$	$f\sigma_8(0.61)$	$0.4663 \pm 0.0055$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2459 \pm 0.0027$	$\sigma_8(0.61)$	$0.5881 \pm 0.0082$
$A^{\mathrm{kSZ}}$	$< 5.77$	$10^5 \mathrm{D}/\mathrm{H}$	$2.578 \pm 0.054$	$f\sigma_8(2.33)$	$0.2966 \pm 0.0043$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$\mathrm{Age}/\mathrm{Gyr}$	$13.86 \pm 0.20$	$\sigma_8(2.33)$	$0.3058 \pm 0.0046$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.17$	$z_*$	$1089.77 \pm 0.39$	$f_{2000}^{143}$	$29 \pm 3$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$r_*$	$145.3 \pm 1.9$	$f_{2000}^{217}$	$106.4 \pm 2.2$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$100\theta_*$	$1.04131 \pm 0.00058$	$f_{2000}^{143 \times 217}$	$31.5 \pm 2.5$
$c_{100}$	$0.9975 \pm 0.0010$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.95 \pm 0.18$	$\chi_{\mathrm{lensing}}^2$	$9.23 \pm 0.79$
$c_{217}$	$1.0011 \pm 0.0015$	$z_{\mathrm{drag}}$	$1059.60 \pm 0.73$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.7$
$c_{TE}$	$0.9963 \pm 0.0052$	$r_{\mathrm{drag}}$	$148.0 \pm 2.0$	$\chi_{\mathrm{lowl}}^2$	$23.2 \pm 1.1$
$c_{EE}$	$0.9917 \pm 0.0054$	$k_{\mathrm{D}}$	$0.1401 \pm 0.0014$	$\chi_{\mathrm{CamSpec}}^2$	$11514.5 \pm 5.9$
$H_0$	$67.3 \pm 1.3$	$100\theta_{\mathrm{D}}$	$0.16071 \pm 0.00048$	$\chi_{\mathrm{JLA}}^2$	$706.78 \pm 0.21$
$\Omega_{\Lambda}$	$0.6889^{+0.0074}_{-0.0066}$	$z_{\mathrm{eq}}$	$3382 \pm 25$	$\chi_{6\mathrm{DF}}^2$	$0.059 \pm 0.073$
$\Omega_{\mathrm{m}}$	$0.3111^{+0.0066}_{-0.0074}$	$k_{\mathrm{eq}}$	$0.01028 \pm 0.00011$	$\chi_{\mathrm{MGS}}^2$	$1.28 \pm 0.46$
$\Omega_{\mathrm{m}}h^2$	$0.1410^{+0.0031}_{-0.0035}$	$100\theta_{\mathrm{eq}}$	$0.8169 \pm 0.0048$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.5$
$\Omega_{\mathrm{m}}h^3$	$0.0950^{+0.0035}_{-0.0041}$	$100\theta_{\mathrm{s,eq}}$	$0.4513 \pm 0.0024$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.3$
$\sigma_8$	$0.806 \pm 0.010$	$H(0.15)$	$72.6 \pm 1.3$	$\chi_{\mathrm{CMB}}^2$	$11943.9 \pm 6.0$
$S_8$	$0.821 \pm 0.011$	$D_{\mathrm{M}}(0.15)$	$644 \pm 12$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.2$

$$\bar{\chi}_{\mathrm{eff}}^2 = 12664.58; R - 1 = 0.04058$$



**7.69 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02232 \pm 0.00019$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4492 \pm 0.0061$	$H(0.38)$	$82.8 \pm 1.3$
$\Omega_{\text{c}}h^2$	$0.1182 \pm 0.0032$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6019 \pm 0.0072$	$D_{\text{M}}(0.38)$	$1534 \pm 26$
$100\theta_{\text{MC}}$	$1.04106 \pm 0.00046$	$\sigma_8/h^{0.5}$	$0.9820 \pm 0.0083$	$H(0.51)$	$89.4 \pm 1.3$
$\tau$	$0.0564^{+0.0057}_{-0.0073}$	$r_{\text{drag}}h$	$99.75 \pm 0.83$	$D_{\text{M}}(0.51)$	$1987 \pm 33$
$N_{\text{eff}}$	$3.00 \pm 0.19$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.021$	$H(0.61)$	$95.0 \pm 1.4$
$\ln(10^{10}A_{\text{s}})$	$3.043^{+0.014}_{-0.016}$	$z_{\text{re}}$	$7.85^{+0.61}_{-0.71}$	$D_{\text{M}}(0.61)$	$2312 \pm 38$
$n_{\text{s}}$	$0.9661 \pm 0.0073$	$10^9 A_{\text{s}}$	$2.096^{+0.029}_{-0.034}$	$H(2.33)$	$235.2 \pm 2.8$
$y_{\text{cal}}$	$1.0007 \pm 0.0025$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.873 \pm 0.018$	$D_{\text{M}}(2.33)$	$5782 \pm 81$
$A_{100}^{\text{PS}}$	$238 \pm 25$	$D_{40}$	$1226^{+12}_{-14}$	$f\sigma_8(0.15)$	$0.4538 \pm 0.0059$
$A_{143}^{\text{PS}}$	$38 \pm 9$	$D_{220}$	$5725 \pm 37$	$\sigma_8(0.15)$	$0.7454 \pm 0.0098$
$A_{217}^{\text{PS}}$	$103 \pm 10$	$D_{810}$	$2535 \pm 13$	$f\sigma_8(0.38)$	$0.4724 \pm 0.0056$
$A_{217}^{\text{CIB}}$	$39 \pm 7$	$D_{1420}$	$816.9 \pm 5.0$	$\sigma_8(0.38)$	$0.6609 \pm 0.0090$
$A_{143}^{\text{tSZ}}$	$4.0^{+1.9}_{-2.5}$	$D_{2000}$	$230.9 \pm 2.0$	$f\sigma_8(0.51)$	$0.4711 \pm 0.0056$
$r_{143 \times 217}^{\text{PS}}$	$0.66 \pm 0.14$	$n_{\text{s},0.002}$	$0.9661 \pm 0.0073$	$\sigma_8(0.51)$	$0.6185 \pm 0.0086$
$r_{143 \times 217}^{\text{CIB}}$	$0.55^{+0.41}_{-0.17}$	$Y_{\text{P}}$	$0.2447 \pm 0.0027$	$f\sigma_8(0.61)$	$0.4663 \pm 0.0056$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.2461 \pm 0.0027$	$\sigma_8(0.61)$	$0.5886 \pm 0.0082$
$A^{\text{kSZ}}$	$< 6.01$	$10^5 \text{D}/\text{H}$	$2.579 \pm 0.054$	$f\sigma_8(2.33)$	$0.2968 \pm 0.0043$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.20$	$\text{Age}/\text{Gyr}$	$13.84 \pm 0.19$	$\sigma_8(2.33)$	$0.3061 \pm 0.0046$
$A_{143}^{\text{dust}}$	$0.95 \pm 0.17$	$z_*$	$1089.78 \pm 0.39$	$f_{2000}^{143}$	$29 \pm 3$
$A_{217}^{\text{dust}}$	$0.98 \pm 0.10$	$r_*$	$145.2 \pm 1.9$	$f_{2000}^{217}$	$106.4 \pm 2.2$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.16$	$100\theta_*$	$1.04128 \pm 0.00057$	$f_{2000}^{143 \times 217}$	$31.6 \pm 2.4$
$c_{100}$	$0.9976 \pm 0.0011$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.94 \pm 0.17$	$\chi_{\text{lensing}}^2$	$9.27 \pm 0.79$
$c_{217}$	$1.0011 \pm 0.0016$	$z_{\text{drag}}$	$1059.65 \pm 0.72$	$\chi_{\text{simall}}^2$	$397.1 \pm 1.8$
$c_{TE}$	$0.9964 \pm 0.0051$	$r_{\text{drag}}$	$147.9 \pm 2.0$	$\chi_{\text{lowl}}^2$	$23.1 \pm 1.1$
$c_{EE}$	$0.9919 \pm 0.0054$	$k_{\text{D}}$	$0.1402 \pm 0.0014$	$\chi_{\text{CamSpec}}^2$	$11514.7 \pm 5.8$
$H_0$	$67.5 \pm 1.2$	$100\theta_{\text{D}}$	$0.16073 \pm 0.00047$	$\chi_{\text{JLA}}^2$	$1035.09 \pm 0.34$
$\Omega_{\Lambda}$	$0.6898 \pm 0.0068$	$z_{\text{eq}}$	$3379 \pm 25$	$\chi_{6\text{DF}}^2$	$0.051 \pm 0.064$
$\Omega_{\text{m}}$	$0.3102 \pm 0.0068$	$k_{\text{eq}}$	$0.01028 \pm 0.00012$	$\chi_{\text{MGS}}^2$	$1.33 \pm 0.46$
$\Omega_{\text{m}}h^2$	$0.1412 \pm 0.0033$	$100\theta_{\text{eq}}$	$0.8175 \pm 0.0047$	$\chi_{\text{DR12BAO}}^2$	$4.7 \pm 1.4$
$\Omega_{\text{m}}h^3$	$0.0953 \pm 0.0038$	$100\theta_{\text{s,eq}}$	$0.4516 \pm 0.0024$	$\chi_{\text{prior}}^2$	$7.7 \pm 3.4$
$\sigma_8$	$0.807 \pm 0.010$	$H(0.15)$	$72.7 \pm 1.3$	$\chi_{\text{CMB}}^2$	$11944.2 \pm 5.9$
$S_8$	$0.820 \pm 0.011$	$D_{\text{M}}(0.15)$	$643 \pm 11$	$\chi_{\text{BAO}}^2$	$6.1 \pm 1.1$

$$\bar{\chi}_{\text{eff}}^2 = 12993.02; R - 1 = 0.01132$$



**7.70 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02230 \pm 0.00019$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4496 \pm 0.0061$	$H(0.38)$	$82.6 \pm 1.3$
$\Omega_{\mathrm{c}}h^2$	$0.1180 \pm 0.0032$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6020 \pm 0.0072$	$D_{\mathrm{M}}(0.38)$	$1537 \pm 27$
$100\theta_{\mathrm{MC}}$	$1.04108 \pm 0.00047$	$\sigma_8/h^{0.5}$	$0.9824 \pm 0.0083$	$H(0.51)$	$89.3 \pm 1.4$
$\tau$	$0.0561^{+0.0056}_{-0.0073}$	$r_{\mathrm{drag}}h$	$99.61 \pm 0.87$	$D_{\mathrm{M}}(0.51)$	$1991 \pm 34$
$N_{\mathrm{eff}}$	$2.98 \pm 0.20$	$\langle d^2 \rangle^{1/2}$	$2.434 \pm 0.021$	$H(0.61)$	$94.9 \pm 1.4$
$\ln(10^{10}A_{\mathrm{s}})$	$3.042^{+0.014}_{-0.016}$	$z_{\mathrm{re}}$	$7.82^{+0.60}_{-0.72}$	$D_{\mathrm{M}}(0.61)$	$2317 \pm 39$
$n_{\mathrm{s}}$	$0.9652 \pm 0.0074$	$10^9 A_{\mathrm{s}}$	$2.094^{+0.030}_{-0.034}$	$H(2.33)$	$235.0 \pm 2.8$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.872 \pm 0.018$	$D_{\mathrm{M}}(2.33)$	$5790 \pm 83$
$A_{100}^{\mathrm{PS}}$	$238 \pm 25$	$D_{40}$	$1227^{+13}_{-14}$	$f\sigma_8(0.15)$	$0.4542 \pm 0.0059$
$A_{143}^{\mathrm{PS}}$	$38 \pm 9$	$D_{220}$	$5724 \pm 38$	$\sigma_8(0.15)$	$0.7447 \pm 0.0098$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10$	$D_{810}$	$2535 \pm 13$	$f\sigma_8(0.38)$	$0.4725 \pm 0.0056$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7$	$D_{1420}$	$816.9 \pm 5.0$	$\sigma_8(0.38)$	$0.6601 \pm 0.0091$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+1.9}_{-2.5}$	$D_{2000}$	$231.0 \pm 2.0$	$f\sigma_8(0.51)$	$0.4711 \pm 0.0056$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.14$	$n_{\mathrm{s},0.002}$	$0.9652 \pm 0.0074$	$\sigma_8(0.51)$	$0.6178 \pm 0.0086$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.41}_{-0.17}$	$Y_{\mathrm{P}}$	$0.2445 \pm 0.0027$	$f\sigma_8(0.61)$	$0.4662 \pm 0.0056$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2458 \pm 0.0027$	$\sigma_8(0.61)$	$0.5879 \pm 0.0083$
$A^{\mathrm{kSZ}}$	$< 5.97$	$10^5 \mathrm{D}/\mathrm{H}$	$2.577 \pm 0.054$	$f\sigma_8(2.33)$	$0.2964 \pm 0.0043$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.86 \pm 0.20$	$\sigma_8(2.33)$	$0.3056 \pm 0.0047$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.17$	$z_*$	$1089.77 \pm 0.39$	$f_{2000}^{143}$	$29 \pm 3$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$r_*$	$145.4 \pm 1.9$	$f_{2000}^{217}$	$106.4 \pm 2.2$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$100\theta_*$	$1.04132 \pm 0.00058$	$f_{2000}^{143 \times 217}$	$31.5 \pm 2.4$
$c_{100}$	$0.9976 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.96 \pm 0.18$	$\chi_{\mathrm{lensing}}^2$	$9.22 \pm 0.77$
$c_{217}$	$1.0011 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.57 \pm 0.73$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.8$
$c_{TE}$	$0.9963 \pm 0.0051$	$r_{\mathrm{drag}}$	$148.1 \pm 2.0$	$\chi_{\mathrm{lowl}}^2$	$23.2 \pm 1.1$
$c_{EE}$	$0.9916 \pm 0.0055$	$k_{\mathrm{D}}$	$0.1401 \pm 0.0014$	$\chi_{\mathrm{CamSpec}}^2$	$11514.5 \pm 5.8$
$H_0$	$67.3 \pm 1.3$	$100\theta_{\mathrm{D}}$	$0.16070 \pm 0.00048$	$\chi_{6\mathrm{DF}}^2$	$0.063 \pm 0.075$
$\Omega_{\Lambda}$	$0.6886 \pm 0.0071$	$z_{\mathrm{eq}}$	$3383 \pm 26$	$\chi_{\mathrm{MGS}}^2$	$1.26 \pm 0.47$
$\Omega_{\mathrm{m}}$	$0.3114 \pm 0.0071$	$k_{\mathrm{eq}}$	$0.01028 \pm 0.00012$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 \pm 1.6$
$\Omega_{\mathrm{m}}h^2$	$0.1410 \pm 0.0033$	$100\theta_{\mathrm{eq}}$	$0.8167 \pm 0.0049$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.4$
$\Omega_{\mathrm{m}}h^3$	$0.0949^{+0.0036}_{-0.0040}$	$100\theta_{\mathrm{s,eq}}$	$0.4512 \pm 0.0025$	$\chi_{\mathrm{CMB}}^2$	$11944.0 \pm 5.9$
$\sigma_8$	$0.806 \pm 0.010$	$H(0.15)$	$72.5 \pm 1.3$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.3$
$S_8$	$0.821 \pm 0.011$	$D_{\mathrm{M}}(0.15)$	$644 \pm 12$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11957.94; R - 1 = 0.01105$$



**7.71 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Aver15\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02230 \pm 0.00018$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4477 \pm 0.0072$	$H(0.38)$	$82.6 \pm 1.1$
$\Omega_{\mathrm{c}}h^2$	$0.1177 \pm 0.0028$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5998 \pm 0.0079$	$D_{\mathrm{M}}(0.38)$	$1537 \pm 23$
$100\theta_{\mathrm{MC}}$	$1.04111 \pm 0.00043$	$\sigma_8/h^{0.5}$	$0.980 \pm 0.010$	$H(0.51)$	$89.3 \pm 1.1$
$\tau$	$0.0549^{+0.0050}_{-0.0078}$	$r_{\mathrm{drag}}h$	$99.74 \pm 0.86$	$D_{\mathrm{M}}(0.51)$	$1991 \pm 29$
$N_{\mathrm{eff}}$	$2.97 \pm 0.17$	$\langle d^2 \rangle^{1/2}$	$2.427 \pm 0.024$	$H(0.61)$	$94.8 \pm 1.2$
$\ln(10^{10}A_{\mathrm{s}})$	$3.038^{+0.014}_{-0.017}$	$z_{\mathrm{re}}$	$7.70^{+0.55}_{-0.79}$	$D_{\mathrm{M}}(0.61)$	$2317 \pm 33$
$n_{\mathrm{s}}$	$0.9654 \pm 0.0065$	$10^9 A_{\mathrm{s}}$	$2.086^{+0.029}_{-0.036}$	$H(2.33)$	$234.7 \pm 2.4$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.869 \pm 0.017$	$D_{\mathrm{M}}(2.33)$	$5793 \pm 70$
$A_{100}^{\mathrm{PS}}$	$237 \pm 25$	$D_{40}$	$1225 \pm 13$	$f\sigma_8(0.15)$	$0.4524 \pm 0.0069$
$A_{143}^{\mathrm{PS}}$	$38 \pm 8$	$D_{220}$	$5720 \pm 38$	$\sigma_8(0.15)$	$0.7427 \pm 0.0094$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{810}$	$2533 \pm 14$	$f\sigma_8(0.38)$	$0.4708 \pm 0.0063$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7$	$D_{1420}$	$816.6 \pm 5.0$	$\sigma_8(0.38)$	$0.6584 \pm 0.0085$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+1.9}_{-2.5}$	$D_{2000}$	$230.9 \pm 1.9$	$f\sigma_8(0.51)$	$0.4695 \pm 0.0060$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.14$	$n_{\mathrm{s},0.002}$	$0.9654 \pm 0.0065$	$\sigma_8(0.51)$	$0.6163 \pm 0.0080$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.41}_{-0.16}$	$Y_{\mathrm{P}}$	$0.2443 \pm 0.0023$	$f\sigma_8(0.61)$	$0.4647 \pm 0.0059$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2457 \pm 0.0023$	$\sigma_8(0.61)$	$0.5864 \pm 0.0077$
$A^{\mathrm{kSZ}}$	$< 6.05$	$10^5 \mathrm{D}/\mathrm{H}$	$2.574 \pm 0.048$	$f\sigma_8(2.33)$	$0.2957 \pm 0.0039$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.87 \pm 0.17$	$\sigma_8(2.33)$	$0.3049 \pm 0.0042$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$z_*$	$1089.73 \pm 0.36$	$f_{2000}^{143}$	$28.9 \pm 3.1$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$r_*$	$145.5 \pm 1.6$	$f_{2000}^{217}$	$106.3 \pm 2.1$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$100\theta_*$	$1.04135 \pm 0.00051$	$f_{2000}^{143 \times 217}$	$31.5 \pm 2.3$
$c_{100}$	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.97 \pm 0.15$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.7$
$c_{217}$	$1.0011 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.54 \pm 0.63$	$\chi_{\mathrm{lowl}}^2$	$23.1 \pm 1.0$
$c_{TE}$	$0.9963 \pm 0.0051$	$r_{\mathrm{drag}}$	$148.2 \pm 1.7$	$\chi_{\mathrm{CamSpec}}^2$	$11514.8 \pm 5.8$
$c_{EE}$	$0.9915 \pm 0.0053$	$k_{\mathrm{D}}$	$0.1400 \pm 0.0012$	$\chi_{\mathrm{Aver15}}^2$	$0.36 \pm 0.51$
$H_0$	$67.3 \pm 1.1$	$100\theta_{\mathrm{D}}$	$0.16068 \pm 0.00042$	$\chi_{6\mathrm{DF}}^2$	$0.054 \pm 0.068$
$\Omega_{\Lambda}$	$0.6895 \pm 0.0069$	$z_{\mathrm{eq}}$	$3379 \pm 26$	$\chi_{\mathrm{MGS}}^2$	$1.33 \pm 0.48$
$\Omega_{\mathrm{m}}$	$0.3105 \pm 0.0069$	$k_{\mathrm{eq}}$	$0.01026 \pm 0.00011$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.5$
$\Omega_{\mathrm{m}}h^2$	$0.1406 \pm 0.0029$	$100\theta_{\mathrm{eq}}$	$0.8175 \pm 0.0048$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4$
$\Omega_{\mathrm{m}}h^3$	$0.0947 \pm 0.0032$	$100\theta_{\mathrm{s,eq}}$	$0.4516 \pm 0.0025$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.2$
$\sigma_8$	$0.804 \pm 0.010$	$H(0.15)$	$72.6 \pm 1.1$	$\chi_{\mathrm{CMB}}^2$	$11934.7 \pm 5.7$
$S_8$	$0.817 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$644 \pm 10$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11948.97; R - 1 = 0.00928$$



**7.72 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Cooke17\_Aver15\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02229 \pm 0.00018$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6007 \pm 0.0077$	$H(0.51)$	$89.4 \pm 1.1$
$\Omega_{\mathrm{c}}h^2$	$0.1181 \pm 0.0026$	$\sigma_8/h^{0.5}$	$0.9802 \pm 0.0099$	$D_{\mathrm{M}}(0.51)$	$1988 \pm 27$
$100\theta_{\mathrm{MC}}$	$1.04106 \pm 0.00040$	$r_{\mathrm{drag}}h$	$99.75 \pm 0.86$	$H(0.61)$	$95.0 \pm 1.1$
$\tau$	$0.0549^{+0.0050}_{-0.0078}$	$\langle d^2 \rangle^{1/2}$	$2.427 \pm 0.024$	$D_{\mathrm{M}}(0.61)$	$2313 \pm 31$
$N_{\mathrm{eff}}$	$3.00 \pm 0.15$	$z_{\mathrm{re}}$	$7.70^{+0.55}_{-0.78}$	$H(2.33)$	$235.1 \pm 2.3$
$\ln(10^{10}A_{\mathrm{s}})$	$3.039^{+0.014}_{-0.017}$	$10^9 A_{\mathrm{s}}$	$2.088^{+0.029}_{-0.035}$	$D_{\mathrm{M}}(2.33)$	$5783 \pm 66$
$n_{\mathrm{s}}$	$0.9661 \pm 0.0063$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.871 \pm 0.016$	$f\sigma_8(0.15)$	$0.4530 \pm 0.0067$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{40}$	$1224 \pm 13$	$\sigma_8(0.15)$	$0.7439 \pm 0.0090$
$A_{100}^{\mathrm{PS}}$	$238 \pm 25$	$D_{220}$	$5718 \pm 38$	$f\sigma_8(0.38)$	$0.4715 \pm 0.0061$
$A_{143}^{\mathrm{PS}}$	$38 \pm 8$	$D_{810}$	$2533 \pm 14$	$\sigma_8(0.38)$	$0.6595 \pm 0.0081$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{1420}$	$816.2 \pm 4.9$	$f\sigma_8(0.51)$	$0.4702 \pm 0.0058$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7$	$D_{2000}$	$230.6 \pm 1.8$	$\sigma_8(0.51)$	$0.6173 \pm 0.0077$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5}$	$n_{\mathrm{s},0.002}$	$0.9661 \pm 0.0063$	$f\sigma_8(0.61)$	$0.4654 \pm 0.0056$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.14$	$Y_{\mathrm{P}}$	$0.2447 \pm 0.0021$	$\sigma_8(0.61)$	$0.5874 \pm 0.0073$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.42}_{-0.15}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2460 \pm 0.0021$	$f\sigma_8(2.33)$	$0.2962 \pm 0.0038$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.583 \pm 0.043$	$\sigma_8(2.33)$	$0.3054 \pm 0.0040$
$A^{\mathrm{kSZ}}$	$4.6^{+1.6}_{-4.5}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.85 \pm 0.16$	$f_{2000}^{143}$	$29.2 \pm 3.1$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$z_*$	$1089.80 \pm 0.32$	$f_{2000}^{217}$	$106.5 \pm 2.1$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$r_*$	$145.2 \pm 1.5$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.2$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04128 \pm 0.00048$	$\chi_{\mathrm{simall}}^2$	$396.8 \pm 1.7$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.95 \pm 0.14$	$\chi_{\mathrm{lowl}}^2$	$23.01 \pm 0.99$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.58 \pm 0.62$	$\chi_{\mathrm{CamSpec}}^2$	$11514.7 \pm 5.8$
$c_{217}$	$1.0011 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.9 \pm 1.6$	$\chi_{\mathrm{Aver15}}^2$	$0.36 \pm 0.50$
$c_{TE}$	$0.9966 \pm 0.0050$	$k_{\mathrm{D}}$	$0.1401 \pm 0.0011$	$\chi_{\mathrm{Cooke17}}^2$	$0.35 \pm 0.45$
$c_{EE}$	$0.9920 \pm 0.0052$	$100\theta_{\mathrm{D}}$	$0.16076 \pm 0.00038$	$\chi_{6\mathrm{DF}}^2$	$0.054 \pm 0.067$
$H_0$	$67.4 \pm 1.1$	$z_{\mathrm{eq}}$	$3378 \pm 25$	$\chi_{\mathrm{MGS}}^2$	$1.34 \pm 0.48$
$\Omega_{\Lambda}$	$0.6897 \pm 0.0069$	$k_{\mathrm{eq}}$	$0.01027 \pm 0.00010$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.4$
$\Omega_{\mathrm{m}}$	$0.3103 \pm 0.0069$	$100\theta_{\mathrm{eq}}$	$0.8176 \pm 0.0048$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4$
$\Omega_{\mathrm{m}}h^2$	$0.1411 \pm 0.0027$	$100\theta_{\mathrm{s,eq}}$	$0.4517 \pm 0.0025$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.1$
$\Omega_{\mathrm{m}}h^3$	$0.0951 \pm 0.0030$	$H(0.15)$	$72.7 \pm 1.0$	$\chi_{\mathrm{CMB}}^2$	$11934.6 \pm 5.7$
$\sigma_8$	$0.8049 \pm 0.0096$	$D_{\mathrm{M}}(0.15)$	$643.1 \pm 9.6$	$\chi_{\mathrm{Abund}}^2$	$0.71 \pm 0.65$
$S_8$	$0.819 \pm 0.013$	$H(0.38)$	$82.7 \pm 1.1$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4483 \pm 0.0070$	$D_{\mathrm{M}}(0.38)$	$1534 \pm 22$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11949.15; R - 1 = 0.01020$$



### 7.73 base\_nnu\_plikHM\_TT\_lowl\_lowE\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022625	$0.02260 \pm 0.00023$	$\sigma_8 \Omega_m^{0.25}$	0.6042	$0.606 \pm 0.012$	$D_M(0.15)$	611.1	$610 \pm 12$
$\Omega_c h^2$	0.12382	$0.1248 \pm 0.0036$	$\sigma_8/h^{0.5}$	0.9757	$0.977 \pm 0.015$	$H(0.38)$	86.33	$86.6 \pm 1.3$
$100\theta_{MC}$	1.04058	$1.04048 \pm 0.00054$	$r_{drag}h$	102.21	$102.2 \pm 1.5$	$D_M(0.38)$	1462.2	$1459 \pm 26$
$\tau$	0.0568	$0.0573^{+0.0076}_{-0.0086}$	$\langle d^2 \rangle^{1/2}$	2.3870	$2.391 \pm 0.034$	$H(0.51)$	93.01	$93.3 \pm 1.4$
$N_{eff}$	3.478	$3.53 \pm 0.20$	$z_{re}$	7.99	$8.04 \pm 0.83$	$D_M(0.51)$	1897.3	$1893 \pm 32$
$\ln(10^{10} A_s)$	3.0599	$3.061 \pm 0.019$	$10^9 A_s$	2.1325	$2.136^{+0.037}_{-0.041}$	$H(0.61)$	98.62	$98.9 \pm 1.4$
$n_s$	0.9858	$0.9858 \pm 0.0079$	$10^9 A_s e^{-2\tau}$	1.9035	$1.905 \pm 0.019$	$D_M(0.61)$	2210.4	$2205 \pm 36$
$y_{cal}$	1.00109	$1.0006 \pm 0.0025$	$D_{40}$	1200.2	$1201 \pm 15$	$H(2.33)$	240.73	$241.4 \pm 2.9$
$A_{217}^{CIB}$	48.4	$50 \pm 7$	$D_{220}$	5729.7	$5724 \pm 41$	$D_M(2.33)$	5581	$5566 \pm 74$
$\xi^{tSZ \times CIB}$	0.59	—	$D_{810}$	2545.7	$2542 \pm 14$	$f\sigma_8(0.15)$	0.4500	$0.452 \pm 0.011$
$A_{143}^{tSZ}$	5.42	$4.6 \pm 2.0$	$D_{1420}$	816.1	$813.7 \pm 5.4$	$\sigma_8(0.15)$	0.7624	$0.764 \pm 0.011$
$A_{100}^{PS}$	264.6	$272 \pm 28$	$D_{2000}$	228.71	$227.7 \pm 2.1$	$f\sigma_8(0.38)$	0.4732	$0.4747 \pm 0.0095$
$A_{143}^{PS}$	54.9	$53 \pm 8$	$n_{s,0.002}$	0.9858	$0.9858 \pm 0.0079$	$\sigma_8(0.38)$	0.6781	$0.680 \pm 0.010$
$A_{143 \times 217}^{PS}$	50.2	$45^{+9}_{-10}$	$Y_P$	0.25111	$0.2517 \pm 0.0025$	$f\sigma_8(0.51)$	0.4743	$0.4757 \pm 0.0087$
$A_{217}^{PS}$	118.5	$115 \pm 10$	$Y_P^{BBN}$	0.25245	$0.2530 \pm 0.0025$	$\sigma_8(0.51)$	0.6356	$0.6372 \pm 0.0096$
$A^{kSZ}$	3.04	$4.6^{+2.0}_{-4.1}$	$10^5 D/H$	2.686	$2.706 \pm 0.062$	$f\sigma_8(0.61)$	0.4710	$0.4723 \pm 0.0082$
$A_{100}^{dustTT}$	9.01	$9.1 \pm 1.8$	Age/Gyr	13.366	$13.33 \pm 0.18$	$\sigma_8(0.61)$	0.6054	$0.6069 \pm 0.0092$
$A_{143}^{dustTT}$	10.96	$10.9 \pm 1.8$	$z_*$	1090.346	$1090.50 \pm 0.49$	$f\sigma_8(2.33)$	0.30605	$0.3068 \pm 0.0047$
$A_{143 \times 217}^{dustTT}$	19.35	$18.5 \pm 3.3$	$r_*$	141.20	$140.8 \pm 1.8$	$\sigma_8(2.33)$	0.3165	$0.3173 \pm 0.0050$
$A_{217}^{dustTT}$	94.5	$93.0 \pm 7.3$	$100\theta_*$	1.04046	$1.04034 \pm 0.00061$	$f_{2000}^{143}$	32.80	$34.0 \pm 3.3$
$c_{100}$	0.99963	$0.99962 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	13.571	$13.53 \pm 0.16$	$f_{2000}^{143 \times 217}$	35.12	$35.8 \pm 2.4$
$c_{217}$	0.99833	$0.99831 \pm 0.00062$	$z_{drag}$	1061.12	$1061.18 \pm 0.73$	$f_{2000}^{217}$	109.46	$110.1 \pm 2.2$
$H_0$	71.11	$71.3 \pm 1.4$	$r_{drag}$	143.74	$143.3 \pm 1.8$	$\chi_{small}^2$	396.30	$397.5 \pm 2.2$
$\Omega_\Lambda$	0.7091	$0.708^{+0.011}_{-0.010}$	$k_D$	0.14304	$0.1433 \pm 0.0014$	$\chi_{lowl}^2$	20.96	$21.17 \pm 0.79$
$\Omega_m$	0.2909	$0.292^{+0.010}_{-0.011}$	$100\theta_D$	0.16184	$0.16200 \pm 0.00051$	$\chi_{plik}^2$	765.1	$777.8 \pm 6.1$
$\Omega_m h^2$	0.14709	$0.1480 \pm 0.0037$	$z_{eq}$	3307.8	$3308 \pm 42$	$\chi_{H073p45}^2$	1.99	$2.4 \pm 2.4$
$\Omega_m h^3$	0.10459	$0.1055 \pm 0.0040$	$k_{eq}$	0.010384	$0.01042 \pm 0.00016$	$\chi_{prior}^2$	1.91	$7.5 \pm 3.8$
$\sigma_8$	0.8227	$0.825 \pm 0.013$	$100\theta_{eq}$	0.8314	$0.8313 \pm 0.0084$	$\chi_{CMB}^2$	1182.4	$1196.5 \pm 5.9$
$S_8$	0.8102	$0.813 \pm 0.021$	$100\theta_{s,eq}$	0.45861	$0.4586 \pm 0.0043$			
$\sigma_8 \Omega_m^{0.5}$	0.4438	$0.445 \pm 0.012$	$H(0.15)$	76.31	$76.5 \pm 1.4$			

Best-fit  $\chi_{eff}^2 = 1186.27$ ;  $\bar{\chi}_{eff}^2 = 1206.39$ ;  $R - 1 = 0.00670$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.30 commander\_dx12.v3.2.29: 20.96 plik\_rd12\_HM.v22\_TT: 765.11 Hubble - H073p45: 1.99



7.74 base\_nnu\_plikHM\_TT\_lowl\_lowE\_Riess18\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022516	$0.02251 \pm 0.00021$	$\sigma_8/h^{0.5}$	0.9839	$0.984 \pm 0.012$	$D_{\text{M}}(0.38)$	1474.6	$1472 \pm 22$
$\Omega_{\text{c}}h^2$	0.12435	$0.1254 \pm 0.0035$	$r_{\text{drag}}h$	101.26	$101.12 \pm 0.92$	$H(0.51)$	92.51	$92.8 \pm 1.2$
$100\theta_{\text{MC}}$	1.04048	$1.04039 \pm 0.00052$	$\langle d^2 \rangle^{1/2}$	2.4070	$2.409 \pm 0.027$	$D_{\text{M}}(0.51)$	1912.4	$1908 \pm 28$
$\tau$	0.0565	$0.0558 \pm 0.0080$	$z_{\text{re}}$	7.99	$7.92 \pm 0.82$	$H(0.61)$	98.16	$98.4 \pm 1.3$
$N_{\text{eff}}$	3.442	$3.49 \pm 0.19$	$10^9 A_{\text{s}}$	2.1354	$2.133 \pm 0.039$	$D_{\text{M}}(0.61)$	2227.0	$2222 \pm 32$
$\ln(10^{10} A_{\text{s}})$	3.0612	$3.060 \pm 0.018$	$10^9 A_{\text{s}} e^{-2\tau}$	1.9072	$1.907 \pm 0.019$	$H(2.33)$	240.82	$241.6 \pm 2.9$
$n_{\text{s}}$	0.9825	$0.9819 \pm 0.0067$	$D_{40}$	1206.9	$1207 \pm 14$	$D_{\text{M}}(2.33)$	5603	$5588 \pm 72$
$y_{\text{cal}}$	1.00148	$1.0005 \pm 0.0025$	$D_{220}$	5727.5	$5719 \pm 41$	$f\sigma_8(0.15)$	0.4562	$0.4576 \pm 0.0085$
$A_{217}^{\text{CIB}}$	52.6	$50 \pm 7$	$D_{810}$	2548.1	$2542 \pm 14$	$\sigma_8(0.15)$	0.7641	$0.765 \pm 0.011$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.27	—	$D_{1420}$	816.4	$813.3 \pm 5.2$	$f\sigma_8(0.38)$	0.4780	$0.4791 \pm 0.0079$
$A_{143}^{\text{tSZ}}$	6.34	$4.6 \pm 2.0$	$D_{2000}$	228.87	$227.7 \pm 2.1$	$\sigma_8(0.38)$	0.6788	$0.680 \pm 0.010$
$A_{100}^{\text{PS}}$	264.3	$273 \pm 28$	$n_{\text{s},0.002}$	0.9825	$0.9819 \pm 0.0067$	$f\sigma_8(0.51)$	0.4782	$0.4792 \pm 0.0076$
$A_{143}^{\text{PS}}$	52.0	$54 \pm 8$	$Y_{\text{P}}$	0.25060	$0.2512 \pm 0.0025$	$\sigma_8(0.51)$	0.6359	$0.6367 \pm 0.0095$
$A_{143 \times 217}^{\text{PS}}$	46.4	$45_{-10}^{+9}$	$Y_{\text{P}}^{\text{BBN}}$	0.25195	$0.2525 \pm 0.0025$	$f\sigma_8(0.61)$	0.4742	$0.4752 \pm 0.0073$
$A_{217}^{\text{PS}}$	116.2	$115 \pm 10$	$10^5 D/\text{H}$	2.694	$2.711 \pm 0.062$	$\sigma_8(0.61)$	0.6055	$0.6062 \pm 0.0090$
$A^{\text{kSZ}}$	1.18	$4.6_{-3.9}^{+2.1}$	Age/Gyr	13.417	$13.38 \pm 0.17$	$f\sigma_8(2.33)$	0.30581	$0.3061 \pm 0.0046$
$A_{100}^{\text{dustTT}}$	9.07	$9.1 \pm 1.9$	$z_*$	1090.492	$1090.63 \pm 0.46$	$\sigma_8(2.33)$	0.31594	$0.3162 \pm 0.0048$
$A_{143}^{\text{dustTT}}$	10.80	$10.9 \pm 1.8$	$r_*$	141.32	$140.9 \pm 1.8$	$f_{2000}^{143}$	32.57	$34.0 \pm 3.3$
$A_{143 \times 217}^{\text{dustTT}}$	18.26	$18.5 \pm 3.3$	$100\theta_*$	1.04039	$1.04028 \pm 0.00060$	$f_{2000}^{143 \times 217}$	35.15	$35.8 \pm 2.3$
$A_{217}^{\text{dustTT}}$	91.0	$93.0 \pm 7.3$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.583	$13.54 \pm 0.17$	$f_{2000}^{217}$	109.36	$110.1 \pm 2.1$
$c_{100}$	0.99969	$0.99961 \pm 0.00062$	$z_{\text{drag}}$	1060.89	$1061.00 \pm 0.71$	$\chi_{\text{small}}^2$	396.32	$397.3 \pm 2.0$
$c_{217}$	0.99825	$0.99831 \pm 0.00063$	$r_{\text{drag}}$	143.90	$143.4 \pm 1.8$	$\chi_{\text{lowl}}^2$	21.31	$21.55 \pm 0.74$
$H_0$	70.37	$70.5 \pm 1.1$	$k_{\text{D}}$	0.14292	$0.1433 \pm 0.0014$	$\chi_{\text{plik}}^2$	763.9	$776.3 \pm 5.8$
$\Omega_{\Lambda}$	0.7022	$0.7011 \pm 0.0069$	$100\theta_{\text{D}}$	0.16183	$0.16195 \pm 0.00050$	$\chi_{\text{H073p45}}^2$	3.43	$3.6 \pm 2.5$
$\Omega_{\text{m}}$	0.2978	$0.2989 \pm 0.0069$	$z_{\text{eq}}$	3332.5	$3337 \pm 28$	$\chi_{6\text{DF}}^2$	0.0250	$0.052 \pm 0.071$
$\Omega_{\text{m}}h^2$	0.14751	$0.1486 \pm 0.0036$	$k_{\text{eq}}$	0.010438	$0.01048 \pm 0.00014$	$\chi_{\text{MGS}}^2$	2.19	$2.16 \pm 0.60$
$\Omega_{\text{m}}h^3$	0.10381	$0.1048 \pm 0.0039$	$100\theta_{\text{eq}}$	0.8263	$0.8256 \pm 0.0052$	$\chi_{\text{DR12BAO}}^2$	3.483	$3.99 \pm 0.81$
$\sigma_8$	0.8254	$0.827 \pm 0.012$	$100\theta_{\text{s,eq}}$	0.45607	$0.4557 \pm 0.0027$	$\chi_{\text{prior}}^2$	1.79	$7.5 \pm 3.7$
$S_8$	0.8224	$0.825 \pm 0.016$	$H(0.15)$	75.64	$75.8 \pm 1.1$	$\chi_{\text{BAO}}^2$	5.70	$6.2 \pm 1.2$
$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4504	$0.4519 \pm 0.0088$	$D_{\text{M}}(0.15)$	617.0	$615.8 \pm 9.6$	$\chi_{\text{CMB}}^2$	1181.6	$1195.1 \pm 5.7$
$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6097	$0.6112 \pm 0.0099$	$H(0.38)$	85.76	$86.0 \pm 1.2$			

Best-fit  $\chi_{\text{eff}}^2 = 1192.50$ ;  $\bar{\chi}_{\text{eff}}^2 = 1212.38$ ;  $R - 1 = 0.01231$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.03 MGS: 2.19 DR12BAO: 3.48 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.32 commander\_dx12\_v3.2.29: 21.31 plik\_rd12\_HM\_v22\_TT: 763.94  
Hubble - H073p45: 3.44



**7.75 base\_nnu\_plikHM\_TT\_lowl\_lowE\_Riess18\_post\_BAO\_Pantheon18**

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022535	$0.02252 \pm 0.00021$	$\sigma_8/h^{0.5}$	0.9831	$0.984 \pm 0.012$	$D_M(0.38)$	1472.7	$1472 \pm 22$
$\Omega_c h^2$	0.12507	$0.1254 \pm 0.0035$	$r_{\text{drag}} h$	101.14	$101.13 \pm 0.88$	$H(0.51)$	92.67	$92.8 \pm 1.2$
$100\theta_{\text{MC}}$	1.04041	$1.04039 \pm 0.00052$	$\langle d^2 \rangle^{1/2}$	2.4064	$2.409 \pm 0.026$	$D_M(0.51)$	1909.7	$1908 \pm 28$
$\tau$	0.0551	$0.0558 \pm 0.0080$	$z_{\text{re}}$	7.86	$7.92 \pm 0.82$	$H(0.61)$	98.34	$98.4 \pm 1.3$
$N_{\text{eff}}$	3.471	$3.49 \pm 0.19$	$10^9 A_s$	2.1283	$2.133 \pm 0.039$	$D_M(0.61)$	2223.8	$2222 \pm 32$
$\ln(10^{10} A_s)$	3.0579	$3.060 \pm 0.018$	$10^9 A_s e^{-2\tau}$	1.9062	$1.907 \pm 0.019$	$H(2.33)$	241.40	$241.6 \pm 2.9$
$n_s$	0.9817	$0.9819 \pm 0.0066$	$D_{40}$	1207.0	$1207 \pm 13$	$D_M(2.33)$	5592	$5588 \pm 72$
$y_{\text{cal}}$	1.00049	$1.0005 \pm 0.0025$	$D_{220}$	5720.9	$5719 \pm 41$	$f\sigma_8(0.15)$	0.4566	$0.4576 \pm 0.0083$
$A_{217}^{\text{CIB}}$	52.0	$50 \pm 7$	$D_{810}$	2542.6	$2542 \pm 14$	$\sigma_8(0.15)$	0.7638	$0.765 \pm 0.011$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.01	—	$D_{1420}$	813.8	$813.3 \pm 5.2$	$f\sigma_8(0.38)$	0.4782	$0.4791 \pm 0.0079$
$A_{143}^{\text{tSZ}}$	6.31	$4.6 \pm 2.0$	$D_{2000}$	227.92	$227.7 \pm 2.1$	$\sigma_8(0.38)$	0.6785	$0.680 \pm 0.010$
$A_{100}^{\text{PS}}$	267.4	$273 \pm 28$	$n_{\text{s},0.002}$	0.9817	$0.9819 \pm 0.0066$	$f\sigma_8(0.51)$	0.4783	$0.4792 \pm 0.0075$
$A_{143}^{\text{PS}}$	49.1	$54 \pm 8$	$Y_{\text{P}}$	0.25098	$0.2512 \pm 0.0025$	$\sigma_8(0.51)$	0.6355	$0.6367 \pm 0.0095$
$A_{143 \times 217}^{\text{PS}}$	39.3	$45_{-10}^{+9}$	$Y_{\text{P}}^{\text{BBN}}$	0.25233	$0.2525 \pm 0.0025$	$f\sigma_8(0.61)$	0.4743	$0.4752 \pm 0.0073$
$A_{217}^{\text{PS}}$	115.0	$115 \pm 10$	$10^5 D/H$	2.701	$2.711 \pm 0.062$	$\sigma_8(0.61)$	0.6051	$0.6062 \pm 0.0090$
$A^{\text{kSZ}}$	1.66	$4.6_{-3.9}^{+2.1}$	Age/Gyr	13.392	$13.38 \pm 0.17$	$f\sigma_8(2.33)$	0.30558	$0.3061 \pm 0.0046$
$A_{100}^{\text{dustTT}}$	9.05	$9.1 \pm 1.9$	$z_*$	1090.560	$1090.63 \pm 0.46$	$\sigma_8(2.33)$	0.31566	$0.3162 \pm 0.0048$
$A_{143}^{\text{dustTT}}$	10.91	$10.9 \pm 1.8$	$r_*$	140.99	$140.9 \pm 1.8$	$f_{2000}^{143}$	33.48	$34.0 \pm 3.3$
$A_{143 \times 217}^{\text{dustTT}}$	18.79	$18.5 \pm 3.3$	$100\theta_*$	1.04031	$1.04028 \pm 0.00060$	$f_{2000}^{143 \times 217}$	35.48	$35.8 \pm 2.3$
$A_{217}^{\text{dustTT}}$	93.2	$93.0 \pm 7.3$	$D_M(z_*)/\text{Gpc}$	13.553	$13.54 \pm 0.17$	$f_{2000}^{217}$	109.85	$110.1 \pm 2.1$
$c_{100}$	0.99963	$0.99962 \pm 0.00062$	$z_{\text{drag}}$	1061.00	$1061.00 \pm 0.71$	$\chi_{\text{small}}^2$	396.11	$397.3 \pm 2.0$
$c_{217}$	0.99831	$0.99831 \pm 0.00063$	$r_{\text{drag}}$	143.56	$143.4 \pm 1.8$	$\chi_{\text{lowl}}^2$	21.44	$21.54 \pm 0.73$
$H_0$	70.45	$70.5 \pm 1.1$	$k_{\text{D}}$	0.14320	$0.1433 \pm 0.0014$	$\chi_{\text{plik}}^2$	763.7	$776.3 \pm 5.8$
$\Omega_{\Lambda}$	0.7013	$0.7011 \pm 0.0066$	$100\theta_{\text{D}}$	0.16187	$0.16195 \pm 0.00050$	$\chi_{\text{H073p45}}^2$	3.26	$3.6 \pm 2.4$
$\Omega_{\text{m}}$	0.2987	$0.2989 \pm 0.0066$	$z_{\text{eq}}$	3336.9	$3337 \pm 27$	$\chi_{\text{JLA}}^2$	1034.734	$1034.82 \pm 0.13$
$\Omega_{\text{m}} h^2$	0.14825	$0.1486 \pm 0.0036$	$k_{\text{eq}}$	0.010471	$0.01048 \pm 0.00014$	$\chi_{6\text{DF}}^2$	0.0174	$0.049 \pm 0.066$
$\Omega_{\text{m}} h^3$	0.10445	$0.1048 \pm 0.0039$	$100\theta_{\text{eq}}$	0.82554	$0.8256 \pm 0.0050$	$\chi_{\text{MGS}}^2$	2.12	$2.16 \pm 0.58$
$\sigma_8$	0.8252	$0.827 \pm 0.012$	$100\theta_{\text{s,eq}}$	0.45564	$0.4557 \pm 0.0026$	$\chi_{\text{DR12BAO}}^2$	3.446	$3.94 \pm 0.74$
$S_8$	0.8234	$0.825 \pm 0.016$	$H(0.15)$	75.74	$75.8 \pm 1.1$	$\chi_{\text{prior}}^2$	1.81	$7.5 \pm 3.7$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4510	$0.4519 \pm 0.0086$	$D_M(0.15)$	616.2	$615.8 \pm 9.4$	$\chi_{\text{BAO}}^2$	5.58	$6.2 \pm 1.1$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6100	$0.6112 \pm 0.0099$	$H(0.38)$	85.90	$86.0 \pm 1.2$	$\chi_{\text{CMB}}^2$	1181.2	$1195.1 \pm 5.7$

Best-fit  $\chi_{\text{eff}}^2 = 2226.63$ ;  $\bar{\chi}_{\text{eff}}^2 = 2247.12$ ;  $R - 1 = 0.01243$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 MGS: 2.12 DR12BAO: 3.45 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.11 commander\_dx12\_v3.2.29: 21.44 plik\_rd12\_HM\_v22\_TT: 763.69  
Hubble - H073p45: 3.26 SN - JLA Pantheon18: 1034.73



# 7.76 base\_nnu\_plikHM\_TT\_lowl\_lowE\_Riess18\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022573	$0.02258 \pm 0.00023$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6088	$0.6095 \pm 0.0084$	$D_{\mathrm{M}}(0.15)$	614.2	$613 \pm 11$
$\Omega_{\mathrm{c}}h^2$	0.12449	$0.1248 \pm 0.0033$	$\sigma_8/h^{0.5}$	0.9820	$0.983 \pm 0.010$	$H(0.38)$	86.06	$86.3 \pm 1.3$
$100\theta_{\mathrm{MC}}$	1.04051	$1.04047 \pm 0.00052$	$r_{\mathrm{drag}}h$	101.59	$101.7 \pm 1.3$	$D_{\mathrm{M}}(0.38)$	1468.5	$1465 \pm 26$
$\tau$	0.0581	$0.0590^{+0.0071}_{-0.0087}$	$\langle d^2 \rangle^{1/2}$	2.4033	$2.405 \pm 0.025$	$H(0.51)$	92.80	$93.0 \pm 1.4$
$N_{\mathrm{eff}}$	3.471	$3.50 \pm 0.19$	$z_{\mathrm{re}}$	8.15	$8.22^{+0.73}_{-0.82}$	$D_{\mathrm{M}}(0.51)$	1904.8	$1901 \pm 32$
$\ln(10^{10}A_{\mathrm{s}})$	3.0629	$3.066^{+0.016}_{-0.018}$	$10^9A_{\mathrm{s}}$	2.1389	$2.146^{+0.033}_{-0.038}$	$H(0.61)$	98.44	$98.6 \pm 1.4$
$n_{\mathrm{s}}$	0.9834	$0.9837 \pm 0.0078$	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.9041	$1.906 \pm 0.017$	$D_{\mathrm{M}}(0.61)$	2218.5	$2214 \pm 36$
$y_{\mathrm{cal}}$	1.00032	$1.0008 \pm 0.0025$	$D_{40}$	1204.4	$1206 \pm 14$	$H(2.33)$	241.07	$241.4 \pm 2.7$
$A_{217}^{\mathrm{CIB}}$	46.9	$49 \pm 7$	$D_{220}$	5722.5	$5729 \pm 41$	$D_{\mathrm{M}}(2.33)$	5588	$5579 \pm 75$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.72	—	$D_{810}$	2542.8	$2544 \pm 14$	$f\sigma_8(0.15)$	0.4547	$0.4550 \pm 0.0079$
$A_{143}^{\mathrm{tSZ}}$	5.07	$4.6 \pm 2.0$	$D_{1420}$	814.5	$814.1 \pm 5.4$	$\sigma_8(0.15)$	0.7647	$0.7662 \pm 0.0099$
$A_{100}^{\mathrm{PS}}$	264.8	$272 \pm 29$	$D_{2000}$	228.22	$228.0 \pm 2.1$	$f\sigma_8(0.38)$	0.4771	$0.4775 \pm 0.0068$
$A_{143}^{\mathrm{PS}}$	56.7	$53 \pm 8$	$n_{\mathrm{s},0.002}$	0.9834	$0.9837 \pm 0.0078$	$\sigma_8(0.38)$	0.6797	$0.6811 \pm 0.0091$
$A_{143 \times 217}^{\mathrm{PS}}$	52.4	$45^{+9}_{-10}$	$Y_{\mathrm{P}}$	0.25099	$0.2513 \pm 0.0025$	$f\sigma_8(0.51)$	0.4776	$0.4781 \pm 0.0063$
$A_{217}^{\mathrm{PS}}$	120.0	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.25234	$0.2527 \pm 0.0025$	$\sigma_8(0.51)$	0.6368	$0.6382 \pm 0.0087$
$A^{\mathrm{kSZ}}$	3.42	$4.5^{+1.8}_{-4.1}$	$10^5\mathrm{D}/\mathrm{H}$	2.693	$2.701 \pm 0.060$	$f\sigma_8(0.61)$	0.4739	$0.4745 \pm 0.0061$
$A_{100}^{\mathrm{dustTT}}$	9.07	$9.1 \pm 1.9$	$\mathrm{Age}/\mathrm{Gyr}$	13.383	$13.36 \pm 0.18$	$\sigma_8(0.61)$	0.6064	$0.6078 \pm 0.0084$
$A_{143}^{\mathrm{dustTT}}$	10.90	$10.9 \pm 1.8$	$z_{*}$	1090.460	$1090.51 \pm 0.45$	$f\sigma_8(2.33)$	0.30639	$0.3071 \pm 0.0044$
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.47	$18.4 \pm 3.3$	$r_{*}$	141.11	$140.9 \pm 1.7$	$\sigma_8(2.33)$	0.31667	$0.3175 \pm 0.0049$
$A_{217}^{\mathrm{dustTT}}$	95.1	$93.0 \pm 7.4$	$100\theta_{*}$	1.04041	$1.04035 \pm 0.00060$	$f_{2000}^{143}$	32.98	$33.7 \pm 3.3$
$c_{100}$	0.99965	$0.99962 \pm 0.00062$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	13.563	$13.55 \pm 0.16$	$f_{2000}^{143 \times 217}$	35.17	$35.6 \pm 2.3$
$c_{217}$	0.99828	$0.99830 \pm 0.00062$	$z_{\mathrm{drag}}$	1061.04	$1061.11 \pm 0.73$	$f_{2000}^{217}$	109.40	$109.9 \pm 2.2$
$H_0$	70.72	$70.9 \pm 1.4$	$r_{\mathrm{drag}}$	143.66	$143.5 \pm 1.8$	$\chi_{\mathrm{lensing}}^2$	9.68	$10.3 \pm 1.1$
$\Omega_{\Lambda}$	0.7046	$0.7053 \pm 0.0094$	$k_{\mathrm{D}}$	0.14311	$0.1432 \pm 0.0013$	$\chi_{\mathrm{small}}^2$	396.67	$397.9 \pm 2.5$
$\Omega_{\mathrm{m}}$	0.2954	$0.2947 \pm 0.0094$	$100\theta_{\mathrm{D}}$	0.16185	$0.16193 \pm 0.00050$	$\chi_{\mathrm{lowl}}^2$	21.30	$21.43 \pm 0.80$
$\Omega_{\mathrm{m}}h^2$	0.14771	$0.1481 \pm 0.0034$	$z_{\mathrm{eq}}$	3324.9	$3321 \pm 36$	$\chi_{\mathrm{plik}}^2$	764.3	$776.3 \pm 5.9$
$\Omega_{\mathrm{m}}h^3$	0.10445	$0.1050 \pm 0.0039$	$k_{\mathrm{eq}}$	0.010433	$0.01044 \pm 0.00013$	$\chi_{\mathrm{H073p45}}^2$	2.71	$3.0 \pm 2.7$
$\sigma_8$	0.8258	$0.827 \pm 0.010$	$100\theta_{\mathrm{eq}}$	0.8280	$0.8287 \pm 0.0070$	$\chi_{\mathrm{prior}}^2$	1.56	$7.5 \pm 3.8$
$S_8$	0.8194	$0.820 \pm 0.015$	$100\theta_{\mathrm{s,eq}}$	0.45688	$0.4572 \pm 0.0036$	$\chi_{\mathrm{CMB}}^2$	1191.9	$1205.9 \pm 6.1$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4488	$0.4490 \pm 0.0084$	$H(0.15)$	75.97	$76.2 \pm 1.4$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 1196.19$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1216.39$ ;  $R - 1 = 0.01200$   
 $\chi_{\mathrm{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 9.68 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.67 commander\_dx12\_v3.2\_29: 21.30 plik\_rd12\_HM.v22\_TT: 764.27 Hubble - H073p45: 2.71



**7.77 base\_nnu\_plikHM\_TT\_lowl\_lowE\_Riess18\_post\_BAO\_lensing**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02251 \pm 0.00021$	$\sigma_8/h^{0.5}$	$0.9855 \pm 0.0092$	$D_{\mathrm{M}}(0.38)$	$1475 \pm 22$
$\Omega_{\mathrm{c}}h^2$	$0.1250 \pm 0.0033$	$r_{\mathrm{drag}}h$	$101.05 \pm 0.86$	$H(0.51)$	$92.6 \pm 1.2$
$100\theta_{\mathrm{MC}}$	$1.04043 \pm 0.00051$	$\langle d^2 \rangle^{1/2}$	$2.414 \pm 0.022$	$D_{\mathrm{M}}(0.51)$	$1913 \pm 28$
$\tau$	$0.0570 \pm 0.0075$	$z_{\mathrm{re}}$	$8.04 \pm 0.75$	$H(0.61)$	$98.2 \pm 1.3$
$N_{\mathrm{eff}}$	$3.46 \pm 0.18$	$10^9 A_{\mathrm{s}}$	$2.137^{+0.031}_{-0.035}$	$D_{\mathrm{M}}(0.61)$	$2227 \pm 32$
$\ln(10^{10} A_{\mathrm{s}})$	$3.062 \pm 0.016$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.906 \pm 0.017$	$H(2.33)$	$241.2 \pm 2.7$
$n_{\mathrm{s}}$	$0.9807 \pm 0.0066$	$D_{40}$	$1210 \pm 13$	$D_{\mathrm{M}}(2.33)$	$5599 \pm 70$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025$	$D_{220}$	$5724 \pm 41$	$f\sigma_8(0.15)$	$0.4578 \pm 0.0067$
$A_{217}^{\mathrm{CIB}}$	$49 \pm 7$	$D_{810}$	$2543 \pm 14$	$\sigma_8(0.15)$	$0.7649 \pm 0.0097$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$813.7 \pm 5.2$	$f\sigma_8(0.38)$	$0.4793 \pm 0.0063$
$A_{143}^{\mathrm{tSZ}}$	$4.7 \pm 2.0$	$D_{2000}$	$227.9 \pm 2.1$	$\sigma_8(0.38)$	$0.6794 \pm 0.0088$
$A_{100}^{\mathrm{PS}}$	$272 \pm 29$	$n_{\mathrm{s},0.002}$	$0.9807 \pm 0.0066$	$f\sigma_8(0.51)$	$0.4793 \pm 0.0061$
$A_{143}^{\mathrm{PS}}$	$53 \pm 8$	$Y_{\mathrm{P}}$	$0.2508 \pm 0.0024$	$\sigma_8(0.51)$	$0.6364 \pm 0.0083$
$A_{143 \times 217}^{\mathrm{PS}}$	$45^{+9}_{-10}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2521 \pm 0.0024$	$f\sigma_8(0.61)$	$0.4752 \pm 0.0059$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.701 \pm 0.059$	$\sigma_8(0.61)$	$0.6059 \pm 0.0080$
$A^{\mathrm{kSZ}}$	$4.5^{+1.8}_{-4.1}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.41 \pm 0.17$	$f\sigma_8(2.33)$	$0.3059 \pm 0.0041$
$A_{100}^{\mathrm{dust}TT}$	$9.1 \pm 1.9$	$z_*$	$1090.57 \pm 0.44$	$\sigma_8(2.33)$	$0.3160 \pm 0.0044$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8$	$r_*$	$141.1 \pm 1.7$	$f_{2000}^{143}$	$33.7 \pm 3.3$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.3$	$100\theta_*$	$1.04034 \pm 0.00059$	$f_{2000}^{143 \times 217}$	$35.6 \pm 2.3$
$A_{217}^{\mathrm{dust}TT}$	$93.1 \pm 7.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.57 \pm 0.16$	$f_{2000}^{217}$	$109.9 \pm 2.1$
$c_{100}$	$0.99963 \pm 0.00062$	$z_{\mathrm{drag}}$	$1060.93 \pm 0.69$	$\chi_{\mathrm{lensing}}^2$	$10.02 \pm 0.81$
$c_{217}$	$0.99830 \pm 0.00062$	$r_{\mathrm{drag}}$	$143.7 \pm 1.7$	$\chi_{\mathrm{simall}}^2$	$397.4 \pm 2.0$
$H_0$	$70.3 \pm 1.1$	$k_{\mathrm{D}}$	$0.1431 \pm 0.0013$	$\chi_{\mathrm{lowl}}^2$	$21.70 \pm 0.76$
$\Omega_{\Lambda}$	$0.7005 \pm 0.0065$	$100\theta_{\mathrm{D}}$	$0.16187 \pm 0.00049$	$\chi_{\mathrm{plik}}^2$	$775.5 \pm 5.7$
$\Omega_{\mathrm{m}}$	$0.2995 \pm 0.0065$	$z_{\mathrm{eq}}$	$3339 \pm 25$	$\chi_{\mathrm{H073p45}}^2$	$4.0 \pm 2.6$
$\Omega_{\mathrm{m}}h^2$	$0.1481 \pm 0.0033$	$k_{\mathrm{eq}}$	$0.01047 \pm 0.00013$	$\chi_{6\mathrm{DF}}^2$	$0.044 \pm 0.059$
$\Omega_{\mathrm{m}}h^3$	$0.1042 \pm 0.0037$	$100\theta_{\mathrm{eq}}$	$0.8251 \pm 0.0048$	$\chi_{\mathrm{MGS}}^2$	$2.11 \pm 0.56$
$\sigma_8$	$0.826 \pm 0.010$	$100\theta_{\mathrm{s,eq}}$	$0.4554 \pm 0.0025$	$\chi_{\mathrm{DR12BAO}}^2$	$3.90 \pm 0.69$
$S_8$	$0.826 \pm 0.013$	$H(0.15)$	$75.6 \pm 1.1$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.7$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4523 \pm 0.0070$	$D_{\mathrm{M}}(0.15)$	$617.4 \pm 9.5$	$\chi_{\mathrm{CMB}}^2$	$1204.6 \pm 5.8$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6114 \pm 0.0079$	$H(0.38)$	$85.8 \pm 1.2$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.0$

$\bar{\chi}_{\mathrm{eff}}^2 = 1222.03$ ;  $R - 1 = 0.01416$



**7.78 base\_nnu\_plikHM\_TT\_lowl\_lowE\_Riess18\_post\_BAO\_lensing\_Pantheon18**

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022521	$0.02251 \pm 0.00020$	$r_{\text{drag}} h$	101.03	$101.05 \pm 0.82$	$D_{\text{M}}(0.51)$	1914.5	$1913 \pm 27$
$\Omega_c h^2$	0.12467	$0.1250 \pm 0.0033$	$\langle d^2 \rangle^{1/2}$	2.4137	$2.414 \pm 0.021$	$H(0.61)$	98.13	$98.2 \pm 1.2$
$100\theta_{\text{MC}}$	1.04049	$1.04043 \pm 0.00051$	$z_{\text{re}}$	8.02	$8.04 \pm 0.74$	$D_{\text{M}}(0.61)$	2229.3	$2227 \pm 31$
$\tau$	0.0568	$0.0571 \pm 0.0075$	$10^9 A_{\text{s}}$	2.1349	$2.137 \pm 0.034$	$H(2.33)$	241.03	$241.2 \pm 2.7$
$N_{\text{eff}}$	3.440	$3.46 \pm 0.18$	$10^9 A_{\text{s}} e^{-2\tau}$	1.9058	$1.906 \pm 0.017$	$D_{\text{M}}(2.33)$	5604	$5599 \pm 69$
$\ln(10^{10} A_{\text{s}})$	3.0610	$3.062 \pm 0.016$	$D_{40}$	1210.1	$1210 \pm 13$	$f\sigma_8(0.15)$	0.4575	$0.4578 \pm 0.0067$
$n_{\text{s}}$	0.9805	$0.9808 \pm 0.0065$	$D_{220}$	5725.8	$5724 \pm 41$	$\sigma_8(0.15)$	0.7643	$0.7649 \pm 0.0097$
$y_{\text{cal}}$	1.00067	$1.0007 \pm 0.0025$	$D_{810}$	2543.7	$2543 \pm 14$	$f\sigma_8(0.38)$	0.4790	$0.4793 \pm 0.0063$
$A_{217}^{\text{CIB}}$	52.1	$49 \pm 7$	$D_{1420}$	814.4	$813.7 \pm 5.2$	$\sigma_8(0.38)$	0.6788	$0.6794 \pm 0.0087$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.00	—	$D_{2000}$	228.25	$227.9 \pm 2.1$	$f\sigma_8(0.51)$	0.4790	$0.4793 \pm 0.0061$
$A_{143}^{\text{tSZ}}$	6.67	$4.7 \pm 2.0$	$n_{\text{s},0.002}$	0.9805	$0.9808 \pm 0.0065$	$\sigma_8(0.51)$	0.6358	$0.6364 \pm 0.0083$
$A_{100}^{\text{PS}}$	264.9	$272 \pm 29$	$Y_{\text{P}}$	0.25059	$0.2508 \pm 0.0024$	$f\sigma_8(0.61)$	0.4749	$0.4752 \pm 0.0059$
$A_{143}^{\text{PS}}$	49.0	$53 \pm 8$	$Y_{\text{P}}^{\text{BBN}}$	0.25193	$0.2521 \pm 0.0024$	$\sigma_8(0.61)$	0.6053	$0.6059 \pm 0.0079$
$A_{143 \times 217}^{\text{PS}}$	39.9	$45_{-10}^{+9}$	$10^5 D/H$	2.693	$2.701 \pm 0.059$	$f\sigma_8(2.33)$	0.30565	$0.3059 \pm 0.0041$
$A_{217}^{\text{PS}}$	115.7	$115 \pm 10$	Age/Gyr	13.419	$13.41 \pm 0.17$	$\sigma_8(2.33)$	0.31570	$0.3160 \pm 0.0044$
$A^{\text{kSZ}}$	0.999	$4.5_{-4.1}^{+1.7}$	$z_*$	1090.512	$1090.57 \pm 0.44$	$f_{2000}^{143}$	33.20	$33.7 \pm 3.3$
$A_{100}^{\text{dustTT}}$	9.03	$9.1 \pm 1.9$	$r_*$	141.24	$141.1 \pm 1.7$	$f_{2000}^{143 \times 217}$	35.30	$35.6 \pm 2.3$
$A_{143}^{\text{dustTT}}$	10.88	$10.9 \pm 1.8$	$100\theta_*$	1.04041	$1.04034 \pm 0.00059$	$f_{2000}^{217}$	109.66	$109.9 \pm 2.1$
$A_{143 \times 217}^{\text{dustTT}}$	18.95	$18.5 \pm 3.3$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.576	$13.57 \pm 0.16$	$\chi_{\text{lensing}}^2$	9.51	$10.01 \pm 0.81$
$A_{217}^{\text{dustTT}}$	93.4	$93.1 \pm 7.3$	$z_{\text{drag}}$	1060.92	$1060.93 \pm 0.69$	$\chi_{\text{small}}^2$	396.47	$397.4 \pm 2.0$
$c_{100}$	0.99962	$0.99963 \pm 0.00062$	$r_{\text{drag}}$	143.81	$143.7 \pm 1.7$	$\chi_{\text{lowl}}^2$	21.61	$21.69 \pm 0.75$
$c_{217}$	0.99831	$0.99830 \pm 0.00062$	$k_{\text{D}}$	0.14302	$0.1431 \pm 0.0013$	$\chi_{\text{plik}}^2$	763.0	$775.5 \pm 5.7$
$H_0$	70.25	$70.3 \pm 1.1$	$100\theta_{\text{D}}$	0.161806	$0.16187 \pm 0.00049$	$\chi_{\text{H073p45}}^2$	3.71	$4.0 \pm 2.5$
$\Omega_{\Lambda}$	0.7004	$0.7006 \pm 0.0062$	$z_{\text{eq}}$	3340.7	$3339 \pm 25$	$\chi_{\text{JLA}}^2$	1034.7350	$1034.82 \pm 0.12$
$\Omega_{\text{m}}$	0.2996	$0.2994 \pm 0.0062$	$k_{\text{eq}}$	0.010463	$0.01047 \pm 0.00013$	$\chi_{6\text{DF}}^2$	0.0122	$0.042 \pm 0.056$
$\Omega_{\text{m}} h^2$	0.14784	$0.1481 \pm 0.0033$	$100\theta_{\text{eq}}$	0.82484	$0.8251 \pm 0.0047$	$\chi_{\text{MGS}}^2$	2.04	$2.11 \pm 0.54$
$\Omega_{\text{m}} h^3$	0.10386	$0.1042 \pm 0.0037$	$100\theta_{\text{s,eq}}$	0.45529	$0.4554 \pm 0.0024$	$\chi_{\text{DR12BAO}}^2$	3.422	$3.87 \pm 0.63$
$\sigma_8$	0.8257	$0.826 \pm 0.010$	$H(0.15)$	75.54	$75.6 \pm 1.1$	$\chi_{\text{prior}}^2$	1.79	$7.4 \pm 3.7$
$S_8$	0.8252	$0.826 \pm 0.013$	$D_{\text{M}}(0.15)$	617.9	$617.4 \pm 9.3$	$\chi_{\text{CMB}}^2$	1190.5	$1204.6 \pm 5.8$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4520	$0.4522 \pm 0.0069$	$H(0.38)$	85.69	$85.8 \pm 1.2$	$\chi_{\text{BAO}}^2$	5.47	$6.02 \pm 0.97$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6109	$0.6113 \pm 0.0079$	$D_{\text{M}}(0.38)$	1476.5	$1475 \pm 21$			
$\sigma_8/h^{0.5}$	0.9852	$0.9855 \pm 0.0092$	$H(0.51)$	92.46	$92.6 \pm 1.2$			

Best-fit  $\chi_{\text{eff}}^2 = 2236.25$ ;  $\bar{\chi}_{\text{eff}}^2 = 2256.76$ ;  $R - 1 = 0.01430$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.01 MGS: 2.04 DR12BAO: 3.42 CMB - smicadx12\_Dec5.ftl\_mv2.ndclpp\_p.teb\_consext8: 9.51 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.47 comman-  
der\_dx12.v3.2.29: 21.61 plik\_rd12\_HM.v22\_TT: 762.95 Hubble - H073p45: 3.71 SN - JLA Pantheon18: 1034.73



**7.79**    **base\_nnu\_plikHM\_TT\_lowl\_lowE\_Riess18\_post\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02261 \pm 0.00023$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.606 \pm 0.012$	$D_{\mathrm{M}}(0.15)$	$610 \pm 12$
$\Omega_{\mathrm{c}}h^2$	$0.1247 \pm 0.0036$	$\sigma_8/h^{0.5}$	$0.978 \pm 0.015$	$H(0.38)$	$86.6 \pm 1.3$
$100\theta_{\mathrm{MC}}$	$1.04048 \pm 0.00054$	$r_{\mathrm{drag}}h$	$102.2 \pm 1.5$	$D_{\mathrm{M}}(0.38)$	$1459 \pm 26$
$\tau$	$0.0579^{+0.0064}_{-0.0088}$	$\langle d^2 \rangle^{1/2}$	$2.392 \pm 0.034$	$H(0.51)$	$93.3 \pm 1.4$
$N_{\mathrm{eff}}$	$3.53 \pm 0.20$	$z_{\mathrm{re}}$	$8.11^{+0.69}_{-0.85}$	$D_{\mathrm{M}}(0.51)$	$1893 \pm 32$
$\ln(10^{10}A_{\mathrm{s}})$	$3.063^{+0.016}_{-0.019}$	$10^9 A_{\mathrm{s}}$	$2.139^{+0.033}_{-0.041}$	$H(0.61)$	$98.9 \pm 1.4$
$n_{\mathrm{s}}$	$0.9859 \pm 0.0079$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.905 \pm 0.019$	$D_{\mathrm{M}}(0.61)$	$2205 \pm 36$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{40}$	$1201 \pm 15$	$H(2.33)$	$241.4 \pm 2.9$
$A_{217}^{\mathrm{CIB}}$	$50 \pm 7$	$D_{220}$	$5724 \pm 41$	$D_{\mathrm{M}}(2.33)$	$5566 \pm 74$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2542 \pm 14$	$f\sigma_8(0.15)$	$0.452 \pm 0.011$
$A_{143}^{\mathrm{tSZ}}$	$4.6 \pm 2.0$	$D_{1420}$	$813.7 \pm 5.4$	$\sigma_8(0.15)$	$0.765 \pm 0.011$
$A_{100}^{\mathrm{PS}}$	$272 \pm 28$	$D_{2000}$	$227.7 \pm 2.1$	$f\sigma_8(0.38)$	$0.4749 \pm 0.0095$
$A_{143}^{\mathrm{PS}}$	$53 \pm 8$	$n_{\mathrm{s},0.002}$	$0.9859 \pm 0.0079$	$\sigma_8(0.38)$	$0.680 \pm 0.010$
$A_{143 \times 217}^{\mathrm{PS}}$	$45^{+9}_{-10}$	$Y_{\mathrm{P}}$	$0.2517 \pm 0.0025$	$f\sigma_8(0.51)$	$0.4759 \pm 0.0087$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2530 \pm 0.0025$	$\sigma_8(0.51)$	$0.6376 \pm 0.0094$
$A^{\mathrm{kSZ}}$	$4.6^{+2.0}_{-4.1}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.706 \pm 0.062$	$f\sigma_8(0.61)$	$0.4726 \pm 0.0081$
$A_{100}^{\mathrm{dust}TT}$	$9.1 \pm 1.8$	$\mathrm{Age}/\mathrm{Gyr}$	$13.33 \pm 0.18$	$\sigma_8(0.61)$	$0.6073 \pm 0.0090$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8$	$z_*$	$1090.49 \pm 0.49$	$f\sigma_8(2.33)$	$0.3070 \pm 0.0046$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.3$	$r_*$	$140.8 \pm 1.8$	$\sigma_8(2.33)$	$0.3175 \pm 0.0049$
$A_{217}^{\mathrm{dust}TT}$	$93.0 \pm 7.3$	$100\theta_*$	$1.04035 \pm 0.00061$	$f_{2000}^{143}$	$34.0 \pm 3.3$
$c_{100}$	$0.99962 \pm 0.00062$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.53 \pm 0.16$	$f_{2000}^{143 \times 217}$	$35.8 \pm 2.4$
$c_{217}$	$0.99831 \pm 0.00062$	$z_{\mathrm{drag}}$	$1061.19 \pm 0.73$	$f_{2000}^{217}$	$110.1 \pm 2.2$
$H_0$	$71.3 \pm 1.4$	$r_{\mathrm{drag}}$	$143.3 \pm 1.8$	$\chi_{\mathrm{simall}}^2$	$397.5 \pm 2.3$
$\Omega_{\Lambda}$	$0.709^{+0.011}_{-0.010}$	$k_{\mathrm{D}}$	$0.1433 \pm 0.0014$	$\chi_{\mathrm{lowl}}^2$	$21.17 \pm 0.79$
$\Omega_{\mathrm{m}}$	$0.291^{+0.010}_{-0.011}$	$100\theta_{\mathrm{D}}$	$0.16200 \pm 0.00051$	$\chi_{\mathrm{plik}}^2$	$777.7 \pm 6.1$
$\Omega_{\mathrm{m}}h^2$	$0.1480 \pm 0.0037$	$z_{\mathrm{eq}}$	$3308 \pm 42$	$\chi_{\mathrm{H073p45}}^2$	$2.4 \pm 2.4$
$\Omega_{\mathrm{m}}h^3$	$0.1055 \pm 0.0040$	$k_{\mathrm{eq}}$	$0.01042 \pm 0.00016$	$\chi_{\mathrm{prior}}^2$	$7.5 \pm 3.8$
$\sigma_8$	$0.825 \pm 0.012$	$100\theta_{\mathrm{eq}}$	$0.8314 \pm 0.0084$	$\chi_{\mathrm{CMB}}^2$	$1196.4 \pm 5.9$
$S_8$	$0.813 \pm 0.021$	$100\theta_{\mathrm{s,eq}}$	$0.4586 \pm 0.0043$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.446 \pm 0.012$	$H(0.15)$	$76.5 \pm 1.4$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1206.27$ ;  $R - 1 = 0.00718$



# 7.80 base\_nnu\_plikHM\_TT\_lowl\_lowE\_Riess18\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02252 \pm 0.00021$	$\sigma_8/h^{0.5}$	$0.985 \pm 0.012$	$D_{\mathrm{M}}(0.38)$	$1472 \pm 22$
$\Omega_{\mathrm{c}}h^2$	$0.1254 \pm 0.0035$	$r_{\mathrm{drag}}h$	$101.13 \pm 0.92$	$H(0.51)$	$92.8 \pm 1.2$
$100\theta_{\mathrm{MC}}$	$1.04039 \pm 0.00052$	$\langle d^2 \rangle^{1/2}$	$2.411 \pm 0.026$	$D_{\mathrm{M}}(0.51)$	$1908 \pm 28$
$\tau$	$0.0566^{+0.0062}_{-0.0081}$	$z_{\mathrm{re}}$	$8.00^{+0.66}_{-0.81}$	$H(0.61)$	$98.4 \pm 1.3$
$N_{\mathrm{eff}}$	$3.49 \pm 0.19$	$10^9 A_{\mathrm{s}}$	$2.136^{+0.032}_{-0.040}$	$D_{\mathrm{M}}(0.61)$	$2222 \pm 32$
$\ln(10^{10} A_{\mathrm{s}})$	$3.061^{+0.015}_{-0.019}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.907 \pm 0.019$	$H(2.33)$	$241.7 \pm 2.9$
$n_{\mathrm{s}}$	$0.9820 \pm 0.0067$	$D_{40}$	$1207 \pm 14$	$D_{\mathrm{M}}(2.33)$	$5587 \pm 72$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{220}$	$5719 \pm 41$	$f\sigma_8(0.15)$	$0.4579 \pm 0.0084$
$A_{217}^{\mathrm{CIB}}$	$50 \pm 7$	$D_{810}$	$2542 \pm 14$	$\sigma_8(0.15)$	$0.766 \pm 0.011$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$813.3 \pm 5.2$	$f\sigma_8(0.38)$	$0.4795 \pm 0.0078$
$A_{143}^{\mathrm{tSZ}}$	$4.6 \pm 2.0$	$D_{2000}$	$227.7 \pm 2.1$	$\sigma_8(0.38)$	$0.6802 \pm 0.0098$
$A_{100}^{\mathrm{PS}}$	$273 \pm 28$	$n_{\mathrm{s},0.002}$	$0.9820 \pm 0.0067$	$f\sigma_8(0.51)$	$0.4796 \pm 0.0074$
$A_{143}^{\mathrm{PS}}$	$54 \pm 8$	$Y_{\mathrm{P}}$	$0.2512 \pm 0.0025$	$\sigma_8(0.51)$	$0.6371 \pm 0.0092$
$A_{143 \times 217}^{\mathrm{PS}}$	$45^{+9}_{-10}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2525 \pm 0.0025$	$f\sigma_8(0.61)$	$0.4755 \pm 0.0072$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.711 \pm 0.061$	$\sigma_8(0.61)$	$0.6066 \pm 0.0088$
$A^{\mathrm{kSZ}}$	$4.6^{+2.0}_{-3.9}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.38 \pm 0.17$	$f\sigma_8(2.33)$	$0.3063 \pm 0.0045$
$A_{100}^{\mathrm{dust}TT}$	$9.1 \pm 1.9$	$z_*$	$1090.63 \pm 0.46$	$\sigma_8(2.33)$	$0.3165 \pm 0.0047$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8$	$r_*$	$140.9 \pm 1.8$	$f_{2000}^{143}$	$33.9 \pm 3.3$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.3$	$100\theta_*$	$1.04028 \pm 0.00060$	$f_{2000}^{143 \times 217}$	$35.8 \pm 2.3$
$A_{217}^{\mathrm{dust}TT}$	$93.0 \pm 7.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.54 \pm 0.17$	$f_{2000}^{217}$	$110.0 \pm 2.1$
$c_{100}$	$0.99961 \pm 0.00062$	$z_{\mathrm{drag}}$	$1061.00 \pm 0.71$	$\chi_{\mathrm{simall}}^2$	$397.2 \pm 2.0$
$c_{217}$	$0.99831 \pm 0.00063$	$r_{\mathrm{drag}}$	$143.4 \pm 1.8$	$\chi_{\mathrm{lowl}}^2$	$21.55 \pm 0.75$
$H_0$	$70.5 \pm 1.1$	$k_{\mathrm{D}}$	$0.1433 \pm 0.0014$	$\chi_{\mathrm{plik}}^2$	$776.2 \pm 5.8$
$\Omega_{\Lambda}$	$0.7012 \pm 0.0069$	$100\theta_{\mathrm{D}}$	$0.16195 \pm 0.00050$	$\chi_{\mathrm{H073p45}}^2$	$3.6 \pm 2.5$
$\Omega_{\mathrm{m}}$	$0.2988 \pm 0.0069$	$z_{\mathrm{eq}}$	$3337 \pm 28$	$\chi_{6\mathrm{DF}}^2$	$0.053 \pm 0.072$
$\Omega_{\mathrm{m}}h^2$	$0.1486 \pm 0.0036$	$k_{\mathrm{eq}}$	$0.01048 \pm 0.00014$	$\chi_{\mathrm{MGS}}^2$	$2.17 \pm 0.60$
$\Omega_{\mathrm{m}}h^3$	$0.1048 \pm 0.0039$	$100\theta_{\mathrm{eq}}$	$0.8256 \pm 0.0052$	$\chi_{\mathrm{DR12BAO}}^2$	$4.00 \pm 0.82$
$\sigma_8$	$0.827 \pm 0.012$	$100\theta_{\mathrm{s,eq}}$	$0.4557 \pm 0.0027$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.7$
$S_8$	$0.826 \pm 0.016$	$H(0.15)$	$75.8 \pm 1.1$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.2$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4522 \pm 0.0087$	$D_{\mathrm{M}}(0.15)$	$615.8 \pm 9.6$	$\chi_{\mathrm{CMB}}^2$	$1195.0 \pm 5.7$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6116 \pm 0.0098$	$H(0.38)$	$86.0 \pm 1.2$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1212.22$ ;  $R - 1 = 0.01139$



**7.81 base\_nnu\_plikHM\_TT\_lowl\_lowE\_Riess18\_post\_BAO\_Pantheon18\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02252 \pm 0.00021$	$\sigma_8/h^{0.5}$	$0.985 \pm 0.011$	$D_{\mathrm{M}}(0.38)$	$1472 \pm 22$
$\Omega_{\mathrm{c}}h^2$	$0.1254 \pm 0.0036$	$r_{\mathrm{drag}}h$	$101.13 \pm 0.88$	$H(0.51)$	$92.8 \pm 1.2$
$100\theta_{\mathrm{MC}}$	$1.04039 \pm 0.00052$	$\langle d^2 \rangle^{1/2}$	$2.411 \pm 0.026$	$D_{\mathrm{M}}(0.51)$	$1908 \pm 28$
$\tau$	$0.0566^{+0.0062}_{-0.0081}$	$z_{\mathrm{re}}$	$8.00^{+0.66}_{-0.81}$	$H(0.61)$	$98.4 \pm 1.3$
$N_{\mathrm{eff}}$	$3.49 \pm 0.19$	$10^9 A_{\mathrm{s}}$	$2.136^{+0.032}_{-0.040}$	$D_{\mathrm{M}}(0.61)$	$2222 \pm 32$
$\ln(10^{10} A_{\mathrm{s}})$	$3.061^{+0.015}_{-0.019}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.907 \pm 0.019$	$H(2.33)$	$241.7 \pm 2.9$
$n_{\mathrm{s}}$	$0.9820 \pm 0.0066$	$D_{40}$	$1207 \pm 13$	$D_{\mathrm{M}}(2.33)$	$5587 \pm 72$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{220}$	$5719 \pm 41$	$f\sigma_8(0.15)$	$0.4579 \pm 0.0083$
$A_{217}^{\mathrm{CIB}}$	$50 \pm 7$	$D_{810}$	$2542 \pm 14$	$\sigma_8(0.15)$	$0.766 \pm 0.011$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$813.3 \pm 5.2$	$f\sigma_8(0.38)$	$0.4795 \pm 0.0077$
$A_{143}^{\mathrm{tSZ}}$	$4.6 \pm 2.0$	$D_{2000}$	$227.7 \pm 2.1$	$\sigma_8(0.38)$	$0.6802 \pm 0.0098$
$A_{100}^{\mathrm{PS}}$	$273 \pm 28$	$n_{\mathrm{s},0.002}$	$0.9820 \pm 0.0066$	$f\sigma_8(0.51)$	$0.4796 \pm 0.0074$
$A_{143}^{\mathrm{PS}}$	$54 \pm 8$	$Y_{\mathrm{P}}$	$0.2512 \pm 0.0025$	$\sigma_8(0.51)$	$0.6372 \pm 0.0092$
$A_{143 \times 217}^{\mathrm{PS}}$	$45^{+9}_{-10}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2525 \pm 0.0025$	$f\sigma_8(0.61)$	$0.4755 \pm 0.0072$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.711 \pm 0.062$	$\sigma_8(0.61)$	$0.6066 \pm 0.0088$
$A^{\mathrm{kSZ}}$	$4.6^{+2.0}_{-4.0}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.38 \pm 0.17$	$f\sigma_8(2.33)$	$0.3063 \pm 0.0045$
$A_{100}^{\mathrm{dust}TT}$	$9.1 \pm 1.9$	$z_*$	$1090.63 \pm 0.46$	$\sigma_8(2.33)$	$0.3165 \pm 0.0047$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8$	$r_*$	$140.9 \pm 1.8$	$f_{2000}^{143}$	$33.9 \pm 3.3$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.3$	$100\theta_*$	$1.04028 \pm 0.00060$	$f_{2000}^{143 \times 217}$	$35.8 \pm 2.3$
$A_{217}^{\mathrm{dust}TT}$	$93.0 \pm 7.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.54 \pm 0.17$	$f_{2000}^{217}$	$110.0 \pm 2.1$
$c_{100}$	$0.99961 \pm 0.00062$	$z_{\mathrm{drag}}$	$1061.00 \pm 0.71$	$\chi_{\mathrm{simall}}^2$	$397.2 \pm 2.0$
$c_{217}$	$0.99831 \pm 0.00063$	$r_{\mathrm{drag}}$	$143.4 \pm 1.8$	$\chi_{\mathrm{lowl}}^2$	$21.55 \pm 0.74$
$H_0$	$70.5 \pm 1.1$	$k_{\mathrm{D}}$	$0.1433 \pm 0.0014$	$\chi_{\mathrm{plik}}^2$	$776.2 \pm 5.8$
$\Omega_{\Lambda}$	$0.7012 \pm 0.0066$	$100\theta_{\mathrm{D}}$	$0.16195 \pm 0.00050$	$\chi_{\mathrm{H073p45}}^2$	$3.6 \pm 2.4$
$\Omega_{\mathrm{m}}$	$0.2988 \pm 0.0066$	$z_{\mathrm{eq}}$	$3337 \pm 27$	$\chi_{\mathrm{JLA}}^2$	$1034.82 \pm 0.13$
$\Omega_{\mathrm{m}}h^2$	$0.1486 \pm 0.0036$	$k_{\mathrm{eq}}$	$0.01048 \pm 0.00014$	$\chi_{6\mathrm{DF}}^2$	$0.050 \pm 0.067$
$\Omega_{\mathrm{m}}h^3$	$0.1048 \pm 0.0039$	$100\theta_{\mathrm{eq}}$	$0.8256 \pm 0.0050$	$\chi_{\mathrm{MGS}}^2$	$2.16 \pm 0.58$
$\sigma_8$	$0.827 \pm 0.012$	$100\theta_{\mathrm{s,eq}}$	$0.4557 \pm 0.0026$	$\chi_{\mathrm{DR12BAO}}^2$	$3.95 \pm 0.75$
$S_8$	$0.826 \pm 0.016$	$H(0.15)$	$75.8 \pm 1.1$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.7$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4522 \pm 0.0085$	$D_{\mathrm{M}}(0.15)$	$615.8 \pm 9.5$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.2$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6116 \pm 0.0097$	$H(0.38)$	$86.0 \pm 1.2$	$\chi_{\mathrm{CMB}}^2$	$1195.0 \pm 5.7$

$\bar{\chi}_{\mathrm{eff}}^2 = 2246.95$ ;  $R - 1 = 0.01150$



## 7.82 base\_nnu\_plikHM\_TT\_lowl\_lowE\_Riess18\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02258 \pm 0.00023$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6095 \pm 0.0084$	$D_{\mathrm{M}}(0.15)$	$613 \pm 11$
$\Omega_{\mathrm{c}}h^2$	$0.1248 \pm 0.0033$	$\sigma_8/h^{0.5}$	$0.983 \pm 0.010$	$H(0.38)$	$86.3 \pm 1.3$
$100\theta_{\mathrm{MC}}$	$1.04047 \pm 0.00052$	$r_{\mathrm{drag}}h$	$101.7 \pm 1.3$	$D_{\mathrm{M}}(0.38)$	$1465 \pm 26$
$\tau$	$0.0593^{+0.0066}_{-0.0088}$	$\langle d^2 \rangle^{1/2}$	$2.406 \pm 0.025$	$H(0.51)$	$93.0 \pm 1.4$
$N_{\mathrm{eff}}$	$3.50 \pm 0.19$	$z_{\mathrm{re}}$	$8.25^{+0.69}_{-0.84}$	$D_{\mathrm{M}}(0.51)$	$1901 \pm 32$
$\ln(10^{10}A_{\mathrm{s}})$	$3.066^{+0.015}_{-0.018}$	$10^9 A_{\mathrm{s}}$	$2.147^{+0.031}_{-0.039}$	$H(0.61)$	$98.6 \pm 1.4$
$n_{\mathrm{s}}$	$0.9837 \pm 0.0078$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.906 \pm 0.017$	$D_{\mathrm{M}}(0.61)$	$2214 \pm 36$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0025$	$D_{40}$	$1206 \pm 14$	$H(2.33)$	$241.4 \pm 2.7$
$A_{217}^{\mathrm{CIB}}$	$49 \pm 7$	$D_{220}$	$5729 \pm 41$	$D_{\mathrm{M}}(2.33)$	$5579 \pm 75$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2544 \pm 14$	$f\sigma_8(0.15)$	$0.4550 \pm 0.0079$
$A_{143}^{\mathrm{tSZ}}$	$4.6 \pm 2.0$	$D_{1420}$	$814.1 \pm 5.4$	$\sigma_8(0.15)$	$0.7664 \pm 0.0098$
$A_{100}^{\mathrm{PS}}$	$272 \pm 28$	$D_{2000}$	$228.0 \pm 2.1$	$f\sigma_8(0.38)$	$0.4776 \pm 0.0068$
$A_{143}^{\mathrm{PS}}$	$53 \pm 8$	$n_{\mathrm{s},0.002}$	$0.9837 \pm 0.0078$	$\sigma_8(0.38)$	$0.6813 \pm 0.0090$
$A_{143 \times 217}^{\mathrm{PS}}$	$45^{+9}_{-10}$	$Y_{\mathrm{P}}$	$0.2513 \pm 0.0025$	$f\sigma_8(0.51)$	$0.4782 \pm 0.0063$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2527 \pm 0.0025$	$\sigma_8(0.51)$	$0.6384 \pm 0.0087$
$A^{\mathrm{kSZ}}$	$4.5^{+1.8}_{-4.1}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.701 \pm 0.060$	$f\sigma_8(0.61)$	$0.4745 \pm 0.0061$
$A_{100}^{\mathrm{dust}TT}$	$9.1 \pm 1.9$	$\mathrm{Age}/\mathrm{Gyr}$	$13.36 \pm 0.18$	$\sigma_8(0.61)$	$0.6079 \pm 0.0084$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8$	$z_*$	$1090.50 \pm 0.45$	$f\sigma_8(2.33)$	$0.3072 \pm 0.0044$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.4 \pm 3.3$	$r_*$	$140.9 \pm 1.7$	$\sigma_8(2.33)$	$0.3175 \pm 0.0048$
$A_{217}^{\mathrm{dust}TT}$	$93.1 \pm 7.4$	$100\theta_*$	$1.04035 \pm 0.00060$	$f_{2000}^{143}$	$33.7 \pm 3.3$
$c_{100}$	$0.99963 \pm 0.00062$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.55 \pm 0.16$	$f_{2000}^{143 \times 217}$	$35.6 \pm 2.3$
$c_{217}$	$0.99830 \pm 0.00062$	$z_{\mathrm{drag}}$	$1061.11 \pm 0.73$	$f_{2000}^{217}$	$109.9 \pm 2.2$
$H_0$	$70.9 \pm 1.4$	$r_{\mathrm{drag}}$	$143.5 \pm 1.8$	$\chi_{\mathrm{lensing}}^2$	$10.2 \pm 1.0$
$\Omega_{\Lambda}$	$0.7054 \pm 0.0094$	$k_{\mathrm{D}}$	$0.1432 \pm 0.0013$	$\chi_{\mathrm{simall}}^2$	$397.9 \pm 2.5$
$\Omega_{\mathrm{m}}$	$0.2946 \pm 0.0094$	$100\theta_{\mathrm{D}}$	$0.16193 \pm 0.00050$	$\chi_{\mathrm{lowl}}^2$	$21.43 \pm 0.80$
$\Omega_{\mathrm{m}}h^2$	$0.1480 \pm 0.0033$	$z_{\mathrm{eq}}$	$3321 \pm 36$	$\chi_{\mathrm{plik}}^2$	$776.3 \pm 5.8$
$\Omega_{\mathrm{m}}h^3$	$0.1050 \pm 0.0039$	$k_{\mathrm{eq}}$	$0.01044 \pm 0.00013$	$\chi_{\mathrm{H073p45}}^2$	$3.0 \pm 2.7$
$\sigma_8$	$0.827 \pm 0.010$	$100\theta_{\mathrm{eq}}$	$0.8288 \pm 0.0070$	$\chi_{\mathrm{prior}}^2$	$7.5 \pm 3.8$
$S_8$	$0.820 \pm 0.015$	$100\theta_{\mathrm{s,eq}}$	$0.4573 \pm 0.0036$	$\chi_{\mathrm{CMB}}^2$	$1205.8 \pm 6.1$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4490 \pm 0.0084$	$H(0.15)$	$76.2 \pm 1.4$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1216.31; R - 1 = 0.01206$$



### 7.83 base\_nnu\_plikHM\_TT\_lowl\_lowE\_Riess18\_post\_BAO\_lensing\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02251 \pm 0.00020$	$r_{\mathrm{drag}}h$	$101.07 \pm 0.82$	$D_{\mathrm{M}}(0.51)$	$1913 \pm 27$
$\Omega_{\mathrm{c}}h^2$	$0.1249 \pm 0.0033$	$\langle d^2 \rangle^{1/2}$	$2.415 \pm 0.021$	$H(0.61)$	$98.2 \pm 1.2$
$100\theta_{\mathrm{MC}}$	$1.04043 \pm 0.00051$	$z_{\mathrm{re}}$	$8.08^{+0.65}_{-0.74}$	$D_{\mathrm{M}}(0.61)$	$2227 \pm 31$
$\tau$	$0.0574^{+0.0063}_{-0.0076}$	$10^9 A_{\mathrm{s}}$	$2.138^{+0.029}_{-0.035}$	$H(2.33)$	$241.2 \pm 2.7$
$N_{\mathrm{eff}}$	$3.46 \pm 0.18$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.906 \pm 0.017$	$D_{\mathrm{M}}(2.33)$	$5599 \pm 69$
$\ln(10^{10} A_{\mathrm{s}})$	$3.062^{+0.014}_{-0.016}$	$D_{40}$	$1210 \pm 13$	$f\sigma_8(0.15)$	$0.4579 \pm 0.0066$
$n_{\mathrm{s}}$	$0.9808 \pm 0.0065$	$D_{220}$	$5724 \pm 41$	$\sigma_8(0.15)$	$0.7651 \pm 0.0096$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{810}$	$2543 \pm 14$	$f\sigma_8(0.38)$	$0.4794 \pm 0.0062$
$A_{217}^{\mathrm{CIB}}$	$49 \pm 7$	$D_{1420}$	$813.7 \pm 5.2$	$\sigma_8(0.38)$	$0.6796 \pm 0.0087$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{2000}$	$227.9 \pm 2.1$	$f\sigma_8(0.51)$	$0.4794 \pm 0.0060$
$A_{143}^{\mathrm{tSZ}}$	$4.7 \pm 2.0$	$n_{\mathrm{s},0.002}$	$0.9808 \pm 0.0065$	$\sigma_8(0.51)$	$0.6366 \pm 0.0082$
$A_{100}^{\mathrm{PS}}$	$272 \pm 29$	$Y_{\mathrm{P}}$	$0.2508 \pm 0.0024$	$f\sigma_8(0.61)$	$0.4753 \pm 0.0059$
$A_{143}^{\mathrm{PS}}$	$53 \pm 8$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2521 \pm 0.0024$	$\sigma_8(0.61)$	$0.6061 \pm 0.0078$
$A_{143 \times 217}^{\mathrm{PS}}$	$45^{+9}_{-10}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.701 \pm 0.059$	$f\sigma_8(2.33)$	$0.3060 \pm 0.0040$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$\mathrm{Age}/\mathrm{Gyr}$	$13.41 \pm 0.17$	$\sigma_8(2.33)$	$0.3161 \pm 0.0043$
$A^{\mathrm{kSZ}}$	$4.5^{+1.7}_{-4.1}$	$z_*$	$1090.56 \pm 0.43$	$f_{2000}^{143}$	$33.7 \pm 3.3$
$A_{100}^{\mathrm{dust}TT}$	$9.1 \pm 1.9$	$r_*$	$141.1 \pm 1.7$	$f_{2000}^{143 \times 217}$	$35.5 \pm 2.3$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8$	$100\theta_*$	$1.04034 \pm 0.00059$	$f_{2000}^{217}$	$109.8 \pm 2.1$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.57 \pm 0.16$	$\chi_{\mathrm{lensing}}^2$	$9.99 \pm 0.78$
$A_{217}^{\mathrm{dust}TT}$	$93.1 \pm 7.3$	$z_{\mathrm{drag}}$	$1060.93 \pm 0.69$	$\chi_{\mathrm{simall}}^2$	$397.4 \pm 2.0$
$c_{100}$	$0.99963 \pm 0.00062$	$r_{\mathrm{drag}}$	$143.7 \pm 1.7$	$\chi_{\mathrm{lowl}}^2$	$21.69 \pm 0.75$
$c_{217}$	$0.99830 \pm 0.00062$	$k_{\mathrm{D}}$	$0.1431 \pm 0.0013$	$\chi_{\mathrm{plik}}^2$	$775.4 \pm 5.7$
$H_0$	$70.3 \pm 1.1$	$100\theta_{\mathrm{D}}$	$0.16187 \pm 0.00049$	$\chi_{\mathrm{H073p45}}^2$	$4.0 \pm 2.5$
$\Omega_{\Lambda}$	$0.7006 \pm 0.0062$	$z_{\mathrm{eq}}$	$3339 \pm 25$	$\chi_{\mathrm{JLA}}^2$	$1034.82 \pm 0.12$
$\Omega_{\mathrm{m}}$	$0.2994 \pm 0.0062$	$k_{\mathrm{eq}}$	$0.01047 \pm 0.00013$	$\chi_{6\mathrm{DF}}^2$	$0.042 \pm 0.056$
$\Omega_{\mathrm{m}}h^2$	$0.1481 \pm 0.0033$	$100\theta_{\mathrm{eq}}$	$0.8252 \pm 0.0046$	$\chi_{\mathrm{MGS}}^2$	$2.12 \pm 0.54$
$\Omega_{\mathrm{m}}h^3$	$0.1042 \pm 0.0037$	$100\theta_{\mathrm{s,eq}}$	$0.4555 \pm 0.0024$	$\chi_{\mathrm{DR12BAO}}^2$	$3.87 \pm 0.64$
$\sigma_8$	$0.827 \pm 0.010$	$H(0.15)$	$75.6 \pm 1.1$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.7$
$S_8$	$0.826 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$617.3 \pm 9.4$	$\chi_{\mathrm{CMB}}^2$	$1204.5 \pm 5.7$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4523 \pm 0.0069$	$H(0.38)$	$85.8 \pm 1.2$	$\chi_{\mathrm{BAO}}^2$	$6.03 \pm 0.98$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6114 \pm 0.0078$	$D_{\mathrm{M}}(0.38)$	$1475 \pm 21$		
$\sigma_8/h^{0.5}$	$0.9857 \pm 0.0091$	$H(0.51)$	$92.6 \pm 1.2$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2256.66; R - 1 = 0.01360$$



## 7.84 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022649	$0.02266 \pm 0.00019$ (+0.2 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.10061	$0.1014 \pm 0.0032$ (−1.0 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.45380	$0.4539 \pm 0.0030$ (−1.1 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.12182	$0.1225 \pm 0.0028$ (−0.6 $\sigma$ )	$\sigma_8$	0.8177	$0.820 \pm 0.011$ (−0.4 $\sigma$ )	$H(0.15)$	74.59	$74.8 \pm 1.1$ (−1.2 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.040761	$1.04068 \pm 0.00039$ (+0.4 $\sigma$ )	$S_8$	0.8203	$0.822 \pm 0.016$ (+0.4 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	626.0	$624.2 \pm 9.9$ (+1.3 $\sigma$ )
$\tau$	0.0578	$0.0579 \pm 0.0081$ (+0.1 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4493	$0.4504 \pm 0.0086$ (+0.4 $\sigma$ )	$H(0.38)$	84.68	$84.9 \pm 1.1$ (−1.2 $\sigma$ )
$N_{\mathrm{eff}}$	3.256	$3.30 \pm 0.16$ (−1.2 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6061	$0.6077 \pm 0.0090$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1495.1	$1491 \pm 22$ (+1.3 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0551	$3.058 \pm 0.018$ (−0.2 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9820	$0.983 \pm 0.012$ (+0.4 $\sigma$ )	$H(0.51)$	91.40	$91.7 \pm 1.1$ (−1.2 $\sigma$ )
$n_{\mathrm{s}}$	0.9765	$0.9770 \pm 0.0068$ (−1.1 $\sigma$ )	$r_{\mathrm{drag}}h$	100.72	$100.8 \pm 1.1$ (−0.9 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1938.3	$1933 \pm 28$ (+1.2 $\sigma$ )
$y_{\mathrm{cal}}$	1.00002	$1.0008 \pm 0.0025$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4160	$2.419 \pm 0.028$ (+0.8 $\sigma$ )	$H(0.61)$	97.03	$97.3 \pm 1.1$ (−1.2 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	47.3	$48 \pm 7$ (−0.3 $\sigma$ )	$z_{\mathrm{re}}$	8.03	$8.03 \pm 0.81$ (−0.0 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2256.7	$2251 \pm 31$ (+1.2 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.66	—	$10^9 A_{\mathrm{s}}$	2.1224	$2.129^{+0.036}_{-0.040}$ (−0.2 $\sigma$ )	$H(2.33)$	238.72	$239.3 \pm 2.4$ (−0.7 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	6.26	$5.3^{+2.2}_{-2.0}$ (+0.3 $\sigma$ )	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8906	$1.896 \pm 0.016$ (−0.5 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5666	$5651 \pm 64$ (+1.1 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	255.9	$263 \pm 28$ (−0.3 $\sigma$ )	$D_{40}$	1212.9	$1215 \pm 14$ (+0.9 $\sigma$ )	$f\sigma_8(0.15)$	0.4547	$0.4558 \pm 0.0082$ (+0.4 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	51.3	$48 \pm 8$ (−0.7 $\sigma$ )	$D_{220}$	5731.2	$5739 \pm 39$ (+0.4 $\sigma$ )	$\sigma_8(0.15)$	0.7566	$0.7588 \pm 0.0099$ (−0.5 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	51.0	$43 \pm 9$ (−0.2 $\sigma$ )	$D_{810}$	2540.0	$2543 \pm 14$ (+0.0 $\sigma$ )	$f\sigma_8(0.38)$	0.4753	$0.4765 \pm 0.0073$ (+0.2 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	118.6	$114 \pm 10$ (−0.0 $\sigma$ )	$D_{1420}$	817.08	$817.1 \pm 4.8$ (+0.6 $\sigma$ )	$\sigma_8(0.38)$	0.6717	$0.6737 \pm 0.0090$ (−0.6 $\sigma$ )
$A^{\mathrm{kSZ}}$	1.69	$< 4.87$ (−0.3 $\sigma$ )	$D_{2000}$	230.29	$230.1 \pm 1.8$ (+1.1 $\sigma$ )	$f\sigma_8(0.51)$	0.4751	$0.4763 \pm 0.0068$ (+0.1 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.94	$9.1 \pm 1.8$ (−0.0 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.9765	$0.9770 \pm 0.0068$ (−1.1 $\sigma$ )	$\sigma_8(0.51)$	0.6291	$0.6309 \pm 0.0085$ (−0.7 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	11.11	$11.1 \pm 1.8$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}$	0.24827	$0.2488 \pm 0.0021$ (−1.2 $\sigma$ )	$f\sigma_8(0.61)$	0.4708	$0.4721 \pm 0.0065$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.63	$18.8 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24961	$0.2501 \pm 0.0021$ (−1.2 $\sigma$ )	$\sigma_8(0.61)$	0.5988	$0.6006 \pm 0.0081$ (−0.7 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	94.1	$93.6 \pm 7.3$ (+0.1 $\sigma$ )	$10^5 \mathrm{D}/\mathrm{H}$	2.6068	$2.618 \pm 0.043$ (−1.4 $\sigma$ )	$f\sigma_8(2.33)$	0.30231	$0.3032 \pm 0.0042$ (−0.8 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1141	$0.115 \pm 0.038$	Age/Gyr	13.568	$13.53 \pm 0.15$ (+1.1 $\sigma$ )	$\sigma_8(2.33)$	0.31212	$0.3131 \pm 0.0045$ (−0.8 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1338	$0.135 \pm 0.030$	$z_*$	1089.933	$1090.02 \pm 0.35$ (−1.0 $\sigma$ )	$f_{2000}^{143}$	29.98	$30.8 \pm 3.0$ (−1.0 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.478	$0.480 \pm 0.085$	$r_*$	142.73	$142.4 \pm 1.5$ (+0.9 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.90	$33.2 \pm 2.0$ (−1.1 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.222	$0.225 \pm 0.054$	$100\theta_*$	1.040778	$1.04068 \pm 0.00047$ (+0.6 $\sigma$ )	$f_{2000}^{217}$	107.20	$107.9 \pm 1.9$ (−1.0 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.664	$0.662 \pm 0.080$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.713	$13.68 \pm 0.14$ (+0.9 $\sigma$ )	$\chi_{\mathrm{small}}^2$	396.61	$397.6 \pm 2.4$ (+0.1 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.083	$2.07 \pm 0.27$	$z_{\mathrm{drag}}$	1060.89	$1060.98 \pm 0.63$ (−0.3 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	21.93	$22.03 \pm 0.89$ (+1.1 $\sigma$ )
$c_{100}$	0.99968	$0.99965 \pm 0.00062$ (+0.1 $\sigma$ )	$r_{\mathrm{drag}}$	145.27	$144.9 \pm 1.5$ (+0.9 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2349.8	$2365.3 \pm 7.0$ (+261.2 $\sigma$ )
$c_{217}$	0.99820	$0.99822 \pm 0.00063$ (−0.1 $\sigma$ )	$k_{\mathrm{D}}$	0.14222	$0.1425 \pm 0.0012$ (−0.6 $\sigma$ )	$\chi_{\mathrm{H073p45}}^2$	6.15	$6.0 \pm 3.3$ (+1.5 $\sigma$ )
$H_0$	69.33	$69.5 \pm 1.2$ (−1.2 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.161081	$0.16119 \pm 0.00036$ (−1.6 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.84	$11.9 \pm 4.7$ (+1.2 $\sigma$ )
$\Omega_{\Lambda}$	0.6981	$0.6983 \pm 0.0084$ (−0.9 $\sigma$ )	$z_{\mathrm{eq}}$	3357.6	$3356 \pm 31$ (+1.1 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	2768.3	$2785.0 \pm 6.7$ (+268.1 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3019	$0.3017 \pm 0.0084$ (+0.9 $\sigma$ )	$k_{\mathrm{eq}}$	0.010391	$0.01042 \pm 0.00012$ (−0.0 $\sigma$ )			
$\Omega_{\mathrm{m}}h^2$	0.14511	$0.1458 \pm 0.0029$ (−0.6 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8222	$0.8224 \pm 0.0060$ (−1.1 $\sigma$ )			

Best-fit  $\chi_{\mathrm{eff}}^2 = 2776.34$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1590.07$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2802.87$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1596.48$ ;  $R - 1 = 0.00770$   
 $\chi_{\mathrm{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck.B: 396.62 ( $\Delta$  0.32) commander\_dx12\_v3.2.29: 21.93 ( $\Delta$  0.97) plik\_rd12\_HM\_v22b\_TTTEEE: 2349.80 Hubble - H073p45: 6.15 ( $\Delta$  4.16)



# 7.85 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022656	$0.02264 \pm 0.00016$ (+0.6 $\sigma$ )	$\sigma_8$	0.8205	$0.820 \pm 0.011$ (−0.5 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	626.2	$625.1 \pm 8.5$ (+1.0 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.12217	$0.1226 \pm 0.0028$ (−0.8 $\sigma$ )	$S_8$	0.8245	$0.824 \pm 0.013$ (−0.1 $\sigma$ )	$H(0.38)$	84.69	$84.8 \pm 1.0$ (−1.0 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.040676	$1.04068 \pm 0.00039$ (+0.6 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4516	$0.4511 \pm 0.0074$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1495.4	$1493 \pm 19$ (+1.0 $\sigma$ )
$\tau$	0.0587	$0.0576^{+0.0073}_{-0.0082}$ (+0.2 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6087	$0.6082 \pm 0.0084$ (−0.3 $\sigma$ )	$H(0.51)$	91.42	$91.6 \pm 1.0$ (−1.0 $\sigma$ )
$N_{\mathrm{eff}}$	3.266	$3.29 \pm 0.15$ (−1.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9856	$0.984 \pm 0.011$ (−0.0 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1938.5	$1935 \pm 24$ (+1.0 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0601	$3.057 \pm 0.018$ (−0.1 $\sigma$ )	$r_{\mathrm{drag}}h$	100.57	$100.62 \pm 0.79$ (−0.5 $\sigma$ )	$H(0.61)$	97.06	$97.2 \pm 1.1$ (−0.9 $\sigma$ )
$n_{\mathrm{s}}$	0.9763	$0.9764 \pm 0.0060$ (−0.8 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4243	$2.421 \pm 0.025$ (+0.4 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2256.9	$2253 \pm 28$ (+1.0 $\sigma$ )
$y_{\mathrm{cal}}$	1.00108	$1.0007 \pm 0.0025$ (+0.1 $\sigma$ )	$z_{\mathrm{re}}$	8.12	$8.00 \pm 0.79$ (+0.1 $\sigma$ )	$H(2.33)$	238.98	$239.3 \pm 2.4$ (−0.8 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	49.5	$48 \pm 7$ (−0.3 $\sigma$ )	$10^9 A_{\mathrm{s}}$	2.1329	$2.127^{+0.036}_{-0.040}$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5664	$5655 \pm 61$ (+0.9 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.30	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8968	$1.896 \pm 0.016$ (−0.6 $\sigma$ )	$f\sigma_8(0.15)$	0.4569	$0.4564 \pm 0.0071$ (−0.1 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	7.10	$5.3^{+2.2}_{-2.0}$ (+0.3 $\sigma$ )	$D_{40}$	1216.8	$1216 \pm 13$ (+0.6 $\sigma$ )	$\sigma_8(0.15)$	0.7590	$0.7586 \pm 0.0099$ (−0.6 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	254.2	$263 \pm 28$ (−0.3 $\sigma$ )	$D_{220}$	5745.1	$5739 \pm 38$ (+0.5 $\sigma$ )	$f\sigma_8(0.38)$	0.4774	$0.4770 \pm 0.0067$ (−0.3 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	47.2	$48 \pm 8$ (−0.7 $\sigma$ )	$D_{810}$	2546.1	$2543 \pm 13$ (+0.0 $\sigma$ )	$\sigma_8(0.38)$	0.6738	$0.6735 \pm 0.0089$ (−0.6 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	45.2	$42 \pm 9$ (−0.3 $\sigma$ )	$D_{1420}$	818.81	$817.0 \pm 4.8$ (+0.7 $\sigma$ )	$f\sigma_8(0.51)$	0.4770	$0.4766 \pm 0.0065$ (−0.3 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	118.0	$114 \pm 10$ (−0.1 $\sigma$ )	$D_{2000}$	230.79	$230.1 \pm 1.8$ (+1.2 $\sigma$ )	$\sigma_8(0.51)$	0.6309	$0.6307 \pm 0.0084$ (−0.6 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.12	$< 4.95$ (−0.3 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.9763	$0.9764 \pm 0.0060$ (−0.8 $\sigma$ )	$f\sigma_8(0.61)$	0.4727	$0.4723 \pm 0.0063$ (−0.4 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.84	$9.1 \pm 1.8$ (−0.0 $\sigma$ )	$Y_{\mathrm{P}}$	0.24840	$0.2487 \pm 0.0020$ (−1.0 $\sigma$ )	$\sigma_8(0.61)$	0.6006	$0.6004 \pm 0.0080$ (−0.6 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	10.97	$11.1 \pm 1.8$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24974	$0.2500 \pm 0.0020$ (−1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.30315	$0.3030 \pm 0.0041$ (−0.7 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.01	$18.8 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 \mathrm{D}/\mathrm{H}$	2.6089	$2.619 \pm 0.043$ (−1.5 $\sigma$ )	$\sigma_8(2.33)$	0.31294	$0.3128 \pm 0.0043$ (−0.7 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	93.0	$93.6 \pm 7.3$ (+0.1 $\sigma$ )	Age/Gyr	13.561	$13.54 \pm 0.15$ (+0.9 $\sigma$ )	$f_{2000}^{143}$	29.70	$30.8 \pm 2.9$ (−1.0 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1125	$0.115 \pm 0.038$	$z_*$	1089.962	$1090.03 \pm 0.33$ (−1.3 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.75	$33.2 \pm 2.0$ (−1.1 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1351	$0.135 \pm 0.030$	$r_*$	142.59	$142.4 \pm 1.5$ (+0.9 $\sigma$ )	$f_{2000}^{217}$	107.37	$107.9 \pm 1.9$ (−1.0 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.482	$0.481 \pm 0.086$	$100\theta_*$	1.040694	$1.04068 \pm 0.00047$ (+0.7 $\sigma$ )	$\chi_{\mathrm{small}}^2$	396.87	$397.6 \pm 2.3$ (+0.2 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.219	$0.225 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.701	$13.68 \pm 0.14$ (+0.9 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	22.03	$22.08 \pm 0.79$ (+0.7 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.660	$0.663 \pm 0.080$	$z_{\mathrm{drag}}$	1060.92	$1060.94 \pm 0.59$ (−0.1 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2349.0	$2364.6 \pm 6.7$ (+272.6 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.084	$2.08 \pm 0.26$	$r_{\mathrm{drag}}$	145.13	$144.9 \pm 1.5$ (+0.8 $\sigma$ )	$\chi_{\mathrm{H073p45}}^2$	6.25	$6.2 \pm 2.9$ (+1.0 $\sigma$ )
$c_{100}$	0.99965	$0.99965 \pm 0.00062$ (+0.1 $\sigma$ )	$k_{\mathrm{D}}$	0.14234	$0.1425 \pm 0.0012$ (−0.6 $\sigma$ )	$\chi_{\mathrm{6DF}}^2$	0.0003	$0.027 \pm 0.039$ (−0.4 $\sigma$ )
$c_{217}$	0.99820	$0.99822 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.161086	$0.16118 \pm 0.00036$ (−1.5 $\sigma$ )	$\chi_{\mathrm{MGS}}^2$	1.748	$1.84 \pm 0.49$ (−0.5 $\sigma$ )
$H_0$	69.30	$69.43 \pm 0.97$ (−1.0 $\sigma$ )	$z_{\mathrm{eq}}$	3361.7	$3360 \pm 23$ (+0.8 $\sigma$ )	$\chi_{\mathrm{DR12BAO}}^2$	3.515	$3.90 \pm 0.67$ (−0.1 $\sigma$ )
$\Omega_{\Lambda}$	0.6971	$0.6974 \pm 0.0061$ (−0.5 $\sigma$ )	$k_{\mathrm{eq}}$	0.010411	$0.01042 \pm 0.00011$ (−0.4 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	2.08	$11.9 \pm 4.7$ (+1.2 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3029	$0.3026 \pm 0.0061$ (+0.5 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.82138	$0.8217 \pm 0.0044$ (−0.7 $\sigma$ )	$\chi_{\mathrm{BAO}}^2$	5.263	$5.76 \pm 0.67$ (−0.4 $\sigma$ )
$\Omega_{\mathrm{m}}h^2$	0.14547	$0.1459 \pm 0.0029$ (−0.8 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.45338	$0.4536 \pm 0.0022$ (−0.8 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	2767.9	$2784.3 \pm 6.4$ (+277.3 $\sigma$ )
$\Omega_{\mathrm{m}}h^3$	0.10081	$0.1013 \pm 0.0031$ (−0.9 $\sigma$ )	$H(0.15)$	74.57	$74.71 \pm 0.98$ (−1.0 $\sigma$ )			

Best-fit  $\chi_{\mathrm{eff}}^2 = 2781.50$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1589.00$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2808.11$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1595.72$ ;  $R - 1 = 0.00961$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.00 ( $\Delta$  -0.03) MGS: 1.75 ( $\Delta$  -0.45) DR12BAO: 3.52 ( $\Delta$  0.03) CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.87 ( $\Delta$  0.54) commander\_dx12\_v3\_2\_29: 22.03 ( $\Delta$  0.71) plik\_rd12\_HM\_v22b\_TTTEEE: 2349.01 Hubble - H073p45: 6.25 ( $\Delta$  2.82)



7.86 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_BAO\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022654	$0.02265 \pm 0.00016$ (+0.6 $\sigma$ )	$\sigma_8$	0.8186	$0.820 \pm 0.011$ (−0.5 $\sigma$ )	$D_M(0.15)$	625.3	$624.9 \pm 8.3$ (+1.0 $\sigma$ )
$\Omega_c h^2$	0.12222	$0.1226 \pm 0.0028$ (−0.8 $\sigma$ )	$S_8$	0.8214	$0.823 \pm 0.013$ (−0.1 $\sigma$ )	$H(0.38)$	84.78	$84.86 \pm 0.99$ (−0.9 $\sigma$ )
$100\theta_{MC}$	1.040711	$1.04068 \pm 0.00039$ (+0.6 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4499	$0.4509 \pm 0.0073$ (−0.1 $\sigma$ )	$D_M(0.38)$	1493.5	$1492 \pm 19$ (+1.0 $\sigma$ )
$\tau$	0.0569	$0.0577^{+0.0073}_{-0.0082}$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6069	$0.6081 \pm 0.0084$ (−0.3 $\sigma$ )	$H(0.51)$	91.51	$91.6 \pm 1.0$ (−0.9 $\sigma$ )
$N_{\text{eff}}$	3.276	$3.29 \pm 0.15$ (−1.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9825	$0.984 \pm 0.011$ (−0.0 $\sigma$ )	$D_M(0.51)$	1936.1	$1935 \pm 24$ (+1.0 $\sigma$ )
$\ln(10^{10} A_s)$	3.0556	$3.058 \pm 0.018$ (−0.1 $\sigma$ )	$r_{\text{drag}} h$	100.69	$100.66 \pm 0.76$ (−0.5 $\sigma$ )	$H(0.61)$	97.15	$97.2 \pm 1.1$ (−0.9 $\sigma$ )
$n_s$	0.9764	$0.9765 \pm 0.0059$ (−0.8 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4175	$2.420 \pm 0.024$ (+0.4 $\sigma$ )	$D_M(0.61)$	2254.1	$2253 \pm 27$ (+1.0 $\sigma$ )
$y_{\text{cal}}$	1.00066	$1.0007 \pm 0.0025$ (+0.1 $\sigma$ )	$z_{\text{re}}$	7.95	$8.01 \pm 0.79$ (+0.1 $\sigma$ )	$H(2.33)$	239.05	$239.3 \pm 2.3$ (−0.8 $\sigma$ )
$A_{217}^{\text{CIB}}$	50.2	$48 \pm 7$ (−0.3 $\sigma$ )	$10^9 A_s$	2.1233	$2.128^{+0.036}_{-0.040}$ (−0.1 $\sigma$ )	$D_M(2.33)$	5659	$5654 \pm 61$ (+0.9 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.11	—	$10^9 A_s e^{-2\tau}$	1.8948	$1.896 \pm 0.016$ (−0.6 $\sigma$ )	$f\sigma_8(0.15)$	0.4553	$0.4562 \pm 0.0070$ (−0.2 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.42	$5.3^{+2.2}_{-2.0}$ (+0.3 $\sigma$ )	$D_{40}$	1215.1	$1216 \pm 13$ (+0.6 $\sigma$ )	$\sigma_8(0.15)$	0.7574	$0.7587 \pm 0.0099$ (−0.6 $\sigma$ )
$A_{100}^{\text{PS}}$	256.1	$263 \pm 28$ (−0.3 $\sigma$ )	$D_{220}$	5740.1	$5739 \pm 38$ (+0.5 $\sigma$ )	$f\sigma_8(0.38)$	0.4759	$0.4769 \pm 0.0067$ (−0.3 $\sigma$ )
$A_{143}^{\text{PS}}$	45.0	$48 \pm 8$ (−0.7 $\sigma$ )	$D_{810}$	2543.1	$2543 \pm 13$ (+0.0 $\sigma$ )	$\sigma_8(0.38)$	0.6724	$0.6735 \pm 0.0089$ (−0.6 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	40.4	$42 \pm 9$ (−0.3 $\sigma$ )	$D_{1420}$	817.55	$817.1 \pm 4.8$ (+0.7 $\sigma$ )	$f\sigma_8(0.51)$	0.4756	$0.4765 \pm 0.0064$ (−0.4 $\sigma$ )
$A_{217}^{\text{PS}}$	116.3	$114 \pm 10$ (−0.1 $\sigma$ )	$D_{2000}$	230.29	$230.1 \pm 1.8$ (+1.2 $\sigma$ )	$\sigma_8(0.51)$	0.6297	$0.6307 \pm 0.0083$ (−0.6 $\sigma$ )
$A^{\text{kSZ}}$	0.00	$< 4.95$ (−0.3 $\sigma$ )	$n_{s,0.002}$	0.9764	$0.9765 \pm 0.0059$ (−0.8 $\sigma$ )	$f\sigma_8(0.61)$	0.4714	$0.4723 \pm 0.0063$ (−0.4 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.91	$9.1 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P$	0.24853	$0.2487 \pm 0.0020$ (−1.0 $\sigma$ )	$\sigma_8(0.61)$	0.5994	$0.6004 \pm 0.0080$ (−0.6 $\sigma$ )
$A_{143}^{\text{dustTT}}$	11.15	$11.1 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{\text{BBN}}$	0.24987	$0.2501 \pm 0.0020$ (−1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.30258	$0.3031 \pm 0.0041$ (−0.7 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	19.60	$18.8 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 \text{D/H}$	2.6127	$2.619 \pm 0.043$ (−1.5 $\sigma$ )	$\sigma_8(2.33)$	0.31240	$0.3129 \pm 0.0043$ (−0.7 $\sigma$ )
$A_{217}^{\text{dustTT}}$	94.3	$93.6 \pm 7.3$ (+0.1 $\sigma$ )	Age/Gyr	13.551	$13.54 \pm 0.14$ (+0.9 $\sigma$ )	$f_{2000}^{143}$	30.30	$30.8 \pm 2.9$ (−1.0 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1136	$0.115 \pm 0.038$	$z_*$	1089.979	$1090.03 \pm 0.33$ (−1.3 $\sigma$ )	$f_{2000}^{143 \times 217}$	33.04	$33.2 \pm 2.0$ (−1.1 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1339	$0.135 \pm 0.030$	$r_*$	142.53	$142.4 \pm 1.5$ (+0.9 $\sigma$ )	$f_{2000}^{217}$	107.66	$107.9 \pm 1.9$ (−1.0 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.481	$0.481 \pm 0.086$	$100\theta_*$	1.040721	$1.04068 \pm 0.00047$ (+0.7 $\sigma$ )	$\chi_{\text{small}}^2$	396.44	$397.6 \pm 2.3$ (+0.2 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.223	$0.225 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	13.695	$13.68 \pm 0.14$ (+0.9 $\sigma$ )	$\chi_{\text{lowl}}^2$	21.97	$22.06 \pm 0.78$ (+0.7 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.660	$0.663 \pm 0.080$	$z_{\text{drag}}$	1060.92	$1060.95 \pm 0.59$ (−0.1 $\sigma$ )	$\chi_{\text{plik}}^2$	2349.6	$2364.7 \pm 6.6$ (+273.0 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.069	$2.08 \pm 0.26$	$r_{\text{drag}}$	145.07	$144.9 \pm 1.5$ (+0.8 $\sigma$ )	$\chi_{\text{H073p45}}^2$	5.93	$6.1 \pm 2.8$ (+1.0 $\sigma$ )
$c_{100}$	0.99968	$0.99965 \pm 0.00062$ (+0.1 $\sigma$ )	$k_D$	0.14237	$0.1425 \pm 0.0012$ (−0.6 $\sigma$ )	$\chi_{\text{JLA}}^2$	1034.755	$1034.83 \pm 0.13$ (+0.0 $\sigma$ )
$c_{217}$	0.99821	$0.99822 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_D$	0.161130	$0.16118 \pm 0.00036$ (−1.5 $\sigma$ )	$\chi_{\text{6DF}}^2$	0.0016	$0.025 \pm 0.036$ (−0.4 $\sigma$ )
$H_0$	69.41	$69.46 \pm 0.95$ (−0.9 $\sigma$ )	$z_{\text{eq}}$	3358.4	$3359 \pm 22$ (+0.8 $\sigma$ )	$\chi_{\text{MGS}}^2$	1.819	$1.86 \pm 0.48$ (−0.5 $\sigma$ )
$\Omega_\Lambda$	0.6979	$0.6976 \pm 0.0059$ (−0.5 $\sigma$ )	$k_{\text{eq}}$	0.010407	$0.01042 \pm 0.00011$ (−0.4 $\sigma$ )	$\chi_{\text{DR12BAO}}^2$	3.464	$3.85 \pm 0.61$ (−0.1 $\sigma$ )
$\Omega_m$	0.3021	$0.3024 \pm 0.0059$ (+0.5 $\sigma$ )	$100\theta_{\text{eq}}$	0.82200	$0.8219 \pm 0.0042$ (−0.7 $\sigma$ )	$\chi_{\text{prior}}^2$	2.08	$11.9 \pm 4.7$ (+1.2 $\sigma$ )
$\Omega_m h^2$	0.14552	$0.1459 \pm 0.0029$ (−0.8 $\sigma$ )	$100\theta_{s,\text{eq}}$	0.45371	$0.4536 \pm 0.0022$ (−0.8 $\sigma$ )	$\chi_{\text{BAO}}^2$	5.285	$5.73 \pm 0.64$ (−0.4 $\sigma$ )
$\Omega_m h^3$	0.10100	$0.1013 \pm 0.0031$ (−0.9 $\sigma$ )	$H(0.15)$	74.67	$74.73 \pm 0.96$ (−1.0 $\sigma$ )	$\chi_{\text{CMB}}^2$	2768.0	$2784.3 \pm 6.3$ (+277.4 $\sigma$ )

Best-fit  $\chi_{\text{eff}}^2 = 3816.05$ ;  $\Delta\chi_{\text{eff}}^2 = 1589.42$ ;  $\bar{\chi}_{\text{eff}}^2 = 3842.86$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1595.74$ ;  $R - 1 = 0.00994$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 ( $\Delta$  -0.02) MGS: 1.82 ( $\Delta$  -0.30) DR12BAO: 3.46 ( $\Delta$  0.02) CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.44 ( $\Delta$  0.32) commander\_dx12\_v3\_2\_29: 21.97 ( $\Delta$  0.53) plik\_rd12\_HM\_v22b\_TTTEEE: 2349.59 Hubble - H073p45: 5.93 ( $\Delta$  2.67) SN - JLA Pantheon18: 1034.76 ( $\Delta$  0.02)



# 7.87 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022643	$0.02265 \pm 0.00019$ (+0.3 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.10031	$0.1011 \pm 0.0032$ (−1.0 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.45339	$0.4536 \pm 0.0028$ (−1.0 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.12171	$0.1223 \pm 0.0027$ (−0.8 $\sigma$ )	$\sigma_8$	0.8189	$0.8202 \pm 0.0093$ (−0.7 $\sigma$ )	$H(0.15)$	74.44	$74.7 \pm 1.1$ (−1.1 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.040739	$1.04070 \pm 0.00039$ (+0.4 $\sigma$ )	$S_8$	0.8229	$0.823 \pm 0.013$ (+0.2 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	627.2	$625.5 \pm 9.8$ (+1.1 $\sigma$ )
$\tau$	0.0587	$0.0587 \pm 0.0078$ (−0.0 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4507	$0.4510 \pm 0.0069$ (+0.2 $\sigma$ )	$H(0.38)$	84.55	$84.8 \pm 1.1$ (−1.1 $\sigma$ )
$N_{\mathrm{eff}}$	3.241	$3.28 \pm 0.16$ (−1.1 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6075	$0.6082 \pm 0.0072$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1498.0	$1494 \pm 22$ (+1.1 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0583	$3.059 \pm 0.016$ (−0.4 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9846	$0.9845 \pm 0.0091$ (+0.2 $\sigma$ )	$H(0.51)$	91.27	$91.5 \pm 1.1$ (−1.1 $\sigma$ )
$n_{\mathrm{s}}$	0.9759	$0.9761 \pm 0.0067$ (−1.0 $\sigma$ )	$r_{\mathrm{drag}}h$	100.58	$100.7 \pm 1.0$ (−0.8 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1941.8	$1937 \pm 27$ (+1.1 $\sigma$ )
$y_{\mathrm{cal}}$	1.00070	$1.0009 \pm 0.0025$ (+0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4227	$2.423 \pm 0.022$ (+0.7 $\sigma$ )	$H(0.61)$	96.90	$97.2 \pm 1.1$ (−1.1 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	46.5	$48 \pm 7$ (−0.2 $\sigma$ )	$z_{\mathrm{re}}$	8.12	$8.10 \pm 0.76$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2260.7	$2255 \pm 31$ (+1.1 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.53	—	$10^9 A_{\mathrm{s}}$	2.1291	$2.131 \pm 0.035$ (−0.4 $\sigma$ )	$H(2.33)$	238.59	$239.1 \pm 2.3$ (−0.8 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	7.30	$5.3_{-2.0}^{+2.2}$ (+0.3 $\sigma$ )	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8931	$1.895 \pm 0.015$ (−0.7 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5673	$5659 \pm 64$ (+1.1 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	251.5	$263 \pm 28$ (−0.3 $\sigma$ )	$D_{40}$	1215.9	$1217 \pm 13$ (+0.8 $\sigma$ )	$f\sigma_8(0.15)$	0.4560	$0.4563 \pm 0.0065$ (+0.2 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	50.5	$47 \pm 8$ (−0.7 $\sigma$ )	$D_{220}$	5739.8	$5743 \pm 39$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7576	$0.7588 \pm 0.0088$ (−0.7 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	51.3	$42 \pm 9$ (−0.2 $\sigma$ )	$D_{810}$	2543.9	$2543 \pm 13$ (−0.0 $\sigma$ )	$f\sigma_8(0.38)$	0.4765	$0.4769 \pm 0.0058$ (−0.1 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	121.6	$114 \pm 10$ (−0.1 $\sigma$ )	$D_{1420}$	818.49	$817.4 \pm 4.8$ (+0.6 $\sigma$ )	$\sigma_8(0.38)$	0.6725	$0.6736 \pm 0.0081$ (−0.8 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.00	$< 4.85$ (−0.3 $\sigma$ )	$D_{2000}$	230.81	$230.2 \pm 1.8$ (+1.1 $\sigma$ )	$f\sigma_8(0.51)$	0.4761	$0.4766 \pm 0.0055$ (−0.2 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	9.03	$9.0 \pm 1.8$ (−0.0 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.9759	$0.9761 \pm 0.0067$ (−1.0 $\sigma$ )	$\sigma_8(0.51)$	0.6297	$0.6308 \pm 0.0078$ (−0.8 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	11.37	$11.0 \pm 1.8$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}$	0.24807	$0.2485 \pm 0.0021$ (−1.1 $\sigma$ )	$f\sigma_8(0.61)$	0.4718	$0.4723 \pm 0.0053$ (−0.4 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	20.90	$18.8 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24940	$0.2499 \pm 0.0021$ (−1.1 $\sigma$ )	$\sigma_8(0.61)$	0.5994	$0.6005 \pm 0.0075$ (−0.9 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	96.8	$93.6 \pm 7.3$ (+0.1 $\sigma$ )	$10^5 \mathrm{D}/\mathrm{H}$	2.6027	$2.614 \pm 0.041$ (−1.4 $\sigma$ )	$f\sigma_8(2.33)$	0.30256	$0.3031 \pm 0.0039$ (−0.9 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1139	$0.115 \pm 0.038$	Age/Gyr	13.584	$13.55 \pm 0.15$ (+1.1 $\sigma$ )	$\sigma_8(2.33)$	0.31233	$0.3130 \pm 0.0043$ (−0.9 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1338	$0.135 \pm 0.030$	$z_*$	1089.915	$1089.99 \pm 0.33$ (−1.1 $\sigma$ )	$f_{2000}^{143}$	29.56	$30.6 \pm 2.9$ (−0.9 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.482	$0.482 \pm 0.086$	$r_*$	142.83	$142.5 \pm 1.5$ (+0.9 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.66	$33.1 \pm 2.0$ (−1.1 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.223	$0.224 \pm 0.054$	$100\theta_*$	1.040777	$1.04071 \pm 0.00046$ (+0.6 $\sigma$ )	$f_{2000}^{217}$	107.19	$107.8 \pm 1.9$ (−1.0 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.664	$0.663 \pm 0.080$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.724	$13.69 \pm 0.13$ (+0.9 $\sigma$ )	$\chi_{\mathrm{lensing}}^2$	9.02	$9.54 \pm 0.72$ (−0.7 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.073	$2.08 \pm 0.27$	$z_{\mathrm{drag}}$	1060.85	$1060.92 \pm 0.63$ (−0.3 $\sigma$ )	$\chi_{\mathrm{small}}^2$	396.87	$397.8 \pm 2.4$ (−0.0 $\sigma$ )
$c_{100}$	0.99973	$0.99966 \pm 0.00062$ (+0.1 $\sigma$ )	$r_{\mathrm{drag}}$	145.38	$145.1 \pm 1.5$ (+0.9 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	22.04	$22.16 \pm 0.86$ (+0.9 $\sigma$ )
$c_{217}$	0.99820	$0.99821 \pm 0.00062$ (−0.1 $\sigma$ )	$k_{\mathrm{D}}$	0.14215	$0.1424 \pm 0.0011$ (−0.6 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2348.8	$2364.2 \pm 6.7$ (+271.3 $\sigma$ )
$H_0$	69.18	$69.4 \pm 1.1$ (−1.1 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.161034	$0.16114 \pm 0.00035$ (−1.6 $\sigma$ )	$\chi_{\mathrm{H073p45}}^2$	6.61	$6.4 \pm 3.4$ (+1.3 $\sigma$ )
$\Omega_{\Lambda}$	0.6970	$0.6976 \pm 0.0078$ (−0.8 $\sigma$ )	$z_{\mathrm{eq}}$	3361.8	$3359 \pm 28$ (+1.1 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.87	$11.8 \pm 4.7$ (+1.2 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3030	$0.3024 \pm 0.0078$ (+0.8 $\sigma$ )	$k_{\mathrm{eq}}$	0.010394	$0.01041 \pm 0.00011$ (−0.2 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	2776.8	$2793.7 \pm 6.7$ (+260.9 $\sigma$ )
$\Omega_{\mathrm{m}}h^2$	0.14500	$0.1456 \pm 0.0027$ (−0.7 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8214	$0.8219 \pm 0.0055$ (−1.0 $\sigma$ )			

Best-fit  $\chi_{\mathrm{eff}}^2 = 2785.24$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1589.04$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2811.92$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1595.54$ ;  $R - 1 = 0.01134$   
 $\chi_{\mathrm{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb\_consext8: 9.02 ( $\Delta$  -0.66) small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.87 ( $\Delta$  0.19) commander\_dx12\_v3.2.29: 22.04 ( $\Delta$  0.74) plik\_rd12\_HM\_v22b\_TTTEEE: 2348.83 Hubble - H073p45: 6.61 ( $\Delta$  3.90)



# 7.88 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_BAO\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022622	$0.02264 \pm 0.00016$ (+0.6 $\sigma$ )	$\sigma_8$	0.8183	$0.8200 \pm 0.0093$ (−0.6 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	628.1	$626.1 \pm 8.5$ (+0.9 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.12173	$0.1223 \pm 0.0026$ (−0.8 $\sigma$ )	$S_8$	0.8236	$0.824 \pm 0.011$ (−0.1 $\sigma$ )	$H(0.38)$	84.46	$84.7 \pm 1.0$ (−0.9 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.040731	$1.04070 \pm 0.00039$ (+0.5 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4511	$0.4513 \pm 0.0061$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1499.9	$1495 \pm 19$ (+0.9 $\sigma$ )
$\tau$	0.0577	$0.0584 \pm 0.0074$ (+0.2 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6075	$0.6083 \pm 0.0070$ (−0.4 $\sigma$ )	$H(0.51)$	91.19	$91.5 \pm 1.0$ (−0.9 $\sigma$ )
$N_{\mathrm{eff}}$	3.234	$3.27 \pm 0.15$ (−1.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9845	$0.9849 \pm 0.0086$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1944.2	$1938 \pm 24$ (+0.9 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0565	$3.059 \pm 0.016$ (−0.2 $\sigma$ )	$r_{\mathrm{drag}}h$	100.46	$100.58 \pm 0.76$ (−0.5 $\sigma$ )	$H(0.61)$	96.82	$97.1 \pm 1.1$ (−0.9 $\sigma$ )
$n_{\mathrm{s}}$	0.9751	$0.9756 \pm 0.0059$ (−0.8 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4235	$2.424 \pm 0.021$ (+0.5 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2263.3	$2256 \pm 28$ (+0.9 $\sigma$ )
$y_{\mathrm{cal}}$	1.00093	$1.0008 \pm 0.0025$ (+0.1 $\sigma$ )	$z_{\mathrm{re}}$	8.02	$8.08 \pm 0.73$ (+0.1 $\sigma$ )	$H(2.33)$	238.56	$239.0 \pm 2.3$ (−0.8 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	48.9	$48 \pm 7$ (−0.2 $\sigma$ )	$10^9A_{\mathrm{s}}$	2.1252	$2.130 \pm 0.034$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5677	$5663 \pm 60$ (+0.9 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.28	—	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8937	$1.895 \pm 0.015$ (−0.6 $\sigma$ )	$f\sigma_8(0.15)$	0.4563	$0.4566 \pm 0.0059$ (−0.2 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	7.32	$5.3^{+2.2}_{-2.0}$ (+0.3 $\sigma$ )	$D_{40}$	1217.5	$1218 \pm 12$ (+0.6 $\sigma$ )	$\sigma_8(0.15)$	0.7569	$0.7586 \pm 0.0087$ (−0.7 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	253.7	$263 \pm 28$ (−0.3 $\sigma$ )	$D_{220}$	5741.7	$5742 \pm 38$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4765	$0.4771 \pm 0.0055$ (−0.3 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	46.9	$47 \pm 8$ (−0.7 $\sigma$ )	$D_{810}$	2544.4	$2543 \pm 13$ (+0.0 $\sigma$ )	$\sigma_8(0.38)$	0.6718	$0.6734 \pm 0.0079$ (−0.7 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	44.6	$42 \pm 9$ (−0.3 $\sigma$ )	$D_{1420}$	818.51	$817.3 \pm 4.8$ (+0.7 $\sigma$ )	$f\sigma_8(0.51)$	0.4760	$0.4767 \pm 0.0054$ (−0.4 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	118.0	$114 \pm 10$ (−0.1 $\sigma$ )	$D_{2000}$	230.78	$230.2 \pm 1.8$ (+1.1 $\sigma$ )	$\sigma_8(0.51)$	0.6290	$0.6305 \pm 0.0075$ (−0.7 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.01	$< 4.87$ (−0.3 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.9751	$0.9756 \pm 0.0059$ (−0.8 $\sigma$ )	$f\sigma_8(0.61)$	0.4716	$0.4724 \pm 0.0053$ (−0.5 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.93	$9.0 \pm 1.8$ (−0.0 $\sigma$ )	$Y_{\mathrm{P}}$	0.24797	$0.2485 \pm 0.0020$ (−1.0 $\sigma$ )	$\sigma_8(0.61)$	0.5987	$0.6002 \pm 0.0072$ (−0.7 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	11.10	$11.0 \pm 1.8$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24931	$0.2498 \pm 0.0020$ (−1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.30217	$0.3030 \pm 0.0037$ (−0.7 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.78	$18.8 \pm 3.3$ (+0.1 $\sigma$ )	$10^5\mathrm{D}/\mathrm{H}$	2.6042	$2.614 \pm 0.041$ (−1.5 $\sigma$ )	$\sigma_8(2.33)$	0.31188	$0.3127 \pm 0.0040$ (−0.7 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	94.8	$93.6 \pm 7.3$ (+0.1 $\sigma$ )	Age/Gyr	13.593	$13.56 \pm 0.14$ (+0.9 $\sigma$ )	$f_{2000}^{143}$	29.77	$30.7 \pm 2.9$ (−0.9 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1143	$0.115 \pm 0.038$	$z_*$	1089.937	$1090.00 \pm 0.32$ (−1.3 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.72	$33.1 \pm 2.0$ (−1.1 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1347	$0.135 \pm 0.030$	$r_*$	142.88	$142.6 \pm 1.4$ (+0.8 $\sigma$ )	$f_{2000}^{217}$	107.31	$107.8 \pm 1.9$ (−1.0 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.479	$0.482 \pm 0.086$	$100\theta_*$	1.040769	$1.04072 \pm 0.00046$ (+0.6 $\sigma$ )	$\chi_{\mathrm{lensing}}^2$	9.02	$9.48 \pm 0.66$ (−0.7 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.221	$0.224 \pm 0.053$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.728	$13.70 \pm 0.13$ (+0.8 $\sigma$ )	$\chi_{\mathrm{small}}^2$	396.62	$397.7 \pm 2.2$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.664	$0.664 \pm 0.080$	$z_{\mathrm{drag}}$	1060.77	$1060.89 \pm 0.59$ (−0.1 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	22.11	$22.20 \pm 0.79$ (+0.7 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.074	$2.08 \pm 0.26$	$r_{\mathrm{drag}}$	145.44	$145.1 \pm 1.5$ (+0.8 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2348.4	$2363.8 \pm 6.5$ (+279.5 $\sigma$ )
$c_{100}$	0.99969	$0.99966 \pm 0.00062$ (+0.1 $\sigma$ )	$k_{\mathrm{D}}$	0.14211	$0.1423 \pm 0.0011$ (−0.6 $\sigma$ )	$\chi_{\mathrm{H073p45}}^2$	6.95	$6.5 \pm 2.9$ (+1.0 $\sigma$ )
$c_{217}$	0.99823	$0.99821 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.161034	$0.16113 \pm 0.00035$ (−1.5 $\sigma$ )	$\chi_{6\mathrm{DF}}^2$	0.0000	$0.024 \pm 0.035$ (−0.3 $\sigma$ )
$H_0$	69.08	$69.32 \pm 0.97$ (−0.9 $\sigma$ )	$z_{\mathrm{eq}}$	3364.7	$3361 \pm 22$ (+0.9 $\sigma$ )	$\chi_{\mathrm{MGS}}^2$	1.677	$1.81 \pm 0.47$ (−0.5 $\sigma$ )
$\Omega_{\Lambda}$	0.6961	$0.6970 \pm 0.0059$ (−0.5 $\sigma$ )	$k_{\mathrm{eq}}$	0.010398	$0.01041 \pm 0.00010$ (−0.4 $\sigma$ )	$\chi_{\mathrm{DR12BAO}}^2$	3.569	$3.88 \pm 0.64$ (−0.0 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3039	$0.3030 \pm 0.0059$ (+0.5 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.82076	$0.8214 \pm 0.0042$ (−0.8 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.99	$11.8 \pm 4.7$ (+1.2 $\sigma$ )
$\Omega_{\mathrm{m}}h^2$	0.14500	$0.1456 \pm 0.0027$ (−0.8 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.45309	$0.4534 \pm 0.0021$ (−0.8 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	2776.2	$2793.1 \pm 6.4$ (+275.0 $\sigma$ )
$\Omega_{\mathrm{m}}h^3$	0.10016	$0.1009 \pm 0.0031$ (−0.9 $\sigma$ )	$H(0.15)$	74.35	$74.59 \pm 0.97$ (−0.9 $\sigma$ )	$\chi_{\mathrm{BAO}}^2$	5.246	$5.71 \pm 0.61$ (−0.3 $\sigma$ )

Best-fit  $\chi_{\mathrm{eff}}^2 = 2790.37$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2817.17$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1595.14$ ;  $R - 1 = 0.01178$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.57 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 9.02 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.62 commander\_dx12.v3.2.29: 22.11 plik\_rd12\_HM.v22b\_TTTEEE: 2348.44 Hubble - H073p45: 6.95



7.89 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_BAO\_lensing\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022634	$0.02264 \pm 0.00016$ (+0.6 $\sigma$ )	$S_8$	0.8219	$0.824 \pm 0.011$ (−0.2 $\sigma$ )	$D_M(0.38)$	1498.1	$1495 \pm 19$ (+0.9 $\sigma$ )
$\Omega_c h^2$	0.12172	$0.1223 \pm 0.0026$ (−0.8 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4501	$0.4512 \pm 0.0060$ (−0.2 $\sigma$ )	$H(0.51)$	91.26	$91.5 \pm 1.0$ (−0.9 $\sigma$ )
$100\theta_{MC}$	1.040762	$1.04070 \pm 0.00039$ (+0.5 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6067	$0.6082 \pm 0.0070$ (−0.4 $\sigma$ )	$D_M(0.51)$	1942.0	$1937 \pm 24$ (+0.9 $\sigma$ )
$\tau$	0.0576	$0.0585 \pm 0.0074$ (+0.2 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9832	$0.9847 \pm 0.0086$ (−0.1 $\sigma$ )	$H(0.61)$	96.90	$97.1 \pm 1.0$ (−0.9 $\sigma$ )
$N_{\text{eff}}$	3.240	$3.27 \pm 0.15$ (−1.0 $\sigma$ )	$r_{\text{drag}} h$	100.58	$100.62 \pm 0.73$ (−0.5 $\sigma$ )	$D_M(0.61)$	2260.8	$2256 \pm 27$ (+0.9 $\sigma$ )
$\ln(10^{10} A_s)$	3.0557	$3.059 \pm 0.016$ (−0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4209	$2.424 \pm 0.020$ (+0.5 $\sigma$ )	$H(2.33)$	238.59	$239.1 \pm 2.3$ (−0.8 $\sigma$ )
$n_s$	0.9753	$0.9758 \pm 0.0058$ (−0.8 $\sigma$ )	$z_{\text{re}}$	8.01	$8.09 \pm 0.73$ (+0.1 $\sigma$ )	$D_M(2.33)$	5673	$5661 \pm 60$ (+0.9 $\sigma$ )
$y_{\text{cal}}$	1.00059	$1.0008 \pm 0.0025$ (+0.1 $\sigma$ )	$10^9 A_s$	2.1236	$2.131 \pm 0.034$ (−0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4554	$0.4565 \pm 0.0058$ (−0.2 $\sigma$ )
$A_{217}^{\text{CIB}}$	49.8	$48 \pm 7$ (−0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8924	$1.895 \pm 0.015$ (−0.6 $\sigma$ )	$\sigma_8(0.15)$	0.7565	$0.7587 \pm 0.0087$ (−0.6 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.11	—	$D_{40}$	1216.6	$1217 \pm 12$ (+0.6 $\sigma$ )	$f\sigma_8(0.38)$	0.4759	$0.4770 \pm 0.0055$ (−0.4 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.38	$5.3_{-2.0}^{+2.2}$ (+0.3 $\sigma$ )	$D_{220}$	5739.9	$5742 \pm 38$ (+0.4 $\sigma$ )	$\sigma_8(0.38)$	0.6715	$0.6735 \pm 0.0079$ (−0.7 $\sigma$ )
$A_{100}^{\text{PS}}$	255.1	$263 \pm 28$ (−0.3 $\sigma$ )	$D_{810}$	2542.5	$2543 \pm 13$ (+0.0 $\sigma$ )	$f\sigma_8(0.51)$	0.4755	$0.4767 \pm 0.0054$ (−0.4 $\sigma$ )
$A_{143}^{\text{PS}}$	44.2	$47 \pm 8$ (−0.7 $\sigma$ )	$D_{1420}$	817.77	$817.3 \pm 4.8$ (+0.7 $\sigma$ )	$\sigma_8(0.51)$	0.6288	$0.6307 \pm 0.0075$ (−0.7 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	39.9	$42 \pm 9$ (−0.3 $\sigma$ )	$D_{2000}$	230.52	$230.2 \pm 1.8$ (+1.1 $\sigma$ )	$f\sigma_8(0.61)$	0.4711	$0.4723 \pm 0.0053$ (−0.5 $\sigma$ )
$A_{217}^{\text{PS}}$	116.4	$114 \pm 10$ (−0.1 $\sigma$ )	$n_{s,0.002}$	0.9753	$0.9758 \pm 0.0058$ (−0.8 $\sigma$ )	$\sigma_8(0.61)$	0.5986	$0.6004 \pm 0.0072$ (−0.7 $\sigma$ )
$A^{\text{kSZ}}$	0.00	$< 4.88$ (−0.3 $\sigma$ )	$Y_P$	0.24806	$0.2485 \pm 0.0020$ (−1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.30212	$0.3030 \pm 0.0037$ (−0.7 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.93	$9.0 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P^{\text{BBN}}$	0.24940	$0.2498 \pm 0.0020$ (−1.0 $\sigma$ )	$\sigma_8(2.33)$	0.31188	$0.3128 \pm 0.0039$ (−0.7 $\sigma$ )
$A_{143}^{\text{dustTT}}$	11.09	$11.0 \pm 1.8$ (+0.1 $\sigma$ )	$10^5 D/H$	2.6043	$2.614 \pm 0.041$ (−1.5 $\sigma$ )	$f_{2000}^{143}$	29.89	$30.7 \pm 2.9$ (−0.9 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	19.48	$18.8 \pm 3.3$ (+0.1 $\sigma$ )	Age/Gyr	13.584	$13.56 \pm 0.14$ (+0.9 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.71	$33.1 \pm 2.0$ (−1.1 $\sigma$ )
$A_{217}^{\text{dustTT}}$	94.3	$93.6 \pm 7.3$ (+0.1 $\sigma$ )	$z_*$	1089.927	$1090.00 \pm 0.32$ (−1.3 $\sigma$ )	$f_{2000}^{217}$	107.43	$107.8 \pm 1.9$ (−1.0 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1147	$0.115 \pm 0.038$	$r_*$	142.84	$142.5 \pm 1.4$ (+0.8 $\sigma$ )	$\chi_{\text{lensing}}^2$	9.06	$9.48 \pm 0.65$ (−0.7 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1348	$0.135 \pm 0.030$	$100\theta_*$	1.040793	$1.04071 \pm 0.00046$ (+0.6 $\sigma$ )	$\chi_{\text{small}}^2$	396.60	$397.7 \pm 2.3$ (+0.1 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.482 \pm 0.086$	$D_M(z_*)/\text{Gpc}$	13.724	$13.70 \pm 0.13$ (+0.8 $\sigma$ )	$\chi_{\text{lowl}}^2$	22.11	$22.17 \pm 0.78$ (+0.6 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.223	$0.224 \pm 0.053$	$z_{\text{drag}}$	1060.81	$1060.90 \pm 0.58$ (−0.0 $\sigma$ )	$\chi_{\text{plik}}^2$	2348.7	$2363.9 \pm 6.5$ (+279.8 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.660	$0.664 \pm 0.080$	$r_{\text{drag}}$	145.39	$145.1 \pm 1.5$ (+0.8 $\sigma$ )	$\chi_{\text{H073p45}}^2$	6.63	$6.4 \pm 2.9$ (+1.0 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.069	$2.08 \pm 0.26$	$k_D$	0.14214	$0.1424 \pm 0.0011$ (−0.6 $\sigma$ )	$\chi_{\text{JLA}}^2$	1034.769	$1034.83 \pm 0.13$ (+0.1 $\sigma$ )
$c_{100}$	0.99970	$0.99966 \pm 0.00062$ (+0.1 $\sigma$ )	$100\theta_D$	0.161048	$0.16114 \pm 0.00035$ (−1.5 $\sigma$ )	$\chi_{6\text{DF}}^2$	0.0003	$0.023 \pm 0.033$ (−0.3 $\sigma$ )
$c_{217}$	0.99822	$0.99821 \pm 0.00062$ (−0.1 $\sigma$ )	$z_{\text{eq}}$	3361.8	$3360 \pm 21$ (+0.9 $\sigma$ )	$\chi_{\text{MGS}}^2$	1.748	$1.83 \pm 0.46$ (−0.5 $\sigma$ )
$H_0$	69.17	$69.36 \pm 0.95$ (−0.9 $\sigma$ )	$k_{\text{eq}}$	0.010394	$0.01041 \pm 0.00010$ (−0.4 $\sigma$ )	$\chi_{\text{DR12BAO}}^2$	3.504	$3.84 \pm 0.58$ (−0.0 $\sigma$ )
$\Omega_\Lambda$	0.6970	$0.6973 \pm 0.0057$ (−0.5 $\sigma$ )	$100\theta_{\text{eq}}$	0.82134	$0.8216 \pm 0.0040$ (−0.8 $\sigma$ )	$\chi_{\text{prior}}^2$	1.98	$11.8 \pm 4.7$ (+1.2 $\sigma$ )
$\Omega_m$	0.3030	$0.3027 \pm 0.0057$ (+0.5 $\sigma$ )	$100\theta_{s,\text{eq}}$	0.45338	$0.4535 \pm 0.0021$ (−0.8 $\sigma$ )	$\chi_{\text{CMB}}^2$	2776.5	$2793.2 \pm 6.4$ (+275.5 $\sigma$ )
$\Omega_m h^2$	0.14500	$0.1456 \pm 0.0027$ (−0.8 $\sigma$ )	$H(0.15)$	74.44	$74.63 \pm 0.95$ (−0.9 $\sigma$ )	$\chi_{\text{BAO}}^2$	5.252	$5.69 \pm 0.58$ (−0.3 $\sigma$ )
$\Omega_m h^3$	0.10030	$0.1010 \pm 0.0030$ (−0.9 $\sigma$ )	$D_M(0.15)$	627.3	$625.8 \pm 8.3$ (+0.9 $\sigma$ )			
$\sigma_8$	0.8177	$0.8200 \pm 0.0093$ (−0.6 $\sigma$ )	$H(0.38)$	84.54	$84.74 \pm 0.99$ (−0.9 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 3825.12$ ;  $\Delta\chi_{\text{eff}}^2 = 1588.87$ ;  $\bar{\chi}_{\text{eff}}^2 = 3851.93$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1595.17$ ;  $R - 1 = 0.01182$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 ( $\Delta$  -0.01) MGS: 1.75 ( $\Delta$  -0.29) DR12BAO: 3.50 ( $\Delta$  0.08) CMB - smicadx12.Dec5.ftl\_mv2\_ndclpp\_p.teb.consext8: 9.06 ( $\Delta$  -0.45) small\_100x143.offlike5\_EE\_Aplanc  
396.60 ( $\Delta$  0.13) commander\_dx12.v3.2.29: 22.11 ( $\Delta$  0.50) plik\_rd12\_HM.v22b\_TTTEEE: 2348.72 Hubble - H073p45: 6.63 ( $\Delta$  2.92) SN - JLA Pantheon18: 1034.77 ( $\Delta$  0.03)



# 7.90 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02266 \pm 0.00019 \quad (+0.2\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.1015 \pm 0.0032 \quad (-1.0\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4540 \pm 0.0030 \quad (-1.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1225 \pm 0.0028 \quad (-0.6\sigma)$	$\sigma_8$	$0.820 \pm 0.010 \quad (-0.4\sigma)$	$H(0.15)$	$74.8 \pm 1.1 \quad (-1.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04068 \pm 0.00039 \quad (+0.4\sigma)$	$S_8$	$0.823 \pm 0.016 \quad (+0.4\sigma)$	$D_{\mathrm{M}}(0.15)$	$624.1 \pm 9.8 \quad (+1.2\sigma)$
$\tau$	$0.0584^{+0.0065}_{-0.0085} \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4505 \pm 0.0086 \quad (+0.4\sigma)$	$H(0.38)$	$84.9 \pm 1.1 \quad (-1.2\sigma)$
$N_{\mathrm{eff}}$	$3.30 \pm 0.16 \quad (-1.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6080 \pm 0.0089 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1491 \pm 22 \quad (+1.2\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.059^{+0.016}_{-0.019} \quad (-0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.984 \pm 0.012 \quad (+0.4\sigma)$	$H(0.51)$	$91.7 \pm 1.1 \quad (-1.2\sigma)$
$n_{\mathrm{s}}$	$0.9771 \pm 0.0068 \quad (-1.1\sigma)$	$r_{\mathrm{drag}}h$	$100.8 \pm 1.1 \quad (-0.9\sigma)$	$D_{\mathrm{M}}(0.51)$	$1933 \pm 28 \quad (+1.2\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.420 \pm 0.028 \quad (+0.8\sigma)$	$H(0.61)$	$97.3 \pm 1.1 \quad (-1.2\sigma)$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7 \quad (-0.3\sigma)$	$z_{\mathrm{re}}$	$8.08^{+0.69}_{-0.82} \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2250 \pm 31 \quad (+1.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}}$	$2.131^{+0.032}_{-0.041} \quad (-0.2\sigma)$	$H(2.33)$	$239.3 \pm 2.4 \quad (-0.7\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.3^{+2.2}_{-2.0} \quad (+0.3\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.896 \pm 0.016 \quad (-0.5\sigma)$	$D_{\mathrm{M}}(2.33)$	$5651 \pm 64 \quad (+1.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$263 \pm 28 \quad (-0.3\sigma)$	$D_{40}$	$1215 \pm 14 \quad (+0.9\sigma)$	$f\sigma_8(0.15)$	$0.4559 \pm 0.0082 \quad (+0.4\sigma)$
$A_{143}^{\mathrm{PS}}$	$48 \pm 8 \quad (-0.7\sigma)$	$D_{220}$	$5739 \pm 39 \quad (+0.4\sigma)$	$\sigma_8(0.15)$	$0.7592 \pm 0.0097 \quad (-0.5\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9 \quad (-0.2\sigma)$	$D_{810}$	$2543 \pm 14 \quad (+0.0\sigma)$	$f\sigma_8(0.38)$	$0.4767 \pm 0.0072 \quad (+0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$114 \pm 10 \quad (-0.0\sigma)$	$D_{1420}$	$817.1 \pm 4.8 \quad (+0.6\sigma)$	$\sigma_8(0.38)$	$0.6741 \pm 0.0087 \quad (-0.6\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.86 \quad (-0.3\sigma)$	$D_{2000}$	$230.1 \pm 1.8 \quad (+1.1\sigma)$	$f\sigma_8(0.51)$	$0.4765 \pm 0.0067 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$9.1 \pm 1.8 \quad (-0.0\sigma)$	$n_{\mathrm{s},0.002}$	$0.9771 \pm 0.0068 \quad (-1.1\sigma)$	$\sigma_8(0.51)$	$0.6313 \pm 0.0082 \quad (-0.7\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$11.1 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}$	$0.2488 \pm 0.0021 \quad (-1.2\sigma)$	$f\sigma_8(0.61)$	$0.4723 \pm 0.0064 \quad (-0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.8 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2502 \pm 0.0021 \quad (-1.2\sigma)$	$\sigma_8(0.61)$	$0.6010 \pm 0.0079 \quad (-0.7\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.6 \pm 7.3 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.619 \pm 0.043 \quad (-1.4\sigma)$	$f\sigma_8(2.33)$	$0.3034 \pm 0.0041 \quad (-0.8\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.115 \pm 0.038$	$\mathrm{Age}/\mathrm{Gyr}$	$13.53 \pm 0.15 \quad (+1.1\sigma)$	$\sigma_8(2.33)$	$0.3133 \pm 0.0044 \quad (-0.9\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.030$	$z_*$	$1090.02 \pm 0.35 \quad (-1.0\sigma)$	$f_{2000}^{143}$	$30.8 \pm 3.0 \quad (-1.0\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.480 \pm 0.085$	$r_*$	$142.4 \pm 1.5 \quad (+0.9\sigma)$	$f_{2000}^{143 \times 217}$	$33.2 \pm 2.0 \quad (-1.1\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.225 \pm 0.054$	$100\theta_*$	$1.04068 \pm 0.00047 \quad (+0.5\sigma)$	$f_{2000}^{217}$	$107.9 \pm 1.9 \quad (-1.0\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.662 \pm 0.080$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.68 \pm 0.14 \quad (+0.9\sigma)$	$\chi_{\mathrm{small}}^2$	$397.6 \pm 2.4 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.07 \pm 0.27$	$z_{\mathrm{drag}}$	$1060.98 \pm 0.63 \quad (-0.3\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.03 \pm 0.89 \quad (+1.1\sigma)$
$c_{100}$	$0.99965 \pm 0.00062 \quad (+0.1\sigma)$	$r_{\mathrm{drag}}$	$144.9 \pm 1.5 \quad (+0.9\sigma)$	$\chi_{\mathrm{plik}}^2$	$2365.2 \pm 7.0 \quad (+261.8\sigma)$
$c_{217}$	$0.99822 \pm 0.00063 \quad (-0.1\sigma)$	$k_{\mathrm{D}}$	$0.1425 \pm 0.0012 \quad (-0.6\sigma)$	$\chi_{\mathrm{H073p45}}^2$	$6.0 \pm 3.3 \quad (+1.5\sigma)$
$H_0$	$69.6 \pm 1.1 \quad (-1.2\sigma)$	$100\theta_{\mathrm{D}}$	$0.16119 \pm 0.00036 \quad (-1.6\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.9 \pm 4.7 \quad (+1.2\sigma)$
$\Omega_{\Lambda}$	$0.6985 \pm 0.0083 \quad (-0.9\sigma)$	$z_{\mathrm{eq}}$	$3356 \pm 31 \quad (+1.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2784.9 \pm 6.6 \quad (+269.4\sigma)$
$\Omega_{\mathrm{m}}$	$0.3015 \pm 0.0083 \quad (+0.9\sigma)$	$k_{\mathrm{eq}}$	$0.01041 \pm 0.00012 \quad (-0.0\sigma)$		
$\Omega_{\mathrm{m}}h^2$	$0.1459 \pm 0.0029 \quad (-0.6\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8225 \pm 0.0060 \quad (-1.1\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2802.74; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1596.48; R - 1 = 0.00708$$



7.91 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02265 \pm 0.00016 \quad (+0.6\sigma)$	$\sigma_8$	$0.821 \pm 0.010 \quad (-0.6\sigma)$	$D_{\mathrm{M}}(0.15)$	$625.0 \pm 8.4 \quad (+1.0\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1226 \pm 0.0028 \quad (-0.8\sigma)$	$S_8$	$0.824 \pm 0.013 \quad (-0.1\sigma)$	$H(0.38)$	$84.8 \pm 1.0 \quad (-1.0\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04068 \pm 0.00039 \quad (+0.6\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4513 \pm 0.0073 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1493 \pm 19 \quad (+1.0\sigma)$
$\tau$	$0.0582^{+0.0063}_{-0.0084} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6085 \pm 0.0083 \quad (-0.3\sigma)$	$H(0.51)$	$91.6 \pm 1.0 \quad (-0.9\sigma)$
$N_{\mathrm{eff}}$	$3.29 \pm 0.15 \quad (-1.0\sigma)$	$\sigma_8/h^{0.5}$	$0.985 \pm 0.010 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1935 \pm 24 \quad (+1.0\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.058^{+0.015}_{-0.018} \quad (-0.2\sigma)$	$r_{\mathrm{drag}}h$	$100.63 \pm 0.79 \quad (-0.5\sigma)$	$H(0.61)$	$97.2 \pm 1.1 \quad (-0.9\sigma)$
$n_{\mathrm{s}}$	$0.9765 \pm 0.0060 \quad (-0.8\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.422 \pm 0.024 \quad (+0.4\sigma)$	$D_{\mathrm{M}}(0.61)$	$2253 \pm 28 \quad (+1.0\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$z_{\mathrm{re}}$	$8.06^{+0.67}_{-0.82} \quad (+0.1\sigma)$	$H(2.33)$	$239.3 \pm 2.4 \quad (-0.8\sigma)$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7 \quad (-0.3\sigma)$	$10^9 A_{\mathrm{s}}$	$2.130^{+0.032}_{-0.040} \quad (-0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5655 \pm 61 \quad (+0.9\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.896 \pm 0.016 \quad (-0.6\sigma)$	$f\sigma_8(0.15)$	$0.4566 \pm 0.0070 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.3^{+2.2}_{-2.0} \quad (+0.3\sigma)$	$D_{40}$	$1216 \pm 13 \quad (+0.6\sigma)$	$\sigma_8(0.15)$	$0.7591 \pm 0.0096 \quad (-0.6\sigma)$
$A_{100}^{\mathrm{PS}}$	$263 \pm 28 \quad (-0.3\sigma)$	$D_{220}$	$5738 \pm 39 \quad (+0.5\sigma)$	$f\sigma_8(0.38)$	$0.4772 \pm 0.0066 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{PS}}$	$48 \pm 8 \quad (-0.7\sigma)$	$D_{810}$	$2543 \pm 13 \quad (+0.0\sigma)$	$\sigma_8(0.38)$	$0.6739 \pm 0.0086 \quad (-0.6\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.3\sigma)$	$D_{1420}$	$817.0 \pm 4.8 \quad (+0.7\sigma)$	$f\sigma_8(0.51)$	$0.4769 \pm 0.0063 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{PS}}$	$114 \pm 10 \quad (-0.1\sigma)$	$D_{2000}$	$230.1 \pm 1.8 \quad (+1.2\sigma)$	$\sigma_8(0.51)$	$0.6311 \pm 0.0081 \quad (-0.7\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.94 \quad (-0.3\sigma)$	$n_{\mathrm{s},0.002}$	$0.9765 \pm 0.0060 \quad (-0.8\sigma)$	$f\sigma_8(0.61)$	$0.4726 \pm 0.0061 \quad (-0.4\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$9.1 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.2487 \pm 0.0020 \quad (-1.0\sigma)$	$\sigma_8(0.61)$	$0.6007 \pm 0.0078 \quad (-0.7\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$11.1 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2500 \pm 0.0020 \quad (-1.0\sigma)$	$f\sigma_8(2.33)$	$0.3032 \pm 0.0040 \quad (-0.7\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.8 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.619 \pm 0.043 \quad (-1.5\sigma)$	$\sigma_8(2.33)$	$0.3130 \pm 0.0042 \quad (-0.7\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.6 \pm 7.3 \quad (+0.1\sigma)$	Age/Gyr	$13.54 \pm 0.15 \quad (+0.9\sigma)$	$f_{2000}^{143}$	$30.8 \pm 2.9 \quad (-1.0\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.115 \pm 0.038$	$z_*$	$1090.03 \pm 0.33 \quad (-1.3\sigma)$	$f_{2000}^{143 \times 217}$	$33.2 \pm 2.0 \quad (-1.1\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.030$	$r_*$	$142.4 \pm 1.5 \quad (+0.9\sigma)$	$f_{2000}^{217}$	$107.9 \pm 1.9 \quad (-1.0\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.482 \pm 0.086$	$100\theta_*$	$1.04068 \pm 0.00047 \quad (+0.7\sigma)$	$\chi_{\mathrm{small}}^2$	$397.6 \pm 2.3 \quad (+0.2\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.225 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.68 \pm 0.14 \quad (+0.9\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.09 \pm 0.79 \quad (+0.7\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.664 \pm 0.080$	$z_{\mathrm{drag}}$	$1060.94 \pm 0.59 \quad (-0.1\sigma)$	$\chi_{\mathrm{plik}}^2$	$2364.5 \pm 6.6 \quad (+274.1\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.26$	$r_{\mathrm{drag}}$	$144.9 \pm 1.5 \quad (+0.8\sigma)$	$\chi_{\mathrm{H073p45}}^2$	$6.2 \pm 2.9 \quad (+1.0\sigma)$
$c_{100}$	$0.99965 \pm 0.00062 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.1425 \pm 0.0012 \quad (-0.6\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.027 \pm 0.039 \quad (-0.4\sigma)$
$c_{217}$	$0.99822 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16118 \pm 0.00036 \quad (-1.5\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.84 \pm 0.49 \quad (-0.5\sigma)$
$H_0$	$69.44 \pm 0.97 \quad (-0.9\sigma)$	$z_{\mathrm{eq}}$	$3360 \pm 23 \quad (+0.8\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$3.89 \pm 0.66 \quad (-0.1\sigma)$
$\Omega_{\Lambda}$	$0.6974 \pm 0.0061 \quad (-0.5\sigma)$	$k_{\mathrm{eq}}$	$0.01042 \pm 0.00011 \quad (-0.4\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.9 \pm 4.7 \quad (+1.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.3026 \pm 0.0061 \quad (+0.5\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8217 \pm 0.0044 \quad (-0.7\sigma)$	$\chi_{\mathrm{BAO}}^2$	$5.76 \pm 0.67 \quad (-0.4\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1459 \pm 0.0029 \quad (-0.8\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4536 \pm 0.0022 \quad (-0.8\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2784.2 \pm 6.3 \quad (+280.3\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.1013 \pm 0.0031 \quad (-0.9\sigma)$	$H(0.15)$	$74.72 \pm 0.97 \quad (-1.0\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2807.99; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1595.77; R - 1 = 0.00955$$



7.92 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_BAO\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02265 \pm 0.00016 \quad (+0.6\sigma)$	$\sigma_8$	$0.821 \pm 0.010 \quad (-0.6\sigma)$	$D_M(0.15)$	$624.8 \pm 8.3 \quad (+1.0\sigma)$
$\Omega_c h^2$	$0.1226 \pm 0.0028 \quad (-0.8\sigma)$	$S_8$	$0.824 \pm 0.013 \quad (-0.1\sigma)$	$H(0.38)$	$84.87 \pm 0.99 \quad (-0.9\sigma)$
$100\theta_{MC}$	$1.04068 \pm 0.00039 \quad (+0.6\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4511 \pm 0.0072 \quad (-0.1\sigma)$	$D_M(0.38)$	$1492 \pm 19 \quad (+1.0\sigma)$
$\tau$	$0.0582^{+0.0063}_{-0.0084} \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6084 \pm 0.0083 \quad (-0.3\sigma)$	$H(0.51)$	$91.6 \pm 1.0 \quad (-0.9\sigma)$
$N_{\text{eff}}$	$3.29 \pm 0.15 \quad (-1.0\sigma)$	$\sigma_8/h^{0.5}$	$0.984 \pm 0.010 \quad (-0.1\sigma)$	$D_M(0.51)$	$1934 \pm 24 \quad (+1.0\sigma)$
$\ln(10^{10} A_s)$	$3.059^{+0.015}_{-0.018} \quad (-0.2\sigma)$	$r_{\text{drag}} h$	$100.67 \pm 0.76 \quad (-0.5\sigma)$	$H(0.61)$	$97.2 \pm 1.1 \quad (-0.9\sigma)$
$n_s$	$0.9766 \pm 0.0059 \quad (-0.8\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.421 \pm 0.024 \quad (+0.4\sigma)$	$D_M(0.61)$	$2252 \pm 27 \quad (+1.0\sigma)$
$y_{\text{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$z_{\text{re}}$	$8.07^{+0.67}_{-0.82} \quad (+0.1\sigma)$	$H(2.33)$	$239.3 \pm 2.4 \quad (-0.8\sigma)$
$A_{217}^{\text{CIB}}$	$48 \pm 7 \quad (-0.3\sigma)$	$10^9 A_s$	$2.130^{+0.032}_{-0.040} \quad (-0.2\sigma)$	$D_M(2.33)$	$5654 \pm 60 \quad (+0.9\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.896 \pm 0.016 \quad (-0.6\sigma)$	$f\sigma_8(0.15)$	$0.4565 \pm 0.0070 \quad (-0.2\sigma)$
$A_{143}^{\text{tSZ}}$	$5.3^{+2.2}_{-2.0} \quad (+0.3\sigma)$	$D_{40}$	$1216 \pm 13 \quad (+0.6\sigma)$	$\sigma_8(0.15)$	$0.7591 \pm 0.0096 \quad (-0.6\sigma)$
$A_{100}^{\text{PS}}$	$263 \pm 28 \quad (-0.3\sigma)$	$D_{220}$	$5739 \pm 39 \quad (+0.5\sigma)$	$f\sigma_8(0.38)$	$0.4771 \pm 0.0066 \quad (-0.3\sigma)$
$A_{143}^{\text{PS}}$	$48 \pm 8 \quad (-0.7\sigma)$	$D_{810}$	$2543 \pm 13 \quad (+0.0\sigma)$	$\sigma_8(0.38)$	$0.6739 \pm 0.0086 \quad (-0.6\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.3\sigma)$	$D_{1420}$	$817.0 \pm 4.8 \quad (+0.7\sigma)$	$f\sigma_8(0.51)$	$0.4768 \pm 0.0063 \quad (-0.4\sigma)$
$A_{217}^{\text{PS}}$	$114 \pm 10 \quad (-0.1\sigma)$	$D_{2000}$	$230.1 \pm 1.8 \quad (+1.1\sigma)$	$\sigma_8(0.51)$	$0.6311 \pm 0.0081 \quad (-0.7\sigma)$
$A^{\text{kSZ}}$	$< 4.95 \quad (-0.3\sigma)$	$n_{s,0.002}$	$0.9766 \pm 0.0059 \quad (-0.8\sigma)$	$f\sigma_8(0.61)$	$0.4725 \pm 0.0061 \quad (-0.4\sigma)$
$A_{100}^{\text{dustTT}}$	$9.1 \pm 1.8 \quad (-0.0\sigma)$	$Y_P$	$0.2487 \pm 0.0020 \quad (-1.0\sigma)$	$\sigma_8(0.61)$	$0.6008 \pm 0.0078 \quad (-0.7\sigma)$
$A_{143}^{\text{dustTT}}$	$11.1 \pm 1.8 \quad (+0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.2501 \pm 0.0020 \quad (-1.0\sigma)$	$f\sigma_8(2.33)$	$0.3033 \pm 0.0040 \quad (-0.7\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.8 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \text{D/H}$	$2.619 \pm 0.043 \quad (-1.5\sigma)$	$\sigma_8(2.33)$	$0.3131 \pm 0.0042 \quad (-0.7\sigma)$
$A_{217}^{\text{dustTT}}$	$93.6 \pm 7.3 \quad (+0.1\sigma)$	Age/Gyr	$13.54 \pm 0.14 \quad (+0.9\sigma)$	$f_{2000}^{143}$	$30.8 \pm 2.9 \quad (-0.9\sigma)$
$A_{100}^{\text{dustTE}}$	$0.115 \pm 0.038$	$z_*$	$1090.03 \pm 0.33 \quad (-1.3\sigma)$	$f_{2000}^{143 \times 217}$	$33.2 \pm 2.0 \quad (-1.1\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$r_*$	$142.4 \pm 1.5 \quad (+0.9\sigma)$	$f_{2000}^{217}$	$107.9 \pm 1.9 \quad (-1.0\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.482 \pm 0.086$	$100\theta_*$	$1.04068 \pm 0.00047 \quad (+0.7\sigma)$	$\chi_{\text{small}}^2$	$397.6 \pm 2.3 \quad (+0.2\sigma)$
$A_{143}^{\text{dustTE}}$	$0.225 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	$13.68 \pm 0.14 \quad (+0.8\sigma)$	$\chi_{\text{lowl}}^2$	$22.06 \pm 0.78 \quad (+0.7\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.663 \pm 0.080$	$z_{\text{drag}}$	$1060.95 \pm 0.59 \quad (-0.1\sigma)$	$\chi_{\text{plik}}^2$	$2364.6 \pm 6.6 \quad (+274.5\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.26$	$r_{\text{drag}}$	$144.9 \pm 1.5 \quad (+0.8\sigma)$	$\chi_{\text{H073p45}}^2$	$6.1 \pm 2.8 \quad (+1.0\sigma)$
$c_{100}$	$0.99965 \pm 0.00062 \quad (+0.1\sigma)$	$k_D$	$0.1425 \pm 0.0012 \quad (-0.6\sigma)$	$\chi_{\text{JLA}}^2$	$1034.83 \pm 0.13 \quad (+0.0\sigma)$
$c_{217}$	$0.99822 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_D$	$0.16118 \pm 0.00036 \quad (-1.5\sigma)$	$\chi_{6\text{DF}}^2$	$0.025 \pm 0.036 \quad (-0.4\sigma)$
$H_0$	$69.47 \pm 0.95 \quad (-0.9\sigma)$	$z_{\text{eq}}$	$3359 \pm 22 \quad (+0.8\sigma)$	$\chi_{\text{MGS}}^2$	$1.86 \pm 0.48 \quad (-0.5\sigma)$
$\Omega_\Lambda$	$0.6977 \pm 0.0058 \quad (-0.5\sigma)$	$k_{\text{eq}}$	$0.01042 \pm 0.00011 \quad (-0.4\sigma)$	$\chi_{\text{DR12BAO}}^2$	$3.85 \pm 0.60 \quad (-0.1\sigma)$
$\Omega_m$	$0.3023 \pm 0.0058 \quad (+0.5\sigma)$	$100\theta_{\text{eq}}$	$0.8219 \pm 0.0042 \quad (-0.7\sigma)$	$\chi_{\text{prior}}^2$	$11.9 \pm 4.7 \quad (+1.2\sigma)$
$\Omega_m h^2$	$0.1459 \pm 0.0029 \quad (-0.8\sigma)$	$100\theta_{s,\text{eq}}$	$0.4537 \pm 0.0021 \quad (-0.8\sigma)$	$\chi_{\text{BAO}}^2$	$5.73 \pm 0.64 \quad (-0.4\sigma)$
$\Omega_m h^3$	$0.1014 \pm 0.0031 \quad (-0.9\sigma)$	$H(0.15)$	$74.74 \pm 0.96 \quad (-0.9\sigma)$	$\chi_{\text{CMB}}^2$	$2784.3 \pm 6.3 \quad (+280.5\sigma)$

$\bar{\chi}_{\text{eff}}^2 = 3842.74$ ;  $\Delta \bar{\chi}_{\text{eff}}^2 = 1595.79$ ;  $R - 1 = 0.00993$



### 7.93 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02265 \pm 0.00018 \quad (+0.3\sigma)$	$\Omega_{\text{m}}h^3$	$0.1011 \pm 0.0032 \quad (-1.0\sigma)$	$100\theta_{\text{s,eq}}$	$0.4537 \pm 0.0028 \quad (-1.0\sigma)$
$\Omega_{\text{c}}h^2$	$0.1223 \pm 0.0027 \quad (-0.8\sigma)$	$\sigma_8$	$0.8204 \pm 0.0092 \quad (-0.7\sigma)$	$H(0.15)$	$74.7 \pm 1.1 \quad (-1.1\sigma)$
$100\theta_{\text{MC}}$	$1.04070 \pm 0.00039 \quad (+0.4\sigma)$	$S_8$	$0.823 \pm 0.013 \quad (+0.2\sigma)$	$D_{\text{M}}(0.15)$	$625.3 \pm 9.7 \quad (+1.1\sigma)$
$\tau$	$0.0590^{+0.0065}_{-0.0081} \quad (-0.0\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4510 \pm 0.0069 \quad (+0.2\sigma)$	$H(0.38)$	$84.8 \pm 1.1 \quad (-1.1\sigma)$
$N_{\text{eff}}$	$3.28 \pm 0.16 \quad (-1.1\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6083 \pm 0.0072 \quad (-0.1\sigma)$	$D_{\text{M}}(0.38)$	$1494 \pm 22 \quad (+1.1\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.060^{+0.015}_{-0.017} \quad (-0.4\sigma)$	$\sigma_8/h^{0.5}$	$0.9847 \pm 0.0090 \quad (+0.2\sigma)$	$H(0.51)$	$91.5 \pm 1.1 \quad (-1.1\sigma)$
$n_{\text{s}}$	$0.9762 \pm 0.0066 \quad (-1.0\sigma)$	$r_{\text{drag}}h$	$100.7 \pm 1.0 \quad (-0.8\sigma)$	$D_{\text{M}}(0.51)$	$1936 \pm 27 \quad (+1.1\sigma)$
$y_{\text{cal}}$	$1.0008 \pm 0.0025 \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.424 \pm 0.022 \quad (+0.7\sigma)$	$H(0.61)$	$97.2 \pm 1.1 \quad (-1.1\sigma)$
$A_{217}^{\text{CIB}}$	$48 \pm 7 \quad (-0.2\sigma)$	$z_{\text{re}}$	$8.14^{+0.68}_{-0.77} \quad (-0.1\sigma)$	$D_{\text{M}}(0.61)$	$2254 \pm 31 \quad (+1.1\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_{\text{s}}$	$2.133^{+0.030}_{-0.037} \quad (-0.4\sigma)$	$H(2.33)$	$239.1 \pm 2.3 \quad (-0.8\sigma)$
$A_{143}^{\text{tSZ}}$	$5.3^{+2.2}_{-2.0} \quad (+0.3\sigma)$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.895 \pm 0.015 \quad (-0.7\sigma)$	$D_{\text{M}}(2.33)$	$5659 \pm 64 \quad (+1.1\sigma)$
$A_{100}^{\text{PS}}$	$263 \pm 28 \quad (-0.3\sigma)$	$D_{40}$	$1217 \pm 13 \quad (+0.8\sigma)$	$f\sigma_8(0.15)$	$0.4564 \pm 0.0065 \quad (+0.2\sigma)$
$A_{143}^{\text{PS}}$	$47 \pm 8 \quad (-0.7\sigma)$	$D_{220}$	$5742 \pm 39 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7590 \pm 0.0087 \quad (-0.7\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.3\sigma)$	$D_{810}$	$2543 \pm 13 \quad (-0.0\sigma)$	$f\sigma_8(0.38)$	$0.4770 \pm 0.0058 \quad (-0.1\sigma)$
$A_{217}^{\text{PS}}$	$114 \pm 10 \quad (-0.1\sigma)$	$D_{1420}$	$817.3 \pm 4.8 \quad (+0.6\sigma)$	$\sigma_8(0.38)$	$0.6739 \pm 0.0080 \quad (-0.8\sigma)$
$A^{\text{kSZ}}$	$< 4.86 \quad (-0.3\sigma)$	$D_{2000}$	$230.2 \pm 1.8 \quad (+1.1\sigma)$	$f\sigma_8(0.51)$	$0.4767 \pm 0.0054 \quad (-0.2\sigma)$
$A_{100}^{\text{dustTT}}$	$9.0 \pm 1.8 \quad (-0.0\sigma)$	$n_{\text{s},0.002}$	$0.9762 \pm 0.0066 \quad (-1.0\sigma)$	$\sigma_8(0.51)$	$0.6311 \pm 0.0076 \quad (-0.8\sigma)$
$A_{143}^{\text{dustTT}}$	$11.0 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.2486 \pm 0.0021 \quad (-1.1\sigma)$	$f\sigma_8(0.61)$	$0.4724 \pm 0.0053 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.8 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.2499 \pm 0.0021 \quad (-1.1\sigma)$	$\sigma_8(0.61)$	$0.6007 \pm 0.0074 \quad (-0.9\sigma)$
$A_{217}^{\text{dustTT}}$	$93.6 \pm 7.3 \quad (+0.1\sigma)$	$10^5 \text{D/H}$	$2.614 \pm 0.041 \quad (-1.4\sigma)$	$f\sigma_8(2.33)$	$0.3033 \pm 0.0038 \quad (-0.9\sigma)$
$A_{100}^{\text{dustTE}}$	$0.115 \pm 0.038$	Age/Gyr	$13.55 \pm 0.15 \quad (+1.1\sigma)$	$\sigma_8(2.33)$	$0.3131 \pm 0.0042 \quad (-0.9\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$z_*$	$1089.99 \pm 0.33 \quad (-1.1\sigma)$	$f_{2000}^{143}$	$30.6 \pm 2.9 \quad (-0.9\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.482 \pm 0.086$	$r_*$	$142.5 \pm 1.5 \quad (+0.9\sigma)$	$f_{2000}^{143 \times 217}$	$33.1 \pm 2.0 \quad (-1.1\sigma)$
$A_{143}^{\text{dustTE}}$	$0.224 \pm 0.054$	$100\theta_*$	$1.04071 \pm 0.00046 \quad (+0.6\sigma)$	$f_{2000}^{217}$	$107.8 \pm 1.9 \quad (-1.0\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.663 \pm 0.080$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.69 \pm 0.13 \quad (+0.9\sigma)$	$\chi_{\text{lensing}}^2$	$9.53 \pm 0.70 \quad (-0.7\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.27$	$z_{\text{drag}}$	$1060.93 \pm 0.63 \quad (-0.3\sigma)$	$\chi_{\text{small}}^2$	$397.8 \pm 2.4 \quad (-0.0\sigma)$
$c_{100}$	$0.99966 \pm 0.00062 \quad (+0.1\sigma)$	$r_{\text{drag}}$	$145.1 \pm 1.5 \quad (+0.9\sigma)$	$\chi_{\text{lowl}}^2$	$22.16 \pm 0.86 \quad (+0.9\sigma)$
$c_{217}$	$0.99821 \pm 0.00062 \quad (-0.1\sigma)$	$k_{\text{D}}$	$0.1424 \pm 0.0011 \quad (-0.6\sigma)$	$\chi_{\text{plik}}^2$	$2364.2 \pm 6.7 \quad (+271.8\sigma)$
$H_0$	$69.4 \pm 1.1 \quad (-1.1\sigma)$	$100\theta_{\text{D}}$	$0.16114 \pm 0.00035 \quad (-1.6\sigma)$	$\chi_{\text{H073p45}}^2$	$6.4 \pm 3.4 \quad (+1.3\sigma)$
$\Omega_{\Lambda}$	$0.6977 \pm 0.0077 \quad (-0.8\sigma)$	$z_{\text{eq}}$	$3359 \pm 28 \quad (+1.1\sigma)$	$\chi_{\text{prior}}^2$	$11.8 \pm 4.7 \quad (+1.2\sigma)$
$\Omega_{\text{m}}$	$0.3023 \pm 0.0077 \quad (+0.8\sigma)$	$k_{\text{eq}}$	$0.01041 \pm 0.00011 \quad (-0.2\sigma)$	$\chi_{\text{CMB}}^2$	$2793.6 \pm 6.7 \quad (+262.0\sigma)$
$\Omega_{\text{m}}h^2$	$0.1456 \pm 0.0027 \quad (-0.7\sigma)$	$100\theta_{\text{eq}}$	$0.8220 \pm 0.0055 \quad (-1.0\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2811.83; \Delta\bar{\chi}_{\text{eff}}^2 = 1595.52; R - 1 = 0.01079$$



**7.94 base\_nnu\_plikHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_BAO\_lensing\_Pantheon18\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02264 \pm 0.00016 \quad (+0.6\sigma)$	$S_8$	$0.824 \pm 0.011 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.38)$	$1494 \pm 19 \quad (+0.9\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1223 \pm 0.0027 \quad (-0.8\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4512 \pm 0.0060 \quad (-0.2\sigma)$	$H(0.51)$	$91.5 \pm 1.0 \quad (-0.9\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04070 \pm 0.00039 \quad (+0.5\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6084 \pm 0.0069 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.51)$	$1937 \pm 24 \quad (+0.9\sigma)$
$\tau$	$0.0588^{+0.0063}_{-0.0077} \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.9849 \pm 0.0085 \quad (-0.1\sigma)$	$H(0.61)$	$97.1 \pm 1.0 \quad (-0.9\sigma)$
$N_{\mathrm{eff}}$	$3.28 \pm 0.15 \quad (-1.0\sigma)$	$r_{\mathrm{drag}}h$	$100.63 \pm 0.73 \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.61)$	$2255 \pm 27 \quad (+0.9\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.059^{+0.014}_{-0.016} \quad (-0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.424 \pm 0.020 \quad (+0.5\sigma)$	$H(2.33)$	$239.1 \pm 2.3 \quad (-0.8\sigma)$
$n_{\mathrm{s}}$	$0.9759 \pm 0.0058 \quad (-0.8\sigma)$	$z_{\mathrm{re}}$	$8.12^{+0.66}_{-0.74} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5661 \pm 60 \quad (+0.9\sigma)$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0025 \quad (+0.1\sigma)$	$10^9 A_{\mathrm{s}}$	$2.132^{+0.030}_{-0.035} \quad (-0.2\sigma)$	$f\sigma_8(0.15)$	$0.4565 \pm 0.0058 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.895 \pm 0.015 \quad (-0.6\sigma)$	$\sigma_8(0.15)$	$0.7589 \pm 0.0086 \quad (-0.7\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{40}$	$1217 \pm 12 \quad (+0.6\sigma)$	$f\sigma_8(0.38)$	$0.4771 \pm 0.0055 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.3^{+2.2}_{-2.0} \quad (+0.3\sigma)$	$D_{220}$	$5742 \pm 38 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6737 \pm 0.0078 \quad (-0.7\sigma)$
$A_{100}^{\mathrm{PS}}$	$263 \pm 28 \quad (-0.3\sigma)$	$D_{810}$	$2543 \pm 13 \quad (+0.0\sigma)$	$f\sigma_8(0.51)$	$0.4768 \pm 0.0053 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{PS}}$	$47 \pm 8 \quad (-0.7\sigma)$	$D_{1420}$	$817.3 \pm 4.8 \quad (+0.7\sigma)$	$\sigma_8(0.51)$	$0.6309 \pm 0.0074 \quad (-0.7\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.3\sigma)$	$D_{2000}$	$230.2 \pm 1.8 \quad (+1.1\sigma)$	$f\sigma_8(0.61)$	$0.4725 \pm 0.0052 \quad (-0.5\sigma)$
$A_{217}^{\mathrm{PS}}$	$114 \pm 10 \quad (-0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9759 \pm 0.0058 \quad (-0.8\sigma)$	$\sigma_8(0.61)$	$0.6005 \pm 0.0071 \quad (-0.7\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.88 \quad (-0.3\sigma)$	$Y_{\mathrm{P}}$	$0.2485 \pm 0.0020 \quad (-1.0\sigma)$	$f\sigma_8(2.33)$	$0.3031 \pm 0.0036 \quad (-0.7\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$9.0 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2498 \pm 0.0020 \quad (-1.0\sigma)$	$\sigma_8(2.33)$	$0.3129 \pm 0.0039 \quad (-0.7\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$11.0 \pm 1.8 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.614 \pm 0.041 \quad (-1.5\sigma)$	$f_{2000}^{143}$	$30.7 \pm 2.9 \quad (-0.9\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.8 \pm 3.3 \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.55 \pm 0.14 \quad (+0.9\sigma)$	$f_{2000}^{143 \times 217}$	$33.1 \pm 2.0 \quad (-1.1\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.6 \pm 7.3 \quad (+0.1\sigma)$	$z_*$	$1090.00 \pm 0.32 \quad (-1.3\sigma)$	$f_{2000}^{217}$	$107.8 \pm 1.9 \quad (-1.0\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.115 \pm 0.038$	$r_*$	$142.5 \pm 1.4 \quad (+0.8\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.47 \pm 0.63 \quad (-0.7\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.030$	$100\theta_*$	$1.04071 \pm 0.00046 \quad (+0.6\sigma)$	$\chi_{\mathrm{small}}^2$	$397.7 \pm 2.3 \quad (+0.2\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.482 \pm 0.086$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.70 \pm 0.13 \quad (+0.8\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.17 \pm 0.78 \quad (+0.6\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.224 \pm 0.053$	$z_{\mathrm{drag}}$	$1060.90 \pm 0.58 \quad (-0.0\sigma)$	$\chi_{\mathrm{plik}}^2$	$2363.8 \pm 6.5 \quad (+281.0\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.664 \pm 0.080$	$r_{\mathrm{drag}}$	$145.1 \pm 1.5 \quad (+0.8\sigma)$	$\chi_{\mathrm{H073p45}}^2$	$6.4 \pm 2.8 \quad (+1.0\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.26$	$k_{\mathrm{D}}$	$0.1424 \pm 0.0011 \quad (-0.5\sigma)$	$\chi_{\mathrm{JLA}}^2$	$1034.83 \pm 0.13 \quad (+0.1\sigma)$
$c_{100}$	$0.99966 \pm 0.00062 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16114 \pm 0.00035 \quad (-1.5\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.023 \pm 0.033 \quad (-0.3\sigma)$
$c_{217}$	$0.99821 \pm 0.00062 \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3360 \pm 21 \quad (+0.9\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.83 \pm 0.45 \quad (-0.5\sigma)$
$H_0$	$69.36 \pm 0.95 \quad (-0.9\sigma)$	$k_{\mathrm{eq}}$	$0.01041 \pm 0.00010 \quad (-0.4\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$3.83 \pm 0.57 \quad (-0.1\sigma)$
$\Omega_{\Lambda}$	$0.6974 \pm 0.0056 \quad (-0.5\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8217 \pm 0.0040 \quad (-0.8\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.8 \pm 4.7 \quad (+1.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.3026 \pm 0.0056 \quad (+0.5\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4536 \pm 0.0020 \quad (-0.8\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2793.1 \pm 6.4 \quad (+277.8\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1456 \pm 0.0027 \quad (-0.7\sigma)$	$H(0.15)$	$74.63 \pm 0.95 \quad (-0.9\sigma)$	$\chi_{\mathrm{BAO}}^2$	$5.69 \pm 0.57 \quad (-0.3\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.1010 \pm 0.0031 \quad (-0.9\sigma)$	$D_{\mathrm{M}}(0.15)$	$625.7 \pm 8.3 \quad (+0.9\sigma)$		
$\sigma_8$	$0.8203 \pm 0.0091 \quad (-0.6\sigma)$	$H(0.38)$	$84.75 \pm 0.98 \quad (-0.9\sigma)$		

$\bar{\chi}_{\mathrm{eff}}^2 = 3851.85$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1595.19$ ;  $R - 1 = 0.01150$



**7.95 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Riess18**

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022599	$0.02261 \pm 0.00018$	$S_8$	0.8140	$0.815 \pm 0.016$	$H(0.15)$	75.40	$75.5 \pm 1.2$
$\Omega_c h^2$	0.12298	$0.1231 \pm 0.0031$	$\sigma_8 \Omega_m^{0.5}$	0.4459	$0.4462 \pm 0.0085$	$D_M(0.15)$	618.8	$619 \pm 10$
$100\theta_{MC}$	1.040534	$1.04053 \pm 0.00042$	$\sigma_8 \Omega_m^{0.25}$	0.6040	$0.6044 \pm 0.0091$	$H(0.38)$	85.47	$85.5 \pm 1.2$
$\tau$	0.0553	$0.0556 \pm 0.0080$	$\sigma_8/h^{0.5}$	0.9767	$0.977 \pm 0.012$	$D_M(0.38)$	1479.3	$1479 \pm 24$
$N_{\text{eff}}$	3.374	$3.38 \pm 0.18$	$r_{\text{drag}} h$	101.37	$101.4 \pm 1.1$	$H(0.51)$	92.18	$92.2 \pm 1.2$
$\ln(10^{10} A_s)$	3.0526	$3.053 \pm 0.018$	$\langle d^2 \rangle^{1/2}$	2.3988	$2.399 \pm 0.028$	$D_M(0.51)$	1918.6	$1918 \pm 30$
$n_s$	0.9799	$0.9804 \pm 0.0069$	$z_{\text{re}}$	7.82	$7.83 \pm 0.81$	$H(0.61)$	97.81	$97.9 \pm 1.3$
$y_{\text{cal}}$	1.00057	$1.0005 \pm 0.0025$	$10^9 A_s$	2.1171	$2.119 \pm 0.038$	$D_M(0.61)$	2234.3	$2233 \pm 34$
$A_{100}^{\text{PS}}$	246.6	$247 \pm 25$	$10^9 A_s e^{-2\tau}$	1.8953	$1.896 \pm 0.017$	$H(2.33)$	239.79	$239.9 \pm 2.6$
$A_{143}^{\text{PS}}$	40.2	$43 \pm 9$	$D_{40}$	1207.3	$1207 \pm 14$	$D_M(2.33)$	5624	$5621 \pm 70$
$A_{217}^{\text{PS}}$	98.5	$101 \pm 10$	$D_{220}$	5726.2	$5726 \pm 39$	$f\sigma_8(0.15)$	0.4516	$0.4519 \pm 0.0082$
$A_{217}^{\text{CIB}}$	45.2	$42 \pm 7$	$D_{810}$	2538.5	$2539 \pm 14$	$\sigma_8(0.15)$	0.7575	$0.758 \pm 0.010$
$A_{143}^{\text{tSZ}}$	4.90	$3.7_{-2.7}^{+1.7}$	$D_{1420}$	814.4	$814.5 \pm 5.1$	$f\sigma_8(0.38)$	0.4734	$0.4737 \pm 0.0073$
$r_{143 \times 217}^{\text{PS}}$	0.548	$0.65 \pm 0.12$	$D_{2000}$	228.62	$228.7 \pm 2.0$	$\sigma_8(0.38)$	0.6731	$0.6736 \pm 0.0092$
$r_{143 \times 217}^{\text{CIB}}$	0.720	$> 0.482$	$n_{s,0.002}$	0.9799	$0.9804 \pm 0.0069$	$f\sigma_8(0.51)$	0.4737	$0.4740 \pm 0.0069$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.00	—	$Y_P$	0.24977	$0.2499 \pm 0.0023$	$\sigma_8(0.51)$	0.6306	$0.6311 \pm 0.0088$
$A^{\text{kSZ}}$	3.05	$5.2_{-2.3}^{+3.8}$	$Y_P^{\text{BBN}}$	0.25111	$0.2512 \pm 0.0023$	$f\sigma_8(0.61)$	0.4699	$0.4702 \pm 0.0066$
$A_{100}^{\text{dust}}$	1.017	$1.02 \pm 0.20$	$10^5 D/H$	2.656	$2.657 \pm 0.051$	$\sigma_8(0.61)$	0.6004	$0.6009 \pm 0.0084$
$A_{143}^{\text{dust}}$	0.980	$0.98 \pm 0.18$	Age/Gyr	13.468	$13.46 \pm 0.17$	$f\sigma_8(2.33)$	0.30330	$0.3036 \pm 0.0043$
$A_{217}^{\text{dust}}$	0.960	$0.97 \pm 0.10$	$z_*$	1090.205	$1090.22 \pm 0.39$	$\sigma_8(2.33)$	0.31339	$0.3137 \pm 0.0046$
$A_{143 \times 217}^{\text{dust}}$	1.004	$1.03 \pm 0.16$	$r_*$	141.92	$141.9 \pm 1.6$	$f_{2000}^{143}$	32.35	$32.0 \pm 3.3$
$c_{100}$	0.99752	$0.9975 \pm 0.0011$	$100\theta_*$	1.04050	$1.04049 \pm 0.00050$	$f_{2000}^{217}$	108.57	$108.4 \pm 2.2$
$c_{217}$	1.00146	$1.0013 \pm 0.0016$	$D_M(z_*)/\text{Gpc}$	13.639	$13.63 \pm 0.15$	$f_{2000}^{143 \times 217}$	33.94	$34.0 \pm 2.3$
$c_{TE}$	0.9988	$0.9990 \pm 0.0050$	$z_{\text{drag}}$	1060.92	$1060.97 \pm 0.65$	$\chi_{\text{small}}^2$	396.09	$397.2 \pm 1.9$
$c_{EE}$	0.9965	$0.9965 \pm 0.0055$	$r_{\text{drag}}$	144.47	$144.4 \pm 1.7$	$\chi_{\text{lowl}}^2$	21.47	$21.54 \pm 0.77$
$H_0$	70.17	$70.2 \pm 1.2$	$k_D$	0.14261	$0.1427 \pm 0.0013$	$\chi_{\text{CamSpec}}^2$	11505.1	$11520.7 \pm 6.6$
$\Omega_\Lambda$	0.7030	$0.7030 \pm 0.0083$	$100\theta_D$	0.161517	$0.16153 \pm 0.00044$	$\chi_{\text{H073p45}}^2$	3.91	$4.3 \pm 3.0$
$\Omega_m$	0.2970	$0.2970 \pm 0.0083$	$z_{\text{eq}}$	3332.1	$3332 \pm 31$	$\chi_{\text{prior}}^2$	2.43	$7.9 \pm 3.5$
$\Omega_m h^2$	0.14622	$0.1464 \pm 0.0031$	$k_{\text{eq}}$	0.010391	$0.01040 \pm 0.00012$	$\chi_{\text{CMB}}^2$	11922.6	$11939.4 \pm 6.5$
$\Omega_m h^3$	0.10260	$0.1028 \pm 0.0036$	$100\theta_{\text{eq}}$	0.8266	$0.8267 \pm 0.0062$			
$\sigma_8$	0.8182	$0.819 \pm 0.011$	$100\theta_{s,\text{eq}}$	0.45616	$0.4562 \pm 0.0031$			

Best-fit  $\chi_{\text{eff}}^2 = 11928.99$ ;  $\bar{\chi}_{\text{eff}}^2 = 11951.65$ ;  $R - 1 = 0.01475$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.09 commander\_dx12\_v3.2\_29: 21.47 CamSpec like\_10.7HM\_1400\_unified: 11505.09 Hubble - H073p45: 3.91



**7.96 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_BAO**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02256 \pm 0.00017$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4486 \pm 0.0074$	$H(0.38)$	$85.2 \pm 1.1$
$\Omega_{\mathrm{c}}h^2$	$0.1232 \pm 0.0031$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6061 \pm 0.0085$	$D_{\mathrm{M}}(0.38)$	$1485 \pm 21$
$100\theta_{\mathrm{MC}}$	$1.04052 \pm 0.00042$	$\sigma_8/h^{0.5}$	$0.980 \pm 0.011$	$H(0.51)$	$91.9 \pm 1.2$
$\tau$	$0.0549 \pm 0.0079$	$r_{\mathrm{drag}}h$	$100.95 \pm 0.81$	$D_{\mathrm{M}}(0.51)$	$1926 \pm 27$
$N_{\mathrm{eff}}$	$3.35 \pm 0.18$	$\langle d^2 \rangle^{1/2}$	$2.407 \pm 0.025$	$H(0.61)$	$97.6 \pm 1.2$
$\ln(10^{10}A_{\mathrm{s}})$	$3.052 \pm 0.018$	$z_{\mathrm{re}}$	$7.77 \pm 0.80$	$D_{\mathrm{M}}(0.61)$	$2243 \pm 31$
$n_{\mathrm{s}}$	$0.9784 \pm 0.0062$	$10^9 A_{\mathrm{s}}$	$2.116 \pm 0.038$	$H(2.33)$	$239.8 \pm 2.6$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.896 \pm 0.017$	$D_{\mathrm{M}}(2.33)$	$5635 \pm 68$
$A_{100}^{\mathrm{PS}}$	$246 \pm 25$	$D_{40}$	$1210 \pm 13$	$f\sigma_8(0.15)$	$0.4541 \pm 0.0071$
$A_{143}^{\mathrm{PS}}$	$43 \pm 9$	$D_{220}$	$5723 \pm 39$	$\sigma_8(0.15)$	$0.758 \pm 0.010$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{810}$	$2539 \pm 14$	$f\sigma_8(0.38)$	$0.4752 \pm 0.0068$
$A_{217}^{\mathrm{CIB}}$	$42 \pm 7$	$D_{1420}$	$814.4 \pm 5.1$	$\sigma_8(0.38)$	$0.6729 \pm 0.0092$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.6}$	$D_{2000}$	$228.7 \pm 2.0$	$f\sigma_8(0.51)$	$0.4751 \pm 0.0065$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.12$	$n_{\mathrm{s},0.002}$	$0.9784 \pm 0.0062$	$\sigma_8(0.51)$	$0.6303 \pm 0.0086$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.480$	$Y_{\mathrm{P}}$	$0.2495 \pm 0.0023$	$f\sigma_8(0.61)$	$0.4710 \pm 0.0064$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2508 \pm 0.0023$	$\sigma_8(0.61)$	$0.6001 \pm 0.0083$
$A^{\mathrm{kSZ}}$	$5.2^{+3.6}_{-2.5}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.656 \pm 0.052$	$f\sigma_8(2.33)$	$0.3030 \pm 0.0042$
$A_{100}^{\mathrm{dust}}$	$1.02 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.49 \pm 0.16$	$\sigma_8(2.33)$	$0.3129 \pm 0.0045$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	$z_*$	$1090.25 \pm 0.39$	$f_{2000}^{143}$	$31.9 \pm 3.2$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$r_*$	$142.0 \pm 1.6$	$f_{2000}^{217}$	$108.3 \pm 2.2$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04050 \pm 0.00051$	$f_{2000}^{143 \times 217}$	$33.9 \pm 2.3$
$c_{100}$	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.65 \pm 0.15$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.8$
$c_{217}$	$1.0013 \pm 0.0016$	$z_{\mathrm{drag}}$	$1060.84 \pm 0.62$	$\chi_{\mathrm{lowl}}^2$	$21.73 \pm 0.74$
$c_{TE}$	$0.9987 \pm 0.0050$	$r_{\mathrm{drag}}$	$144.6 \pm 1.7$	$\chi_{\mathrm{CamSpec}}^2$	$11519.5 \pm 6.3$
$c_{EE}$	$0.9960 \pm 0.0054$	$k_{\mathrm{D}}$	$0.1426 \pm 0.0013$	$\chi_{\mathrm{H073p45}}^2$	$5.2 \pm 2.9$
$H_0$	$69.8 \pm 1.1$	$100\theta_{\mathrm{D}}$	$0.16148 \pm 0.00044$	$\chi_{6\mathrm{DF}}^2$	$0.036 \pm 0.050$
$\Omega_{\Lambda}$	$0.6998 \pm 0.0062$	$z_{\mathrm{eq}}$	$3344 \pm 24$	$\chi_{\mathrm{MGS}}^2$	$2.04 \pm 0.52$
$\Omega_{\mathrm{m}}$	$0.3002 \pm 0.0062$	$k_{\mathrm{eq}}$	$0.01042 \pm 0.00012$	$\chi_{\mathrm{DR12BAO}}^2$	$3.84 \pm 0.59$
$\Omega_{\mathrm{m}}h^2$	$0.1464 \pm 0.0032$	$100\theta_{\mathrm{eq}}$	$0.8243 \pm 0.0046$	$\chi_{\mathrm{prior}}^2$	$7.9 \pm 3.5$
$\Omega_{\mathrm{m}}h^3$	$0.1022 \pm 0.0035$	$100\theta_{\mathrm{s,eq}}$	$0.4550 \pm 0.0023$	$\chi_{\mathrm{BAO}}^2$	$5.92 \pm 0.87$
$\sigma_8$	$0.819 \pm 0.011$	$H(0.15)$	$75.1 \pm 1.1$	$\chi_{\mathrm{CMB}}^2$	$11938.4 \pm 6.2$
$S_8$	$0.819 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$621.7 \pm 9.2$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11957.32; R - 1 = 0.01940$$



**7.97 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_BAO\_Pantheon18**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02256 \pm 0.00016$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4485 \pm 0.0073$	$H(0.38)$	$85.2 \pm 1.1$
$\Omega_{\mathrm{c}}h^2$	$0.1232 \pm 0.0031$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6060 \pm 0.0085$	$D_{\mathrm{M}}(0.38)$	$1485 \pm 21$
$100\theta_{\mathrm{MC}}$	$1.04052 \pm 0.00042$	$\sigma_8/h^{0.5}$	$0.980 \pm 0.010$	$H(0.51)$	$92.0 \pm 1.1$
$\tau$	$0.0550 \pm 0.0079$	$r_{\mathrm{drag}}h$	$100.96 \pm 0.78$	$D_{\mathrm{M}}(0.51)$	$1926 \pm 26$
$N_{\mathrm{eff}}$	$3.36 \pm 0.18$	$\langle d^2 \rangle^{1/2}$	$2.406 \pm 0.024$	$H(0.61)$	$97.6 \pm 1.2$
$\ln(10^{10}A_{\mathrm{s}})$	$3.052 \pm 0.018$	$z_{\mathrm{re}}$	$7.77 \pm 0.80$	$D_{\mathrm{M}}(0.61)$	$2242 \pm 30$
$n_{\mathrm{s}}$	$0.9785 \pm 0.0061$	$10^9 A_{\mathrm{s}}$	$2.116 \pm 0.038$	$H(2.33)$	$239.8 \pm 2.6$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.896 \pm 0.017$	$D_{\mathrm{M}}(2.33)$	$5635 \pm 67$
$A_{100}^{\mathrm{PS}}$	$246 \pm 25$	$D_{40}$	$1210 \pm 13$	$f\sigma_8(0.15)$	$0.4541 \pm 0.0071$
$A_{143}^{\mathrm{PS}}$	$43 \pm 9$	$D_{220}$	$5723 \pm 39$	$\sigma_8(0.15)$	$0.758 \pm 0.010$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{810}$	$2539 \pm 14$	$f\sigma_8(0.38)$	$0.4751 \pm 0.0067$
$A_{217}^{\mathrm{CIB}}$	$42 \pm 7$	$D_{1420}$	$814.4 \pm 5.1$	$\sigma_8(0.38)$	$0.6730 \pm 0.0092$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.6}$	$D_{2000}$	$228.7 \pm 2.0$	$f\sigma_8(0.51)$	$0.4751 \pm 0.0065$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.12$	$n_{\mathrm{s},0.002}$	$0.9785 \pm 0.0061$	$\sigma_8(0.51)$	$0.6303 \pm 0.0086$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.480$	$Y_{\mathrm{P}}$	$0.2495 \pm 0.0023$	$f\sigma_8(0.61)$	$0.4710 \pm 0.0064$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2508 \pm 0.0023$	$\sigma_8(0.61)$	$0.6001 \pm 0.0083$
$A^{\mathrm{kSZ}}$	$5.2^{+3.6}_{-2.5}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.656 \pm 0.052$	$f\sigma_8(2.33)$	$0.3030 \pm 0.0042$
$A_{100}^{\mathrm{dust}}$	$1.02 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.49 \pm 0.16$	$\sigma_8(2.33)$	$0.3129 \pm 0.0045$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	$z_*$	$1090.25 \pm 0.39$	$f_{2000}^{143}$	$31.9 \pm 3.2$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$r_*$	$142.0 \pm 1.6$	$f_{2000}^{217}$	$108.3 \pm 2.2$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04050 \pm 0.00051$	$f_{2000}^{143 \times 217}$	$33.9 \pm 2.3$
$c_{100}$	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.65 \pm 0.15$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.8$
$c_{217}$	$1.0013 \pm 0.0016$	$z_{\mathrm{drag}}$	$1060.85 \pm 0.61$	$\chi_{\mathrm{lowl}}^2$	$21.73 \pm 0.72$
$c_{TE}$	$0.9987 \pm 0.0050$	$r_{\mathrm{drag}}$	$144.6 \pm 1.7$	$\chi_{\mathrm{CamSpec}}^2$	$11519.6 \pm 6.3$
$c_{EE}$	$0.9960 \pm 0.0054$	$k_{\mathrm{D}}$	$0.1426 \pm 0.0013$	$\chi_{\mathrm{H073p45}}^2$	$5.1 \pm 2.8$
$H_0$	$69.8 \pm 1.0$	$100\theta_{\mathrm{D}}$	$0.16149 \pm 0.00044$	$\chi_{\mathrm{JLA}}^2$	$1034.81 \pm 0.11$
$\Omega_{\Lambda}$	$0.6999 \pm 0.0059$	$z_{\mathrm{eq}}$	$3344 \pm 23$	$\chi_{6\mathrm{DF}}^2$	$0.035 \pm 0.048$
$\Omega_{\mathrm{m}}$	$0.3001 \pm 0.0059$	$k_{\mathrm{eq}}$	$0.01041 \pm 0.00012$	$\chi_{\mathrm{MGS}}^2$	$2.05 \pm 0.51$
$\Omega_{\mathrm{m}}h^2$	$0.1464 \pm 0.0032$	$100\theta_{\mathrm{eq}}$	$0.8243 \pm 0.0044$	$\chi_{\mathrm{DR12BAO}}^2$	$3.81 \pm 0.55$
$\Omega_{\mathrm{m}}h^3$	$0.1023 \pm 0.0035$	$100\theta_{\mathrm{s,eq}}$	$0.4550 \pm 0.0022$	$\chi_{\mathrm{prior}}^2$	$7.9 \pm 3.5$
$\sigma_8$	$0.819 \pm 0.011$	$H(0.15)$	$75.1 \pm 1.1$	$\chi_{\mathrm{BAO}}^2$	$5.90 \pm 0.84$
$S_8$	$0.819 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$621.6 \pm 9.1$	$\chi_{\mathrm{CMB}}^2$	$11938.4 \pm 6.2$

$$\bar{\chi}_{\mathrm{eff}}^2 = 12992.06; R - 1 = 0.01918$$



**7.98 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_lensing**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02259 \pm 0.00018$	$S_8$	$0.820 \pm 0.012$	$H(0.15)$	$75.2 \pm 1.2$
$\Omega_{\mathrm{c}}h^2$	$0.1231 \pm 0.0029$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4489 \pm 0.0068$	$D_{\mathrm{M}}(0.15)$	$621 \pm 10$
$100\theta_{\mathrm{MC}}$	$1.04053 \pm 0.00041$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6071 \pm 0.0072$	$H(0.38)$	$85.3 \pm 1.2$
$\tau$	$0.0576 \pm 0.0078$	$\sigma_8/h^{0.5}$	$0.9815 \pm 0.0089$	$D_{\mathrm{M}}(0.38)$	$1483 \pm 23$
$N_{\mathrm{eff}}$	$3.36 \pm 0.18$	$r_{\mathrm{drag}}h$	$101.1 \pm 1.0$	$H(0.51)$	$92.0 \pm 1.2$
$\ln(10^{10}A_{\mathrm{s}})$	$3.058 \pm 0.016$	$\langle d^2 \rangle^{1/2}$	$2.411 \pm 0.022$	$D_{\mathrm{M}}(0.51)$	$1923 \pm 29$
$n_{\mathrm{s}}$	$0.9788 \pm 0.0068$	$z_{\mathrm{re}}$	$8.04 \pm 0.77$	$H(0.61)$	$97.7 \pm 1.3$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0025$	$10^9 A_{\mathrm{s}}$	$2.129 \pm 0.035$	$D_{\mathrm{M}}(0.61)$	$2240 \pm 34$
$A_{100}^{\mathrm{PS}}$	$247 \pm 25$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.897 \pm 0.016$	$H(2.33)$	$239.8 \pm 2.5$
$A_{143}^{\mathrm{PS}}$	$43 \pm 9$	$D_{40}$	$1211 \pm 13$	$D_{\mathrm{M}}(2.33)$	$5631 \pm 70$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{220}$	$5731 \pm 39$	$f\sigma_8(0.15)$	$0.4545 \pm 0.0064$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{810}$	$2541 \pm 14$	$\sigma_8(0.15)$	$0.7598 \pm 0.0091$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.6}$	$D_{1420}$	$815.0 \pm 5.1$	$f\sigma_8(0.38)$	$0.4759 \pm 0.0058$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.12$	$D_{2000}$	$228.9 \pm 2.0$	$\sigma_8(0.38)$	$0.6749 \pm 0.0084$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.473$	$n_{\mathrm{s},0.002}$	$0.9788 \pm 0.0068$	$f\sigma_8(0.51)$	$0.4760 \pm 0.0055$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.2496 \pm 0.0023$	$\sigma_8(0.51)$	$0.6322 \pm 0.0081$
$A^{\mathrm{kSZ}}$	$5.1^{+3.5}_{-2.7}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2509 \pm 0.0023$	$f\sigma_8(0.61)$	$0.4720 \pm 0.0053$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$10^5 \mathrm{D}/\mathrm{H}$	$2.653 \pm 0.051$	$\sigma_8(0.61)$	$0.6019 \pm 0.0078$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.17$	$\mathrm{Age}/\mathrm{Gyr}$	$13.48 \pm 0.17$	$f\sigma_8(2.33)$	$0.3040 \pm 0.0041$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$z_*$	$1090.22 \pm 0.38$	$\sigma_8(2.33)$	$0.3140 \pm 0.0044$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$r_*$	$142.0 \pm 1.6$	$f_{2000}^{143}$	$31.8 \pm 3.2$
$c_{100}$	$0.9976 \pm 0.0010$	$100\theta_*$	$1.04050 \pm 0.00050$	$f_{2000}^{217}$	$108.3 \pm 2.2$
$c_{217}$	$1.0013 \pm 0.0016$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.64 \pm 0.15$	$f_{2000}^{143 \times 217}$	$33.8 \pm 2.3$
$c_{TE}$	$0.9986 \pm 0.0050$	$z_{\mathrm{drag}}$	$1060.90 \pm 0.64$	$\chi_{\mathrm{lensing}}^2$	$9.92 \pm 0.96$
$c_{EE}$	$0.9962 \pm 0.0054$	$r_{\mathrm{drag}}$	$144.5 \pm 1.7$	$\chi_{\mathrm{simall}}^2$	$397.5 \pm 2.1$
$H_0$	$70.0 \pm 1.2$	$k_{\mathrm{D}}$	$0.1426 \pm 0.0012$	$\chi_{\mathrm{lowl}}^2$	$21.79 \pm 0.80$
$\Omega_{\Lambda}$	$0.7009 \pm 0.0078$	$100\theta_{\mathrm{D}}$	$0.16148 \pm 0.00043$	$\chi_{\mathrm{CamSpec}}^2$	$11519.4 \pm 6.4$
$\Omega_{\mathrm{m}}$	$0.2991 \pm 0.0078$	$z_{\mathrm{eq}}$	$3341 \pm 29$	$\chi_{\mathrm{H073p45}}^2$	$5.0 \pm 3.2$
$\Omega_{\mathrm{m}}h^2$	$0.1463 \pm 0.0030$	$k_{\mathrm{eq}}$	$0.01041 \pm 0.00011$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.5$
$\Omega_{\mathrm{m}}h^3$	$0.1024 \pm 0.0036$	$100\theta_{\mathrm{eq}}$	$0.8251 \pm 0.0057$	$\chi_{\mathrm{CMB}}^2$	$11948.6 \pm 6.6$
$\sigma_8$	$0.8209 \pm 0.0096$	$100\theta_{\mathrm{s,eq}}$	$0.4553 \pm 0.0029$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11961.40; R - 1 = 0.02109$$



**7.99 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_BAO\_lensing**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02255 \pm 0.00016$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4501 \pm 0.0060$	$H(0.38)$	$85.1 \pm 1.1$
$\Omega_{\mathrm{c}} h^2$	$0.1230 \pm 0.0030$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.6076 \pm 0.0070$	$D_{\mathrm{M}}(0.38)$	$1488 \pm 21$
$100\theta_{\mathrm{MC}}$	$1.04053 \pm 0.00042$	$\sigma_8/h^{0.5}$	$0.9826 \pm 0.0084$	$H(0.51)$	$91.8 \pm 1.1$
$\tau$	$0.0568 \pm 0.0074$	$r_{\mathrm{drag}} h$	$100.82 \pm 0.78$	$D_{\mathrm{M}}(0.51)$	$1929 \pm 26$
$N_{\mathrm{eff}}$	$3.34 \pm 0.17$	$\langle d^2 \rangle^{1/2}$	$2.415 \pm 0.020$	$H(0.61)$	$97.5 \pm 1.2$
$\ln(10^{10} A_{\mathrm{s}})$	$3.056 \pm 0.016$	$z_{\mathrm{re}}$	$7.96 \pm 0.74$	$D_{\mathrm{M}}(0.61)$	$2246 \pm 30$
$n_{\mathrm{s}}$	$0.9775 \pm 0.0061$	$10^9 A_{\mathrm{s}}$	$2.125 \pm 0.033$	$H(2.33)$	$239.7 \pm 2.5$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.897 \pm 0.016$	$D_{\mathrm{M}}(2.33)$	$5642 \pm 67$
$A_{100}^{\mathrm{PS}}$	$246 \pm 25$	$D_{40}$	$1213 \pm 12$	$f\sigma_8(0.15)$	$0.4556 \pm 0.0058$
$A_{143}^{\mathrm{PS}}$	$43 \pm 9$	$D_{220}$	$5729 \pm 39$	$\sigma_8(0.15)$	$0.7590 \pm 0.0089$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{810}$	$2540 \pm 14$	$f\sigma_8(0.38)$	$0.4765 \pm 0.0055$
$A_{217}^{\mathrm{CIB}}$	$41_{-8}^{+7}$	$D_{1420}$	$814.9 \pm 5.1$	$\sigma_8(0.38)$	$0.6740 \pm 0.0082$
$A_{143}^{\mathrm{tSZ}}$	$3.7_{-2.6}^{+1.7}$	$D_{2000}$	$229.0 \pm 2.0$	$f\sigma_8(0.51)$	$0.4763 \pm 0.0054$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.12$	$n_{\mathrm{s},0.002}$	$0.9775 \pm 0.0061$	$\sigma_8(0.51)$	$0.6312 \pm 0.0077$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.471$	$Y_{\mathrm{P}}$	$0.2493 \pm 0.0022$	$f\sigma_8(0.61)$	$0.4721 \pm 0.0053$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2506 \pm 0.0023$	$\sigma_8(0.61)$	$0.6009 \pm 0.0074$
$A^{\mathrm{kSZ}}$	$5.1_{-2.8}^{+3.4}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.652 \pm 0.051$	$f\sigma_8(2.33)$	$0.3034 \pm 0.0039$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.51 \pm 0.16$	$\sigma_8(2.33)$	$0.3133 \pm 0.0041$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.17$	$z_*$	$1090.23 \pm 0.38$	$f_{2000}^{143}$	$31.7 \pm 3.2$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$r_*$	$142.1 \pm 1.6$	$f_{2000}^{217}$	$108.2 \pm 2.2$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04052 \pm 0.00050$	$f_{2000}^{143 \times 217}$	$33.7 \pm 2.3$
$c_{100}$	$0.9976 \pm 0.0010$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.66 \pm 0.15$	$\chi_{\mathrm{lensing}}^2$	$9.80 \pm 0.83$
$c_{217}$	$1.0013 \pm 0.0016$	$z_{\mathrm{drag}}$	$1060.80 \pm 0.60$	$\chi_{\mathrm{simall}}^2$	$397.3 \pm 1.9$
$c_{TE}$	$0.9985 \pm 0.0050$	$r_{\mathrm{drag}}$	$144.7 \pm 1.6$	$\chi_{\mathrm{lowl}}^2$	$21.90 \pm 0.76$
$c_{EE}$	$0.9959 \pm 0.0054$	$k_{\mathrm{D}}$	$0.1425 \pm 0.0012$	$\chi_{\mathrm{CamSpec}}^2$	$11518.7 \pm 6.2$
$H_0$	$69.7 \pm 1.1$	$100\theta_{\mathrm{D}}$	$0.16144 \pm 0.00043$	$\chi_{\mathrm{H073p45}}^2$	$5.5 \pm 2.9$
$\Omega_{\Lambda}$	$0.6988 \pm 0.0060$	$z_{\mathrm{eq}}$	$3348 \pm 23$	$\chi_{6\mathrm{DF}}^2$	$0.030 \pm 0.042$
$\Omega_{\mathrm{m}}$	$0.3012 \pm 0.0060$	$k_{\mathrm{eq}}$	$0.01042 \pm 0.00011$	$\chi_{\mathrm{MGS}}^2$	$1.96 \pm 0.49$
$\Omega_{\mathrm{m}} h^2$	$0.1462 \pm 0.0030$	$100\theta_{\mathrm{eq}}$	$0.8235 \pm 0.0044$	$\chi_{\mathrm{DR12BAO}}^2$	$3.81 \pm 0.55$
$\Omega_{\mathrm{m}} h^3$	$0.1019 \pm 0.0034$	$100\theta_{\mathrm{s,eq}}$	$0.4546 \pm 0.0022$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.5$
$\sigma_8$	$0.8203 \pm 0.0095$	$H(0.15)$	$75.0 \pm 1.1$	$\chi_{\mathrm{CMB}}^2$	$11947.7 \pm 6.3$
$S_8$	$0.822 \pm 0.011$	$D_{\mathrm{M}}(0.15)$	$622.9 \pm 9.2$	$\chi_{\mathrm{BAO}}^2$	$5.80 \pm 0.73$

$$\bar{\chi}_{\mathrm{eff}}^2 = 11966.84; R - 1 = 0.02276$$



**7.100 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_BAO\_lensing\_Pantheon18**

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022562	$0.02256 \pm 0.00016$	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6075	$0.6076 \pm 0.0070$	$H(0.51)$	91.85	$91.8 \pm 1.1$
$\Omega_{\text{c}}h^2$	0.12317	$0.1231 \pm 0.0030$	$\sigma_8/h^{0.5}$	0.9821	$0.9826 \pm 0.0083$	$D_{\text{M}}(0.51)$	1928.3	$1929 \pm 26$
$100\theta_{\text{MC}}$	1.040535	$1.04053 \pm 0.00041$	$r_{\text{drag}}h$	100.81	$100.84 \pm 0.75$	$H(0.61)$	97.50	$97.5 \pm 1.2$
$\tau$	0.0560	$0.0569 \pm 0.0074$	$\langle d^2 \rangle^{1/2}$	2.4134	$2.415 \pm 0.020$	$D_{\text{M}}(0.61)$	2245.2	$2246 \pm 30$
$N_{\text{eff}}$	3.343	$3.34 \pm 0.17$	$z_{\text{re}}$	7.90	$7.97 \pm 0.73$	$H(2.33)$	239.78	$239.7 \pm 2.5$
$\ln(10^{10}A_{\text{s}})$	3.0548	$3.056 \pm 0.015$	$10^9 A_{\text{s}}$	2.1216	$2.125 \pm 0.033$	$D_{\text{M}}(2.33)$	5639	$5641 \pm 66$
$n_{\text{s}}$	0.9775	$0.9776 \pm 0.0061$	$10^9 A_{\text{s}}e^{-2\tau}$	1.8967	$1.897 \pm 0.016$	$f\sigma_8(0.15)$	0.4555	$0.4555 \pm 0.0058$
$y_{\text{cal}}$	1.00059	$1.0007 \pm 0.0025$	$D_{40}$	1212.5	$1213 \pm 12$	$\sigma_8(0.15)$	0.7587	$0.7591 \pm 0.0089$
$A_{100}^{\text{PS}}$	245.5	$246 \pm 25$	$D_{220}$	5727.4	$5729 \pm 39$	$f\sigma_8(0.38)$	0.4763	$0.4764 \pm 0.0055$
$A_{143}^{\text{PS}}$	40.5	$43 \pm 9$	$D_{810}$	2539.4	$2540 \pm 14$	$\sigma_8(0.38)$	0.6737	$0.6741 \pm 0.0081$
$A_{217}^{\text{PS}}$	99.2	$101 \pm 10$	$D_{1420}$	814.6	$814.9 \pm 5.1$	$f\sigma_8(0.51)$	0.4762	$0.4763 \pm 0.0054$
$A_{217}^{\text{CIB}}$	45.0	$41_{-8}^{+7}$	$D_{2000}$	228.83	$229.0 \pm 2.0$	$\sigma_8(0.51)$	0.6309	$0.6313 \pm 0.0077$
$A_{143}^{\text{tSZ}}$	5.07	$3.7_{-2.6}^{+1.7}$	$n_{\text{s},0.002}$	0.9775	$0.9776 \pm 0.0061$	$f\sigma_8(0.61)$	0.4720	$0.4721 \pm 0.0053$
$r_{143 \times 217}^{\text{PS}}$	0.557	$0.65 \pm 0.12$	$Y_{\text{P}}$	0.24936	$0.2493 \pm 0.0022$	$\sigma_8(0.61)$	0.6007	$0.6010 \pm 0.0074$
$r_{143 \times 217}^{\text{CIB}}$	0.730	$> 0.470$	$Y_{\text{P}}^{\text{BBN}}$	0.25070	$0.2506 \pm 0.0022$	$f\sigma_8(2.33)$	0.30324	$0.3034 \pm 0.0038$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.02	—	$10^5 D/H$	2.652	$2.652 \pm 0.051$	$\sigma_8(2.33)$	0.31312	$0.3133 \pm 0.0041$
$A^{\text{kSZ}}$	2.66	$5.1_{-2.8}^{+3.4}$	Age/Gyr	13.503	$13.51 \pm 0.16$	$f_{2000}^{143}$	32.12	$31.7 \pm 3.2$
$A_{100}^{\text{dust}}$	1.018	$1.01 \pm 0.20$	$z_*$	1090.239	$1090.23 \pm 0.38$	$f_{2000}^{217}$	108.40	$108.2 \pm 2.2$
$A_{143}^{\text{dust}}$	0.976	$0.96 \pm 0.17$	$r_*$	142.04	$142.1 \pm 1.6$	$f_{2000}^{143 \times 217}$	33.80	$33.7 \pm 2.3$
$A_{217}^{\text{dust}}$	0.965	$0.97 \pm 0.10$	$100\theta_*$	1.04052	$1.04051 \pm 0.00050$	$\chi_{\text{lensing}}^2$	9.46	$9.80 \pm 0.83$
$A_{143 \times 217}^{\text{dust}}$	1.004	$1.03 \pm 0.16$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.651	$13.66 \pm 0.15$	$\chi_{\text{small}}^2$	396.28	$397.3 \pm 1.9$
$c_{100}$	0.99758	$0.9976 \pm 0.0010$	$z_{\text{drag}}$	1060.85	$1060.81 \pm 0.60$	$\chi_{\text{lowl}}^2$	21.82	$21.89 \pm 0.75$
$c_{217}$	1.00150	$1.0013 \pm 0.0016$	$r_{\text{drag}}$	144.61	$144.7 \pm 1.6$	$\chi_{\text{CamSpec}}^2$	11503.8	$11518.7 \pm 6.2$
$c_{TE}$	0.9983	$0.9985 \pm 0.0050$	$k_{\text{D}}$	0.14254	$0.1425 \pm 0.0012$	$\chi_{\text{H073p45}}^2$	5.08	$5.5 \pm 2.9$
$c_{EE}$	0.9957	$0.9959 \pm 0.0054$	$100\theta_{\text{D}}$	0.161447	$0.16144 \pm 0.00043$	$\chi_{\text{JLA}}^2$	1034.7450	$1034.81 \pm 0.11$
$H_0$	69.71	$69.7 \pm 1.0$	$z_{\text{eq}}$	3349.1	$3348 \pm 22$	$\chi_{6\text{DF}}^2$	0.0041	$0.029 \pm 0.040$
$\Omega_{\Lambda}$	0.6988	$0.6990 \pm 0.0058$	$k_{\text{eq}}$	0.010423	$0.01042 \pm 0.00011$	$\chi_{\text{MGS}}^2$	1.892	$1.97 \pm 0.48$
$\Omega_{\text{m}}$	0.3012	$0.3010 \pm 0.0058$	$100\theta_{\text{eq}}$	0.82337	$0.8237 \pm 0.0042$	$\chi_{\text{DR12BAO}}^2$	3.432	$3.79 \pm 0.52$
$\Omega_{\text{m}}h^2$	0.14637	$0.1463 \pm 0.0030$	$100\theta_{\text{s,eq}}$	0.45449	$0.4546 \pm 0.0021$	$\chi_{\text{prior}}^2$	2.36	$7.8 \pm 3.5$
$\Omega_{\text{m}}h^3$	0.10204	$0.1020 \pm 0.0034$	$H(0.15)$	74.98	$75.0 \pm 1.0$	$\chi_{\text{CMB}}^2$	11931.3	$11947.7 \pm 6.3$
$\sigma_8$	0.8200	$0.8203 \pm 0.0095$	$D_{\text{M}}(0.15)$	622.6	$622.8 \pm 9.0$	$\chi_{\text{BAO}}^2$	5.328	$5.79 \pm 0.70$
$S_8$	0.8216	$0.822 \pm 0.011$	$H(0.38)$	85.11	$85.1 \pm 1.1$			
$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4500	$0.4501 \pm 0.0060$	$D_{\text{M}}(0.38)$	1487.3	$1488 \pm 21$			

Best-fit  $\chi_{\text{eff}}^2 = 12978.85$ ;  $\bar{\chi}_{\text{eff}}^2 = 13001.59$ ;  $R - 1 = 0.02251$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.89 DR12BAO: 3.43 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 9.46 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.28 commander\_dx12\_v3\_2\_29: 21.82 CamSpec like\_10.7HM\_1400\_unified: 11503.77 Hubble - H073p45: 5.08 SN - JLA Pantheon18: 1034.74



**7.101 base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02261 \pm 0.00018$	$S_8$	$0.815 \pm 0.015$	$H(0.15)$	$75.5 \pm 1.2$
$\Omega_{\mathrm{c}}h^2$	$0.1231 \pm 0.0031$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4464 \pm 0.0085$	$D_{\mathrm{M}}(0.15)$	$618 \pm 10$
$100\theta_{\mathrm{MC}}$	$1.04054 \pm 0.00042$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6048 \pm 0.0089$	$H(0.38)$	$85.6 \pm 1.2$
$\tau$	$0.0565^{+0.0060}_{-0.0083}$	$\sigma_8/h^{0.5}$	$0.978 \pm 0.011$	$D_{\mathrm{M}}(0.38)$	$1478 \pm 23$
$N_{\mathrm{eff}}$	$3.38 \pm 0.18$	$r_{\mathrm{drag}}h$	$101.4 \pm 1.1$	$H(0.51)$	$92.3 \pm 1.2$
$\ln(10^{10}A_{\mathrm{s}})$	$3.055^{+0.015}_{-0.018}$	$\langle d^2 \rangle^{1/2}$	$2.401 \pm 0.027$	$D_{\mathrm{M}}(0.51)$	$1917 \pm 30$
$n_{\mathrm{s}}$	$0.9805 \pm 0.0069$	$z_{\mathrm{re}}$	$7.92^{+0.65}_{-0.81}$	$H(0.61)$	$97.9 \pm 1.3$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$10^9 A_{\mathrm{s}}$	$2.123^{+0.031}_{-0.039}$	$D_{\mathrm{M}}(0.61)$	$2233 \pm 34$
$A_{100}^{\mathrm{PS}}$	$247 \pm 25$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.896 \pm 0.017$	$H(2.33)$	$239.9 \pm 2.6$
$A_{143}^{\mathrm{PS}}$	$43 \pm 9$	$D_{40}$	$1207 \pm 14$	$D_{\mathrm{M}}(2.33)$	$5620 \pm 70$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{220}$	$5726 \pm 39$	$f\sigma_8(0.15)$	$0.4522 \pm 0.0081$
$A_{217}^{\mathrm{CIB}}$	$42 \pm 7$	$D_{810}$	$2539 \pm 14$	$\sigma_8(0.15)$	$0.7588 \pm 0.0099$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.6}$	$D_{1420}$	$814.5 \pm 5.1$	$f\sigma_8(0.38)$	$0.4740 \pm 0.0072$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.12$	$D_{2000}$	$228.7 \pm 2.0$	$\sigma_8(0.38)$	$0.6742 \pm 0.0090$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.481$	$n_{\mathrm{s},0.002}$	$0.9805 \pm 0.0069$	$f\sigma_8(0.51)$	$0.4744 \pm 0.0067$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.2499 \pm 0.0023$	$\sigma_8(0.51)$	$0.6317 \pm 0.0085$
$A^{\mathrm{kSZ}}$	$5.2^{+3.8}_{-2.3}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2512 \pm 0.0023$	$f\sigma_8(0.61)$	$0.4706 \pm 0.0064$
$A_{100}^{\mathrm{dust}}$	$1.02 \pm 0.20$	$10^5 \mathrm{D}/\mathrm{H}$	$2.657 \pm 0.051$	$\sigma_8(0.61)$	$0.6015 \pm 0.0081$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.18$	$\mathrm{Age}/\mathrm{Gyr}$	$13.46 \pm 0.17$	$f\sigma_8(2.33)$	$0.3038 \pm 0.0042$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$z_*$	$1090.21 \pm 0.39$	$\sigma_8(2.33)$	$0.3140 \pm 0.0045$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$r_*$	$141.8 \pm 1.6$	$f_{2000}^{143}$	$32.0 \pm 3.3$
$c_{100}$	$0.9975 \pm 0.0011$	$100\theta_*$	$1.04049 \pm 0.00050$	$f_{2000}^{217}$	$108.4 \pm 2.2$
$c_{217}$	$1.0013 \pm 0.0016$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.63 \pm 0.15$	$f_{2000}^{143 \times 217}$	$33.9 \pm 2.3$
$c_{TE}$	$0.9989 \pm 0.0050$	$z_{\mathrm{drag}}$	$1060.98 \pm 0.64$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.9$
$c_{EE}$	$0.9965 \pm 0.0055$	$r_{\mathrm{drag}}$	$144.4 \pm 1.7$	$\chi_{\mathrm{lowl}}^2$	$21.54 \pm 0.77$
$H_0$	$70.2 \pm 1.2$	$k_{\mathrm{D}}$	$0.1427 \pm 0.0013$	$\chi_{\mathrm{CamSpec}}^2$	$11520.6 \pm 6.6$
$\Omega_{\Lambda}$	$0.7032 \pm 0.0082$	$100\theta_{\mathrm{D}}$	$0.16153 \pm 0.00044$	$\chi_{\mathrm{H073p45}}^2$	$4.3 \pm 3.0$
$\Omega_{\mathrm{m}}$	$0.2968 \pm 0.0082$	$z_{\mathrm{eq}}$	$3332 \pm 31$	$\chi_{\mathrm{prior}}^2$	$7.9 \pm 3.5$
$\Omega_{\mathrm{m}}h^2$	$0.1464 \pm 0.0031$	$k_{\mathrm{eq}}$	$0.01040 \pm 0.00012$	$\chi_{\mathrm{CMB}}^2$	$11939.3 \pm 6.4$
$\Omega_{\mathrm{m}}h^3$	$0.1029 \pm 0.0036$	$100\theta_{\mathrm{eq}}$	$0.8268 \pm 0.0061$		
$\sigma_8$	$0.819 \pm 0.011$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4563 \pm 0.0031$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11951.46; R - 1 = 0.01420$$



**7.102**    **base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_BAO\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02256 \pm 0.00017$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4489 \pm 0.0073$	$H(0.38)$	$85.2 \pm 1.1$
$\Omega_{\mathrm{c}}h^2$	$0.1232 \pm 0.0031$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6065 \pm 0.0083$	$D_{\mathrm{M}}(0.38)$	$1485 \pm 21$
$100\theta_{\mathrm{MC}}$	$1.04052 \pm 0.00042$	$\sigma_8/h^{0.5}$	$0.981 \pm 0.010$	$H(0.51)$	$92.0 \pm 1.2$
$\tau$	$0.0559^{+0.0057}_{-0.0082}$	$r_{\mathrm{drag}}h$	$100.97 \pm 0.81$	$D_{\mathrm{M}}(0.51)$	$1926 \pm 27$
$N_{\mathrm{eff}}$	$3.35 \pm 0.18$	$\langle d^2 \rangle^{1/2}$	$2.408 \pm 0.024$	$H(0.61)$	$97.6 \pm 1.2$
$\ln(10^{10}A_{\mathrm{s}})$	$3.054^{+0.015}_{-0.018}$	$z_{\mathrm{re}}$	$7.87^{+0.63}_{-0.82}$	$D_{\mathrm{M}}(0.61)$	$2242 \pm 31$
$n_{\mathrm{s}}$	$0.9786 \pm 0.0062$	$10^9 A_{\mathrm{s}}$	$2.120^{+0.031}_{-0.038}$	$H(2.33)$	$239.8 \pm 2.6$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.896 \pm 0.017$	$D_{\mathrm{M}}(2.33)$	$5635 \pm 68$
$A_{100}^{\mathrm{PS}}$	$246 \pm 25$	$D_{40}$	$1210 \pm 13$	$f\sigma_8(0.15)$	$0.4544 \pm 0.0070$
$A_{143}^{\mathrm{PS}}$	$43 \pm 9$	$D_{220}$	$5723 \pm 39$	$\sigma_8(0.15)$	$0.7584 \pm 0.0099$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{810}$	$2539 \pm 14$	$f\sigma_8(0.38)$	$0.4756 \pm 0.0066$
$A_{217}^{\mathrm{CIB}}$	$42 \pm 7$	$D_{1420}$	$814.4 \pm 5.1$	$\sigma_8(0.38)$	$0.6736 \pm 0.0089$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.6}$	$D_{2000}$	$228.8 \pm 2.0$	$f\sigma_8(0.51)$	$0.4755 \pm 0.0064$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.12$	$n_{\mathrm{s},0.002}$	$0.9786 \pm 0.0062$	$\sigma_8(0.51)$	$0.6309 \pm 0.0084$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.478$	$Y_{\mathrm{P}}$	$0.2495 \pm 0.0023$	$f\sigma_8(0.61)$	$0.4714 \pm 0.0062$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2508 \pm 0.0023$	$\sigma_8(0.61)$	$0.6006 \pm 0.0080$
$A^{\mathrm{kSZ}}$	$5.2^{+3.6}_{-2.6}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.655 \pm 0.052$	$f\sigma_8(2.33)$	$0.3033 \pm 0.0041$
$A_{100}^{\mathrm{dust}}$	$1.02 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.49 \pm 0.16$	$\sigma_8(2.33)$	$0.3132 \pm 0.0043$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	$z_*$	$1090.25 \pm 0.39$	$f_{2000}^{143}$	$31.8 \pm 3.2$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$r_*$	$142.0 \pm 1.6$	$f_{2000}^{217}$	$108.3 \pm 2.2$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04050 \pm 0.00051$	$f_{2000}^{143 \times 217}$	$33.8 \pm 2.3$
$c_{100}$	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.65 \pm 0.15$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.8$
$c_{217}$	$1.0013 \pm 0.0016$	$z_{\mathrm{drag}}$	$1060.85 \pm 0.62$	$\chi_{\mathrm{lowl}}^2$	$21.74 \pm 0.74$
$c_{TE}$	$0.9986 \pm 0.0050$	$r_{\mathrm{drag}}$	$144.6 \pm 1.7$	$\chi_{\mathrm{CamSpec}}^2$	$11519.4 \pm 6.3$
$c_{EE}$	$0.9960 \pm 0.0054$	$k_{\mathrm{D}}$	$0.1426 \pm 0.0013$	$\chi_{\mathrm{H073p45}}^2$	$5.1 \pm 2.9$
$H_0$	$69.8 \pm 1.1$	$100\theta_{\mathrm{D}}$	$0.16148 \pm 0.00044$	$\chi_{6\mathrm{DF}}^2$	$0.037 \pm 0.050$
$\Omega_{\Lambda}$	$0.6999 \pm 0.0061$	$z_{\mathrm{eq}}$	$3344 \pm 24$	$\chi_{\mathrm{MGS}}^2$	$2.05 \pm 0.52$
$\Omega_{\mathrm{m}}$	$0.3001 \pm 0.0061$	$k_{\mathrm{eq}}$	$0.01041 \pm 0.00012$	$\chi_{\mathrm{DR12BAO}}^2$	$3.84 \pm 0.59$
$\Omega_{\mathrm{m}}h^2$	$0.1464 \pm 0.0032$	$100\theta_{\mathrm{eq}}$	$0.8244 \pm 0.0045$	$\chi_{\mathrm{prior}}^2$	$7.9 \pm 3.5$
$\Omega_{\mathrm{m}}h^3$	$0.1023 \pm 0.0035$	$100\theta_{\mathrm{s,eq}}$	$0.4550 \pm 0.0023$	$\chi_{\mathrm{BAO}}^2$	$5.93 \pm 0.88$
$\sigma_8$	$0.820 \pm 0.011$	$H(0.15)$	$75.1 \pm 1.1$	$\chi_{\mathrm{CMB}}^2$	$11938.2 \pm 6.2$
$S_8$	$0.820 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$621.6 \pm 9.2$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11957.12; R - 1 = 0.01923$$



**7.103**    **base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_BAO\_Pantheon18\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02257 \pm 0.00016$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4489 \pm 0.0072$	$H(0.38)$	$85.2 \pm 1.1$
$\Omega_{\mathrm{c}}h^2$	$0.1232 \pm 0.0031$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6065 \pm 0.0083$	$D_{\mathrm{M}}(0.38)$	$1485 \pm 21$
$100\theta_{\mathrm{MC}}$	$1.04052 \pm 0.00042$	$\sigma_8/h^{0.5}$	$0.981 \pm 0.010$	$H(0.51)$	$92.0 \pm 1.1$
$\tau$	$0.0559^{+0.0057}_{-0.0082}$	$r_{\mathrm{drag}}h$	$100.98 \pm 0.78$	$D_{\mathrm{M}}(0.51)$	$1925 \pm 26$
$N_{\mathrm{eff}}$	$3.36 \pm 0.18$	$\langle d^2 \rangle^{1/2}$	$2.408 \pm 0.023$	$H(0.61)$	$97.6 \pm 1.2$
$\ln(10^{10}A_{\mathrm{s}})$	$3.054^{+0.015}_{-0.018}$	$z_{\mathrm{re}}$	$7.87^{+0.63}_{-0.82}$	$D_{\mathrm{M}}(0.61)$	$2242 \pm 30$
$n_{\mathrm{s}}$	$0.9786 \pm 0.0061$	$10^9 A_{\mathrm{s}}$	$2.120^{+0.031}_{-0.038}$	$H(2.33)$	$239.8 \pm 2.6$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.896 \pm 0.017$	$D_{\mathrm{M}}(2.33)$	$5634 \pm 67$
$A_{100}^{\mathrm{PS}}$	$246 \pm 25$	$D_{40}$	$1210 \pm 13$	$f\sigma_8(0.15)$	$0.4544 \pm 0.0070$
$A_{143}^{\mathrm{PS}}$	$43 \pm 9$	$D_{220}$	$5723 \pm 39$	$\sigma_8(0.15)$	$0.7585 \pm 0.0099$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{810}$	$2539 \pm 14$	$f\sigma_8(0.38)$	$0.4755 \pm 0.0066$
$A_{217}^{\mathrm{CIB}}$	$42 \pm 7$	$D_{1420}$	$814.5 \pm 5.1$	$\sigma_8(0.38)$	$0.6736 \pm 0.0089$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.6}$	$D_{2000}$	$228.8 \pm 2.0$	$f\sigma_8(0.51)$	$0.4755 \pm 0.0064$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.12$	$n_{\mathrm{s},0.002}$	$0.9786 \pm 0.0061$	$\sigma_8(0.51)$	$0.6309 \pm 0.0083$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.478$	$Y_{\mathrm{P}}$	$0.2495 \pm 0.0023$	$f\sigma_8(0.61)$	$0.4714 \pm 0.0062$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2508 \pm 0.0023$	$\sigma_8(0.61)$	$0.6007 \pm 0.0080$
$A^{\mathrm{kSZ}}$	$5.2^{+3.6}_{-2.6}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.656 \pm 0.052$	$f\sigma_8(2.33)$	$0.3033 \pm 0.0041$
$A_{100}^{\mathrm{dust}}$	$1.02 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.49 \pm 0.16$	$\sigma_8(2.33)$	$0.3132 \pm 0.0043$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	$z_*$	$1090.24 \pm 0.39$	$f_{2000}^{143}$	$31.8 \pm 3.2$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$r_*$	$142.0 \pm 1.6$	$f_{2000}^{217}$	$108.3 \pm 2.2$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04049 \pm 0.00051$	$f_{2000}^{143 \times 217}$	$33.8 \pm 2.3$
$c_{100}$	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.65 \pm 0.15$	$\chi_{\mathrm{small}}^2$	$397.0 \pm 1.8$
$c_{217}$	$1.0013 \pm 0.0016$	$z_{\mathrm{drag}}$	$1060.85 \pm 0.61$	$\chi_{\mathrm{lowl}}^2$	$21.73 \pm 0.73$
$c_{TE}$	$0.9986 \pm 0.0050$	$r_{\mathrm{drag}}$	$144.6 \pm 1.7$	$\chi_{\mathrm{CamSpec}}^2$	$11519.4 \pm 6.3$
$c_{EE}$	$0.9960 \pm 0.0054$	$k_{\mathrm{D}}$	$0.1426 \pm 0.0013$	$\chi_{\mathrm{H073p45}}^2$	$5.1 \pm 2.8$
$H_0$	$69.9 \pm 1.0$	$100\theta_{\mathrm{D}}$	$0.16148 \pm 0.00044$	$\chi_{\mathrm{JLA}}^2$	$1034.81 \pm 0.11$
$\Omega_{\Lambda}$	$0.7000 \pm 0.0059$	$z_{\mathrm{eq}}$	$3344 \pm 23$	$\chi_{6\mathrm{DF}}^2$	$0.035 \pm 0.048$
$\Omega_{\mathrm{m}}$	$0.3000 \pm 0.0059$	$k_{\mathrm{eq}}$	$0.01041 \pm 0.00012$	$\chi_{\mathrm{MGS}}^2$	$2.06 \pm 0.50$
$\Omega_{\mathrm{m}}h^2$	$0.1464 \pm 0.0032$	$100\theta_{\mathrm{eq}}$	$0.8244 \pm 0.0044$	$\chi_{\mathrm{DR12BAO}}^2$	$3.81 \pm 0.55$
$\Omega_{\mathrm{m}}h^3$	$0.1023 \pm 0.0035$	$100\theta_{\mathrm{s,eq}}$	$0.4550 \pm 0.0022$	$\chi_{\mathrm{prior}}^2$	$7.9 \pm 3.5$
$\sigma_8$	$0.820 \pm 0.011$	$H(0.15)$	$75.1 \pm 1.1$	$\chi_{\mathrm{BAO}}^2$	$5.90 \pm 0.84$
$S_8$	$0.820 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$621.5 \pm 9.1$	$\chi_{\mathrm{CMB}}^2$	$11938.2 \pm 6.2$

$$\bar{\chi}_{\mathrm{eff}}^2 = 12991.86; R - 1 = 0.01898$$



7.104    base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02259 \pm 0.00018$	$S_8$	$0.820 \pm 0.012$	$H(0.15)$	$75.2 \pm 1.2$
$\Omega_{\text{c}}h^2$	$0.1231 \pm 0.0029$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4489 \pm 0.0068$	$D_{\text{M}}(0.15)$	$621 \pm 10$
$100\theta_{\text{MC}}$	$1.04053 \pm 0.00041$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6072 \pm 0.0072$	$H(0.38)$	$85.3 \pm 1.2$
$\tau$	$0.0580^{+0.0064}_{-0.0081}$	$\sigma_8/h^{0.5}$	$0.9817 \pm 0.0088$	$D_{\text{M}}(0.38)$	$1483 \pm 23$
$N_{\text{eff}}$	$3.36 \pm 0.18$	$r_{\text{drag}}h$	$101.1 \pm 1.0$	$H(0.51)$	$92.1 \pm 1.2$
$\ln(10^{10}A_{\text{s}})$	$3.059^{+0.014}_{-0.016}$	$\langle d^2 \rangle^{1/2}$	$2.412 \pm 0.022$	$D_{\text{M}}(0.51)$	$1923 \pm 29$
$n_{\text{s}}$	$0.9789 \pm 0.0068$	$z_{\text{re}}$	$8.08^{+0.68}_{-0.77}$	$H(0.61)$	$97.7 \pm 1.3$
$y_{\text{cal}}$	$1.0008 \pm 0.0025$	$10^9 A_{\text{s}}$	$2.131^{+0.030}_{-0.036}$	$D_{\text{M}}(0.61)$	$2239 \pm 34$
$A_{100}^{\text{PS}}$	$247 \pm 25$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.897 \pm 0.016$	$H(2.33)$	$239.8 \pm 2.5$
$A_{143}^{\text{PS}}$	$43 \pm 9$	$D_{40}$	$1211 \pm 13$	$D_{\text{M}}(2.33)$	$5631 \pm 70$
$A_{217}^{\text{PS}}$	$101 \pm 10$	$D_{220}$	$5731 \pm 39$	$f\sigma_8(0.15)$	$0.4546 \pm 0.0064$
$A_{217}^{\text{CIB}}$	$41 \pm 7$	$D_{810}$	$2541 \pm 14$	$\sigma_8(0.15)$	$0.7601 \pm 0.0090$
$A_{143}^{\text{tSZ}}$	$3.7^{+1.7}_{-2.6}$	$D_{1420}$	$815.0 \pm 5.1$	$f\sigma_8(0.38)$	$0.4760 \pm 0.0057$
$r_{143 \times 217}^{\text{PS}}$	$0.65 \pm 0.12$	$D_{2000}$	$228.9 \pm 2.0$	$\sigma_8(0.38)$	$0.6752 \pm 0.0083$
$r_{143 \times 217}^{\text{CIB}}$	$> 0.473$	$n_{\text{s},0.002}$	$0.9789 \pm 0.0068$	$f\sigma_8(0.51)$	$0.4761 \pm 0.0055$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}$	$0.2496 \pm 0.0023$	$\sigma_8(0.51)$	$0.6325 \pm 0.0079$
$A^{\text{kSZ}}$	$5.1^{+3.5}_{-2.7}$	$Y_{\text{P}}^{\text{BBN}}$	$0.2509 \pm 0.0023$	$f\sigma_8(0.61)$	$0.4721 \pm 0.0053$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.20$	$10^5 \text{D}/\text{H}$	$2.653 \pm 0.050$	$\sigma_8(0.61)$	$0.6022 \pm 0.0076$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.17$	$\text{Age}/\text{Gyr}$	$13.48 \pm 0.17$	$f\sigma_8(2.33)$	$0.3041 \pm 0.0040$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$z_*$	$1090.21 \pm 0.37$	$\sigma_8(2.33)$	$0.3141 \pm 0.0044$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16$	$r_*$	$142.0 \pm 1.6$	$f_{2000}^{143}$	$31.7 \pm 3.2$
$c_{100}$	$0.9976 \pm 0.0010$	$100\theta_*$	$1.04050 \pm 0.00050$	$f_{2000}^{217}$	$108.3 \pm 2.2$
$c_{217}$	$1.0013 \pm 0.0016$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.64 \pm 0.15$	$f_{2000}^{143 \times 217}$	$33.8 \pm 2.3$
$c_{TE}$	$0.9985 \pm 0.0050$	$z_{\text{drag}}$	$1060.91 \pm 0.64$	$\chi_{\text{lensing}}^2$	$9.90 \pm 0.93$
$c_{EE}$	$0.9963 \pm 0.0054$	$r_{\text{drag}}$	$144.5 \pm 1.7$	$\chi_{\text{simall}}^2$	$397.5 \pm 2.1$
$H_0$	$70.0 \pm 1.2$	$k_{\text{D}}$	$0.1426 \pm 0.0012$	$\chi_{\text{lowl}}^2$	$21.78 \pm 0.80$
$\Omega_{\Lambda}$	$0.7010 \pm 0.0077$	$100\theta_{\text{D}}$	$0.16148 \pm 0.00043$	$\chi_{\text{CamSpec}}^2$	$11519.4 \pm 6.4$
$\Omega_{\text{m}}$	$0.2990 \pm 0.0077$	$z_{\text{eq}}$	$3340 \pm 29$	$\chi_{\text{H073p45}}^2$	$4.9 \pm 3.2$
$\Omega_{\text{m}}h^2$	$0.1463 \pm 0.0030$	$k_{\text{eq}}$	$0.01041 \pm 0.00011$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.5$
$\Omega_{\text{m}}h^3$	$0.1024 \pm 0.0036$	$100\theta_{\text{eq}}$	$0.8252 \pm 0.0056$	$\chi_{\text{CMB}}^2$	$11948.5 \pm 6.5$
$\sigma_8$	$0.8212 \pm 0.0095$	$100\theta_{\text{s,eq}}$	$0.4554 \pm 0.0028$		

$\bar{\chi}_{\text{eff}}^2 = 11961.28; R - 1 = 0.02116$



**7.105**    **base\_nnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Riess18\_post\_BAO\_lensing\_Pantheon18\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02256 \pm 0.00016$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6077 \pm 0.0069$	$H(0.51)$	$91.8 \pm 1.1$
$\Omega_{\mathrm{c}}h^2$	$0.1230 \pm 0.0029$	$\sigma_8/h^{0.5}$	$0.9828 \pm 0.0082$	$D_{\mathrm{M}}(0.51)$	$1929 \pm 26$
$100\theta_{\mathrm{MC}}$	$1.04053 \pm 0.00041$	$r_{\mathrm{drag}}h$	$100.86 \pm 0.74$	$H(0.61)$	$97.5 \pm 1.2$
$\tau$	$0.0573^{+0.0061}_{-0.0077}$	$\langle d^2 \rangle^{1/2}$	$2.415 \pm 0.020$	$D_{\mathrm{M}}(0.61)$	$2246 \pm 30$
$N_{\mathrm{eff}}$	$3.34 \pm 0.17$	$z_{\mathrm{re}}$	$8.01^{+0.65}_{-0.75}$	$H(2.33)$	$239.7 \pm 2.5$
$\ln(10^{10}A_{\mathrm{s}})$	$3.057^{+0.014}_{-0.015}$	$10^9 A_{\mathrm{s}}$	$2.127^{+0.029}_{-0.033}$	$D_{\mathrm{M}}(2.33)$	$5641 \pm 66$
$n_{\mathrm{s}}$	$0.9777 \pm 0.0060$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.896 \pm 0.016$	$f\sigma_8(0.15)$	$0.4556 \pm 0.0058$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025$	$D_{40}$	$1213 \pm 12$	$\sigma_8(0.15)$	$0.7593 \pm 0.0088$
$A_{100}^{\mathrm{PS}}$	$246 \pm 25$	$D_{220}$	$5729 \pm 39$	$f\sigma_8(0.38)$	$0.4765 \pm 0.0055$
$A_{143}^{\mathrm{PS}}$	$43 \pm 9$	$D_{810}$	$2540 \pm 14$	$\sigma_8(0.38)$	$0.6743 \pm 0.0080$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{1420}$	$814.9 \pm 5.1$	$f\sigma_8(0.51)$	$0.4764 \pm 0.0053$
$A_{217}^{\mathrm{CIB}}$	$41^{+7}_{-8}$	$D_{2000}$	$229.0 \pm 2.0$	$\sigma_8(0.51)$	$0.6315 \pm 0.0076$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.6}$	$n_{\mathrm{s},0.002}$	$0.9777 \pm 0.0060$	$f\sigma_8(0.61)$	$0.4722 \pm 0.0052$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.12$	$Y_{\mathrm{P}}$	$0.2493 \pm 0.0022$	$\sigma_8(0.61)$	$0.6012 \pm 0.0073$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.470$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2506 \pm 0.0022$	$f\sigma_8(2.33)$	$0.3035 \pm 0.0038$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.652 \pm 0.051$	$\sigma_8(2.33)$	$0.3134 \pm 0.0040$
$A^{\mathrm{kSZ}}$	$5.1^{+3.4}_{-2.8}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.51 \pm 0.16$	$f_{2000}^{143}$	$31.7 \pm 3.2$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$z_*$	$1090.23 \pm 0.37$	$f_{2000}^{217}$	$108.2 \pm 2.2$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.17$	$r_*$	$142.1 \pm 1.6$	$f_{2000}^{143 \times 217}$	$33.7 \pm 2.3$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04051 \pm 0.00050$	$\chi_{\mathrm{lensing}}^2$	$9.77 \pm 0.79$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.66 \pm 0.15$	$\chi_{\mathrm{simall}}^2$	$397.3 \pm 1.9$
$c_{100}$	$0.9976 \pm 0.0010$	$z_{\mathrm{drag}}$	$1060.81 \pm 0.60$	$\chi_{\mathrm{lowl}}^2$	$21.89 \pm 0.75$
$c_{217}$	$1.0013 \pm 0.0016$	$r_{\mathrm{drag}}$	$144.7 \pm 1.6$	$\chi_{\mathrm{CamSpec}}^2$	$11518.7 \pm 6.2$
$c_{TE}$	$0.9984 \pm 0.0050$	$k_{\mathrm{D}}$	$0.1425 \pm 0.0012$	$\chi_{\mathrm{H073p45}}^2$	$5.5 \pm 2.9$
$c_{EE}$	$0.9959 \pm 0.0054$	$100\theta_{\mathrm{D}}$	$0.16144 \pm 0.00043$	$\chi_{\mathrm{JLA}}^2$	$1034.81 \pm 0.11$
$H_0$	$69.7 \pm 1.0$	$z_{\mathrm{eq}}$	$3347 \pm 22$	$\chi_{6\mathrm{DF}}^2$	$0.029 \pm 0.040$
$\Omega_{\Lambda}$	$0.6991 \pm 0.0057$	$k_{\mathrm{eq}}$	$0.01041 \pm 0.00011$	$\chi_{\mathrm{MGS}}^2$	$1.98 \pm 0.48$
$\Omega_{\mathrm{m}}$	$0.3009 \pm 0.0057$	$100\theta_{\mathrm{eq}}$	$0.8237 \pm 0.0042$	$\chi_{\mathrm{DR12BAO}}^2$	$3.78 \pm 0.51$
$\Omega_{\mathrm{m}}h^2$	$0.1462 \pm 0.0030$	$100\theta_{\mathrm{s,eq}}$	$0.4547 \pm 0.0021$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.5$
$\Omega_{\mathrm{m}}h^3$	$0.1020 \pm 0.0034$	$H(0.15)$	$75.0 \pm 1.0$	$\chi_{\mathrm{CMB}}^2$	$11947.6 \pm 6.2$
$\sigma_8$	$0.8206 \pm 0.0093$	$D_{\mathrm{M}}(0.15)$	$622.7 \pm 9.0$	$\chi_{\mathrm{BAO}}^2$	$5.79 \pm 0.70$
$S_8$	$0.822 \pm 0.011$	$H(0.38)$	$85.1 \pm 1.1$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4501 \pm 0.0059$	$D_{\mathrm{M}}(0.38)$	$1488 \pm 21$		

$\bar{\chi}_{\mathrm{eff}}^2 = 13001.46$ ;  $R - 1 = 0.02255$



**7.106 base\_nnu\_CleanedCamSpecHM\_TT\_lowl\_lowE**

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022014	$0.02206 \pm 0.00032$	$\sigma_8/h^{0.5}$	0.9910	$0.990 \pm 0.016$	$D_{\text{M}}(0.15)$	653.0	$651 \pm 23$
$\Omega_{\text{c}}h^2$	0.11957	$0.1197 \pm 0.0041$	$r_{\text{drag}}h$	98.12	$98.4 \pm 2.2$	$H(0.38)$	81.93	$82.2 \pm 2.3$
$100\theta_{\text{MC}}$	1.04091	$1.04088 \pm 0.00058$	$\langle d^2 \rangle^{1/2}$	2.4548	$2.454 \pm 0.046$	$D_{\text{M}}(0.38)$	1554	$1551 \pm 50$
$\tau$	0.0503	$0.0515 \pm 0.0081$	$z_{\text{re}}$	7.33	$7.43^{+0.85}_{-0.76}$	$H(0.51)$	88.73	$88.9 \pm 2.3$
$N_{\text{eff}}$	2.968	$2.99 \pm 0.29$	$10^9 A_{\text{s}}$	2.0745	$2.080 \pm 0.044$	$D_{\text{M}}(0.51)$	2012	$2007 \pm 62$
$\ln(10^{10} A_{\text{s}})$	3.0323	$3.035 \pm 0.021$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8760	$1.876 \pm 0.023$	$H(0.61)$	94.40	$94.6 \pm 2.3$
$n_{\text{s}}$	0.9590	$0.960 \pm 0.014$	$D_{40}$	1236.1	$1236 \pm 22$	$D_{\text{M}}(0.61)$	2339	$2335 \pm 70$
$y_{\text{cal}}$	1.00026	$1.0004 \pm 0.0025$	$D_{220}$	5703.1	$5707 \pm 41$	$H(2.33)$	235.66	$235.8 \pm 3.7$
$A_{100}^{\text{PS}}$	251.1	$255 \pm 28$	$D_{810}$	2531.0	$2530 \pm 14$	$D_{\text{M}}(2.33)$	5813	$5805 \pm 130$
$A_{143}^{\text{tSZ}}$	5.91	$3.8^{+1.8}_{-2.7}$	$D_{1420}$	813.0	$812.7 \pm 5.4$	$f\sigma_8(0.15)$	0.4625	$0.462 \pm 0.012$
$A^{\text{kSZ}}$	0.8	—	$D_{2000}$	229.29	$229.2 \pm 2.4$	$\sigma_8(0.15)$	0.7444	$0.745 \pm 0.013$
$A_{100}^{\text{dust}}$	0.998	$1.00 \pm 0.20$	$n_{\text{s},0.002}$	0.9590	$0.960 \pm 0.014$	$f\sigma_8(0.38)$	0.4781	$0.4777 \pm 0.0095$
$A_{143}^{\text{power}}$	11.77	$10.3^{+2.3}_{-2.8}$	$Y_{\text{P}}$	0.24420	$0.2444 \pm 0.0041$	$\sigma_8(0.38)$	0.6586	$0.659 \pm 0.013$
$A_{217}^{\text{power}}$	10.90	$8.2^{+1.6}_{-3.2}$	$Y_{\text{P}}^{\text{BBN}}$	0.24552	$0.2458 \pm 0.0041$	$f\sigma_8(0.51)$	0.4753	$0.4751 \pm 0.0085$
$A_{143 \times 217}^{\text{power}}$	7.21	$4.3^{+1.6}_{-3.1}$	$10^5 D/H$	2.626	$2.625 \pm 0.072$	$\sigma_8(0.51)$	0.6158	$0.617 \pm 0.012$
$\gamma_{143}^{\text{power}}$	1.313	$1.32^{+0.41}_{-0.54}$	Age/Gyr	13.914	$13.90 \pm 0.31$	$f\sigma_8(0.61)$	0.4694	$0.4693 \pm 0.0080$
$\gamma_{217}^{\text{power}}$	1.33	$1.38^{+0.74}_{-0.62}$	$z_*$	1090.259	$1090.23 \pm 0.50$	$\sigma_8(0.61)$	0.5856	$0.587 \pm 0.012$
$\gamma_{143 \times 217}^{\text{power}}$	1.24	$1.32 \pm 0.59$	$r_*$	145.21	$145.1 \pm 2.6$	$f\sigma_8(2.33)$	0.2948	$0.2954 \pm 0.0065$
$c_{100}$	0.99804	$0.9978 \pm 0.0011$	$100\theta_*$	1.04117	$1.04113 \pm 0.00072$	$\sigma_8(2.33)$	0.3034	$0.3041 \pm 0.0073$
$c_{217}$	0.99899	$0.9994^{+0.0012}_{-0.0017}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.947	$13.94 \pm 0.24$	$f_{2000}^{143}$	23.13	$23 \pm 4$
$H_0$	66.30	$66.6 \pm 2.5$	$z_{\text{drag}}$	1059.02	$1059.1 \pm 1.1$	$f_{2000}^{217}$	16.74	$16.7 \pm 2.5$
$\Omega_{\Lambda}$	0.6764	$0.678 \pm 0.019$	$r_{\text{drag}}$	148.00	$147.9 \pm 2.7$	$f_{2000}^{143 \times 217}$	11.07	$10.9 \pm 2.7$
$\Omega_{\text{m}}$	0.3236	$0.322 \pm 0.019$	$k_{\text{D}}$	0.13994	$0.1401 \pm 0.0019$	$\chi_{\text{small}}^2$	395.69	$396.9 \pm 1.6$
$\Omega_{\text{m}}h^2$	0.14223	$0.1424 \pm 0.0042$	$100\theta_{\text{D}}$	0.16097	$0.16098 \pm 0.00068$	$\chi_{\text{lowl}}^2$	24.16	$24.4 \pm 2.3$
$\Omega_{\text{m}}h^3$	0.0943	$0.0948^{+0.0053}_{-0.0061}$	$z_{\text{eq}}$	3419	$3414 \pm 66$	$\chi_{\text{CamSpec}}^2$	6703.8	$6716.4 \pm 5.6$
$\sigma_8$	0.8069	$0.808 \pm 0.014$	$k_{\text{eq}}$	0.010381	$0.01038 \pm 0.00016$	$\chi_{\text{prior}}^2$	1.29	$5.3 \pm 2.9$
$S_8$	0.8380	$0.837 \pm 0.025$	$100\theta_{\text{eq}}$	0.8092	$0.810 \pm 0.012$	$\chi_{\text{CMB}}^2$	7123.7	$7137.7 \pm 5.4$
$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4590	$0.458 \pm 0.014$	$100\theta_{\text{s,eq}}$	0.4475	$0.4481 \pm 0.0063$			
$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6086	$0.608 \pm 0.012$	$H(0.15)$	71.68	$71.9 \pm 2.4$			

Best-fit  $\chi_{\text{eff}}^2 = 7124.98$ ;  $\bar{\chi}_{\text{eff}}^2 = 7142.96$ ;  $R - 1 = 0.00706$

$\chi_{\text{eff}}^2$ : CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.69 commander\_dx12\_v3.2\_29: 24.16 CamSpec like\_10.7cleaned: 6703.83



# 7.107 base\_nnu\_lensing\_lenspriors\_BAO\_Cooke17\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.02186	$0.02200 \pm 0.00066$	$D_{1420}$	859	$843 \pm 100$	$D_{\mathrm{M}}(0.51)$	2011	$1999 \pm 59$
$\Omega_{\mathrm{c}}h^2$	0.1127	$0.115^{+0.011}_{-0.013}$	$D_{2000}$	242.0	$240^{+25}_{-31}$	$H(0.61)$	93.57	$94.3 \pm 3.1$
$100\theta_{\mathrm{MC}}$	1.0384	$1.040 \pm 0.015$	$n_{\mathrm{s},0.002}$	0.9566	$0.956 \pm 0.020$	$D_{\mathrm{M}}(0.61)$	2341	$2328 \pm 70$
$N_{\mathrm{eff}}$	2.883	$2.91 \pm 0.27$	$Y_{\mathrm{P}}$	0.24296	$0.2434 \pm 0.0038$	$H(2.33)$	230.4	$232.3 \pm 9.6$
$\ln(10^{10}A_{\mathrm{s}})$	3.092	$3.08 \pm 0.10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24428	$0.2447 \pm 0.0038$	$D_{\mathrm{M}}(2.33)$	5875	$5838 \pm 200$
$n_{\mathrm{s}}$	0.9566	$0.956 \pm 0.020$	$10^5D/H$	2.626	$2.610 \pm 0.091$	$f\sigma_{\mathrm{s}}(0.15)$	0.4495	$0.452 \pm 0.018$
$H_0$	66.82	$67.2 \pm 1.9$	Age/Gyr	14.067	$13.98 \pm 0.48$	$\sigma_{\mathrm{s}}(0.15)$	0.7470	$0.748 \pm 0.017$
$\Omega_{\Lambda}$	0.6973	$0.695^{+0.018}_{-0.016}$	$z_{*}$	1089.75	$1089.8 \pm 1.1$	$f\sigma_{\mathrm{s}}(0.38)$	0.4698	$0.471 \pm 0.015$
$\Omega_{\mathrm{m}}$	0.3027	$0.305^{+0.016}_{-0.018}$	$r_{*}$	147.63	$146.8 \pm 4.1$	$\sigma_{\mathrm{s}}(0.38)$	0.6631	$0.664 \pm 0.014$
$\Omega_{\mathrm{m}}h^2$	0.1352	$0.138^{+0.011}_{-0.013}$	$100\theta_{*}$	1.0387	$1.041 \pm 0.015$	$f\sigma_{\mathrm{s}}(0.51)$	0.4694	$0.471 \pm 0.014$
$\Omega_{\mathrm{m}}h^3$	0.0903	$0.0928^{+0.0091}_{-0.011}$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	14.21	$14.12 \pm 0.55$	$\sigma_{\mathrm{s}}(0.51)$	0.6210	$0.622 \pm 0.013$
$\sigma_{\mathrm{s}}$	0.8074	$0.809 \pm 0.019$	$z_{\mathrm{drag}}$	1058.06	$1058.6 \pm 2.1$	$f\sigma_{\mathrm{s}}(0.61)$	0.4652	$0.466 \pm 0.013$
$S_{\mathrm{s}}$	0.8111	$0.815 \pm 0.035$	$r_{\mathrm{drag}}$	150.52	$149.7 \pm 4.3$	$\sigma_{\mathrm{s}}(0.61)$	0.5911	$0.592 \pm 0.013$
$\sigma_{\mathrm{s}}\Omega_{\mathrm{m}}^{0.5}$	0.4442	$0.447 \pm 0.019$	$k_{\mathrm{D}}$	0.13755	$0.1385 \pm 0.0041$	$f\sigma_{\mathrm{s}}(2.33)$	0.2984	$0.2988 \pm 0.0063$
$\sigma_{\mathrm{s}}\Omega_{\mathrm{m}}^{0.25}$	0.5989	$0.601 \pm 0.019$	$100\theta_{\mathrm{D}}$	0.16070	$0.1608 \pm 0.0020$	$\sigma_{\mathrm{s}}(2.33)$	0.3081	$0.3084 \pm 0.0066$
$\sigma_{\mathrm{s}}/h^{0.5}$	0.9878	$0.987 \pm 0.020$	$z_{\mathrm{eq}}$	3286	$3337^{+240}_{-290}$	$\chi^2_{\mathrm{lensing}}$	7.84	$9.9 \pm 2.2$
$r_{\mathrm{drag}}h$	100.58	$100.5 \pm 1.2$	$k_{\mathrm{eq}}$	0.00992	$0.01009^{+0.00074}_{-0.00089}$	$\chi^2_{\mathrm{Aver15}}$	0.024	$0.9 \pm 1.3$
$\langle d^2 \rangle^{1/2}$	2.487	$2.485 \pm 0.053$	$100\theta_{\mathrm{eq}}$	0.8310	$0.826 \pm 0.038$	$\chi^2_{\mathrm{Cooke17}}$	0.007	$0.9 \pm 1.4$
$z_{\mathrm{re}}$	7.719	$7.73 \pm 0.23$	$100\theta_{\mathrm{s,eq}}$	0.4590	$0.456 \pm 0.019$	$\chi^2_{6\mathrm{DF}}$	0.0003	$0.058 \pm 0.082$
$10^9A_{\mathrm{s}}$	2.203	$2.19^{+0.20}_{-0.24}$	$H(0.15)$	71.90	$72.3 \pm 2.1$	$\chi^2_{\mathrm{MGS}}$	1.75	$1.81 \pm 0.71$
$10^9A_{\mathrm{s}}e^{-2\tau}$	1.973	$1.96^{+0.18}_{-0.22}$	$D_{\mathrm{M}}(0.15)$	649.4	$646 \pm 18$	$\chi^2_{\mathrm{DR12BAO}}$	3.53	$4.4 \pm 1.6$
$D_{40}$	1325	$1318^{+130}_{-150}$	$H(0.38)$	81.65	$82.2 \pm 2.6$	$\chi^2_{\mathrm{prior}}$	0.03	$1.0 \pm 1.4$
$D_{220}$	6159	$6121^{+800}_{-900}$	$D_{\mathrm{M}}(0.38)$	1551.0	$1543 \pm 45$	$\chi^2_{\mathrm{BAO}}$	5.28	$6.3 \pm 1.7$
$D_{810}$	2685	$2648 \pm 300$	$H(0.51)$	88.14	$88.8 \pm 2.9$	$\chi^2_{\mathrm{Abund}}$	0.03	$1.9 \pm 1.9$

Best-fit  $\chi^2_{\mathrm{eff}} = 13.18$ ;  $\bar{\chi}^2_{\mathrm{eff}} = 19.03$ ;  $R - 1 = 0.01158$   
 $\chi^2_{\mathrm{eff}}$ : Abund - Yp\_Aver2015: 0.02 D\_Cooke2017: 0.01 BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.53 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 7.84



# 7.108 base\_nnu\_lensing\_lenspriors\_BAO\_Cooke17\_Aver15\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}} h^2$	0.02194	$0.02202 \pm 0.00066$	$D_{2000}$	243.5	$243^{+22}_{-27}$	$D_{\mathrm{M}}(0.61)$	2337	$2331 \pm 68$
$\Omega_{\mathrm{c}} h^2$	0.1124	$0.1139^{+0.0095}_{-0.011}$	$n_{\mathrm{s},0.002}$	0.9561	$0.956 \pm 0.019$	$H(2.33)$	230.3	$231.4 \pm 8.5$
$100\theta_{\mathrm{MC}}$	1.0376	$1.039 \pm 0.013$	$Y_{\mathrm{P}}$	0.24327	$0.2435 \pm 0.0038$	$D_{\mathrm{M}}(2.33)$	5871	$5853 \pm 190$
$N_{\mathrm{eff}}$	2.903	$2.92 \pm 0.26$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24459	$0.2448 \pm 0.0038$	$f\sigma_{\mathrm{s}}(0.15)$	0.4487	$0.450 \pm 0.015$
$\ln(10^{10} A_{\mathrm{s}})$	3.100	$3.092 \pm 0.087$	$10^5 \mathrm{D}/\mathrm{H}$	2.617	$2.610 \pm 0.091$	$\sigma_{\mathrm{s}}(0.15)$	0.7476	$0.748 \pm 0.016$
$n_{\mathrm{s}}$	0.9561	$0.956 \pm 0.019$	Age/Gyr	14.059	$14.01 \pm 0.45$	$f\sigma_{\mathrm{s}}(0.38)$	0.4693	$0.470 \pm 0.014$
$H_0$	66.96	$67.2 \pm 1.9$	$z_*$	1089.65	$1089.69 \pm 0.98$	$\sigma_{\mathrm{s}}(0.38)$	0.6638	$0.664 \pm 0.014$
$\Omega_{\Lambda}$	0.6989	$0.698 \pm 0.014$	$r_*$	147.52	$147.1 \pm 3.9$	$f\sigma_{\mathrm{s}}(0.51)$	0.4692	$0.470 \pm 0.013$
$\Omega_{\mathrm{m}}$	0.3011	$0.302 \pm 0.014$	$100\theta_*$	1.0380	$1.039 \pm 0.013$	$\sigma_{\mathrm{s}}(0.51)$	0.6217	$0.622 \pm 0.013$
$\Omega_{\mathrm{m}} h^2$	0.1350	$0.1365^{+0.0098}_{-0.011}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	14.213	$14.17 \pm 0.50$	$f\sigma_{\mathrm{s}}(0.61)$	0.4651	$0.466 \pm 0.012$
$\Omega_{\mathrm{m}} h^3$	0.0904	$0.0919^{+0.0085}_{-0.010}$	$z_{\mathrm{drag}}$	1058.25	$1058.5 \pm 2.1$	$\sigma_{\mathrm{s}}(0.61)$	0.5919	$0.592 \pm 0.013$
$\sigma_{\mathrm{s}}$	0.8079	$0.808 \pm 0.018$	$r_{\mathrm{drag}}$	150.39	$150.0 \pm 4.1$	$f\sigma_{\mathrm{s}}(2.33)$	0.2989	$0.2989 \pm 0.0064$
$S_{\mathrm{s}}$	0.8093	$0.811 \pm 0.030$	$k_{\mathrm{D}}$	0.13767	$0.1382 \pm 0.0038$	$\sigma_{\mathrm{s}}(2.33)$	0.3086	$0.3086 \pm 0.0066$
$\sigma_{\mathrm{s}} \Omega_{\mathrm{m}}^{0.5}$	0.4433	$0.444 \pm 0.016$	$100\theta_{\mathrm{D}}$	0.16055	$0.1606 \pm 0.0018$	$\chi_{\mathrm{lensing}}^2$	7.78	$9.6 \pm 1.9$
$\sigma_{\mathrm{s}} \Omega_{\mathrm{m}}^{0.25}$	0.5984	$0.599 \pm 0.017$	$z_{\mathrm{eq}}$	3273	$3303^{+200}_{-230}$	$\chi_{\mathrm{Aver15}}^2$	0.006	$0.9 \pm 1.3$
$\sigma_{\mathrm{s}}/h^{0.5}$	0.9873	$0.986 \pm 0.020$	$k_{\mathrm{eq}}$	0.00989	$0.00999^{+0.00065}_{-0.00073}$	$\chi_{\mathrm{Cooke17}}^2$	0.000	$0.95 \pm 1.4$
$r_{\mathrm{drag}} h$	100.71	$100.7 \pm 1.1$	$100\theta_{\mathrm{eq}}$	0.8331	$0.831 \pm 0.031$	$\chi_{\mathrm{JLA}}^2$	1034.743	$1035.14 \pm 0.57$
$\langle d^2 \rangle^{1/2}$	2.4931	$2.488 \pm 0.049$	$100\theta_{\mathrm{s,eq}}$	0.4600	$0.459 \pm 0.016$	$\chi_{\mathrm{6DF}}^2$	0.0017	$0.047 \pm 0.068$
$z_{\mathrm{re}}$	7.698	$7.71 \pm 0.20$	$H(0.15)$	72.03	$72.3 \pm 2.1$	$\chi_{\mathrm{MGS}}^2$	1.82	$1.87 \pm 0.65$
$10^9 A_{\mathrm{s}}$	2.220	$2.21^{+0.17}_{-0.20}$	$D_{\mathrm{M}}(0.15)$	648.2	$647 \pm 18$	$\chi_{\mathrm{DR12BAO}}^2$	3.54	$4.4 \pm 1.5$
$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.989	$1.98^{+0.15}_{-0.18}$	$H(0.38)$	81.75	$82.1 \pm 2.4$	$\chi_{\mathrm{prior}}^2$	0.038	$0.96 \pm 1.4$
$D_{40}$	1338	$1331^{+110}_{-130}$	$D_{\mathrm{M}}(0.38)$	1548.4	$1544 \pm 44$	$\chi_{\mathrm{BAO}}^2$	5.36	$6.3 \pm 1.6$
$D_{220}$	6230	$6202^{+650}_{-790}$	$H(0.51)$	88.22	$88.6 \pm 2.7$	$\chi_{\mathrm{Abund}}^2$	0.01	$1.8 \pm 1.9$
$D_{810}$	2704	$2680 \pm 260$	$D_{\mathrm{M}}(0.51)$	2008	$2002 \pm 58$			
$D_{1420}$	864	$854 \pm 82$	$H(0.61)$	93.65	$94.0 \pm 3.0$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 1047.92$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1053.81$ ;  $R - 1 = 0.01510$   
 $\chi_{\mathrm{eff}}^2$ : Abund - Yp\_Aver2015: 0.01 D\_Cooke2017: 0.00 BAO - 6DF: 0.00 MGS: 1.82 DR12BAO: 3.54 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 7.78 SN - JLA Pantheon18: 1034.74



7.109    base\_nnu\_lensing\_lenspriors\_BAO\_Cooke17\_Aver15\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02189	$0.02198 \pm 0.00068$	$D_{1420}$	845.4	$843 \pm 44$	$D_{\text{M}}(0.51)$	2003.3	$1999 \pm 49$
$\Omega_{\text{c}}h^2$	0.1143	$0.1152^{+0.0052}_{-0.0060}$	$D_{2000}$	238.2	$237 \pm 14$	$H(0.61)$	94.01	$94.3 \pm 2.2$
$100\theta_{\text{MC}}$	1.04091	$1.04089 \pm 0.00061$	$n_{\text{s},0.002}$	0.9551	$0.954 \pm 0.019$	$D_{\text{M}}(0.61)$	2332	$2327 \pm 56$
$N_{\text{eff}}$	2.878	$2.91 \pm 0.27$	$Y_{\text{P}}$	0.24292	$0.2434 \pm 0.0039$	$H(2.33)$	231.8	$232.5 \pm 5.2$
$\ln(10^{10}A_{\text{s}})$	3.0766	$3.075 \pm 0.037$	$Y_{\text{P}}^{\text{BBN}}$	0.24423	$0.2447 \pm 0.0039$	$D_{\text{M}}(2.33)$	5847	$5832 \pm 130$
$n_{\text{s}}$	0.9551	$0.954 \pm 0.019$	$10^5\text{D}/\text{H}$	2.618	$2.615 \pm 0.093$	$f\sigma_8(0.15)$	0.4518	$0.4521 \pm 0.0097$
$H_0$	67.02	$67.2 \pm 1.7$	Age/Gyr	13.999	$13.96 \pm 0.32$	$\sigma_8(0.15)$	0.7483	$0.749 \pm 0.015$
$\Omega_{\Lambda}$	0.6952	$0.6948 \pm 0.0088$	$z_*$	1089.86	$1089.86 \pm 0.64$	$f\sigma_8(0.38)$	0.4716	$0.4719 \pm 0.0094$
$\Omega_{\text{m}}$	0.3048	$0.3052 \pm 0.0088$	$r_*$	147.16	$146.8 \pm 3.3$	$\sigma_8(0.38)$	0.6640	$0.664 \pm 0.014$
$\Omega_{\text{m}}h^2$	0.1369	$0.1378^{+0.0057}_{-0.0065}$	$100\theta_*$	1.04127	$1.04122 \pm 0.00065$	$f\sigma_8(0.51)$	0.4710	$0.4712 \pm 0.0092$
$\Omega_{\text{m}}h^3$	0.0917	$0.0927^{+0.0056}_{-0.0067}$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.133	$14.10 \pm 0.31$	$\sigma_8(0.51)$	0.6217	$0.622 \pm 0.013$
$\sigma_8$	0.8090	$0.809 \pm 0.016$	$z_{\text{drag}}$	1058.25	$1058.5 \pm 2.1$	$f\sigma_8(0.61)$	0.4666	$0.4668 \pm 0.0091$
$S_8$	0.8154	$0.816 \pm 0.018$	$r_{\text{drag}}$	150.04	$149.6 \pm 3.5$	$\sigma_8(0.61)$	0.5918	$0.592 \pm 0.012$
$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4466	$0.4470 \pm 0.0099$	$k_{\text{D}}$	0.13809	$0.1385 \pm 0.0031$	$f\sigma_8(2.33)$	0.2987	$0.2988 \pm 0.0064$
$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6011	$0.601 \pm 0.012$	$100\theta_{\text{D}}$	0.16097	$0.16096 \pm 0.00073$	$\sigma_8(2.33)$	0.3082	$0.3083 \pm 0.0067$
$\sigma_8/h^{0.5}$	0.9883	$0.987 \pm 0.020$	$z_{\text{eq}}$	3330.4	$3336 \pm 48$	$\chi^2_{\text{lensing}}$	7.99	$9.2 \pm 1.5$
$r_{\text{drag}}h$	100.55	$100.5 \pm 1.1$	$k_{\text{eq}}$	0.010050	$0.01009^{+0.00026}_{-0.00029}$	$\chi^2_{\text{Aver15}}$	0.027	$0.95 \pm 1.4$
$\langle d^2 \rangle^{1/2}$	2.4816	$2.483 \pm 0.040$	$100\theta_{\text{eq}}$	0.8249	$0.8241 \pm 0.0077$	$\chi^2_{\text{Cooke17}}$	0.000	$0.98 \pm 1.4$
$z_{\text{re}}$	7.747	$7.74 \pm 0.11$	$100\theta_{\text{s,eq}}$	0.45579	$0.4553 \pm 0.0043$	$\chi^2_{6\text{DF}}$	0.0002	$0.055 \pm 0.079$
$10^9A_{\text{s}}$	2.168	$2.166 \pm 0.079$	$H(0.15)$	72.14	$72.4 \pm 1.8$	$\chi^2_{\text{MGS}}$	1.75	$1.80 \pm 0.70$
$10^9A_{\text{s}}e^{-2\tau}$	1.943	$1.940 \pm 0.071$	$D_{\text{M}}(0.15)$	647.4	$646 \pm 16$	$\chi^2_{\text{DR12BAO}}$	3.37	$4.3 \pm 1.3$
$D_{40}$	1305	$1306 \pm 57$	$H(0.38)$	81.98	$82.2 \pm 2.0$	$\chi^2_{\text{prior}}$	0.06	$2.0 \pm 2.0$
$D_{220}$	6027	$6025 \pm 240$	$D_{\text{M}}(0.38)$	1545.6	$1542 \pm 38$	$\chi^2_{\text{BAO}}$	5.12	$6.1 \pm 1.4$
$D_{810}$	2639	$2632 \pm 120$	$H(0.51)$	88.53	$88.8 \pm 2.1$	$\chi^2_{\text{Abund}}$	0.03	$1.9 \pm 2.0$

Best-fit  $\chi^2_{\text{eff}} = 13.20$ ;  $\bar{\chi}^2_{\text{eff}} = 19.27$ ;  $R - 1 = 0.00810$   
 $\chi^2_{\text{eff}}$ : Abund - Yp\_Aver2015: 0.03 D\_Cooke2017: 0.00 BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.37 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged:  
7.99



# 7.110 base\_nnu\_lensing\_lenspriors\_BAO\_Cooke17\_Aver15\_theta\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02187	$0.02199 \pm 0.00069$	$D_{2000}$	240.0	$238 \pm 14$	$D_M(0.61)$	2334	$2324 \pm 56$
$\Omega_c h^2$	0.1139	$0.1151^{+0.0052}_{-0.0060}$	$n_{s,0.002}$	0.9557	$0.954 \pm 0.019$	$H(2.33)$	231.4	$232.5 \pm 5.2$
$100\theta_{MC}$	1.04091	$1.04089 \pm 0.00062$	$Y_P$	0.24271	$0.2434 \pm 0.0039$	$D_M(2.33)$	5853	$5829 \pm 130$
$N_{\text{eff}}$	2.864	$2.92 \pm 0.27$	$Y_P^{\text{BBN}}$	0.24403	$0.2448 \pm 0.0039$	$f\sigma_8(0.15)$	0.4519	$0.4517 \pm 0.0096$
$\ln(10^{10} A_s)$	3.0818	$3.077 \pm 0.036$	$10^5 D/H$	2.616	$2.615 \pm 0.093$	$\sigma_8(0.15)$	0.7495	$0.749 \pm 0.015$
$n_s$	0.9557	$0.954 \pm 0.019$	Age/Gyr	14.014	$13.96 \pm 0.32$	$f\sigma_8(0.38)$	0.4719	$0.4717 \pm 0.0094$
$H_0$	67.00	$67.3 \pm 1.7$	$z_*$	1089.83	$1089.85 \pm 0.63$	$\sigma_8(0.38)$	0.6652	$0.665 \pm 0.014$
$\Omega_\Lambda$	0.6961	$0.6958 \pm 0.0082$	$r_*$	147.37	$146.8 \pm 3.3$	$f\sigma_8(0.51)$	0.4714	$0.4712 \pm 0.0092$
$\Omega_m$	0.3039	$0.3042 \pm 0.0082$	$100\theta_*$	1.04127	$1.04121 \pm 0.00066$	$\sigma_8(0.51)$	0.6229	$0.622 \pm 0.013$
$\Omega_m h^2$	0.1364	$0.1378^{+0.0056}_{-0.0065}$	$D_M(z_*)/\text{Gpc}$	14.153	$14.09 \pm 0.31$	$f\sigma_8(0.61)$	0.4671	$0.4668 \pm 0.0091$
$\Omega_m h^3$	0.0914	$0.0928^{+0.0057}_{-0.0067}$	$z_{\text{drag}}$	1058.18	$1058.6 \pm 2.1$	$\sigma_8(0.61)$	0.5929	$0.592 \pm 0.012$
$\sigma_8$	0.8102	$0.810 \pm 0.016$	$r_{\text{drag}}$	150.25	$149.6 \pm 3.6$	$f\sigma_8(2.33)$	0.2993	$0.2990 \pm 0.0063$
$S_8$	0.8155	$0.815 \pm 0.018$	$k_D$	0.13792	$0.1385 \pm 0.0031$	$\sigma_8(2.33)$	0.3089	$0.3086 \pm 0.0067$
$\sigma_8 \Omega_m^{0.5}$	0.4467	$0.4466 \pm 0.0098$	$100\theta_D$	0.16095	$0.16097 \pm 0.00073$	$\chi^2_{\text{lensing}}$	7.96	$9.2 \pm 1.5$
$\sigma_8 \Omega_m^{0.25}$	0.6016	$0.601 \pm 0.012$	$z_{\text{eq}}$	3325.6	$3333 \pm 47$	$\chi^2_{\text{Aver15}}$	0.047	$0.9 \pm 1.4$
$\sigma_8/h^{0.5}$	0.9899	$0.987 \pm 0.020$	$k_{\text{eq}}$	0.010025	$0.01009^{+0.00026}_{-0.00029}$	$\chi^2_{\text{Cooke17}}$	0.001	$0.98 \pm 1.4$
$r_{\text{drag}} h$	100.66	$100.6 \pm 1.1$	$100\theta_{\text{eq}}$	0.8257	$0.8248 \pm 0.0074$	$\chi^2_{\text{JLA}}$	1034.786	$1034.93 \pm 0.27$
$\langle d^2 \rangle^{1/2}$	2.4852	$2.484 \pm 0.040$	$100\theta_{s,\text{eq}}$	0.45623	$0.4557 \pm 0.0041$	$\chi^2_{6\text{DF}}$	0.0015	$0.049 \pm 0.069$
$z_{\text{re}}$	7.741	$7.74 \pm 0.11$	$H(0.15)$	72.11	$72.4 \pm 1.8$	$\chi^2_{\text{MGS}}$	1.82	$1.86 \pm 0.66$
$10^9 A_s$	2.180	$2.170 \pm 0.078$	$D_M(0.15)$	647.6	$645 \pm 16$	$\chi^2_{\text{DR12BAO}}$	3.335	$4.1 \pm 1.1$
$10^9 A_s e^{-2\tau}$	1.953	$1.944 \pm 0.070$	$H(0.38)$	81.92	$82.3 \pm 1.9$	$\chi^2_{\text{prior}}$	0.05	$2.0 \pm 2.0$
$D_{40}$	1311	$1308 \pm 57$	$D_M(0.38)$	1546.5	$1540 \pm 38$	$\chi^2_{\text{BAO}}$	5.16	$6.0 \pm 1.2$
$D_{220}$	6063	$6038 \pm 230$	$H(0.51)$	88.45	$88.9 \pm 2.1$	$\chi^2_{\text{Abund}}$	0.05	$1.9 \pm 1.9$
$D_{810}$	2656	$2637 \pm 120$	$D_M(0.51)$	2004.5	$1997 \pm 48$			
$D_{1420}$	851.1	$844 \pm 44$	$H(0.61)$	93.91	$94.3 \pm 2.2$			

Best-fit  $\chi^2_{\text{eff}} = 1048.00$ ;  $\bar{\chi}^2_{\text{eff}} = 1054.11$ ;  $R - 1 = 0.00939$   
 $\chi^2_{\text{eff}}$ : Abund - Yp\_Aver2015: 0.05 D\_Cooke2017: 0.00 BAO - 6DF: 0.00 MGS: 1.82 DR12BAO: 3.33 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 7.96 SN - JLA Pantheon18: 1034.79



### 7.111 base\_nnu\_BAO\_Cooke17\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02202	$0.02208 \pm 0.00072$	$r_*$	134.9	$130.7 \pm 9.1$	$H(0.51)$	98.2	$102.8^{+7.5}_{-9.5}$
$\Omega_{\text{c}}h^2$	0.1647	$0.192^{+0.037}_{-0.057}$	$100\theta_*$	1.0956	$1.113 \pm 0.037$	$D_{\text{M}}(0.51)$	1844	$1787 \pm 120$
$100\theta_{\text{MC}}$	1.0953	$1.113 \pm 0.037$	$D_{\text{M}}(z_*)/\text{Gpc}$	12.32	$11.8 \pm 1.2$	$H(0.61)$	105.0	$110.1^{+8.4}_{-11}$
$N_{\text{eff}}$	2.941	$2.96 \pm 0.28$	$z_{\text{drag}}$	1062.07	$1063.7 \pm 3.7$	$D_{\text{M}}(0.61)$	2139	$2071 \pm 150$
$H_0$	71.21	$73.2^{+3.7}_{-4.4}$	$r_{\text{drag}}$	137.5	$133.1 \pm 9.4$	$H(2.33)$	269.2	$286^{+28}_{-35}$
$\Omega_{\Lambda}$	0.630	$0.604^{+0.057}_{-0.046}$	$k_{\text{D}}$	0.1516	$0.157^{+0.010}_{-0.012}$	$D_{\text{M}}(2.33)$	5213	$5009 \pm 440$
$\Omega_{\text{m}}$	0.370	$0.396^{+0.046}_{-0.057}$	$100\theta_{\text{D}}$	0.1682	$0.1708 \pm 0.0053$	$\chi^2_{\text{Aver15}}$	0.00	$1.0 \pm 1.4$
$\Omega_{\text{m}}h^2$	0.1874	$0.215^{+0.037}_{-0.058}$	$z_{\text{eq}}$	4527	$5183^{+900}_{-1000}$	$\chi^2_{\text{Cooke17}}$	0.00	$1.1 \pm 1.5$
$\Omega_{\text{m}}h^3$	0.1335	$0.159^{+0.031}_{-0.053}$	$k_{\text{eq}}$	0.01372	$0.0157^{+0.0027}_{-0.0042}$	$\chi^2_{6\text{DF}}$	0.180	$0.44 \pm 0.45$
$r_{\text{drag}}h$	97.91	$97.1 \pm 2.1$	$100\theta_{\text{eq}}$	0.693	$0.657^{+0.074}_{-0.088}$	$\chi^2_{\text{MGS}}$	0.719	$0.69 \pm 0.65$
$Y_{\text{P}}$	0.24383	$0.2440 \pm 0.0041$	$100\theta_{\text{s,eq}}$	0.3873	$0.368^{+0.040}_{-0.046}$	$\chi^2_{\text{DR12BAO}}$	2.10	$4.0 \pm 1.8$
$Y_{\text{P}}^{\text{BBN}}$	0.24516	$0.2453 \pm 0.0041$	$H(0.15)$	77.8	$80.4^{+4.6}_{-5.7}$	$\chi^2_{\text{BAO}}$	3.00	$5.1 \pm 2.0$
$10^5\text{D}/\text{H}$	2.614	$2.611 \pm 0.096$	$D_{\text{M}}(0.15)$	604.9	$589 \pm 35$	$\chi^2_{\text{Abund}}$	0.01	$2.1 \pm 2.1$
Age/Gyr	12.47	$12.0 \pm 1.1$	$H(0.38)$	90.1	$93.9^{+6.4}_{-8.0}$			
$z_*$	1093.95	$1095.7^{+3.0}_{-3.9}$	$D_{\text{M}}(0.38)$	1430	$1387 \pm 91$			

Best-fit  $\chi^2_{\text{eff}} = 3.01$ ;  $\bar{\chi}^2_{\text{eff}} = 7.19$ ;  $R - 1 = 0.02751$

$\chi^2_{\text{eff}}$ : Abund - Yp\_Aver2015: 0.00 D\_Cooke2017: 0.00 BAO - 6DF: 0.18 MGS: 0.72 DR12BAO: 2.10

### 7.112 base\_nnu\_BAO\_Cooke17\_Aver15\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02197	$0.02212^{+0.00067}_{-0.00075}$	$r_*$	144.8	$143.9 \pm 5.2$	$H(0.51)$	90.26	$91.1^{+3.6}_{-4.2}$
$\Omega_{\text{c}}h^2$	0.1218	$0.125^{+0.014}_{-0.019}$	$100\theta_*$	1.0496	$1.052 \pm 0.019$	$D_{\text{M}}(0.51)$	1970	$1956 \pm 75$
$100\theta_{\text{MC}}$	1.0494	$1.052 \pm 0.019$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.80	$13.69 \pm 0.70$	$H(0.61)$	95.93	$96.9^{+4.0}_{-4.6}$
$N_{\text{eff}}$	2.937	$2.98 \pm 0.28$	$z_{\text{drag}}$	1059.06	$1059.6 \pm 2.5$	$D_{\text{M}}(0.61)$	2292	$2276 \pm 89$
$H_0$	67.96	$68.5^{+2.2}_{-2.5}$	$r_{\text{drag}}$	147.6	$146.6 \pm 5.4$	$H(2.33)$	237.8	$240^{+12}_{-14}$
$\Omega_{\Lambda}$	0.6874	$0.685 \pm 0.020$	$k_{\text{D}}$	0.1404	$0.1416^{+0.0051}_{-0.0058}$	$D_{\text{M}}(2.33)$	5726	$5682 \pm 260$
$\Omega_{\text{m}}$	0.3126	$0.315 \pm 0.020$	$100\theta_{\text{D}}$	0.16215	$0.1624 \pm 0.0026$	$\chi^2_{\text{Aver15}}$	0.00	$1.0 \pm 1.4$
$\Omega_{\text{m}}h^2$	0.1444	$0.148^{+0.015}_{-0.019}$	$z_{\text{eq}}$	3486	$3555^{+330}_{-410}$	$\chi^2_{\text{Cooke17}}$	0.00	$1.1 \pm 1.5$
$\Omega_{\text{m}}h^3$	0.0981	$0.102^{+0.012}_{-0.017}$	$k_{\text{eq}}$	0.01056	$0.0108^{+0.0010}_{-0.0013}$	$\chi^2_{\text{JLA}}$	1035.11	$1036.0 \pm 1.7$
$r_{\text{drag}}h$	100.32	$100.3 \pm 1.2$	$100\theta_{\text{eq}}$	0.8041	$0.799 \pm 0.047$	$\chi^2_{6\text{DF}}$	0.0003	$0.052 \pm 0.074$
$Y_{\text{P}}$	0.24376	$0.2443 \pm 0.0040$	$100\theta_{\text{s,eq}}$	0.4450	$0.442 \pm 0.024$	$\chi^2_{\text{MGS}}$	1.68	$1.76 \pm 0.67$
$Y_{\text{P}}^{\text{BBN}}$	0.24508	$0.2456 \pm 0.0040$	$H(0.15)$	73.29	$73.9^{+2.6}_{-2.9}$	$\chi^2_{\text{DR12BAO}}$	2.97	$4.0 \pm 1.5$
$10^5\text{D}/\text{H}$	2.623	$2.612 \pm 0.097$	$D_{\text{M}}(0.15)$	637.8	$633 \pm 23$	$\chi^2_{\text{BAO}}$	4.65	$5.8 \pm 1.8$
Age/Gyr	13.71	$13.60 \pm 0.62$	$H(0.38)$	83.49	$84.3^{+3.2}_{-3.7}$	$\chi^2_{\text{Abund}}$	0.01	$2.1 \pm 2.0$
$z_*$	1090.48	$1090.6^{+1.3}_{-1.5}$	$D_{\text{M}}(0.38)$	1521	$1510 \pm 57$			

Best-fit  $\chi^2_{\text{eff}} = 1039.77$ ;  $\bar{\chi}^2_{\text{eff}} = 1043.87$ ;  $R - 1 = 0.00775$

$\chi^2_{\text{eff}}$ : Abund - Yp\_Aver2015: 0.00 D\_Cooke2017: 0.00 BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 2.97 SN - JLA Pantheon18: 1035.11



### 7.113 base\_nnu\_BAO\_Cooke17\_Aver15\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02192	$0.02201^{+0.00065}_{-0.00074}$	$r_*$	146.81	$146.5 \pm 3.4$	$H(0.51)$	88.69	$89.0 \pm 2.2$
$\Omega_{\text{c}}h^2$	0.1150	$0.1158 \pm 0.0059$	$100\theta_*$	1.04123	$1.04120 \pm 0.00066$	$D_{\text{M}}(0.51)$	2000	$1995 \pm 51$
$100\theta_{\text{MC}}$	1.04090	$1.04090 \pm 0.00059$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.100	$14.07 \pm 0.32$	$H(0.61)$	94.19	$94.5 \pm 2.3$
$N_{\text{eff}}$	2.905	$2.94 \pm 0.28$	$z_{\text{drag}}$	1058.41	$1058.7 \pm 2.1$	$D_{\text{M}}(0.61)$	2328	$2323 \pm 58$
$H_0$	67.11	$67.3 \pm 1.8$	$r_{\text{drag}}$	149.67	$149.3 \pm 3.7$	$H(2.33)$	232.3	$233.0 \pm 5.3$
$\Omega_{\Lambda}$	0.6945	$0.6943 \pm 0.0093$	$k_{\text{D}}$	0.13839	$0.1388 \pm 0.0032$	$D_{\text{M}}(2.33)$	5835	$5821 \pm 140$
$\Omega_{\text{m}}$	0.3055	$0.3057 \pm 0.0093$	$100\theta_{\text{D}}$	0.16101	$0.16100 \pm 0.00075$	$\chi^2_{\text{Aver15}}$	0.00	$1.0 \pm 1.4$
$\Omega_{\text{m}}h^2$	0.1376	$0.1385 \pm 0.0064$	$z_{\text{eq}}$	3335.5	$3341 \pm 48$	$\chi^2_{\text{Cooke17}}$	0.00	$1.0 \pm 1.4$
$\Omega_{\text{m}}h^3$	0.0923	$0.0933^{+0.0060}_{-0.0070}$	$k_{\text{eq}}$	0.010084	$0.01012 \pm 0.00029$	$\chi^2_{6\text{DF}}$	0.0001	$0.059 \pm 0.084$
$r_{\text{drag}}h$	100.44	$100.4 \pm 1.2$	$100\theta_{\text{eq}}$	0.8240	$0.8235 \pm 0.0079$	$\chi^2_{\text{MGS}}$	1.68	$1.75 \pm 0.72$
$Y_{\text{P}}$	0.24330	$0.2437 \pm 0.0041$	$100\theta_{\text{s,eq}}$	0.45532	$0.4550 \pm 0.0043$	$\chi^2_{\text{DR12BAO}}$	3.43	$4.4 \pm 1.5$
$Y_{\text{P}}^{\text{BBN}}$	0.24462	$0.2450 \pm 0.0041$	$H(0.15)$	72.25	$72.5 \pm 1.9$	$\chi^2_{\text{prior}}$	0.000	$0.98 \pm 1.4$
$10^5\text{D}/\text{H}$	2.621	$2.619 \pm 0.095$	$D_{\text{M}}(0.15)$	646.5	$645 \pm 17$	$\chi^2_{\text{BAO}}$	5.11	$6.2 \pm 1.5$
Age/Gyr	13.971	$13.94 \pm 0.33$	$H(0.38)$	82.13	$82.4 \pm 2.0$	$\chi^2_{\text{Abund}}$	0.01	$2.0 \pm 2.0$
$z_*$	1089.91	$1089.91 \pm 0.65$	$D_{\text{M}}(0.38)$	1543.2	$1540 \pm 40$			

Best-fit  $\chi^2_{\text{eff}} = 5.12$ ;  $\bar{\chi}^2_{\text{eff}} = 9.22$ ;  $R - 1 = 0.01015$

$\chi^2_{\text{eff}}$ : Abund - Yp\_Aver2015: 0.01 D\_Cooke2017: 0.00 BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.43

### 7.114 base\_nnu\_BAO\_Cooke17\_Aver15\_Pantheon18\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02195	$0.02205 \pm 0.00068$	$r_*$	146.68	$146.4 \pm 3.3$	$H(0.51)$	88.82	$89.1 \pm 2.1$
$\Omega_{\text{c}}h^2$	0.1152	$0.1157^{+0.0054}_{-0.0061}$	$100\theta_*$	1.04125	$1.04118 \pm 0.00064$	$D_{\text{M}}(0.51)$	1996.6	$1992 \pm 48$
$100\theta_{\text{MC}}$	1.04093	$1.04089 \pm 0.00059$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.087	$14.06 \pm 0.32$	$H(0.61)$	94.32	$94.6 \pm 2.2$
$N_{\text{eff}}$	2.919	$2.95 \pm 0.27$	$z_{\text{drag}}$	1058.48	$1058.8 \pm 2.1$	$D_{\text{M}}(0.61)$	2324	$2319 \pm 55$
$H_0$	67.24	$67.4 \pm 1.7$	$r_{\text{drag}}$	149.53	$149.2 \pm 3.6$	$H(2.33)$	232.5	$233.0 \pm 5.2$
$\Omega_{\Lambda}$	0.6954	$0.6957 \pm 0.0082$	$k_{\text{D}}$	0.13849	$0.1389 \pm 0.0031$	$D_{\text{M}}(2.33)$	5828	$5816 \pm 130$
$\Omega_{\text{m}}$	0.3046	$0.3043 \pm 0.0082$	$100\theta_{\text{D}}$	0.16103	$0.16097 \pm 0.00073$	$\chi^2_{\text{Aver15}}$	0.000	$0.96 \pm 1.3$
$\Omega_{\text{m}}h^2$	0.1378	$0.1384^{+0.0058}_{-0.0067}$	$z_{\text{eq}}$	3333.3	$3336 \pm 47$	$\chi^2_{\text{Cooke17}}$	0.002	$0.98 \pm 1.4$
$\Omega_{\text{m}}h^3$	0.0926	$0.0934^{+0.0058}_{-0.0068}$	$k_{\text{eq}}$	0.010087	$0.01011^{+0.00027}_{-0.00030}$	$\chi^2_{\text{JLA}}$	1034.802	$1034.93 \pm 0.26$
$r_{\text{drag}}h$	100.55	$100.6 \pm 1.1$	$100\theta_{\text{eq}}$	0.8245	$0.8243 \pm 0.0075$	$\chi^2_{6\text{DF}}$	0.0002	$0.049 \pm 0.070$
$Y_{\text{P}}$	0.24350	$0.2438 \pm 0.0039$	$100\theta_{\text{s,eq}}$	0.45556	$0.4554 \pm 0.0041$	$\chi^2_{\text{MGS}}$	1.75	$1.84 \pm 0.67$
$Y_{\text{P}}^{\text{BBN}}$	0.24482	$0.2451 \pm 0.0039$	$H(0.15)$	72.39	$72.6 \pm 1.8$	$\chi^2_{\text{DR12BAO}}$	3.381	$4.1 \pm 1.1$
$10^5\text{D}/\text{H}$	2.622	$2.614 \pm 0.093$	$D_{\text{M}}(0.15)$	645.2	$644 \pm 16$	$\chi^2_{\text{prior}}$	0.003	$0.96 \pm 1.4$
Age/Gyr	13.954	$13.93 \pm 0.32$	$H(0.38)$	82.25	$82.5 \pm 1.9$	$\chi^2_{\text{BAO}}$	5.13	$6.0 \pm 1.3$
$z_*$	1089.90	$1089.85 \pm 0.64$	$D_{\text{M}}(0.38)$	1540.4	$1537 \pm 37$	$\chi^2_{\text{Abund}}$	0.00	$1.9 \pm 1.9$

Best-fit  $\chi^2_{\text{eff}} = 1039.94$ ;  $\bar{\chi}^2_{\text{eff}} = 1043.87$ ;  $R - 1 = 0.00476$

$\chi^2_{\text{eff}}$ : Abund - Yp\_Aver2015: 0.00 D\_Cooke2017: 0.00 BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.38 SN - JLA Pantheon18: 1034.80



### 7.115 base\_nnu\_BAO\_Cooke17Marc\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02179	$0.02184 \pm 0.00054$	$r_*$	134.4	$131.4 \pm 8.8$	$H(0.51)$	98.8	$102.0^{+7.1}_{-9.2}$
$\Omega_{\text{c}}h^2$	0.1683	$0.188^{+0.036}_{-0.055}$	$100\theta_*$	1.0990	$1.110^{+0.039}_{-0.035}$	$D_{\text{M}}(0.51)$	1837	$1798 \pm 120$
$100\theta_{\text{MC}}$	1.0987	$1.110^{+0.039}_{-0.035}$	$D_{\text{M}}(z_*)/\text{Gpc}$	12.23	$11.9^{+1.1}_{-1.3}$	$H(0.61)$	105.6	$109.2^{+8.0}_{-10}$
$N_{\text{eff}}$	2.945	$2.97 \pm 0.27$	$z_{\text{drag}}$	1061.76	$1062.9^{+3.1}_{-3.6}$	$D_{\text{M}}(0.61)$	2131	$2084 \pm 140$
$H_0$	71.36	$72.8^{+3.4}_{-4.3}$	$r_{\text{drag}}$	137.0	$134.0 \pm 9.1$	$H(2.33)$	271.4	$283^{+27}_{-34}$
$\Omega_{\Lambda}$	0.626	$0.608^{+0.054}_{-0.048}$	$k_{\text{D}}$	0.1519	$0.1560^{+0.0098}_{-0.012}$	$D_{\text{M}}(2.33)$	5183	$5048 \pm 430$
$\Omega_{\text{m}}$	0.374	$0.392^{+0.048}_{-0.054}$	$100\theta_{\text{D}}$	0.1691	$0.1708 \pm 0.0053$	$\chi^2_{\text{Cooke17Marc}}$	0.000	$0.99 \pm 1.4$
$\Omega_{\text{m}}h^2$	0.1907	$0.211^{+0.036}_{-0.055}$	$z_{\text{eq}}$	4604	$5067^{+900}_{-1000}$	$\chi^2_{\text{Aver15}}$	0.002	$0.97 \pm 1.3$
$\Omega_{\text{m}}h^3$	0.1361	$0.155^{+0.029}_{-0.050}$	$k_{\text{eq}}$	0.01396	$0.0154^{+0.0026}_{-0.0040}$	$\chi^2_{6\text{DF}}$	0.202	$0.42 \pm 0.42$
$r_{\text{drag}}h$	97.75	$97.2 \pm 2.1$	$100\theta_{\text{eq}}$	0.687	$0.665^{+0.071}_{-0.091}$	$\chi^2_{\text{MGS}}$	0.672	$0.72 \pm 0.66$
$Y_{\text{P}}$	0.24376	$0.2441 \pm 0.0039$	$100\theta_{\text{s,eq}}$	0.3838	$0.372^{+0.038}_{-0.048}$	$\chi^2_{\text{DR12BAO}}$	2.11	$3.8 \pm 1.7$
$Y_{\text{P}}^{\text{BBN}}$	0.24509	$0.2454 \pm 0.0039$	$H(0.15)$	78.01	$79.9^{+4.3}_{-5.5}$	$\chi^2_{\text{BAO}}$	2.98	$5.0 \pm 1.9$
$10^5\text{D}/\text{H}$	2.6613	$2.660 \pm 0.043$	$D_{\text{M}}(0.15)$	603.3	$592 \pm 34$	$\chi^2_{\text{Abund}}$	0.00	$2.0 \pm 1.9$
Age/Gyr	12.40	$12.1 \pm 1.0$	$H(0.38)$	90.5	$93.3^{+6.0}_{-7.8}$			
$z_*$	1094.57	$1095.8^{+3.0}_{-3.7}$	$D_{\text{M}}(0.38)$	1425	$1396 \pm 88$			

Best-fit  $\chi^2_{\text{eff}} = 2.98$ ;  $\bar{\chi}^2_{\text{eff}} = 6.92$ ;  $R - 1 = 0.01290$

$\chi^2_{\text{eff}}$ : Abund - D.Cooke2017\_marcucci: 0.00 Yp\_Aver2015: 0.00 BAO - 6DF: 0.20 MGS: 0.67 DR12BAO: 2.11

### 7.116 base\_nnu\_BAO\_Cooke17Marc\_Aver15\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02178	$0.02183 \pm 0.00055$	$r_*$	145.1	$144.3 \pm 5.3$	$H(0.51)$	90.02	$90.8^{+3.7}_{-4.2}$
$\Omega_{\text{c}}h^2$	0.1211	$0.125^{+0.015}_{-0.018}$	$100\theta_*$	1.0490	$1.052 \pm 0.020$	$D_{\text{M}}(0.51)$	1975	$1963 \pm 77$
$100\theta_{\text{MC}}$	1.0486	$1.052 \pm 0.020$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.84	$13.72 \pm 0.72$	$H(0.61)$	95.67	$96.6^{+4.1}_{-4.6}$
$N_{\text{eff}}$	2.938	$2.97 \pm 0.28$	$z_{\text{drag}}$	1058.56	$1058.9 \pm 2.3$	$D_{\text{M}}(0.61)$	2298	$2283 \pm 91$
$H_0$	67.79	$68.2^{+2.2}_{-2.6}$	$r_{\text{drag}}$	148.0	$147.1 \pm 5.6$	$H(2.33)$	237.1	$240^{+13}_{-14}$
$\Omega_{\Lambda}$	0.6876	$0.684 \pm 0.020$	$k_{\text{D}}$	0.1399	$0.1409^{+0.0051}_{-0.0057}$	$D_{\text{M}}(2.33)$	5741	$5698 \pm 270$
$\Omega_{\text{m}}$	0.3124	$0.316 \pm 0.020$	$100\theta_{\text{D}}$	0.16234	$0.1628 \pm 0.0026$	$\chi^2_{\text{Cooke17Marc}}$	0.000	$1.0 \pm 1.4$
$\Omega_{\text{m}}h^2$	0.1435	$0.148^{+0.015}_{-0.019}$	$z_{\text{eq}}$	3465	$3547^{+330}_{-400}$	$\chi^2_{\text{Aver15}}$	0.00	$1.0 \pm 1.5$
$\Omega_{\text{m}}h^3$	0.0973	$0.101^{+0.012}_{-0.017}$	$k_{\text{eq}}$	0.01050	$0.0108^{+0.0010}_{-0.0013}$	$\chi^2_{\text{JLA}}$	1035.10	$1036.1 \pm 1.8$
$r_{\text{drag}}h$	100.33	$100.2 \pm 1.2$	$100\theta_{\text{eq}}$	0.8065	$0.800^{+0.044}_{-0.049}$	$\chi^2_{6\text{DF}}$	0.0002	$0.053 \pm 0.076$
$Y_{\text{P}}$	0.24367	$0.2440 \pm 0.0040$	$100\theta_{\text{s,eq}}$	0.4464	$0.443 \pm 0.024$	$\chi^2_{\text{MGS}}$	1.68	$1.73 \pm 0.67$
$Y_{\text{P}}^{\text{BBN}}$	0.24499	$0.2453 \pm 0.0040$	$H(0.15)$	73.10	$73.6^{+2.6}_{-2.9}$	$\chi^2_{\text{DR12BAO}}$	2.98	$3.9 \pm 1.5$
$10^5\text{D}/\text{H}$	2.6606	$2.660 \pm 0.043$	$D_{\text{M}}(0.15)$	639.5	$636 \pm 23$	$\chi^2_{\text{BAO}}$	4.66	$5.7 \pm 1.8$
Age/Gyr	13.74	$13.64 \pm 0.64$	$H(0.38)$	83.27	$84.0^{+3.3}_{-3.7}$	$\chi^2_{\text{Abund}}$	0.00	$2.0 \pm 2.0$
$z_*$	1090.67	$1090.9^{+1.3}_{-1.4}$	$D_{\text{M}}(0.38)$	1525	$1516 \pm 58$			

Best-fit  $\chi^2_{\text{eff}} = 1039.76$ ;  $\bar{\chi}^2_{\text{eff}} = 1043.83$ ;  $R - 1 = 0.00422$

$\chi^2_{\text{eff}}$ : Abund - D.Cooke2017\_marcucci: 0.00 Yp\_Aver2015: 0.00 BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 2.98 SN - JLA Pantheon18: 1035.10



7.117    base\_nnu\_BAO\_Cooke17Marc\_Aver15\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02172	$0.02179 \pm 0.00054$	$r_*$	146.93	$146.5 \pm 3.3$	$H(0.51)$	88.60	$88.9 \pm 2.1$
$\Omega_{\text{c}}h^2$	0.1150	$0.1160^{+0.0054}_{-0.0061}$	$100\theta_*$	1.04128	$1.04123 \pm 0.00064$	$D_{\text{M}}(0.51)$	2002.5	$1998 \pm 49$
$100\theta_{\text{MC}}$	1.04093	$1.04091 \pm 0.00059$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.111	$14.07 \pm 0.32$	$H(0.61)$	94.09	$94.4 \pm 2.2$
$N_{\text{eff}}$	2.911	$2.95 \pm 0.28$	$z_{\text{drag}}$	1057.95	$1058.2 \pm 1.9$	$D_{\text{M}}(0.61)$	2331	$2326 \pm 56$
$H_0$	67.01	$67.2 \pm 1.7$	$r_{\text{drag}}$	149.86	$149.4 \pm 3.6$	$H(2.33)$	232.2	$233.0 \pm 5.3$
$\Omega_{\Lambda}$	0.6940	$0.6933 \pm 0.0092$	$k_{\text{D}}$	0.13801	$0.1385 \pm 0.0030$	$D_{\text{M}}(2.33)$	5841	$5826 \pm 130$
$\Omega_{\text{m}}$	0.3060	$0.3067 \pm 0.0092$	$100\theta_{\text{D}}$	0.161314	$0.16133 \pm 0.00038$	$\chi^2_{\text{Cooke17Marc}}$	0.00	$1.0 \pm 1.4$
$\Omega_{\text{m}}h^2$	0.1374	$0.1384^{+0.0059}_{-0.0066}$	$z_{\text{eq}}$	3328.7	$3335 \pm 47$	$\chi^2_{\text{Aver15}}$	0.006	$0.98 \pm 1.4$
$\Omega_{\text{m}}h^3$	0.0921	$0.0931^{+0.0059}_{-0.0067}$	$k_{\text{eq}}$	0.010067	$0.01011 \pm 0.00029$	$\chi^2_{6\text{DF}}$	0.0001	$0.061 \pm 0.086$
$r_{\text{drag}}h$	100.43	$100.3 \pm 1.2$	$100\theta_{\text{eq}}$	0.8248	$0.8239 \pm 0.0079$	$\chi^2_{\text{MGS}}$	1.68	$1.71 \pm 0.72$
$Y_{\text{P}}$	0.24327	$0.2438 \pm 0.0040$	$100\theta_{\text{s,eq}}$	0.45586	$0.4553 \pm 0.0043$	$\chi^2_{\text{DR12BAO}}$	3.40	$4.4 \pm 1.6$
$Y_{\text{P}}^{\text{BBN}}$	0.24459	$0.2451 \pm 0.0040$	$H(0.15)$	72.16	$72.4 \pm 1.8$	$\chi^2_{\text{prior}}$	0.003	$0.98 \pm 1.5$
$10^5\text{D}/\text{H}$	2.6615	$2.662 \pm 0.043$	$D_{\text{M}}(0.15)$	647.3	$646 \pm 16$	$\chi^2_{\text{BAO}}$	5.08	$6.2 \pm 1.5$
Age/Gyr	13.984	$13.95 \pm 0.32$	$H(0.38)$	82.03	$82.3 \pm 2.0$	$\chi^2_{\text{Abund}}$	0.01	$2.0 \pm 2.0$
$z_*$	1090.171	$1090.20 \pm 0.35$	$D_{\text{M}}(0.38)$	1545.2	$1542 \pm 38$			

Best-fit  $\chi^2_{\text{eff}} = 5.09$ ;  $\bar{\chi}^2_{\text{eff}} = 9.16$ ;  $R - 1 = 0.00593$   
 $\chi^2_{\text{eff}}$ : Abund - D\_Cooke2017\_marcucci: 0.00 Yp\_Aver2015: 0.01 BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.40

7.118    base\_nnu\_BAO\_Cooke17Marc\_Aver15\_Pantheon18\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02177	$0.02181 \pm 0.00054$	$r_*$	146.63	$146.5 \pm 3.3$	$H(0.51)$	88.78	$88.9 \pm 2.1$
$\Omega_{\text{c}}h^2$	0.1155	$0.1159 \pm 0.0058$	$100\theta_*$	1.04122	$1.04122 \pm 0.00065$	$D_{\text{M}}(0.51)$	1998.2	$1996 \pm 49$
$100\theta_{\text{MC}}$	1.04089	$1.04091 \pm 0.00060$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.082	$14.07 \pm 0.32$	$H(0.61)$	94.29	$94.4 \pm 2.2$
$N_{\text{eff}}$	2.937	$2.95 \pm 0.28$	$z_{\text{drag}}$	1058.10	$1058.2 \pm 1.9$	$D_{\text{M}}(0.61)$	2326	$2323 \pm 56$
$H_0$	67.16	$67.3 \pm 1.7$	$r_{\text{drag}}$	149.54	$149.4 \pm 3.6$	$H(2.33)$	232.6	$232.9 \pm 5.3$
$\Omega_{\Lambda}$	0.6941	$0.6945 \pm 0.0084$	$k_{\text{D}}$	0.13828	$0.1385 \pm 0.0030$	$D_{\text{M}}(2.33)$	5829	$5823 \pm 130$
$\Omega_{\text{m}}$	0.3059	$0.3055 \pm 0.0084$	$100\theta_{\text{D}}$	0.161332	$0.16133 \pm 0.00038$	$\chi^2_{\text{Cooke17Marc}}$	0.002	$0.98 \pm 1.4$
$\Omega_{\text{m}}h^2$	0.1380	$0.1383 \pm 0.0063$	$z_{\text{eq}}$	3330.1	$3331 \pm 44$	$\chi^2_{\text{Aver15}}$	0.000	$0.99 \pm 1.4$
$\Omega_{\text{m}}h^3$	0.0927	$0.0932 \pm 0.0064$	$k_{\text{eq}}$	0.010089	$0.01010 \pm 0.00028$	$\chi^2_{\text{JLA}}$	1034.833	$1034.96 \pm 0.29$
$r_{\text{drag}}h$	100.43	$100.5 \pm 1.1$	$100\theta_{\text{eq}}$	0.8246	$0.8247^{+0.0069}_{-0.0079}$	$\chi^2_{6\text{DF}}$	0.0001	$0.050 \pm 0.070$
$Y_{\text{P}}$	0.24365	$0.2438 \pm 0.0040$	$100\theta_{\text{s,eq}}$	0.45574	$0.4558^{+0.0038}_{-0.0043}$	$\chi^2_{\text{MGS}}$	1.68	$1.79 \pm 0.68$
$Y_{\text{P}}^{\text{BBN}}$	0.24497	$0.2452 \pm 0.0040$	$H(0.15)$	72.32	$72.5 \pm 1.8$	$\chi^2_{\text{DR12BAO}}$	3.41	$4.2 \pm 1.2$
$10^5\text{D}/\text{H}$	2.6625	$2.660 \pm 0.042$	$D_{\text{M}}(0.15)$	645.9	$645 \pm 16$	$\chi^2_{\text{prior}}$	0.00	$1.0 \pm 1.4$
Age/Gyr	13.955	$13.94 \pm 0.32$	$H(0.38)$	82.21	$82.4 \pm 2.0$	$\chi^2_{\text{BAO}}$	5.09	$6.0 \pm 1.3$
$z_*$	1090.186	$1090.17 \pm 0.34$	$D_{\text{M}}(0.38)$	1541.8	$1540 \pm 38$	$\chi^2_{\text{Abund}}$	0.00	$2.0 \pm 2.0$

Best-fit  $\chi^2_{\text{eff}} = 1039.92$ ;  $\bar{\chi}^2_{\text{eff}} = 1043.97$ ;  $R - 1 = 0.00670$   
 $\chi^2_{\text{eff}}$ : Abund - D\_Cooke2017\_marcucci: 0.00 Yp\_Aver2015: 0.00 BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.41 SN - JLA Pantheon18: 1034.83



### 7.119 base\_nnu\_BAO\_Cooke17Adel\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02246	$0.02254 \pm 0.00064$	$r_*$	136.5	$130.6 \pm 9.1$	$H(0.51)$	96.8	$102.8^{+7.3}_{-9.7}$
$\Omega_{\text{c}}h^2$	0.1561	$0.191^{+0.036}_{-0.058}$	$100\theta_*$	1.0873	$1.112 \pm 0.038$	$D_{\text{M}}(0.51)$	1864	$1784 \pm 120$
$100\theta_{\text{MC}}$	1.0871	$1.112 \pm 0.038$	$D_{\text{M}}(z_*)/\text{Gpc}$	12.56	$11.8^{+1.1}_{-1.3}$	$H(0.61)$	103.4	$110.1^{+8.2}_{-11}$
$N_{\text{eff}}$	2.919	$2.95 \pm 0.28$	$z_{\text{drag}}$	1062.49	$1064.6 \pm 3.6$	$D_{\text{M}}(0.61)$	2164	$2068 \pm 150$
$H_0$	70.71	$73.4^{+3.6}_{-4.4}$	$r_{\text{drag}}$	139.0	$132.9 \pm 9.4$	$H(2.33)$	263.5	$285^{+27}_{-36}$
$\Omega_{\Lambda}$	0.641	$0.608^{+0.057}_{-0.047}$	$k_{\text{D}}$	0.1504	$0.158^{+0.010}_{-0.013}$	$D_{\text{M}}(2.33)$	5296	$5009 \pm 440$
$\Omega_{\text{m}}$	0.359	$0.392^{+0.047}_{-0.057}$	$100\theta_{\text{D}}$	0.1664	$0.1699 \pm 0.0053$	$\chi^2_{\text{Cooke17Adel}}$	0.000	$1.0 \pm 1.4$
$\Omega_{\text{m}}h^2$	0.1792	$0.214^{+0.036}_{-0.058}$	$z_{\text{eq}}$	4342	$5170^{+900}_{-1000}$	$\chi^2_{\text{Aver15}}$	0.00	$1.0 \pm 1.5$
$\Omega_{\text{m}}h^3$	0.1267	$0.159^{+0.030}_{-0.054}$	$k_{\text{eq}}$	0.01314	$0.0157^{+0.0026}_{-0.0042}$	$\chi^2_{6\text{DF}}$	0.137	$0.42 \pm 0.43$
$r_{\text{drag}}h$	98.26	$97.2 \pm 2.1$	$100\theta_{\text{eq}}$	0.710	$0.659^{+0.074}_{-0.092}$	$\chi^2_{\text{MGS}}$	0.820	$0.72 \pm 0.66$
$Y_{\text{P}}$	0.24371	$0.2441 \pm 0.0040$	$100\theta_{\text{s,eq}}$	0.3959	$0.368^{+0.040}_{-0.048}$	$\chi^2_{\text{DR12BAO}}$	2.18	$3.9 \pm 1.7$
$Y_{\text{P}}^{\text{BBN}}$	0.24504	$0.2454 \pm 0.0041$	$H(0.15)$	77.0	$80.6^{+4.5}_{-5.8}$	$\chi^2_{\text{BAO}}$	3.14	$5.0 \pm 1.9$
$10^5\text{D}/\text{H}$	2.526	$2.523 \pm 0.067$	$D_{\text{M}}(0.15)$	610.0	$587 \pm 35$	$\chi^2_{\text{Abund}}$	0.00	$2.0 \pm 2.1$
Age/Gyr	12.67	$12.0 \pm 1.1$	$H(0.38)$	89.0	$94.0^{+6.2}_{-8.2}$			
$z_*$	1092.65	$1095.0^{+3.0}_{-3.8}$	$D_{\text{M}}(0.38)$	1444	$1385 \pm 91$			

Best-fit  $\chi^2_{\text{eff}} = 3.14$ ;  $\bar{\chi}^2_{\text{eff}} = 7.04$ ;  $R - 1 = 0.00760$

$\chi^2_{\text{eff}}$ : Abund - D.Cooke2017\_adelberger: 0.00 Yp\_Aver2015: 0.00 BAO - 6DF: 0.14 MGS: 0.82 DR12BAO: 2.18

### 7.120 base\_nnu\_BAO\_Cooke17Adel\_Aver15\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02245	$0.02252^{+0.00058}_{-0.00066}$	$r_*$	144.42	$143.9 \pm 4.9$	$H(0.51)$	90.61	$91.1 \pm 3.7$
$\Omega_{\text{c}}h^2$	0.1223	$0.125^{+0.015}_{-0.017}$	$100\theta_*$	1.0505	$1.052 \pm 0.019$	$D_{\text{M}}(0.51)$	1962	$1954 \pm 71$
$100\theta_{\text{MC}}$	1.0503	$1.052 \pm 0.019$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.75	$13.69^{+0.62}_{-0.71}$	$H(0.61)$	96.30	$96.9 \pm 4.1$
$N_{\text{eff}}$	2.916	$2.94 \pm 0.27$	$z_{\text{drag}}$	1060.20	$1060.5 \pm 2.3$	$D_{\text{M}}(0.61)$	2283	$2274 \pm 84$
$H_0$	68.23	$68.6 \pm 2.3$	$r_{\text{drag}}$	147.0	$146.5 \pm 5.1$	$H(2.33)$	238.6	$240 \pm 12$
$\Omega_{\Lambda}$	0.6877	$0.686 \pm 0.019$	$k_{\text{D}}$	0.1415	$0.1422 \pm 0.0051$	$D_{\text{M}}(2.33)$	5704	$5680^{+230}_{-260}$
$\Omega_{\text{m}}$	0.3123	$0.314 \pm 0.019$	$100\theta_{\text{D}}$	0.16152	$0.1617 \pm 0.0025$	$\chi^2_{\text{Cooke17Adel}}$	0.000	$0.96 \pm 1.4$
$\Omega_{\text{m}}h^2$	0.1454	$0.148^{+0.015}_{-0.017}$	$z_{\text{eq}}$	3521	$3570 \pm 350$	$\chi^2_{\text{Aver15}}$	0.001	$0.97 \pm 1.4$
$\Omega_{\text{m}}h^3$	0.0992	$0.102^{+0.012}_{-0.015}$	$k_{\text{eq}}$	0.01065	$0.0108 \pm 0.0011$	$\chi^2_{\text{JLA}}$	1035.10	$1035.9 \pm 1.5$
$r_{\text{drag}}h$	100.33	$100.3 \pm 1.1$	$100\theta_{\text{eq}}$	0.8000	$0.798^{+0.040}_{-0.048}$	$\chi^2_{6\text{DF}}$	0.0002	$0.049 \pm 0.071$
$Y_{\text{P}}$	0.24368	$0.2439 \pm 0.0039$	$100\theta_{\text{s,eq}}$	0.4426	$0.441^{+0.021}_{-0.025}$	$\chi^2_{\text{MGS}}$	1.68	$1.77 \pm 0.65$
$Y_{\text{P}}^{\text{BBN}}$	0.24500	$0.2452 \pm 0.0039$	$H(0.15)$	73.58	$74.0 \pm 2.6$	$\chi^2_{\text{DR12BAO}}$	2.98	$3.9 \pm 1.5$
$10^5\text{D}/\text{H}$	2.526	$2.522 \pm 0.065$	$D_{\text{M}}(0.15)$	635.3	$633 \pm 21$	$\chi^2_{\text{BAO}}$	4.66	$5.8 \pm 1.7$
Age/Gyr	13.66	$13.60^{+0.55}_{-0.63}$	$H(0.38)$	83.81	$84.3 \pm 3.3$	$\chi^2_{\text{Abund}}$	0.00	$1.9 \pm 1.9$
$z_*$	1089.90	$1090.0 \pm 1.3$	$D_{\text{M}}(0.38)$	1515	$1509 \pm 54$			

Best-fit  $\chi^2_{\text{eff}} = 1039.76$ ;  $\bar{\chi}^2_{\text{eff}} = 1043.57$ ;  $R - 1 = 0.00588$

$\chi^2_{\text{eff}}$ : Abund - D.Cooke2017\_adelberger: 0.00 Yp\_Aver2015: 0.00 BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 2.98 SN - JLA Pantheon18: 1035.10



7.121     base\_nnu\_BAO\_Cooke17Adel\_Aver15\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02242	$0.02250 \pm 0.00065$	$r_*$	146.38	$146.1 \pm 3.5$	$H(0.51)$	89.01	$89.2 \pm 2.2$
$\Omega_{\text{c}}h^2$	0.1152	$0.1159 \pm 0.0061$	$100\theta_*$	1.04121	$1.04115 \pm 0.00066$	$D_{\text{M}}(0.51)$	1992	$1988 \pm 51$
$100\theta_{\text{MC}}$	1.04094	$1.04089 \pm 0.00061$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.059	$14.03 \pm 0.33$	$H(0.61)$	94.51	$94.8 \pm 2.3$
$N_{\text{eff}}$	2.901	$2.93 \pm 0.29$	$z_{\text{drag}}$	1059.59	$1059.8 \pm 2.1$	$D_{\text{M}}(0.61)$	2319	$2315 \pm 59$
$H_0$	67.39	$67.6 \pm 1.8$	$r_{\text{drag}}$	149.06	$148.7 \pm 3.7$	$H(2.33)$	233.0	$233.5 \pm 5.5$
$\Omega_{\Lambda}$	0.6954	$0.6955 \pm 0.0089$	$k_{\text{D}}$	0.13941	$0.1398 \pm 0.0032$	$D_{\text{M}}(2.33)$	5815	$5804 \pm 140$
$\Omega_{\text{m}}$	0.3046	$0.3045 \pm 0.0089$	$100\theta_{\text{D}}$	0.16029	$0.16028 \pm 0.00055$	$\chi^2_{\text{Cooke17Adel}}$	0.000	$0.99 \pm 1.4$
$\Omega_{\text{m}}h^2$	0.1383	$0.1391 \pm 0.0066$	$z_{\text{eq}}$	3355.1	$3358 \pm 49$	$\chi^2_{\text{Aver15}}$	0.00	$1.1 \pm 1.5$
$\Omega_{\text{m}}h^3$	0.0932	$0.0941^{+0.0062}_{-0.0071}$	$k_{\text{eq}}$	0.010140	$0.01017 \pm 0.00030$	$\chi^2_{6\text{DF}}$	0.0001	$0.056 \pm 0.079$
$r_{\text{drag}}h$	100.45	$100.5 \pm 1.2$	$100\theta_{\text{eq}}$	0.8219	$0.8216 \pm 0.0079$	$\chi^2_{\text{MGS}}$	1.68	$1.76 \pm 0.71$
$Y_{\text{P}}$	0.24346	$0.2438 \pm 0.0041$	$100\theta_{\text{s,eq}}$	0.45381	$0.4536 \pm 0.0043$	$\chi^2_{\text{DR12BAO}}$	3.51	$4.4 \pm 1.4$
$Y_{\text{P}}^{\text{BBN}}$	0.24478	$0.2451 \pm 0.0041$	$H(0.15)$	72.54	$72.7 \pm 1.9$	$\chi^2_{\text{prior}}$	0.00	$1.0 \pm 1.5$
$10^5\text{D}/\text{H}$	2.526	$2.524 \pm 0.067$	$D_{\text{M}}(0.15)$	643.8	$643 \pm 17$	$\chi^2_{\text{BAO}}$	5.19	$6.2 \pm 1.4$
Age/Gyr	13.924	$13.90 \pm 0.34$	$H(0.38)$	82.43	$82.6 \pm 2.1$	$\chi^2_{\text{Abund}}$	0.00	$2.1 \pm 2.1$
$z_*$	1089.299	$1089.28 \pm 0.48$	$D_{\text{M}}(0.38)$	1537.1	$1534 \pm 40$			

Best-fit  $\chi^2_{\text{eff}} = 5.19$ ;  $\bar{\chi}^2_{\text{eff}} = 9.33$ ;  $R - 1 = 0.00415$   
 $\chi^2_{\text{eff}}$ : Abund - D.Cooke2017\_adelberger: 0.00 Yp\_Aver2015: 0.00 BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.51

7.122     base\_nnu\_BAO\_Cooke17Adel\_Aver15\_Pantheon18\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02241	$0.02252 \pm 0.00064$	$r_*$	146.56	$146.0^{+3.2}_{-3.5}$	$H(0.51)$	88.94	$89.3 \pm 2.1$
$\Omega_{\text{c}}h^2$	0.1148	$0.1159 \pm 0.0059$	$100\theta_*$	1.04119	$1.04114 \pm 0.00064$	$D_{\text{M}}(0.51)$	1993.2	$1986 \pm 49$
$100\theta_{\text{MC}}$	1.04090	$1.04090 \pm 0.00060$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.077	$14.03^{+0.30}_{-0.34}$	$H(0.61)$	94.43	$94.8 \pm 2.2$
$N_{\text{eff}}$	2.889	$2.94 \pm 0.28$	$z_{\text{drag}}$	1059.51	$1059.9 \pm 2.0$	$D_{\text{M}}(0.61)$	2320	$2313 \pm 56$
$H_0$	67.38	$67.6 \pm 1.7$	$r_{\text{drag}}$	149.25	$148.7^{+3.4}_{-3.8}$	$H(2.33)$	232.6	$233.6 \pm 5.4$
$\Omega_{\Lambda}$	0.6963	$0.6961 \pm 0.0081$	$k_{\text{D}}$	0.13925	$0.1398 \pm 0.0031$	$D_{\text{M}}(2.33)$	5821	$5801 \pm 140$
$\Omega_{\text{m}}$	0.3037	$0.3039 \pm 0.0081$	$100\theta_{\text{D}}$	0.16027	$0.16028 \pm 0.00054$	$\chi^2_{\text{Cooke17Adel}}$	0.001	$0.98 \pm 1.4$
$\Omega_{\text{m}}h^2$	0.1379	$0.1391 \pm 0.0064$	$z_{\text{eq}}$	3350.0	$3357 \pm 46$	$\chi^2_{\text{Aver15}}$	0.005	$0.99 \pm 1.4$
$\Omega_{\text{m}}h^3$	0.0929	$0.0942 \pm 0.0065$	$k_{\text{eq}}$	0.010117	$0.01017 \pm 0.00029$	$\chi^2_{\text{JLA}}$	1034.781	$1034.92 \pm 0.25$
$r_{\text{drag}}h$	100.56	$100.5 \pm 1.1$	$100\theta_{\text{eq}}$	0.8227	$0.8219 \pm 0.0074$	$\chi^2_{6\text{DF}}$	0.0003	$0.047 \pm 0.066$
$Y_{\text{P}}$	0.24329	$0.2439 \pm 0.0040$	$100\theta_{\text{s,eq}}$	0.45426	$0.4538 \pm 0.0041$	$\chi^2_{\text{MGS}}$	1.75	$1.80 \pm 0.65$
$Y_{\text{P}}^{\text{BBN}}$	0.24461	$0.2452 \pm 0.0040$	$H(0.15)$	72.52	$72.8 \pm 1.8$	$\chi^2_{\text{DR12BAO}}$	3.45	$4.2 \pm 1.2$
$10^5\text{D}/\text{H}$	2.525	$2.523 \pm 0.066$	$D_{\text{M}}(0.15)$	644.0	$642 \pm 16$	$\chi^2_{\text{prior}}$	0.000	$0.99 \pm 1.3$
Age/Gyr	13.937	$13.89^{+0.30}_{-0.34}$	$H(0.38)$	82.38	$82.7 \pm 2.0$	$\chi^2_{\text{BAO}}$	5.20	$6.1 \pm 1.2$
$z_*$	1089.266	$1089.27 \pm 0.47$	$D_{\text{M}}(0.38)$	1537.7	$1533 \pm 38$	$\chi^2_{\text{Abund}}$	0.01	$2.0 \pm 2.0$

Best-fit  $\chi^2_{\text{eff}} = 1039.99$ ;  $\bar{\chi}^2_{\text{eff}} = 1043.96$ ;  $R - 1 = 0.00918$   
 $\chi^2_{\text{eff}}$ : Abund - D.Cooke2017\_adelberger: 0.00 Yp\_Aver2015: 0.01 BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.45 SN - JLA Pantheon18: 1034.78



## 8 nnu+meffsterile

### 8.1 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022161	$0.02223 \pm 0.00023$	$S_8$	0.8374	$0.816^{+0.030}_{-0.026}$	$100\theta_{s,eq}$	0.4490	$0.4547^{+0.0044}_{-0.0080}$
$\Omega_c h^2$	0.12031	$0.1215^{+0.0041}_{-0.0032}$	$\sigma_8 \Omega_m^{0.5}$	0.4587	$0.447^{+0.017}_{-0.014}$	$H(0.15)$	72.33	$72.52^{+0.85}_{-1.4}$
$100\theta_{MC}$	1.04072	$1.04053 \pm 0.00051$	$\sigma_8 \Omega_m^{0.25}$	0.6101	$0.591^{+0.023}_{-0.015}$	$D_M(0.15)$	646.8	$646^{+13}_{-9.3}$
$\tau$	0.0529	$0.0525 \pm 0.0080$	$\sigma_8/h^{0.5}$	0.9918	$0.953^{+0.039}_{-0.023}$	$H(0.38)$	82.57	$83.02^{+0.54}_{-1.2}$
$m_{\nu, sterile}^{eff} [eV]$	0.011	$< 0.335$	$r_{drag} h$	98.58	$97.5 \pm 2.1$	$D_M(0.38)$	1540.7	$1537^{+28}_{-18}$
$N_{eff}$	3.046	$3.223^{+0.041}_{-0.18}$	$\langle d^2 \rangle^{1/2}$	2.4513	$2.448 \pm 0.041$	$H(0.51)$	89.36	$89.97^{+0.40}_{-1.1}$
$\ln(10^{10} A_s)$	3.0415	$3.047 \pm 0.017$	$z_{re}$	7.59	$7.60 \pm 0.83$	$D_M(0.51)$	1994.6	$1988^{+34}_{-20}$
$n_s$	0.9637	$0.9657^{+0.0071}_{-0.0096}$	$10^9 A_s$	2.0936	$2.105 \pm 0.037$	$H(0.61)$	95.04	$95.77^{+0.33}_{-1.1}$
$y_{cal}$	1.00030	$1.0005 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8833	$1.895 \pm 0.016$	$D_M(0.61)$	2320.0	$2311^{+38}_{-21}$
$A_{217}^{CIB}$	48.9	$49 \pm 7$	$D_{40}$	1231.0	$1228 \pm 19$	$H(2.33)$	236.62	$239.8^{+1.9}_{-3.0}$
$\xi^{tSZ \times CIB}$	0.30	—	$D_{220}$	5711.9	$5712 \pm 41$	$D_M(2.33)$	5776.1	$5729^{+62}_{-19}$
$A_{143}^{tSZ}$	7.00	$4.8 \pm 2.0$	$D_{810}$	2537.4	$2539 \pm 14$	$f\sigma_8(0.15)$	0.4626	$0.451^{+0.017}_{-0.013}$
$A_{100}^{PS}$	254.4	$269 \pm 28$	$D_{1420}$	815.1	$813.2 \pm 5.2$	$\sigma_8(0.15)$	0.7492	$0.719^{+0.033}_{-0.018}$
$A_{143}^{PS}$	49.4	$52 \pm 8$	$D_{2000}$	229.95	$228.2 \pm 2.0$	$f\sigma_8(0.38)$	0.4792	$0.465^{+0.018}_{-0.012}$
$A_{143 \times 217}^{PS}$	46.5	$45^{+9}_{-10}$	$n_{s,0.002}$	0.9637	$0.9657^{+0.0071}_{-0.0096}$	$\sigma_8(0.38)$	0.6632	$0.636^{+0.030}_{-0.017}$
$A_{217}^{PS}$	119.0	$116 \pm 10$	$Y_P$	0.24531	$0.24765^{+0.00069}_{-0.0023}$	$f\sigma_8(0.51)$	0.4769	$0.461^{+0.018}_{-0.011}$
$A^{kSZ}$	0.02	$< 5.54$	$Y_P^{BBN}$	0.24664	$0.24899^{+0.00070}_{-0.0023}$	$\sigma_8(0.51)$	0.6203	$0.595^{+0.029}_{-0.016}$
$A_{100}^{dustTT}$	8.78	$9.0 \pm 1.8$	$10^5 D/H$	2.625	$2.675^{+0.047}_{-0.056}$	$f\sigma_8(0.61)$	0.4712	$0.455^{+0.019}_{-0.011}$
$A_{143}^{dustTT}$	10.77	$10.8 \pm 1.8$	Age/Gyr	13.826	$13.71^{+0.15}_{-0.045}$	$\sigma_8(0.61)$	0.5900	$0.565^{+0.028}_{-0.016}$
$A_{143 \times 217}^{dustTT}$	19.31	$18.4 \pm 3.3$	$z_*$	1090.224	$1090.63 \pm 0.47$	$f\sigma_8(2.33)$	0.2972	$0.285^{+0.014}_{-0.0080}$
$A_{217}^{dustTT}$	94.4	$93.1 \pm 7.4$	$r_*$	144.48	$142.8^{+1.7}_{-0.84}$	$\sigma_8(2.33)$	0.3060	$0.293^{+0.015}_{-0.0088}$
$c_{100}$	0.99962	$0.99960 \pm 0.00061$	$100\theta_*$	1.04093	$1.04064 \pm 0.00054$	$f_{2000}^{143}$	30.40	$33.1 \pm 3.2$
$c_{217}$	0.99823	$0.99829 \pm 0.00062$	$D_M(z_*)/Gpc$	13.880	$13.72^{+0.15}_{-0.079}$	$f_{2000}^{143 \times 217}$	33.22	$35.1 \pm 2.3$
$H_0$	66.97	$67.0^{+1.1}_{-1.5}$	$z_{drag}$	1059.47	$1060.03^{+0.56}_{-0.71}$	$f_{2000}^{217}$	107.62	$109.5 \pm 2.1$
$\Omega_\Lambda$	0.6806	$0.671^{+0.019}_{-0.016}$	$r_{drag}$	147.21	$145.5^{+1.7}_{-0.86}$	$\chi_{small}^2$	395.94	$397.0 \pm 1.8$
$\Omega_m$	0.3194	$0.329^{+0.016}_{-0.019}$	$k_D$	0.14058	$0.14192^{+0.00080}_{-0.0013}$	$\chi_{lowl}^2$	23.58	$23.5 \pm 1.6$
$\Omega_m h^2$	0.14324	$0.1474^{+0.0027}_{-0.0041}$	$100\theta_D$	0.161005	$0.16135^{+0.00031}_{-0.00047}$	$\chi_{plik}^2$	758.8	$774.5 \pm 5.9$
$\Omega_\nu h^2$	0.00077	$0.00372^{+0.00083}_{-0.0031}$	$z_{eq}$	3405	$3355^{+73}_{-47}$	$\chi_{prior}^2$	1.36	$7.4 \pm 3.7$
$\Omega_m h^3$	0.09592	$0.09878^{+0.00095}_{-0.0031}$	$k_{eq}$	0.010393	$0.01039^{+0.00022}_{-0.00016}$	$\chi_{CMB}^2$	1178.3	$1195.0 \pm 5.9$
$\sigma_8$	0.8116	$0.780^{+0.035}_{-0.019}$	$100\theta_{eq}$	0.8122	$0.8232^{+0.0085}_{-0.015}$			

Best-fit  $\chi_{eff}^2 = 1179.66$ ;  $\bar{\chi}_{eff}^2 = 1202.36$ ;  $R - 1 = 0.01778$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.94 commander\_dx12\_v3.2.29: 23.58 plik\_rd12\_HM\_v22\_TT: 758.77



## 8.2 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022210	$0.02221 \pm 0.00022$	$S_8$	0.8311	$0.819^{+0.023}_{-0.018}$	$100\theta_{s,eq}$	0.46004	$0.4541^{+0.0030}_{-0.0067}$
$\Omega_c h^2$	0.11605	$0.1216^{+0.0038}_{-0.0029}$	$\sigma_8 \Omega_m^{0.5}$	0.4552	$0.448^{+0.013}_{-0.010}$	$H(0.15)$	72.55	$72.37^{+0.69}_{-1.1}$
$100\theta_{MC}$	1.04082	$1.04053 \pm 0.00050$	$\sigma_8 \Omega_m^{0.25}$	0.6073	$0.592^{+0.019}_{-0.012}$	$D_M(0.15)$	644.5	$647^{+11}_{-7.6}$
$\tau$	0.0541	$0.0529 \pm 0.0077$	$\sigma_8/h^{0.5}$	0.9880	$0.955^{+0.032}_{-0.018}$	$H(0.38)$	82.74	$82.89^{+0.43}_{-0.98}$
$m_{\nu, sterile}^{eff} [eV]$	0.361	$< 0.333$	$r_{drag} h$	99.03	$97.3^{+1.9}_{-1.7}$	$D_M(0.38)$	1536.1	$1539^{+23}_{-14}$
$N_{eff}$	3.047	$3.210^{+0.039}_{-0.16}$	$\langle d^2 \rangle^{1/2}$	2.4443	$2.453 \pm 0.029$	$H(0.51)$	89.49	$89.85^{+0.32}_{-0.92}$
$\ln(10^{10} A_s)$	3.0425	$3.048 \pm 0.016$	$z_{re}$	7.70	$7.63 \pm 0.80$	$D_M(0.51)$	1989.2	$1991^{+28}_{-16}$
$n_s$	0.9653	$0.9647^{+0.0061}_{-0.0079}$	$10^9 A_s$	2.0958	$2.107^{+0.031}_{-0.035}$	$H(0.61)$	95.14	$95.65^{+0.28}_{-0.91}$
$y_{cal}$	1.00022	$1.0005 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8808	$1.895^{+0.013}_{-0.016}$	$D_M(0.61)$	2314.2	$2315^{+31}_{-17}$
$A_{217}^{CIB}$	48.4	$49 \pm 7$	$D_{40}$	1227.7	$1230 \pm 15$	$H(2.33)$	236.32	$239.7^{+1.7}_{-2.9}$
$\xi^{tSZ \times CIB}$	0.34	—	$D_{220}$	5713.1	$5714 \pm 41$	$D_M(2.33)$	5771.4	$5735^{+52}_{-16}$
$A_{143}^{tSZ}$	7.00	$4.8 \pm 2.0$	$D_{810}$	2536.9	$2539 \pm 14$	$f\sigma_8(0.15)$	0.4595	$0.452^{+0.013}_{-0.0096}$
$A_{100}^{PS}$	253.0	$269 \pm 28$	$D_{1420}$	815.6	$813.3 \pm 5.2$	$\sigma_8(0.15)$	0.7481	$0.720^{+0.029}_{-0.017}$
$A_{143}^{PS}$	49.0	$52 \pm 8$	$D_{2000}$	230.21	$228.3 \pm 2.0$	$f\sigma_8(0.38)$	0.4768	$0.465^{+0.015}_{-0.0091}$
$A_{143 \times 217}^{PS}$	47.0	$45^{+9}_{-10}$	$n_{s,0.002}$	0.9653	$0.9647^{+0.0061}_{-0.0079}$	$\sigma_8(0.38)$	0.6627	$0.636^{+0.027}_{-0.016}$
$A_{217}^{PS}$	119.3	$116 \pm 10$	$Y_P$	0.24535	$0.24748^{+0.00065}_{-0.0020}$	$f\sigma_8(0.51)$	0.4749	$0.462^{+0.015}_{-0.0090}$
$A^{kSZ}$	0.02	$< 5.46$	$Y_P^{BBN}$	0.24667	$0.24881^{+0.00065}_{-0.0020}$	$\sigma_8(0.51)$	0.6200	$0.595^{+0.025}_{-0.016}$
$A_{100}^{dustTT}$	8.90	$9.0 \pm 1.8$	$10^5 D/H$	2.616	$2.673^{+0.046}_{-0.056}$	$f\sigma_8(0.61)$	0.4696	$0.456^{+0.016}_{-0.0090}$
$A_{143}^{dustTT}$	10.87	$10.8 \pm 1.8$	Age/Gyr	13.816	$13.73^{+0.12}_{-0.039}$	$\sigma_8(0.61)$	0.5898	$0.565^{+0.024}_{-0.015}$
$A_{143 \times 217}^{dustTT}$	19.37	$18.4 \pm 3.3$	$z_*$	1090.112	$1090.63^{+0.40}_{-0.47}$	$f\sigma_8(2.33)$	0.2972	$0.285^{+0.012}_{-0.0078}$
$A_{217}^{dustTT}$	94.5	$93.2 \pm 7.4$	$r_*$	144.58	$142.9^{+1.6}_{-0.78}$	$\sigma_8(2.33)$	0.3062	$0.293^{+0.013}_{-0.0086}$
$c_{100}$	0.99964	$0.99960 \pm 0.00061$	$100\theta_*$	1.04102	$1.04065 \pm 0.00053$	$f_{2000}^{143}$	29.97	$33.0 \pm 3.2$
$c_{217}$	0.99824	$0.99829 \pm 0.00062$	$D_M(z_*)/Gpc$	13.888	$13.73^{+0.14}_{-0.073}$	$f_{2000}^{143 \times 217}$	32.94	$35.0 \pm 2.2$
$H_0$	67.23	$66.84^{+0.87}_{-1.2}$	$z_{drag}$	1059.55	$1059.99^{+0.54}_{-0.65}$	$f_{2000}^{217}$	107.36	$109.5 \pm 2.1$
$\Omega_\Lambda$	0.6842	$0.670^{+0.017}_{-0.013}$	$r_{drag}$	147.30	$145.5^{+1.6}_{-0.80}$	$\chi_{lensing}^2$	8.88	$9.27 \pm 0.94$
$\Omega_m$	0.3158	$0.330^{+0.013}_{-0.017}$	$k_D$	0.14052	$0.14187^{+0.00075}_{-0.0013}$	$\chi_{small}^2$	396	$502 \pm 200$
$\Omega_m h^2$	0.14274	$0.1474^{+0.0024}_{-0.0040}$	$100\theta_D$	0.160971	$0.16132^{+0.00030}_{-0.00044}$	$\chi_{lowl}^2$	23.29	$23.6 \pm 1.3$
$\Omega_\nu h^2$	0.00449	$0.00366^{+0.00080}_{-0.0030}$	$z_{eq}$	3303.3	$3362^{+62}_{-33}$	$\chi_{plik}^2$	759	$668 \pm 200$
$\Omega_m h^3$	0.09597	$0.09853^{+0.00091}_{-0.0027}$	$k_{eq}$	0.010152	$0.01041^{+0.00020}_{-0.00013}$	$\chi_{prior}^2$	1.35	$7.3 \pm 3.7$
$\sigma_8$	0.8101	$0.781^{+0.030}_{-0.018}$	$100\theta_{eq}$	0.8333	$0.8219^{+0.0059}_{-0.013}$	$\chi_{CMB}^2$	1187.2	$1203.6 \pm 5.9$

Best-fit  $\chi_{eff}^2 = 1188.51$ ;  $\bar{\chi}_{eff}^2 = 1210.94$ ;  $R - 1 = 0.01963$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consect8: 8.88 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.04 commander\_dx12\_v3.2.29: 23.29 plik\_rd12\_HM.v22\_TT: 758.94



### 8.3 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02223 \pm 0.00023$	$S_8$	$0.817^{+0.030}_{-0.026}$	$100\theta_{s,eq}$	$0.4549^{+0.0043}_{-0.0079}$
$\Omega_c h^2$	$0.1215^{+0.0041}_{-0.0032}$	$\sigma_8 \Omega_m^{0.5}$	$0.447^{+0.016}_{-0.014}$	$H(0.15)$	$72.56^{+0.86}_{-1.4}$
$100\theta_{MC}$	$1.04053 \pm 0.00051$	$\sigma_8 \Omega_m^{0.25}$	$0.591^{+0.023}_{-0.015}$	$D_M(0.15)$	$646^{+13}_{-9.4}$
$\tau$	$0.0539^{+0.0050}_{-0.0082}$	$\sigma_8/h^{0.5}$	$0.954^{+0.038}_{-0.022}$	$H(0.38)$	$83.06^{+0.54}_{-1.2}$
$m_{\nu, sterile}^{eff} [eV]$	$< 0.331$	$r_{drag} h$	$97.5 \pm 2.1$	$D_M(0.38)$	$1536^{+28}_{-18}$
$N_{eff}$	$3.225^{+0.042}_{-0.18}$	$\langle d^2 \rangle^{1/2}$	$2.449 \pm 0.041$	$H(0.51)$	$90.00^{+0.40}_{-1.2}$
$\ln(10^{10} A_s)$	$3.049^{+0.013}_{-0.017}$	$z_{re}$	$7.75^{+0.56}_{-0.82}$	$D_M(0.51)$	$1987^{+35}_{-20}$
$n_s$	$0.9661^{+0.0070}_{-0.0096}$	$10^9 A_s$	$2.111^{+0.027}_{-0.037}$	$H(0.61)$	$95.80^{+0.34}_{-1.1}$
$y_{cal}$	$1.0005 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.895 \pm 0.016$	$D_M(0.61)$	$2310^{+38}_{-21}$
$A_{217}^{CIB}$	$49 \pm 7$	$D_{40}$	$1227 \pm 19$	$H(2.33)$	$239.8^{+1.9}_{-3.0}$
$\xi^{tSZ \times CIB}$	—	$D_{220}$	$5712 \pm 41$	$D_M(2.33)$	$5728^{+63}_{-19}$
$A_{143}^{tSZ}$	$4.8 \pm 2.0$	$D_{810}$	$2539 \pm 14$	$f\sigma_8(0.15)$	$0.451^{+0.016}_{-0.013}$
$A_{100}^{PS}$	$268 \pm 28$	$D_{1420}$	$813.2 \pm 5.2$	$\sigma_8(0.15)$	$0.721^{+0.033}_{-0.018}$
$A_{143}^{PS}$	$52 \pm 8$	$D_{2000}$	$228.2 \pm 2.0$	$f\sigma_8(0.38)$	$0.465^{+0.018}_{-0.012}$
$A_{143 \times 217}^{PS}$	$45^{+9}_{-10}$	$n_{s,0.002}$	$0.9661^{+0.0070}_{-0.0096}$	$\sigma_8(0.38)$	$0.637^{+0.030}_{-0.017}$
$A_{217}^{PS}$	$116 \pm 10$	$Y_P$	$0.24769^{+0.00072}_{-0.0023}$	$f\sigma_8(0.51)$	$0.462^{+0.018}_{-0.011}$
$A^{kSZ}$	$< 5.51$	$Y_P^{BBN}$	$0.24902^{+0.00072}_{-0.0023}$	$\sigma_8(0.51)$	$0.596^{+0.029}_{-0.016}$
$A_{100}^{dustTT}$	$9.0 \pm 1.8$	$10^5 D/H$	$2.674^{+0.048}_{-0.057}$	$f\sigma_8(0.61)$	$0.456^{+0.018}_{-0.011}$
$A_{143}^{dustTT}$	$10.8 \pm 1.8$	$Age/Gyr$	$13.71^{+0.15}_{-0.046}$	$\sigma_8(0.61)$	$0.566^{+0.028}_{-0.015}$
$A_{143 \times 217}^{dustTT}$	$18.3 \pm 3.3$	$z_*$	$1090.62 \pm 0.47$	$f\sigma_8(2.33)$	$0.286^{+0.014}_{-0.0079}$
$A_{217}^{dustTT}$	$93.1 \pm 7.4$	$r_*$	$142.8^{+1.7}_{-0.85}$	$\sigma_8(2.33)$	$0.293^{+0.015}_{-0.0086}$
$c_{100}$	$0.99960 \pm 0.00061$	$100\theta_*$	$1.04064^{+0.00057}_{-0.00051}$	$f_{2000}^{143}$	$33.0 \pm 3.2$
$c_{217}$	$0.99828 \pm 0.00062$	$D_M(z_*)/Gpc$	$13.72^{+0.16}_{-0.080}$	$f_{2000}^{143 \times 217}$	$35.1 \pm 2.3$
$H_0$	$67.1^{+1.1}_{-1.5}$	$z_{drag}$	$1060.04^{+0.56}_{-0.71}$	$f_{2000}^{217}$	$109.5 \pm 2.1$
$\Omega_\Lambda$	$0.672^{+0.019}_{-0.016}$	$r_{drag}$	$145.5^{+1.7}_{-0.87}$	$\chi_{small}^2$	$396.9 \pm 1.8$
$\Omega_m$	$0.328^{+0.016}_{-0.019}$	$k_D$	$0.14192^{+0.00081}_{-0.0013}$	$\chi_{lowl}^2$	$23.4 \pm 1.6$
$\Omega_m h^2$	$0.1474^{+0.0027}_{-0.0041}$	$100\theta_D$	$0.16136^{+0.00031}_{-0.00047}$	$\chi_{plik}^2$	$774.4 \pm 5.9$
$\Omega_\nu h^2$	$0.00369^{+0.00084}_{-0.0031}$	$z_{eq}$	$3354^{+72}_{-46}$	$\chi_{prior}^2$	$7.4 \pm 3.7$
$\Omega_m h^3$	$0.09883^{+0.00097}_{-0.0031}$	$k_{eq}$	$0.01039^{+0.00022}_{-0.00016}$	$\chi_{CMB}^2$	$1194.8 \pm 5.9$
$\sigma_8$	$0.781^{+0.035}_{-0.019}$	$100\theta_{eq}$	$0.8235^{+0.0084}_{-0.015}$		

$\bar{\chi}_{eff}^2 = 1202.13$ ;  $R - 1 = 0.02055$



#### 8.4 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02222 \pm 0.00022$	$S_8$	$0.819^{+0.023}_{-0.018}$	$100\theta_{s,eq}$	$0.4542^{+0.0029}_{-0.0067}$
$\Omega_c h^2$	$0.1215^{+0.0038}_{-0.0029}$	$\sigma_8 \Omega_m^{0.5}$	$0.448^{+0.013}_{-0.010}$	$H(0.15)$	$72.42^{+0.68}_{-1.1}$
$100\theta_{MC}$	$1.04054 \pm 0.00050$	$\sigma_8 \Omega_m^{0.25}$	$0.592^{+0.019}_{-0.012}$	$D_M(0.15)$	$647^{+11}_{-7.5}$
$\tau$	$0.0540^{+0.0051}_{-0.0080}$	$\sigma_8/h^{0.5}$	$0.955^{+0.032}_{-0.018}$	$H(0.38)$	$82.93^{+0.42}_{-0.98}$
$m_{\nu, sterile}^{eff} [eV]$	$< 0.331$	$r_{drag} h$	$97.4^{+1.9}_{-1.7}$	$D_M(0.38)$	$1538^{+23}_{-14}$
$N_{eff}$	$3.212^{+0.040}_{-0.16}$	$\langle d^2 \rangle^{1/2}$	$2.454 \pm 0.029$	$H(0.51)$	$89.88^{+0.31}_{-0.93}$
$\ln(10^{10} A_s)$	$3.050^{+0.012}_{-0.016}$	$z_{re}$	$7.76^{+0.57}_{-0.80}$	$D_M(0.51)$	$1990^{+28}_{-16}$
$n_s$	$0.9651^{+0.0059}_{-0.0079}$	$10^9 A_s$	$2.111^{+0.025}_{-0.035}$	$H(0.61)$	$95.68^{+0.27}_{-0.92}$
$y_{cal}$	$1.0005 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.895^{+0.013}_{-0.016}$	$D_M(0.61)$	$2313^{+31}_{-16}$
$A_{217}^{CIB}$	$49 \pm 7$	$D_{40}$	$1229 \pm 15$	$H(2.33)$	$239.7^{+1.7}_{-2.9}$
$\xi^{tSZ \times CIB}$	—	$D_{220}$	$5714 \pm 41$	$D_M(2.33)$	$5734^{+53}_{-16}$
$A_{143}^{tSZ}$	$4.8 \pm 2.0$	$D_{810}$	$2539 \pm 14$	$f\sigma_8(0.15)$	$0.452^{+0.013}_{-0.0096}$
$A_{100}^{PS}$	$268 \pm 28$	$D_{1420}$	$813.3 \pm 5.2$	$\sigma_8(0.15)$	$0.720^{+0.029}_{-0.017}$
$A_{143}^{PS}$	$52 \pm 8$	$D_{2000}$	$228.3 \pm 2.0$	$f\sigma_8(0.38)$	$0.466^{+0.015}_{-0.0091}$
$A_{143 \times 217}^{PS}$	$45^{+9}_{-10}$	$n_{s,0.002}$	$0.9651^{+0.0059}_{-0.0079}$	$\sigma_8(0.38)$	$0.637^{+0.027}_{-0.016}$
$A_{217}^{PS}$	$116 \pm 10$	$Y_P$	$0.24751^{+0.00067}_{-0.0021}$	$f\sigma_8(0.51)$	$0.462^{+0.015}_{-0.0090}$
$A^{kSZ}$	$< 5.41$	$Y_P^{BBN}$	$0.24884^{+0.00067}_{-0.0021}$	$\sigma_8(0.51)$	$0.595^{+0.025}_{-0.015}$
$A_{100}^{dustTT}$	$9.0 \pm 1.8$	$10^5 D/H$	$2.672^{+0.046}_{-0.056}$	$f\sigma_8(0.61)$	$0.456^{+0.016}_{-0.0090}$
$A_{143}^{dustTT}$	$10.8 \pm 1.8$	$Age/Gyr$	$13.72^{+0.13}_{-0.039}$	$\sigma_8(0.61)$	$0.566^{+0.024}_{-0.015}$
$A_{143 \times 217}^{dustTT}$	$18.4 \pm 3.3$	$z_*$	$1090.62^{+0.40}_{-0.47}$	$f\sigma_8(2.33)$	$0.285^{+0.012}_{-0.0078}$
$A_{217}^{dustTT}$	$93.2 \pm 7.4$	$r_*$	$142.9^{+1.6}_{-0.79}$	$\sigma_8(2.33)$	$0.293^{+0.013}_{-0.0086}$
$c_{100}$	$0.99960 \pm 0.00061$	$100\theta_*$	$1.04066 \pm 0.00053$	$f_{2000}^{143}$	$33.0 \pm 3.2$
$c_{217}$	$0.99828 \pm 0.00062$	$D_M(z_*)/Gpc$	$13.73^{+0.15}_{-0.074}$	$f_{2000}^{143 \times 217}$	$35.0 \pm 2.2$
$H_0$	$66.90^{+0.87}_{-1.2}$	$z_{drag}$	$1060.00^{+0.54}_{-0.65}$	$f_{2000}^{217}$	$109.4 \pm 2.1$
$\Omega_\Lambda$	$0.670^{+0.017}_{-0.013}$	$r_{drag}$	$145.5^{+1.6}_{-0.81}$	$\chi^2_{lensing}$	$9.25 \pm 0.93$
$\Omega_m$	$0.330^{+0.013}_{-0.017}$	$k_D$	$0.14187^{+0.00076}_{-0.0013}$	$\chi^2_{small}$	$501 \pm 200$
$\Omega_m h^2$	$0.1474^{+0.0024}_{-0.0040}$	$100\theta_D$	$0.16132^{+0.00031}_{-0.00045}$	$\chi^2_{lowl}$	$23.5 \pm 1.3$
$\Omega_\nu h^2$	$0.00364^{+0.00077}_{-0.0030}$	$z_{eq}$	$3360^{+61}_{-31}$	$\chi^2_{plik}$	$669 \pm 200$
$\Omega_m h^3$	$0.09857^{+0.00093}_{-0.0028}$	$k_{eq}$	$0.01040^{+0.00020}_{-0.00013}$	$\chi^2_{prior}$	$7.3 \pm 3.7$
$\sigma_8$	$0.781^{+0.030}_{-0.018}$	$100\theta_{eq}$	$0.8223^{+0.0056}_{-0.013}$	$\chi^2_{CMB}$	$1203.4 \pm 5.8$
$\bar{\chi}^2_{eff} = 1210.72; R - 1 = 0.02178$					



## 8.5 base\_nnu\_meffsterile\_plikHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}} h^2$	0.022445	$0.02243 \pm 0.00016$ (+0.9 $\sigma$ )	$\Omega_{\text{m}} h^2$	0.14339	$0.1459^{+0.0017}_{-0.0028}$ (−0.4 $\sigma$ )	$k_{\text{eq}}$	0.010384	$0.01035^{+0.00019}_{-0.00010}$ (−0.2 $\sigma$ )
$\Omega_{\text{c}} h^2$	0.12030	$0.1199^{+0.0035}_{-0.0021}$ (−0.4 $\sigma$ )	$\Omega_{\nu} h^2$	0.00065	$0.00353^{+0.00063}_{-0.0029}$ (−0.1 $\sigma$ )	$100\theta_{\text{eq}}$	0.8150	$0.8239^{+0.0055}_{-0.014}$ (+0.0 $\sigma$ )
$100\theta_{\text{MC}}$	1.040883	$1.04074^{+0.00035}_{-0.00031}$ (+0.4 $\sigma$ )	$\Omega_{\text{m}} h^3$	0.09713	$0.09795^{+0.00059}_{-0.0018}$ (−0.3 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.4502	$0.4549^{+0.0028}_{-0.0075}$ (+0.0 $\sigma$ )
$\tau$	0.0602	$0.0546 \pm 0.0079$ (+0.3 $\sigma$ )	$\sigma_8$	0.8174	$0.783^{+0.030}_{-0.017}$ (+0.1 $\sigma$ )	$H(0.15)$	73.05	$72.58^{+0.54}_{-0.76}$ (+0.1 $\sigma$ )
$m_{\nu, \text{sterile}}^{\text{eff}}$ [eV]	0.000	< 0.323 (−0.1 $\sigma$ )	$S_8$	0.8342	$0.813^{+0.027}_{-0.019}$ (−0.1 $\sigma$ )	$D_{\text{M}}(0.15)$	639.9	$644.9^{+7.4}_{-5.8}$ (−0.1 $\sigma$ )
$N_{\text{eff}}$	3.084	$3.152^{+0.024}_{-0.11}$ (−0.5 $\sigma$ )	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4569	$0.445^{+0.015}_{-0.010}$ (−0.1 $\sigma$ )	$H(0.38)$	83.215	$82.97^{+0.33}_{-0.63}$ (−0.0 $\sigma$ )
$\ln(10^{10} A_{\text{s}})$	3.0581	$3.049 \pm 0.017$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6111	$0.590^{+0.021}_{-0.012}$ (−0.0 $\sigma$ )	$D_{\text{M}}(0.38)$	1525.9	$1535^{+15}_{-11}$ (−0.1 $\sigma$ )
$n_{\text{s}}$	0.9687	$0.9655^{+0.0049}_{-0.0059}$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9932	$0.955^{+0.035}_{-0.018}$ (+0.1 $\sigma$ )	$H(0.51)$	89.965	$89.86^{+0.25}_{-0.58}$ (−0.1 $\sigma$ )
$y_{\text{cal}}$	1.00100	$1.0008 \pm 0.0025$ (+0.1 $\sigma$ )	$r_{\text{drag}} h$	99.40	$98.0^{+1.5}_{-1.2}$ (+0.3 $\sigma$ )	$D_{\text{M}}(0.51)$	1976.5	$1987^{+18}_{-12}$ (−0.0 $\sigma$ )
$A_{217}^{\text{CIB}}$	45.5	$47 \pm 7$ (−0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4513	$2.448 \pm 0.028$ (+0.0 $\sigma$ )	$H(0.61)$	95.611	$95.60^{+0.21}_{-0.57}$ (−0.2 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.74	—	$z_{\text{re}}$	8.27	$7.74 \pm 0.80$ (+0.2 $\sigma$ )	$D_{\text{M}}(0.61)$	2299.8	$2310^{+20}_{-13}$ (−0.0 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.03	$5.3 \pm 2.0$ (+0.3 $\sigma$ )	$10^9 A_{\text{s}}$	2.1288	$2.110^{+0.032}_{-0.036}$ (+0.1 $\sigma$ )	$H(2.33)$	236.96	$238.7^{+1.2}_{-2.1}$ (−0.4 $\sigma$ )
$A_{100}^{\text{PS}}$	247.5	$261 \pm 28$ (−0.3 $\sigma$ )	$10^9 A_{\text{s}} e^{-2\tau}$	1.8872	$1.891 \pm 0.013$ (−0.2 $\sigma$ )	$D_{\text{M}}(2.33)$	5744.7	$5740^{+33}_{-11}$ (+0.2 $\sigma$ )
$A_{143}^{\text{PS}}$	51.8	$48 \pm 8$ (−0.5 $\sigma$ )	$D_{40}$	1227.2	$1230 \pm 14$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4615	$0.449^{+0.015}_{-0.010}$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	55.4	$43 \pm 9$ (−0.2 $\sigma$ )	$D_{220}$	5734.8	$5733 \pm 39$ (+0.5 $\sigma$ )	$\sigma_8(0.15)$	0.7552	$0.722^{+0.029}_{-0.016}$ (+0.1 $\sigma$ )
$A_{217}^{\text{PS}}$	122.9	$116 \pm 10$ (+0.0 $\sigma$ )	$D_{810}$	2544.6	$2542 \pm 14$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.4797	$0.464^{+0.016}_{-0.0096}$ (−0.0 $\sigma$ )
$A^{\text{kSZ}}$	0.00	< 4.66 (−0.2 $\sigma$ )	$D_{1420}$	819.33	$816.6 \pm 4.8$ (+0.7 $\sigma$ )	$\sigma_8(0.38)$	0.6694	$0.639^{+0.026}_{-0.014}$ (+0.1 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.81	$9.0 \pm 1.8$ (−0.0 $\sigma$ )	$D_{2000}$	231.71	$230.0 \pm 1.7$ (+0.9 $\sigma$ )	$f\sigma_8(0.51)$	0.4782	$0.461^{+0.016}_{-0.0094}$ (+0.0 $\sigma$ )
$A_{143}^{\text{dustTT}}$	11.02	$11.0 \pm 1.8$ (+0.1 $\sigma$ )	$n_{\text{s}, 0.002}$	0.9687	$0.9655^{+0.0049}_{-0.0059}$ (−0.0 $\sigma$ )	$\sigma_8(0.51)$	0.6264	$0.598^{+0.025}_{-0.013}$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	20.27	$18.8 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\text{P}}$	0.24593	$0.24681^{+0.00044}_{-0.0013}$ (−0.4 $\sigma$ )	$f\sigma_8(0.61)$	0.4731	$0.456^{+0.017}_{-0.0092}$ (+0.0 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.7	$93.8 \pm 7.3$ (+0.1 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.24726	$0.24815^{+0.00044}_{-0.0013}$ (−0.4 $\sigma$ )	$\sigma_8(0.61)$	0.5960	$0.568^{+0.024}_{-0.013}$ (+0.1 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1137	$0.114 \pm 0.038$	$10^5 \text{D/H}$	2.5849	$2.612^{+0.029}_{-0.034}$ (−1.2 $\sigma$ )	$f\sigma_8(2.33)$	0.3004	$0.286^{+0.012}_{-0.0066}$ (+0.1 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1350	$0.134 \pm 0.029$	Age/Gyr	13.753	$13.740^{+0.080}_{-0.026}$ (+0.2 $\sigma$ )	$\sigma_8(2.33)$	0.3097	$0.295^{+0.013}_{-0.0071}$ (+0.1 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.480	$0.480 \pm 0.085$	$z_*$	1089.891	$1090.16^{+0.29}_{-0.33}$ (−1.0 $\sigma$ )	$f_{2000}^{143}$	28.47	$30.8 \pm 2.8$ (−0.7 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.225	$0.224 \pm 0.054$	$r_*$	144.11	$143.3^{+1.1}_{-0.53}$ (+0.4 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.89	$33.2 \pm 1.9$ (−0.8 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.665	$0.666 \pm 0.080$	$100\theta_*$	1.041033	$1.04087^{+0.00037}_{-0.00032}$ (+0.4 $\sigma$ )	$f_{2000}^{217}$	106.43	$108.0 \pm 1.9$ (−0.7 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.081	$2.09 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.843	$13.77^{+0.10}_{-0.050}$ (+0.4 $\sigma$ )	$\chi_{\text{simall}}^2$	397.59	$397.2 \pm 2.0$ (+0.1 $\sigma$ )
$c_{100}$	0.99974	$0.99966 \pm 0.00061$ (+0.1 $\sigma$ )	$z_{\text{drag}}$	1060.162	$1060.33^{+0.35}_{-0.49}$ (+0.5 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.02	$23.4 \pm 1.1$ (−0.0 $\sigma$ )
$c_{217}$	0.99817	$0.99821 \pm 0.00062$ (−0.1 $\sigma$ )	$r_{\text{drag}}$	146.74	$146.0^{+1.1}_{-0.54}$ (+0.4 $\sigma$ )	$\chi_{\text{plik}}^2$	2344.4	$2362.4 \pm 6.2$ (+269.3 $\sigma$ )
$H_0$	67.74	$67.14^{+0.68}_{-0.85}$ (+0.1 $\sigma$ )	$k_{\text{D}}$	0.14115	$0.14178^{+0.00050}_{-0.00092}$ (−0.1 $\sigma$ )	$\chi_{\text{prior}}^2$	1.64	$11.7 \pm 4.7$ (+1.2 $\sigma$ )
$\Omega_{\Lambda}$	0.6875	$0.676^{+0.013}_{-0.0094}$ (+0.3 $\sigma$ )	$100\theta_{\text{D}}$	0.160784	$0.16090^{+0.00019}_{-0.00025}$ (−1.1 $\sigma$ )	$\chi_{\text{CMB}}^2$	2765.0	$2783.1 \pm 6.3$ (+267.7 $\sigma$ )
$\Omega_{\text{m}}$	0.3125	$0.3239^{+0.0094}_{-0.013}$ (−0.3 $\sigma$ )	$z_{\text{eq}}$	3393.7	$3355^{+68}_{-30}$ (−0.0 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 2766.68$ ;  $\Delta\chi_{\text{eff}}^2 = 1587.02$ ;  $\bar{\chi}_{\text{eff}}^2 = 2794.77$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1592.41$ ;  $R - 1 = 0.01444$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 397.59 ( $\Delta$  1.65) commander\_dx12\_v3.2.29: 23.02 ( $\Delta$  -0.56) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.43



## 8.6 base\_nnu\_meffsterile\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022389	$0.02242^{+0.00014}_{-0.00016}$ (+1.0 $\sigma$ )	$\Omega_m h^2$	0.14291	$0.1459^{+0.0017}_{-0.0027}$ (−0.5 $\sigma$ )	$k_{\text{eq}}$	0.009249	$0.01035^{+0.00017}_{-0.000097}$ (−0.3 $\sigma$ )
$\Omega_c h^2$	0.09952	$0.1200^{+0.0032}_{-0.0020}$ (−0.4 $\sigma$ )	$\Omega_\nu h^2$	0.02100	$0.00338^{+0.00084}_{-0.0027}$ (−0.1 $\sigma$ )	$100\theta_{\text{eq}}$	0.9283	$0.8230^{+0.0051}_{-0.013}$ (+0.1 $\sigma$ )
$100\theta_{\text{MC}}$	1.040940	$1.04074^{+0.00033}_{-0.00029}$ (+0.4 $\sigma$ )	$\Omega_m h^3$	0.09635	$0.09787^{+0.00055}_{-0.0017}$ (−0.3 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.50955	$0.4545^{+0.0026}_{-0.0066}$ (+0.1 $\sigma$ )
$\tau$	0.0543	$0.0552^{+0.0070}_{-0.0079}$ (+0.3 $\sigma$ )	$\sigma_8$	0.8065	$0.784^{+0.026}_{-0.016}$ (+0.1 $\sigma$ )	$H(0.15)$	72.74	$72.56^{+0.50}_{-0.70}$ (+0.2 $\sigma$ )
$m_{\nu, \text{sterile}}^{\text{eff}}$ [eV]	1.915	< 0.319 (−0.1 $\sigma$ )	$S_8$	0.8256	$0.815^{+0.022}_{-0.016}$ (−0.2 $\sigma$ )	$D_{\text{M}}(0.15)$	642.8	$645.2^{+6.8}_{-5.3}$ (−0.2 $\sigma$ )
$N_{\text{eff}}$	3.054	$3.147^{+0.023}_{-0.10}$ (−0.5 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4522	$0.446^{+0.012}_{-0.0087}$ (−0.2 $\sigma$ )	$H(0.38)$	82.906	$82.95^{+0.31}_{-0.57}$ (+0.1 $\sigma$ )
$\ln(10^{10} A_s)$	3.0438	$3.050^{+0.014}_{-0.016}$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6039	$0.591^{+0.017}_{-0.011}$ (−0.0 $\sigma$ )	$D_{\text{M}}(0.38)$	1532.4	$1536^{+14}_{-10}$ (−0.2 $\sigma$ )
$n_s$	0.9660	$0.9652^{+0.0045}_{-0.0056}$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9822	$0.957^{+0.029}_{-0.017}$ (+0.1 $\sigma$ )	$H(0.51)$	89.658	$89.83^{+0.23}_{-0.53}$ (−0.0 $\sigma$ )
$y_{\text{cal}}$	1.00046	$1.0009 \pm 0.0025$ (+0.1 $\sigma$ )	$r_{\text{drag}} h$	99.18	$98.0^{+1.4}_{-1.2}$ (+0.4 $\sigma$ )	$D_{\text{M}}(0.51)$	1984.6	$1987^{+17}_{-11}$ (−0.2 $\sigma$ )
$A_{217}^{\text{CIB}}$	47.7	$47 \pm 7$ (−0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4444	$2.451 \pm 0.023$ (−0.1 $\sigma$ )	$H(0.61)$	95.304	$95.58^{+0.18}_{-0.52}$ (−0.1 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.33	—	$z_{\text{re}}$	7.68	$7.80 \pm 0.76$ (+0.2 $\sigma$ )	$D_{\text{M}}(0.61)$	2309.0	$2311^{+18}_{-12}$ (−0.1 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.30	$5.3 \pm 2.0$ (+0.3 $\sigma$ )	$10^9 A_s$	2.0984	$2.112^{+0.029}_{-0.034}$ (+0.2 $\sigma$ )	$H(2.33)$	236.50	$238.6^{+1.2}_{-2.0}$ (−0.5 $\sigma$ )
$A_{100}^{\text{PS}}$	250.6	$262 \pm 27$ (−0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8823	$1.891 \pm 0.012$ (−0.3 $\sigma$ )	$D_{\text{M}}(2.33)$	5762.3	$5742^{+31}_{-9.7}$ (+0.1 $\sigma$ )
$A_{143}^{\text{PS}}$	45.9	$48 \pm 8$ (−0.5 $\sigma$ )	$D_{40}$	1228.4	$1231 \pm 13$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4565	$0.450^{+0.012}_{-0.0086}$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	44.8	$43 \pm 9$ (−0.2 $\sigma$ )	$D_{220}$	5729.5	$5734 \pm 39$ (+0.5 $\sigma$ )	$\sigma_8(0.15)$	0.7449	$0.723^{+0.024}_{-0.016}$ (+0.1 $\sigma$ )
$A_{217}^{\text{PS}}$	118.6	$116 \pm 10$ (−0.0 $\sigma$ )	$D_{810}$	2539.8	$2542 \pm 14$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.4741	$0.465^{+0.013}_{-0.0087}$ (−0.0 $\sigma$ )
$A^{\text{kSZ}}$	0.00	< 4.57 (−0.2 $\sigma$ )	$D_{1420}$	817.6	$816.6 \pm 4.9$ (+0.6 $\sigma$ )	$\sigma_8(0.38)$	0.6600	$0.640^{+0.022}_{-0.014}$ (+0.2 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.90	$9.0 \pm 1.8$ (−0.0 $\sigma$ )	$D_{2000}$	231.22	$230.1 \pm 1.7$ (+0.9 $\sigma$ )	$f\sigma_8(0.51)$	0.4724	$0.462^{+0.014}_{-0.0087}$ (+0.0 $\sigma$ )
$A_{143}^{\text{dustTT}}$	11.04	$11.0 \pm 1.8$ (+0.1 $\sigma$ )	$n_{\text{s},0.002}$	0.9660	$0.9652^{+0.0045}_{-0.0056}$ (+0.1 $\sigma$ )	$\sigma_8(0.51)$	0.6175	$0.598^{+0.021}_{-0.014}$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	19.71	$18.8 \pm 3.2$ (+0.1 $\sigma$ )	$Y_{\text{P}}$	0.24551	$0.24675^{+0.00043}_{-0.0013}$ (−0.4 $\sigma$ )	$f\sigma_8(0.61)$	0.4672	$0.456^{+0.014}_{-0.0087}$ (+0.0 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.0	$93.9 \pm 7.3$ (+0.1 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.24683	$0.24809^{+0.00043}_{-0.0013}$ (−0.4 $\sigma$ )	$\sigma_8(0.61)$	0.5875	$0.569^{+0.020}_{-0.013}$ (+0.2 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1142	$0.115 \pm 0.038$	$10^5 \text{D/H}$	2.5846	$2.611^{+0.029}_{-0.034}$ (−1.2 $\sigma$ )	$f\sigma_8(2.33)$	0.2961	$0.287^{+0.010}_{-0.0068}$ (+0.2 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1351	$0.134 \pm 0.029$	Age/Gyr	13.7944	$13.744^{+0.073}_{-0.023}$ (+0.2 $\sigma$ )	$\sigma_8(2.33)$	0.3052	$0.295^{+0.011}_{-0.0074}$ (+0.2 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.477 \pm 0.084$	$z_*$	1089.890	$1090.16^{+0.28}_{-0.32}$ (−1.1 $\sigma$ )	$f_{2000}^{143}$	28.90	$30.8 \pm 2.8$ (−0.7 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.225	$0.224 \pm 0.054$	$r_*$	144.45	$143.4^{+1.0}_{-0.53}$ (+0.4 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.96	$33.2^{+1.8}_{-2.1}$ (−0.8 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.664	$0.664 \pm 0.081$	$100\theta_*$	1.041114	$1.04087^{+0.00036}_{-0.00030}$ (+0.4 $\sigma$ )	$f_{2000}^{217}$	106.62	$108.0 \pm 1.9$ (−0.7 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.077	$2.08 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.874	$13.775^{+0.096}_{-0.050}$ (+0.4 $\sigma$ )	$\chi_{\text{lensing}}^2$	8.958	$9.03 \pm 0.70$ (−0.3 $\sigma$ )
$c_{100}$	0.99972	$0.99966 \pm 0.00061$ (+0.1 $\sigma$ )	$z_{\text{drag}}$	1059.971	$1060.31^{+0.34}_{-0.47}$ (+0.5 $\sigma$ )	$\chi_{\text{small}}^2$	396	$1646 \pm 900$ (+6.8 $\sigma$ )
$c_{217}$	0.99819	$0.99822 \pm 0.00062$ (−0.1 $\sigma$ )	$r_{\text{drag}}$	147.10	$146.0^{+1.1}_{-0.54}$ (+0.4 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.22	$23.5 \pm 1.0$ (−0.1 $\sigma$ )
$H_0$	67.42	$67.11^{+0.63}_{-0.79}$ (+0.2 $\sigma$ )	$k_{\text{D}}$	0.14087	$0.14176^{+0.00051}_{-0.00088}$ (−0.1 $\sigma$ )	$\chi_{\text{plik}}^2$	2344	$1113 \pm 900$ (+2.6 $\sigma$ )
$\Omega_\Lambda$	0.6856	$0.676^{+0.012}_{-0.0093}$ (+0.4 $\sigma$ )	$100\theta_{\text{D}}$	0.160743	$0.16089^{+0.00019}_{-0.00024}$ (−1.1 $\sigma$ )	$\chi_{\text{prior}}^2$	1.81	$11.6 \pm 4.7$ (+1.2 $\sigma$ )
$\Omega_{\text{m}}$	0.3144	$0.3240^{+0.0093}_{-0.012}$ (−0.4 $\sigma$ )	$z_{\text{eq}}$	2910.2	$3359^{+60}_{-27}$ (−0.0 $\sigma$ )	$\chi_{\text{CMB}}^2$	2772.3	$2791.6 \pm 6.3$ (+269.6 $\sigma$ )

Best-fit  $\chi_{\text{eff}}^2 = 2774.15$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.64$ ;  $\bar{\chi}_{\text{eff}}^2 = 2803.21$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1592.26$ ;  $R - 1 = 0.04894$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.96 ( $\Delta$  0.07) simall\_100x143\_offlike5\_EE\_Aplanck.B: 396.02 ( $\Delta$  -0.02) commander\_dx12.v3.2.29: 23.22 ( $\Delta$  -0.07) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.13



## 8.7 base\_nnu\_meffsterile\_plikHM\_TTTEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02243 \pm 0.00016 \quad (+0.8\sigma)$	$\Omega_{\text{m}}h^2$	$0.1459^{+0.0017}_{-0.0029} \quad (-0.4\sigma)$	$k_{\text{eq}}$	$0.01035^{+0.00019}_{-0.00010} \quad (-0.2\sigma)$
$\Omega_{\text{c}}h^2$	$0.1200^{+0.0035}_{-0.0021} \quad (-0.4\sigma)$	$\Omega_{\nu}h^2$	$0.00351^{+0.00062}_{-0.0029} \quad (-0.1\sigma)$	$100\theta_{\text{eq}}$	$0.8239^{+0.0056}_{-0.014} \quad (+0.0\sigma)$
$100\theta_{\text{MC}}$	$1.04074 \pm 0.00033 \quad (+0.4\sigma)$	$\Omega_{\text{m}}h^3$	$0.09797^{+0.00059}_{-0.0018} \quad (-0.3\sigma)$	$100\theta_{\text{s,eq}}$	$0.4549^{+0.0028}_{-0.0074} \quad (+0.0\sigma)$
$\tau$	$0.0556^{+0.0056}_{-0.0082} \quad (+0.2\sigma)$	$\sigma_8$	$0.784^{+0.030}_{-0.016} \quad (+0.1\sigma)$	$H(0.15)$	$72.60^{+0.53}_{-0.76} \quad (+0.0\sigma)$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.321 \quad (-0.1\sigma)$	$S_8$	$0.814^{+0.027}_{-0.019} \quad (-0.1\sigma)$	$D_{\text{M}}(0.15)$	$644.8^{+7.4}_{-5.7} \quad (-0.1\sigma)$
$N_{\text{eff}}$	$3.152^{+0.024}_{-0.11} \quad (-0.5\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.446^{+0.015}_{-0.010} \quad (-0.1\sigma)$	$H(0.38)$	$82.98^{+0.33}_{-0.64} \quad (-0.1\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.051^{+0.013}_{-0.017} \quad (+0.1\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.591^{+0.021}_{-0.012} \quad (-0.0\sigma)$	$D_{\text{M}}(0.38)$	$1535^{+15}_{-11} \quad (-0.0\sigma)$
$n_{\text{s}}$	$0.9656^{+0.0049}_{-0.0059} \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.956^{+0.035}_{-0.018} \quad (+0.1\sigma)$	$H(0.51)$	$89.87^{+0.25}_{-0.59} \quad (-0.1\sigma)$
$y_{\text{cal}}$	$1.0008 \pm 0.0025 \quad (+0.1\sigma)$	$r_{\text{drag}}h$	$98.0^{+1.5}_{-1.2} \quad (+0.2\sigma)$	$D_{\text{M}}(0.51)$	$1986^{+18}_{-12} \quad (-0.0\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.450 \pm 0.028 \quad (+0.0\sigma)$	$H(0.61)$	$95.61^{+0.21}_{-0.58} \quad (-0.2\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$z_{\text{re}}$	$7.84^{+0.62}_{-0.81} \quad (+0.1\sigma)$	$D_{\text{M}}(0.61)$	$2310^{+20}_{-13} \quad (+0.0\sigma)$
$A_{143}^{\text{tSZ}}$	$5.3 \pm 2.0 \quad (+0.3\sigma)$	$10^9 A_{\text{s}}$	$2.113^{+0.026}_{-0.036} \quad (+0.1\sigma)$	$H(2.33)$	$238.7^{+1.2}_{-2.1} \quad (-0.4\sigma)$
$A_{100}^{\text{PS}}$	$261 \pm 28 \quad (-0.3\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.891 \pm 0.013 \quad (-0.2\sigma)$	$D_{\text{M}}(2.33)$	$5740^{+34}_{-11} \quad (+0.2\sigma)$
$A_{143}^{\text{PS}}$	$48 \pm 8 \quad (-0.5\sigma)$	$D_{40}$	$1230 \pm 14 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.449^{+0.015}_{-0.0099} \quad (-0.1\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9 \quad (-0.2\sigma)$	$D_{220}$	$5732 \pm 39 \quad (+0.5\sigma)$	$\sigma_8(0.15)$	$0.723^{+0.029}_{-0.015} \quad (+0.1\sigma)$
$A_{217}^{\text{PS}}$	$116 \pm 10 \quad (+0.0\sigma)$	$D_{810}$	$2542 \pm 14 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.464^{+0.016}_{-0.0095} \quad (-0.0\sigma)$
$A^{\text{kSZ}}$	$< 4.62 \quad (-0.2\sigma)$	$D_{1420}$	$816.6 \pm 4.8 \quad (+0.6\sigma)$	$\sigma_8(0.38)$	$0.640^{+0.026}_{-0.014} \quad (+0.1\sigma)$
$A_{100}^{\text{dustTT}}$	$9.0 \pm 1.8 \quad (-0.0\sigma)$	$D_{2000}$	$230.0 \pm 1.7 \quad (+0.9\sigma)$	$f\sigma_8(0.51)$	$0.462^{+0.016}_{-0.0092} \quad (-0.0\sigma)$
$A_{143}^{\text{dustTT}}$	$11.0 \pm 1.8 \quad (+0.1\sigma)$	$n_{\text{s},0.002}$	$0.9656^{+0.0049}_{-0.0059} \quad (-0.0\sigma)$	$\sigma_8(0.51)$	$0.598^{+0.025}_{-0.013} \quad (+0.1\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.7 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.24683^{+0.00044}_{-0.0014} \quad (-0.5\sigma)$	$f\sigma_8(0.61)$	$0.456^{+0.017}_{-0.0091} \quad (+0.0\sigma)$
$A_{217}^{\text{dustTT}}$	$93.8 \pm 7.3 \quad (+0.1\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.24816^{+0.00044}_{-0.0014} \quad (-0.5\sigma)$	$\sigma_8(0.61)$	$0.569^{+0.024}_{-0.013} \quad (+0.1\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$10^5 \text{D/H}$	$2.611^{+0.029}_{-0.034} \quad (-1.2\sigma)$	$f\sigma_8(2.33)$	$0.287^{+0.012}_{-0.0065} \quad (+0.1\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134 \pm 0.029$	$\text{Age/Gyr}$	$13.739^{+0.080}_{-0.027} \quad (+0.2\sigma)$	$\sigma_8(2.33)$	$0.295^{+0.013}_{-0.0069} \quad (+0.1\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.480 \pm 0.085$	$z_*$	$1090.16^{+0.29}_{-0.32} \quad (-1.0\sigma)$	$f_{2000}^{143}$	$30.7 \pm 2.8 \quad (-0.7\sigma)$
$A_{143}^{\text{dustTE}}$	$0.224 \pm 0.054$	$r_*$	$143.3^{+1.1}_{-0.53} \quad (+0.4\sigma)$	$f_{2000}^{143 \times 217}$	$33.2 \pm 1.9 \quad (-0.8\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.666 \pm 0.081$	$100\theta_*$	$1.04087^{+0.00037}_{-0.00032} \quad (+0.4\sigma)$	$f_{2000}^{217}$	$107.9 \pm 1.9 \quad (-0.7\sigma)$
$A_{217}^{\text{dustTE}}$	$2.09 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.77^{+0.10}_{-0.050} \quad (+0.4\sigma)$	$\chi_{\text{small}}^2$	$397.2 \pm 2.0 \quad (+0.2\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$z_{\text{drag}}$	$1060.33^{+0.35}_{-0.49} \quad (+0.4\sigma)$	$\chi_{\text{lowl}}^2$	$23.4 \pm 1.1 \quad (+0.0\sigma)$
$c_{217}$	$0.99821 \pm 0.00062 \quad (-0.1\sigma)$	$r_{\text{drag}}$	$146.0^{+1.1}_{-0.54} \quad (+0.4\sigma)$	$\chi_{\text{plik}}^2$	$2362.2 \pm 6.2 \quad (+269.5\sigma)$
$H_0$	$67.15^{+0.67}_{-0.85} \quad (+0.1\sigma)$	$k_{\text{D}}$	$0.14179^{+0.00050}_{-0.00093} \quad (-0.1\sigma)$	$\chi_{\text{prior}}^2$	$11.7 \pm 4.7 \quad (+1.2\sigma)$
$\Omega_{\Lambda}$	$0.676^{+0.013}_{-0.0093} \quad (+0.3\sigma)$	$100\theta_{\text{D}}$	$0.16089^{+0.00019}_{-0.00025} \quad (-1.1\sigma)$	$\chi_{\text{CMB}}^2$	$2782.9 \pm 6.2 \quad (+270.3\sigma)$
$\Omega_{\text{m}}$	$0.3238^{+0.0093}_{-0.013} \quad (-0.3\sigma)$	$z_{\text{eq}}$	$3355^{+67}_{-30} \quad (+0.0\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2794.57; \Delta\bar{\chi}_{\text{eff}}^2 = 1592.45; R - 1 = 0.01250$$



## 8.8 base\_nnu\_meffsterile\_plikHM\_TTTEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02243^{+0.00014}_{-0.00016} \quad (+0.9\sigma)$	$\Omega_m h^2$	$0.1458^{+0.0017}_{-0.0027} \quad (-0.4\sigma)$	$k_{\text{eq}}$	$0.01035^{+0.00017}_{-0.000097} \quad (-0.3\sigma)$
$\Omega_c h^2$	$0.1200^{+0.0032}_{-0.0020} \quad (-0.4\sigma)$	$\Omega_\nu h^2$	$0.00339^{+0.00084}_{-0.0027} \quad (-0.1\sigma)$	$100\theta_{\text{eq}}$	$0.8232^{+0.0050}_{-0.013} \quad (+0.1\sigma)$
$100\theta_{\text{MC}}$	$1.04075^{+0.00033}_{-0.00029} \quad (+0.4\sigma)$	$\Omega_m h^3$	$0.09789^{+0.00056}_{-0.0017} \quad (-0.3\sigma)$	$100\theta_{\text{s,eq}}$	$0.4546^{+0.0026}_{-0.0065} \quad (+0.0\sigma)$
$\tau$	$0.0559^{+0.0058}_{-0.0080} \quad (+0.3\sigma)$	$\sigma_8$	$0.784^{+0.026}_{-0.016} \quad (+0.1\sigma)$	$H(0.15)$	$72.57^{+0.50}_{-0.70} \quad (+0.1\sigma)$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.320 \quad (-0.1\sigma)$	$S_8$	$0.815^{+0.022}_{-0.016} \quad (-0.2\sigma)$	$D_{\text{M}}(0.15)$	$645.0^{+6.8}_{-5.3} \quad (-0.2\sigma)$
$N_{\text{eff}}$	$3.148^{+0.023}_{-0.10} \quad (-0.5\sigma)$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.446^{+0.012}_{-0.0087} \quad (-0.2\sigma)$	$H(0.38)$	$82.96^{+0.31}_{-0.57} \quad (+0.0\sigma)$
$\ln(10^{10} A_{\text{s}})$	$3.051^{+0.012}_{-0.016} \quad (+0.1\sigma)$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.592^{+0.017}_{-0.011} \quad (-0.0\sigma)$	$D_{\text{M}}(0.38)$	$1535^{+14}_{-10} \quad (-0.1\sigma)$
$n_{\text{s}}$	$0.9654^{+0.0045}_{-0.0056} \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.957^{+0.029}_{-0.017} \quad (+0.1\sigma)$	$H(0.51)$	$89.84^{+0.23}_{-0.53} \quad (-0.0\sigma)$
$y_{\text{cal}}$	$1.0009 \pm 0.0026 \quad (+0.1\sigma)$	$r_{\text{drag}} h$	$98.0^{+1.4}_{-1.2} \quad (+0.3\sigma)$	$D_{\text{M}}(0.51)$	$1987^{+17}_{-11} \quad (-0.1\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.451 \pm 0.022 \quad (-0.1\sigma)$	$H(0.61)$	$95.59^{+0.18}_{-0.53} \quad (-0.1\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$z_{\text{re}}$	$7.86^{+0.63}_{-0.79} \quad (+0.2\sigma)$	$D_{\text{M}}(0.61)$	$2311^{+18}_{-12} \quad (-0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$5.3^{+2.1}_{-1.9} \quad (+0.3\sigma)$	$10^9 A_{\text{s}}$	$2.115^{+0.025}_{-0.034} \quad (+0.1\sigma)$	$H(2.33)$	$238.6^{+1.2}_{-2.0} \quad (-0.4\sigma)$
$A_{100}^{\text{PS}}$	$262 \pm 28 \quad (-0.2\sigma)$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.891 \pm 0.012 \quad (-0.3\sigma)$	$D_{\text{M}}(2.33)$	$5741^{+31}_{-9.8} \quad (+0.2\sigma)$
$A_{143}^{\text{PS}}$	$48 \pm 8 \quad (-0.5\sigma)$	$D_{40}$	$1231 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.450^{+0.012}_{-0.0086} \quad (-0.2\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9 \quad (-0.2\sigma)$	$D_{220}$	$5734 \pm 39 \quad (+0.5\sigma)$	$\sigma_8(0.15)$	$0.724^{+0.025}_{-0.015} \quad (+0.1\sigma)$
$A_{217}^{\text{PS}}$	$116 \pm 10 \quad (-0.0\sigma)$	$D_{810}$	$2542 \pm 14 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.465^{+0.013}_{-0.0086} \quad (-0.0\sigma)$
$A^{\text{kSZ}}$	$< 4.54 \quad (-0.2\sigma)$	$D_{1420}$	$816.6 \pm 4.9 \quad (+0.6\sigma)$	$\sigma_8(0.38)$	$0.640^{+0.022}_{-0.014} \quad (+0.1\sigma)$
$A_{100}^{\text{dustTT}}$	$9.0 \pm 1.8 \quad (+0.0\sigma)$	$D_{2000}$	$230.1 \pm 1.7 \quad (+0.9\sigma)$	$f\sigma_8(0.51)$	$0.462^{+0.014}_{-0.0086} \quad (+0.0\sigma)$
$A_{143}^{\text{dustTT}}$	$11.0 \pm 1.8 \quad (+0.1\sigma)$	$n_{\text{s}, 0.002}$	$0.9654^{+0.0045}_{-0.0056} \quad (+0.0\sigma)$	$\sigma_8(0.51)$	$0.599^{+0.021}_{-0.014} \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.8 \pm 3.2 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.24677^{+0.00044}_{-0.0013} \quad (-0.4\sigma)$	$f\sigma_8(0.61)$	$0.457^{+0.014}_{-0.0086} \quad (+0.0\sigma)$
$A_{217}^{\text{dustTT}}$	$93.9 \pm 7.2 \quad (+0.1\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.24810^{+0.00044}_{-0.0013} \quad (-0.4\sigma)$	$\sigma_8(0.61)$	$0.569^{+0.020}_{-0.013} \quad (+0.2\sigma)$
$A_{100}^{\text{dustTE}}$	$0.115 \pm 0.038$	$10^5 \text{D/H}$	$2.611^{+0.029}_{-0.034} \quad (-1.2\sigma)$	$f\sigma_8(2.33)$	$0.287^{+0.010}_{-0.0068} \quad (+0.2\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134 \pm 0.029$	$\text{Age/Gyr}$	$13.742^{+0.073}_{-0.023} \quad (+0.2\sigma)$	$\sigma_8(2.33)$	$0.295^{+0.011}_{-0.0073} \quad (+0.2\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.477 \pm 0.084$	$z_*$	$1090.16^{+0.28}_{-0.32} \quad (-1.0\sigma)$	$f_{2000}^{143}$	$30.8 \pm 2.8 \quad (-0.7\sigma)$
$A_{143}^{\text{dustTE}}$	$0.224 \pm 0.054$	$r_*$	$143.4^{+1.0}_{-0.54} \quad (+0.4\sigma)$	$f_{2000}^{143 \times 217}$	$33.2^{+1.8}_{-2.0} \quad (-0.8\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.664 \pm 0.082$	$100\theta_*$	$1.04088^{+0.00036}_{-0.00030} \quad (+0.4\sigma)$	$f_{2000}^{217}$	$108.0 \pm 1.9 \quad (-0.7\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.775^{+0.097}_{-0.051} \quad (+0.4\sigma)$	$\chi_{\text{lensing}}^2$	$9.01 \pm 0.68 \quad (-0.3\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$z_{\text{drag}}$	$1060.32^{+0.35}_{-0.47} \quad (+0.5\sigma)$	$\chi_{\text{simall}}^2$	$1645 \pm 900 \quad (+6.8\sigma)$
$c_{217}$	$0.99822 \pm 0.00061 \quad (-0.1\sigma)$	$r_{\text{drag}}$	$146.0^{+1.1}_{-0.55} \quad (+0.3\sigma)$	$\chi_{\text{lowl}}^2$	$23.5 \pm 1.0 \quad (-0.0\sigma)$
$H_0$	$67.13^{+0.63}_{-0.78} \quad (+0.2\sigma)$	$k_{\text{D}}$	$0.14176^{+0.00052}_{-0.00088} \quad (-0.1\sigma)$	$\chi_{\text{plik}}^2$	$1114 \pm 900 \quad (+2.6\sigma)$
$\Omega_{\Lambda}$	$0.676^{+0.012}_{-0.0092} \quad (+0.4\sigma)$	$100\theta_{\text{D}}$	$0.16089^{+0.00019}_{-0.00024} \quad (-1.1\sigma)$	$\chi_{\text{prior}}^2$	$11.6 \pm 4.7 \quad (+1.2\sigma)$
$\Omega_{\text{m}}$	$0.3238^{+0.0092}_{-0.012} \quad (-0.4\sigma)$	$z_{\text{eq}}$	$3358^{+60}_{-27} \quad (-0.0\sigma)$	$\chi_{\text{CMB}}^2$	$2791.5 \pm 6.2 \quad (+271.9\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 2803.10; \Delta\bar{\chi}_{\text{eff}}^2 = 1592.38; R - 1 = 0.04623$$



## 8.9 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022298	$0.02237 \pm 0.00017$	$\Omega_{\mathrm{m}}h^3$	0.09691	$0.09813^{+0.00067}_{-0.0022}$	$100\theta_{\mathrm{eq}}$	0.8160	$0.8265^{+0.0054}_{-0.014}$
$\Omega_{\mathrm{c}}h^2$	0.12021	$0.1198^{+0.0036}_{-0.0025}$	$\sigma_8$	0.8114	$0.778^{+0.031}_{-0.017}$	$100\theta_{\mathrm{s,eq}}$	0.45084	$0.4563^{+0.0028}_{-0.0072}$
$100\theta_{\mathrm{MC}}$	1.040842	$1.04068^{+0.00038}_{-0.00034}$	$S_8$	0.8281	$0.805^{+0.027}_{-0.019}$	$H(0.15)$	73.00	$72.79^{+0.56}_{-0.87}$
$\tau$	0.0547	$0.0528 \pm 0.0080$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4536	$0.441^{+0.015}_{-0.010}$	$D_{\mathrm{M}}(0.15)$	640.4	$642.9^{+8.2}_{-6.0}$
$m_{\nu,\mathrm{sterile}}^{\mathrm{eff}} [\mathrm{eV}]$	0.001	$< 0.319$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6067	$0.586^{+0.021}_{-0.013}$	$H(0.38)$	83.15	$83.14^{+0.35}_{-0.75}$
$N_{\mathrm{eff}}$	3.089	$< 3.21$	$\sigma_8/h^{0.5}$	0.9862	$0.948^{+0.035}_{-0.019}$	$D_{\mathrm{M}}(0.38)$	1527.0	$1531^{+17}_{-11}$
$\ln(10^{10}A_{\mathrm{s}})$	3.0445	$3.043 \pm 0.017$	$r_{\mathrm{drag}}h$	99.44	$98.3^{+1.6}_{-1.3}$	$H(0.51)$	89.898	$90.00^{+0.26}_{-0.72}$
$n_{\mathrm{s}}$	0.9671	$0.9674^{+0.0051}_{-0.0067}$	$\langle d^2 \rangle^{1/2}$	2.4372	$2.430 \pm 0.030$	$D_{\mathrm{M}}(0.51)$	1978.0	$1982^{+21}_{-13}$
$y_{\mathrm{cal}}$	1.00062	$1.0005 \pm 0.0026$	$z_{\mathrm{re}}$	7.75	$7.56 \pm 0.82$	$H(0.61)$	95.539	$95.73^{+0.23}_{-0.71}$
$A_{100}^{\mathrm{PS}}$	238.8	$244 \pm 25$	$10^9A_{\mathrm{s}}$	2.1000	$2.096 \pm 0.036$	$D_{\mathrm{M}}(0.61)$	2301.5	$2305^{+23}_{-13}$
$A_{143}^{\mathrm{PS}}$	44.7	$42 \pm 8$	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8822	$1.886^{+0.013}_{-0.014}$	$H(2.33)$	236.77	$238.6^{+1.3}_{-2.4}$
$A_{217}^{\mathrm{PS}}$	102.0	$101 \pm 10$	$D_{40}$	1225.7	$1222 \pm 15$	$D_{\mathrm{M}}(2.33)$	5749.0	$5734^{+41}_{-13}$
$A_{217}^{\mathrm{CIB}}$	42.1	$41 \pm 7$	$D_{220}$	5718.9	$5717 \pm 40$	$f\sigma_8(0.15)$	0.4581	$0.445^{+0.015}_{-0.010}$
$A_{143}^{\mathrm{tSZ}}$	4.79	$3.7^{+1.7}_{-2.7}$	$D_{810}$	2536.7	$2536 \pm 14$	$\sigma_8(0.15)$	0.7497	$0.718^{+0.029}_{-0.016}$
$r_{143 \times 217}^{\mathrm{PS}}$	0.682	$0.65 \pm 0.12$	$D_{1420}$	815.34	$814.4 \pm 5.0$	$f\sigma_8(0.38)$	0.4762	$0.460^{+0.016}_{-0.0098}$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.695	$0.58^{+0.40}_{-0.14}$	$D_{2000}$	229.99	$229.0 \pm 1.8$	$\sigma_8(0.38)$	0.6645	$0.636^{+0.026}_{-0.015}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.55	—	$n_{\mathrm{s},0.002}$	0.9671	$0.9674^{+0.0051}_{-0.0067}$	$f\sigma_8(0.51)$	0.4747	$0.458^{+0.016}_{-0.0097}$
$A^{\mathrm{kSZ}}$	3.0	—	$Y_{\mathrm{P}}$	0.24594	$0.24711^{+0.00054}_{-0.0017}$	$\sigma_8(0.51)$	0.6218	$0.595^{+0.025}_{-0.014}$
$A_{100}^{\mathrm{dust}}$	1.006	$1.01 \pm 0.20$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24727	$0.24844^{+0.00054}_{-0.0017}$	$f\sigma_8(0.61)$	0.4697	$0.453^{+0.016}_{-0.0097}$
$A_{143}^{\mathrm{dust}}$	0.969	$0.97 \pm 0.17$	$10^5\mathrm{D}/\mathrm{H}$	2.6141	$2.632^{+0.034}_{-0.045}$	$\sigma_8(0.61)$	0.5916	$0.566^{+0.024}_{-0.014}$
$A_{217}^{\mathrm{dust}}$	0.966	$0.97 \pm 0.10$	$\mathrm{Age}/\mathrm{Gyr}$	13.763	$13.726^{+0.098}_{-0.031}$	$f\sigma_8(2.33)$	0.2983	$0.285^{+0.012}_{-0.0071}$
$A_{143 \times 217}^{\mathrm{dust}}$	1.021	$1.03 \pm 0.16$	$z_*$	1090.071	$1090.25^{+0.32}_{-0.39}$	$\sigma_8(2.33)$	0.3075	$0.293^{+0.013}_{-0.0075}$
$c_{100}$	0.99762	$0.9975 \pm 0.0010$	$r_*$	144.22	$143.3^{+1.3}_{-0.60}$	$f_{2000}^{143}$	30.60	$31.4 \pm 3.1$
$c_{217}$	1.00124	$1.0012 \pm 0.0016$	$100\theta_*$	1.041009	$1.04080^{+0.00043}_{-0.00034}$	$f_{2000}^{217}$	107.24	$108.0 \pm 2.1$
$c_{TE}$	0.99690	$0.9975 \pm 0.0050$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.853	$13.77^{+0.12}_{-0.056}$	$f_{2000}^{143 \times 217}$	32.81	$33.5 \pm 2.2$
$c_{EE}$	0.9933	$0.9932 \pm 0.0052$	$z_{\mathrm{drag}}$	1059.818	$1060.19^{+0.39}_{-0.53}$	$\chi_{\mathrm{small}}^2$	396.18	$397.0 \pm 1.8$
$H_0$	67.69	$67.37^{+0.71}_{-0.95}$	$r_{\mathrm{drag}}$	146.90	$146.0^{+1.3}_{-0.61}$	$\chi_{\mathrm{lowl}}^2$	23.00	$22.9 \pm 1.1$
$\Omega_{\Lambda}$	0.6876	$0.679^{+0.013}_{-0.010}$	$k_{\mathrm{D}}$	0.14085	$0.14163^{+0.00056}_{-0.0010}$	$\chi_{\mathrm{CamSpec}}^2$	11500.0	$11517.5 \pm 6.2$
$\Omega_{\mathrm{m}}$	0.3124	$0.321^{+0.010}_{-0.013}$	$100\theta_{\mathrm{D}}$	0.161005	$0.16107^{+0.00022}_{-0.00035}$	$\chi_{\mathrm{prior}}^2$	2.23	$7.9 \pm 3.5$
$\Omega_{\mathrm{m}}h^2$	0.14316	$0.1457^{+0.0019}_{-0.0032}$	$z_{\mathrm{eq}}$	3385.9	$3339^{+64}_{-29}$	$\chi_{\mathrm{CMB}}^2$	11919.1	$11937.4 \pm 6.2$
$\Omega_{\nu}h^2$	0.00065	$0.00349^{+0.00065}_{-0.0028}$	$k_{\mathrm{eq}}$	0.010364	$0.01031^{+0.00019}_{-0.00011}$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 11921.37$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 11945.34$ ;  $R - 1 = 0.02481$

$\chi_{\mathrm{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.18 commander\_dx12\_v3.2\_29: 23.00 CamSpec like\_10.7HM\_1400\_unified: 11499.96



# 8.10 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02234 \pm 0.00016$	$\Omega_{\mathrm{m}}h^3$	$0.09796^{+0.00058}_{-0.0020}$	$100\theta_{\mathrm{eq}}$	$0.8241^{+0.0046}_{-0.012}$
$\Omega_{\mathrm{c}}h^2$	$0.1201^{+0.0033}_{-0.0024}$	$\sigma_8$	$0.783^{+0.025}_{-0.016}$	$100\theta_{\mathrm{s,eq}}$	$0.4551^{+0.0024}_{-0.0062}$
$100\theta_{\mathrm{MC}}$	$1.04066^{+0.00037}_{-0.00033}$	$S_8$	$0.812^{+0.021}_{-0.015}$	$H(0.15)$	$72.65^{+0.51}_{-0.79}$
$\tau$	$0.0544^{+0.0069}_{-0.0078}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.445^{+0.011}_{-0.0084}$	$D_{\mathrm{M}}(0.15)$	$644.3^{+7.5}_{-5.5}$
$m_{\nu,\mathrm{sterile}}^{\mathrm{eff}} [\mathrm{eV}]$	$< 0.299$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.590^{+0.017}_{-0.011}$	$H(0.38)$	$83.02^{+0.31}_{-0.68}$
$N_{\mathrm{eff}}$	$< 3.19$	$\sigma_8/h^{0.5}$	$0.955^{+0.028}_{-0.017}$	$D_{\mathrm{M}}(0.38)$	$1534^{+16}_{-10}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.047 \pm 0.016$	$r_{\mathrm{drag}}h$	$98.1^{+1.5}_{-1.2}$	$H(0.51)$	$89.89^{+0.22}_{-0.65}$
$n_{\mathrm{s}}$	$0.9663^{+0.0049}_{-0.0062}$	$\langle d^2 \rangle^{1/2}$	$2.441 \pm 0.024$	$D_{\mathrm{M}}(0.51)$	$1985^{+19}_{-12}$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025$	$z_{\mathrm{re}}$	$7.73 \pm 0.78$	$H(0.61)$	$95.64^{+0.19}_{-0.65}$
$A_{100}^{\mathrm{PS}}$	$244 \pm 25$	$10^9 A_{\mathrm{s}}$	$2.105^{+0.030}_{-0.034}$	$D_{\mathrm{M}}(0.61)$	$2309^{+21}_{-12}$
$A_{143}^{\mathrm{PS}}$	$42 \pm 8$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.888^{+0.012}_{-0.014}$	$H(2.33)$	$238.6^{+1.2}_{-2.3}$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{40}$	$1226 \pm 13$	$D_{\mathrm{M}}(2.33)$	$5739^{+38}_{-10}$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{220}$	$5720 \pm 39$	$f\sigma_8(0.15)$	$0.449^{+0.012}_{-0.0082}$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.7}$	$D_{810}$	$2538 \pm 14$	$\sigma_8(0.15)$	$0.723^{+0.024}_{-0.015}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.12$	$D_{1420}$	$814.7 \pm 5.0$	$f\sigma_8(0.38)$	$0.464^{+0.013}_{-0.0083}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.57^{+0.39}_{-0.16}$	$D_{2000}$	$229.2 \pm 1.8$	$\sigma_8(0.38)$	$0.639^{+0.022}_{-0.014}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.9663^{+0.0049}_{-0.0062}$	$f\sigma_8(0.51)$	$0.461^{+0.013}_{-0.0085}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}$	$0.24696^{+0.00047}_{-0.0015}$	$\sigma_8(0.51)$	$0.598^{+0.021}_{-0.014}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24829^{+0.00047}_{-0.0015}$	$f\sigma_8(0.61)$	$0.456^{+0.014}_{-0.0085}$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	$10^5 \mathrm{D}/\mathrm{H}$	$2.632^{+0.033}_{-0.044}$	$\sigma_8(0.61)$	$0.569^{+0.020}_{-0.013}$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$\mathrm{Age}/\mathrm{Gyr}$	$13.737^{+0.090}_{-0.025}$	$f\sigma_8(2.33)$	$0.287^{+0.010}_{-0.0068}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$z_*$	$1090.28^{+0.30}_{-0.38}$	$\sigma_8(2.33)$	$0.295^{+0.011}_{-0.0073}$
$c_{100}$	$0.9975 \pm 0.0011$	$r_*$	$143.4^{+1.2}_{-0.55}$	$f_{2000}^{143}$	$31.2 \pm 3.1$
$c_{217}$	$1.0012 \pm 0.0016$	$100\theta_*$	$1.04079^{+0.00042}_{-0.00033}$	$f_{2000}^{217}$	$108.0 \pm 2.1$
$c_{TE}$	$0.9972 \pm 0.0050$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.77^{+0.11}_{-0.051}$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.2$
$c_{EE}$	$0.9931 \pm 0.0051$	$z_{\mathrm{drag}}$	$1060.14^{+0.37}_{-0.49}$	$\chi_{\mathrm{lensing}}^2$	$9.25 \pm 0.93$
$H_0$	$67.22^{+0.65}_{-0.86}$	$r_{\mathrm{drag}}$	$146.0^{+1.2}_{-0.55}$	$\chi_{\mathrm{small}}^2$	$397.1 \pm 1.9$
$\Omega_{\Lambda}$	$0.677^{+0.012}_{-0.0094}$	$k_{\mathrm{D}}$	$0.14161^{+0.00052}_{-0.00097}$	$\chi_{\mathrm{lowl}}^2$	$23.2 \pm 1.0$
$\Omega_{\mathrm{m}}$	$0.3228^{+0.0094}_{-0.012}$	$100\theta_{\mathrm{D}}$	$0.16106^{+0.00021}_{-0.00034}$	$\chi_{\mathrm{CamSpec}}^2$	$11516.6 \pm 5.8$
$\Omega_{\mathrm{m}}h^2$	$0.1458^{+0.0018}_{-0.0030}$	$z_{\mathrm{eq}}$	$3351^{+56}_{-25}$	$\chi_{\mathrm{prior}}^2$	$7.9 \pm 3.5$
$\Omega_{\nu}h^2$	$0.00329^{+0.00064}_{-0.0026}$	$k_{\mathrm{eq}}$	$0.01034^{+0.00017}_{-0.00010}$	$\chi_{\mathrm{CMB}}^2$	$11946.1 \pm 6.1$

$$\bar{\chi}_{\mathrm{eff}}^2 = 11954.00; R - 1 = 0.02353$$



# 8.11 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02237 \pm 0.00017$	$\Omega_{\mathrm{m}} h^3$	$0.09816^{+0.00069}_{-0.0022}$	$100\theta_{\mathrm{eq}}$	$0.8266^{+0.0054}_{-0.014}$
$\Omega_{\mathrm{c}} h^2$	$0.1198^{+0.0036}_{-0.0025}$	$\sigma_8$	$0.779^{+0.031}_{-0.017}$	$100\theta_{\mathrm{s,eq}}$	$0.4564^{+0.0028}_{-0.0071}$
$100\theta_{\mathrm{MC}}$	$1.04068^{+0.00039}_{-0.00034}$	$S_8$	$0.806^{+0.027}_{-0.019}$	$H(0.15)$	$72.81^{+0.56}_{-0.87}$
$\tau$	$0.0543^{+0.0048}_{-0.0082}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.441^{+0.015}_{-0.010}$	$D_{\mathrm{M}}(0.15)$	$642.7^{+8.3}_{-6.1}$
$m_{\nu, \mathrm{sterile}}^{\mathrm{eff}} [\mathrm{eV}]$	$< 0.318$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.586^{+0.021}_{-0.012}$	$H(0.38)$	$83.16^{+0.35}_{-0.76}$
$N_{\mathrm{eff}}$	$< 3.21$	$\sigma_8/h^{0.5}$	$0.949^{+0.035}_{-0.019}$	$D_{\mathrm{M}}(0.38)$	$1531^{+18}_{-11}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.046^{+0.012}_{-0.017}$	$r_{\mathrm{drag}} h$	$98.4^{+1.6}_{-1.3}$	$H(0.51)$	$90.01^{+0.26}_{-0.73}$
$n_{\mathrm{s}}$	$0.9676^{+0.0051}_{-0.0067}$	$\langle d^2 \rangle^{1/2}$	$2.433 \pm 0.029$	$D_{\mathrm{M}}(0.51)$	$1981^{+21}_{-13}$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0026$	$z_{\mathrm{re}}$	$7.72^{+0.54}_{-0.83}$	$H(0.61)$	$95.74^{+0.23}_{-0.72}$
$A_{100}^{\mathrm{PS}}$	$244 \pm 25$	$10^9 A_{\mathrm{s}}$	$2.102^{+0.025}_{-0.036}$	$D_{\mathrm{M}}(0.61)$	$2304^{+24}_{-13}$
$A_{143}^{\mathrm{PS}}$	$42 \pm 8$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.886 \pm 0.014$	$H(2.33)$	$238.6^{+1.4}_{-2.4}$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{40}$	$1222 \pm 15$	$D_{\mathrm{M}}(2.33)$	$5733^{+42}_{-13}$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{220}$	$5717 \pm 40$	$f\sigma_8(0.15)$	$0.445^{+0.015}_{-0.0099}$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.7}$	$D_{810}$	$2536 \pm 14$	$\sigma_8(0.15)$	$0.719^{+0.029}_{-0.016}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.12$	$D_{1420}$	$814.4 \pm 5.0$	$f\sigma_8(0.38)$	$0.461^{+0.016}_{-0.0097}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.58^{+0.40}_{-0.14}$	$D_{2000}$	$229.1 \pm 1.8$	$\sigma_8(0.38)$	$0.637^{+0.026}_{-0.015}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s}, 0.002}$	$0.9676^{+0.0051}_{-0.0067}$	$f\sigma_8(0.51)$	$0.459^{+0.016}_{-0.0096}$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}$	$0.24713^{+0.00055}_{-0.0017}$	$\sigma_8(0.51)$	$0.595^{+0.025}_{-0.014}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24847^{+0.00055}_{-0.0017}$	$f\sigma_8(0.61)$	$0.453^{+0.016}_{-0.0095}$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	$10^5 \mathrm{D}/\mathrm{H}$	$2.632^{+0.034}_{-0.045}$	$\sigma_8(0.61)$	$0.566^{+0.024}_{-0.013}$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$\mathrm{Age}/\mathrm{Gyr}$	$13.72^{+0.10}_{-0.031}$	$f\sigma_8(2.33)$	$0.286^{+0.012}_{-0.0069}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$z_*$	$1090.24^{+0.32}_{-0.39}$	$\sigma_8(2.33)$	$0.294^{+0.013}_{-0.0074}$
$c_{100}$	$0.9975 \pm 0.0010$	$r_*$	$143.3^{+1.3}_{-0.62}$	$f_{2000}^{143}$	$31.4 \pm 3.1$
$c_{217}$	$1.0012 \pm 0.0016$	$100\theta_*$	$1.04080^{+0.00043}_{-0.00034}$	$f_{2000}^{217}$	$108.0 \pm 2.1$
$c_{TE}$	$0.9974 \pm 0.0050$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.77^{+0.12}_{-0.058}$	$f_{2000}^{143 \times 217}$	$33.5 \pm 2.2$
$c_{EE}$	$0.9932 \pm 0.0052$	$z_{\mathrm{drag}}$	$1060.20^{+0.40}_{-0.53}$	$\chi_{\mathrm{small}}^2$	$396.9 \pm 1.8$
$H_0$	$67.39^{+0.71}_{-0.96}$	$r_{\mathrm{drag}}$	$146.0^{+1.3}_{-0.63}$	$\chi_{\mathrm{lowl}}^2$	$22.9 \pm 1.1$
$\Omega_{\Lambda}$	$0.679^{+0.013}_{-0.010}$	$k_{\mathrm{D}}$	$0.14164^{+0.00058}_{-0.0010}$	$\chi_{\mathrm{CamSpec}}^2$	$11517.4 \pm 6.1$
$\Omega_{\mathrm{m}}$	$0.321^{+0.010}_{-0.013}$	$100\theta_{\mathrm{D}}$	$0.16107^{+0.00022}_{-0.00035}$	$\chi_{\mathrm{prior}}^2$	$7.9 \pm 3.5$
$\Omega_{\mathrm{m}} h^2$	$0.1457^{+0.0020}_{-0.0032}$	$z_{\mathrm{eq}}$	$3339^{+63}_{-29}$	$\chi_{\mathrm{CMB}}^2$	$11937.2 \pm 6.1$
$\Omega_{\nu} h^2$	$0.00348^{+0.00065}_{-0.0028}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00019}_{-0.00011}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11945.16; R - 1 = 0.02558$$



## 8.12 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02235 \pm 0.00016$	$\Omega_m h^3$	$0.09799^{+0.00060}_{-0.0020}$	$100\theta_{\text{eq}}$	$0.8243^{+0.0046}_{-0.012}$
$\Omega_c h^2$	$0.1201^{+0.0033}_{-0.0024}$	$\sigma_8$	$0.784^{+0.026}_{-0.016}$	$100\theta_{\text{s,eq}}$	$0.4552^{+0.0023}_{-0.0062}$
$100\theta_{\text{MC}}$	$1.04066^{+0.00038}_{-0.00033}$	$S_8$	$0.812^{+0.021}_{-0.015}$	$H(0.15)$	$72.67^{+0.51}_{-0.79}$
$\tau$	$0.0553^{+0.0053}_{-0.0080}$	$\sigma_8 \Omega_m^{0.5}$	$0.445^{+0.012}_{-0.0083}$	$D_{\text{M}}(0.15)$	$644.1^{+7.5}_{-5.5}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.298$	$\sigma_8 \Omega_m^{0.25}$	$0.590^{+0.017}_{-0.011}$	$H(0.38)$	$83.04^{+0.30}_{-0.68}$
$N_{\text{eff}}$	$< 3.19$	$\sigma_8/h^{0.5}$	$0.955^{+0.028}_{-0.016}$	$D_{\text{M}}(0.38)$	$1533^{+16}_{-10}$
$\ln(10^{10} A_{\text{s}})$	$3.049^{+0.012}_{-0.016}$	$r_{\text{drag}} h$	$98.2^{+1.5}_{-1.2}$	$H(0.51)$	$89.91^{+0.22}_{-0.65}$
$n_{\text{s}}$	$0.9665^{+0.0048}_{-0.0062}$	$\langle d^2 \rangle^{1/2}$	$2.442 \pm 0.023$	$D_{\text{M}}(0.51)$	$1985^{+19}_{-11}$
$y_{\text{cal}}$	$1.0007 \pm 0.0025$	$z_{\text{re}}$	$7.82^{+0.58}_{-0.81}$	$H(0.61)$	$95.65^{+0.18}_{-0.65}$
$A_{100}^{\text{PS}}$	$244 \pm 25$	$10^9 A_{\text{s}}$	$2.109^{+0.025}_{-0.034}$	$D_{\text{M}}(0.61)$	$2308^{+21}_{-12}$
$A_{143}^{\text{PS}}$	$42 \pm 8$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.888^{+0.012}_{-0.014}$	$H(2.33)$	$238.6^{+1.2}_{-2.3}$
$A_{217}^{\text{PS}}$	$102 \pm 10$	$D_{40}$	$1226 \pm 13$	$D_{\text{M}}(2.33)$	$5738^{+38}_{-10}$
$A_{217}^{\text{CIB}}$	$41 \pm 7$	$D_{220}$	$5720 \pm 39$	$f\sigma_8(0.15)$	$0.449^{+0.012}_{-0.0081}$
$A_{143}^{\text{tSZ}}$	$3.7^{+1.7}_{-2.7}$	$D_{810}$	$2538 \pm 14$	$\sigma_8(0.15)$	$0.723^{+0.024}_{-0.015}$
$r_{143 \times 217}^{\text{PS}}$	$0.66 \pm 0.12$	$D_{1420}$	$814.7 \pm 5.0$	$f\sigma_8(0.38)$	$0.464^{+0.013}_{-0.0082}$
$r_{143 \times 217}^{\text{CIB}}$	$0.57^{+0.39}_{-0.16}$	$D_{2000}$	$229.2 \pm 1.8$	$\sigma_8(0.38)$	$0.640^{+0.022}_{-0.014}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$n_{\text{s}, 0.002}$	$0.9665^{+0.0048}_{-0.0062}$	$f\sigma_8(0.51)$	$0.462^{+0.013}_{-0.0083}$
$A^{\text{kSZ}}$	—	$Y_{\text{P}}$	$0.24698^{+0.00049}_{-0.0015}$	$\sigma_8(0.51)$	$0.598^{+0.021}_{-0.013}$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.19$	$Y_{\text{P}}^{\text{BBN}}$	$0.24831^{+0.00049}_{-0.0015}$	$f\sigma_8(0.61)$	$0.456^{+0.014}_{-0.0084}$
$A_{143}^{\text{dust}}$	$0.97 \pm 0.17$	$10^5 \text{D}/\text{H}$	$2.632^{+0.033}_{-0.044}$	$\sigma_8(0.61)$	$0.569^{+0.020}_{-0.013}$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$\text{Age}/\text{Gyr}$	$13.735^{+0.090}_{-0.025}$	$f\sigma_8(2.33)$	$0.287^{+0.010}_{-0.0067}$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16$	$z_*$	$1090.27^{+0.30}_{-0.38}$	$\sigma_8(2.33)$	$0.295^{+0.011}_{-0.0072}$
$c_{100}$	$0.9975 \pm 0.0011$	$r_*$	$143.4^{+1.2}_{-0.56}$	$f_{2000}^{143}$	$31.2 \pm 3.1$
$c_{217}$	$1.0012 \pm 0.0016$	$100\theta_*$	$1.04079^{+0.00042}_{-0.00033}$	$f_{2000}^{217}$	$107.9 \pm 2.1$
$c_{TE}$	$0.9972 \pm 0.0050$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.77^{+0.11}_{-0.052}$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.2$
$c_{EE}$	$0.9930 \pm 0.0051$	$z_{\text{drag}}$	$1060.15^{+0.37}_{-0.49}$	$\chi_{\text{lensing}}^2$	$9.21 \pm 0.88$
$H_0$	$67.24^{+0.64}_{-0.86}$	$r_{\text{drag}}$	$146.0^{+1.2}_{-0.57}$	$\chi_{\text{small}}^2$	$397.1 \pm 1.9$
$\Omega_{\Lambda}$	$0.677^{+0.012}_{-0.0093}$	$k_{\text{D}}$	$0.14162^{+0.00053}_{-0.00098}$	$\chi_{\text{lowl}}^2$	$23.2 \pm 1.0$
$\Omega_{\text{m}}$	$0.3226^{+0.0093}_{-0.012}$	$100\theta_{\text{D}}$	$0.16106^{+0.00021}_{-0.00034}$	$\chi_{\text{CamSpec}}^2$	$11516.5 \pm 5.8$
$\Omega_{\text{m}} h^2$	$0.1457^{+0.0018}_{-0.0031}$	$z_{\text{eq}}$	$3350^{+56}_{-25}$	$\chi_{\text{prior}}^2$	$7.9 \pm 3.5$
$\Omega_{\nu} h^2$	$0.00329^{+0.00065}_{-0.0026}$	$k_{\text{eq}}$	$0.01034^{+0.00017}_{-0.00010}$	$\chi_{\text{CMB}}^2$	$11946.0 \pm 6.1$

$$\bar{\chi}_{\text{eff}}^2 = 11953.86; R - 1 = 0.02344$$



### 8.13 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022314	$0.02235 \pm 0.00021$	$\sigma_8 \Omega_m^{0.5}$	0.4502	$0.441^{+0.015}_{-0.010}$	$D_M(0.15)$	636.1	$633^{+12}_{-6.0}$
$\Omega_c h^2$	0.11991	$0.1203^{+0.0044}_{-0.0035}$	$\sigma_8 \Omega_m^{0.25}$	0.6047	$0.591^{+0.020}_{-0.012}$	$H(0.38)$	83.52	$83.98^{+0.54}_{-1.3}$
$100\theta_{MC}$	1.04093	$1.04074^{+0.00054}_{-0.00047}$	$\sigma_8/h^{0.5}$	0.9835	$0.957^{+0.031}_{-0.016}$	$D_M(0.38)$	1518.2	$1511^{+26}_{-13}$
$\tau$	0.0557	$0.0548 \pm 0.0082$	$r_{drag} h$	100.10	$99.8 \pm 1.0$	$H(0.51)$	90.23	$90.75^{+0.51}_{-1.3}$
$m_{\nu, sterile}^{eff} [eV]$	0.001	$< 0.165$	$\langle d^2 \rangle^{1/2}$	2.4279	$2.412 \pm 0.030$	$D_M(0.51)$	1967.3	$1958^{+33}_{-15}$
$N_{eff}$	3.118	$< 3.30$	$z_{re}$	7.85	$7.77 \pm 0.84$	$H(0.61)$	95.84	$96.41^{+0.50}_{-1.4}$
$\ln(10^{10} A_s)$	3.0484	$3.048 \pm 0.019$	$10^9 A_s$	2.1083	$2.107^{+0.036}_{-0.040}$	$D_M(0.61)$	2289.7	$2279^{+38}_{-17}$
$n_s$	0.9701	$0.9728^{+0.0061}_{-0.0088}$	$10^9 A_s e^{-2\tau}$	1.8858	$1.888^{+0.013}_{-0.019}$	$H(2.33)$	236.69	$238.5^{+1.4}_{-3.1}$
$y_{cal}$	1.00131	$1.0006 \pm 0.0025$	$D_{40}$	1223.1	$1215 \pm 16$	$D_M(2.33)$	5734	$5699^{+78}_{-28}$
$A_{217}^{CIB}$	49.8	$49 \pm 7$	$D_{220}$	5730.6	$5720 \pm 40$	$f\sigma_8(0.15)$	0.4552	$0.446^{+0.015}_{-0.0098}$
$\xi^{tSZ \times CIB}$	0.20	—	$D_{810}$	2543.0	$2538 \pm 14$	$\sigma_8(0.15)$	0.7509	$0.732^{+0.025}_{-0.015}$
$A_{143}^{tSZ}$	7.10	$4.9 \pm 2.0$	$D_{1420}$	817.5	$814.3 \pm 5.0$	$f\sigma_8(0.38)$	0.4745	$0.464^{+0.016}_{-0.0095}$
$A_{100}^{PS}$	255.9	$267 \pm 28$	$D_{2000}$	230.48	$228.7 \pm 1.9$	$\sigma_8(0.38)$	0.6660	$0.649^{+0.023}_{-0.014}$
$A_{143}^{PS}$	48.0	$51 \pm 8$	$n_{s,0.002}$	0.9701	$0.9728^{+0.0061}_{-0.0088}$	$f\sigma_8(0.51)$	0.4736	$0.463^{+0.016}_{-0.0093}$
$A_{143 \times 217}^{PS}$	43.9	$44^{+9}_{-10}$	$Y_P$	0.24634	$0.24796^{+0.00086}_{-0.0026}$	$\sigma_8(0.51)$	0.6235	$0.607^{+0.021}_{-0.013}$
$A_{217}^{PS}$	118.0	$115 \pm 10$	$Y_P^{BBN}$	0.24767	$0.24930^{+0.00086}_{-0.0026}$	$f\sigma_8(0.61)$	0.4689	$0.458^{+0.015}_{-0.0091}$
$A^{kSZ}$	0.01	$< 5.56$	$10^5 D/H$	2.621	$2.658^{+0.046}_{-0.065}$	$\sigma_8(0.61)$	0.5934	$0.578^{+0.020}_{-0.012}$
$A_{100}^{dustTT}$	8.89	$9.1 \pm 1.9$	Age/Gyr	13.728	$13.64^{+0.19}_{-0.067}$	$f\sigma_8(2.33)$	0.2993	$0.292^{+0.010}_{-0.0063}$
$A_{143}^{dustTT}$	10.79	$10.8 \pm 1.8$	$z_*$	1090.053	$1090.29^{+0.35}_{-0.45}$	$\sigma_8(2.33)$	0.3088	$0.301^{+0.011}_{-0.0067}$
$A_{143 \times 217}^{dustTT}$	19.20	$18.4 \pm 3.3$	$r_*$	144.14	$143.1^{+1.9}_{-0.73}$	$f_{2000}^{143}$	30.59	$32.6 \pm 3.2$
$A_{217}^{dustTT}$	94.2	$93.3 \pm 7.3$	$100\theta_*$	1.04108	$1.04083^{+0.00063}_{-0.00049}$	$f_{2000}^{143 \times 217}$	33.32	$34.7 \pm 2.2$
$c_{100}$	0.99967	$0.99961 \pm 0.00061$	$D_M(z_*)/Gpc$	13.845	$13.75^{+0.18}_{-0.069}$	$f_{2000}^{217}$	107.92	$109.1 \pm 2.1$
$c_{217}$	0.99826	$0.99829 \pm 0.00062$	$z_{drag}$	1059.86	$1060.16^{+0.54}_{-0.76}$	$\chi_{small}^2$	396.28	$397.2 \pm 2.0$
$H_0$	68.18	$68.47^{+0.67}_{-1.3}$	$r_{drag}$	146.82	$145.8^{+2.0}_{-0.77}$	$\chi_{lowl}^2$	22.61	$22.3 \pm 1.1$
$\Omega_\Lambda$	0.6927	$0.6903 \pm 0.0079$	$k_D$	0.14084	$0.14157^{+0.00068}_{-0.0015}$	$\chi_{plik}^2$	760.1	$775.2 \pm 6.0$
$\Omega_m$	0.3073	$0.3097 \pm 0.0079$	$100\theta_D$	0.161116	$0.16141^{+0.00036}_{-0.00058}$	$\chi_{6DF}^2$	0.0062	$0.063 \pm 0.082$
$\Omega_m h^2$	0.14288	$0.1451^{+0.0018}_{-0.0038}$	$z_{eq}$	3366.1	$3321^{+59}_{-25}$	$\chi_{MGS}^2$	1.47	$1.36 \pm 0.56$
$\Omega_\nu h^2$	0.00065	$0.002500^{+0.000091}_{-0.0019}$	$k_{eq}$	0.010323	$0.01029^{+0.00021}_{-0.00013}$	$\chi_{DR12BAO}^2$	3.79	$4.9 \pm 1.8$
$\Omega_m h^3$	0.09741	$0.0994^{+0.0013}_{-0.0039}$	$100\theta_{eq}$	0.8197	$0.8294^{+0.0042}_{-0.013}$	$\chi_{prior}^2$	1.65	$7.4 \pm 3.7$
$\sigma_8$	0.8121	$0.792^{+0.027}_{-0.016}$	$100\theta_{s,eq}$	0.45278	$0.4578^{+0.0021}_{-0.0065}$	$\chi_{BAO}^2$	5.27	$6.3 \pm 1.5$
$S_8$	0.8220	$0.804^{+0.027}_{-0.019}$	$H(0.15)$	73.44	$73.79^{+0.61}_{-1.3}$	$\chi_{CMB}^2$	1179.0	$1194.7 \pm 5.8$

Best-fit  $\chi_{eff}^2 = 1185.94$ ;  $\bar{\chi}_{eff}^2 = 1208.40$ ;  $R - 1 = 0.03028$

$\chi_{eff}^2$ : BAO - 6DF: 0.01 MGS: 1.47 DR12BAO: 3.79 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.28 commander\_dx12\_v3.2.29: 22.61 plik\_rd12\_HM\_v22\_TT: 760.13



# 8.14 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}} h^2$	0.022246	$0.02236 \pm 0.00021$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	0.4472	$0.440^{+0.014}_{-0.0099}$	$D_{\mathrm{M}}(0.15)$	639.5	$632^{+12}_{-6.1}$
$\Omega_{\mathrm{c}} h^2$	0.11894	$0.1204^{+0.0043}_{-0.0036}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	0.6002	$0.591^{+0.019}_{-0.012}$	$H(0.38)$	83.12	$84.08^{+0.57}_{-1.4}$
$100\theta_{\mathrm{MC}}$	1.04093	$1.04074^{+0.00054}_{-0.00047}$	$\sigma_8/h^{0.5}$	0.9780	$0.957^{+0.030}_{-0.016}$	$D_{\mathrm{M}}(0.38)$	1525.9	$1509^{+26}_{-13}$
$\tau$	0.0525	$0.0549 \pm 0.0082$	$r_{\mathrm{drag}} h$	99.98	$99.93 \pm 0.95$	$H(0.51)$	89.81	$90.84^{+0.55}_{-1.4}$
$m_{\nu, \mathrm{sterile}}^{\mathrm{eff}} [\mathrm{eV}]$	0.000	$< 0.153$	$\langle d^2 \rangle^{1/2}$	2.4181	$2.409 \pm 0.029$	$D_{\mathrm{M}}(0.51)$	1977.2	$1955^{+33}_{-16}$
$N_{\mathrm{eff}}$	3.062	$< 3.31$	$z_{\mathrm{re}}$	7.51	$7.78 \pm 0.84$	$H(0.61)$	95.40	$96.50^{+0.54}_{-1.4}$
$\ln(10^{10} A_{\mathrm{s}})$	3.0364	$3.048 \pm 0.019$	$10^9 A_{\mathrm{s}}$	2.0831	$2.108^{+0.036}_{-0.041}$	$D_{\mathrm{M}}(0.61)$	2301.1	$2275^{+38}_{-18}$
$n_{\mathrm{s}}$	0.9679	$0.9735^{+0.0062}_{-0.0088}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8754	$1.888^{+0.014}_{-0.019}$	$H(2.33)$	235.79	$238.5^{+1.4}_{-3.2}$
$y_{\mathrm{cal}}$	1.00006	$1.0006 \pm 0.0025$	$D_{40}$	1220.8	$1214 \pm 15$	$D_{\mathrm{M}}(2.33)$	5759	$5694^{+81}_{-31}$
$A_{217}^{\mathrm{CIB}}$	50.4	$49 \pm 7$	$D_{220}$	5713.1	$5721 \pm 40$	$f\sigma_8(0.15)$	0.4521	$0.445^{+0.015}_{-0.0096}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.12	—	$D_{810}$	2534.2	$2538 \pm 14$	$\sigma_8(0.15)$	0.7445	$0.733^{+0.024}_{-0.015}$
$A_{143}^{\mathrm{tSZ}}$	7.14	$4.9 \pm 2.0$	$D_{1420}$	815.0	$814.3 \pm 5.0$	$f\sigma_8(0.38)$	0.4710	$0.464^{+0.015}_{-0.0093}$
$A_{100}^{\mathrm{PS}}$	256.2	$267 \pm 28$	$D_{2000}$	229.83	$228.7 \pm 2.0$	$\sigma_8(0.38)$	0.6603	$0.650^{+0.022}_{-0.014}$
$A_{143}^{\mathrm{PS}}$	46.1	$51 \pm 8$	$n_{\mathrm{s}, 0.002}$	0.9679	$0.9735^{+0.0062}_{-0.0088}$	$f\sigma_8(0.51)$	0.4699	$0.463^{+0.015}_{-0.0091}$
$A_{143 \times 217}^{\mathrm{PS}}$	41.3	$44^{+9}_{-10}$	$Y_{\mathrm{P}}$	0.24556	$0.24808^{+0.00094}_{-0.0027}$	$\sigma_8(0.51)$	0.6180	$0.609^{+0.020}_{-0.013}$
$A_{217}^{\mathrm{PS}}$	116.1	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24689	$0.24942^{+0.00095}_{-0.0027}$	$f\sigma_8(0.61)$	0.4652	$0.459^{+0.015}_{-0.0090}$
$A^{\mathrm{kSZ}}$	0.09	$< 5.56$	$10^5 \mathrm{D}/\mathrm{H}$	2.615	$2.659^{+0.047}_{-0.066}$	$\sigma_8(0.61)$	0.5882	$0.579^{+0.020}_{-0.012}$
$A_{100}^{\mathrm{dustTT}}$	8.88	$9.1 \pm 1.9$	Age/Gyr	13.788	$13.63^{+0.19}_{-0.074}$	$f\sigma_8(2.33)$	0.2967	$0.2927^{+0.0099}_{-0.0061}$
$A_{143}^{\mathrm{dustTT}}$	10.81	$10.8 \pm 1.8$	$z_*$	1090.003	$1090.28^{+0.35}_{-0.46}$	$\sigma_8(2.33)$	0.3060	$0.302^{+0.010}_{-0.0066}$
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.10	$18.4 \pm 3.3$	$r_*$	144.72	$143.1^{+2.0}_{-0.79}$	$\chi_{\mathrm{small}}^2$	396	$312 \pm 200$
$A_{217}^{\mathrm{dustTT}}$	93.9	$93.3 \pm 7.3$	$100\theta_*$	1.04112	$1.04082^{+0.00064}_{-0.00050}$	$\chi_{\mathrm{lowl}}^2$	22.70	$107 \pm 200$
$c_{100}$	0.99966	$0.99961 \pm 0.00061$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.900	$13.74^{+0.19}_{-0.074}$	$\chi_{\mathrm{plik}}^2$	760.5	$775.3 \pm 5.9$
$c_{217}$	0.99829	$0.99829 \pm 0.00062$	$z_{\mathrm{drag}}$	1059.59	$1060.20^{+0.54}_{-0.78}$	$\chi_{\mathrm{JLA}}^2$	1034.919	$1035.04 \pm 0.33$
$H_0$	67.81	$68.59^{+0.68}_{-1.3}$	$r_{\mathrm{drag}}$	147.43	$145.7^{+2.1}_{-0.83}$	$\chi_{6\mathrm{DF}}^2$	0.011	$0.36 \pm 0.63$
$\Omega_{\Lambda}$	0.6916	$0.6914 \pm 0.0074$	$k_{\mathrm{D}}$	0.14035	$0.14161^{+0.00072}_{-0.0015}$	$\chi_{\mathrm{MGS}}^2$	1.41	$1.13 \pm 0.76$
$\Omega_{\mathrm{m}}$	0.3084	$0.3086 \pm 0.0074$	$100\theta_{\mathrm{D}}$	0.161026	$0.16142^{+0.00038}_{-0.00059}$	$\chi_{\mathrm{DR12BAO}}^2$	3.91	$4.6 \pm 1.5$
$\Omega_{\mathrm{m}} h^2$	0.14183	$0.1451^{+0.0019}_{-0.0039}$	$z_{\mathrm{eq}}$	3366.6	$3320^{+56}_{-24}$	$\chi_{\mathrm{prior}}^2$	1.49	$7.4 \pm 3.7$
$\Omega_{\nu} h^2$	0.00065	$0.002364^{+0.000086}_{-0.0018}$	$k_{\mathrm{eq}}$	0.010286	$0.01029^{+0.00020}_{-0.00013}$	$\chi_{\mathrm{BAO}}^2$	5.33	$6.1 \pm 1.2$
$\Omega_{\mathrm{m}} h^3$	0.09618	$0.0996^{+0.0014}_{-0.0041}$	$100\theta_{\mathrm{eq}}$	0.8194	$0.8294^{+0.0042}_{-0.012}$	$\chi_{\mathrm{CMB}}^2$	1179.0	$1194.7 \pm 5.8$
$\sigma_8$	0.8053	$0.793^{+0.026}_{-0.016}$	$100\theta_{\mathrm{s}, \mathrm{eq}}$	0.45265	$0.4578^{+0.0021}_{-0.0061}$			
$S_8$	0.8166	$0.804^{+0.026}_{-0.018}$	$H(0.15)$	73.06	$73.90^{+0.63}_{-1.3}$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 2220.73$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2243.31$ ;  $R - 1 = 0.02477$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.91 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.81 commander\_dx12\_v3.2.29: 22.70 plik\_rd12\_HM\_v22\_TT: 760.48  
SN - JLA Pantheon18: 1034.92



### 8.15 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_Aver15

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02230 \pm 0.00020$	$\sigma_8 \Omega_m^{0.25}$	$0.588^{+0.020}_{-0.012}$	$D_M(0.38)$	$1520^{+18}_{-9.9}$
$\Omega_c h^2$	$0.1187^{+0.0040}_{-0.0026}$	$\sigma_8/h^{0.5}$	$0.955^{+0.031}_{-0.016}$	$H(0.51)$	$90.25^{+0.30}_{-0.87}$
$100\theta_{MC}$	$1.04086 \pm 0.00046$	$r_{drag}h$	$99.66 \pm 0.97$	$D_M(0.51)$	$1969^{+22}_{-12}$
$\tau$	$0.0544 \pm 0.0081$	$\langle d^2 \rangle^{1/2}$	$2.417 \pm 0.029$	$H(0.61)$	$95.90^{+0.27}_{-0.87}$
$m_{\nu, sterile}^{eff} [eV]$	$< 0.203$	$z_{re}$	$7.71 \pm 0.83$	$D_M(0.61)$	$2292^{+25}_{-12}$
$N_{eff}$	$< 3.19$	$10^9 A_s$	$2.099 \pm 0.037$	$H(2.33)$	$237.39^{+0.97}_{-2.1}$
$\ln(10^{10} A_s)$	$3.044 \pm 0.017$	$10^9 A_s e^{-2\tau}$	$1.883^{+0.012}_{-0.015}$	$D_M(2.33)$	$5729^{+50}_{-15}$
$n_s$	$0.9699^{+0.0052}_{-0.0067}$	$D_{40}$	$1219 \pm 14$	$f\sigma_8(0.15)$	$0.444^{+0.015}_{-0.0098}$
$y_{cal}$	$1.0006 \pm 0.0025$	$D_{220}$	$5720 \pm 40$	$\sigma_8(0.15)$	$0.728^{+0.024}_{-0.013}$
$A_{217}^{CIB}$	$48 \pm 7$	$D_{810}$	$2537 \pm 14$	$f\sigma_8(0.38)$	$0.462^{+0.015}_{-0.0092}$
$\xi^{tSZ \times CIB}$	—	$D_{1420}$	$814.6 \pm 5.0$	$\sigma_8(0.38)$	$0.645^{+0.022}_{-0.012}$
$A_{143}^{tSZ}$	$5.0 \pm 2.0$	$D_{2000}$	$229.1 \pm 1.8$	$f\sigma_8(0.51)$	$0.461^{+0.015}_{-0.0088}$
$A_{100}^{PS}$	$265 \pm 28$	$n_{s,0.002}$	$0.9699^{+0.0052}_{-0.0067}$	$\sigma_8(0.51)$	$0.604^{+0.020}_{-0.011}$
$A_{143}^{PS}$	$50 \pm 8$	$Y_P$	$0.24694^{+0.00040}_{-0.0016}$	$f\sigma_8(0.61)$	$0.456^{+0.015}_{-0.0085}$
$A_{143 \times 217}^{PS}$	$44^{+9}_{-10}$	$Y_P^{BBN}$	$0.24827^{+0.00040}_{-0.0016}$	$\sigma_8(0.61)$	$0.575^{+0.020}_{-0.011}$
$A_{217}^{PS}$	$115 \pm 10$	$10^5 D/H$	$2.640^{+0.040}_{-0.051}$	$f\sigma_8(2.33)$	$0.2902^{+0.0099}_{-0.0054}$
$A^{kSZ}$	$< 5.28$	$Age/Gyr$	$13.72^{+0.12}_{-0.035}$	$\sigma_8(2.33)$	$0.299^{+0.010}_{-0.0057}$
$A_{100}^{dustTT}$	$9.0 \pm 1.9$	$z_*$	$1090.17^{+0.32}_{-0.37}$	$f_{2000}^{143}$	$32.0 \pm 3.0$
$A_{143}^{dustTT}$	$10.8 \pm 1.8$	$r_*$	$143.8^{+1.2}_{-0.43}$	$f_{2000}^{143 \times 217}$	$34.2 \pm 2.1$
$A_{143 \times 217}^{dustTT}$	$18.4 \pm 3.3$	$100\theta_*$	$1.04099^{+0.00052}_{-0.00044}$	$f_{2000}^{217}$	$108.7 \pm 2.0$
$A_{217}^{dustTT}$	$93.4 \pm 7.3$	$D_M(z_*)/Gpc$	$13.81^{+0.11}_{-0.042}$	$\chi_{small}^2$	$310 \pm 200$
$c_{100}$	$0.99960 \pm 0.00061$	$z_{drag}$	$1059.92^{+0.49}_{-0.57}$	$\chi_{lowl}^2$	$109 \pm 200$
$c_{217}$	$0.99828 \pm 0.00062$	$r_{drag}$	$146.5^{+1.3}_{-0.46}$	$\chi_{plik}^2$	$774.3 \pm 5.7$
$H_0$	$68.04^{+0.57}_{-0.91}$	$k_D$	$0.14106^{+0.00053}_{-0.00097}$	$\chi_{Aver15}^2$	$0.84 \pm 0.83$
$\Omega_\Lambda$	$0.6891 \pm 0.0076$	$100\theta_D$	$0.16122^{+0.00029}_{-0.00043}$	$\chi_{6DF}^2$	$0.34 \pm 0.57$
$\Omega_m$	$0.3109 \pm 0.0076$	$z_{eq}$	$3317^{+69}_{-24}$	$\chi_{MGS}^2$	$1.02 \pm 0.70$
$\Omega_m h^2$	$0.1439^{+0.0014}_{-0.0026}$	$k_{eq}$	$0.01023^{+0.00021}_{-0.00011}$	$\chi_{DR12BAO}^2$	$5.0 \pm 1.8$
$\Omega_\nu h^2$	$0.002830^{+0.000013}_{-0.0022}$	$100\theta_{eq}$	$0.8303^{+0.0040}_{-0.015}$	$\chi_{prior}^2$	$7.4 \pm 3.7$
$\Omega_m h^3$	$0.09788^{+0.00065}_{-0.0024}$	$100\theta_{s,eq}$	$0.4583^{+0.0020}_{-0.0077}$	$\chi_{BAO}^2$	$6.4 \pm 1.5$
$\sigma_8$	$0.787^{+0.026}_{-0.015}$	$H(0.15)$	$73.34^{+0.49}_{-0.89}$	$\chi_{CMB}^2$	$1194.1 \pm 5.7$
$S_8$	$0.802^{+0.027}_{-0.019}$	$D_M(0.15)$	$637.3^{+8.0}_{-4.9}$		
$\sigma_8 \Omega_m^{0.5}$	$0.439^{+0.015}_{-0.010}$	$H(0.38)$	$83.50^{+0.36}_{-0.87}$		

$\bar{\chi}_{eff}^2 = 1208.67$ ;  $R - 1 = 0.03995$



# 8.16 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_Cooke17\_Aver15

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02231 \pm 0.00019$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.587^{+0.020}_{-0.011}$	$D_{\mathrm{M}}(0.38)$	$1521^{+17}_{-9.6}$
$\Omega_{\mathrm{c}}h^2$	$0.1185^{+0.0039}_{-0.0024}$	$\sigma_8/h^{0.5}$	$0.954^{+0.031}_{-0.016}$	$H(0.51)$	$90.20^{+0.28}_{-0.80}$
$100\theta_{\mathrm{MC}}$	$1.04088 \pm 0.00045$	$r_{\mathrm{drag}}h$	$99.66 \pm 0.96$	$D_{\mathrm{M}}(0.51)$	$1970^{+21}_{-11}$
$\tau$	$0.0545 \pm 0.0081$	$\langle d^2 \rangle^{1/2}$	$2.417 \pm 0.029$	$H(0.61)$	$95.84^{+0.25}_{-0.80}$
$m_{\nu, \mathrm{sterile}}^{\mathrm{eff}} [\mathrm{eV}]$	$< 0.212$	$z_{\mathrm{re}}$	$7.71 \pm 0.83$	$D_{\mathrm{M}}(0.61)$	$2293^{+24}_{-12}$
$N_{\mathrm{eff}}$	$< 3.17$	$10^9 A_{\mathrm{s}}$	$2.099 \pm 0.037$	$H(2.33)$	$237.24^{+0.95}_{-1.9}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.044 \pm 0.017$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.882^{+0.012}_{-0.014}$	$D_{\mathrm{M}}(2.33)$	$5732^{+45}_{-14}$
$n_{\mathrm{s}}$	$0.9696^{+0.0051}_{-0.0065}$	$D_{40}$	$1220 \pm 14$	$f\sigma_8(0.15)$	$0.443^{+0.015}_{-0.0097}$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{220}$	$5721 \pm 39$	$\sigma_8(0.15)$	$0.727^{+0.025}_{-0.013}$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2537 \pm 14$	$f\sigma_8(0.38)$	$0.461^{+0.015}_{-0.0090}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$814.8 \pm 4.9$	$\sigma_8(0.38)$	$0.645^{+0.022}_{-0.012}$
$A_{143}^{\mathrm{tSZ}}$	$5.0 \pm 2.0$	$D_{2000}$	$229.2 \pm 1.7$	$f\sigma_8(0.51)$	$0.460^{+0.015}_{-0.0086}$
$A_{100}^{\mathrm{PS}}$	$265 \pm 28$	$n_{\mathrm{s}, 0.002}$	$0.9696^{+0.0051}_{-0.0065}$	$\sigma_8(0.51)$	$0.603^{+0.021}_{-0.011}$
$A_{143}^{\mathrm{PS}}$	$50 \pm 8$	$Y_{\mathrm{P}}$	$0.24680^{+0.00035}_{-0.0014}$	$f\sigma_8(0.61)$	$0.455^{+0.015}_{-0.0084}$
$A_{143 \times 217}^{\mathrm{PS}}$	$44^{+9}_{-10}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24813^{+0.00035}_{-0.0015}$	$\sigma_8(0.61)$	$0.574^{+0.020}_{-0.010}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.634^{+0.037}_{-0.044}$	$f\sigma_8(2.33)$	$0.290^{+0.010}_{-0.0053}$
$A^{\mathrm{kSZ}}$	$< 5.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.72^{+0.11}_{-0.032}$	$\sigma_8(2.33)$	$0.299^{+0.010}_{-0.0056}$
$A_{100}^{\mathrm{dustTT}}$	$9.0 \pm 1.9$	$z_*$	$1090.14 \pm 0.31$	$f_{2000}^{143}$	$31.8 \pm 2.9$
$A_{143}^{\mathrm{dustTT}}$	$10.8 \pm 1.8$	$r_*$	$143.9^{+1.1}_{-0.41}$	$f_{2000}^{143 \times 217}$	$34.1 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.4 \pm 3.3$	$100\theta_*$	$1.04102^{+0.00049}_{-0.00043}$	$f_{2000}^{217}$	$108.6 \pm 1.9$
$A_{217}^{\mathrm{dustTT}}$	$93.4 \pm 7.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.82^{+0.10}_{-0.040}$	$\chi_{\mathrm{small}}^2$	$313 \pm 200$
$c_{100}$	$0.99960 \pm 0.00061$	$z_{\mathrm{drag}}$	$1059.92^{+0.46}_{-0.55}$	$\chi_{\mathrm{lowl}}^2$	$107 \pm 200$
$c_{217}$	$0.99828 \pm 0.00062$	$r_{\mathrm{drag}}$	$146.6^{+1.2}_{-0.44}$	$\chi_{\mathrm{plik}}^2$	$774.2 \pm 5.7$
$H_0$	$68.00^{+0.55}_{-0.86}$	$k_{\mathrm{D}}$	$0.14101^{+0.00051}_{-0.00091}$	$\chi_{\mathrm{Aver15}}^2$	$0.76 \pm 0.71$
$\Omega_{\Lambda}$	$0.6892 \pm 0.0075$	$100\theta_{\mathrm{D}}$	$0.16118^{+0.00027}_{-0.00037}$	$\chi_{\mathrm{Cooke17}}^2$	$0.22 \pm 0.34$
$\Omega_{\mathrm{m}}$	$0.3108 \pm 0.0075$	$z_{\mathrm{eq}}$	$3316^{+71}_{-24}$	$\chi_{6\mathrm{DF}}^2$	$0.33 \pm 0.56$
$\Omega_{\mathrm{m}}h^2$	$0.1437^{+0.0014}_{-0.0024}$	$k_{\mathrm{eq}}$	$0.01022^{+0.00021}_{-0.00010}$	$\chi_{\mathrm{MGS}}^2$	$1.03 \pm 0.69$
$\Omega_{\nu}h^2$	$0.00290^{+0.00017}_{-0.0023}$	$100\theta_{\mathrm{eq}}$	$0.8306^{+0.0040}_{-0.015}$	$\chi_{\mathrm{DR12BAO}}^2$	$5.0 \pm 1.8$
$\Omega_{\mathrm{m}}h^3$	$0.09770^{+0.00060}_{-0.0022}$	$100\theta_{\mathrm{s,eq}}$	$0.4585^{+0.0021}_{-0.0078}$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.7$
$\sigma_8$	$0.787^{+0.026}_{-0.014}$	$H(0.15)$	$73.30^{+0.47}_{-0.83}$	$\chi_{\mathrm{BAO}}^2$	$6.4 \pm 1.5$
$S_8$	$0.801^{+0.027}_{-0.018}$	$D_{\mathrm{M}}(0.15)$	$637.7^{+7.6}_{-4.8}$	$\chi_{\mathrm{CMB}}^2$	$1194.0 \pm 5.6$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.438^{+0.015}_{-0.010}$	$H(0.38)$	$83.45^{+0.34}_{-0.80}$	$\chi_{\mathrm{Abund}}^2$	$0.98 \pm 0.93$

$$\bar{\chi}_{\mathrm{eff}}^2 = 1208.67; R - 1 = 0.03900$$



## 8.17 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02235 \pm 0.00021$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.441^{+0.015}_{-0.010}$	$D_{\text{M}}(0.15)$	$633^{+12}_{-6.0}$
$\Omega_{\text{c}}h^2$	$0.1203^{+0.0044}_{-0.0035}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.591^{+0.020}_{-0.012}$	$H(0.38)$	$83.99^{+0.54}_{-1.3}$
$100\theta_{\text{MC}}$	$1.04074^{+0.00054}_{-0.00047}$	$\sigma_8/h^{0.5}$	$0.958^{+0.031}_{-0.016}$	$D_{\text{M}}(0.38)$	$1511^{+26}_{-13}$
$\tau$	$0.0559^{+0.0057}_{-0.0086}$	$r_{\text{drag}}h$	$99.8 \pm 1.0$	$H(0.51)$	$90.77^{+0.51}_{-1.4}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.165$	$\langle d^2 \rangle^{1/2}$	$2.414 \pm 0.029$	$D_{\text{M}}(0.51)$	$1957^{+33}_{-15}$
$N_{\text{eff}}$	$< 3.30$	$z_{\text{re}}$	$7.88^{+0.64}_{-0.85}$	$H(0.61)$	$96.43^{+0.50}_{-1.4}$
$\ln(10^{10}A_{\text{s}})$	$3.050^{+0.014}_{-0.019}$	$10^9 A_{\text{s}}$	$2.111^{+0.030}_{-0.041}$	$D_{\text{M}}(0.61)$	$2278^{+38}_{-17}$
$n_{\text{s}}$	$0.9730^{+0.0061}_{-0.0088}$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.888^{+0.014}_{-0.019}$	$H(2.33)$	$238.5^{+1.4}_{-3.1}$
$y_{\text{cal}}$	$1.0006 \pm 0.0025$	$D_{40}$	$1215 \pm 16$	$D_{\text{M}}(2.33)$	$5698^{+79}_{-29}$
$A_{217}^{\text{CIB}}$	$49 \pm 7$	$D_{220}$	$5720 \pm 40$	$f\sigma_8(0.15)$	$0.446^{+0.015}_{-0.0096}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{810}$	$2538 \pm 14$	$\sigma_8(0.15)$	$0.733^{+0.025}_{-0.015}$
$A_{143}^{\text{tSZ}}$	$4.9 \pm 2.0$	$D_{1420}$	$814.3 \pm 5.0$	$f\sigma_8(0.38)$	$0.464^{+0.016}_{-0.0092}$
$A_{100}^{\text{PS}}$	$267 \pm 28$	$D_{2000}$	$228.7 \pm 2.0$	$\sigma_8(0.38)$	$0.650^{+0.022}_{-0.013}$
$A_{143}^{\text{PS}}$	$51 \pm 8$	$n_{\text{s},0.002}$	$0.9730^{+0.0061}_{-0.0088}$	$f\sigma_8(0.51)$	$0.463^{+0.015}_{-0.0090}$
$A_{143 \times 217}^{\text{PS}}$	$44^{+9}_{-10}$	$Y_{\text{P}}$	$0.24799^{+0.00087}_{-0.0026}$	$\sigma_8(0.51)$	$0.608^{+0.021}_{-0.013}$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$Y_{\text{P}}^{\text{BBN}}$	$0.24933^{+0.00087}_{-0.0026}$	$f\sigma_8(0.61)$	$0.459^{+0.015}_{-0.0089}$
$A^{\text{kSZ}}$	$< 5.54$	$10^5 \text{D}/\text{H}$	$2.658^{+0.046}_{-0.065}$	$\sigma_8(0.61)$	$0.579^{+0.020}_{-0.012}$
$A_{100}^{\text{dustTT}}$	$9.1 \pm 1.9$	$\text{Age}/\text{Gyr}$	$13.64^{+0.19}_{-0.068}$	$f\sigma_8(2.33)$	$0.292^{+0.010}_{-0.0061}$
$A_{143}^{\text{dustTT}}$	$10.8 \pm 1.8$	$z_*$	$1090.29^{+0.35}_{-0.45}$	$\sigma_8(2.33)$	$0.301^{+0.011}_{-0.0066}$
$A_{143 \times 217}^{\text{dustTT}}$	$18.4 \pm 3.3$	$r_*$	$143.1^{+1.9}_{-0.74}$	$f_{2000}^{143}$	$32.6 \pm 3.2$
$A_{217}^{\text{dustTT}}$	$93.3 \pm 7.3$	$100\theta_*$	$1.04082^{+0.00063}_{-0.00049}$	$f_{2000}^{143 \times 217}$	$34.7 \pm 2.2$
$c_{100}$	$0.99961 \pm 0.00061$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.75^{+0.18}_{-0.070}$	$f_{2000}^{217}$	$109.1 \pm 2.1$
$c_{217}$	$0.99829 \pm 0.00062$	$z_{\text{drag}}$	$1060.18^{+0.53}_{-0.77}$	$\chi_{\text{small}}^2$	$397.2 \pm 2.0$
$H_0$	$68.49^{+0.68}_{-1.3}$	$r_{\text{drag}}$	$145.7^{+2.0}_{-0.78}$	$\chi_{\text{lowl}}^2$	$22.3 \pm 1.1$
$\Omega_{\Lambda}$	$0.6904 \pm 0.0079$	$k_{\text{D}}$	$0.14159^{+0.00069}_{-0.0015}$	$\chi_{\text{plik}}^2$	$775.0 \pm 5.9$
$\Omega_{\text{m}}$	$0.3096 \pm 0.0079$	$100\theta_{\text{D}}$	$0.16141^{+0.00037}_{-0.00058}$	$\chi_{6\text{DF}}^2$	$0.062 \pm 0.081$
$\Omega_{\text{m}}h^2$	$0.1452^{+0.0019}_{-0.0038}$	$z_{\text{eq}}$	$3320^{+59}_{-24}$	$\chi_{\text{MGS}}^2$	$1.37 \pm 0.56$
$\Omega_{\nu}h^2$	$0.002495^{+0.000085}_{-0.0019}$	$k_{\text{eq}}$	$0.01029^{+0.00021}_{-0.00013}$	$\chi_{\text{DR12BAO}}^2$	$4.9 \pm 1.7$
$\Omega_{\text{m}}h^3$	$0.0994^{+0.0013}_{-0.0039}$	$100\theta_{\text{eq}}$	$0.8294^{+0.0041}_{-0.012}$	$\chi_{\text{prior}}^2$	$7.4 \pm 3.7$
$\sigma_8$	$0.793^{+0.027}_{-0.016}$	$100\theta_{\text{s,eq}}$	$0.4578^{+0.0021}_{-0.0065}$	$\chi_{\text{BAO}}^2$	$6.3 \pm 1.4$
$S_8$	$0.805^{+0.027}_{-0.018}$	$H(0.15)$	$73.81^{+0.61}_{-1.3}$	$\chi_{\text{CMB}}^2$	$1194.5 \pm 5.8$

$$\bar{\chi}_{\text{eff}}^2 = 1208.20; R - 1 = 0.02851$$



# 8.18 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02237 \pm 0.00021$	$\sigma_8 \Omega_m^{0.25}$	$0.591^{+0.019}_{-0.012}$	$D_M(0.38)$	$1509^{+26}_{-13}$
$\Omega_c h^2$	$0.1204 \pm 0.0043$	$\sigma_8/h^{0.5}$	$0.958^{+0.030}_{-0.015}$	$H(0.51)$	$90.86^{+0.55}_{-1.4}$
$100\theta_{MC}$	$1.04074^{+0.00054}_{-0.00047}$	$r_{drag}h$	$99.94 \pm 0.95$	$D_M(0.51)$	$1955^{+33}_{-16}$
$\tau$	$0.0559^{+0.0058}_{-0.0085}$	$\langle d^2 \rangle^{1/2}$	$2.411 \pm 0.029$	$H(0.61)$	$96.52^{+0.55}_{-1.4}$
$m_{\nu, sterile}^{eff} [eV]$	$< 0.152$	$z_{re}$	$7.89^{+0.64}_{-0.85}$	$D_M(0.61)$	$2275^{+38}_{-18}$
$N_{eff}$	$< 3.32$	$10^9 A_s$	$2.112^{+0.030}_{-0.041}$	$H(2.33)$	$238.5^{+1.5}_{-3.3}$
$\ln(10^{10} A_s)$	$3.050^{+0.015}_{-0.019}$	$10^9 A_s e^{-2\tau}$	$1.888^{+0.014}_{-0.019}$	$D_M(2.33)$	$5693^{+81}_{-32}$
$n_s$	$0.9737^{+0.0062}_{-0.0087}$	$D_{40}$	$1214 \pm 15$	$f\sigma_8(0.15)$	$0.446^{+0.014}_{-0.0094}$
$y_{cal}$	$1.0006 \pm 0.0025$	$D_{220}$	$5721 \pm 40$	$\sigma_8(0.15)$	$0.734^{+0.024}_{-0.015}$
$A_{217}^{CIB}$	$49 \pm 7$	$D_{810}$	$2538 \pm 14$	$f\sigma_8(0.38)$	$0.465^{+0.015}_{-0.0092}$
$\xi^{tSZ \times CIB}$	—	$D_{1420}$	$814.3 \pm 5.0$	$\sigma_8(0.38)$	$0.651^{+0.022}_{-0.013}$
$A_{143}^{tSZ}$	$4.9 \pm 2.0$	$D_{2000}$	$228.7 \pm 2.0$	$f\sigma_8(0.51)$	$0.464^{+0.015}_{-0.0090}$
$A_{100}^{PS}$	$267 \pm 28$	$n_{s,0.002}$	$0.9737^{+0.0062}_{-0.0087}$	$\sigma_8(0.51)$	$0.609^{+0.020}_{-0.013}$
$A_{143}^{PS}$	$51 \pm 8$	$Y_P$	$0.24811^{+0.00095}_{-0.0027}$	$f\sigma_8(0.61)$	$0.459^{+0.015}_{-0.0088}$
$A_{143 \times 217}^{PS}$	$44^{+9}_{-10}$	$Y_P^{BBN}$	$0.24945^{+0.00096}_{-0.0028}$	$\sigma_8(0.61)$	$0.580^{+0.019}_{-0.012}$
$A_{217}^{PS}$	$115 \pm 10$	$10^5 D/H$	$2.659^{+0.047}_{-0.066}$	$f\sigma_8(2.33)$	$0.2930^{+0.0098}_{-0.0061}$
$A^{kSZ}$	$< 5.55$	Age/Gyr	$13.63^{+0.19}_{-0.075}$	$\sigma_8(2.33)$	$0.302^{+0.010}_{-0.0065}$
$A_{100}^{dustTT}$	$9.1 \pm 1.9$	$z_*$	$1090.28^{+0.35}_{-0.46}$	$f_{2000}^{143}$	$32.6 \pm 3.2$
$A_{143}^{dustTT}$	$10.8 \pm 1.8$	$r_*$	$143.0^{+2.0}_{-0.80}$	$f_{2000}^{143 \times 217}$	$34.7 \pm 2.3$
$A_{143 \times 217}^{dustTT}$	$18.5 \pm 3.3$	$100\theta_*$	$1.04081^{+0.00064}_{-0.00050}$	$f_{2000}^{217}$	$109.1 \pm 2.1$
$A_{217}^{dustTT}$	$93.3 \pm 7.3$	$D_M(z_*)/Gpc$	$13.74^{+0.19}_{-0.076}$	$\chi_{small}^2$	$312 \pm 200$
$c_{100}$	$0.99961 \pm 0.00062$	$z_{drag}$	$1060.22^{+0.54}_{-0.78}$	$\chi_{lowl}^2$	$107 \pm 200$
$c_{217}$	$0.99829 \pm 0.00062$	$r_{drag}$	$145.7^{+2.1}_{-0.84}$	$\chi_{plik}^2$	$775.2 \pm 5.9$
$H_0$	$68.61^{+0.69}_{-1.3}$	$k_D$	$0.14163^{+0.00073}_{-0.0015}$	$\chi_{JLA}^2$	$1035.03 \pm 0.33$
$\Omega_\Lambda$	$0.6915 \pm 0.0074$	$100\theta_D$	$0.16142^{+0.00038}_{-0.00059}$	$\chi_{6DF}^2$	$0.36 \pm 0.63$
$\Omega_m$	$0.3085 \pm 0.0074$	$z_{eq}$	$3320^{+55}_{-24}$	$\chi_{MGS}^2$	$1.13 \pm 0.76$
$\Omega_m h^2$	$0.1452^{+0.0019}_{-0.0040}$	$k_{eq}$	$0.01029^{+0.00020}_{-0.00013}$	$\chi_{DR12BAO}^2$	$4.6 \pm 1.5$
$\Omega_\nu h^2$	$0.002357^{+0.000088}_{-0.0018}$	$100\theta_{eq}$	$0.8294^{+0.0042}_{-0.012}$	$\chi_{prior}^2$	$7.4 \pm 3.7$
$\Omega_m h^3$	$0.0996^{+0.0014}_{-0.0041}$	$100\theta_{s,eq}$	$0.4578^{+0.0021}_{-0.0061}$	$\chi_{BAO}^2$	$6.1 \pm 1.2$
$\sigma_8$	$0.794^{+0.026}_{-0.016}$	$H(0.15)$	$73.92^{+0.64}_{-1.3}$	$\chi_{CMB}^2$	$1194.6 \pm 5.7$
$S_8$	$0.805^{+0.026}_{-0.018}$	$D_M(0.15)$	$632^{+12}_{-6.2}$		
$\sigma_8 \Omega_m^{0.5}$	$0.441^{+0.014}_{-0.0098}$	$H(0.38)$	$84.10^{+0.58}_{-1.4}$		

$$\bar{\chi}_{eff}^2 = 2243.12; R - 1 = 0.02260$$



# 8.19 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_Aver15\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02231 \pm 0.00020$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.589^{+0.020}_{-0.011}$	$D_{\mathrm{M}}(0.38)$	$1520^{+18}_{-9.9}$
$\Omega_{\mathrm{c}} h^2$	$0.1187^{+0.0040}_{-0.0026}$	$\sigma_8 / h^{0.5}$	$0.956^{+0.031}_{-0.016}$	$H(0.51)$	$90.27^{+0.30}_{-0.87}$
$100\theta_{\mathrm{MC}}$	$1.04086 \pm 0.00046$	$r_{\mathrm{drag}} h$	$99.68 \pm 0.97$	$D_{\mathrm{M}}(0.51)$	$1969^{+22}_{-12}$
$\tau$	$0.0556^{+0.0056}_{-0.0084}$	$\langle d^2 \rangle^{1/2}$	$2.419 \pm 0.028$	$H(0.61)$	$95.91^{+0.27}_{-0.88}$
$m_{\nu, \mathrm{sterile}}^{\mathrm{eff}} [\mathrm{eV}]$	$< 0.201$	$z_{\mathrm{re}}$	$7.83^{+0.62}_{-0.85}$	$D_{\mathrm{M}}(0.61)$	$2291^{+25}_{-12}$
$N_{\mathrm{eff}}$	$< 3.19$	$10^9 A_{\mathrm{s}}$	$2.104^{+0.028}_{-0.037}$	$H(2.33)$	$237.40^{+0.99}_{-2.1}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.046^{+0.014}_{-0.018}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.883^{+0.012}_{-0.015}$	$D_{\mathrm{M}}(2.33)$	$5728^{+50}_{-15}$
$n_{\mathrm{s}}$	$0.9701^{+0.0052}_{-0.0067}$	$D_{40}$	$1219 \pm 14$	$f\sigma_8(0.15)$	$0.444^{+0.015}_{-0.0097}$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{220}$	$5720 \pm 40$	$\sigma_8(0.15)$	$0.729^{+0.024}_{-0.013}$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2537 \pm 14$	$f\sigma_8(0.38)$	$0.462^{+0.015}_{-0.0090}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$814.6 \pm 5.0$	$\sigma_8(0.38)$	$0.646^{+0.022}_{-0.012}$
$A_{143}^{\mathrm{tSZ}}$	$5.0 \pm 2.0$	$D_{2000}$	$229.1 \pm 1.8$	$f\sigma_8(0.51)$	$0.461^{+0.015}_{-0.0086}$
$A_{100}^{\mathrm{PS}}$	$265 \pm 28$	$n_{\mathrm{s}, 0.002}$	$0.9701^{+0.0052}_{-0.0067}$	$\sigma_8(0.51)$	$0.605^{+0.020}_{-0.011}$
$A_{143}^{\mathrm{PS}}$	$50 \pm 8$	$Y_{\mathrm{P}}$	$0.24696^{+0.00041}_{-0.0016}$	$f\sigma_8(0.61)$	$0.456^{+0.015}_{-0.0083}$
$A_{143 \times 217}^{\mathrm{PS}}$	$44^{+9}_{-10}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24829^{+0.00041}_{-0.0016}$	$\sigma_8(0.61)$	$0.575^{+0.019}_{-0.011}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.639^{+0.040}_{-0.052}$	$f\sigma_8(2.33)$	$0.2905^{+0.0098}_{-0.0053}$
$A^{\mathrm{kSZ}}$	$< 5.26$	$\mathrm{Age}/\mathrm{Gyr}$	$13.71^{+0.12}_{-0.035}$	$\sigma_8(2.33)$	$0.299^{+0.010}_{-0.0056}$
$A_{100}^{\mathrm{dustTT}}$	$9.0 \pm 1.9$	$z_*$	$1090.17^{+0.32}_{-0.37}$	$f_{2000}^{143}$	$32.0 \pm 3.0$
$A_{143}^{\mathrm{dustTT}}$	$10.8 \pm 1.8$	$r_*$	$143.8^{+1.2}_{-0.44}$	$f_{2000}^{143 \times 217}$	$34.2 \pm 2.1$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.4 \pm 3.3$	$100\theta_*$	$1.04099^{+0.00052}_{-0.00044}$	$f_{2000}^{217}$	$108.7 \pm 2.0$
$A_{217}^{\mathrm{dustTT}}$	$93.4 \pm 7.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.81^{+0.12}_{-0.043}$	$\chi_{\mathrm{small}}^2$	$311 \pm 200$
$c_{100}$	$0.99960 \pm 0.00061$	$z_{\mathrm{drag}}$	$1059.93^{+0.49}_{-0.57}$	$\chi_{\mathrm{lowl}}^2$	$109 \pm 200$
$c_{217}$	$0.99828 \pm 0.00062$	$r_{\mathrm{drag}}$	$146.5^{+1.3}_{-0.47}$	$\chi_{\mathrm{plik}}^2$	$774.2 \pm 5.7$
$H_0$	$68.06^{+0.57}_{-0.91}$	$k_{\mathrm{D}}$	$0.14107^{+0.00054}_{-0.00097}$	$\chi_{\mathrm{Aver15}}^2$	$0.85 \pm 0.84$
$\Omega_{\Lambda}$	$0.6893 \pm 0.0076$	$100\theta_{\mathrm{D}}$	$0.16122^{+0.00030}_{-0.00043}$	$\chi_{6\mathrm{DF}}^2$	$0.35 \pm 0.57$
$\Omega_{\mathrm{m}}$	$0.3107 \pm 0.0076$	$z_{\mathrm{eq}}$	$3316^{+69}_{-23}$	$\chi_{\mathrm{MGS}}^2$	$1.02 \pm 0.70$
$\Omega_{\mathrm{m}} h^2$	$0.1439^{+0.0015}_{-0.0026}$	$k_{\mathrm{eq}}$	$0.01023^{+0.00021}_{-0.00011}$	$\chi_{\mathrm{DR12BAO}}^2$	$5.0 \pm 1.8$
$\Omega_{\nu} h^2$	$0.0028251^{+0.0000012}_{-0.0022}$	$100\theta_{\mathrm{eq}}$	$0.8304^{+0.0039}_{-0.015}$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.7$
$\Omega_{\mathrm{m}} h^3$	$0.09791^{+0.00066}_{-0.0024}$	$100\theta_{\mathrm{s,eq}}$	$0.4584^{+0.0020}_{-0.0076}$	$\chi_{\mathrm{BAO}}^2$	$6.4 \pm 1.5$
$\sigma_8$	$0.788^{+0.026}_{-0.014}$	$H(0.15)$	$73.36^{+0.49}_{-0.89}$	$\chi_{\mathrm{CMB}}^2$	$1193.9 \pm 5.6$
$S_8$	$0.802^{+0.027}_{-0.018}$	$D_{\mathrm{M}}(0.15)$	$637.2^{+8.1}_{-4.9}$		
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.439^{+0.015}_{-0.010}$	$H(0.38)$	$83.52^{+0.36}_{-0.87}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1208.49; R - 1 = 0.03891$$



## 8.20 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_Cooke17\_Aver15\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02232 \pm 0.00019$	$\sigma_8 \Omega_m^{0.25}$	$0.588^{+0.020}_{-0.011}$	$D_M(0.38)$	$1521^{+17}_{-9.5}$
$\Omega_c h^2$	$0.1185^{+0.0039}_{-0.0024}$	$\sigma_8/h^{0.5}$	$0.955^{+0.031}_{-0.016}$	$H(0.51)$	$90.21^{+0.28}_{-0.80}$
$100\theta_{MC}$	$1.04089 \pm 0.00045$	$r_{drag}h$	$99.68 \pm 0.96$	$D_M(0.51)$	$1970^{+21}_{-11}$
$\tau$	$0.0556^{+0.0056}_{-0.0084}$	$\langle d^2 \rangle^{1/2}$	$2.419 \pm 0.028$	$H(0.61)$	$95.85^{+0.25}_{-0.80}$
$m_{\nu, sterile}^{eff} [eV]$	$< 0.210$	$z_{re}$	$7.83^{+0.62}_{-0.85}$	$D_M(0.61)$	$2292^{+24}_{-12}$
$N_{eff}$	$< 3.17$	$10^9 A_s$	$2.103^{+0.028}_{-0.037}$	$H(2.33)$	$237.25^{+0.96}_{-1.9}$
$\ln(10^{10} A_s)$	$3.046^{+0.013}_{-0.018}$	$10^9 A_s e^{-2\tau}$	$1.882^{+0.012}_{-0.014}$	$D_M(2.33)$	$5731^{+46}_{-14}$
$n_s$	$0.9697^{+0.0051}_{-0.0065}$	$D_{40}$	$1220 \pm 14$	$f\sigma_8(0.15)$	$0.444^{+0.015}_{-0.0096}$
$y_{cal}$	$1.0006 \pm 0.0025$	$D_{220}$	$5721 \pm 39$	$\sigma_8(0.15)$	$0.728^{+0.024}_{-0.013}$
$A_{217}^{CIB}$	$48 \pm 7$	$D_{810}$	$2537 \pm 14$	$f\sigma_8(0.38)$	$0.462^{+0.015}_{-0.0088}$
$\xi^{tSZ \times CIB}$	—	$D_{1420}$	$814.8 \pm 4.9$	$\sigma_8(0.38)$	$0.645^{+0.022}_{-0.011}$
$A_{143}^{tSZ}$	$5.0 \pm 2.0$	$D_{2000}$	$229.2 \pm 1.8$	$f\sigma_8(0.51)$	$0.460^{+0.015}_{-0.0084}$
$A_{100}^{PS}$	$265 \pm 28$	$n_{s,0.002}$	$0.9697^{+0.0051}_{-0.0065}$	$\sigma_8(0.51)$	$0.604^{+0.020}_{-0.011}$
$A_{143}^{PS}$	$50 \pm 8$	$Y_P$	$0.24682^{+0.00037}_{-0.0015}$	$f\sigma_8(0.61)$	$0.456^{+0.015}_{-0.0082}$
$A_{143 \times 217}^{PS}$	$44 \pm 9$	$Y_P^{BBN}$	$0.24815^{+0.00037}_{-0.0015}$	$\sigma_8(0.61)$	$0.575^{+0.019}_{-0.010}$
$A_{217}^{PS}$	$115 \pm 10$	$10^5 D/H$	$2.634^{+0.037}_{-0.044}$	$f\sigma_8(2.33)$	$0.2902^{+0.0098}_{-0.0051}$
$A^{kSZ}$	$< 5.19$	Age/Gyr	$13.72^{+0.11}_{-0.032}$	$\sigma_8(2.33)$	$0.299^{+0.010}_{-0.0054}$
$A_{100}^{dustTT}$	$9.0 \pm 1.9$	$z_*$	$1090.13 \pm 0.31$	$f_{2000}^{143}$	$31.8 \pm 2.9$
$A_{143}^{dustTT}$	$10.8 \pm 1.8$	$r_*$	$143.9^{+1.1}_{-0.42}$	$f_{2000}^{143 \times 217}$	$34.1 \pm 2.0$
$A_{143 \times 217}^{dustTT}$	$18.4 \pm 3.3$	$100\theta_*$	$1.04102^{+0.00049}_{-0.00043}$	$f_{2000}^{217}$	$108.6 \pm 1.9$
$A_{217}^{dustTT}$	$93.4 \pm 7.3$	$D_M(z_*)/Gpc$	$13.82^{+0.11}_{-0.041}$	$\chi_{small}^2$	$313 \pm 200$
$c_{100}$	$0.99960 \pm 0.00061$	$z_{drag}$	$1059.93^{+0.46}_{-0.56}$	$\chi_{lowl}^2$	$107 \pm 200$
$c_{217}$	$0.99828 \pm 0.00062$	$r_{drag}$	$146.6^{+1.2}_{-0.45}$	$\chi_{plik}^2$	$774.0 \pm 5.6$
$H_0$	$68.01^{+0.55}_{-0.87}$	$k_D$	$0.14102^{+0.00052}_{-0.00091}$	$\chi_{Aver15}^2$	$0.77 \pm 0.72$
$\Omega_\Lambda$	$0.6893 \pm 0.0075$	$100\theta_D$	$0.16118^{+0.00027}_{-0.00037}$	$\chi_{Cooke17}^2$	$0.22 \pm 0.34$
$\Omega_m$	$0.3107 \pm 0.0075$	$z_{eq}$	$3315^{+70}_{-24}$	$\chi_{6DF}^2$	$0.34 \pm 0.57$
$\Omega_m h^2$	$0.1437^{+0.0014}_{-0.0024}$	$k_{eq}$	$0.01022^{+0.00021}_{-0.00010}$	$\chi_{MGS}^2$	$1.03 \pm 0.70$
$\Omega_\nu h^2$	$0.00290^{+0.00016}_{-0.0023}$	$100\theta_{eq}$	$0.8307^{+0.0039}_{-0.015}$	$\chi_{DR12BAO}^2$	$5.0 \pm 1.8$
$\Omega_m h^3$	$0.09773^{+0.00061}_{-0.0022}$	$100\theta_{s,eq}$	$0.4585^{+0.0020}_{-0.0078}$	$\chi_{prior}^2$	$7.4 \pm 3.7$
$\sigma_8$	$0.787^{+0.026}_{-0.014}$	$H(0.15)$	$73.32^{+0.47}_{-0.84}$	$\chi_{BAO}^2$	$6.3 \pm 1.5$
$S_8$	$0.801^{+0.027}_{-0.018}$	$D_M(0.15)$	$637.5^{+7.6}_{-4.8}$	$\chi_{CMB}^2$	$1193.8 \pm 5.6$
$\sigma_8 \Omega_m^{0.5}$	$0.439^{+0.015}_{-0.010}$	$H(0.38)$	$83.47^{+0.34}_{-0.81}$	$\chi_{Abund}^2$	$0.99 \pm 0.93$

$$\bar{\chi}_{eff}^2 = 1208.48; R - 1 = 0.03789$$



## 8.21 base\_nnu\_meffsterile\_plikHM\_TTTEEE\_lowl\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022412	$0.02250 \pm 0.00015$ (+0.7 $\sigma$ )	$\Omega_\nu h^2$	0.00386	$0.00272^{+0.00050}_{-0.0022}$ (+0.1 $\sigma$ )	$100\theta_{s,eq}$	0.45952	$0.4565^{+0.0019}_{-0.0070}$ (−0.2 $\sigma$ )
$\Omega_c h^2$	0.11606	$0.1187^{+0.0034}_{-0.0022}$ (−0.4 $\sigma$ )	$\Omega_m h^3$	0.09632	$0.09773^{+0.00033}_{-0.0017}$ (−0.5 $\sigma$ )	$H(0.15)$	72.95	$73.21^{+0.38}_{-0.67}$ (−0.5 $\sigma$ )
$100\theta_{MC}$	1.041014	$1.04091 \pm 0.00032$ (+0.3 $\sigma$ )	$\sigma_8$	0.8085	$0.792^{+0.023}_{-0.014}$ (+0.0 $\sigma$ )	$D_M(0.15)$	640.7	$638.6^{+6.2}_{-3.9}$ (+0.5 $\sigma$ )
$\tau$	0.0546	$0.0564^{+0.0069}_{-0.0083}$ (+0.2 $\sigma$ )	$S_8$	0.8229	$0.808^{+0.023}_{-0.016}$ (+0.1 $\sigma$ )	$H(0.38)$	83.056	$83.39^{+0.25}_{-0.64}$ (−0.5 $\sigma$ )
$m_{\nu, sterile}^{eff}$ [eV]	0.302	< 0.220 (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4507	$0.443^{+0.013}_{-0.0087}$ (+0.1 $\sigma$ )	$D_M(0.38)$	1528.1	$1523^{+14}_{-7.6}$ (+0.5 $\sigma$ )
$N_{eff}$	3.0471	< 3.14 (−0.7 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6037	$0.592^{+0.017}_{-0.010}$ (+0.1 $\sigma$ )	$H(0.51)$	89.770	$90.15^{+0.19}_{-0.62}$ (−0.5 $\sigma$ )
$\ln(10^{10} A_s)$	3.0434	$3.049^{+0.015}_{-0.017}$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9828	$0.961^{+0.027}_{-0.015}$ (+0.2 $\sigma$ )	$D_M(0.51)$	1979.7	$1972^{+17}_{-8.7}$ (+0.5 $\sigma$ )
$n_s$	0.96775	$0.9687^{+0.0043}_{-0.0056}$ (−0.5 $\sigma$ )	$r_{drag} h$	99.64	$99.42 \pm 0.83$ (−0.4 $\sigma$ )	$H(0.61)$	95.387	$95.81^{+0.16}_{-0.62}$ (−0.5 $\sigma$ )
$y_{cal}$	1.00074	$1.0008 \pm 0.0025$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4324	$2.430 \pm 0.025$ (+0.6 $\sigma$ )	$D_M(0.61)$	2303.7	$2295^{+19}_{-9.3}$ (+0.5 $\sigma$ )
$A_{217}^{CIB}$	47.9	$47 \pm 7$ (−0.2 $\sigma$ )	$z_{re}$	7.69	$7.87 \pm 0.79$ (+0.1 $\sigma$ )	$H(2.33)$	236.13	$237.42^{+0.71}_{-1.6}$ (−0.4 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.33	—	$10^9 A_s$	2.0976	$2.110^{+0.032}_{-0.036}$ (+0.1 $\sigma$ )	$D_M(2.33)$	5759.0	$5733^{+35}_{-8.0}$ (+0.5 $\sigma$ )
$A_{143}^{tSZ}$	7.17	$5.4 \pm 2.0$ (+0.3 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8806	$1.885 \pm 0.012$ (−0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4554	$0.447^{+0.013}_{-0.0084}$ (+0.1 $\sigma$ )
$A_{100}^{PS}$	251.0	$260 \pm 28$ (−0.3 $\sigma$ )	$D_{40}$	1225.0	$1225 \pm 13$ (+0.6 $\sigma$ )	$\sigma_8(0.15)$	0.7472	$0.732^{+0.022}_{-0.013}$ (−0.0 $\sigma$ )
$A_{143}^{PS}$	45.9	$47 \pm 8$ (−0.6 $\sigma$ )	$D_{220}$	5731.6	$5738 \pm 39$ (+0.5 $\sigma$ )	$f\sigma_8(0.38)$	0.4738	$0.465^{+0.013}_{-0.0082}$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{PS}$	44.5	$43 \pm 9$ (−0.2 $\sigma$ )	$D_{810}$	2541.0	$2541 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6624	$0.648^{+0.019}_{-0.011}$ (−0.0 $\sigma$ )
$A_{217}^{PS}$	118.3	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{1420}$	818.57	$817.3 \pm 4.7$ (+0.6 $\sigma$ )	$f\sigma_8(0.51)$	0.4725	$0.463^{+0.013}_{-0.0080}$ (+0.0 $\sigma$ )
$A^{kSZ}$	0.00	< 4.45 (−0.3 $\sigma$ )	$D_{2000}$	231.47	$230.6 \pm 1.6$ (+1.0 $\sigma$ )	$\sigma_8(0.51)$	0.6199	$0.607^{+0.018}_{-0.011}$ (−0.0 $\sigma$ )
$A_{100}^{dustTT}$	8.91	$9.0 \pm 1.8$ (−0.0 $\sigma$ )	$n_{s,0.002}$	0.96775	$0.9687^{+0.0043}_{-0.0056}$ (−0.5 $\sigma$ )	$f\sigma_8(0.61)$	0.4676	$0.459^{+0.013}_{-0.0078}$ (+0.0 $\sigma$ )
$A_{143}^{dustTT}$	10.97	$11.0 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P$	0.24543	$0.24655^{+0.00022}_{-0.0011}$ (−0.6 $\sigma$ )	$\sigma_8(0.61)$	0.5899	$0.577^{+0.017}_{-0.010}$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.48	$18.7 \pm 3.2$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.24675	$0.24788^{+0.00022}_{-0.0011}$ (−0.6 $\sigma$ )	$f\sigma_8(2.33)$	0.2974	$0.2914^{+0.0088}_{-0.0053}$ (−0.1 $\sigma$ )
$A_{217}^{dustTT}$	94.6	$93.7 \pm 7.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5782	$2.591^{+0.025}_{-0.032}$ (−1.2 $\sigma$ )	$\sigma_8(2.33)$	0.3067	$0.3002^{+0.0092}_{-0.0056}$ (−0.1 $\sigma$ )
$A_{100}^{dustTE}$	0.1123	$0.114 \pm 0.038$	Age/Gyr	13.787	$13.725^{+0.083}_{-0.019}$ (+0.5 $\sigma$ )	$f_{2000}^{143}$	28.79	$30.1 \pm 2.8$ (−0.8 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1341	$0.135 \pm 0.029$	$z_*$	1089.804	$1089.89^{+0.23}_{-0.26}$ (−1.0 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.88	$32.6 \pm 1.9$ (−0.9 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.482	$0.481 \pm 0.085$	$r_*$	144.59	$143.83^{+0.90}_{-0.28}$ (+0.5 $\sigma$ )	$f_{2000}^{217}$	106.57	$107.4 \pm 1.8$ (−0.8 $\sigma$ )
$A_{143}^{dustTE}$	0.223	$0.224 \pm 0.054$	$100\theta_*$	1.041192	$1.04104^{+0.00036}_{-0.00030}$ (+0.4 $\sigma$ )	$\chi_{small}^2$	396.05	$397.4 \pm 2.2$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.663	$0.664 \pm 0.081$	$D_M(z_*)/\text{Gpc}$	13.887	$13.816^{+0.084}_{-0.027}$ (+0.5 $\sigma$ )	$\chi_{lowl}^2$	22.87	$22.90 \pm 0.92$ (+0.6 $\sigma$ )
$A_{217}^{dustTE}$	2.081	$2.08 \pm 0.27$	$z_{drag}$	1059.971	$1060.34^{+0.33}_{-0.45}$ (+0.3 $\sigma$ )	$\chi_{plik}^2$	2345.2	$2362.0 \pm 6.2$ (+266.4 $\sigma$ )
$c_{100}$	0.99971	$0.99966 \pm 0.00061$ (+0.1 $\sigma$ )	$r_{drag}$	147.24	$146.44^{+0.94}_{-0.29}$ (+0.4 $\sigma$ )	$\chi_{6DF}^2$	0.0300	$0.077 \pm 0.085$ (+0.2 $\sigma$ )
$c_{217}$	0.99820	$0.99820 \pm 0.00063$ (−0.2 $\sigma$ )	$k_D$	0.14074	$0.14138^{+0.00034}_{-0.00076}$ (−0.2 $\sigma$ )	$\chi_{MGS}^2$	1.217	$1.15 \pm 0.43$ (−0.4 $\sigma$ )
$H_0$	67.67	$67.89^{+0.45}_{-0.70}$ (−0.5 $\sigma$ )	$100\theta_D$	0.160740	$0.16084^{+0.00017}_{-0.00027}$ (−1.2 $\sigma$ )	$\chi_{DR12BAO}^2$	4.44	$5.4 \pm 1.8$ (+0.3 $\sigma$ )
$\Omega_\Lambda$	0.6892	$0.6876 \pm 0.0066$ (−0.3 $\sigma$ )	$z_{eq}$	3308.6	$3337^{+63}_{-21}$ (+0.3 $\sigma$ )	$\chi_{prior}^2$	1.83	$11.7 \pm 4.6$ (+1.1 $\sigma$ )
$\Omega_m$	0.3108	$0.3124 \pm 0.0066$ (+0.3 $\sigma$ )	$k_{eq}$	0.010157	$0.01027^{+0.00018}_{-0.000096}$ (−0.1 $\sigma$ )	$\chi_{BAO}^2$	5.68	$6.6 \pm 1.5$ (+0.2 $\sigma$ )
$\Omega_m h^2$	0.14233	$0.1440^{+0.0011}_{-0.0020}$ (−0.4 $\sigma$ )	$100\theta_{eq}$	0.8326	$0.8269^{+0.0037}_{-0.013}$ (−0.2 $\sigma$ )	$\chi_{CMB}^2$	2764.1	$2782.3 \pm 6.1$ (+272.3 $\sigma$ )

Best-fit  $\chi_{eff}^2 = 2771.63$ ;  $\Delta\chi_{eff}^2 = 1585.69$ ;  $\bar{\chi}_{eff}^2 = 2800.57$ ;  $\Delta\bar{\chi}_{eff}^2 = 1592.17$ ;  $R - 1 = 0.01553$

$\chi_{eff}^2$ : BAO - 6DF: 0.03 ( $\Delta$  0.02) MGS: 1.22 ( $\Delta$  -0.26) DR12BAO: 4.44 ( $\Delta$  0.65) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.05 ( $\Delta$  -0.23) commander\_dx12\_v3\_2\_29: 22.87 ( $\Delta$  0.26) plik\_rd12\_HM\_v22b\_TTTEEE: 2345.20



## 8.22 base\_nnu\_meffsterile\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022440	$0.02251 \pm 0.00015$ (+0.7 $\sigma$ )	$\Omega_m h^3$	0.09635	$0.09781^{+0.00032}_{-0.0018}$ (−0.5 $\sigma$ )	$D_M(0.15)$	640.0	$637.7^{+6.4}_{-3.7}$ (+0.5 $\sigma$ )
$\Omega_c h^2$	0.11887	$0.1187^{+0.0035}_{-0.0023}$ (−0.4 $\sigma$ )	$\sigma_8$	0.8111	$0.792^{+0.023}_{-0.014}$ (−0.0 $\sigma$ )	$H(0.38)$	83.108	$83.47^{+0.24}_{-0.67}$ (−0.5 $\sigma$ )
$100\theta_{MC}$	1.041020	$1.04092 \pm 0.00032$ (+0.4 $\sigma$ )	$S_8$	0.8243	$0.807^{+0.023}_{-0.016}$ (+0.1 $\sigma$ )	$D_M(0.38)$	1526.8	$1521^{+14}_{-7.2}$ (+0.6 $\sigma$ )
$\tau$	0.0585	$0.0566^{+0.0069}_{-0.0083}$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4515	$0.442^{+0.013}_{-0.0085}$ (+0.1 $\sigma$ )	$H(0.51)$	89.813	$90.22^{+0.18}_{-0.66}$ (−0.5 $\sigma$ )
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	0.025	< 0.211 (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6051	$0.592^{+0.017}_{-0.010}$ (+0.0 $\sigma$ )	$D_M(0.51)$	1978.0	$1970^{+17}_{-8.3}$ (+0.6 $\sigma$ )
$N_{\text{eff}}$	3.0462	< 3.14 (−0.7 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9854	$0.961^{+0.027}_{-0.015}$ (+0.1 $\sigma$ )	$H(0.61)$	95.424	$95.87^{+0.15}_{-0.65}$ (−0.5 $\sigma$ )
$\ln(10^{10} A_s)$	3.0505	$3.049^{+0.015}_{-0.017}$ (+0.1 $\sigma$ )	$r_{\text{drag}} h$	99.76	$99.57 \pm 0.80$ (−0.4 $\sigma$ )	$D_M(0.61)$	2301.9	$2293^{+20}_{-8.8}$ (+0.6 $\sigma$ )
$n_s$	0.96715	$0.9692^{+0.0042}_{-0.0056}$ (−0.6 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4400	$2.428 \pm 0.024$ (+0.6 $\sigma$ )	$H(2.33)$	236.07	$237.37^{+0.69}_{-1.6}$ (−0.4 $\sigma$ )
$y_{\text{cal}}$	1.00052	$1.0007 \pm 0.0025$ (+0.1 $\sigma$ )	$z_{\text{re}}$	8.07	$7.88 \pm 0.78$ (+0.1 $\sigma$ )	$D_M(2.33)$	5757.3	$5730^{+37}_{-7.8}$ (+0.5 $\sigma$ )
$A_{217}^{\text{CIB}}$	48.2	$47 \pm 7$ (−0.2 $\sigma$ )	$10^9 A_s$	2.1127	$2.110^{+0.032}_{-0.037}$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4562	$0.447^{+0.013}_{-0.0084}$ (+0.1 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.34	—	$10^9 A_s e^{-2\tau}$	1.8796	$1.884^{+0.012}_{-0.013}$ (−0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7497	$0.732^{+0.022}_{-0.013}$ (−0.0 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.23	$5.4^{+2.2}_{-2.0}$ (+0.3 $\sigma$ )	$D_{40}$	1227.8	$1224 \pm 13$ (+0.6 $\sigma$ )	$f\sigma_8(0.38)$	0.4749	$0.465^{+0.013}_{-0.0082}$ (+0.0 $\sigma$ )
$A_{100}^{\text{PS}}$	251.4	$260 \pm 28$ (−0.3 $\sigma$ )	$D_{220}$	5737.7	$5739 \pm 39$ (+0.5 $\sigma$ )	$\sigma_8(0.38)$	0.6647	$0.649^{+0.019}_{-0.012}$ (−0.1 $\sigma$ )
$A_{143}^{\text{PS}}$	46.4	$47 \pm 8$ (−0.6 $\sigma$ )	$D_{810}$	2539.4	$2540 \pm 13$ (+0.1 $\sigma$ )	$f\sigma_8(0.51)$	0.4737	$0.463^{+0.013}_{-0.0080}$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	44.9	$43 \pm 9$ (−0.2 $\sigma$ )	$D_{1420}$	817.80	$817.3 \pm 4.7$ (+0.6 $\sigma$ )	$\sigma_8(0.51)$	0.6221	$0.607^{+0.018}_{-0.011}$ (−0.1 $\sigma$ )
$A_{217}^{\text{PS}}$	118.0	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	231.26	$230.6 \pm 1.6$ (+1.0 $\sigma$ )	$f\sigma_8(0.61)$	0.4689	$0.458^{+0.013}_{-0.0079}$ (−0.0 $\sigma$ )
$A^{\text{kSZ}}$	0.00	< 4.51 (−0.3 $\sigma$ )	$n_{s,0.002}$	0.96715	$0.9692^{+0.0042}_{-0.0056}$ (−0.6 $\sigma$ )	$\sigma_8(0.61)$	0.5920	$0.578^{+0.017}_{-0.011}$ (−0.1 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.79	$9.0 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P$	0.24542	$0.24660^{+0.00021}_{-0.0012}$ (−0.6 $\sigma$ )	$f\sigma_8(2.33)$	0.2986	$0.2917^{+0.0088}_{-0.0054}$ (−0.1 $\sigma$ )
$A_{143}^{\text{dustTT}}$	11.04	$11.0 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{\text{BBN}}$	0.24675	$0.24793^{+0.00022}_{-0.0012}$ (−0.6 $\sigma$ )	$\sigma_8(2.33)$	0.3079	$0.3006^{+0.0092}_{-0.0057}$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	19.71	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5727	$2.590^{+0.025}_{-0.033}$ (−1.2 $\sigma$ )	$f_{2000}^{143}$	29.04	$30.1 \pm 2.8$ (−0.8 $\sigma$ )
$A_{217}^{\text{dustTT}}$	94.7	$93.6 \pm 7.3$ (+0.0 $\sigma$ )	Age/Gyr	13.784	$13.719^{+0.087}_{-0.018}$ (+0.5 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.04	$32.6 \pm 1.9$ (−0.9 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1136	$0.113 \pm 0.038$	$z_*$	1089.756	$1089.87^{+0.22}_{-0.26}$ (−1.0 $\sigma$ )	$f_{2000}^{217}$	106.65	$107.4 \pm 1.8$ (−0.8 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1337	$0.135 \pm 0.030$	$r_*$	144.60	$143.83^{+0.94}_{-0.28}$ (+0.5 $\sigma$ )	$\chi_{\text{small}}^2$	397	$291 \pm 200$ (−0.1 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.479	$0.480 \pm 0.084$	$100\theta_*$	1.041203	$1.04105^{+0.00036}_{-0.00030}$ (+0.4 $\sigma$ )	$\chi_{\text{lowl}}^2$	23	$129 \pm 200$ (+0.1 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.223	$0.224 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	13.888	$13.816^{+0.088}_{-0.027}$ (+0.5 $\sigma$ )	$\chi_{\text{plik}}^2$	2344.6	$2362.3 \pm 6.2$ (+267.6 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.662	$0.663 \pm 0.082$	$z_{\text{drag}}$	1060.047	$1060.36^{+0.32}_{-0.47}$ (+0.2 $\sigma$ )	$\chi_{\text{JLA}}^2$	1034.977	$1035.12 \pm 0.33$ (+0.3 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.069	$2.07 \pm 0.27$	$r_{\text{drag}}$	147.24	$146.44^{+0.98}_{-0.29}$ (+0.4 $\sigma$ )	$\chi_{6\text{DF}}^2$	0.022	$0.40 \pm 0.59$ (+0.1 $\sigma$ )
$c_{100}$	0.99970	$0.99966 \pm 0.00061$ (+0.1 $\sigma$ )	$k_D$	0.14076	$0.14138^{+0.00034}_{-0.00079}$ (−0.2 $\sigma$ )	$\chi_{\text{MGS}}^2$	1.28	$0.89 \pm 0.63$ (−0.3 $\sigma$ )
$c_{217}$	0.99820	$0.99820 \pm 0.00063$ (−0.2 $\sigma$ )	$100\theta_D$	0.160706	$0.16084^{+0.00018}_{-0.00028}$ (−1.2 $\sigma$ )	$\chi_{\text{DR12BAO}}^2$	4.25	$5.0 \pm 1.6$ (+0.3 $\sigma$ )
$H_0$	67.75	$68.00^{+0.43}_{-0.72}$ (−0.5 $\sigma$ )	$z_{\text{eq}}$	3376.8	$3335^{+63}_{-19}$ (+0.3 $\sigma$ )	$\chi_{\text{prior}}^2$	1.78	$11.7 \pm 4.6$ (+1.2 $\sigma$ )
$\Omega_\Lambda$	0.6902	$0.6888 \pm 0.0063$ (−0.4 $\sigma$ )	$k_{\text{eq}}$	0.010311	$0.01026^{+0.00019}_{-0.000095}$ (−0.1 $\sigma$ )	$\chi_{\text{BAO}}^2$	5.56	$6.3 \pm 1.3$ (+0.2 $\sigma$ )
$\Omega_m$	0.3098	$0.3112 \pm 0.0063$ (+0.4 $\sigma$ )	$100\theta_{\text{eq}}$	0.8183	$0.8275^{+0.0034}_{-0.013}$ (−0.2 $\sigma$ )	$\chi_{\text{CMB}}^2$	2764.7	$2782.5 \pm 6.1$ (+273.7 $\sigma$ )
$\Omega_m h^2$	0.14222	$0.1438^{+0.0011}_{-0.0021}$ (−0.4 $\sigma$ )	$100\theta_{s,\text{eq}}$	0.45195	$0.4567^{+0.0017}_{-0.0070}$ (−0.2 $\sigma$ )			
$\Omega_\nu h^2$	0.00091	$0.00266^{+0.00045}_{-0.0022}$ (+0.1 $\sigma$ )	$H(0.15)$	73.02	$73.30^{+0.36}_{-0.70}$ (−0.5 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 3806.99$ ;  $\Delta\chi_{\text{eff}}^2 = 1586.25$ ;  $\bar{\chi}_{\text{eff}}^2 = 3835.68$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1592.37$ ;  $R - 1 = 0.01641$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 ( $\Delta$  0.01) MGS: 1.28 ( $\Delta$  -0.13) DR12BAO: 4.25 ( $\Delta$  0.34) CMB - simall\_100x143.offlike5\_EE\_Aplanck\_B: 396.96 ( $\Delta$  1.15) commander\_dx12.v3.2.29: 23.15 ( $\Delta$  0.44) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.56 SN - JLA Pantheon18: 1034.98 ( $\Delta$  0.06)



### 8.23 base\_nnu\_meffsterile\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Aver15

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02249 \pm 0.00014 \quad (+0.9\sigma)$	$\Omega_{\mathrm{m}} h^3$	$0.09743^{+0.00026}_{-0.0013} \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$639.2^{+5.4}_{-3.9} \quad (+0.3\sigma)$
$\Omega_{\mathrm{c}} h^2$	$0.1183^{+0.0034}_{-0.0020} \quad (-0.1\sigma)$	$\sigma_8$	$0.790^{+0.023}_{-0.013} \quad (+0.1\sigma)$	$H(0.38)$	$83.30^{+0.26}_{-0.52} \quad (-0.3\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04094 \pm 0.00030 \quad (+0.2\sigma)$	$S_8$	$0.807^{+0.023}_{-0.016} \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.38)$	$1524^{+12}_{-7.7} \quad (+0.3\sigma)$
$\tau$	$0.0562^{+0.0069}_{-0.0082} \quad (+0.2\sigma)$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.442^{+0.013}_{-0.0087} \quad (+0.2\sigma)$	$H(0.51)$	$90.06^{+0.20}_{-0.51} \quad (-0.3\sigma)$
$m_{\nu, \mathrm{sterile}}^{\mathrm{eff}} [\mathrm{eV}]$	$< 0.242 \quad (+0.0\sigma)$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.591^{+0.017}_{-0.010} \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1974^{+14}_{-8.9} \quad (+0.3\sigma)$
$N_{\mathrm{eff}}$	$3.1146^{+0.0072}_{-0.068} \quad (-0.5\sigma)$	$\sigma_8/h^{0.5}$	$0.960^{+0.027}_{-0.015} \quad (+0.2\sigma)$	$H(0.61)$	$95.71^{+0.15}_{-0.50} \quad (-0.2\sigma)$
$\ln(10^{10} A_{\mathrm{s}})$	$3.048 \pm 0.016 \quad (+0.2\sigma)$	$r_{\mathrm{drag}} h$	$99.41 \pm 0.82 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.61)$	$2297^{+16}_{-9.5} \quad (+0.3\sigma)$
$n_{\mathrm{s}}$	$0.9681^{+0.0042}_{-0.0050} \quad (-0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.431 \pm 0.025 \quad (+0.5\sigma)$	$H(2.33)$	$237.18^{+0.70}_{-1.3} \quad (-0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$z_{\mathrm{re}}$	$7.85 \pm 0.77 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5739^{+28}_{-7.2} \quad (+0.2\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.108^{+0.031}_{-0.036} \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.446^{+0.013}_{-0.0085} \quad (+0.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.883 \pm 0.012 \quad (+0.0\sigma)$	$\sigma_8(0.15)$	$0.730^{+0.021}_{-0.013} \quad (+0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.4^{+2.2}_{-2.0} \quad (+0.2\sigma)$	$D_{40}$	$1225 \pm 13 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.464^{+0.013}_{-0.0082} \quad (+0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$259 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5738 \pm 39 \quad (+0.5\sigma)$	$\sigma_8(0.38)$	$0.647^{+0.019}_{-0.011} \quad (+0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$47 \pm 8 \quad (-0.5\sigma)$	$D_{810}$	$2540 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.463^{+0.013}_{-0.0080} \quad (+0.2\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9 \quad (-0.2\sigma)$	$D_{1420}$	$817.3 \pm 4.7 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.606^{+0.018}_{-0.011} \quad (+0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$230.6 \pm 1.6 \quad (+0.8\sigma)$	$f\sigma_8(0.61)$	$0.458^{+0.013}_{-0.0078} \quad (+0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.44 \quad (-0.2\sigma)$	$n_{\mathrm{s}, 0.002}$	$0.9681^{+0.0042}_{-0.0050} \quad (-0.3\sigma)$	$\sigma_8(0.61)$	$0.576^{+0.017}_{-0.010} \quad (+0.1\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.24635^{+0.00017}_{-0.00090} \quad (-0.4\sigma)$	$f\sigma_8(2.33)$	$0.2908^{+0.0087}_{-0.0052} \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24768^{+0.00017}_{-0.00090} \quad (-0.4\sigma)$	$\sigma_8(2.33)$	$0.2996^{+0.0090}_{-0.0054} \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.588^{+0.025}_{-0.030} \quad (-1.1\sigma)$	$f_{2000}^{143}$	$30.0 \pm 2.8 \quad (-0.7\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.6 \pm 7.3 \quad (+0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.739^{+0.067}_{-0.016} \quad (+0.2\sigma)$	$f_{2000}^{143 \times 217}$	$32.6 \pm 1.9 \quad (-0.8\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.038$	$z_*$	$1089.87^{+0.22}_{-0.25} \quad (-0.9\sigma)$	$f_{2000}^{217}$	$107.4 \pm 1.8 \quad (-0.7\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.030$	$r_*$	$143.98^{+0.74}_{-0.26} \quad (+0.2\sigma)$	$\chi_{\mathrm{small}}^2$	$292 \pm 200 \quad (-0.1\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.480 \pm 0.084$	$100\theta_*$	$1.04108 \pm 0.00032 \quad (+0.2\sigma)$	$\chi_{\mathrm{lowl}}^2$	$129 \pm 200 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.224 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.830^{+0.069}_{-0.025} \quad (+0.2\sigma)$	$\chi_{\mathrm{plik}}^2$	$2361.8 \pm 6.1 \quad (+278.3\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.664 \pm 0.082$	$z_{\mathrm{drag}}$	$1060.28^{+0.32}_{-0.40} \quad (+0.7\sigma)$	$\chi_{\mathrm{Aver15}}^2$	$0.53 \pm 0.40 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.08 \pm 0.27$	$r_{\mathrm{drag}}$	$146.60^{+0.77}_{-0.27} \quad (+0.1\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.39 \pm 0.55 \quad (+0.1\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.14127^{+0.00033}_{-0.00063} \quad (+0.2\sigma)$	$\chi_{\mathrm{MGS}}^2$	$0.84 \pm 0.60 \quad (-0.3\sigma)$
$c_{217}$	$0.99820 \pm 0.00063 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16081^{+0.00017}_{-0.00024} \quad (-1.1\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$5.3 \pm 1.8 \quad (+0.2\sigma)$
$H_0$	$67.82^{+0.46}_{-0.61} \quad (-0.3\sigma)$	$z_{\mathrm{eq}}$	$3334^{+67}_{-22} \quad (+0.3\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.7 \pm 4.6 \quad (+1.2\sigma)$
$\Omega_{\Lambda}$	$0.6875 \pm 0.0065 \quad (-0.2\sigma)$	$k_{\mathrm{eq}}$	$0.01025^{+0.00019}_{-0.000090} \quad (+0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.6 \pm 1.5 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3125 \pm 0.0065 \quad (+0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8277^{+0.0040}_{-0.014} \quad (-0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2782.1 \pm 6.0 \quad (+280.7\sigma)$
$\Omega_{\mathrm{m}} h^2$	$0.1437^{+0.0011}_{-0.0017} \quad (-0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4569^{+0.0021}_{-0.0074} \quad (-0.2\sigma)$		
$\Omega_{\nu} h^2$	$0.00287^{+0.00058}_{-0.0024} \quad (+0.0\sigma)$	$H(0.15)$	$73.13^{+0.38}_{-0.57} \quad (-0.3\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2800.91; \Delta \bar{\chi}_{\mathrm{eff}}^2 = 1592.23; R - 1 = 0.01503$$



## 8.24 base\_nnu\_meffsterile\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Cooke17\_Aver15

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02248 \pm 0.00014 \quad (+0.8\sigma)$	$\Omega_m h^3$	$0.09744^{+0.00028}_{-0.0014} \quad (-0.1\sigma)$	$D_M(0.15)$	$639.4^{+5.4}_{-3.9} \quad (+0.3\sigma)$
$\Omega_c h^2$	$0.1184^{+0.0034}_{-0.0019} \quad (-0.0\sigma)$	$\sigma_8$	$0.791^{+0.023}_{-0.013} \quad (+0.2\sigma)$	$H(0.38)$	$83.30^{+0.26}_{-0.53} \quad (-0.2\sigma)$
$100\theta_{MC}$	$1.04093 \pm 0.00030 \quad (+0.1\sigma)$	$S_8$	$0.807^{+0.023}_{-0.016} \quad (+0.3\sigma)$	$D_M(0.38)$	$1525^{+12}_{-7.6} \quad (+0.2\sigma)$
$\tau$	$0.0562^{+0.0069}_{-0.0082} \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.442^{+0.013}_{-0.0087} \quad (+0.3\sigma)$	$H(0.51)$	$90.05^{+0.19}_{-0.52} \quad (-0.2\sigma)$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.240 \quad (-0.0\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.591^{+0.017}_{-0.010} \quad (+0.2\sigma)$	$D_M(0.51)$	$1975^{+14}_{-8.8} \quad (+0.2\sigma)$
$N_{\text{eff}}$	$3.1160^{+0.0079}_{-0.069} \quad (-0.4\sigma)$	$\sigma_8/h^{0.5}$	$0.960^{+0.027}_{-0.015} \quad (+0.2\sigma)$	$H(0.61)$	$95.71^{+0.15}_{-0.51} \quad (-0.2\sigma)$
$\ln(10^{10} A_s)$	$3.048 \pm 0.016 \quad (+0.2\sigma)$	$r_{\text{drag}} h$	$99.39 \pm 0.82 \quad (-0.3\sigma)$	$D_M(0.61)$	$2298^{+16}_{-9.4} \quad (+0.2\sigma)$
$n_s$	$0.9681^{+0.0042}_{-0.0050} \quad (-0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.431 \pm 0.025 \quad (+0.5\sigma)$	$H(2.33)$	$237.21^{+0.71}_{-1.3} \quad (-0.0\sigma)$
$y_{\text{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$z_{\text{re}}$	$7.84 \pm 0.77 \quad (+0.2\sigma)$	$D_M(2.33)$	$5739^{+29}_{-7.3} \quad (+0.2\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_s$	$2.107^{+0.031}_{-0.036} \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.447^{+0.013}_{-0.0085} \quad (+0.3\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.883 \pm 0.012 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.730^{+0.021}_{-0.013} \quad (+0.2\sigma)$
$A_{143}^{\text{tSZ}}$	$5.4^{+2.2}_{-2.0} \quad (+0.2\sigma)$	$D_{40}$	$1225 \pm 13 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.464^{+0.013}_{-0.0082} \quad (+0.2\sigma)$
$A_{100}^{\text{PS}}$	$260 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5737 \pm 38 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.647^{+0.019}_{-0.011} \quad (+0.2\sigma)$
$A_{143}^{\text{PS}}$	$47 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2540 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.463^{+0.013}_{-0.0080} \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$817.2 \pm 4.7 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.606^{+0.018}_{-0.011} \quad (+0.1\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$230.5 \pm 1.6 \quad (+0.8\sigma)$	$f\sigma_8(0.61)$	$0.458^{+0.013}_{-0.0078} \quad (+0.2\sigma)$
$A^{\text{kSZ}}$	$< 4.46 \quad (-0.2\sigma)$	$n_{s,0.002}$	$0.9681^{+0.0042}_{-0.0050} \quad (-0.3\sigma)$	$\sigma_8(0.61)$	$0.576^{+0.017}_{-0.010} \quad (+0.1\sigma)$
$A_{100}^{\text{dustTT}}$	$9.0 \pm 1.8 \quad (-0.0\sigma)$	$Y_P$	$0.24636^{+0.00018}_{-0.00092} \quad (-0.3\sigma)$	$f\sigma_8(2.33)$	$0.2908^{+0.0087}_{-0.0052} \quad (+0.1\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.24769^{+0.00018}_{-0.00092} \quad (-0.3\sigma)$	$\sigma_8(2.33)$	$0.2996^{+0.0091}_{-0.0054} \quad (+0.1\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$10^5 D/H$	$2.590^{+0.024}_{-0.029} \quad (-1.1\sigma)$	$f_{2000}^{143}$	$30.1 \pm 2.8 \quad (-0.6\sigma)$
$A_{217}^{\text{dustTT}}$	$93.6 \pm 7.3 \quad (+0.0\sigma)$	$\text{Age/Gyr}$	$13.739^{+0.068}_{-0.017} \quad (+0.2\sigma)$	$f_{2000}^{143 \times 217}$	$32.6 \pm 1.9 \quad (-0.7\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$z_*$	$1089.89 \pm 0.23 \quad (-0.8\sigma)$	$f_{2000}^{217}$	$107.4 \pm 1.8 \quad (-0.6\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$r_*$	$143.97^{+0.75}_{-0.27} \quad (+0.1\sigma)$	$\chi_{\text{simall}}^2$	$290 \pm 200 \quad (-0.1\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.480 \pm 0.084$	$100\theta_*$	$1.04107 \pm 0.00032 \quad (+0.1\sigma)$	$\chi_{\text{lowl}}^2$	$130 \pm 200 \quad (+0.2\sigma)$
$A_{143}^{\text{dustTE}}$	$0.224 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	$13.829^{+0.070}_{-0.026} \quad (+0.1\sigma)$	$\chi_{\text{plik}}^2$	$2361.7 \pm 6.1 \quad (+280.3\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.664 \pm 0.082$	$z_{\text{drag}}$	$1060.26^{+0.32}_{-0.40} \quad (+0.6\sigma)$	$\chi_{\text{Aver15}}^2$	$0.54 \pm 0.40 \quad (-0.3\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.27$	$r_{\text{drag}}$	$146.59^{+0.78}_{-0.28} \quad (+0.0\sigma)$	$\chi_{\text{Cooke17}}^2$	$0.17 \pm 0.19 \quad (-0.2\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$k_D$	$0.14127^{+0.00034}_{-0.00065} \quad (+0.3\sigma)$	$\chi_{6\text{DF}}^2$	$0.39 \pm 0.55 \quad (+0.1\sigma)$
$c_{217}$	$0.99820 \pm 0.00063 \quad (-0.1\sigma)$	$100\theta_D$	$0.16082^{+0.00017}_{-0.00023} \quad (-1.1\sigma)$	$\chi_{\text{MGS}}^2$	$0.82 \pm 0.59 \quad (-0.3\sigma)$
$H_0$	$67.80^{+0.45}_{-0.62} \quad (-0.3\sigma)$	$z_{\text{eq}}$	$3335^{+67}_{-21} \quad (+0.3\sigma)$	$\chi_{\text{DR12BAO}}^2$	$5.4 \pm 1.8 \quad (+0.2\sigma)$
$\Omega_\Lambda$	$0.6873 \pm 0.0064 \quad (-0.2\sigma)$	$k_{\text{eq}}$	$0.01026^{+0.00019}_{-0.000089} \quad (+0.2\sigma)$	$\chi_{\text{prior}}^2$	$11.7 \pm 4.6 \quad (+1.2\sigma)$
$\Omega_m$	$0.3127 \pm 0.0064 \quad (+0.2\sigma)$	$100\theta_{\text{eq}}$	$0.8275^{+0.0039}_{-0.014} \quad (-0.2\sigma)$	$\chi_{\text{BAO}}^2$	$6.6 \pm 1.5 \quad (+0.2\sigma)$
$\Omega_m h^2$	$0.1437^{+0.0011}_{-0.0017} \quad (+0.0\sigma)$	$100\theta_{s,\text{eq}}$	$0.4568^{+0.0020}_{-0.0074} \quad (-0.2\sigma)$	$\chi_{\text{CMB}}^2$	$2782.0 \pm 6.0 \quad (+282.0\sigma)$
$\Omega_\nu h^2$	$0.00285^{+0.00058}_{-0.0024} \quad (-0.0\sigma)$	$H(0.15)$	$73.12^{+0.38}_{-0.58} \quad (-0.2\sigma)$	$\chi_{\text{Abund}}^2$	$0.70 \pm 0.42 \quad (-0.3\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 2801.05; \Delta\bar{\chi}_{\text{eff}}^2 = 1592.38; R - 1 = 0.01420$$



## 8.25 base\_nnu\_meffsterile\_plikHM\_TTTEE\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02250 \pm 0.00015 \quad (+0.7\sigma)$	$\Omega_\nu h^2$	$0.00272^{+0.00048}_{-0.0022} \quad (+0.1\sigma)$	$100\theta_{s,eq}$	$0.4565^{+0.0019}_{-0.0070} \quad (-0.2\sigma)$
$\Omega_c h^2$	$0.1187^{+0.0034}_{-0.0022} \quad (-0.4\sigma)$	$\Omega_m h^3$	$0.09775^{+0.00033}_{-0.0017} \quad (-0.5\sigma)$	$H(0.15)$	$73.22^{+0.38}_{-0.67} \quad (-0.5\sigma)$
$100\theta_{MC}$	$1.04091 \pm 0.00032 \quad (+0.3\sigma)$	$\sigma_8$	$0.792^{+0.023}_{-0.013} \quad (-0.0\sigma)$	$D_M(0.15)$	$638.5^{+6.2}_{-3.9} \quad (+0.5\sigma)$
$\tau$	$0.0570^{+0.0057}_{-0.0085} \quad (+0.2\sigma)$	$S_8$	$0.808^{+0.023}_{-0.016} \quad (+0.1\sigma)$	$H(0.38)$	$83.40^{+0.25}_{-0.64} \quad (-0.5\sigma)$
$m_{\nu, sterile}^{eff} [eV]$	$< 0.219 \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.443^{+0.013}_{-0.0086} \quad (+0.1\sigma)$	$D_M(0.38)$	$1523^{+14}_{-7.6} \quad (+0.5\sigma)$
$N_{eff}$	$< 3.14 \quad (-0.7\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.592^{+0.017}_{-0.010} \quad (+0.1\sigma)$	$H(0.51)$	$90.16^{+0.19}_{-0.63} \quad (-0.5\sigma)$
$\ln(10^{10} A_s)$	$3.050^{+0.013}_{-0.017} \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.961^{+0.027}_{-0.014} \quad (+0.1\sigma)$	$D_M(0.51)$	$1972^{+17}_{-8.7} \quad (+0.5\sigma)$
$n_s$	$0.9688^{+0.0043}_{-0.0056} \quad (-0.5\sigma)$	$r_{drag} h$	$99.43 \pm 0.83 \quad (-0.4\sigma)$	$H(0.61)$	$95.82^{+0.16}_{-0.62} \quad (-0.5\sigma)$
$y_{cal}$	$1.0008 \pm 0.0025 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.024 \quad (+0.6\sigma)$	$D_M(0.61)$	$2295^{+19}_{-9.3} \quad (+0.5\sigma)$
$A_{217}^{CIB}$	$47 \pm 7 \quad (-0.2\sigma)$	$z_{re}$	$7.93^{+0.63}_{-0.83} \quad (+0.1\sigma)$	$H(2.33)$	$237.43^{+0.72}_{-1.6} \quad (-0.4\sigma)$
$\xi^{tSZ \times CIB}$	—	$10^9 A_s$	$2.112^{+0.028}_{-0.037} \quad (+0.0\sigma)$	$D_M(2.33)$	$5733^{+35}_{-8.1} \quad (+0.5\sigma)$
$A_{143}^{tSZ}$	$5.4^{+2.2}_{-1.9} \quad (+0.3\sigma)$	$10^9 A_s e^{-2\tau}$	$1.885 \pm 0.012 \quad (-0.2\sigma)$	$f\sigma_8(0.15)$	$0.447^{+0.013}_{-0.0083} \quad (+0.1\sigma)$
$A_{100}^{PS}$	$260 \pm 28 \quad (-0.3\sigma)$	$D_{40}$	$1225 \pm 13 \quad (+0.6\sigma)$	$\sigma_8(0.15)$	$0.732^{+0.022}_{-0.012} \quad (-0.0\sigma)$
$A_{143}^{PS}$	$47 \pm 8 \quad (-0.6\sigma)$	$D_{220}$	$5738 \pm 39 \quad (+0.5\sigma)$	$f\sigma_8(0.38)$	$0.465^{+0.013}_{-0.0080} \quad (+0.1\sigma)$
$A_{143 \times 217}^{PS}$	$43 \pm 9 \quad (-0.2\sigma)$	$D_{810}$	$2541 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.649^{+0.019}_{-0.011} \quad (-0.0\sigma)$
$A_{217}^{PS}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{1420}$	$817.3 \pm 4.7 \quad (+0.6\sigma)$	$f\sigma_8(0.51)$	$0.464^{+0.013}_{-0.0078} \quad (+0.0\sigma)$
$A^{kSZ}$	$< 4.43 \quad (-0.3\sigma)$	$D_{2000}$	$230.6 \pm 1.6 \quad (+1.0\sigma)$	$\sigma_8(0.51)$	$0.607^{+0.018}_{-0.011} \quad (-0.1\sigma)$
$A_{100}^{dustTT}$	$9.0 \pm 1.8 \quad (-0.0\sigma)$	$n_{s,0.002}$	$0.9688^{+0.0043}_{-0.0056} \quad (-0.5\sigma)$	$f\sigma_8(0.61)$	$0.459^{+0.013}_{-0.0077} \quad (+0.0\sigma)$
$A_{143}^{dustTT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_P$	$0.24656^{+0.00022}_{-0.0011} \quad (-0.6\sigma)$	$\sigma_8(0.61)$	$0.578^{+0.017}_{-0.010} \quad (-0.1\sigma)$
$A_{143 \times 217}^{dustTT}$	$18.7 \pm 3.2 \quad (+0.1\sigma)$	$Y_P^{BBN}$	$0.24789^{+0.00022}_{-0.0011} \quad (-0.6\sigma)$	$f\sigma_8(2.33)$	$0.2916^{+0.0088}_{-0.0052} \quad (-0.1\sigma)$
$A_{217}^{dustTT}$	$93.7 \pm 7.3 \quad (+0.1\sigma)$	$10^5 D/H$	$2.591^{+0.025}_{-0.033} \quad (-1.2\sigma)$	$\sigma_8(2.33)$	$0.3004^{+0.0091}_{-0.0055} \quad (-0.1\sigma)$
$A_{100}^{dustTE}$	$0.114 \pm 0.038$	Age/Gyr	$13.724^{+0.084}_{-0.019} \quad (+0.5\sigma)$	$f_{2000}^{143}$	$30.0 \pm 2.8 \quad (-0.8\sigma)$
$A_{100 \times 143}^{dustTE}$	$0.135 \pm 0.029$	$z_*$	$1089.89^{+0.23}_{-0.26} \quad (-1.0\sigma)$	$f_{2000}^{143 \times 217}$	$32.6 \pm 1.9 \quad (-0.9\sigma)$
$A_{100 \times 217}^{dustTE}$	$0.481 \pm 0.085$	$r_*$	$143.83^{+0.91}_{-0.28} \quad (+0.5\sigma)$	$f_{2000}^{217}$	$107.4 \pm 1.8 \quad (-0.8\sigma)$
$A_{143}^{dustTE}$	$0.224 \pm 0.054$	$100\theta_*$	$1.04104^{+0.00036}_{-0.00030} \quad (+0.4\sigma)$	$\chi_{small}^2$	$397.4 \pm 2.3 \quad (+0.1\sigma)$
$A_{143 \times 217}^{dustTE}$	$0.664 \pm 0.081$	$D_M(z_*)/Gpc$	$13.816^{+0.085}_{-0.027} \quad (+0.5\sigma)$	$\chi_{lowl}^2$	$22.90 \pm 0.92 \quad (+0.6\sigma)$
$A_{217}^{dustTE}$	$2.08 \pm 0.27$	$z_{drag}$	$1060.34^{+0.33}_{-0.45} \quad (+0.2\sigma)$	$\chi_{plik}^2$	$2361.9 \pm 6.2 \quad (+267.6\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$r_{drag}$	$146.44^{+0.94}_{-0.30} \quad (+0.4\sigma)$	$\chi_{6DF}^2$	$0.076 \pm 0.084 \quad (+0.2\sigma)$
$c_{217}$	$0.99820 \pm 0.00063 \quad (-0.2\sigma)$	$k_D$	$0.14139^{+0.00034}_{-0.00076} \quad (-0.2\sigma)$	$\chi_{MGS}^2$	$1.15 \pm 0.44 \quad (-0.4\sigma)$
$H_0$	$67.90^{+0.45}_{-0.70} \quad (-0.5\sigma)$	$100\theta_D$	$0.16084^{+0.00017}_{-0.00027} \quad (-1.2\sigma)$	$\chi_{DR12BAO}^2$	$5.3 \pm 1.8 \quad (+0.3\sigma)$
$\Omega_\Lambda$	$0.6877 \pm 0.0066 \quad (-0.3\sigma)$	$z_{eq}$	$3337^{+63}_{-21} \quad (+0.3\sigma)$	$\chi_{prior}^2$	$11.7 \pm 4.6 \quad (+1.1\sigma)$
$\Omega_m$	$0.3123 \pm 0.0066 \quad (+0.3\sigma)$	$k_{eq}$	$0.01027^{+0.00019}_{-0.000096} \quad (-0.1\sigma)$	$\chi_{BAO}^2$	$6.6 \pm 1.5 \quad (+0.2\sigma)$
$\Omega_m h^2$	$0.1440^{+0.0011}_{-0.0020} \quad (-0.4\sigma)$	$100\theta_{eq}$	$0.8270^{+0.0037}_{-0.013} \quad (-0.2\sigma)$	$\chi_{CMB}^2$	$2782.2 \pm 6.1 \quad (+275.7\sigma)$

$$\bar{\chi}_{eff}^2 = 2800.45; \Delta \bar{\chi}_{eff}^2 = 1592.25; R - 1 = 0.01583$$



## 8.26 base\_nnu\_meffsterile\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02251 \pm 0.00015 \quad (+0.7\sigma)$	$\Omega_m h^3$	$0.09783^{+0.00033}_{-0.0018} \quad (-0.5\sigma)$	$D_M(0.15)$	$637.6^{+6.4}_{-3.7} \quad (+0.6\sigma)$
$\Omega_c h^2$	$0.1187^{+0.0035}_{-0.0023} \quad (-0.4\sigma)$	$\sigma_8$	$0.793^{+0.023}_{-0.014} \quad (-0.0\sigma)$	$H(0.38)$	$83.47^{+0.24}_{-0.67} \quad (-0.6\sigma)$
$100\theta_{MC}$	$1.04092 \pm 0.00032 \quad (+0.4\sigma)$	$S_8$	$0.807^{+0.023}_{-0.015} \quad (+0.1\sigma)$	$D_M(0.38)$	$1521^{+14}_{-7.2} \quad (+0.6\sigma)$
$\tau$	$0.0571^{+0.0058}_{-0.0085} \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.442^{+0.013}_{-0.0085} \quad (+0.1\sigma)$	$H(0.51)$	$90.23^{+0.18}_{-0.66} \quad (-0.6\sigma)$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.210 \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.592^{+0.017}_{-0.010} \quad (+0.0\sigma)$	$D_M(0.51)$	$1970^{+17}_{-8.3} \quad (+0.6\sigma)$
$N_{\text{eff}}$	$< 3.14 \quad (-0.7\sigma)$	$\sigma_8/h^{0.5}$	$0.961^{+0.027}_{-0.014} \quad (+0.1\sigma)$	$H(0.61)$	$95.87^{+0.15}_{-0.66} \quad (-0.5\sigma)$
$\ln(10^{10} A_s)$	$3.050^{+0.014}_{-0.017} \quad (+0.0\sigma)$	$r_{\text{drag}} h$	$99.58 \pm 0.80 \quad (-0.4\sigma)$	$D_M(0.61)$	$2292^{+20}_{-8.8} \quad (+0.6\sigma)$
$n_s$	$0.9693^{+0.0042}_{-0.0056} \quad (-0.6\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.429 \pm 0.024 \quad (+0.6\sigma)$	$H(2.33)$	$237.38^{+0.69}_{-1.6} \quad (-0.4\sigma)$
$y_{\text{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$z_{\text{re}}$	$7.94^{+0.64}_{-0.83} \quad (+0.1\sigma)$	$D_M(2.33)$	$5730^{+37}_{-7.9} \quad (+0.5\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_s$	$2.112^{+0.028}_{-0.037} \quad (+0.0\sigma)$	$f\sigma_8(0.15)$	$0.447^{+0.013}_{-0.0083} \quad (+0.1\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.884 \pm 0.013 \quad (-0.2\sigma)$	$\sigma_8(0.15)$	$0.732^{+0.022}_{-0.013} \quad (-0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$5.4^{+2.2}_{-2.0} \quad (+0.3\sigma)$	$D_{40}$	$1224 \pm 13 \quad (+0.6\sigma)$	$f\sigma_8(0.38)$	$0.465^{+0.013}_{-0.0080} \quad (+0.0\sigma)$
$A_{100}^{\text{PS}}$	$260 \pm 28 \quad (-0.3\sigma)$	$D_{220}$	$5739 \pm 39 \quad (+0.5\sigma)$	$\sigma_8(0.38)$	$0.649^{+0.019}_{-0.011} \quad (-0.1\sigma)$
$A_{143}^{\text{PS}}$	$47 \pm 8 \quad (-0.6\sigma)$	$D_{810}$	$2540 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.51)$	$0.464^{+0.013}_{-0.0079} \quad (-0.0\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9 \quad (-0.2\sigma)$	$D_{1420}$	$817.3 \pm 4.7 \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.608^{+0.018}_{-0.011} \quad (-0.1\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$230.6 \pm 1.6 \quad (+0.9\sigma)$	$f\sigma_8(0.61)$	$0.459^{+0.013}_{-0.0078} \quad (-0.0\sigma)$
$A^{\text{kSZ}}$	$< 4.48 \quad (-0.3\sigma)$	$n_{s,0.002}$	$0.9693^{+0.0042}_{-0.0056} \quad (-0.6\sigma)$	$\sigma_8(0.61)$	$0.578^{+0.017}_{-0.010} \quad (-0.1\sigma)$
$A_{100}^{\text{dustTT}}$	$9.0 \pm 1.8 \quad (-0.0\sigma)$	$Y_P$	$0.24661^{+0.00022}_{-0.0012} \quad (-0.6\sigma)$	$f\sigma_8(2.33)$	$0.2919^{+0.0088}_{-0.0053} \quad (-0.1\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.24794^{+0.00022}_{-0.0012} \quad (-0.6\sigma)$	$\sigma_8(2.33)$	$0.3007^{+0.0092}_{-0.0056} \quad (-0.1\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$10^5 D/H$	$2.590^{+0.025}_{-0.033} \quad (-1.2\sigma)$	$f_{2000}^{143}$	$30.0 \pm 2.8 \quad (-0.8\sigma)$
$A_{217}^{\text{dustTT}}$	$93.6 \pm 7.3 \quad (+0.0\sigma)$	Age/Gyr	$13.718^{+0.088}_{-0.018} \quad (+0.5\sigma)$	$f_{2000}^{143 \times 217}$	$32.6 \pm 1.9 \quad (-0.9\sigma)$
$A_{100}^{\text{dustTE}}$	$0.113 \pm 0.038$	$z_*$	$1089.87^{+0.22}_{-0.27} \quad (-1.0\sigma)$	$f_{2000}^{217}$	$107.4 \pm 1.8 \quad (-0.8\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$r_*$	$143.83^{+0.94}_{-0.28} \quad (+0.5\sigma)$	$\chi_{\text{small}}^2$	$291 \pm 200 \quad (-0.1\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.480 \pm 0.084$	$100\theta_*$	$1.04104^{+0.00036}_{-0.00030} \quad (+0.4\sigma)$	$\chi_{\text{lowl}}^2$	$129 \pm 200 \quad (+0.1\sigma)$
$A_{143}^{\text{dustTE}}$	$0.224 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	$13.816^{+0.089}_{-0.027} \quad (+0.5\sigma)$	$\chi_{\text{plik}}^2$	$2362.2 \pm 6.2 \quad (+268.8\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.663 \pm 0.082$	$z_{\text{drag}}$	$1060.37^{+0.32}_{-0.47} \quad (+0.2\sigma)$	$\chi_{\text{JLA}}^2$	$1035.12 \pm 0.33 \quad (+0.3\sigma)$
$A_{217}^{\text{dustTE}}$	$2.07 \pm 0.27$	$r_{\text{drag}}$	$146.43^{+0.98}_{-0.29} \quad (+0.4\sigma)$	$\chi_{6\text{DF}}^2$	$0.40 \pm 0.59 \quad (+0.1\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$k_D$	$0.14139^{+0.00034}_{-0.00079} \quad (-0.2\sigma)$	$\chi_{\text{MGS}}^2$	$0.89 \pm 0.64 \quad (-0.3\sigma)$
$c_{217}$	$0.99819 \pm 0.00063 \quad (-0.2\sigma)$	$100\theta_D$	$0.16084^{+0.00018}_{-0.00028} \quad (-1.2\sigma)$	$\chi_{\text{DR12BAO}}^2$	$5.0 \pm 1.6 \quad (+0.3\sigma)$
$H_0$	$68.00^{+0.43}_{-0.72} \quad (-0.6\sigma)$	$z_{\text{eq}}$	$3334^{+63}_{-19} \quad (+0.3\sigma)$	$\chi_{\text{prior}}^2$	$11.7 \pm 4.6 \quad (+1.2\sigma)$
$\Omega_\Lambda$	$0.6889 \pm 0.0063 \quad (-0.4\sigma)$	$k_{\text{eq}}$	$0.01026^{+0.00019}_{-0.000095} \quad (-0.1\sigma)$	$\chi_{\text{BAO}}^2$	$6.3 \pm 1.3 \quad (+0.2\sigma)$
$\Omega_m$	$0.3111 \pm 0.0063 \quad (+0.4\sigma)$	$100\theta_{\text{eq}}$	$0.8275^{+0.0033}_{-0.013} \quad (-0.2\sigma)$	$\chi_{\text{CMB}}^2$	$2782.4 \pm 6.1 \quad (+277.0\sigma)$
$\Omega_m h^2$	$0.1439^{+0.0011}_{-0.0021} \quad (-0.4\sigma)$	$100\theta_{s,\text{eq}}$	$0.4567^{+0.0017}_{-0.0070} \quad (-0.2\sigma)$		
$\Omega_\nu h^2$	$0.00267^{+0.00044}_{-0.0022} \quad (+0.1\sigma)$	$H(0.15)$	$73.31^{+0.36}_{-0.70} \quad (-0.6\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 3835.56; \Delta \bar{\chi}_{\text{eff}}^2 = 1592.44; R - 1 = 0.01701$$



# 8.27 base\_nnu\_meffsterile\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Aver15\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02249 \pm 0.00014 \quad (+0.9\sigma)$	$\Omega_{\mathrm{m}} h^3$	$0.09744^{+0.00027}_{-0.0013} \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$639.2^{+5.4}_{-3.9} \quad (+0.3\sigma)$
$\Omega_{\mathrm{c}} h^2$	$0.1183^{+0.0034}_{-0.0020} \quad (-0.1\sigma)$	$\sigma_8$	$0.791^{+0.023}_{-0.013} \quad (+0.1\sigma)$	$H(0.38)$	$83.31^{+0.26}_{-0.52} \quad (-0.3\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04094 \pm 0.00030 \quad (+0.2\sigma)$	$S_8$	$0.807^{+0.023}_{-0.016} \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.38)$	$1524^{+12}_{-7.7} \quad (+0.3\sigma)$
$\tau$	$0.0568^{+0.0058}_{-0.0084} \quad (+0.2\sigma)$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.442^{+0.013}_{-0.0087} \quad (+0.2\sigma)$	$H(0.51)$	$90.06^{+0.20}_{-0.51} \quad (-0.3\sigma)$
$m_{\nu, \mathrm{sterile}}^{\mathrm{eff}} [\mathrm{eV}]$	$< 0.241 \quad (+0.0\sigma)$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.591^{+0.017}_{-0.010} \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1974^{+14}_{-8.9} \quad (+0.3\sigma)$
$N_{\mathrm{eff}}$	$3.1151^{+0.0073}_{-0.068} \quad (-0.5\sigma)$	$\sigma_8/h^{0.5}$	$0.960^{+0.027}_{-0.015} \quad (+0.2\sigma)$	$H(0.61)$	$95.72^{+0.16}_{-0.50} \quad (-0.3\sigma)$
$\ln(10^{10} A_{\mathrm{s}})$	$3.049^{+0.013}_{-0.017} \quad (+0.2\sigma)$	$r_{\mathrm{drag}} h$	$99.42 \pm 0.82 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.61)$	$2297^{+16}_{-9.5} \quad (+0.3\sigma)$
$n_{\mathrm{s}}$	$0.9682^{+0.0041}_{-0.0050} \quad (-0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.024 \quad (+0.5\sigma)$	$H(2.33)$	$237.18^{+0.70}_{-1.3} \quad (-0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$z_{\mathrm{re}}$	$7.91^{+0.63}_{-0.82} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5739^{+28}_{-7.3} \quad (+0.2\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.110^{+0.027}_{-0.036} \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.447^{+0.013}_{-0.0084} \quad (+0.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.883 \pm 0.012 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.731^{+0.021}_{-0.012} \quad (+0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.4^{+2.2}_{-2.0} \quad (+0.2\sigma)$	$D_{40}$	$1225 \pm 13 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.464^{+0.013}_{-0.0081} \quad (+0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$259 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5738 \pm 39 \quad (+0.5\sigma)$	$\sigma_8(0.38)$	$0.648^{+0.019}_{-0.011} \quad (+0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$47 \pm 8 \quad (-0.5\sigma)$	$D_{810}$	$2540 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.463^{+0.013}_{-0.0079} \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9 \quad (-0.2\sigma)$	$D_{1420}$	$817.3 \pm 4.7 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.606^{+0.018}_{-0.010} \quad (+0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$230.6 \pm 1.6 \quad (+0.8\sigma)$	$f\sigma_8(0.61)$	$0.458^{+0.013}_{-0.0077} \quad (+0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.42 \quad (-0.2\sigma)$	$n_{\mathrm{s}, 0.002}$	$0.9682^{+0.0041}_{-0.0050} \quad (-0.3\sigma)$	$\sigma_8(0.61)$	$0.577^{+0.017}_{-0.0099} \quad (+0.1\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.24636^{+0.00017}_{-0.00090} \quad (-0.4\sigma)$	$f\sigma_8(2.33)$	$0.2910^{+0.0087}_{-0.0051} \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24769^{+0.00017}_{-0.00091} \quad (-0.4\sigma)$	$\sigma_8(2.33)$	$0.2998^{+0.0090}_{-0.0053} \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.588^{+0.025}_{-0.030} \quad (-1.1\sigma)$	$f_{2000}^{143}$	$30.0 \pm 2.8 \quad (-0.7\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.6 \pm 7.3 \quad (+0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.739^{+0.067}_{-0.016} \quad (+0.2\sigma)$	$f_{2000}^{143 \times 217}$	$32.6 \pm 1.9 \quad (-0.8\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.038$	$z_*$	$1089.87^{+0.22}_{-0.25} \quad (-0.9\sigma)$	$f_{2000}^{217}$	$107.3 \pm 1.8 \quad (-0.7\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.030$	$r_*$	$143.98^{+0.74}_{-0.26} \quad (+0.2\sigma)$	$\chi_{\mathrm{simall}}^2$	$292 \pm 200 \quad (-0.1\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.481 \pm 0.084$	$100\theta_*$	$1.04108 \pm 0.00032 \quad (+0.2\sigma)$	$\chi_{\mathrm{lowl}}^2$	$128 \pm 200 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.224 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.830^{+0.070}_{-0.025} \quad (+0.2\sigma)$	$\chi_{\mathrm{plik}}^2$	$2361.7 \pm 6.1 \quad (+279.5\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.663 \pm 0.082$	$z_{\mathrm{drag}}$	$1060.28^{+0.32}_{-0.40} \quad (+0.6\sigma)$	$\chi_{\mathrm{Aver15}}^2$	$0.53 \pm 0.40 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.08 \pm 0.27$	$r_{\mathrm{drag}}$	$146.59^{+0.77}_{-0.27} \quad (+0.1\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.39 \pm 0.55 \quad (+0.1\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.14127^{+0.00033}_{-0.00064} \quad (+0.2\sigma)$	$\chi_{\mathrm{MGS}}^2$	$0.84 \pm 0.60 \quad (-0.3\sigma)$
$c_{217}$	$0.99819 \pm 0.00063 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16080^{+0.00017}_{-0.00024} \quad (-1.1\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$5.3 \pm 1.8 \quad (+0.2\sigma)$
$H_0$	$67.82^{+0.46}_{-0.61} \quad (-0.3\sigma)$	$z_{\mathrm{eq}}$	$3333^{+68}_{-21} \quad (+0.3\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.7 \pm 4.6 \quad (+1.2\sigma)$
$\Omega_{\Lambda}$	$0.6876 \pm 0.0065 \quad (-0.2\sigma)$	$k_{\mathrm{eq}}$	$0.01025^{+0.00019}_{-0.000090} \quad (+0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.6 \pm 1.5 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3124 \pm 0.0065 \quad (+0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8278^{+0.0040}_{-0.014} \quad (-0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2782.0 \pm 6.0 \quad (+283.8\sigma)$
$\Omega_{\mathrm{m}} h^2$	$0.1437^{+0.0011}_{-0.0017} \quad (-0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4569^{+0.0020}_{-0.0075} \quad (-0.2\sigma)$		
$\Omega_{\nu} h^2$	$0.00287^{+0.00057}_{-0.0024} \quad (+0.0\sigma)$	$H(0.15)$	$73.14^{+0.38}_{-0.57} \quad (-0.3\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2800.77; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.28; R - 1 = 0.01526$$



## 8.28 base\_nnu\_meffsterile\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Cooke17\_Aver15\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02248 \pm 0.00014 \quad (+0.8\sigma)$	$\Omega_m h^3$	$0.09745^{+0.00028}_{-0.0014} \quad (-0.1\sigma)$	$D_M(0.15)$	$639.3^{+5.4}_{-3.9} \quad (+0.3\sigma)$
$\Omega_c h^2$	$0.1184^{+0.0034}_{-0.0019} \quad (-0.0\sigma)$	$\sigma_8$	$0.791^{+0.023}_{-0.013} \quad (+0.2\sigma)$	$H(0.38)$	$83.30^{+0.26}_{-0.53} \quad (-0.2\sigma)$
$100\theta_{MC}$	$1.04093 \pm 0.00030 \quad (+0.1\sigma)$	$S_8$	$0.807^{+0.023}_{-0.016} \quad (+0.3\sigma)$	$D_M(0.38)$	$1524^{+12}_{-7.6} \quad (+0.3\sigma)$
$\tau$	$0.0568^{+0.0057}_{-0.0083} \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.442^{+0.013}_{-0.0086} \quad (+0.3\sigma)$	$H(0.51)$	$90.06^{+0.20}_{-0.52} \quad (-0.2\sigma)$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.240 \quad (-0.0\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.591^{+0.017}_{-0.010} \quad (+0.2\sigma)$	$D_M(0.51)$	$1975^{+14}_{-8.8} \quad (+0.3\sigma)$
$N_{\text{eff}}$	$3.1165^{+0.0080}_{-0.070} \quad (-0.4\sigma)$	$\sigma_8/h^{0.5}$	$0.961^{+0.027}_{-0.015} \quad (+0.2\sigma)$	$H(0.61)$	$95.71^{+0.15}_{-0.51} \quad (-0.2\sigma)$
$\ln(10^{10} A_s)$	$3.049^{+0.013}_{-0.017} \quad (+0.2\sigma)$	$r_{\text{drag}} h$	$99.39 \pm 0.82 \quad (-0.3\sigma)$	$D_M(0.61)$	$2298^{+16}_{-9.4} \quad (+0.2\sigma)$
$n_s$	$0.9682^{+0.0041}_{-0.0050} \quad (-0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.024 \quad (+0.5\sigma)$	$H(2.33)$	$237.21^{+0.72}_{-1.3} \quad (-0.0\sigma)$
$y_{\text{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$z_{\text{re}}$	$7.91^{+0.63}_{-0.82} \quad (+0.1\sigma)$	$D_M(2.33)$	$5739^{+29}_{-7.4} \quad (+0.2\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_s$	$2.110^{+0.027}_{-0.036} \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.447^{+0.013}_{-0.0084} \quad (+0.2\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.883 \pm 0.012 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.731^{+0.021}_{-0.012} \quad (+0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$5.4^{+2.2}_{-2.0} \quad (+0.2\sigma)$	$D_{40}$	$1225 \pm 13 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.464^{+0.013}_{-0.0081} \quad (+0.2\sigma)$
$A_{100}^{\text{PS}}$	$260 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5737 \pm 39 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.648^{+0.019}_{-0.011} \quad (+0.1\sigma)$
$A_{143}^{\text{PS}}$	$47 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2540 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.463^{+0.013}_{-0.0078} \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$817.2 \pm 4.7 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.606^{+0.018}_{-0.010} \quad (+0.1\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$230.5 \pm 1.6 \quad (+0.8\sigma)$	$f\sigma_8(0.61)$	$0.458^{+0.013}_{-0.0076} \quad (+0.2\sigma)$
$A^{\text{kSZ}}$	$< 4.44 \quad (-0.2\sigma)$	$n_{s,0.002}$	$0.9682^{+0.0041}_{-0.0050} \quad (-0.3\sigma)$	$\sigma_8(0.61)$	$0.577^{+0.017}_{-0.0099} \quad (+0.1\sigma)$
$A_{100}^{\text{dust}TT}$	$9.0 \pm 1.8 \quad (-0.0\sigma)$	$Y_P$	$0.24637^{+0.00018}_{-0.00092} \quad (-0.3\sigma)$	$f\sigma_8(2.33)$	$0.2910^{+0.0087}_{-0.0051} \quad (+0.1\sigma)$
$A_{143}^{\text{dust}TT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.24770^{+0.00018}_{-0.00093} \quad (-0.3\sigma)$	$\sigma_8(2.33)$	$0.2998^{+0.0091}_{-0.0053} \quad (+0.1\sigma)$
$A_{143 \times 217}^{\text{dust}TT}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$10^5 D/H$	$2.590^{+0.024}_{-0.029} \quad (-1.1\sigma)$	$f_{2000}^{143}$	$30.0 \pm 2.8 \quad (-0.6\sigma)$
$A_{217}^{\text{dust}TT}$	$93.6 \pm 7.3 \quad (+0.0\sigma)$	$\text{Age/Gyr}$	$13.739^{+0.069}_{-0.017} \quad (+0.2\sigma)$	$f_{2000}^{143 \times 217}$	$32.6 \pm 1.9 \quad (-0.7\sigma)$
$A_{100}^{\text{dust}TE}$	$0.114 \pm 0.038$	$z_*$	$1089.89^{+0.22}_{-0.24} \quad (-0.8\sigma)$	$f_{2000}^{217}$	$107.4 \pm 1.8 \quad (-0.6\sigma)$
$A_{100 \times 143}^{\text{dust}TE}$	$0.135 \pm 0.030$	$r_*$	$143.96^{+0.75}_{-0.27} \quad (+0.1\sigma)$	$\chi_{\text{simall}}^2$	$290 \pm 200 \quad (-0.1\sigma)$
$A_{100 \times 217}^{\text{dust}TE}$	$0.481 \pm 0.084$	$100\theta_*$	$1.04107 \pm 0.00032 \quad (+0.1\sigma)$	$\chi_{\text{lowl}}^2$	$130 \pm 200 \quad (+0.1\sigma)$
$A_{143}^{\text{dust}TE}$	$0.225 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	$13.828^{+0.071}_{-0.026} \quad (+0.1\sigma)$	$\chi_{\text{plik}}^2$	$2361.6 \pm 6.1 \quad (+281.7\sigma)$
$A_{143 \times 217}^{\text{dust}TE}$	$0.664 \pm 0.082$	$z_{\text{drag}}$	$1060.27^{+0.32}_{-0.40} \quad (+0.6\sigma)$	$\chi_{\text{Aver15}}^2$	$0.54 \pm 0.41 \quad (-0.3\sigma)$
$A_{217}^{\text{dust}TE}$	$2.08 \pm 0.27$	$r_{\text{drag}}$	$146.58^{+0.79}_{-0.28} \quad (+0.0\sigma)$	$\chi_{\text{Cooke17}}^2$	$0.17 \pm 0.19 \quad (-0.1\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$k_D$	$0.14127^{+0.00034}_{-0.00065} \quad (+0.3\sigma)$	$\chi_{6DF}^2$	$0.39 \pm 0.55 \quad (+0.1\sigma)$
$c_{217}$	$0.99820 \pm 0.00063 \quad (-0.1\sigma)$	$100\theta_D$	$0.16082^{+0.00017}_{-0.00023} \quad (-1.1\sigma)$	$\chi_{\text{MGS}}^2$	$0.83 \pm 0.59 \quad (-0.3\sigma)$
$H_0$	$67.81^{+0.45}_{-0.62} \quad (-0.3\sigma)$	$z_{\text{eq}}$	$3334^{+67}_{-21} \quad (+0.3\sigma)$	$\chi_{\text{DR12BAO}}^2$	$5.4 \pm 1.8 \quad (+0.2\sigma)$
$\Omega_\Lambda$	$0.6874 \pm 0.0064 \quad (-0.3\sigma)$	$k_{\text{eq}}$	$0.01026^{+0.00019}_{-0.000089} \quad (+0.2\sigma)$	$\chi_{\text{prior}}^2$	$11.7 \pm 4.6 \quad (+1.2\sigma)$
$\Omega_m$	$0.3126 \pm 0.0064 \quad (+0.3\sigma)$	$100\theta_{\text{eq}}$	$0.8276^{+0.0039}_{-0.014} \quad (-0.2\sigma)$	$\chi_{\text{BAO}}^2$	$6.6 \pm 1.5 \quad (+0.2\sigma)$
$\Omega_m h^2$	$0.1437^{+0.0011}_{-0.0017} \quad (+0.0\sigma)$	$100\theta_{s,\text{eq}}$	$0.4568^{+0.0020}_{-0.0074} \quad (-0.2\sigma)$	$\chi_{\text{CMB}}^2$	$2781.9 \pm 6.0 \quad (+285.3\sigma)$
$\Omega_\nu h^2$	$0.00286^{+0.00057}_{-0.0024} \quad (-0.0\sigma)$	$H(0.15)$	$73.12^{+0.38}_{-0.58} \quad (-0.3\sigma)$	$\chi_{\text{Abund}}^2$	$0.71 \pm 0.42 \quad (-0.3\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 2800.91; \Delta\bar{\chi}_{\text{eff}}^2 = 1592.43; R - 1 = 0.01453$$



## 8.29 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022350	$0.02243 \pm 0.00016$	$\sigma_8$	0.8062	$0.788^{+0.025}_{-0.015}$	$H(0.15)$	73.00	$73.42^{+0.38}_{-0.86}$
$\Omega_c h^2$	0.11484	$0.1187^{+0.0039}_{-0.0027}$	$S_8$	0.8184	$0.801^{+0.024}_{-0.016}$	$D_M(0.15)$	640.1	$636.6^{+7.8}_{-4.0}$
$100\theta_{MC}$	1.040969	$1.04082^{+0.00038}_{-0.00032}$	$\sigma_8 \Omega_m^{0.5}$	0.4483	$0.439^{+0.013}_{-0.0089}$	$H(0.38)$	83.07	$83.57^{+0.27}_{-0.85}$
$\tau$	0.0538	$0.0545 \pm 0.0078$	$\sigma_8 \Omega_m^{0.25}$	0.6012	$0.588^{+0.018}_{-0.011}$	$D_M(0.38)$	1527.2	$1519^{+17}_{-7.8}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	0.380	$< 0.210$	$\sigma_8/h^{0.5}$	0.9795	$0.955^{+0.028}_{-0.015}$	$H(0.51)$	89.76	$90.32^{+0.22}_{-0.84}$
$N_{\text{eff}}$	3.047	$< 3.18$	$r_{\text{drag}} h$	99.86	$99.70 \pm 0.87$	$D_M(0.51)$	1978.7	$1967^{+22}_{-9.0}$
$\ln(10^{10} A_s)$	3.0404	$3.044^{+0.016}_{-0.018}$	$\langle d^2 \rangle^{1/2}$	2.4251	$2.415 \pm 0.026$	$H(0.61)$	95.36	$95.97^{+0.20}_{-0.84}$
$n_s$	0.9680	$0.9704^{+0.0048}_{-0.0064}$	$z_{\text{re}}$	7.62	$7.70 \pm 0.80$	$D_M(0.61)$	2302.8	$2290^{+25}_{-9.6}$
$y_{\text{cal}}$	1.00091	$1.0006 \pm 0.0025$	$10^9 A_s$	2.0913	$2.098^{+0.032}_{-0.037}$	$H(2.33)$	235.81	$237.47^{+0.82}_{-2.0}$
$A_{100}^{\text{PS}}$	234.6	$243 \pm 25$	$10^9 A_s e^{-2\tau}$	1.8778	$1.881^{+0.012}_{-0.015}$	$D_M(2.33)$	5761.3	$5725^{+47}_{-11}$
$A_{143}^{\text{PS}}$	43.8	$41 \pm 8$	$D_{40}$	1222.9	$1218 \pm 13$	$f\sigma_8(0.15)$	0.4530	$0.444^{+0.013}_{-0.0087}$
$A_{217}^{\text{PS}}$	104.5	$102 \pm 10$	$D_{220}$	5725.8	$5723 \pm 39$	$\sigma_8(0.15)$	0.7452	$0.728^{+0.023}_{-0.014}$
$A_{217}^{\text{CIB}}$	41.8	$41 \pm 7$	$D_{810}$	2538.5	$2536 \pm 14$	$f\sigma_8(0.38)$	0.4718	$0.462^{+0.014}_{-0.0086}$
$A_{143}^{\text{tSZ}}$	5.70	$3.8^{+1.8}_{-2.6}$	$D_{1420}$	817.40	$815.2 \pm 4.9$	$\sigma_8(0.38)$	0.6609	$0.646^{+0.020}_{-0.012}$
$r_{143 \times 217}^{\text{PS}}$	0.693	$0.65 \pm 0.13$	$D_{2000}$	230.94	$229.5 \pm 1.7$	$f\sigma_8(0.51)$	0.4707	$0.461^{+0.014}_{-0.0084}$
$r_{143 \times 217}^{\text{CIB}}$	0.709	$0.58^{+0.41}_{-0.13}$	$n_{s,0.002}$	0.9680	$0.9704^{+0.0048}_{-0.0064}$	$\sigma_8(0.51)$	0.6186	$0.604^{+0.019}_{-0.012}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.48	—	$Y_P$	0.24540	$0.24694^{+0.00037}_{-0.0015}$	$f\sigma_8(0.61)$	0.4659	$0.456^{+0.014}_{-0.0083}$
$A^{\text{kSZ}}$	1.2	—	$Y_P^{\text{BBN}}$	0.24673	$0.24827^{+0.00037}_{-0.0015}$	$\sigma_8(0.61)$	0.5886	$0.575^{+0.018}_{-0.011}$
$A_{100}^{\text{dust}}$	1.010	$1.02 \pm 0.20$	$10^5 D/H$	2.5898	$2.615^{+0.029}_{-0.042}$	$f\sigma_8(2.33)$	0.2969	$0.2904^{+0.0094}_{-0.0057}$
$A_{143}^{\text{dust}}$	0.958	$0.97 \pm 0.17$	Age/Gyr	13.793	$13.71^{+0.11}_{-0.027}$	$\sigma_8(2.33)$	0.3062	$0.2992^{+0.0098}_{-0.0061}$
$A_{217}^{\text{dust}}$	0.975	$0.97 \pm 0.10$	$z_*$	1089.848	$1090.01^{+0.25}_{-0.31}$	$f_{2000}^{143}$	29.45	$30.8 \pm 3.0$
$A_{143 \times 217}^{\text{dust}}$	1.030	$1.03 \pm 0.16$	$r_*$	144.74	$143.7^{+1.2}_{-0.38}$	$f_{2000}^{217}$	106.55	$107.6 \pm 2.0$
$c_{100}$	0.99777	$0.9975 \pm 0.0011$	$100\theta_*$	1.041155	$1.04094^{+0.00044}_{-0.00031}$	$f_{2000}^{143 \times 217}$	31.94	$33.0 \pm 2.1$
$c_{217}$	1.00120	$1.0012 \pm 0.0016$	$D_M(z_*)/\text{Gpc}$	13.901	$13.81^{+0.11}_{-0.036}$	$\chi_{\text{small}}^2$	395.95	$397.1 \pm 1.8$
$c_{TE}$	0.99685	$0.9975 \pm 0.0050$	$z_{\text{drag}}$	1059.818	$1060.20^{+0.37}_{-0.53}$	$\chi_{\text{lowl}}^2$	22.71	$22.47 \pm 0.90$
$c_{EE}$	0.9925	$0.9936 \pm 0.0052$	$r_{\text{drag}}$	147.41	$146.4^{+1.2}_{-0.40}$	$\chi_{\text{CamSpec}}^2$	11500.3	$11517.3 \pm 6.1$
$H_0$	67.75	$68.11^{+0.46}_{-0.88}$	$k_D$	0.14051	$0.14129^{+0.00040}_{-0.00096}$	$\chi_{6\text{DF}}^2$	0.0162	$0.058 \pm 0.072$
$\Omega_\Lambda$	0.6909	$0.6897 \pm 0.0068$	$100\theta_D$	0.160831	$0.16104^{+0.00021}_{-0.00037}$	$\chi_{\text{MGS}}^2$	1.343	$1.30 \pm 0.48$
$\Omega_m$	0.3091	$0.3103 \pm 0.0068$	$z_{\text{eq}}$	3277.8	$3321^{+64}_{-18}$	$\chi_{\text{DR12BAO}}^2$	4.08	$4.9 \pm 1.6$
$\Omega_m h^2$	0.14188	$0.1439^{+0.0012}_{-0.0026}$	$k_{\text{eq}}$	0.010078	$0.01024^{+0.00020}_{-0.00010}$	$\chi_{\text{prior}}^2$	2.07	$7.9 \pm 3.5$
$\Omega_\nu h^2$	0.00469	$0.00280^{+0.00020}_{-0.0022}$	$100\theta_{\text{eq}}$	0.8388	$0.8298^{+0.0031}_{-0.014}$	$\chi_{\text{BAO}}^2$	5.44	$6.2 \pm 1.3$
$\Omega_m h^3$	0.09612	$0.09804^{+0.00051}_{-0.0023}$	$100\theta_{s,\text{eq}}$	0.46280	$0.4580^{+0.0016}_{-0.0072}$	$\chi_{\text{CMB}}^2$	11919.0	$11936.9 \pm 6.1$

Best-fit  $\chi_{\text{eff}}^2 = 11926.47$ ;  $\bar{\chi}_{\text{eff}}^2 = 11950.99$ ;  $R - 1 = 0.01562$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.34 DR12BAO: 4.08 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.95 commander\_dx12\_v3.2.29: 22.71 CamSpec like\_10.7HM\_1400\_unified: 11500.30



### 8.30 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Pantheon18

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02243^{+0.00015}_{-0.00016}$	$S_8$	$0.801^{+0.024}_{-0.016}$	$H(0.38)$	$83.63^{+0.27}_{-0.86}$
$\Omega_c h^2$	$0.1186^{+0.0040}_{-0.0028}$	$\sigma_8 \Omega_m^{0.5}$	$0.438^{+0.013}_{-0.0087}$	$D_M(0.38)$	$1517^{+17}_{-7.6}$
$100\theta_{MC}$	$1.04083^{+0.00038}_{-0.00032}$	$\sigma_8 \Omega_m^{0.25}$	$0.588^{+0.018}_{-0.011}$	$H(0.51)$	$90.37^{+0.22}_{-0.86}$
$\tau$	$0.0547 \pm 0.0078$	$\sigma_8/h^{0.5}$	$0.955^{+0.028}_{-0.015}$	$D_M(0.51)$	$1966^{+22}_{-8.8}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.201$	$r_{\text{drag}} h$	$99.82 \pm 0.83$	$H(0.61)$	$96.00^{+0.21}_{-0.86}$
$N_{\text{eff}}$	$< 3.18$	$\langle d^2 \rangle^{1/2}$	$2.413 \pm 0.025$	$D_M(0.61)$	$2288^{+25}_{-9.4}$
$\ln(10^{10} A_s)$	$3.044^{+0.016}_{-0.018}$	$z_{\text{re}}$	$7.71 \pm 0.79$	$H(2.33)$	$237.41^{+0.79}_{-2.1}$
$n_s$	$0.9708^{+0.0048}_{-0.0063}$	$10^9 A_s$	$2.099^{+0.032}_{-0.037}$	$D_M(2.33)$	$5723^{+48}_{-12}$
$y_{\text{cal}}$	$1.0006 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.881^{+0.012}_{-0.015}$	$f\sigma_8(0.15)$	$0.443^{+0.013}_{-0.0085}$
$A_{100}^{\text{PS}}$	$243 \pm 25$	$D_{40}$	$1218 \pm 13$	$\sigma_8(0.15)$	$0.729^{+0.023}_{-0.014}$
$A_{143}^{\text{PS}}$	$41 \pm 8$	$D_{220}$	$5724 \pm 39$	$f\sigma_8(0.38)$	$0.462^{+0.014}_{-0.0084}$
$A_{217}^{\text{PS}}$	$102 \pm 10$	$D_{810}$	$2536 \pm 14$	$\sigma_8(0.38)$	$0.646^{+0.020}_{-0.012}$
$A_{217}^{\text{CIB}}$	$41 \pm 7$	$D_{1420}$	$815.3 \pm 4.9$	$f\sigma_8(0.51)$	$0.461^{+0.014}_{-0.0083}$
$A_{143}^{\text{tSZ}}$	$3.7^{+1.8}_{-2.6}$	$D_{2000}$	$229.6 \pm 1.7$	$\sigma_8(0.51)$	$0.605^{+0.019}_{-0.012}$
$r_{143 \times 217}^{\text{PS}}$	$0.65 \pm 0.13$	$n_{s,0.002}$	$0.9708^{+0.0048}_{-0.0063}$	$f\sigma_8(0.61)$	$0.456^{+0.014}_{-0.0082}$
$r_{143 \times 217}^{\text{CIB}}$	$0.58^{+0.41}_{-0.13}$	$Y_P$	$0.24696^{+0.00037}_{-0.0016}$	$\sigma_8(0.61)$	$0.576^{+0.018}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24829^{+0.00037}_{-0.0016}$	$f\sigma_8(2.33)$	$0.2907^{+0.0093}_{-0.0056}$
$A^{\text{kSZ}}$	—	$10^5 D/H$	$2.615^{+0.029}_{-0.042}$	$\sigma_8(2.33)$	$0.2996^{+0.0097}_{-0.0060}$
$A_{100}^{\text{dust}}$	$1.02 \pm 0.20$	Age/Gyr	$13.70^{+0.11}_{-0.028}$	$f_{2000}^{143}$	$30.8 \pm 3.0$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.17$	$z_*$	$1090.00^{+0.25}_{-0.32}$	$f_{2000}^{217}$	$107.6 \pm 2.0$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$r_*$	$143.7^{+1.2}_{-0.37}$	$f_{2000}^{143 \times 217}$	$33.0 \pm 2.1$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04095^{+0.00044}_{-0.00032}$	$\chi_{\text{small}}^2$	$397.1 \pm 1.8$
$c_{100}$	$0.9975 \pm 0.0011$	$D_M(z_*)/\text{Gpc}$	$13.81^{+0.11}_{-0.035}$	$\chi_{\text{lowl}}^2$	$22.41 \pm 0.88$
$c_{217}$	$1.0012 \pm 0.0016$	$z_{\text{drag}}$	$1060.21^{+0.36}_{-0.54}$	$\chi_{\text{CamSpec}}^2$	$11517.4 \pm 6.1$
$c_{TE}$	$0.9975 \pm 0.0050$	$r_{\text{drag}}$	$146.4^{+1.3}_{-0.39}$	$\chi_{\text{JLA}}^2$	$1035.04 \pm 0.30$
$c_{EE}$	$0.9937 \pm 0.0051$	$k_D$	$0.14127^{+0.00038}_{-0.00098}$	$\chi_{6\text{DF}}^2$	$0.048 \pm 0.062$
$H_0$	$68.20^{+0.45}_{-0.88}$	$100\theta_D$	$0.16104^{+0.00021}_{-0.00038}$	$\chi_{\text{MGS}}^2$	$1.37 \pm 0.47$
$\Omega_\Lambda$	$0.6907 \pm 0.0065$	$z_{\text{eq}}$	$3319^{+64}_{-17}$	$\chi_{\text{DR12BAO}}^2$	$4.6 \pm 1.4$
$\Omega_m$	$0.3093 \pm 0.0065$	$k_{\text{eq}}$	$0.01024^{+0.00020}_{-0.00010}$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.5$
$\Omega_m h^2$	$0.1438^{+0.0012}_{-0.0026}$	$100\theta_{\text{eq}}$	$0.8302^{+0.0030}_{-0.014}$	$\chi_{\text{BAO}}^2$	$6.1 \pm 1.1$
$\Omega_\nu h^2$	$0.00274^{+0.00021}_{-0.0021}$	$100\theta_{s,\text{eq}}$	$0.4582^{+0.0015}_{-0.0071}$	$\chi_{\text{CMB}}^2$	$11936.9 \pm 6.1$
$\Omega_m h^3$	$0.09809^{+0.00053}_{-0.0023}$	$H(0.15)$	$73.49^{+0.38}_{-0.87}$		
$\sigma_8$	$0.788^{+0.024}_{-0.014}$	$D_M(0.15)$	$635.9^{+7.8}_{-3.8}$		

$$\bar{\chi}_{\text{eff}}^2 = 12985.86; R - 1 = 0.01581$$



### 8.31 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Aver15

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02241 \pm 0.00015$	$S_8$	$0.799^{+0.024}_{-0.016}$	$H(0.38)$	$83.38^{+0.26}_{-0.61}$
$\Omega_c h^2$	$0.1179^{+0.0038}_{-0.0022}$	$\sigma_8 \Omega_m^{0.5}$	$0.438^{+0.013}_{-0.0089}$	$D_M(0.38)$	$1522^{+13}_{-7.7}$
$100\theta_{MC}$	$1.04087 \pm 0.00033$	$\sigma_8 \Omega_m^{0.25}$	$0.587^{+0.018}_{-0.011}$	$H(0.51)$	$90.12^{+0.20}_{-0.60}$
$\tau$	$0.0544 \pm 0.0078$	$\sigma_8/h^{0.5}$	$0.953^{+0.028}_{-0.016}$	$D_M(0.51)$	$1972^{+16}_{-8.9}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.245$	$r_{\text{drag}} h$	$99.67 \pm 0.84$	$H(0.61)$	$95.76^{+0.15}_{-0.60}$
$N_{\text{eff}}$	$< 3.14$	$\langle d^2 \rangle^{1/2}$	$2.417 \pm 0.025$	$D_M(0.61)$	$2295^{+18}_{-9.4}$
$\ln(10^{10} A_s)$	$3.042 \pm 0.017$	$z_{\text{re}}$	$7.68 \pm 0.80$	$H(2.33)$	$237.00^{+0.70}_{-1.6}$
$n_s$	$0.9693^{+0.0045}_{-0.0054}$	$10^9 A_s$	$2.095^{+0.032}_{-0.036}$	$D_M(2.33)$	$5737^{+34}_{-7.5}$
$y_{\text{cal}}$	$1.0006 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.879^{+0.011}_{-0.013}$	$f\sigma_8(0.15)$	$0.443^{+0.013}_{-0.0087}$
$A_{100}^{\text{PS}}$	$242 \pm 25$	$D_{40}$	$1220 \pm 13$	$\sigma_8(0.15)$	$0.726^{+0.022}_{-0.013}$
$A_{143}^{\text{PS}}$	$41 \pm 8$	$D_{220}$	$5723 \pm 39$	$f\sigma_8(0.38)$	$0.461^{+0.014}_{-0.0084}$
$A_{217}^{\text{PS}}$	$102 \pm 10$	$D_{810}$	$2536 \pm 14$	$\sigma_8(0.38)$	$0.644^{+0.020}_{-0.012}$
$A_{217}^{\text{CIB}}$	$40 \pm 7$	$D_{1420}$	$815.3 \pm 4.9$	$f\sigma_8(0.51)$	$0.459^{+0.014}_{-0.0082}$
$A_{143}^{\text{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$D_{2000}$	$229.7 \pm 1.7$	$\sigma_8(0.51)$	$0.603^{+0.019}_{-0.011}$
$r_{143 \times 217}^{\text{PS}}$	$0.65 \pm 0.13$	$n_{s,0.002}$	$0.9693^{+0.0045}_{-0.0054}$	$f\sigma_8(0.61)$	$0.455^{+0.014}_{-0.0081}$
$r_{143 \times 217}^{\text{CIB}}$	$0.58^{+0.42}_{-0.13}$	$Y_P$	$0.24651^{+0.00020}_{-0.0011}$	$\sigma_8(0.61)$	$0.573^{+0.018}_{-0.010}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24785^{+0.00020}_{-0.0011}$	$f\sigma_8(2.33)$	$0.2895^{+0.0092}_{-0.0053}$
$A^{\text{kSZ}}$	$4.9 \pm 2.7$	$10^5 D/H$	$2.608^{+0.028}_{-0.035}$	$\sigma_8(2.33)$	$0.2983^{+0.0096}_{-0.0056}$
$A_{100}^{\text{dust}}$	$1.02 \pm 0.20$	$\text{Age/Gyr}$	$13.735^{+0.081}_{-0.017}$	$f_{2000}^{143}$	$30.6 \pm 2.9$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.17$	$z_*$	$1089.96^{+0.24}_{-0.28}$	$f_{2000}^{217}$	$107.4 \pm 2.0$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$r_*$	$144.03^{+0.89}_{-0.27}$	$f_{2000}^{143 \times 217}$	$32.8 \pm 2.1$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04101^{+0.00037}_{-0.00030}$	$\chi_{\text{simall}}^2$	$397.1 \pm 1.8$
$c_{100}$	$0.9975 \pm 0.0011$	$D_M(z_*)/\text{Gpc}$	$13.836^{+0.083}_{-0.026}$	$\chi_{\text{lowl}}^2$	$22.60 \pm 0.88$
$c_{217}$	$1.0012 \pm 0.0016$	$z_{\text{drag}}$	$1060.09^{+0.34}_{-0.45}$	$\chi_{\text{CamSpec}}^2$	$11516.9 \pm 6.0$
$c_{TE}$	$0.9973 \pm 0.0050$	$r_{\text{drag}}$	$146.68^{+0.92}_{-0.28}$	$\chi_{\text{Aver15}}^2$	$0.61 \pm 0.54$
$c_{EE}$	$0.9932 \pm 0.0050$	$k_D$	$0.14106^{+0.00034}_{-0.00074}$	$\chi_{6\text{DF}}^2$	$0.058 \pm 0.071$
$H_0$	$67.95^{+0.46}_{-0.69}$	$100\theta_D$	$0.16097^{+0.00020}_{-0.00029}$	$\chi_{\text{MGS}}^2$	$1.29 \pm 0.46$
$\Omega_\Lambda$	$0.6894 \pm 0.0066$	$z_{\text{eq}}$	$3316^{+71}_{-21}$	$\chi_{\text{DR12BAO}}^2$	$4.9 \pm 1.5$
$\Omega_m$	$0.3106 \pm 0.0066$	$k_{\text{eq}}$	$0.01021^{+0.00020}_{-0.000095}$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.5$
$\Omega_m h^2$	$0.1434^{+0.0011}_{-0.0020}$	$100\theta_{\text{eq}}$	$0.8308^{+0.0037}_{-0.015}$	$\chi_{\text{BAO}}^2$	$6.2 \pm 1.3$
$\Omega_\nu h^2$	$0.00303^{+0.00027}_{-0.0024}$	$100\theta_{s,\text{eq}}$	$0.4585^{+0.0019}_{-0.0080}$	$\chi_{\text{CMB}}^2$	$11936.5 \pm 6.0$
$\Omega_m h^3$	$0.09742^{+0.00031}_{-0.0016}$	$H(0.15)$	$73.25^{+0.38}_{-0.65}$		
$\sigma_8$	$0.786^{+0.024}_{-0.014}$	$D_M(0.15)$	$638.1^{+6.0}_{-3.9}$		

$$\bar{\chi}_{\text{eff}}^2 = 11951.21; R - 1 = 0.01810$$



### 8.32 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Cooke17\_Aver15

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02240 \pm 0.00015$	$S_8$	$0.799^{+0.024}_{-0.016}$	$H(0.38)$	$83.37^{+0.26}_{-0.61}$
$\Omega_c h^2$	$0.1179^{+0.0038}_{-0.0021}$	$\sigma_8 \Omega_m^{0.5}$	$0.438^{+0.013}_{-0.0088}$	$D_M(0.38)$	$1522^{+13}_{-7.6}$
$100\theta_{MC}$	$1.04087 \pm 0.00032$	$\sigma_8 \Omega_m^{0.25}$	$0.587^{+0.017}_{-0.011}$	$H(0.51)$	$90.11^{+0.20}_{-0.60}$
$\tau$	$0.0544 \pm 0.0078$	$\sigma_8/h^{0.5}$	$0.953^{+0.028}_{-0.015}$	$D_M(0.51)$	$1972^{+16}_{-8.8}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.245$	$r_{\text{drag}} h$	$99.66 \pm 0.83$	$H(0.61)$	$95.74^{+0.16}_{-0.59}$
$N_{\text{eff}}$	$< 3.14$	$\langle d^2 \rangle^{1/2}$	$2.417 \pm 0.025$	$D_M(0.61)$	$2295^{+18}_{-9.3}$
$\ln(10^{10} A_s)$	$3.042 \pm 0.017$	$z_{\text{re}}$	$7.67 \pm 0.80$	$H(2.33)$	$236.98^{+0.71}_{-1.5}$
$n_s$	$0.9692^{+0.0045}_{-0.0054}$	$10^9 A_s$	$2.095^{+0.032}_{-0.036}$	$D_M(2.33)$	$5738^{+34}_{-7.6}$
$y_{\text{cal}}$	$1.0006 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.879^{+0.011}_{-0.013}$	$f\sigma_8(0.15)$	$0.443^{+0.013}_{-0.0086}$
$A_{100}^{\text{PS}}$	$243 \pm 25$	$D_{40}$	$1220 \pm 13$	$\sigma_8(0.15)$	$0.726^{+0.023}_{-0.013}$
$A_{143}^{\text{PS}}$	$41 \pm 8$	$D_{220}$	$5722 \pm 39$	$f\sigma_8(0.38)$	$0.461^{+0.014}_{-0.0083}$
$A_{217}^{\text{PS}}$	$102 \pm 10$	$D_{810}$	$2535 \pm 14$	$\sigma_8(0.38)$	$0.644^{+0.020}_{-0.011}$
$A_{217}^{\text{CIB}}$	$40 \pm 7$	$D_{1420}$	$815.3 \pm 4.9$	$f\sigma_8(0.51)$	$0.459^{+0.014}_{-0.0081}$
$A_{143}^{\text{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$D_{2000}$	$229.7 \pm 1.7$	$\sigma_8(0.51)$	$0.603^{+0.019}_{-0.011}$
$r_{143 \times 217}^{\text{PS}}$	$0.65 \pm 0.13$	$n_{s,0.002}$	$0.9692^{+0.0045}_{-0.0054}$	$f\sigma_8(0.61)$	$0.455^{+0.014}_{-0.0080}$
$r_{143 \times 217}^{\text{CIB}}$	$0.58^{+0.42}_{-0.13}$	$Y_P$	$0.24650^{+0.00021}_{-0.0011}$	$\sigma_8(0.61)$	$0.573^{+0.018}_{-0.010}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24783^{+0.00022}_{-0.0011}$	$f\sigma_8(2.33)$	$0.2894^{+0.0092}_{-0.0052}$
$A^{\text{kSZ}}$	—	$10^5 D/H$	$2.609^{+0.027}_{-0.033}$	$\sigma_8(2.33)$	$0.2982^{+0.0096}_{-0.0055}$
$A_{100}^{\text{dust}}$	$1.02 \pm 0.20$	$\text{Age/Gyr}$	$13.737^{+0.079}_{-0.017}$	$f_{2000}^{143}$	$30.6 \pm 2.9$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.17$	$z_*$	$1089.97 \pm 0.25$	$f_{2000}^{217}$	$107.5 \pm 1.9$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$r_*$	$144.05^{+0.87}_{-0.28}$	$f_{2000}^{143 \times 217}$	$32.8 \pm 2.0$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04102^{+0.00036}_{-0.00030}$	$\chi_{\text{simall}}^2$	$397.1 \pm 1.8$
$c_{100}$	$0.9975 \pm 0.0011$	$D_M(z_*)/\text{Gpc}$	$13.837^{+0.081}_{-0.026}$	$\chi_{\text{lowl}}^2$	$22.61 \pm 0.88$
$c_{217}$	$1.0012 \pm 0.0016$	$z_{\text{drag}}$	$1060.08^{+0.34}_{-0.44}$	$\chi_{\text{CamSpec}}^2$	$11516.8 \pm 5.9$
$c_{TE}$	$0.9973 \pm 0.0050$	$r_{\text{drag}}$	$146.69^{+0.91}_{-0.29}$	$\chi_{\text{Aver15}}^2$	$0.60 \pm 0.51$
$c_{EE}$	$0.9933 \pm 0.0050$	$k_D$	$0.14105^{+0.00034}_{-0.00073}$	$\chi_{\text{Cooke17}}^2$	$0.12 \pm 0.17$
$H_0$	$67.94^{+0.45}_{-0.68}$	$100\theta_D$	$0.16097^{+0.00019}_{-0.00028}$	$\chi_{6DF}^2$	$0.058 \pm 0.071$
$\Omega_\Lambda$	$0.6893 \pm 0.0065$	$z_{\text{eq}}$	$3317^{+71}_{-21}$	$\chi_{\text{MGS}}^2$	$1.28 \pm 0.46$
$\Omega_m$	$0.3107 \pm 0.0065$	$k_{\text{eq}}$	$0.01021^{+0.00020}_{-0.000092}$	$\chi_{\text{DR12BAO}}^2$	$4.9 \pm 1.5$
$\Omega_m h^2$	$0.1434^{+0.0011}_{-0.0020}$	$100\theta_{\text{eq}}$	$0.8308^{+0.0037}_{-0.015}$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.5$
$\Omega_\nu h^2$	$0.00303^{+0.00027}_{-0.0024}$	$100\theta_{s,\text{eq}}$	$0.4585^{+0.0019}_{-0.0080}$	$\chi_{\text{BAO}}^2$	$6.2 \pm 1.3$
$\Omega_m h^3$	$0.09739^{+0.00033}_{-0.0016}$	$H(0.15)$	$73.23^{+0.38}_{-0.65}$	$\chi_{\text{CMB}}^2$	$11936.5 \pm 6.0$
$\sigma_8$	$0.786^{+0.024}_{-0.014}$	$D_M(0.15)$	$638.3^{+6.0}_{-3.8}$	$\chi_{\text{Abund}}^2$	$0.72 \pm 0.57$

$$\bar{\chi}_{\text{eff}}^2 = 11951.25; R - 1 = 0.01822$$



### 8.33 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02243 \pm 0.00016$	$\sigma_8$	$0.789^{+0.024}_{-0.015}$	$H(0.15)$	$73.43^{+0.38}_{-0.86}$
$\Omega_c h^2$	$0.1187^{+0.0039}_{-0.0027}$	$S_8$	$0.802^{+0.024}_{-0.016}$	$D_M(0.15)$	$636.5^{+7.8}_{-3.9}$
$100\theta_{MC}$	$1.04082^{+0.00038}_{-0.00031}$	$\sigma_8 \Omega_m^{0.5}$	$0.439^{+0.013}_{-0.0089}$	$H(0.38)$	$83.58^{+0.27}_{-0.85}$
$\tau$	$0.0556^{+0.0056}_{-0.0080}$	$\sigma_8 \Omega_m^{0.25}$	$0.589^{+0.017}_{-0.011}$	$D_M(0.38)$	$1518^{+17}_{-7.7}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.209$	$\sigma_8/h^{0.5}$	$0.956^{+0.028}_{-0.015}$	$H(0.51)$	$90.33^{+0.22}_{-0.85}$
$N_{\text{eff}}$	$< 3.18$	$r_{\text{drag}} h$	$99.71 \pm 0.87$	$D_M(0.51)$	$1967^{+22}_{-8.9}$
$\ln(10^{10} A_s)$	$3.046^{+0.012}_{-0.018}$	$\langle d^2 \rangle^{1/2}$	$2.417 \pm 0.025$	$H(0.61)$	$95.97^{+0.20}_{-0.84}$
$n_s$	$0.9705^{+0.0048}_{-0.0064}$	$z_{\text{re}}$	$7.81^{+0.61}_{-0.80}$	$D_M(0.61)$	$2289^{+25}_{-9.5}$
$y_{\text{cal}}$	$1.0006 \pm 0.0025$	$10^9 A_s$	$2.103^{+0.026}_{-0.037}$	$H(2.33)$	$237.47^{+0.83}_{-2.1}$
$A_{100}^{\text{PS}}$	$243 \pm 25$	$10^9 A_s e^{-2\tau}$	$1.881^{+0.012}_{-0.015}$	$D_M(2.33)$	$5725^{+47}_{-11}$
$A_{143}^{\text{PS}}$	$41 \pm 8$	$D_{40}$	$1218 \pm 13$	$f\sigma_8(0.15)$	$0.444^{+0.013}_{-0.0087}$
$A_{217}^{\text{PS}}$	$102 \pm 10$	$D_{220}$	$5723 \pm 39$	$\sigma_8(0.15)$	$0.729^{+0.023}_{-0.014}$
$A_{217}^{\text{CIB}}$	$41 \pm 7$	$D_{810}$	$2536 \pm 14$	$f\sigma_8(0.38)$	$0.462^{+0.014}_{-0.0085}$
$A_{143}^{\text{tSZ}}$	$3.8^{+1.8}_{-2.7}$	$D_{1420}$	$815.2 \pm 4.9$	$\sigma_8(0.38)$	$0.646^{+0.020}_{-0.012}$
$r_{143 \times 217}^{\text{PS}}$	$0.65 \pm 0.13$	$D_{2000}$	$229.6 \pm 1.7$	$f\sigma_8(0.51)$	$0.461^{+0.014}_{-0.0084}$
$r_{143 \times 217}^{\text{CIB}}$	$0.58^{+0.40}_{-0.14}$	$n_{s,0.002}$	$0.9705^{+0.0048}_{-0.0064}$	$\sigma_8(0.51)$	$0.605^{+0.019}_{-0.012}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.24695^{+0.00037}_{-0.0015}$	$f\sigma_8(0.61)$	$0.456^{+0.014}_{-0.0083}$
$A^{\text{kSZ}}$	—	$Y_P^{\text{BBN}}$	$0.24828^{+0.00037}_{-0.0016}$	$\sigma_8(0.61)$	$0.576^{+0.018}_{-0.011}$
$A_{100}^{\text{dust}}$	$1.02 \pm 0.20$	$10^5 D/H$	$2.615^{+0.029}_{-0.042}$	$f\sigma_8(2.33)$	$0.2907^{+0.0093}_{-0.0057}$
$A_{143}^{\text{dust}}$	$0.97 \pm 0.17$	$\text{Age/Gyr}$	$13.71^{+0.11}_{-0.027}$	$\sigma_8(2.33)$	$0.2995^{+0.0097}_{-0.0061}$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$z_*$	$1090.01^{+0.25}_{-0.31}$	$f_{2000}^{143}$	$30.8 \pm 3.0$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16$	$r_*$	$143.7^{+1.2}_{-0.38}$	$f_{2000}^{217}$	$107.6 \pm 2.0$
$c_{100}$	$0.9975 \pm 0.0011$	$100\theta_*$	$1.04094^{+0.00044}_{-0.00031}$	$f_{2000}^{143 \times 217}$	$33.0 \pm 2.1$
$c_{217}$	$1.0012 \pm 0.0016$	$D_M(z_*)/\text{Gpc}$	$13.81^{+0.11}_{-0.036}$	$\chi_{\text{small}}^2$	$397.0 \pm 1.8$
$c_{TE}$	$0.9974 \pm 0.0050$	$z_{\text{drag}}$	$1060.20^{+0.37}_{-0.53}$	$\chi_{\text{lowl}}^2$	$22.48 \pm 0.90$
$c_{EE}$	$0.9936 \pm 0.0052$	$r_{\text{drag}}$	$146.4^{+1.2}_{-0.40}$	$\chi_{\text{CamSpec}}^2$	$11517.2 \pm 6.0$
$H_0$	$68.13^{+0.46}_{-0.88}$	$k_D$	$0.14129^{+0.00040}_{-0.00097}$	$\chi_{6\text{DF}}^2$	$0.057 \pm 0.072$
$\Omega_\Lambda$	$0.6898 \pm 0.0068$	$100\theta_D$	$0.16104^{+0.00021}_{-0.00037}$	$\chi_{\text{MGS}}^2$	$1.31 \pm 0.48$
$\Omega_m$	$0.3102 \pm 0.0068$	$z_{\text{eq}}$	$3321^{+64}_{-18}$	$\chi_{\text{DR12BAO}}^2$	$4.9 \pm 1.6$
$\Omega_m h^2$	$0.1439^{+0.0012}_{-0.0026}$	$k_{\text{eq}}$	$0.01024^{+0.00020}_{-0.00010}$	$\chi_{\text{prior}}^2$	$7.9 \pm 3.5$
$\Omega_\nu h^2$	$0.00278^{+0.00032}_{-0.0023}$	$100\theta_{\text{eq}}$	$0.8298^{+0.0032}_{-0.014}$	$\chi_{\text{BAO}}^2$	$6.2 \pm 1.3$
$\Omega_m h^3$	$0.09806^{+0.00052}_{-0.0023}$	$100\theta_{s,\text{eq}}$	$0.4580^{+0.0016}_{-0.0071}$	$\chi_{\text{CMB}}^2$	$11936.7 \pm 6.0$
$\bar{\chi}_{\text{eff}}^2 = 11950.77; R - 1 = 0.01713$					



### 8.34 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02244 \pm 0.00016$	$S_8$	$0.801^{+0.023}_{-0.016}$	$H(0.38)$	$83.64^{+0.27}_{-0.86}$
$\Omega_c h^2$	$0.1187^{+0.0039}_{-0.0028}$	$\sigma_8 \Omega_m^{0.5}$	$0.439^{+0.013}_{-0.0087}$	$D_M(0.38)$	$1517^{+18}_{-7.5}$
$100\theta_{MC}$	$1.04083^{+0.00038}_{-0.00032}$	$\sigma_8 \Omega_m^{0.25}$	$0.589^{+0.017}_{-0.011}$	$H(0.51)$	$90.38^{+0.22}_{-0.86}$
$\tau$	$0.0557^{+0.0056}_{-0.0079}$	$\sigma_8/h^{0.5}$	$0.956^{+0.027}_{-0.015}$	$D_M(0.51)$	$1965^{+22}_{-8.7}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.201$	$r_{\text{drag}} h$	$99.83 \pm 0.83$	$H(0.61)$	$96.01^{+0.21}_{-0.86}$
$N_{\text{eff}}$	$< 3.18$	$\langle d^2 \rangle^{1/2}$	$2.415 \pm 0.024$	$D_M(0.61)$	$2287^{+25}_{-9.4}$
$\ln(10^{10} A_s)$	$3.046^{+0.013}_{-0.018}$	$z_{\text{re}}$	$7.82^{+0.61}_{-0.79}$	$H(2.33)$	$237.41^{+0.80}_{-2.1}$
$n_s$	$0.9709^{+0.0048}_{-0.0064}$	$10^9 A_s$	$2.103^{+0.026}_{-0.037}$	$D_M(2.33)$	$5723^{+49}_{-12}$
$y_{\text{cal}}$	$1.0006 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.881^{+0.012}_{-0.015}$	$f\sigma_8(0.15)$	$0.444^{+0.013}_{-0.0085}$
$A_{100}^{\text{PS}}$	$243 \pm 25$	$D_{40}$	$1218 \pm 13$	$\sigma_8(0.15)$	$0.730^{+0.022}_{-0.014}$
$A_{143}^{\text{PS}}$	$41 \pm 8$	$D_{220}$	$5724 \pm 39$	$f\sigma_8(0.38)$	$0.462^{+0.014}_{-0.0084}$
$A_{217}^{\text{PS}}$	$102 \pm 10$	$D_{810}$	$2536 \pm 14$	$\sigma_8(0.38)$	$0.647^{+0.020}_{-0.012}$
$A_{217}^{\text{CIB}}$	$41 \pm 7$	$D_{1420}$	$815.3 \pm 4.9$	$f\sigma_8(0.51)$	$0.461^{+0.014}_{-0.0083}$
$A_{143}^{\text{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$D_{2000}$	$229.6 \pm 1.7$	$\sigma_8(0.51)$	$0.606^{+0.019}_{-0.011}$
$r_{143 \times 217}^{\text{PS}}$	$0.65 \pm 0.13$	$n_{s,0.002}$	$0.9709^{+0.0048}_{-0.0064}$	$f\sigma_8(0.61)$	$0.456^{+0.014}_{-0.0081}$
$r_{143 \times 217}^{\text{CIB}}$	$0.58^{+0.40}_{-0.14}$	$Y_P$	$0.24698^{+0.00038}_{-0.0016}$	$\sigma_8(0.61)$	$0.576^{+0.018}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24831^{+0.00038}_{-0.0016}$	$f\sigma_8(2.33)$	$0.2910^{+0.0092}_{-0.0056}$
$A^{\text{kSZ}}$	—	$10^5 D/H$	$2.614^{+0.029}_{-0.042}$	$\sigma_8(2.33)$	$0.2999^{+0.0096}_{-0.0059}$
$A_{100}^{\text{dust}}$	$1.02 \pm 0.19$	$\text{Age/Gyr}$	$13.70^{+0.11}_{-0.028}$	$f_{2000}^{143}$	$30.8 \pm 3.0$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.17$	$z_*$	$1089.99^{+0.25}_{-0.32}$	$f_{2000}^{217}$	$107.6 \pm 2.0$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$r_*$	$143.7^{+1.2}_{-0.38}$	$f_{2000}^{143 \times 217}$	$33.0 \pm 2.1$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04095^{+0.00044}_{-0.00032}$	$\chi_{\text{small}}^2$	$397.0 \pm 1.8$
$c_{100}$	$0.9975 \pm 0.0011$	$D_M(z_*)/\text{Gpc}$	$13.81^{+0.11}_{-0.036}$	$\chi_{\text{lowl}}^2$	$22.42 \pm 0.89$
$c_{217}$	$1.0012 \pm 0.0016$	$z_{\text{drag}}$	$1060.21^{+0.37}_{-0.54}$	$\chi_{\text{CamSpec}}^2$	$11517.3 \pm 6.0$
$c_{TE}$	$0.9974 \pm 0.0050$	$r_{\text{drag}}$	$146.4^{+1.3}_{-0.40}$	$\chi_{\text{JLA}}^2$	$1035.04 \pm 0.30$
$c_{EE}$	$0.9936 \pm 0.0052$	$k_D$	$0.14128^{+0.00039}_{-0.00099}$	$\chi_{\text{6DF}}^2$	$0.047 \pm 0.061$
$H_0$	$68.21^{+0.45}_{-0.88}$	$100\theta_D$	$0.16104^{+0.00021}_{-0.00038}$	$\chi_{\text{MGS}}^2$	$1.37 \pm 0.47$
$\Omega_\Lambda$	$0.6908 \pm 0.0065$	$z_{\text{eq}}$	$3319^{+63}_{-18}$	$\chi_{\text{DR12BAO}}^2$	$4.6 \pm 1.4$
$\Omega_m$	$0.3092 \pm 0.0065$	$k_{\text{eq}}$	$0.01024^{+0.00020}_{-0.00010}$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.5$
$\Omega_m h^2$	$0.1438^{+0.0012}_{-0.0026}$	$100\theta_{\text{eq}}$	$0.8302^{+0.0030}_{-0.013}$	$\chi_{\text{BAO}}^2$	$6.1 \pm 1.1$
$\Omega_\nu h^2$	$0.00272^{+0.00029}_{-0.0022}$	$100\theta_{s,\text{eq}}$	$0.4582^{+0.0015}_{-0.0070}$	$\chi_{\text{CMB}}^2$	$11936.7 \pm 6.0$
$\Omega_m h^3$	$0.09811^{+0.00055}_{-0.0023}$	$H(0.15)$	$73.50^{+0.37}_{-0.87}$		
$\sigma_8$	$0.789^{+0.024}_{-0.014}$	$D_M(0.15)$	$635.8^{+7.8}_{-3.8}$		

$$\bar{\chi}_{\text{eff}}^2 = 12985.64; R - 1 = 0.01787$$



### 8.35 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Aver15\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02241 \pm 0.00015$	$S_8$	$0.800^{+0.024}_{-0.016}$	$H(0.38)$	$83.39^{+0.26}_{-0.61}$
$\Omega_c h^2$	$0.1179^{+0.0038}_{-0.0023}$	$\sigma_8 \Omega_m^{0.5}$	$0.438^{+0.013}_{-0.0089}$	$D_M(0.38)$	$1522^{+13}_{-7.6}$
$100\theta_{MC}$	$1.04087^{+0.00034}_{-0.00031}$	$\sigma_8 \Omega_m^{0.25}$	$0.587^{+0.017}_{-0.011}$	$H(0.51)$	$90.13^{+0.20}_{-0.60}$
$\tau$	$0.0556^{+0.0055}_{-0.0079}$	$\sigma_8/h^{0.5}$	$0.954^{+0.028}_{-0.016}$	$D_M(0.51)$	$1972^{+16}_{-8.8}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.244$	$r_{\text{drag}} h$	$99.68 \pm 0.84$	$H(0.61)$	$95.76^{+0.16}_{-0.60}$
$N_{\text{eff}}$	$< 3.14$	$\langle d^2 \rangle^{1/2}$	$2.419 \pm 0.024$	$D_M(0.61)$	$2294^{+18}_{-9.4}$
$\ln(10^{10} A_s)$	$3.044^{+0.012}_{-0.017}$	$z_{\text{re}}$	$7.80^{+0.60}_{-0.79}$	$H(2.33)$	$237.00^{+0.70}_{-1.6}$
$n_s$	$0.9694^{+0.0045}_{-0.0054}$	$10^9 A_s$	$2.100^{+0.025}_{-0.036}$	$D_M(2.33)$	$5737^{+34}_{-7.5}$
$y_{\text{cal}}$	$1.0006 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.879^{+0.011}_{-0.013}$	$f\sigma_8(0.15)$	$0.443^{+0.013}_{-0.0087}$
$A_{100}^{\text{PS}}$	$242 \pm 25$	$D_{40}$	$1220 \pm 13$	$\sigma_8(0.15)$	$0.727^{+0.022}_{-0.013}$
$A_{143}^{\text{PS}}$	$41 \pm 8$	$D_{220}$	$5722 \pm 39$	$f\sigma_8(0.38)$	$0.461^{+0.014}_{-0.0085}$
$A_{217}^{\text{PS}}$	$102 \pm 10$	$D_{810}$	$2535 \pm 14$	$\sigma_8(0.38)$	$0.645^{+0.020}_{-0.012}$
$A_{217}^{\text{CIB}}$	$40 \pm 7$	$D_{1420}$	$815.3 \pm 4.9$	$f\sigma_8(0.51)$	$0.460^{+0.014}_{-0.0082}$
$A_{143}^{\text{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$D_{2000}$	$229.7 \pm 1.7$	$\sigma_8(0.51)$	$0.603^{+0.019}_{-0.011}$
$r_{143 \times 217}^{\text{PS}}$	$0.65 \pm 0.13$	$n_{s,0.002}$	$0.9694^{+0.0045}_{-0.0054}$	$f\sigma_8(0.61)$	$0.455^{+0.014}_{-0.0080}$
$r_{143 \times 217}^{\text{CIB}}$	$0.58^{+0.40}_{-0.15}$	$Y_P$	$0.24652^{+0.00021}_{-0.0011}$	$\sigma_8(0.61)$	$0.574^{+0.018}_{-0.010}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24785^{+0.00021}_{-0.0011}$	$f\sigma_8(2.33)$	$0.2898^{+0.0091}_{-0.0053}$
$A^{\text{kSZ}}$	—	$10^5 D/H$	$2.608^{+0.028}_{-0.035}$	$\sigma_8(2.33)$	$0.2986^{+0.0095}_{-0.0056}$
$A_{100}^{\text{dust}}$	$1.02 \pm 0.20$	$\text{Age/Gyr}$	$13.734^{+0.081}_{-0.017}$	$f_{2000}^{143}$	$30.6 \pm 2.9$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.17$	$z_*$	$1089.96^{+0.24}_{-0.28}$	$f_{2000}^{217}$	$107.4 \pm 2.0$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$r_*$	$144.03^{+0.90}_{-0.27}$	$f_{2000}^{143 \times 217}$	$32.8 \pm 2.1$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04101^{+0.00037}_{-0.00030}$	$\chi_{\text{simall}}^2$	$397.0 \pm 1.8$
$c_{100}$	$0.9975 \pm 0.0011$	$D_M(z_*)/\text{Gpc}$	$13.836^{+0.084}_{-0.026}$	$\chi_{\text{lowl}}^2$	$22.61 \pm 0.88$
$c_{217}$	$1.0012 \pm 0.0016$	$z_{\text{drag}}$	$1060.10^{+0.35}_{-0.44}$	$\chi_{\text{CamSpec}}^2$	$11516.7 \pm 5.9$
$c_{TE}$	$0.9972 \pm 0.0050$	$r_{\text{drag}}$	$146.68^{+0.93}_{-0.28}$	$\chi_{\text{Aver15}}^2$	$0.62 \pm 0.54$
$c_{EE}$	$0.9932 \pm 0.0050$	$k_D$	$0.14107^{+0.00035}_{-0.00074}$	$\chi_{6\text{DF}}^2$	$0.057 \pm 0.070$
$H_0$	$67.96^{+0.45}_{-0.69}$	$100\theta_D$	$0.16097^{+0.00020}_{-0.00029}$	$\chi_{\text{MGS}}^2$	$1.29 \pm 0.46$
$\Omega_\Lambda$	$0.6895 \pm 0.0066$	$z_{\text{eq}}$	$3316^{+71}_{-21}$	$\chi_{\text{DR12BAO}}^2$	$4.9 \pm 1.5$
$\Omega_m$	$0.3105 \pm 0.0066$	$k_{\text{eq}}$	$0.01021^{+0.00020}_{-0.000096}$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.5$
$\Omega_m h^2$	$0.1434^{+0.0011}_{-0.0020}$	$100\theta_{\text{eq}}$	$0.8308^{+0.0037}_{-0.015}$	$\chi_{\text{BAO}}^2$	$6.2 \pm 1.2$
$\Omega_\nu h^2$	$0.00301^{+0.00027}_{-0.0024}$	$100\theta_{s,\text{eq}}$	$0.4585^{+0.0019}_{-0.0079}$	$\chi_{\text{CMB}}^2$	$11936.3 \pm 5.9$
$\Omega_m h^3$	$0.09744^{+0.00032}_{-0.0016}$	$H(0.15)$	$73.26^{+0.38}_{-0.65}$		
$\sigma_8$	$0.787^{+0.024}_{-0.014}$	$D_M(0.15)$	$638.0^{+6.0}_{-3.9}$		

$$\bar{\chi}_{\text{eff}}^2 = 11950.98; R - 1 = 0.01936$$



8.36 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Cooke17\_Aver15\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02240 \pm 0.00015$	$S_8$	$0.800^{+0.023}_{-0.016}$	$H(0.38)$	$83.38^{+0.26}_{-0.61}$
$\Omega_c h^2$	$0.1179^{+0.0038}_{-0.0022}$	$\sigma_8 \Omega_m^{0.5}$	$0.438^{+0.013}_{-0.0088}$	$D_M(0.38)$	$1522^{+13}_{-7.5}$
$100\theta_{MC}$	$1.04087 \pm 0.00032$	$\sigma_8 \Omega_m^{0.25}$	$0.587^{+0.017}_{-0.011}$	$H(0.51)$	$90.12^{+0.20}_{-0.60}$
$\tau$	$0.0555^{+0.0055}_{-0.0079}$	$\sigma_8/h^{0.5}$	$0.954^{+0.028}_{-0.015}$	$D_M(0.51)$	$1972^{+16}_{-8.7}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.244$	$r_{\text{drag}} h$	$99.67 \pm 0.83$	$H(0.61)$	$95.75^{+0.16}_{-0.60}$
$N_{\text{eff}}$	$< 3.14$	$\langle d^2 \rangle^{1/2}$	$2.419 \pm 0.024$	$D_M(0.61)$	$2295^{+18}_{-9.3}$
$\ln(10^{10} A_s)$	$3.044^{+0.012}_{-0.017}$	$z_{\text{re}}$	$7.80^{+0.60}_{-0.79}$	$H(2.33)$	$236.98^{+0.72}_{-1.5}$
$n_s$	$0.9693^{+0.0045}_{-0.0054}$	$10^9 A_s$	$2.100^{+0.025}_{-0.036}$	$D_M(2.33)$	$5737^{+34}_{-7.7}$
$y_{\text{cal}}$	$1.0006 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.879^{+0.011}_{-0.013}$	$f\sigma_8(0.15)$	$0.443^{+0.013}_{-0.0086}$
$A_{100}^{\text{PS}}$	$242 \pm 25$	$D_{40}$	$1220 \pm 13$	$\sigma_8(0.15)$	$0.727^{+0.022}_{-0.013}$
$A_{143}^{\text{PS}}$	$41 \pm 8$	$D_{220}$	$5722 \pm 39$	$f\sigma_8(0.38)$	$0.461^{+0.014}_{-0.0083}$
$A_{217}^{\text{PS}}$	$102 \pm 10$	$D_{810}$	$2535 \pm 14$	$\sigma_8(0.38)$	$0.645^{+0.020}_{-0.011}$
$A_{217}^{\text{CIB}}$	$40 \pm 7$	$D_{1420}$	$815.3 \pm 4.9$	$f\sigma_8(0.51)$	$0.460^{+0.014}_{-0.0081}$
$A_{143}^{\text{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$D_{2000}$	$229.7 \pm 1.7$	$\sigma_8(0.51)$	$0.603^{+0.019}_{-0.011}$
$r_{143 \times 217}^{\text{PS}}$	$0.65 \pm 0.13$	$n_{s,0.002}$	$0.9693^{+0.0045}_{-0.0054}$	$f\sigma_8(0.61)$	$0.455^{+0.014}_{-0.0080}$
$r_{143 \times 217}^{\text{CIB}}$	$0.58^{+0.40}_{-0.14}$	$Y_P$	$0.24651^{+0.00022}_{-0.0011}$	$\sigma_8(0.61)$	$0.574^{+0.018}_{-0.010}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24784^{+0.00022}_{-0.0011}$	$f\sigma_8(2.33)$	$0.2898^{+0.0091}_{-0.0052}$
$A^{\text{kSZ}}$	—	$10^5 D/H$	$2.608^{+0.027}_{-0.033}$	$\sigma_8(2.33)$	$0.2986^{+0.0095}_{-0.0055}$
$A_{100}^{\text{dust}}$	$1.02 \pm 0.20$	$\text{Age/Gyr}$	$13.736^{+0.080}_{-0.018}$	$f_{2000}^{143}$	$30.6 \pm 2.9$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.17$	$z_*$	$1089.96^{+0.23}_{-0.26}$	$f_{2000}^{217}$	$107.4 \pm 1.9$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$r_*$	$144.04^{+0.88}_{-0.28}$	$f_{2000}^{143 \times 217}$	$32.8 \pm 2.0$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04101^{+0.00036}_{-0.00030}$	$\chi_{\text{simall}}^2$	$397.0 \pm 1.8$
$c_{100}$	$0.9975 \pm 0.0011$	$D_M(z_*)/\text{Gpc}$	$13.837^{+0.082}_{-0.027}$	$\chi_{\text{lowl}}^2$	$22.62 \pm 0.88$
$c_{217}$	$1.0012 \pm 0.0016$	$z_{\text{drag}}$	$1060.08^{+0.34}_{-0.44}$	$\chi_{\text{CamSpec}}^2$	$11516.6 \pm 5.9$
$c_{TE}$	$0.9972 \pm 0.0050$	$r_{\text{drag}}$	$146.69^{+0.92}_{-0.29}$	$\chi_{\text{Aver15}}^2$	$0.61 \pm 0.51$
$c_{EE}$	$0.9932 \pm 0.0050$	$k_D$	$0.14105^{+0.00035}_{-0.00073}$	$\chi_{\text{Cooke17}}^2$	$0.12 \pm 0.17$
$H_0$	$67.95^{+0.45}_{-0.68}$	$100\theta_D$	$0.16097^{+0.00019}_{-0.00028}$	$\chi_{6DF}^2$	$0.057 \pm 0.070$
$\Omega_\Lambda$	$0.6894 \pm 0.0065$	$z_{\text{eq}}$	$3317^{+71}_{-21}$	$\chi_{\text{MGS}}^2$	$1.29 \pm 0.46$
$\Omega_m$	$0.3106 \pm 0.0065$	$k_{\text{eq}}$	$0.01021^{+0.00020}_{-0.000093}$	$\chi_{\text{DR12BAO}}^2$	$4.9 \pm 1.5$
$\Omega_m h^2$	$0.1434^{+0.0011}_{-0.0020}$	$100\theta_{\text{eq}}$	$0.8308^{+0.0037}_{-0.015}$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.5$
$\Omega_\nu h^2$	$0.00301^{+0.00027}_{-0.0024}$	$100\theta_{s,\text{eq}}$	$0.4585^{+0.0019}_{-0.0079}$	$\chi_{\text{BAO}}^2$	$6.2 \pm 1.2$
$\Omega_m h^3$	$0.09740^{+0.00034}_{-0.0016}$	$H(0.15)$	$73.24^{+0.37}_{-0.65}$	$\chi_{\text{CMB}}^2$	$11936.2 \pm 5.9$
$\sigma_8$	$0.787^{+0.024}_{-0.014}$	$D_M(0.15)$	$638.2^{+6.0}_{-3.8}$	$\chi_{\text{Abund}}^2$	$0.73 \pm 0.57$

$$\bar{\chi}_{\text{eff}}^2 = 11951.02; R - 1 = 0.01932$$



### 8.37 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}} h^2$	0.022264	$0.02232 \pm 0.00021$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	0.6054	$0.596^{+0.015}_{-0.0093}$	$D_{\mathrm{M}}(0.38)$	1526.2	$1516^{+24}_{-12}$
$\Omega_{\mathrm{c}} h^2$	0.11957	$0.1204^{+0.0038}_{-0.0034}$	$\sigma_8/h^{0.5}$	0.9853	$0.966^{+0.022}_{-0.012}$	$H(0.51)$	89.86	$90.53^{+0.45}_{-1.2}$
$100\theta_{\mathrm{MC}}$	1.040912	$1.04076 \pm 0.00049$	$r_{\mathrm{drag}} h$	99.73	$99.51 \pm 0.93$	$D_{\mathrm{M}}(0.51)$	1977.3	$1964^{+30}_{-14}$
$\tau$	0.0558	$0.0566 \pm 0.0078$	$\langle d^2 \rangle^{1/2}$	2.4345	$2.427 \pm 0.023$	$H(0.61)$	95.48	$96.20^{+0.44}_{-1.2}$
$m_{\nu, \mathrm{sterile}}^{\mathrm{eff}} [\mathrm{eV}]$	0.000	$< 0.149$	$z_{\mathrm{re}}$	7.85	$7.96 \pm 0.78$	$D_{\mathrm{M}}(0.61)$	2301.0	$2285^{+35}_{-15}$
$N_{\mathrm{eff}}$	3.077	$< 3.26$	$10^9 A_{\mathrm{s}}$	2.1047	$2.116^{+0.032}_{-0.037}$	$H(2.33)$	236.27	$238.3^{+1.2}_{-2.7}$
$\ln(10^{10} A_{\mathrm{s}})$	3.0467	$3.052 \pm 0.017$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8825	$1.890^{+0.012}_{-0.017}$	$D_{\mathrm{M}}(2.33)$	5753.7	$5710^{+69}_{-25}$
$n_{\mathrm{s}}$	0.9679	$0.9709^{+0.0057}_{-0.0080}$	$D_{40}$	1225.4	$1221 \pm 14$	$f\sigma_8(0.15)$	0.4565	$0.450^{+0.011}_{-0.0072}$
$y_{\mathrm{cal}}$	1.00095	$1.0008 \pm 0.0025$	$D_{220}$	5725.1	$5724 \pm 40$	$\sigma_8(0.15)$	0.7496	$0.737^{+0.020}_{-0.013}$
$A_{217}^{\mathrm{CIB}}$	48.8	$49 \pm 7$	$D_{810}$	2540.4	$2540 \pm 14$	$f\sigma_8(0.38)$	0.4751	$0.468^{+0.012}_{-0.0072}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.30	—	$D_{1420}$	816.78	$814.9 \pm 5.0$	$\sigma_8(0.38)$	0.6646	$0.653^{+0.018}_{-0.012}$
$A_{143}^{\mathrm{tSZ}}$	7.05	$4.9 \pm 2.0$	$D_{2000}$	230.43	$229.1 \pm 1.9$	$f\sigma_8(0.51)$	0.4739	$0.467^{+0.012}_{-0.0072}$
$A_{100}^{\mathrm{PS}}$	254.5	$267 \pm 28$	$n_{\mathrm{s}, 0.002}$	0.9679	$0.9709^{+0.0057}_{-0.0080}$	$\sigma_8(0.51)$	0.6220	$0.612^{+0.017}_{-0.012}$
$A_{143}^{\mathrm{PS}}$	49.2	$51 \pm 8$	$Y_{\mathrm{P}}$	0.24576	$0.24756^{+0.00071}_{-0.0022}$	$f\sigma_8(0.61)$	0.4690	$0.462^{+0.012}_{-0.0073}$
$A_{143 \times 217}^{\mathrm{PS}}$	46.2	$44^{+9}_{-10}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24709	$0.24889^{+0.00071}_{-0.0022}$	$\sigma_8(0.61)$	0.5919	$0.582^{+0.016}_{-0.011}$
$A_{217}^{\mathrm{PS}}$	119.1	$115 \pm 10$	$10^5 D/H$	2.616	$2.653^{+0.043}_{-0.059}$	$f\sigma_8(2.33)$	0.2985	$0.2938^{+0.0083}_{-0.0057}$
$A^{\mathrm{kSZ}}$	0.00	$< 5.21$	Age/Gyr	13.775	$13.67^{+0.16}_{-0.059}$	$\sigma_8(2.33)$	0.3078	$0.3026^{+0.0087}_{-0.0062}$
$A_{100}^{\mathrm{dustTT}}$	8.86	$9.0 \pm 1.8$	$z_*$	1090.047	$1090.30^{+0.33}_{-0.41}$	$f_{2000}^{143}$	30.39	$32.3 \pm 3.1$
$A_{143}^{\mathrm{dustTT}}$	10.78	$10.7 \pm 1.8$	$r_*$	144.47	$143.3^{+1.7}_{-0.63}$	$f_{2000}^{143 \times 217}$	33.18	$34.4 \pm 2.2$
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.42	$18.3 \pm 3.3$	$100\theta_*$	1.04109	$1.04086^{+0.00059}_{-0.00049}$	$f_{2000}^{217}$	107.69	$108.9 \pm 2.0$
$A_{217}^{\mathrm{dustTT}}$	94.7	$93.2 \pm 7.4$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.877	$13.76^{+0.16}_{-0.059}$	$\chi_{\mathrm{lensing}}^2$	8.84	$9.5 \pm 1.0$
$c_{100}$	0.99965	$0.99961 \pm 0.00062$	$z_{\mathrm{drag}}$	1059.67	$1060.08^{+0.51}_{-0.71}$	$\chi_{\mathrm{small}}^2$	396.34	$397.5 \pm 2.2$
$c_{217}$	0.99826	$0.99828 \pm 0.00062$	$r_{\mathrm{drag}}$	147.17	$145.9^{+1.7}_{-0.66}$	$\chi_{\mathrm{lowl}}^2$	22.91	$22.6 \pm 1.0$
$H_0$	67.77	$68.20^{+0.63}_{-1.2}$	$k_{\mathrm{D}}$	0.14059	$0.14148^{+0.00061}_{-0.0013}$	$\chi_{\mathrm{plik}}^2$	759.6	$773.6 \pm 5.6$
$\Omega_{\Lambda}$	0.6897	$0.6881 \pm 0.0074$	$100\theta_{\mathrm{D}}$	0.161035	$0.16134^{+0.00033}_{-0.00052}$	$\chi_{6\mathrm{DF}}^2$	0.0236	$0.076 \pm 0.090$
$\Omega_{\mathrm{m}}$	0.3103	$0.3119 \pm 0.0074$	$z_{\mathrm{eq}}$	3375.6	$3337^{+49}_{-23}$	$\chi_{\mathrm{MGS}}^2$	1.279	$1.21 \pm 0.50$
$\Omega_{\mathrm{m}} h^2$	0.14248	$0.1450^{+0.0016}_{-0.0033}$	$k_{\mathrm{eq}}$	0.010324	$0.01032^{+0.00018}_{-0.00012}$	$\chi_{\mathrm{DR12BAO}}^2$	4.25	$5.3 \pm 1.9$
$\Omega_{\nu} h^2$	0.00065	$0.0022471^{+0.0000082}_{-0.0016}$	$100\theta_{\mathrm{eq}}$	0.8178	$0.8261^{+0.0038}_{-0.010}$	$\chi_{\mathrm{prior}}^2$	1.49	$7.3 \pm 3.7$
$\Omega_{\mathrm{m}} h^3$	0.09656	$0.0989^{+0.0011}_{-0.0034}$	$100\theta_{\mathrm{s,eq}}$	0.45181	$0.4561^{+0.0019}_{-0.0054}$	$\chi_{\mathrm{CMB}}^2$	1187.7	$1203.3 \pm 5.8$
$\sigma_8$	0.8111	$0.798^{+0.021}_{-0.014}$	$H(0.15)$	73.04	$73.53^{+0.56}_{-1.2}$	$\chi_{\mathrm{BAO}}^2$	5.56	$6.5 \pm 1.6$
$S_8$	0.8249	$0.813^{+0.020}_{-0.014}$	$D_{\mathrm{M}}(0.15)$	639.8	$636^{+11}_{-5.6}$			
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	0.4518	$0.445^{+0.011}_{-0.0074}$	$H(0.38)$	83.15	$83.74^{+0.48}_{-1.2}$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 1194.69$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1217.17$ ;  $R - 1 = 0.01959$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.28 DR12BAO: 4.25 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.84 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.34 comman-  
der\_dx12.v3.2.29: 22.91 plik\_rd12\_HM\_v22\_TT: 759.57



### 8.38 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022239	$0.02234 \pm 0.00021$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6042	$0.596^{+0.015}_{-0.0091}$	$D_{\mathrm{M}}(0.38)$	1530.2	$1514^{+25}_{-12}$
$\Omega_{\mathrm{c}}h^2$	0.11711	$0.1205^{+0.0039}_{-0.0034}$	$\sigma_8/h^{0.5}$	0.9842	$0.966^{+0.023}_{-0.012}$	$H(0.51)$	89.66	$90.62^{+0.49}_{-1.3}$
$100\theta_{\mathrm{MC}}$	1.041023	$1.04076 \pm 0.00049$	$r_{\mathrm{drag}}h$	99.65	$99.65 \pm 0.90$	$D_{\mathrm{M}}(0.51)$	1982.3	$1961^{+31}_{-15}$
$\tau$	0.0567	$0.0571 \pm 0.0077$	$\langle d^2 \rangle^{1/2}$	2.4382	$2.426 \pm 0.023$	$H(0.61)$	95.27	$96.29^{+0.47}_{-1.3}$
$m_{\nu, \mathrm{sterile}}^{\mathrm{eff}} [\mathrm{eV}]$	0.193	$< 0.139$	$z_{\mathrm{re}}$	7.94	$8.01 \pm 0.77$	$D_{\mathrm{M}}(0.61)$	2306.7	$2282^{+36}_{-16}$
$N_{\mathrm{eff}}$	3.047	$< 3.27$	$10^9 A_{\mathrm{s}}$	2.1022	$2.119 \pm 0.035$	$H(2.33)$	235.88	$238.3^{+1.2}_{-2.9}$
$\ln(10^{10} A_{\mathrm{s}})$	3.0456	$3.053 \pm 0.016$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8768	$1.890^{+0.013}_{-0.018}$	$D_{\mathrm{M}}(2.33)$	5766	$5706^{+73}_{-27}$
$n_{\mathrm{s}}$	0.9661	$0.9715^{+0.0057}_{-0.0081}$	$D_{40}$	1226.6	$1220 \pm 14$	$f\sigma_8(0.15)$	0.4558	$0.450^{+0.011}_{-0.0070}$
$y_{\mathrm{cal}}$	1.00006	$1.0008 \pm 0.0025$	$D_{220}$	5717.4	$5725 \pm 40$	$\sigma_8(0.15)$	0.7477	$0.738^{+0.020}_{-0.013}$
$A_{217}^{\mathrm{CIB}}$	50.1	$49 \pm 7$	$D_{810}$	2534.5	$2540 \pm 14$	$f\sigma_8(0.38)$	0.4742	$0.468^{+0.012}_{-0.0070}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.18	—	$D_{1420}$	814.87	$814.9 \pm 5.0$	$\sigma_8(0.38)$	0.6628	$0.654^{+0.018}_{-0.012}$
$A_{143}^{\mathrm{tSZ}}$	7.16	$4.9 \pm 2.0$	$D_{2000}$	229.97	$229.1 \pm 1.9$	$f\sigma_8(0.51)$	0.4729	$0.467^{+0.012}_{-0.0071}$
$A_{100}^{\mathrm{PS}}$	255.9	$267 \pm 28$	$n_{\mathrm{s}, 0.002}$	0.9661	$0.9715^{+0.0057}_{-0.0081}$	$\sigma_8(0.51)$	0.6203	$0.613^{+0.017}_{-0.011}$
$A_{143}^{\mathrm{PS}}$	47.4	$51 \pm 8$	$Y_{\mathrm{P}}$	0.24536	$0.24768^{+0.00078}_{-0.0023}$	$f\sigma_8(0.61)$	0.4680	$0.462^{+0.012}_{-0.0071}$
$A_{143 \times 217}^{\mathrm{PS}}$	42.9	$44 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24668	$0.24901^{+0.00078}_{-0.0024}$	$\sigma_8(0.61)$	0.5902	$0.583^{+0.016}_{-0.011}$
$A_{217}^{\mathrm{PS}}$	116.7	$115 \pm 10$	$10^5 D/H$	2.611	$2.653^{+0.044}_{-0.061}$	$f\sigma_8(2.33)$	0.2976	$0.2944^{+0.0084}_{-0.0057}$
$A^{\mathrm{kSZ}}$	0.00	$< 5.22$	Age/Gyr	13.804	$13.66^{+0.17}_{-0.064}$	$\sigma_8(2.33)$	0.3068	$0.3033^{+0.0088}_{-0.0062}$
$A_{100}^{\mathrm{dustTT}}$	8.84	$9.0 \pm 1.8$	$z_*$	1090.013	$1090.28^{+0.34}_{-0.41}$	$f_{2000}^{143}$	30.60	$32.3 \pm 3.1$
$A_{143}^{\mathrm{dustTT}}$	10.87	$10.7 \pm 1.8$	$r_*$	144.75	$143.2^{+1.8}_{-0.68}$	$f_{2000}^{143 \times 217}$	33.29	$34.4 \pm 2.2$
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.35	$18.3 \pm 3.3$	$100\theta_*$	1.04122	$1.04085^{+0.00060}_{-0.00049}$	$f_{2000}^{217}$	107.63	$108.9 \pm 2.0$
$A_{217}^{\mathrm{dustTT}}$	94.2	$93.2 \pm 7.4$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.902	$13.76^{+0.16}_{-0.063}$	$\chi_{\mathrm{lensing}}^2$	8.78	$9.6 \pm 1.0$
$c_{100}$	0.99963	$0.99962 \pm 0.00061$	$z_{\mathrm{drag}}$	1059.59	$1060.12^{+0.53}_{-0.73}$	$\chi_{\mathrm{small}}^2$	397	$290 \pm 200$
$c_{217}$	0.99827	$0.99828 \pm 0.00063$	$r_{\mathrm{drag}}$	147.46	$145.9^{+1.8}_{-0.71}$	$\chi_{\mathrm{lowl}}^2$	23	$131 \pm 200$
$H_0$	67.58	$68.32^{+0.63}_{-1.2}$	$k_{\mathrm{D}}$	0.14038	$0.14152^{+0.00063}_{-0.0014}$	$\chi_{\mathrm{plik}}^2$	759.1	$773.8 \pm 5.6$
$\Omega_{\Lambda}$	0.6890	$0.6892 \pm 0.0071$	$100\theta_{\mathrm{D}}$	0.160982	$0.16135^{+0.00035}_{-0.00054}$	$\chi_{\mathrm{JLA}}^2$	1035.034	$1035.12 \pm 0.37$
$\Omega_{\mathrm{m}}$	0.3110	$0.3108 \pm 0.0071$	$z_{\mathrm{eq}}$	3329.4	$3334^{+49}_{-22}$	$\chi_{6\mathrm{DF}}^2$	0.029	$0.41 \pm 0.62$
$\Omega_{\mathrm{m}}h^2$	0.14204	$0.1450^{+0.0017}_{-0.0035}$	$k_{\mathrm{eq}}$	0.010199	$0.01031^{+0.00018}_{-0.00012}$	$\chi_{\mathrm{MGS}}^2$	1.22	$0.93 \pm 0.69$
$\Omega_{\nu}h^2$	0.00269	$0.002206^{+0.000048}_{-0.0016}$	$100\theta_{\mathrm{eq}}$	0.8275	$0.8266^{+0.0037}_{-0.010}$	$\chi_{\mathrm{DR12BAO}}^2$	4.37	$5.0 \pm 1.7$
$\Omega_{\mathrm{m}}h^3$	0.09599	$0.0991^{+0.0012}_{-0.0036}$	$100\theta_{\mathrm{s,eq}}$	0.45697	$0.4564^{+0.0018}_{-0.0053}$	$\chi_{\mathrm{prior}}^2$	1.49	$7.3 \pm 3.7$
$\sigma_8$	0.8091	$0.799^{+0.021}_{-0.014}$	$H(0.15)$	72.85	$73.65^{+0.58}_{-1.2}$	$\chi_{\mathrm{CMB}}^2$	1187.7	$1203.5 \pm 5.9$
$S_8$	0.8238	$0.813^{+0.020}_{-0.013}$	$D_{\mathrm{M}}(0.15)$	641.6	$635^{+11}_{-5.7}$	$\chi_{\mathrm{BAO}}^2$	5.62	$6.3 \pm 1.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4512	$0.445^{+0.011}_{-0.0072}$	$H(0.38)$	82.95	$83.85^{+0.51}_{-1.2}$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 2229.80$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2252.23$ ;  $R - 1 = 0.01841$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.03 MGS: 1.22 DR12BAO: 4.37 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p.teb\_consext8: 8.78 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.58 comman-  
der\_dx12.v3.2.29: 23.22 plik\_rd12\_HM\_v22\_TT: 759.08 SN - JLA Pantheon18: 1035.03



### 8.39 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Aver15

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02229 \pm 0.00020$	$\sigma_8 \Omega_m^{0.25}$	$0.594^{+0.015}_{-0.0092}$	$D_M(0.38)$	$1524^{+17}_{-9.1}$
$\Omega_c h^2$	$0.1192^{+0.0035}_{-0.0027}$	$\sigma_8/h^{0.5}$	$0.964^{+0.024}_{-0.013}$	$H(0.51)$	$90.13^{+0.27}_{-0.81}$
$100\theta_{MC}$	$1.04086 \pm 0.00045$	$r_{drag}h$	$99.38 \pm 0.90$	$D_M(0.51)$	$1973^{+21}_{-11}$
$\tau$	$0.0565 \pm 0.0077$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.022$	$H(0.61)$	$95.79^{+0.24}_{-0.81}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.195$	$z_{\text{re}}$	$7.93 \pm 0.77$	$D_M(0.61)$	$2296^{+24}_{-11}$
$N_{\text{eff}}$	$< 3.17$	$10^9 A_s$	$2.111 \pm 0.033$	$H(2.33)$	$237.46^{+0.88}_{-1.9}$
$\ln(10^{10} A_s)$	$3.050 \pm 0.016$	$10^9 A_s e^{-2\tau}$	$1.885^{+0.011}_{-0.014}$	$D_M(2.33)$	$5734^{+46}_{-13}$
$n_s$	$0.9685^{+0.0049}_{-0.0064}$	$D_{40}$	$1224 \pm 13$	$f\sigma_8(0.15)$	$0.449^{+0.012}_{-0.0074}$
$y_{\text{cal}}$	$1.0008 \pm 0.0025$	$D_{220}$	$5724 \pm 40$	$\sigma_8(0.15)$	$0.733^{+0.020}_{-0.012}$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{810}$	$2539 \pm 13$	$f\sigma_8(0.38)$	$0.466^{+0.012}_{-0.0072}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$815.1 \pm 5.0$	$\sigma_8(0.38)$	$0.650^{+0.018}_{-0.011}$
$A_{143}^{\text{tSZ}}$	$5.0 \pm 2.0$	$D_{2000}$	$229.4 \pm 1.8$	$f\sigma_8(0.51)$	$0.465^{+0.012}_{-0.0071}$
$A_{100}^{\text{PS}}$	$265 \pm 28$	$n_{s,0.002}$	$0.9685^{+0.0049}_{-0.0064}$	$\sigma_8(0.51)$	$0.608^{+0.017}_{-0.011}$
$A_{143}^{\text{PS}}$	$50 \pm 8$	$Y_P$	$0.24675^{+0.00034}_{-0.0014}$	$f\sigma_8(0.61)$	$0.460^{+0.012}_{-0.0071}$
$A_{143 \times 217}^{\text{PS}}$	$44 \pm 9$	$Y_P^{\text{BBN}}$	$0.24808^{+0.00035}_{-0.0014}$	$\sigma_8(0.61)$	$0.579^{+0.016}_{-0.010}$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$10^5 D/H$	$2.639^{+0.040}_{-0.048}$	$f\sigma_8(2.33)$	$0.2920^{+0.0081}_{-0.0054}$
$A^{\text{kSZ}}$	$< 5.03$	$\text{Age/Gyr}$	$13.73^{+0.11}_{-0.031}$	$\sigma_8(2.33)$	$0.3008^{+0.0084}_{-0.0057}$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$z_*$	$1090.20 \pm 0.33$	$f_{2000}^{143}$	$31.8 \pm 3.0$
$A_{143}^{\text{dustTT}}$	$10.7 \pm 1.8$	$r_*$	$143.8^{+1.1}_{-0.39}$	$f_{2000}^{143 \times 217}$	$34.1 \pm 2.1$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04100^{+0.00050}_{-0.00044}$	$f_{2000}^{217}$	$108.6 \pm 1.9$
$A_{217}^{\text{dustTT}}$	$93.2 \pm 7.4$	$D_M(z_*)/\text{Gpc}$	$13.82^{+0.11}_{-0.037}$	$\chi^2_{\text{lensing}}$	$9.42 \pm 0.96$
$c_{100}$	$0.99962 \pm 0.00061$	$z_{\text{drag}}$	$1059.88^{+0.49}_{-0.57}$	$\chi^2_{\text{simall}}$	$291 \pm 200$
$c_{217}$	$0.99827 \pm 0.00063$	$r_{\text{drag}}$	$146.5^{+1.2}_{-0.42}$	$\chi^2_{\text{lowl}}$	$129 \pm 200$
$H_0$	$67.84^{+0.52}_{-0.87}$	$k_D$	$0.14107^{+0.00050}_{-0.00092}$	$\chi^2_{\text{plik}}$	$773.1 \pm 5.5$
$\Omega_\Lambda$	$0.6870 \pm 0.0072$	$100\theta_D$	$0.16120^{+0.00029}_{-0.00040}$	$\chi^2_{\text{Aver15}}$	$0.75 \pm 0.74$
$\Omega_m$	$0.3130 \pm 0.0072$	$z_{\text{eq}}$	$3332^{+58}_{-23}$	$\chi^2_{6\text{DF}}$	$0.39 \pm 0.55$
$\Omega_m h^2$	$0.1440^{+0.0013}_{-0.0023}$	$k_{\text{eq}}$	$0.01027^{+0.00018}_{-0.00011}$	$\chi^2_{\text{MGS}}$	$0.84 \pm 0.62$
$\Omega_\nu h^2$	$0.00259^{+0.00017}_{-0.0020}$	$100\theta_{\text{eq}}$	$0.8271^{+0.0040}_{-0.012}$	$\chi^2_{\text{DR12BAO}}$	$5.4 \pm 2.0$
$\Omega_m h^3$	$0.09772^{+0.00057}_{-0.0022}$	$100\theta_{s,\text{eq}}$	$0.4567^{+0.0020}_{-0.0065}$	$\chi^2_{\text{prior}}$	$7.3 \pm 3.7$
$\sigma_8$	$0.794^{+0.021}_{-0.013}$	$H(0.15)$	$73.17^{+0.45}_{-0.85}$	$\chi^2_{\text{CMB}}$	$1202.9 \pm 5.8$
$S_8$	$0.811^{+0.021}_{-0.014}$	$D_M(0.15)$	$639.0^{+7.7}_{-4.5}$	$\chi^2_{\text{BAO}}$	$6.7 \pm 1.7$
$\sigma_8 \Omega_m^{0.5}$	$0.444^{+0.011}_{-0.0076}$	$H(0.38)$	$83.36^{+0.33}_{-0.82}$		

$$\bar{\chi}^2_{\text{eff}} = 1217.61; R - 1 = 0.02031$$



# 8.40 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Cooke17\_Aver15

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02229 \pm 0.00019$	$\sigma_8/h^{0.5}$	$0.963^{+0.024}_{-0.013}$	$D_{\mathrm{M}}(0.51)$	$1974^{+20}_{-10}$
$\Omega_{\mathrm{c}} h^2$	$0.1189^{+0.0035}_{-0.0025}$	$r_{\mathrm{drag}} h$	$99.38 \pm 0.90$	$H(0.61)$	$95.74^{+0.22}_{-0.75}$
$100\theta_{\mathrm{MC}}$	$1.04088 \pm 0.00044$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.022$	$D_{\mathrm{M}}(0.61)$	$2297^{+23}_{-11}$
$\tau$	$0.0565 \pm 0.0077$	$z_{\mathrm{re}}$	$7.93 \pm 0.77$	$H(2.33)$	$237.33^{+0.87}_{-1.7}$
$m_{\nu, \mathrm{sterile}}^{\mathrm{eff}} [\mathrm{eV}]$	$< 0.208$	$10^9 A_{\mathrm{s}}$	$2.110 \pm 0.033$	$D_{\mathrm{M}}(2.33)$	$5737^{+43}_{-12}$
$N_{\mathrm{eff}}$	$< 3.16$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.885^{+0.011}_{-0.013}$	$f\sigma_8(0.15)$	$0.448^{+0.012}_{-0.0073}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.049 \pm 0.016$	$D_{40}$	$1225 \pm 13$	$\sigma_8(0.15)$	$0.733^{+0.020}_{-0.012}$
$n_{\mathrm{s}}$	$0.9682^{+0.0049}_{-0.0062}$	$D_{220}$	$5726 \pm 39$	$f\sigma_8(0.38)$	$0.466^{+0.012}_{-0.0071}$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0024$	$D_{810}$	$2539 \pm 13$	$\sigma_8(0.38)$	$0.649^{+0.018}_{-0.011}$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{1420}$	$815.3 \pm 4.9$	$f\sigma_8(0.51)$	$0.464^{+0.012}_{-0.0071}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{2000}$	$229.5 \pm 1.7$	$\sigma_8(0.51)$	$0.608^{+0.017}_{-0.011}$
$A_{143}^{\mathrm{tSZ}}$	$5.0 \pm 2.0$	$n_{\mathrm{s}, 0.002}$	$0.9682^{+0.0049}_{-0.0062}$	$f\sigma_8(0.61)$	$0.459^{+0.012}_{-0.0070}$
$A_{100}^{\mathrm{PS}}$	$265 \pm 28$	$Y_{\mathrm{P}}$	$0.24663^{+0.00029}_{-0.0013}$	$\sigma_8(0.61)$	$0.578^{+0.016}_{-0.010}$
$A_{143}^{\mathrm{PS}}$	$50 \pm 8$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24796^{+0.00029}_{-0.0013}$	$f\sigma_8(2.33)$	$0.2917^{+0.0081}_{-0.0053}$
$A_{143 \times 217}^{\mathrm{PS}}$	$44 \pm 9$	$10^5 \mathrm{D}/\mathrm{H}$	$2.634^{+0.037}_{-0.042}$	$\sigma_8(2.33)$	$0.3005^{+0.0085}_{-0.0057}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$\mathrm{Age}/\mathrm{Gyr}$	$13.73^{+0.10}_{-0.028}$	$f_{2000}^{143}$	$31.7 \pm 2.9$
$A^{\mathrm{kSZ}}$	$< 4.97$	$z_*$	$1090.17 \pm 0.30$	$f_{2000}^{143 \times 217}$	$33.9 \pm 2.0$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8$	$r_*$	$143.9^{+1.0}_{-0.37}$	$f_{2000}^{217}$	$108.5 \pm 1.9$
$A_{143}^{\mathrm{dustTT}}$	$10.7 \pm 1.8$	$100\theta_*$	$1.04102 \pm 0.00046$	$\chi_{\mathrm{lensing}}^2$	$9.40 \pm 0.96$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.3 \pm 3.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.823^{+0.098}_{-0.035}$	$\chi_{\mathrm{simall}}^2$	$289 \pm 200$
$A_{217}^{\mathrm{dustTT}}$	$93.3 \pm 7.4$	$z_{\mathrm{drag}}$	$1059.89^{+0.46}_{-0.55}$	$\chi_{\mathrm{lowl}}^2$	$132 \pm 200$
$c_{100}$	$0.99962 \pm 0.00061$	$r_{\mathrm{drag}}$	$146.6^{+1.1}_{-0.40}$	$\chi_{\mathrm{plik}}^2$	$772.9 \pm 5.4$
$c_{217}$	$0.99827 \pm 0.00063$	$k_{\mathrm{D}}$	$0.14103^{+0.00048}_{-0.00087}$	$\chi_{\mathrm{Aver15}}^2$	$0.68 \pm 0.64$
$H_0$	$67.81^{+0.52}_{-0.83}$	$100\theta_{\mathrm{D}}$	$0.16116^{+0.00027}_{-0.00035}$	$\chi_{\mathrm{Cooke17}}^2$	$0.21 \pm 0.31$
$\Omega_{\Lambda}$	$0.6870 \pm 0.0071$	$z_{\mathrm{eq}}$	$3331^{+60}_{-23}$	$\chi_{6\mathrm{DF}}^2$	$0.39 \pm 0.56$
$\Omega_{\mathrm{m}}$	$0.3130 \pm 0.0071$	$k_{\mathrm{eq}}$	$0.01026^{+0.00018}_{-0.00010}$	$\chi_{\mathrm{MGS}}^2$	$0.83 \pm 0.62$
$\Omega_{\mathrm{m}} h^2$	$0.1439^{+0.0013}_{-0.0022}$	$100\theta_{\mathrm{eq}}$	$0.8275^{+0.0041}_{-0.013}$	$\chi_{\mathrm{DR12BAO}}^2$	$5.4 \pm 2.0$
$\Omega_{\nu} h^2$	$0.00268^{+0.00023}_{-0.0021}$	$100\theta_{\mathrm{s,eq}}$	$0.4569^{+0.0021}_{-0.0067}$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\Omega_{\mathrm{m}} h^3$	$0.09756^{+0.00050}_{-0.0020}$	$H(0.15)$	$73.13^{+0.44}_{-0.80}$	$\chi_{\mathrm{CMB}}^2$	$1202.7 \pm 5.8$
$\sigma_8$	$0.793^{+0.021}_{-0.013}$	$D_{\mathrm{M}}(0.15)$	$639.3^{+7.3}_{-4.5}$	$\chi_{\mathrm{BAO}}^2$	$6.7 \pm 1.7$
$S_8$	$0.810^{+0.021}_{-0.014}$	$H(0.38)$	$83.31^{+0.32}_{-0.76}$	$\chi_{\mathrm{Abund}}^2$	$0.89 \pm 0.84$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.444^{+0.011}_{-0.0075}$	$D_{\mathrm{M}}(0.38)$	$1524^{+16}_{-8.9}$		
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.593^{+0.015}_{-0.0091}$	$H(0.51)$	$90.08^{+0.26}_{-0.75}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1217.59; R - 1 = 0.02034$$



# 8.41 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02232 \pm 0.00021$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.596^{+0.015}_{-0.0093}$	$D_{\mathrm{M}}(0.38)$	$1516^{+24}_{-11}$
$\Omega_{\mathrm{c}}h^2$	$0.1204^{+0.0038}_{-0.0034}$	$\sigma_8/h^{0.5}$	$0.966^{+0.022}_{-0.012}$	$H(0.51)$	$90.54^{+0.45}_{-1.2}$
$100\theta_{\mathrm{MC}}$	$1.04076 \pm 0.00049$	$r_{\mathrm{drag}}h$	$99.53 \pm 0.93$	$D_{\mathrm{M}}(0.51)$	$1964^{+30}_{-14}$
$\tau$	$0.0571^{+0.0061}_{-0.0082}$	$\langle d^2 \rangle^{1/2}$	$2.428 \pm 0.023$	$H(0.61)$	$96.21^{+0.44}_{-1.2}$
$m_{\nu, \mathrm{sterile}}^{\mathrm{eff}} [\mathrm{eV}]$	$< 0.150$	$z_{\mathrm{re}}$	$8.01^{+0.66}_{-0.80}$	$D_{\mathrm{M}}(0.61)$	$2285^{+35}_{-15}$
$N_{\mathrm{eff}}$	$< 3.26$	$10^9 A_{\mathrm{s}}$	$2.118^{+0.029}_{-0.037}$	$H(2.33)$	$238.3^{+1.2}_{-2.7}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.053^{+0.014}_{-0.017}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.890^{+0.012}_{-0.017}$	$D_{\mathrm{M}}(2.33)$	$5710^{+69}_{-25}$
$n_{\mathrm{s}}$	$0.9711^{+0.0056}_{-0.0080}$	$D_{40}$	$1221 \pm 14$	$f\sigma_8(0.15)$	$0.450^{+0.011}_{-0.0072}$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0025$	$D_{220}$	$5724 \pm 40$	$\sigma_8(0.15)$	$0.737^{+0.020}_{-0.013}$
$A_{217}^{\mathrm{CIB}}$	$49 \pm 7$	$D_{810}$	$2540 \pm 14$	$f\sigma_8(0.38)$	$0.468^{+0.012}_{-0.0072}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$814.9 \pm 5.0$	$\sigma_8(0.38)$	$0.654^{+0.018}_{-0.012}$
$A_{143}^{\mathrm{tSZ}}$	$4.9 \pm 2.0$	$D_{2000}$	$229.1 \pm 1.9$	$f\sigma_8(0.51)$	$0.467^{+0.012}_{-0.0072}$
$A_{100}^{\mathrm{PS}}$	$267 \pm 28$	$n_{\mathrm{s}, 0.002}$	$0.9711^{+0.0056}_{-0.0080}$	$\sigma_8(0.51)$	$0.612^{+0.017}_{-0.012}$
$A_{143}^{\mathrm{PS}}$	$51 \pm 8$	$Y_{\mathrm{P}}$	$0.24757^{+0.00072}_{-0.0022}$	$f\sigma_8(0.61)$	$0.462^{+0.012}_{-0.0073}$
$A_{143 \times 217}^{\mathrm{PS}}$	$44^{+9}_{-10}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24891^{+0.00072}_{-0.0022}$	$\sigma_8(0.61)$	$0.582^{+0.016}_{-0.011}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$10^5 D/H$	$2.653^{+0.043}_{-0.060}$	$f\sigma_8(2.33)$	$0.2939^{+0.0083}_{-0.0057}$
$A^{\mathrm{kSZ}}$	$< 5.21$	$\mathrm{Age}/\mathrm{Gyr}$	$13.67^{+0.16}_{-0.059}$	$\sigma_8(2.33)$	$0.3028^{+0.0086}_{-0.0062}$
$A_{100}^{\mathrm{dustTT}}$	$9.0 \pm 1.8$	$z_*$	$1090.29^{+0.33}_{-0.41}$	$f_{2000}^{143}$	$32.2 \pm 3.1$
$A_{143}^{\mathrm{dustTT}}$	$10.7 \pm 1.8$	$r_*$	$143.3^{+1.7}_{-0.63}$	$f_{2000}^{143 \times 217}$	$34.4 \pm 2.2$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04086^{+0.00059}_{-0.00048}$	$f_{2000}^{217}$	$108.9 \pm 2.0$
$A_{217}^{\mathrm{dustTT}}$	$93.2 \pm 7.4$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.76^{+0.16}_{-0.059}$	$\chi^2_{\mathrm{lensing}}$	$9.52 \pm 0.99$
$c_{100}$	$0.99961 \pm 0.00062$	$z_{\mathrm{drag}}$	$1060.08^{+0.52}_{-0.70}$	$\chi^2_{\mathrm{small}}$	$397.5 \pm 2.2$
$c_{217}$	$0.99828 \pm 0.00062$	$r_{\mathrm{drag}}$	$145.9^{+1.7}_{-0.67}$	$\chi^2_{\mathrm{lowl}}$	$22.6 \pm 1.0$
$H_0$	$68.21^{+0.61}_{-1.2}$	$k_{\mathrm{D}}$	$0.14148^{+0.00062}_{-0.0013}$	$\chi^2_{\mathrm{plik}}$	$773.6 \pm 5.6$
$\Omega_{\Lambda}$	$0.6883 \pm 0.0073$	$100\theta_{\mathrm{D}}$	$0.16134^{+0.00033}_{-0.00053}$	$\chi^2_{6\mathrm{DF}}$	$0.074 \pm 0.087$
$\Omega_{\mathrm{m}}$	$0.3117 \pm 0.0073$	$z_{\mathrm{eq}}$	$3336^{+49}_{-22}$	$\chi^2_{\mathrm{MGS}}$	$1.22 \pm 0.50$
$\Omega_{\mathrm{m}}h^2$	$0.1450^{+0.0016}_{-0.0033}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00018}_{-0.00012}$	$\chi^2_{\mathrm{DR12BAO}}$	$5.2 \pm 1.9$
$\Omega_{\nu}h^2$	$0.002255^{+0.000012}_{-0.0016}$	$100\theta_{\mathrm{eq}}$	$0.8262^{+0.0037}_{-0.010}$	$\chi^2_{\mathrm{prior}}$	$7.3 \pm 3.7$
$\Omega_{\mathrm{m}}h^3$	$0.0989^{+0.0011}_{-0.0034}$	$100\theta_{\mathrm{s,eq}}$	$0.4562^{+0.0019}_{-0.0054}$	$\chi^2_{\mathrm{CMB}}$	$1203.2 \pm 5.8$
$\sigma_8$	$0.798^{+0.021}_{-0.014}$	$H(0.15)$	$73.55^{+0.55}_{-1.2}$	$\chi^2_{\mathrm{BAO}}$	$6.5 \pm 1.5$
$S_8$	$0.813^{+0.020}_{-0.014}$	$D_{\mathrm{M}}(0.15)$	$636^{+11}_{-5.5}$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.445^{+0.011}_{-0.0074}$	$H(0.38)$	$83.76^{+0.47}_{-1.2}$		
$\bar{\chi}^2_{\mathrm{eff}} = 1217.05; R - 1 = 0.01947$					



# 8.42 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02234 \pm 0.00021$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.596^{+0.015}_{-0.0090}$	$D_{\mathrm{M}}(0.38)$	$1514^{+25}_{-12}$
$\Omega_{\mathrm{c}}h^2$	$0.1205^{+0.0040}_{-0.0034}$	$\sigma_8/h^{0.5}$	$0.966^{+0.023}_{-0.012}$	$H(0.51)$	$90.63^{+0.48}_{-1.3}$
$100\theta_{\mathrm{MC}}$	$1.04076 \pm 0.00049$	$r_{\mathrm{drag}}h$	$99.67 \pm 0.90$	$D_{\mathrm{M}}(0.51)$	$1961^{+31}_{-14}$
$\tau$	$0.0576^{+0.0064}_{-0.0080}$	$\langle d^2 \rangle^{1/2}$	$2.427 \pm 0.022$	$H(0.61)$	$96.30^{+0.47}_{-1.3}$
$m_{\nu, \mathrm{sterile}}^{\mathrm{eff}} [\mathrm{eV}]$	$< 0.140$	$z_{\mathrm{re}}$	$8.06^{+0.67}_{-0.78}$	$D_{\mathrm{M}}(0.61)$	$2282^{+36}_{-16}$
$N_{\mathrm{eff}}$	$< 3.27$	$10^9 A_{\mathrm{s}}$	$2.121^{+0.030}_{-0.036}$	$H(2.33)$	$238.3^{+1.2}_{-2.9}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.054^{+0.015}_{-0.017}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.890^{+0.013}_{-0.018}$	$D_{\mathrm{M}}(2.33)$	$5705^{+73}_{-27}$
$n_{\mathrm{s}}$	$0.9716^{+0.0057}_{-0.0080}$	$D_{40}$	$1220 \pm 14$	$f\sigma_8(0.15)$	$0.450^{+0.011}_{-0.0070}$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0025$	$D_{220}$	$5725 \pm 40$	$\sigma_8(0.15)$	$0.738^{+0.020}_{-0.013}$
$A_{217}^{\mathrm{CIB}}$	$49 \pm 7$	$D_{810}$	$2540 \pm 14$	$f\sigma_8(0.38)$	$0.468^{+0.012}_{-0.0070}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$814.9 \pm 5.1$	$\sigma_8(0.38)$	$0.655^{+0.018}_{-0.012}$
$A_{143}^{\mathrm{tSZ}}$	$4.9 \pm 2.0$	$D_{2000}$	$229.1 \pm 1.9$	$f\sigma_8(0.51)$	$0.467^{+0.012}_{-0.0070}$
$A_{100}^{\mathrm{PS}}$	$267 \pm 28$	$n_{\mathrm{s}, 0.002}$	$0.9716^{+0.0057}_{-0.0080}$	$\sigma_8(0.51)$	$0.613^{+0.017}_{-0.011}$
$A_{143}^{\mathrm{PS}}$	$51 \pm 8$	$Y_{\mathrm{P}}$	$0.24769^{+0.00079}_{-0.0024}$	$f\sigma_8(0.61)$	$0.462^{+0.012}_{-0.0071}$
$A_{143 \times 217}^{\mathrm{PS}}$	$44 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24902^{+0.00079}_{-0.0024}$	$\sigma_8(0.61)$	$0.583^{+0.016}_{-0.011}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$10^5 D/H$	$2.653^{+0.044}_{-0.061}$	$f\sigma_8(2.33)$	$0.2944^{+0.0084}_{-0.0056}$
$A^{\mathrm{kSZ}}$	$< 5.22$	$\mathrm{Age}/\mathrm{Gyr}$	$13.66^{+0.17}_{-0.064}$	$\sigma_8(2.33)$	$0.3034^{+0.0088}_{-0.0061}$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	$z_*$	$1090.28^{+0.34}_{-0.41}$	$f_{2000}^{143}$	$32.2 \pm 3.1$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$r_*$	$143.2^{+1.8}_{-0.68}$	$f_{2000}^{143 \times 217}$	$34.4 \pm 2.2$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04085^{+0.00060}_{-0.00049}$	$f_{2000}^{217}$	$108.9 \pm 2.0$
$A_{217}^{\mathrm{dust}TT}$	$93.2 \pm 7.4$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.76^{+0.16}_{-0.064}$	$\chi_{\mathrm{lensing}}^2$	$9.6 \pm 1.0$
$c_{100}$	$0.99962 \pm 0.00061$	$z_{\mathrm{drag}}$	$1060.13^{+0.53}_{-0.73}$	$\chi_{\mathrm{small}}^2$	$290 \pm 200$
$c_{217}$	$0.99827 \pm 0.00063$	$r_{\mathrm{drag}}$	$145.9^{+1.8}_{-0.72}$	$\chi_{\mathrm{lowl}}^2$	$130 \pm 200$
$H_0$	$68.34^{+0.63}_{-1.2}$	$k_{\mathrm{D}}$	$0.14152^{+0.00063}_{-0.0014}$	$\chi_{\mathrm{plik}}^2$	$773.7 \pm 5.6$
$\Omega_{\Lambda}$	$0.6894 \pm 0.0071$	$100\theta_{\mathrm{D}}$	$0.16135^{+0.00035}_{-0.00054}$	$\chi_{\mathrm{JLA}}^2$	$1035.11 \pm 0.36$
$\Omega_{\mathrm{m}}$	$0.3106 \pm 0.0071$	$z_{\mathrm{eq}}$	$3333^{+49}_{-21}$	$\chi_{6\mathrm{DF}}^2$	$0.41 \pm 0.63$
$\Omega_{\mathrm{m}}h^2$	$0.1450^{+0.0017}_{-0.0035}$	$k_{\mathrm{eq}}$	$0.01031^{+0.00018}_{-0.00012}$	$\chi_{\mathrm{MGS}}^2$	$0.94 \pm 0.69$
$\Omega_{\nu}h^2$	$0.002216^{+0.000047}_{-0.0016}$	$100\theta_{\mathrm{eq}}$	$0.8267^{+0.0036}_{-0.010}$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 \pm 1.6$
$\Omega_{\mathrm{m}}h^3$	$0.0991^{+0.0012}_{-0.0036}$	$100\theta_{\mathrm{s,eq}}$	$0.4564^{+0.0018}_{-0.0053}$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8$	$0.799^{+0.021}_{-0.014}$	$H(0.15)$	$73.66^{+0.57}_{-1.2}$	$\chi_{\mathrm{CMB}}^2$	$1203.4 \pm 5.8$
$S_8$	$0.813^{+0.020}_{-0.013}$	$D_{\mathrm{M}}(0.15)$	$635^{+11}_{-5.6}$	$\chi_{\mathrm{BAO}}^2$	$6.3 \pm 1.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.445^{+0.011}_{-0.0072}$	$H(0.38)$	$83.86^{+0.51}_{-1.2}$		
$\bar{\chi}_{\mathrm{eff}}^2 = 2252.12; R - 1 = 0.01798$					



### 8.43 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Aver15\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02229 \pm 0.00020$	$\sigma_8 \Omega_m^{0.25}$	$0.594^{+0.015}_{-0.0091}$	$D_M(0.38)$	$1523^{+17}_{-8.9}$
$\Omega_c h^2$	$0.1191^{+0.0035}_{-0.0027}$	$\sigma_8/h^{0.5}$	$0.964^{+0.024}_{-0.013}$	$H(0.51)$	$90.14^{+0.27}_{-0.81}$
$100\theta_{MC}$	$1.04086 \pm 0.00045$	$r_{drag}h$	$99.41 \pm 0.90$	$D_M(0.51)$	$1973^{+21}_{-10}$
$\tau$	$0.0571^{+0.0062}_{-0.0079}$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.022$	$H(0.61)$	$95.80^{+0.24}_{-0.81}$
$m_{\nu, sterile}^{eff} [eV]$	$< 0.196$	$z_{re}$	$7.99^{+0.65}_{-0.78}$	$D_M(0.61)$	$2296^{+24}_{-11}$
$N_{eff}$	$< 3.17$	$10^9 A_s$	$2.113^{+0.028}_{-0.034}$	$H(2.33)$	$237.45^{+0.88}_{-1.9}$
$\ln(10^{10} A_s)$	$3.051^{+0.014}_{-0.016}$	$10^9 A_s e^{-2\tau}$	$1.885^{+0.011}_{-0.014}$	$D_M(2.33)$	$5734^{+46}_{-13}$
$n_s$	$0.9687^{+0.0049}_{-0.0063}$	$D_{40}$	$1224 \pm 13$	$f\sigma_8(0.15)$	$0.449^{+0.012}_{-0.0074}$
$y_{cal}$	$1.0008 \pm 0.0025$	$D_{220}$	$5724 \pm 40$	$\sigma_8(0.15)$	$0.734^{+0.020}_{-0.012}$
$A_{217}^{CIB}$	$48 \pm 7$	$D_{810}$	$2539 \pm 13$	$f\sigma_8(0.38)$	$0.466^{+0.012}_{-0.0072}$
$\xi^{tSZ \times CIB}$	—	$D_{1420}$	$815.1 \pm 5.0$	$\sigma_8(0.38)$	$0.650^{+0.018}_{-0.011}$
$A_{143}^{tSZ}$	$5.0 \pm 2.0$	$D_{2000}$	$229.4 \pm 1.8$	$f\sigma_8(0.51)$	$0.465^{+0.012}_{-0.0071}$
$A_{100}^{PS}$	$265 \pm 28$	$n_{s,0.002}$	$0.9687^{+0.0049}_{-0.0063}$	$\sigma_8(0.51)$	$0.608^{+0.017}_{-0.011}$
$A_{143}^{PS}$	$50 \pm 8$	$Y_P$	$0.24676^{+0.00035}_{-0.0014}$	$f\sigma_8(0.61)$	$0.460^{+0.012}_{-0.0071}$
$A_{143 \times 217}^{PS}$	$44 \pm 9$	$Y_P^{BBN}$	$0.24809^{+0.00035}_{-0.0014}$	$\sigma_8(0.61)$	$0.579^{+0.016}_{-0.010}$
$A_{217}^{PS}$	$115 \pm 10$	$10^5 D/H$	$2.638^{+0.039}_{-0.049}$	$f\sigma_8(2.33)$	$0.2921^{+0.0081}_{-0.0053}$
$A^{kSZ}$	$< 5.02$	Age/Gyr	$13.73^{+0.11}_{-0.031}$	$\sigma_8(2.33)$	$0.3009^{+0.0084}_{-0.0057}$
$A_{100}^{dustTT}$	$8.9 \pm 1.8$	$z_*$	$1090.20 \pm 0.33$	$f_{2000}^{143}$	$31.8 \pm 3.0$
$A_{143}^{dustTT}$	$10.7 \pm 1.8$	$r_*$	$143.8^{+1.1}_{-0.39}$	$f_{2000}^{143 \times 217}$	$34.0 \pm 2.1$
$A_{143 \times 217}^{dustTT}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04100^{+0.00050}_{-0.00044}$	$f_{2000}^{217}$	$108.6 \pm 1.9$
$A_{217}^{dustTT}$	$93.2 \pm 7.4$	$D_M(z_*)/Gpc$	$13.82^{+0.11}_{-0.037}$	$\chi^2_{lensing}$	$9.38 \pm 0.93$
$c_{100}$	$0.99962 \pm 0.00061$	$z_{drag}$	$1059.89^{+0.49}_{-0.57}$	$\chi^2_{simall}$	$292 \pm 200$
$c_{217}$	$0.99827 \pm 0.00063$	$r_{drag}$	$146.5^{+1.2}_{-0.42}$	$\chi^2_{lowl}$	$129 \pm 200$
$H_0$	$67.86^{+0.51}_{-0.87}$	$k_D$	$0.14107^{+0.00050}_{-0.00092}$	$\chi^2_{plik}$	$773.1 \pm 5.5$
$\Omega_\Lambda$	$0.6872 \pm 0.0071$	$100\theta_D$	$0.16120^{+0.00029}_{-0.00040}$	$\chi^2_{Aver15}$	$0.75 \pm 0.75$
$\Omega_m$	$0.3128 \pm 0.0071$	$z_{eq}$	$3331^{+58}_{-23}$	$\chi^2_{6DF}$	$0.39 \pm 0.56$
$\Omega_m h^2$	$0.1440^{+0.0013}_{-0.0024}$	$k_{eq}$	$0.01027^{+0.00018}_{-0.00011}$	$\chi^2_{MGS}$	$0.85 \pm 0.62$
$\Omega_\nu h^2$	$0.00260^{+0.00017}_{-0.0020}$	$100\theta_{eq}$	$0.8273^{+0.0039}_{-0.012}$	$\chi^2_{DR12BAO}$	$5.4 \pm 1.9$
$\Omega_m h^3$	$0.09773^{+0.00057}_{-0.0022}$	$100\theta_{s,eq}$	$0.4568^{+0.0020}_{-0.0065}$	$\chi^2_{prior}$	$7.3 \pm 3.7$
$\sigma_8$	$0.794^{+0.021}_{-0.013}$	$H(0.15)$	$73.18^{+0.44}_{-0.84}$	$\chi^2_{CMB}$	$1202.8 \pm 5.8$
$S_8$	$0.811^{+0.021}_{-0.014}$	$D_M(0.15)$	$638.9^{+7.7}_{-4.4}$	$\chi^2_{BAO}$	$6.6 \pm 1.6$
$\sigma_8 \Omega_m^{0.5}$	$0.444^{+0.011}_{-0.0076}$	$H(0.38)$	$83.37^{+0.32}_{-0.82}$		

$$\bar{\chi}^2_{eff} = 1217.49; R - 1 = 0.01945$$



#### 8.44 base\_nnu\_meffsterile\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Cooke17\_Aver15\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02230 \pm 0.00019$	$\sigma_8/h^{0.5}$	$0.963^{+0.024}_{-0.013}$	$D_M(0.51)$	$1974^{+20}_{-10}$
$\Omega_c h^2$	$0.1189^{+0.0035}_{-0.0025}$	$r_{\text{drag}} h$	$99.41 \pm 0.90$	$H(0.61)$	$95.74^{+0.22}_{-0.75}$
$100\theta_{\text{MC}}$	$1.04088 \pm 0.00044$	$\langle d^2 \rangle^{1/2}$	$2.433 \pm 0.022$	$D_M(0.61)$	$2297^{+23}_{-11}$
$\tau$	$0.0571^{+0.0061}_{-0.0080}$	$z_{\text{re}}$	$7.99^{+0.65}_{-0.78}$	$H(2.33)$	$237.32^{+0.86}_{-1.8}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.209$	$10^9 A_s$	$2.113^{+0.028}_{-0.034}$	$D_M(2.33)$	$5737^{+43}_{-12}$
$N_{\text{eff}}$	$< 3.16$	$10^9 A_s e^{-2\tau}$	$1.885^{+0.011}_{-0.013}$	$f\sigma_8(0.15)$	$0.448^{+0.012}_{-0.0073}$
$\ln(10^{10} A_s)$	$3.050^{+0.013}_{-0.016}$	$D_{40}$	$1224 \pm 13$	$\sigma_8(0.15)$	$0.733^{+0.020}_{-0.012}$
$n_s$	$0.9684^{+0.0048}_{-0.0061}$	$D_{220}$	$5725 \pm 39$	$f\sigma_8(0.38)$	$0.466^{+0.012}_{-0.0071}$
$y_{\text{cal}}$	$1.0008 \pm 0.0025$	$D_{810}$	$2539 \pm 13$	$\sigma_8(0.38)$	$0.649^{+0.018}_{-0.011}$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{1420}$	$815.3 \pm 4.9$	$f\sigma_8(0.51)$	$0.464^{+0.012}_{-0.0070}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{2000}$	$229.5 \pm 1.7$	$\sigma_8(0.51)$	$0.608^{+0.017}_{-0.011}$
$A_{143}^{\text{tSZ}}$	$5.0 \pm 2.0$	$n_{s,0.002}$	$0.9684^{+0.0048}_{-0.0061}$	$f\sigma_8(0.61)$	$0.459^{+0.012}_{-0.0070}$
$A_{100}^{\text{PS}}$	$265 \pm 28$	$Y_{\text{P}}$	$0.24664^{+0.00030}_{-0.0013}$	$\sigma_8(0.61)$	$0.578^{+0.016}_{-0.010}$
$A_{143}^{\text{PS}}$	$50 \pm 8$	$Y_{\text{P}}^{\text{BBN}}$	$0.24797^{+0.00030}_{-0.0013}$	$f\sigma_8(2.33)$	$0.2918^{+0.0081}_{-0.0053}$
$A_{143 \times 217}^{\text{PS}}$	$44 \pm 9$	$10^5 D/H$	$2.633^{+0.036}_{-0.042}$	$\sigma_8(2.33)$	$0.3006^{+0.0085}_{-0.0057}$
$A_{217}^{\text{PS}}$	$115 \pm 10$	Age/Gyr	$13.73^{+0.10}_{-0.028}$	$f_{2000}^{143}$	$31.7 \pm 2.9$
$A^{\text{kSZ}}$	$< 4.97$	$z_*$	$1090.17 \pm 0.30$	$f_{2000}^{143 \times 217}$	$33.9 \pm 2.0$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$r_*$	$143.9^{+1.0}_{-0.37}$	$f_{2000}^{217}$	$108.5 \pm 1.9$
$A_{143}^{\text{dustTT}}$	$10.7 \pm 1.8$	$100\theta_*$	$1.04103^{+0.00048}_{-0.00043}$	$\chi^2_{\text{lensing}}$	$9.36 \pm 0.93$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3 \pm 3.3$	$D_M(z_*)/\text{Gpc}$	$13.823^{+0.098}_{-0.035}$	$\chi^2_{\text{simall}}$	$289 \pm 200$
$A_{217}^{\text{dustTT}}$	$93.3 \pm 7.4$	$z_{\text{drag}}$	$1059.89^{+0.46}_{-0.55}$	$\chi^2_{\text{lowl}}$	$131 \pm 200$
$c_{100}$	$0.99962 \pm 0.00061$	$r_{\text{drag}}$	$146.6^{+1.1}_{-0.40}$	$\chi^2_{\text{plik}}$	$772.9 \pm 5.4$
$c_{217}$	$0.99827 \pm 0.00063$	$k_{\text{D}}$	$0.14103^{+0.00048}_{-0.00087}$	$\chi^2_{\text{Aver15}}$	$0.69 \pm 0.65$
$H_0$	$67.82^{+0.51}_{-0.83}$	$100\theta_{\text{D}}$	$0.16116^{+0.00027}_{-0.00035}$	$\chi^2_{\text{Cooke17}}$	$0.21 \pm 0.31$
$\Omega_{\Lambda}$	$0.6872 \pm 0.0071$	$z_{\text{eq}}$	$3330^{+60}_{-23}$	$\chi^2_{6\text{DF}}$	$0.39 \pm 0.56$
$\Omega_{\text{m}}$	$0.3128 \pm 0.0071$	$k_{\text{eq}}$	$0.01026^{+0.00018}_{-0.00010}$	$\chi^2_{\text{MGS}}$	$0.84 \pm 0.62$
$\Omega_{\text{m}} h^2$	$0.1439^{+0.0013}_{-0.0022}$	$100\theta_{\text{eq}}$	$0.8277^{+0.0040}_{-0.013}$	$\chi^2_{\text{DR12BAO}}$	$5.4 \pm 1.9$
$\Omega_{\nu} h^2$	$0.00269^{+0.00023}_{-0.0021}$	$100\theta_{s,\text{eq}}$	$0.4570^{+0.0020}_{-0.0067}$	$\chi^2_{\text{prior}}$	$7.3 \pm 3.7$
$\Omega_{\text{m}} h^3$	$0.09757^{+0.00050}_{-0.0020}$	$H(0.15)$	$73.14^{+0.43}_{-0.80}$	$\chi^2_{\text{CMB}}$	$1202.6 \pm 5.7$
$\sigma_8$	$0.793^{+0.021}_{-0.013}$	$D_M(0.15)$	$639.2^{+7.3}_{-4.4}$	$\chi^2_{\text{BAO}}$	$6.6 \pm 1.6$
$S_8$	$0.810^{+0.021}_{-0.014}$	$H(0.38)$	$83.33^{+0.31}_{-0.76}$	$\chi^2_{\text{Abund}}$	$0.89 \pm 0.84$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.444^{+0.011}_{-0.0075}$	$D_M(0.38)$	$1524^{+16}_{-8.7}$		
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.593^{+0.015}_{-0.0091}$	$H(0.51)$	$90.09^{+0.25}_{-0.75}$		

$\bar{\chi}^2_{\text{eff}} = 1217.47; R - 1 = 0.01988$



# 8.45 base\_nnu\_meffsterile\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}} h^2$	0.022461	$0.02249^{+0.00014}_{-0.00015} \quad (+0.8\sigma)$	$\Omega_{\mathrm{m}} h^3$	0.09644	$0.09765^{+0.00023}_{-0.0016} \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.15)$	640.31	$639.2^{+6.0}_{-3.5} \quad (+0.4\sigma)$
$\Omega_{\mathrm{c}} h^2$	0.11343	$0.1187^{+0.0033}_{-0.0022} \quad (-0.5\sigma)$	$\sigma_8$	0.8100	$0.793^{+0.021}_{-0.012} \quad (-0.2\sigma)$	$H(0.38)$	83.098	$83.34^{+0.23}_{-0.60} \quad (-0.4\sigma)$
$100\theta_{\mathrm{MC}}$	1.041059	$1.04091^{+0.00033}_{-0.00029} \quad (+0.3\sigma)$	$S_8$	0.8242	$0.810^{+0.021}_{-0.013} \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.38)$	1527.3	$1524^{+13}_{-6.8} \quad (+0.4\sigma)$
$\tau$	0.0564	$0.0577^{+0.0068}_{-0.0079} \quad (+0.1\sigma)$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	0.4514	$0.444^{+0.011}_{-0.0073} \quad (-0.2\sigma)$	$H(0.51)$	89.813	$90.10^{+0.16}_{-0.59} \quad (-0.4\sigma)$
$m_{\nu, \mathrm{sterile}}^{\mathrm{eff}} [\mathrm{eV}]$	0.555	$< 0.223 \quad (+0.3\sigma)$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	0.6047	$0.593^{+0.015}_{-0.0089} \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	1978.6	$1974^{+16}_{-7.8} \quad (+0.4\sigma)$
$N_{\mathrm{eff}}$	3.0479	$3.1252^{+0.0051}_{-0.078} \quad (-0.6\sigma)$	$\sigma_8/h^{0.5}$	0.9843	$0.963^{+0.024}_{-0.013} \quad (-0.1\sigma)$	$H(0.61)$	95.431	$95.76^{+0.12}_{-0.58} \quad (-0.4\sigma)$
$\ln(10^{10} A_{\mathrm{s}})$	3.0481	$3.052^{+0.014}_{-0.016} \quad (+0.0\sigma)$	$r_{\mathrm{drag}} h$	99.65	$99.32 \pm 0.81 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.61)$	2302.5	$2297^{+18}_{-8.3} \quad (+0.4\sigma)$
$n_{\mathrm{s}}$	0.96739	$0.9683^{+0.0041}_{-0.0055} \quad (-0.4\sigma)$	$\langle d^2 \rangle^{1/2}$	2.4392	$2.437 \pm 0.021 \quad (+0.4\sigma)$	$H(2.33)$	236.22	$237.42^{+0.65}_{-1.5} \quad (-0.4\sigma)$
$y_{\mathrm{cal}}$	1.00108	$1.0009 \pm 0.0024 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	7.86	$8.00 \pm 0.74 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	5756.4	$5735^{+33}_{-5.7} \quad (+0.4\sigma)$
$A_{217}^{\mathrm{CIB}}$	47.2	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	2.1075	$2.116^{+0.029}_{-0.034} \quad (+0.0\sigma)$	$f\sigma_8(0.15)$	0.4561	$0.448^{+0.011}_{-0.0072} \quad (-0.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.46	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8828	$1.886^{+0.011}_{-0.012} \quad (-0.3\sigma)$	$\sigma_8(0.15)$	0.7485	$0.733^{+0.020}_{-0.012} \quad (-0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	7.20	$5.4 \pm 2.0 \quad (+0.3\sigma)$	$D_{40}$	1228.2	$1227 \pm 12 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	0.4746	$0.466^{+0.012}_{-0.0071} \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	250.4	$260 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	5743.5	$5741 \pm 37 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	0.6636	$0.650^{+0.018}_{-0.011} \quad (-0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	47.6	$47 \pm 8 \quad (-0.5\sigma)$	$D_{810}$	2543.4	$2542 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.51)$	0.4733	$0.465^{+0.012}_{-0.0070} \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	48.0	$43 \pm 9 \quad (-0.2\sigma)$	$D_{1420}$	819.38	$817.6 \pm 4.6 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	0.6211	$0.608^{+0.016}_{-0.010} \quad (-0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	119.4	$115 \pm 10 \quad (-0.0\sigma)$	$D_{2000}$	231.83	$230.7 \pm 1.6 \quad (+0.8\sigma)$	$f\sigma_8(0.61)$	0.4684	$0.460^{+0.012}_{-0.0069} \quad (-0.2\sigma)$
$A^{\mathrm{kSZ}}$	0.00	$< 4.39 \quad (-0.2\sigma)$	$n_{\mathrm{s}, 0.002}$	0.96739	$0.9683^{+0.0041}_{-0.0055} \quad (-0.4\sigma)$	$\sigma_8(0.61)$	0.5910	$0.578^{+0.016}_{-0.0098} \quad (-0.2\sigma)$
$A_{100}^{\mathrm{dustTT}}$	8.81	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	0.24546	$0.24649^{+0.00014}_{-0.0010} \quad (-0.5\sigma)$	$f\sigma_8(2.33)$	0.2980	$0.2918^{+0.0080}_{-0.0051} \quad (-0.3\sigma)$
$A_{143}^{\mathrm{dustTT}}$	11.04	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24678	$0.24782^{+0.00014}_{-0.0010} \quad (-0.5\sigma)$	$\sigma_8(2.33)$	0.3073	$0.3006^{+0.0083}_{-0.0054} \quad (-0.3\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.83	$18.7 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	2.5695	$2.591^{+0.024}_{-0.032} \quad (-1.2\sigma)$	$f_{2000}^{143}$	28.64	$30.0 \pm 2.8 \quad (-0.7\sigma)$
$A_{217}^{\mathrm{dustTT}}$	95.1	$93.7 \pm 7.3 \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	13.7813	$13.731^{+0.078}_{-0.013} \quad (+0.4\sigma)$	$f_{2000}^{143 \times 217}$	31.82	$32.6 \pm 1.9 \quad (-0.8\sigma)$
$A_{100}^{\mathrm{dustTE}}$	0.1138	$0.114 \pm 0.038$	$z_*$	1089.747	$1089.90 \pm 0.24 \quad (-1.0\sigma)$	$f_{2000}^{217}$	106.47	$107.4 \pm 1.8 \quad (-0.7\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1346	$0.135 \pm 0.029$	$r_*$	144.54	$143.85^{+0.85}_{-0.24} \quad (+0.4\sigma)$	$\chi_{\mathrm{lensing}}^2$	8.748	$9.14 \pm 0.77 \quad (-0.4\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.483	$0.481 \pm 0.085$	$100\theta_*$	1.041231	$1.04104^{+0.00036}_{-0.00029} \quad (+0.3\sigma)$	$\chi_{\mathrm{small}}^2$	396.42	$397.6 \pm 2.3 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dustTE}}$	0.224	$0.224 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.881	$13.818^{+0.079}_{-0.023} \quad (+0.4\sigma)$	$\chi_{\mathrm{lowl}}^2$	23.05	$23.03 \pm 0.90 \quad (+0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.665	$0.664 \pm 0.080$	$z_{\mathrm{drag}}$	1060.085	$1060.32^{+0.31}_{-0.45} \quad (+0.4\sigma)$	$\chi_{\mathrm{plik}}^2$	2344.6	$2361.3 \pm 6.1 \quad (+285.1\sigma)$
$A_{217}^{\mathrm{dustTE}}$	2.069	$2.08 \pm 0.27$	$r_{\mathrm{drag}}$	147.17	$146.46^{+0.88}_{-0.25} \quad (+0.4\sigma)$	$\chi_{6\mathrm{DF}}^2$	0.029	$0.084 \pm 0.089 \quad (+0.1\sigma)$
$c_{100}$	0.99971	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	0.14085	$0.14137^{+0.00031}_{-0.00072} \quad (-0.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	1.217	$1.10 \pm 0.42 \quad (-0.2\sigma)$
$c_{217}$	0.99818	$0.99821 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	0.160677	$0.16083^{+0.00017}_{-0.00026} \quad (-1.1\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	4.42	$5.5 \pm 1.9 \quad (+0.1\sigma)$
$H_0$	67.71	$67.82^{+0.41}_{-0.69} \quad (-0.4\sigma)$	$z_{\mathrm{eq}}$	3246.4	$3339^{+63}_{-19} \quad (+0.0\sigma)$	$\chi_{\mathrm{prior}}^2$	1.87	$11.6 \pm 4.6 \quad (+1.2\sigma)$
$\Omega_{\Lambda}$	0.6894	$0.6869 \pm 0.0064 \quad (-0.2\sigma)$	$k_{\mathrm{eq}}$	0.010016	$0.01027^{+0.00018}_{-0.00093} \quad (-0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	2772.9	$2791.1 \pm 6.2 \quad (+271.9\sigma)$
$\Omega_{\mathrm{m}}$	0.3106	$0.3131 \pm 0.0064 \quad (+0.2\sigma)$	$100\theta_{\mathrm{eq}}$	0.8464	$0.8266^{+0.0034}_{-0.013} \quad (+0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	5.67	$6.7 \pm 1.6 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}} h^2$	0.14243	$0.1440^{+0.0010}_{-0.0019} \quad (-0.4\sigma)$	$100\theta_{\mathrm{s}, \mathrm{eq}}$	0.46672	$0.4563^{+0.0017}_{-0.0069} \quad (+0.0\sigma)$			
$\Omega_{\nu} h^2$	0.00654	$0.00277^{+0.00033}_{-0.0021} \quad (+0.3\sigma)$	$H(0.15)$	72.990	$73.14^{+0.34}_{-0.65} \quad (-0.4\sigma)$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 2780.39$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1585.70$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2809.48$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.31$ ;  $R - 1 = 0.02379$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.03 ( $\Delta$  0.01) MGS: 1.22 ( $\Delta$  -0.06) DR12BAO: 4.42 ( $\Delta$  0.17) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.75 ( $\Delta$  -0.09) small\_100x143\_offlike5\_EE\_Aplanck 396.43 ( $\Delta$  0.09) commander\_dx12\_v3\_2.29: 23.05 ( $\Delta$  0.14) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.63



# 8.46 base\_nnu\_meffsterile\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02250^{+0.00014}_{-0.00015} \quad (+0.8\sigma)$	$\Omega_{\mathrm{m}} h^3$	$0.09775^{+0.00022}_{-0.0017} \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.15)$	$638.4^{+6.3}_{-3.2} \quad (+0.4\sigma)$
$\Omega_{\mathrm{c}} h^2$	$0.1188^{+0.0033}_{-0.0023} \quad (-0.4\sigma)$	$\sigma_8$	$0.795^{+0.020}_{-0.013} \quad (-0.2\sigma)$	$H(0.38)$	$83.41^{+0.19}_{-0.64} \quad (-0.4\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04091^{+0.00033}_{-0.00030} \quad (+0.3\sigma)$	$S_8$	$0.811^{+0.020}_{-0.013} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1522^{+14}_{-6.0} \quad (+0.4\sigma)$
$\tau$	$0.0576^{+0.0068}_{-0.0078} \quad (+0.1\sigma)$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.444^{+0.011}_{-0.0074} \quad (-0.1\sigma)$	$H(0.51)$	$90.17^{+0.14}_{-0.63} \quad (-0.4\sigma)$
$m_{\nu, \mathrm{sterile}}^{\mathrm{eff}} [\mathrm{eV}]$	$< 0.203 \quad (+0.2\sigma)$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.594^{+0.015}_{-0.0090} \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1972^{+17}_{-6.8} \quad (+0.4\sigma)$
$N_{\mathrm{eff}}$	$< 3.13 \quad (-0.6\sigma)$	$\sigma_8/h^{0.5}$	$0.964^{+0.023}_{-0.013} \quad (-0.1\sigma)$	$H(0.61)$	$95.82^{+0.11}_{-0.62} \quad (-0.4\sigma)$
$\ln(10^{10} A_{\mathrm{s}})$	$3.052^{+0.014}_{-0.016} \quad (-0.1\sigma)$	$r_{\mathrm{drag}} h$	$99.45 \pm 0.77 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.61)$	$2295^{+19}_{-7.2} \quad (+0.4\sigma)$
$n_{\mathrm{s}}$	$0.9687^{+0.0040}_{-0.0055} \quad (-0.4\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.434 \pm 0.021 \quad (+0.4\sigma)$	$H(2.33)$	$237.40^{+0.60}_{-1.6} \quad (-0.4\sigma)$
$y_{\mathrm{cal}}$	$1.0009 \pm 0.0024 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.99 \pm 0.74 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	$5733^{+35}_{-5.4} \quad (+0.4\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.116^{+0.030}_{-0.034} \quad (-0.1\sigma)$	$f\sigma_8(0.15)$	$0.449^{+0.011}_{-0.0072} \quad (-0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.886^{+0.011}_{-0.013} \quad (-0.3\sigma)$	$\sigma_8(0.15)$	$0.734^{+0.019}_{-0.012} \quad (-0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.4 \pm 2.0 \quad (+0.3\sigma)$	$D_{40}$	$1226 \pm 12 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.466^{+0.011}_{-0.0071} \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$260 \pm 28 \quad (-0.3\sigma)$	$D_{220}$	$5741 \pm 37 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.651^{+0.017}_{-0.011} \quad (-0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$47 \pm 8 \quad (-0.5\sigma)$	$D_{810}$	$2542 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.51)$	$0.465^{+0.012}_{-0.0070} \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$817.7 \pm 4.6 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.609^{+0.016}_{-0.010} \quad (-0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$230.7 \pm 1.6 \quad (+0.9\sigma)$	$f\sigma_8(0.61)$	$0.460^{+0.011}_{-0.0070} \quad (-0.2\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.42 \quad (-0.2\sigma)$	$n_{\mathrm{s}, 0.002}$	$0.9687^{+0.0040}_{-0.0055} \quad (-0.4\sigma)$	$\sigma_8(0.61)$	$0.580^{+0.015}_{-0.0098} \quad (-0.2\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$9.0 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.24654^{+0.00012}_{-0.0011} \quad (-0.5\sigma)$	$f\sigma_8(2.33)$	$0.2925^{+0.0077}_{-0.0051} \quad (-0.3\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24787^{+0.00012}_{-0.0011} \quad (-0.5\sigma)$	$\sigma_8(2.33)$	$0.3013^{+0.0080}_{-0.0054} \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.7 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.590^{+0.024}_{-0.032} \quad (-1.2\sigma)$	$f_{2000}^{143}$	$30.0 \pm 2.8 \quad (-0.7\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.8 \pm 7.3 \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.724^{+0.083}_{-0.012} \quad (+0.4\sigma)$	$f_{2000}^{143 \times 217}$	$32.6 \pm 1.9 \quad (-0.8\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.114 \pm 0.038$	$z_*$	$1089.89^{+0.21}_{-0.25} \quad (-1.0\sigma)$	$f_{2000}^{217}$	$107.4 \pm 1.8 \quad (-0.7\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.030$	$r_*$	$143.83^{+0.90}_{-0.22} \quad (+0.4\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.18 \pm 0.80 \quad (-0.4\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.483 \pm 0.085$	$100\theta_*$	$1.04104^{+0.00037}_{-0.00030} \quad (+0.3\sigma)$	$\chi_{\mathrm{small}}^2$	$262 \pm 200 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.223 \pm 0.055$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.816^{+0.085}_{-0.021} \quad (+0.4\sigma)$	$\chi_{\mathrm{lowl}}^2$	$158 \pm 200 \quad (+0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.664 \pm 0.080$	$z_{\mathrm{drag}}$	$1060.34^{+0.30}_{-0.47} \quad (+0.3\sigma)$	$\chi_{\mathrm{plik}}^2$	$2361.5 \pm 6.0 \quad (+284.5\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.27$	$r_{\mathrm{drag}}$	$146.44^{+0.94}_{-0.23} \quad (+0.4\sigma)$	$\chi_{\mathrm{JLA}}^2$	$1035.16 \pm 0.34 \quad (+0.1\sigma)$
$c_{100}$	$0.99968 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.14138^{+0.00029}_{-0.00078} \quad (-0.1\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.47 \pm 0.59 \quad (+0.1\sigma)$
$c_{217}$	$0.99821 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16083^{+0.00017}_{-0.00028} \quad (-1.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$0.76 \pm 0.62 \quad (-0.2\sigma)$
$H_0$	$67.91^{+0.38}_{-0.71} \quad (-0.4\sigma)$	$z_{\mathrm{eq}}$	$3340^{+59}_{-18} \quad (+0.1\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$5.2 \pm 1.6 \quad (+0.2\sigma)$
$\Omega_{\Lambda}$	$0.6879 \pm 0.0061 \quad (-0.2\sigma)$	$k_{\mathrm{eq}}$	$0.01028^{+0.00018}_{-0.000095} \quad (-0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.7 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.3121 \pm 0.0061 \quad (+0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8264^{+0.0033}_{-0.012} \quad (-0.0\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2791.2 \pm 6.2 \quad (+271.0\sigma)$
$\Omega_{\mathrm{m}} h^2$	$0.14392^{+0.00097}_{-0.0020} \quad (-0.4\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4561^{+0.0017}_{-0.0065} \quad (-0.0\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.5 \pm 1.3 \quad (+0.1\sigma)$
$\Omega_{\nu} h^2$	$0.00260^{+0.00024}_{-0.0020} \quad (+0.2\sigma)$	$H(0.15)$	$73.23^{+0.30}_{-0.69} \quad (-0.4\sigma)$		

$\bar{\chi}_{\mathrm{eff}}^2 = 3844.44$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.22$ ;  $R - 1 = 0.02316$



# 8.47 base\_nnu\_meffsterile\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Aver15

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02248 \pm 0.00014 \quad (+0.9\sigma)$	$\Omega_{\mathrm{m}} h^3$	$0.09736^{+0.00023}_{-0.0013} \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$640.0^{+5.1}_{-3.5} \quad (+0.1\sigma)$
$\Omega_{\mathrm{c}} h^2$	$0.1185^{+0.0032}_{-0.0020} \quad (-0.2\sigma)$	$\sigma_8$	$0.793^{+0.020}_{-0.012} \quad (-0.0\sigma)$	$H(0.38)$	$83.24^{+0.23}_{-0.49} \quad (-0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04093 \pm 0.00030 \quad (+0.2\sigma)$	$S_8$	$0.810^{+0.020}_{-0.014} \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1526^{+11}_{-6.8} \quad (+0.1\sigma)$
$\tau$	$0.0571^{+0.0068}_{-0.0077} \quad (+0.1\sigma)$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.444^{+0.011}_{-0.0075} \quad (-0.0\sigma)$	$H(0.51)$	$90.01^{+0.17}_{-0.47} \quad (-0.2\sigma)$
$m_{\nu, \mathrm{sterile}}^{\mathrm{eff}} [\mathrm{eV}]$	$< 0.231 \quad (+0.1\sigma)$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.593^{+0.014}_{-0.0090} \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1976^{+13}_{-7.8} \quad (+0.2\sigma)$
$N_{\mathrm{eff}}$	$3.1098^{+0.0051}_{-0.062} \quad (-0.4\sigma)$	$\sigma_8/h^{0.5}$	$0.963^{+0.023}_{-0.013} \quad (-0.0\sigma)$	$H(0.61)$	$95.66^{+0.13}_{-0.46} \quad (-0.2\sigma)$
$\ln(10^{10} A_{\mathrm{s}})$	$3.051 \pm 0.015 \quad (+0.1\sigma)$	$r_{\mathrm{drag}} h$	$99.30 \pm 0.78 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2299^{+15}_{-8.3} \quad (+0.2\sigma)$
$n_{\mathrm{s}}$	$0.9676^{+0.0041}_{-0.0048} \quad (-0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.437 \pm 0.021 \quad (+0.2\sigma)$	$H(2.33)$	$237.21^{+0.64}_{-1.3} \quad (-0.2\sigma)$
$y_{\mathrm{cal}}$	$1.0009 \pm 0.0024 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.94 \pm 0.73 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	$5741^{+26}_{-6.1} \quad (+0.2\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.113^{+0.029}_{-0.033} \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.448^{+0.011}_{-0.0073} \quad (-0.0\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.885^{+0.010}_{-0.012} \quad (-0.1\sigma)$	$\sigma_8(0.15)$	$0.733^{+0.018}_{-0.011} \quad (-0.0\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.4 \pm 2.0 \quad (+0.2\sigma)$	$D_{40}$	$1227 \pm 12 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.466^{+0.011}_{-0.0071} \quad (-0.0\sigma)$
$A_{100}^{\mathrm{PS}}$	$259 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5740 \pm 37 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.649^{+0.016}_{-0.010} \quad (-0.0\sigma)$
$A_{143}^{\mathrm{PS}}$	$47 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2541 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.464^{+0.011}_{-0.0070} \quad (-0.0\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$817.6 \pm 4.6 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.607^{+0.015}_{-0.0097} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$230.7 \pm 1.5 \quad (+0.8\sigma)$	$f\sigma_8(0.61)$	$0.459^{+0.011}_{-0.0069} \quad (-0.0\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.37 \quad (-0.2\sigma)$	$n_{\mathrm{s}, 0.002}$	$0.9676^{+0.0041}_{-0.0048} \quad (-0.2\sigma)$	$\sigma_8(0.61)$	$0.578^{+0.015}_{-0.0093} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (+0.0\sigma)$	$Y_{\mathrm{P}}$	$0.24628^{+0.00013}_{-0.00083} \quad (-0.3\sigma)$	$f\sigma_8(2.33)$	$0.2916^{+0.0075}_{-0.0048} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24761^{+0.00013}_{-0.00083} \quad (-0.3\sigma)$	$\sigma_8(2.33)$	$0.3004^{+0.0078}_{-0.0051} \quad (-0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.7 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.589^{+0.024}_{-0.028} \quad (-1.1\sigma)$	$f_{2000}^{143}$	$29.9 \pm 2.8 \quad (-0.6\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.8 \pm 7.3 \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.745^{+0.062}_{-0.014} \quad (+0.2\sigma)$	$f_{2000}^{143 \times 217}$	$32.5 \pm 1.9 \quad (-0.7\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.114 \pm 0.038$	$z_*$	$1089.89 \pm 0.23 \quad (-1.0\sigma)$	$f_{2000}^{217}$	$107.3 \pm 1.8 \quad (-0.7\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.030$	$r_*$	$143.98^{+0.70}_{-0.23} \quad (+0.2\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.13 \pm 0.77 \quad (-0.3\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.482 \pm 0.085$	$100\theta_*$	$1.04107^{+0.00033}_{-0.00029} \quad (+0.2\sigma)$	$\chi_{\mathrm{small}}^2$	$269 \pm 200 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.224 \pm 0.055$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.830^{+0.066}_{-0.022} \quad (+0.2\sigma)$	$\chi_{\mathrm{lowl}}^2$	$152 \pm 200 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.664 \pm 0.080$	$z_{\mathrm{drag}}$	$1060.26^{+0.30}_{-0.40} \quad (+0.7\sigma)$	$\chi_{\mathrm{plik}}^2$	$2361.0 \pm 5.9 \quad (+291.0\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.27$	$r_{\mathrm{drag}}$	$146.60^{+0.73}_{-0.24} \quad (+0.1\sigma)$	$\chi_{\mathrm{Aver15}}^2$	$0.50 \pm 0.39 \quad (-0.3\sigma)$
$c_{100}$	$0.99968 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.14127^{+0.00030}_{-0.00062} \quad (+0.2\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.44 \pm 0.54 \quad (+0.1\sigma)$
$c_{217}$	$0.99820 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16080^{+0.00017}_{-0.00023} \quad (-1.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$0.73 \pm 0.58 \quad (-0.2\sigma)$
$H_0$	$67.73^{+0.41}_{-0.59} \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3340^{+63}_{-21} \quad (+0.1\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$5.5 \pm 1.8 \quad (+0.1\sigma)$
$\Omega_{\Lambda}$	$0.6866 \pm 0.0062 \quad (-0.0\sigma)$	$k_{\mathrm{eq}}$	$0.01027^{+0.00017}_{-0.000089} \quad (-0.0\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.6 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.3134 \pm 0.0062 \quad (+0.0\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8265^{+0.0038}_{-0.013} \quad (-0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2790.7 \pm 6.0 \quad (+274.9\sigma)$
$\Omega_{\mathrm{m}} h^2$	$0.1437^{+0.0010}_{-0.0017} \quad (-0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4562^{+0.0020}_{-0.0069} \quad (-0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.7 \pm 1.6 \quad (+0.0\sigma)$
$\Omega_{\nu} h^2$	$0.00278^{+0.00041}_{-0.0022} \quad (+0.1\sigma)$	$H(0.15)$	$73.06^{+0.34}_{-0.54} \quad (-0.2\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2809.56; \Delta \bar{\chi}_{\mathrm{eff}}^2 = 1591.95; R - 1 = 0.02106$$



## 8.48 base\_nnu\_meffsterile\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Cooke17\_Aver15

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02247 \pm 0.00014 \quad (+0.9\sigma)$	$\sigma_8$	$0.793^{+0.020}_{-0.012} \quad (+0.0\sigma)$	$D_M(0.38)$	$1526^{+11}_{-6.7} \quad (+0.1\sigma)$
$\Omega_c h^2$	$0.1185^{+0.0032}_{-0.0019} \quad (-0.1\sigma)$	$S_8$	$0.811^{+0.020}_{-0.014} \quad (+0.0\sigma)$	$H(0.51)$	$90.00^{+0.17}_{-0.48} \quad (-0.1\sigma)$
$100\theta_{MC}$	$1.04092 \pm 0.00030 \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.444^{+0.011}_{-0.0074} \quad (+0.0\sigma)$	$D_M(0.51)$	$1977^{+13}_{-7.7} \quad (+0.1\sigma)$
$\tau$	$0.0571^{+0.0067}_{-0.0077} \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.593^{+0.014}_{-0.0089} \quad (+0.0\sigma)$	$H(0.61)$	$95.66^{+0.13}_{-0.47} \quad (-0.1\sigma)$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.230 \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.964^{+0.023}_{-0.013} \quad (+0.0\sigma)$	$D_M(0.61)$	$2300^{+15}_{-8.2} \quad (+0.1\sigma)$
$N_{\text{eff}}$	$3.1109^{+0.0057}_{-0.063} \quad (-0.3\sigma)$	$r_{\text{drag}} h$	$99.27 \pm 0.78 \quad (-0.1\sigma)$	$H(2.33)$	$237.24^{+0.64}_{-1.3} \quad (-0.1\sigma)$
$\ln(10^{10} A_s)$	$3.051 \pm 0.015 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.437 \pm 0.021 \quad (+0.2\sigma)$	$D_M(2.33)$	$5741^{+27}_{-6.1} \quad (+0.1\sigma)$
$n_s$	$0.9676^{+0.0041}_{-0.0048} \quad (-0.1\sigma)$	$z_{\text{re}}$	$7.94 \pm 0.73 \quad (+0.0\sigma)$	$f\sigma_8(0.15)$	$0.448^{+0.011}_{-0.0072} \quad (+0.0\sigma)$
$y_{\text{cal}}$	$1.0009 \pm 0.0024 \quad (+0.0\sigma)$	$10^9 A_s$	$2.113^{+0.029}_{-0.033} \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.733^{+0.019}_{-0.011} \quad (+0.0\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_s e^{-2\tau}$	$1.885^{+0.010}_{-0.012} \quad (-0.0\sigma)$	$f\sigma_8(0.38)$	$0.466^{+0.011}_{-0.0071} \quad (+0.0\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{40}$	$1227 \pm 12 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.649^{+0.017}_{-0.010} \quad (-0.0\sigma)$
$A_{143}^{\text{tSZ}}$	$5.4 \pm 2.0 \quad (+0.2\sigma)$	$D_{220}$	$5739 \pm 37 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.464^{+0.011}_{-0.0069} \quad (+0.0\sigma)$
$A_{100}^{\text{PS}}$	$259 \pm 28 \quad (-0.2\sigma)$	$D_{810}$	$2541 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.607^{+0.016}_{-0.0097} \quad (-0.0\sigma)$
$A_{143}^{\text{PS}}$	$47 \pm 8 \quad (-0.4\sigma)$	$D_{1420}$	$817.5 \pm 4.5 \quad (+0.4\sigma)$	$f\sigma_8(0.61)$	$0.459^{+0.011}_{-0.0068} \quad (+0.0\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9 \quad (-0.1\sigma)$	$D_{2000}$	$230.7 \pm 1.5 \quad (+0.7\sigma)$	$\sigma_8(0.61)$	$0.578^{+0.015}_{-0.0093} \quad (-0.0\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$n_{s,0.002}$	$0.9676^{+0.0041}_{-0.0048} \quad (-0.1\sigma)$	$f\sigma_8(2.33)$	$0.2916^{+0.0076}_{-0.0048} \quad (-0.0\sigma)$
$A^{\text{kSZ}}$	$< 4.38 \quad (-0.2\sigma)$	$Y_P$	$0.24629^{+0.00014}_{-0.00085} \quad (-0.3\sigma)$	$\sigma_8(2.33)$	$0.3004^{+0.0079}_{-0.0051} \quad (-0.0\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (+0.0\sigma)$	$Y_P^{\text{BBN}}$	$0.24762^{+0.00014}_{-0.00085} \quad (-0.3\sigma)$	$f_{2000}^{143}$	$30.0 \pm 2.7 \quad (-0.6\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$10^5 \text{D}/\text{H}$	$2.590^{+0.023}_{-0.027} \quad (-1.1\sigma)$	$f_{2000}^{143 \times 217}$	$32.6 \pm 1.9 \quad (-0.7\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.7 \pm 3.3 \quad (+0.1\sigma)$	$\text{Age}/\text{Gyr}$	$13.745^{+0.063}_{-0.014} \quad (+0.1\sigma)$	$f_{2000}^{217}$	$107.4 \pm 1.8 \quad (-0.6\sigma)$
$A_{217}^{\text{dustTT}}$	$93.8 \pm 7.3 \quad (+0.1\sigma)$	$z_*$	$1089.90 \pm 0.22 \quad (-0.9\sigma)$	$\chi_{\text{lensing}}^2$	$9.14 \pm 0.77 \quad (-0.3\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$r_*$	$143.97^{+0.71}_{-0.23} \quad (+0.1\sigma)$	$\chi_{\text{simall}}^2$	$270 \pm 200 \quad (-0.1\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$100\theta_*$	$1.04107^{+0.00033}_{-0.00029} \quad (+0.1\sigma)$	$\chi_{\text{lowl}}^2$	$151 \pm 200 \quad (+0.1\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.482 \pm 0.085$	$D_M(z_*)/\text{Gpc}$	$13.829^{+0.066}_{-0.023} \quad (+0.1\sigma)$	$\chi_{\text{plik}}^2$	$2360.9 \pm 5.9 \quad (+293.0\sigma)$
$A_{143}^{\text{dustTE}}$	$0.224 \pm 0.055$	$z_{\text{drag}}$	$1060.24^{+0.30}_{-0.40} \quad (+0.7\sigma)$	$\chi_{\text{Aver15}}^2$	$0.51 \pm 0.39 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.664 \pm 0.080$	$r_{\text{drag}}$	$146.60^{+0.74}_{-0.24} \quad (+0.0\sigma)$	$\chi_{\text{Cooke17}}^2$	$0.16 \pm 0.19 \quad (-0.1\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.27$	$k_D$	$0.14126^{+0.00030}_{-0.00062} \quad (+0.3\sigma)$	$\chi_{6\text{DF}}^2$	$0.43 \pm 0.53 \quad (+0.1\sigma)$
$c_{100}$	$0.99968 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_D$	$0.16081^{+0.00017}_{-0.00022} \quad (-1.1\sigma)$	$\chi_{\text{MGS}}^2$	$0.73 \pm 0.57 \quad (-0.2\sigma)$
$c_{217}$	$0.99821 \pm 0.00062 \quad (-0.1\sigma)$	$z_{\text{eq}}$	$3340^{+63}_{-20} \quad (+0.2\sigma)$	$\chi_{\text{DR12BAO}}^2$	$5.6 \pm 1.8 \quad (+0.1\sigma)$
$H_0$	$67.72^{+0.40}_{-0.59} \quad (-0.1\sigma)$	$k_{\text{eq}}$	$0.01027^{+0.00017}_{-0.000087} \quad (+0.1\sigma)$	$\chi_{\text{prior}}^2$	$11.6 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_\Lambda$	$0.6864 \pm 0.0062 \quad (-0.1\sigma)$	$100\theta_{\text{eq}}$	$0.8263^{+0.0037}_{-0.013} \quad (-0.1\sigma)$	$\chi_{\text{CMB}}^2$	$2790.7 \pm 6.0 \quad (+276.0\sigma)$
$\Omega_m$	$0.3136 \pm 0.0062 \quad (+0.1\sigma)$	$100\theta_{s,\text{eq}}$	$0.4562^{+0.0019}_{-0.0069} \quad (-0.1\sigma)$	$\chi_{\text{BAO}}^2$	$6.8 \pm 1.6 \quad (+0.1\sigma)$
$\Omega_m h^2$	$0.1438^{+0.0010}_{-0.0017} \quad (-0.0\sigma)$	$H(0.15)$	$73.04^{+0.33}_{-0.55} \quad (-0.1\sigma)$	$\chi_{\text{Abund}}^2$	$0.67 \pm 0.41 \quad (-0.3\sigma)$
$\Omega_\nu h^2$	$0.00277^{+0.00042}_{-0.0022} \quad (+0.0\sigma)$	$D_M(0.15)$	$640.1^{+5.2}_{-3.4} \quad (+0.1\sigma)$		
$\Omega_m h^3$	$0.09736^{+0.00023}_{-0.0013} \quad (-0.1\sigma)$	$H(0.38)$	$83.24^{+0.23}_{-0.49} \quad (-0.1\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2809.72; \Delta\bar{\chi}_{\text{eff}}^2 = 1592.13; R - 1 = 0.02079$$



# 8.49 base\_nnu\_meffsterile\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02249^{+0.00014}_{-0.00015} \quad (+0.8\sigma)$	$\Omega_{\mathrm{m}} h^3$	$0.09766^{+0.00023}_{-0.0016} \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.15)$	$639.1^{+6.0}_{-3.5} \quad (+0.4\sigma)$
$\Omega_{\mathrm{c}} h^2$	$0.1187^{+0.0033}_{-0.0022} \quad (-0.4\sigma)$	$\sigma_8$	$0.794^{+0.021}_{-0.012} \quad (-0.2\sigma)$	$H(0.38)$	$83.34^{+0.22}_{-0.60} \quad (-0.4\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04091^{+0.00033}_{-0.00029} \quad (+0.3\sigma)$	$S_8$	$0.811^{+0.021}_{-0.013} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1524^{+13}_{-6.8} \quad (+0.4\sigma)$
$\tau$	$0.0580^{+0.0061}_{-0.0080} \quad (+0.1\sigma)$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.444^{+0.011}_{-0.0073} \quad (-0.1\sigma)$	$H(0.51)$	$90.11^{+0.16}_{-0.59} \quad (-0.4\sigma)$
$m_{\nu, \mathrm{sterile}}^{\mathrm{eff}} [\mathrm{eV}]$	$< 0.222 \quad (+0.3\sigma)$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.594^{+0.015}_{-0.0089} \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1974^{+16}_{-7.8} \quad (+0.4\sigma)$
$N_{\mathrm{eff}}$	$3.1258^{+0.0053}_{-0.079} \quad (-0.6\sigma)$	$\sigma_8/h^{0.5}$	$0.964^{+0.024}_{-0.013} \quad (-0.1\sigma)$	$H(0.61)$	$95.77^{+0.12}_{-0.59} \quad (-0.4\sigma)$
$\ln(10^{10} A_{\mathrm{s}})$	$3.053^{+0.013}_{-0.016} \quad (-0.0\sigma)$	$r_{\mathrm{drag}} h$	$99.33 \pm 0.81 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.61)$	$2297^{+18}_{-8.3} \quad (+0.4\sigma)$
$n_{\mathrm{s}}$	$0.9683^{+0.0041}_{-0.0055} \quad (-0.4\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.437 \pm 0.021 \quad (+0.4\sigma)$	$H(2.33)$	$237.43^{+0.66}_{-1.5} \quad (-0.4\sigma)$
$y_{\mathrm{cal}}$	$1.0009 \pm 0.0024 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$8.04^{+0.64}_{-0.78} \quad (+0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	$5735^{+33}_{-5.8} \quad (+0.4\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.118^{+0.027}_{-0.035} \quad (-0.0\sigma)$	$f\sigma_8(0.15)$	$0.449^{+0.011}_{-0.0071} \quad (-0.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.886^{+0.011}_{-0.012} \quad (-0.3\sigma)$	$\sigma_8(0.15)$	$0.733^{+0.020}_{-0.012} \quad (-0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.4 \pm 2.0 \quad (+0.3\sigma)$	$D_{40}$	$1226 \pm 12 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.466^{+0.012}_{-0.0070} \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$260 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5740 \pm 37 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.650^{+0.018}_{-0.011} \quad (-0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$47 \pm 8 \quad (-0.5\sigma)$	$D_{810}$	$2542 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.51)$	$0.465^{+0.012}_{-0.0069} \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9 \quad (-0.2\sigma)$	$D_{1420}$	$817.6 \pm 4.6 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.608^{+0.016}_{-0.010} \quad (-0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$230.7 \pm 1.6 \quad (+0.8\sigma)$	$f\sigma_8(0.61)$	$0.460^{+0.012}_{-0.0069} \quad (-0.2\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.39 \quad (-0.2\sigma)$	$n_{\mathrm{s}, 0.002}$	$0.9683^{+0.0041}_{-0.0055} \quad (-0.4\sigma)$	$\sigma_8(0.61)$	$0.579^{+0.016}_{-0.0097} \quad (-0.2\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.24650^{+0.00014}_{-0.0011} \quad (-0.5\sigma)$	$f\sigma_8(2.33)$	$0.2919^{+0.0080}_{-0.0050} \quad (-0.3\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24783^{+0.00015}_{-0.0011} \quad (-0.5\sigma)$	$\sigma_8(2.33)$	$0.3007^{+0.0083}_{-0.0054} \quad (-0.3\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.591^{+0.024}_{-0.032} \quad (-1.2\sigma)$	$f_{2000}^{143}$	$30.0 \pm 2.8 \quad (-0.7\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.7 \pm 7.3 \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.730^{+0.078}_{-0.013} \quad (+0.4\sigma)$	$f_{2000}^{143 \times 217}$	$32.6 \pm 1.9 \quad (-0.8\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.114 \pm 0.038$	$z_*$	$1089.90 \pm 0.24 \quad (-1.0\sigma)$	$f_{2000}^{217}$	$107.4 \pm 1.8 \quad (-0.7\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.029$	$r_*$	$143.84^{+0.85}_{-0.24} \quad (+0.4\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.12 \pm 0.73 \quad (-0.4\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.481 \pm 0.085$	$100\theta_*$	$1.04104^{+0.00036}_{-0.00029} \quad (+0.3\sigma)$	$\chi_{\mathrm{small}}^2$	$397.6 \pm 2.3 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.224 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.817^{+0.080}_{-0.023} \quad (+0.4\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.03 \pm 0.90 \quad (+0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.664 \pm 0.081$	$z_{\mathrm{drag}}$	$1060.32^{+0.31}_{-0.45} \quad (+0.4\sigma)$	$\chi_{\mathrm{plik}}^2$	$2361.3 \pm 6.1 \quad (+285.7\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.27$	$r_{\mathrm{drag}}$	$146.46^{+0.89}_{-0.26} \quad (+0.4\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.084 \pm 0.088 \quad (+0.1\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.14138^{+0.00031}_{-0.00073} \quad (-0.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.10 \pm 0.42 \quad (-0.2\sigma)$
$c_{217}$	$0.99821 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16083^{+0.00017}_{-0.00026} \quad (-1.1\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$5.5 \pm 1.9 \quad (+0.2\sigma)$
$H_0$	$67.82^{+0.41}_{-0.69} \quad (-0.4\sigma)$	$z_{\mathrm{eq}}$	$3339^{+62}_{-19} \quad (+0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.6 \pm 4.6 \quad (+1.2\sigma)$
$\Omega_{\Lambda}$	$0.6869 \pm 0.0064 \quad (-0.2\sigma)$	$k_{\mathrm{eq}}$	$0.01027^{+0.00018}_{-0.000093} \quad (-0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2791.1 \pm 6.2 \quad (+273.0\sigma)$
$\Omega_{\mathrm{m}}$	$0.3131 \pm 0.0064 \quad (+0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8266^{+0.0034}_{-0.013} \quad (+0.0\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.7 \pm 1.6 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}} h^2$	$0.1440^{+0.0010}_{-0.0019} \quad (-0.4\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4563^{+0.0017}_{-0.0069} \quad (+0.0\sigma)$		
$\Omega_{\nu} h^2$	$0.00276^{+0.00034}_{-0.0021} \quad (+0.3\sigma)$	$H(0.15)$	$73.15^{+0.34}_{-0.65} \quad (-0.4\sigma)$		

$\bar{\chi}_{\mathrm{eff}}^2 = 2809.40$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.35$ ;  $R - 1 = 0.02345$



# 8.50 base\_nnu\_meffsterile\_plikHM\_TTTEE\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02250^{+0.00014}_{-0.00015} \quad (+0.8\sigma)$	$\Omega_{\mathrm{m}} h^3$	$0.09776^{+0.00022}_{-0.0017} \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.15)$	$638.3^{+6.3}_{-3.2} \quad (+0.4\sigma)$
$\Omega_{\mathrm{c}} h^2$	$0.1188^{+0.0033}_{-0.0023} \quad (-0.4\sigma)$	$\sigma_8$	$0.795^{+0.020}_{-0.012} \quad (-0.2\sigma)$	$H(0.38)$	$83.41^{+0.19}_{-0.65} \quad (-0.4\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04091^{+0.00033}_{-0.00030} \quad (+0.3\sigma)$	$S_8$	$0.811^{+0.020}_{-0.013} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1522^{+14}_{-6.0} \quad (+0.4\sigma)$
$\tau$	$0.0580^{+0.0061}_{-0.0079} \quad (+0.1\sigma)$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.444^{+0.011}_{-0.0073} \quad (-0.1\sigma)$	$H(0.51)$	$90.17^{+0.14}_{-0.63} \quad (-0.4\sigma)$
$m_{\nu, \mathrm{sterile}}^{\mathrm{eff}} [\mathrm{eV}]$	$< 0.202 \quad (+0.2\sigma)$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.594^{+0.015}_{-0.0089} \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1972^{+17}_{-6.8} \quad (+0.4\sigma)$
$N_{\mathrm{eff}}$	$< 3.13 \quad (-0.6\sigma)$	$\sigma_8/h^{0.5}$	$0.965^{+0.023}_{-0.013} \quad (-0.1\sigma)$	$H(0.61)$	$95.83^{+0.11}_{-0.63} \quad (-0.4\sigma)$
$\ln(10^{10} A_{\mathrm{s}})$	$3.053^{+0.013}_{-0.016} \quad (-0.1\sigma)$	$r_{\mathrm{drag}} h$	$99.46 \pm 0.77 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.61)$	$2294^{+19}_{-7.2} \quad (+0.4\sigma)$
$n_{\mathrm{s}}$	$0.9688^{+0.0040}_{-0.0055} \quad (-0.4\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.435 \pm 0.021 \quad (+0.4\sigma)$	$H(2.33)$	$237.41^{+0.61}_{-1.6} \quad (-0.4\sigma)$
$y_{\mathrm{cal}}$	$1.0009 \pm 0.0024 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$8.03^{+0.64}_{-0.77} \quad (-0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	$5732^{+35}_{-5.4} \quad (+0.4\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.117^{+0.027}_{-0.035} \quad (-0.1\sigma)$	$f\sigma_8(0.15)$	$0.449^{+0.011}_{-0.0071} \quad (-0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.886^{+0.011}_{-0.013} \quad (-0.3\sigma)$	$\sigma_8(0.15)$	$0.735^{+0.019}_{-0.012} \quad (-0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.4 \pm 2.0 \quad (+0.3\sigma)$	$D_{40}$	$1226 \pm 12 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.467^{+0.011}_{-0.0070} \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$259 \pm 28 \quad (-0.3\sigma)$	$D_{220}$	$5741 \pm 37 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.651^{+0.017}_{-0.011} \quad (-0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$47 \pm 8 \quad (-0.5\sigma)$	$D_{810}$	$2542 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.51)$	$0.465^{+0.012}_{-0.0069} \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$817.6 \pm 4.6 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.609^{+0.016}_{-0.010} \quad (-0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$230.7 \pm 1.6 \quad (+0.8\sigma)$	$f\sigma_8(0.61)$	$0.460^{+0.011}_{-0.0069} \quad (-0.2\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.42 \quad (-0.2\sigma)$	$n_{\mathrm{s}, 0.002}$	$0.9688^{+0.0040}_{-0.0055} \quad (-0.4\sigma)$	$\sigma_8(0.61)$	$0.580^{+0.015}_{-0.0097} \quad (-0.2\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$9.0 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.24654^{+0.00012}_{-0.0011} \quad (-0.5\sigma)$	$f\sigma_8(2.33)$	$0.2926^{+0.0077}_{-0.0050} \quad (-0.3\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24788^{+0.00012}_{-0.0011} \quad (-0.5\sigma)$	$\sigma_8(2.33)$	$0.3014^{+0.0080}_{-0.0054} \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.7 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.590^{+0.024}_{-0.032} \quad (-1.2\sigma)$	$f_{2000}^{143}$	$30.0 \pm 2.8 \quad (-0.7\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.8 \pm 7.3 \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.723^{+0.084}_{-0.012} \quad (+0.4\sigma)$	$f_{2000}^{143 \times 217}$	$32.6 \pm 1.9 \quad (-0.8\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.114 \pm 0.038$	$z_*$	$1089.89^{+0.21}_{-0.25} \quad (-1.0\sigma)$	$f_{2000}^{217}$	$107.4 \pm 1.8 \quad (-0.7\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.030$	$r_*$	$143.83^{+0.91}_{-0.22} \quad (+0.4\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.16 \pm 0.76 \quad (-0.4\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.483 \pm 0.085$	$100\theta_*$	$1.04104^{+0.00037}_{-0.00030} \quad (+0.3\sigma)$	$\chi_{\mathrm{small}}^2$	$262 \pm 200 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.223 \pm 0.055$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.816^{+0.085}_{-0.021} \quad (+0.4\sigma)$	$\chi_{\mathrm{lowl}}^2$	$158 \pm 200 \quad (+0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.664 \pm 0.080$	$z_{\mathrm{drag}}$	$1060.34^{+0.30}_{-0.47} \quad (+0.3\sigma)$	$\chi_{\mathrm{plik}}^2$	$2361.4 \pm 6.0 \quad (+285.0\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.27$	$r_{\mathrm{drag}}$	$146.44^{+0.95}_{-0.24} \quad (+0.4\sigma)$	$\chi_{\mathrm{JLA}}^2$	$1035.16 \pm 0.34 \quad (+0.1\sigma)$
$c_{100}$	$0.99968 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.14139^{+0.00029}_{-0.00078} \quad (-0.1\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.47 \pm 0.59 \quad (+0.1\sigma)$
$c_{217}$	$0.99820 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16083^{+0.00017}_{-0.00028} \quad (-1.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$0.76 \pm 0.62 \quad (-0.3\sigma)$
$H_0$	$67.92^{+0.37}_{-0.72} \quad (-0.4\sigma)$	$z_{\mathrm{eq}}$	$3340^{+59}_{-18} \quad (+0.1\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$5.2 \pm 1.6 \quad (+0.2\sigma)$
$\Omega_{\Lambda}$	$0.6879 \pm 0.0061 \quad (-0.2\sigma)$	$k_{\mathrm{eq}}$	$0.01028^{+0.00018}_{-0.000095} \quad (-0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.7 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.3121 \pm 0.0061 \quad (+0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8264^{+0.0032}_{-0.012} \quad (-0.0\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2791.1 \pm 6.2 \quad (+271.9\sigma)$
$\Omega_{\mathrm{m}} h^2$	$0.14392^{+0.00098}_{-0.0020} \quad (-0.4\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4562^{+0.0016}_{-0.0065} \quad (-0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.4 \pm 1.3 \quad (+0.1\sigma)$
$\Omega_{\nu} h^2$	$0.00260^{+0.00025}_{-0.0020} \quad (+0.2\sigma)$	$H(0.15)$	$73.23^{+0.30}_{-0.69} \quad (-0.4\sigma)$		

$\bar{\chi}_{\mathrm{eff}}^2 = 3844.37$ ;  $\Delta \bar{\chi}_{\mathrm{eff}}^2 = 1592.25$ ;  $R - 1 = 0.02468$



## 8.51 base\_nnu\_meffsterile\_plikHM\_TTTEE\_lowl\_lowE\_lensing\_BAO\_post\_Aver15\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02248 \pm 0.00014 \quad (+0.9\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09737^{+0.00023}_{-0.0013} \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$639.9^{+5.1}_{-3.5} \quad (+0.2\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1185^{+0.0032}_{-0.0020} \quad (-0.2\sigma)$	$\sigma_8$	$0.793^{+0.020}_{-0.012} \quad (-0.0\sigma)$	$H(0.38)$	$83.25^{+0.23}_{-0.49} \quad (-0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04093 \pm 0.00030 \quad (+0.2\sigma)$	$S_8$	$0.810^{+0.020}_{-0.014} \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1526^{+11}_{-6.7} \quad (+0.2\sigma)$
$\tau$	$0.0576^{+0.0060}_{-0.0078} \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.444^{+0.011}_{-0.0075} \quad (-0.0\sigma)$	$H(0.51)$	$90.01^{+0.17}_{-0.47} \quad (-0.2\sigma)$
$m_{\nu, \mathrm{sterile}}^{\mathrm{eff}} [\mathrm{eV}]$	$< 0.231 \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.593^{+0.014}_{-0.0090} \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1976^{+13}_{-7.8} \quad (+0.2\sigma)$
$N_{\mathrm{eff}}$	$3.1102^{+0.0052}_{-0.062} \quad (-0.4\sigma)$	$\sigma_8/h^{0.5}$	$0.964^{+0.023}_{-0.013} \quad (-0.0\sigma)$	$H(0.61)$	$95.67^{+0.13}_{-0.46} \quad (-0.2\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.051^{+0.013}_{-0.016} \quad (+0.0\sigma)$	$r_{\mathrm{drag}}h$	$99.31 \pm 0.78 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2299^{+15}_{-8.3} \quad (+0.2\sigma)$
$n_{\mathrm{s}}$	$0.9677^{+0.0040}_{-0.0047} \quad (-0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.438 \pm 0.021 \quad (+0.2\sigma)$	$H(2.33)$	$237.21^{+0.64}_{-1.3} \quad (-0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0009 \pm 0.0024 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.99^{+0.63}_{-0.76} \quad (-0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	$5741^{+26}_{-6.2} \quad (+0.2\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.115^{+0.027}_{-0.034} \quad (+0.0\sigma)$	$f\sigma_8(0.15)$	$0.448^{+0.011}_{-0.0073} \quad (-0.0\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.885^{+0.010}_{-0.012} \quad (-0.1\sigma)$	$\sigma_8(0.15)$	$0.733^{+0.018}_{-0.011} \quad (-0.0\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.4 \pm 2.0 \quad (+0.2\sigma)$	$D_{40}$	$1227 \pm 12 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.466^{+0.011}_{-0.0071} \quad (-0.0\sigma)$
$A_{100}^{\mathrm{PS}}$	$259 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5740 \pm 37 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.649^{+0.017}_{-0.010} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$47 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2541 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.464^{+0.011}_{-0.0069} \quad (-0.0\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$817.6 \pm 4.6 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.608^{+0.016}_{-0.0096} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$230.7 \pm 1.5 \quad (+0.8\sigma)$	$f\sigma_8(0.61)$	$0.459^{+0.011}_{-0.0068} \quad (-0.0\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.37 \quad (-0.2\sigma)$	$n_{\mathrm{s}, 0.002}$	$0.9677^{+0.0040}_{-0.0047} \quad (-0.2\sigma)$	$\sigma_8(0.61)$	$0.578^{+0.015}_{-0.0092} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.24629^{+0.00013}_{-0.00083} \quad (-0.3\sigma)$	$f\sigma_8(2.33)$	$0.2917^{+0.0075}_{-0.0047} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24762^{+0.00013}_{-0.00084} \quad (-0.3\sigma)$	$\sigma_8(2.33)$	$0.3005^{+0.0078}_{-0.0051} \quad (-0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.7 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.588^{+0.024}_{-0.028} \quad (-1.1\sigma)$	$f_{2000}^{143}$	$29.9 \pm 2.8 \quad (-0.6\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.8 \pm 7.3 \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.744^{+0.062}_{-0.014} \quad (+0.2\sigma)$	$f_{2000}^{143 \times 217}$	$32.5 \pm 1.9 \quad (-0.7\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.114 \pm 0.038$	$z_*$	$1089.89 \pm 0.23 \quad (-0.9\sigma)$	$f_{2000}^{217}$	$107.3 \pm 1.8 \quad (-0.7\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.030$	$r_*$	$143.98^{+0.70}_{-0.23} \quad (+0.2\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.11 \pm 0.73 \quad (-0.3\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.482 \pm 0.086$	$100\theta_*$	$1.04107^{+0.00033}_{-0.00029} \quad (+0.2\sigma)$	$\chi_{\mathrm{small}}^2$	$268 \pm 200 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.224 \pm 0.055$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.830^{+0.066}_{-0.022} \quad (+0.2\sigma)$	$\chi_{\mathrm{lowl}}^2$	$152 \pm 200 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.664 \pm 0.080$	$z_{\mathrm{drag}}$	$1060.26^{+0.30}_{-0.40} \quad (+0.7\sigma)$	$\chi_{\mathrm{plik}}^2$	$2360.9 \pm 5.9 \quad (+291.3\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.27$	$r_{\mathrm{drag}}$	$146.60^{+0.73}_{-0.24} \quad (+0.1\sigma)$	$\chi_{\mathrm{Aver15}}^2$	$0.51 \pm 0.39 \quad (-0.3\sigma)$
$c_{100}$	$0.99968 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.14127^{+0.00031}_{-0.00062} \quad (+0.2\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.44 \pm 0.54 \quad (+0.1\sigma)$
$c_{217}$	$0.99820 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16080^{+0.00017}_{-0.00023} \quad (-1.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$0.73 \pm 0.58 \quad (-0.2\sigma)$
$H_0$	$67.74^{+0.40}_{-0.59} \quad (-0.2\sigma)$	$z_{\mathrm{eq}}$	$3339^{+63}_{-21} \quad (+0.1\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$5.5 \pm 1.8 \quad (+0.1\sigma)$
$\Omega_{\Lambda}$	$0.6867 \pm 0.0062 \quad (-0.1\sigma)$	$k_{\mathrm{eq}}$	$0.01027^{+0.00017}_{-0.000089} \quad (+0.0\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.6 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.3133 \pm 0.0062 \quad (+0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8265^{+0.0038}_{-0.013} \quad (-0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2790.6 \pm 6.0 \quad (+275.8\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1437^{+0.0010}_{-0.0017} \quad (-0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4563^{+0.0020}_{-0.0069} \quad (-0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.7 \pm 1.5 \quad (+0.0\sigma)$
$\Omega_{\nu}h^2$	$0.00278^{+0.00041}_{-0.0022} \quad (+0.1\sigma)$	$H(0.15)$	$73.06^{+0.34}_{-0.54} \quad (-0.2\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2809.47; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.98; R - 1 = 0.02226$$



## 8.52 base\_nnu\_meffsterile\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Cooke17\_Aver15\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02247 \pm 0.00014 \quad (+0.9\sigma)$	$\sigma_8$	$0.793^{+0.020}_{-0.012} \quad (+0.0\sigma)$	$D_M(0.38)$	$1526^{+11}_{-6.6} \quad (+0.1\sigma)$
$\Omega_c h^2$	$0.1185^{+0.0032}_{-0.0019} \quad (-0.1\sigma)$	$S_8$	$0.811^{+0.020}_{-0.013} \quad (+0.1\sigma)$	$H(0.51)$	$90.01^{+0.17}_{-0.48} \quad (-0.1\sigma)$
$100\theta_{MC}$	$1.04092 \pm 0.00030 \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.444^{+0.011}_{-0.0074} \quad (+0.1\sigma)$	$D_M(0.51)$	$1976^{+14}_{-7.7} \quad (+0.1\sigma)$
$\tau$	$0.0575^{+0.0060}_{-0.0078} \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.594^{+0.014}_{-0.0088} \quad (+0.0\sigma)$	$H(0.61)$	$95.66^{+0.13}_{-0.47} \quad (-0.1\sigma)$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.229 \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.964^{+0.023}_{-0.013} \quad (+0.0\sigma)$	$D_M(0.61)$	$2300^{+15}_{-8.2} \quad (+0.1\sigma)$
$N_{\text{eff}}$	$3.1113^{+0.0057}_{-0.064} \quad (-0.3\sigma)$	$r_{\text{drag}} h$	$99.28 \pm 0.77 \quad (-0.1\sigma)$	$H(2.33)$	$237.24^{+0.65}_{-1.3} \quad (-0.1\sigma)$
$\ln(10^{10} A_s)$	$3.051^{+0.013}_{-0.016} \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.438 \pm 0.021 \quad (+0.2\sigma)$	$D_M(2.33)$	$5741^{+27}_{-6.1} \quad (+0.1\sigma)$
$n_s$	$0.9676^{+0.0040}_{-0.0048} \quad (-0.1\sigma)$	$z_{\text{re}}$	$7.98^{+0.63}_{-0.76} \quad (-0.0\sigma)$	$f\sigma_8(0.15)$	$0.449^{+0.011}_{-0.0072} \quad (+0.0\sigma)$
$y_{\text{cal}}$	$1.0009 \pm 0.0024 \quad (+0.0\sigma)$	$10^9 A_s$	$2.114^{+0.027}_{-0.034} \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.733^{+0.019}_{-0.011} \quad (+0.0\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_s e^{-2\tau}$	$1.885^{+0.010}_{-0.012} \quad (-0.0\sigma)$	$f\sigma_8(0.38)$	$0.466^{+0.011}_{-0.0070} \quad (+0.0\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{40}$	$1227 \pm 12 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.649^{+0.017}_{-0.010} \quad (-0.0\sigma)$
$A_{143}^{\text{tSZ}}$	$5.4 \pm 2.0 \quad (+0.2\sigma)$	$D_{220}$	$5739 \pm 37 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.465^{+0.011}_{-0.0069} \quad (+0.0\sigma)$
$A_{100}^{\text{PS}}$	$259 \pm 28 \quad (-0.2\sigma)$	$D_{810}$	$2541 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.608^{+0.016}_{-0.0096} \quad (-0.0\sigma)$
$A_{143}^{\text{PS}}$	$47 \pm 8 \quad (-0.4\sigma)$	$D_{1420}$	$817.4 \pm 4.5 \quad (+0.4\sigma)$	$f\sigma_8(0.61)$	$0.460^{+0.011}_{-0.0068} \quad (+0.0\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9 \quad (-0.1\sigma)$	$D_{2000}$	$230.7 \pm 1.5 \quad (+0.7\sigma)$	$\sigma_8(0.61)$	$0.578^{+0.015}_{-0.0092} \quad (-0.0\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$n_{s,0.002}$	$0.9676^{+0.0040}_{-0.0048} \quad (-0.1\sigma)$	$f\sigma_8(2.33)$	$0.2917^{+0.0076}_{-0.0048} \quad (-0.0\sigma)$
$A^{\text{kSZ}}$	$< 4.39 \quad (-0.2\sigma)$	$Y_P$	$0.24630^{+0.00014}_{-0.00085} \quad (-0.3\sigma)$	$\sigma_8(2.33)$	$0.3005^{+0.0079}_{-0.0051} \quad (-0.0\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (+0.0\sigma)$	$Y_P^{\text{BBN}}$	$0.24763^{+0.00014}_{-0.00085} \quad (-0.3\sigma)$	$f_{2000}^{143}$	$30.0 \pm 2.8 \quad (-0.6\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$10^5 \text{D}/\text{H}$	$2.590^{+0.023}_{-0.027} \quad (-1.1\sigma)$	$f_{2000}^{143 \times 217}$	$32.6 \pm 1.9 \quad (-0.7\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.7 \pm 3.3 \quad (+0.1\sigma)$	$\text{Age}/\text{Gyr}$	$13.744^{+0.064}_{-0.014} \quad (+0.1\sigma)$	$f_{2000}^{217}$	$107.4 \pm 1.8 \quad (-0.6\sigma)$
$A_{217}^{\text{dustTT}}$	$93.8 \pm 7.3 \quad (+0.1\sigma)$	$z_*$	$1089.90 \pm 0.22 \quad (-0.9\sigma)$	$\chi_{\text{lensing}}^2$	$9.11 \pm 0.73 \quad (-0.3\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$r_*$	$143.97^{+0.71}_{-0.24} \quad (+0.1\sigma)$	$\chi_{\text{simall}}^2$	$270 \pm 200 \quad (-0.1\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$100\theta_*$	$1.04107^{+0.00033}_{-0.00029} \quad (+0.1\sigma)$	$\chi_{\text{lowl}}^2$	$151 \pm 200 \quad (+0.1\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.482 \pm 0.086$	$D_M(z_*)/\text{Gpc}$	$13.829^{+0.067}_{-0.023} \quad (+0.1\sigma)$	$\chi_{\text{plik}}^2$	$2360.9 \pm 5.9 \quad (+293.2\sigma)$
$A_{143}^{\text{dustTE}}$	$0.224 \pm 0.055$	$z_{\text{drag}}$	$1060.25^{+0.30}_{-0.40} \quad (+0.7\sigma)$	$\chi_{\text{Aver15}}^2$	$0.51 \pm 0.39 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.664 \pm 0.080$	$r_{\text{drag}}$	$146.59^{+0.74}_{-0.25} \quad (+0.0\sigma)$	$\chi_{\text{Cooke17}}^2$	$0.16 \pm 0.19 \quad (-0.1\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.27$	$k_D$	$0.14127^{+0.00031}_{-0.00063} \quad (+0.3\sigma)$	$\chi_{6\text{DF}}^2$	$0.43 \pm 0.53 \quad (+0.1\sigma)$
$c_{100}$	$0.99967 \pm 0.00062 \quad (+0.1\sigma)$	$100\theta_D$	$0.16081^{+0.00017}_{-0.00022} \quad (-1.1\sigma)$	$\chi_{\text{MGS}}^2$	$0.73 \pm 0.57 \quad (-0.2\sigma)$
$c_{217}$	$0.99821 \pm 0.00062 \quad (-0.1\sigma)$	$z_{\text{eq}}$	$3340^{+63}_{-20} \quad (+0.2\sigma)$	$\chi_{\text{DR12BAO}}^2$	$5.6 \pm 1.8 \quad (+0.1\sigma)$
$H_0$	$67.73^{+0.40}_{-0.59} \quad (-0.1\sigma)$	$k_{\text{eq}}$	$0.01027^{+0.00017}_{-0.000087} \quad (+0.1\sigma)$	$\chi_{\text{prior}}^2$	$11.6 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_\Lambda$	$0.6865 \pm 0.0061 \quad (-0.1\sigma)$	$100\theta_{\text{eq}}$	$0.8264^{+0.0037}_{-0.013} \quad (-0.1\sigma)$	$\chi_{\text{CMB}}^2$	$2790.6 \pm 6.0 \quad (+276.8\sigma)$
$\Omega_m$	$0.3135 \pm 0.0061 \quad (+0.1\sigma)$	$100\theta_{s,\text{eq}}$	$0.4562^{+0.0019}_{-0.0069} \quad (-0.1\sigma)$	$\chi_{\text{BAO}}^2$	$6.7 \pm 1.6 \quad (+0.1\sigma)$
$\Omega_m h^2$	$0.1438^{+0.0010}_{-0.0017} \quad (-0.0\sigma)$	$H(0.15)$	$73.05^{+0.33}_{-0.55} \quad (-0.1\sigma)$	$\chi_{\text{Abund}}^2$	$0.67 \pm 0.41 \quad (-0.3\sigma)$
$\Omega_\nu h^2$	$0.00277^{+0.00042}_{-0.0022} \quad (+0.0\sigma)$	$D_M(0.15)$	$640.0^{+5.2}_{-3.4} \quad (+0.1\sigma)$		
$\Omega_m h^3$	$0.09737^{+0.00024}_{-0.0013} \quad (-0.1\sigma)$	$H(0.38)$	$83.24^{+0.23}_{-0.50} \quad (-0.1\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2809.63; \Delta\bar{\chi}_{\text{eff}}^2 = 1592.16; R - 1 = 0.02220$$



### 8.53 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022343	$0.02241^{+0.00015}_{-0.00016}$	$S_8$	0.8223	$0.809^{+0.019}_{-0.013}$	$H(0.38)$	83.003	$83.44^{+0.24}_{-0.75}$
$\Omega_c h^2$	0.11905	$0.1192^{+0.0031}_{-0.0025}$	$\sigma_8 \Omega_m^{0.5}$	0.4504	$0.443^{+0.011}_{-0.0070}$	$D_M(0.38)$	1529.1	$1522^{+16}_{-7.2}$
$100\theta_{MC}$	1.040943	$1.04081^{+0.00036}_{-0.00032}$	$\sigma_8 \Omega_m^{0.25}$	0.6032	$0.593^{+0.014}_{-0.0085}$	$H(0.51)$	89.714	$90.20^{+0.18}_{-0.75}$
$\tau$	0.0546	$0.0564^{+0.0067}_{-0.0078}$	$\sigma_8/h^{0.5}$	0.9824	$0.963^{+0.022}_{-0.012}$	$D_M(0.51)$	1980.9	$1971^{+20}_{-8.2}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	0.011	$< 0.174$	$r_{\text{drag}} h$	99.64	$99.47 \pm 0.84$	$H(0.61)$	95.328	$95.85^{+0.16}_{-0.74}$
$N_{\text{eff}}$	3.046	$< 3.16$	$\langle d^2 \rangle^{1/2}$	2.4294	$2.427 \pm 0.021$	$D_M(0.61)$	2305.2	$2294^{+22}_{-8.7}$
$\ln(10^{10} A_s)$	3.0410	$3.048^{+0.014}_{-0.016}$	$z_{\text{re}}$	7.70	$7.90 \pm 0.74$	$H(2.33)$	235.99	$237.48^{+0.74}_{-1.9}$
$n_s$	0.9673	$0.9693^{+0.0045}_{-0.0060}$	$10^9 A_s$	2.0926	$2.109^{+0.030}_{-0.034}$	$D_M(2.33)$	5762.6	$5731^{+42}_{-9.0}$
$y_{\text{cal}}$	1.00024	$1.0008 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8762	$1.883^{+0.012}_{-0.014}$	$f\sigma_8(0.15)$	0.4550	$0.448^{+0.011}_{-0.0068}$
$A_{100}^{\text{PS}}$	235.8	$243 \pm 25$	$D_{40}$	1223.1	$1222 \pm 13$	$\sigma_8(0.15)$	0.7466	$0.733^{+0.019}_{-0.011}$
$A_{143}^{\text{PS}}$	47.5	$41 \pm 8$	$D_{220}$	5717.3	$5726 \pm 39$	$f\sigma_8(0.38)$	0.4735	$0.466^{+0.011}_{-0.0067}$
$A_{217}^{\text{PS}}$	103.5	$102 \pm 10$	$D_{810}$	2535.0	$2538 \pm 13$	$\sigma_8(0.38)$	0.6619	$0.650^{+0.017}_{-0.010}$
$A_{217}^{\text{CIB}}$	39.8	$40 \pm 7$	$D_{1420}$	816.09	$815.6 \pm 4.8$	$f\sigma_8(0.51)$	0.4722	$0.465^{+0.011}_{-0.0066}$
$A_{143}^{\text{tSZ}}$	4.40	$3.8^{+1.8}_{-2.5}$	$D_{2000}$	230.54	$229.8 \pm 1.7$	$\sigma_8(0.51)$	0.6194	$0.608^{+0.016}_{-0.0098}$
$r_{143 \times 217}^{\text{PS}}$	0.725	$0.65 \pm 0.13$	$n_{s,0.002}$	0.9673	$0.9693^{+0.0045}_{-0.0060}$	$f\sigma_8(0.61)$	0.4672	$0.460^{+0.011}_{-0.0066}$
$r_{143 \times 217}^{\text{CIB}}$	0.726	$0.57^{+0.40}_{-0.15}$	$Y_P$	0.24539	$0.24675^{+0.00025}_{-0.0014}$	$\sigma_8(0.61)$	0.5894	$0.579^{+0.015}_{-0.0094}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.94	—	$Y_P^{\text{BBN}}$	0.24671	$0.24808^{+0.00025}_{-0.0014}$	$f\sigma_8(2.33)$	0.2972	$0.2922^{+0.0077}_{-0.0049}$
$A^{\text{kSZ}}$	3.41	$4.9 \pm 2.7$	$10^5 \text{D}/\text{H}$	2.5905	$2.615^{+0.029}_{-0.041}$	$\sigma_8(2.33)$	0.3064	$0.3010^{+0.0081}_{-0.0052}$
$A_{100}^{\text{dust}}$	1.022	$1.01 \pm 0.20$	Age/Gyr	13.796	$13.72^{+0.10}_{-0.021}$	$f_{2000}^{143}$	29.69	$30.5 \pm 3.0$
$A_{143}^{\text{dust}}$	0.975	$0.96 \pm 0.17$	$z_*$	1089.881	$1090.04^{+0.24}_{-0.31}$	$f_{2000}^{217}$	106.44	$107.5 \pm 2.0$
$A_{217}^{\text{dust}}$	0.982	$0.97 \pm 0.10$	$r_*$	144.66	$143.8^{+1.1}_{-0.31}$	$f_{2000}^{143 \times 217}$	31.97	$32.8 \pm 2.1$
$A_{143 \times 217}^{\text{dust}}$	1.019	$1.03 \pm 0.16$	$100\theta_*$	1.041131	$1.04094^{+0.00041}_{-0.00032}$	$\chi_{\text{lensing}}^2$	8.94	$9.5 \pm 1.0$
$c_{100}$	0.99765	$0.9976 \pm 0.0011$	$D_M(z_*)/\text{Gpc}$	13.895	$13.81^{+0.10}_{-0.030}$	$\chi_{\text{small}}^2$	396.07	$397.3 \pm 2.0$
$c_{217}$	1.00128	$1.0012 \pm 0.0016$	$z_{\text{drag}}$	1059.818	$1060.15^{+0.35}_{-0.49}$	$\chi_{\text{lowl}}^2$	22.86	$22.72 \pm 0.89$
$c_{TE}$	0.99640	$0.9971 \pm 0.0049$	$r_{\text{drag}}$	147.34	$146.4^{+1.1}_{-0.33}$	$\chi_{\text{CamSpec}}^2$	11500.0	$11516.1 \pm 5.8$
$c_{EE}$	0.9920	$0.9934 \pm 0.0051$	$k_D$	0.14058	$0.14127^{+0.00037}_{-0.00087}$	$\chi_{6\text{DF}}^2$	0.0297	$0.073 \pm 0.082$
$H_0$	67.63	$67.94^{+0.43}_{-0.80}$	$100\theta_D$	0.160825	$0.16102^{+0.00019}_{-0.00035}$	$\chi_{\text{MGS}}^2$	1.217	$1.18 \pm 0.44$
$\Omega_\Lambda$	0.6892	$0.6879 \pm 0.0066$	$z_{\text{eq}}$	3378.9	$3338^{+51}_{-19}$	$\chi_{\text{DR12BAO}}^2$	4.42	$5.2 \pm 1.8$
$\Omega_m$	0.3108	$0.3121 \pm 0.0066$	$k_{\text{eq}}$	0.010315	$0.01028^{+0.00016}_{-0.000097}$	$\chi_{\text{prior}}^2$	2.13	$7.8 \pm 3.4$
$\Omega_m h^2$	0.14216	$0.1440^{+0.0011}_{-0.0024}$	$100\theta_{\text{eq}}$	0.8175	$0.8262^{+0.0033}_{-0.011}$	$\chi_{\text{CMB}}^2$	11927.8	$11945.6 \pm 6.0$
$\Omega_\nu h^2$	0.00077	$0.00240^{+0.00029}_{-0.0018}$	$100\theta_{s,\text{eq}}$	0.45160	$0.4561^{+0.0016}_{-0.0057}$	$\chi_{\text{BAO}}^2$	5.67	$6.5 \pm 1.5$
$\Omega_m h^3$	0.09614	$0.09784^{+0.00039}_{-0.0020}$	$H(0.15)$	72.90	$73.26^{+0.35}_{-0.78}$			
$\sigma_8$	0.8079	$0.794^{+0.020}_{-0.012}$	$D_M(0.15)$	641.1	$638.2^{+7.1}_{-3.7}$			

Best-fit  $\chi_{\text{eff}}^2 = 11935.63$ ;  $\bar{\chi}_{\text{eff}}^2 = 11959.89$ ;  $R - 1 = 0.03604$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.03 MGS: 1.22 DR12BAO: 4.42 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.94 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.07 commander\_dx12\_v3.2.29: 22.86 CamSpec like\_10.7HM\_1400\_unified: 11499.95



# 8.54 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}} h^2$	0.022368	$0.02241^{+0.00015}_{-0.00016}$	$S_8$	0.8213	$0.809^{+0.019}_{-0.013}$	$H(0.38)$	83.34	$83.50^{+0.24}_{-0.78}$
$\Omega_{\mathrm{c}} h^2$	0.11974	$0.1192^{+0.0030}_{-0.0026}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	0.4499	$0.443^{+0.010}_{-0.0069}$	$D_{\mathrm{M}}(0.38)$	1522.2	$1520^{+16}_{-7.0}$
$100\theta_{\mathrm{MC}}$	1.040861	$1.04082^{+0.00037}_{-0.00032}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	0.6034	$0.593^{+0.014}_{-0.0085}$	$H(0.51)$	90.050	$90.25^{+0.19}_{-0.77}$
$\tau$	0.0548	$0.0568^{+0.0067}_{-0.0078}$	$\sigma_8/h^{0.5}$	0.9816	$0.964^{+0.022}_{-0.011}$	$D_{\mathrm{M}}(0.51)$	1972.3	$1969^{+20}_{-8.2}$
$m_{\nu, \mathrm{sterile}}^{\mathrm{eff}} [\mathrm{eV}]$	0.000	$< 0.163$	$r_{\mathrm{drag}} h$	99.87	$99.60 \pm 0.80$	$H(0.61)$	95.667	$95.90^{+0.17}_{-0.77}$
$N_{\mathrm{eff}}$	3.093	$< 3.16$	$\langle d^2 \rangle^{1/2}$	2.4283	$2.426 \pm 0.021$	$D_{\mathrm{M}}(0.61)$	2295.3	$2292^{+23}_{-8.7}$
$\ln(10^{10} A_{\mathrm{s}})$	3.0433	$3.049 \pm 0.015$	$z_{\mathrm{re}}$	7.73	$7.93 \pm 0.74$	$H(2.33)$	236.54	$237.42^{+0.71}_{-1.9}$
$n_{\mathrm{s}}$	0.9679	$0.9698^{+0.0045}_{-0.0060}$	$10^9 A_{\mathrm{s}}$	2.0974	$2.110^{+0.030}_{-0.034}$	$D_{\mathrm{M}}(2.33)$	5743.1	$5729^{+44}_{-9.8}$
$y_{\mathrm{cal}}$	1.00049	$1.0008 \pm 0.0025$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8796	$1.883^{+0.012}_{-0.014}$	$f\sigma_8(0.15)$	0.4547	$0.448^{+0.010}_{-0.0068}$
$A_{100}^{\mathrm{PS}}$	240.3	$243 \pm 25$	$D_{40}$	1224.1	$1221 \pm 13$	$\sigma_8(0.15)$	0.7481	$0.734^{+0.018}_{-0.011}$
$A_{143}^{\mathrm{PS}}$	40.6	$41 \pm 8$	$D_{220}$	5725.1	$5727 \pm 39$	$f\sigma_8(0.38)$	0.4735	$0.466^{+0.011}_{-0.0067}$
$A_{217}^{\mathrm{PS}}$	100.4	$102 \pm 10$	$D_{810}$	2535.3	$2538 \pm 13$	$\sigma_8(0.38)$	0.6634	$0.651^{+0.016}_{-0.010}$
$A_{217}^{\mathrm{CIB}}$	44.6	$40 \pm 7$	$D_{1420}$	815.17	$815.7 \pm 4.8$	$f\sigma_8(0.51)$	0.4724	$0.465^{+0.011}_{-0.0066}$
$A_{143}^{\mathrm{tSZ}}$	5.93	$3.7^{+1.8}_{-2.5}$	$D_{2000}$	229.98	$229.8 \pm 1.7$	$\sigma_8(0.51)$	0.6209	$0.609^{+0.015}_{-0.0097}$
$r_{143 \times 217}^{\mathrm{PS}}$	0.577	$0.65 \pm 0.13$	$n_{\mathrm{s}, 0.002}$	0.9679	$0.9698^{+0.0045}_{-0.0060}$	$f\sigma_8(0.61)$	0.4677	$0.460^{+0.011}_{-0.0066}$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.778	$0.57^{+0.41}_{-0.15}$	$Y_{\mathrm{P}}$	0.24602	$0.24678^{+0.00025}_{-0.0014}$	$\sigma_8(0.61)$	0.5909	$0.580^{+0.015}_{-0.0093}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.11	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24735	$0.24811^{+0.00025}_{-0.0014}$	$f\sigma_8(2.33)$	0.2980	$0.2927^{+0.0075}_{-0.0048}$
$A^{\mathrm{kSZ}}$	1.10	$4.9 \pm 2.7$	$10^5 \mathrm{D}/\mathrm{H}$	2.6020	$2.614^{+0.028}_{-0.042}$	$\sigma_8(2.33)$	0.3074	$0.3016^{+0.0079}_{-0.0052}$
$A_{100}^{\mathrm{dust}}$	1.005	$1.01 \pm 0.20$	Age/Gyr	13.750	$13.71^{+0.10}_{-0.023}$	$f_{2000}^{143}$	30.85	$30.5 \pm 3.0$
$A_{143}^{\mathrm{dust}}$	0.980	$0.96 \pm 0.18$	$z_*$	1089.946	$1090.02^{+0.23}_{-0.31}$	$f_{2000}^{217}$	107.29	$107.5 \pm 2.0$
$A_{217}^{\mathrm{dust}}$	0.974	$0.97 \pm 0.10$	$r_*$	144.27	$143.8^{+1.1}_{-0.30}$	$f_{2000}^{143 \times 217}$	32.61	$32.8 \pm 2.1$
$A_{143 \times 217}^{\mathrm{dust}}$	1.006	$1.03 \pm 0.16$	$100\theta_*$	1.041020	$1.04094^{+0.00042}_{-0.00032}$	$\chi_{\mathrm{lensing}}^2$	9.02	$9.5 \pm 1.0$
$c_{100}$	0.99761	$0.9976 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.858	$13.81^{+0.10}_{-0.029}$	$\chi_{\mathrm{small}}^2$	396.12	$397.4 \pm 2.1$
$c_{217}$	1.00143	$1.0012 \pm 0.0016$	$z_{\mathrm{drag}}$	1059.933	$1060.16^{+0.35}_{-0.50}$	$\chi_{\mathrm{lowl}}^2$	22.86	$22.66 \pm 0.88$
$c_{TE}$	0.99648	$0.9972 \pm 0.0050$	$r_{\mathrm{drag}}$	146.93	$146.4^{+1.2}_{-0.32}$	$\chi_{\mathrm{CamSpec}}^2$	11500.0	$11516.2 \pm 5.8$
$c_{EE}$	0.9929	$0.9934 \pm 0.0051$	$k_{\mathrm{D}}$	0.14086	$0.14126^{+0.00037}_{-0.00090}$	$\chi_{\mathrm{JLA}}^2$	1034.942	$1035.11 \pm 0.33$
$H_0$	67.97	$68.03^{+0.42}_{-0.82}$	$100\theta_{\mathrm{D}}$	0.160938	$0.16102^{+0.00019}_{-0.00036}$	$\chi_{6\mathrm{DF}}^2$	0.0161	$0.060 \pm 0.071$
$\Omega_{\Lambda}$	0.6910	$0.6890 \pm 0.0063$	$z_{\mathrm{eq}}$	3374.7	$3337^{+50}_{-18}$	$\chi_{\mathrm{MGS}}^2$	1.343	$1.25 \pm 0.43$
$\Omega_{\mathrm{m}}$	0.3090	$0.3110 \pm 0.0063$	$k_{\mathrm{eq}}$	0.010332	$0.01028^{+0.00016}_{-0.000099}$	$\chi_{\mathrm{DR12BAO}}^2$	4.09	$5.0 \pm 1.5$
$\Omega_{\mathrm{m}} h^2$	0.14275	$0.1439^{+0.0011}_{-0.0024}$	$100\theta_{\mathrm{eq}}$	0.8182	$0.8264^{+0.0032}_{-0.010}$	$\chi_{\mathrm{prior}}^2$	2.29	$7.8 \pm 3.5$
$\Omega_{\nu} h^2$	0.00065	$0.00231^{+0.00025}_{-0.0018}$	$100\theta_{\mathrm{s}, \mathrm{eq}}$	0.45196	$0.4562^{+0.0016}_{-0.0055}$	$\chi_{\mathrm{CMB}}^2$	11928.1	$11945.8 \pm 6.1$
$\Omega_{\mathrm{m}} h^3$	0.09703	$0.09790^{+0.00041}_{-0.0021}$	$H(0.15)$	73.24	$73.34^{+0.35}_{-0.79}$	$\chi_{\mathrm{BAO}}^2$	5.45	$6.3 \pm 1.3$
$\sigma_8$	0.8093	$0.795^{+0.019}_{-0.012}$	$D_{\mathrm{M}}(0.15)$	638.0	$637.4^{+7.2}_{-3.6}$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 12970.74$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 12994.91$ ;  $R - 1 = 0.03797$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.34 DR12BAO: 4.09 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consect8: 9.02 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.12 commander\_dx12\_v3.2.29: 22.86 CamSpec like\_10.7HM\_1400\_unified: 11500.05 SN - JLA Pantheon18: 1034.94



# 8.55 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Aver15

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02239 \pm 0.00015$	$S_8$	$0.808^{+0.019}_{-0.013}$	$H(0.38)$	$83.28^{+0.25}_{-0.57}$
$\Omega_c h^2$	$0.1186^{+0.0030}_{-0.0020}$	$\sigma_8 \Omega_m^{0.5}$	$0.443^{+0.010}_{-0.0071}$	$D_M(0.38)$	$1525^{+12}_{-7.2}$
$100\theta_{MC}$	$1.04085 \pm 0.00032$	$\sigma_8 \Omega_m^{0.25}$	$0.592^{+0.014}_{-0.0083}$	$H(0.51)$	$90.03^{+0.18}_{-0.55}$
$\tau$	$0.0563^{+0.0067}_{-0.0077}$	$\sigma_8/h^{0.5}$	$0.962^{+0.022}_{-0.012}$	$D_M(0.51)$	$1975^{+15}_{-8.3}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.191$	$r_{\text{drag}} h$	$99.44 \pm 0.81$	$H(0.61)$	$95.68^{+0.15}_{-0.55}$
$N_{\text{eff}}$	$< 3.13$	$\langle d^2 \rangle^{1/2}$	$2.429 \pm 0.021$	$D_M(0.61)$	$2298^{+17}_{-8.9}$
$\ln(10^{10} A_s)$	$3.047 \pm 0.015$	$z_{\text{re}}$	$7.87 \pm 0.74$	$H(2.33)$	$237.10^{+0.70}_{-1.5}$
$n_s$	$0.9684^{+0.0044}_{-0.0052}$	$10^9 A_s$	$2.106^{+0.030}_{-0.033}$	$D_M(2.33)$	$5741^{+31}_{-7.3}$
$y_{\text{cal}}$	$1.0008 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.881 \pm 0.012$	$f\sigma_8(0.15)$	$0.447^{+0.011}_{-0.0069}$
$A_{100}^{\text{PS}}$	$242 \pm 25$	$D_{40}$	$1223 \pm 13$	$\sigma_8(0.15)$	$0.732^{+0.018}_{-0.010}$
$A_{143}^{\text{PS}}$	$41 \pm 8$	$D_{220}$	$5726 \pm 39$	$f\sigma_8(0.38)$	$0.465^{+0.011}_{-0.0066}$
$A_{217}^{\text{PS}}$	$102 \pm 10$	$D_{810}$	$2537 \pm 13$	$\sigma_8(0.38)$	$0.649^{+0.016}_{-0.0095}$
$A_{217}^{\text{CIB}}$	$40 \pm 7$	$D_{1420}$	$815.7 \pm 4.8$	$f\sigma_8(0.51)$	$0.464^{+0.011}_{-0.0064}$
$A_{143}^{\text{tSZ}}$	$3.7^{+1.8}_{-2.5}$	$D_{2000}$	$229.9 \pm 1.6$	$\sigma_8(0.51)$	$0.607^{+0.015}_{-0.0090}$
$r_{143 \times 217}^{\text{PS}}$	$0.65 \pm 0.13$	$n_{s,0.002}$	$0.9684^{+0.0044}_{-0.0052}$	$f\sigma_8(0.61)$	$0.459^{+0.011}_{-0.0063}$
$r_{143 \times 217}^{\text{CIB}}$	$0.57^{+0.40}_{-0.16}$	$Y_P$	$0.24641^{+0.00018}_{-0.0010}$	$\sigma_8(0.61)$	$0.578^{+0.015}_{-0.0086}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24774^{+0.00018}_{-0.0010}$	$f\sigma_8(2.33)$	$0.2915^{+0.0075}_{-0.0045}$
$A^{\text{kSZ}}$	$4.9^{+2.8}_{-3.5}$	$10^5 D/H$	$2.609^{+0.027}_{-0.035}$	$\sigma_8(2.33)$	$0.3004^{+0.0078}_{-0.0048}$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.20$	$\text{Age/Gyr}$	$13.743^{+0.074}_{-0.017}$	$f_{2000}^{143}$	$30.3 \pm 2.9$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.18$	$z_*$	$1090.00^{+0.23}_{-0.27}$	$f_{2000}^{217}$	$107.3 \pm 2.0$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$r_*$	$144.02^{+0.83}_{-0.27}$	$f_{2000}^{143 \times 217}$	$32.6 \pm 2.0$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.16$	$100\theta_*$	$1.04100^{+0.00036}_{-0.00031}$	$\chi_{\text{lensing}}^2$	$9.4 \pm 1.0$
$c_{100}$	$0.9976 \pm 0.0011$	$D_M(z_*)/\text{Gpc}$	$13.834^{+0.077}_{-0.026}$	$\chi_{\text{simall}}^2$	$397.3 \pm 2.0$
$c_{217}$	$1.0012 \pm 0.0016$	$z_{\text{drag}}$	$1060.06^{+0.34}_{-0.41}$	$\chi_{\text{lowl}}^2$	$22.83 \pm 0.87$
$c_{TE}$	$0.9970 \pm 0.0049$	$r_{\text{drag}}$	$146.67^{+0.86}_{-0.29}$	$\chi_{\text{CamSpec}}^2$	$11515.7 \pm 5.7$
$c_{EE}$	$0.9930 \pm 0.0050$	$k_D$	$0.14109^{+0.00036}_{-0.00068}$	$\chi_{\text{Aver15}}^2$	$0.56 \pm 0.48$
$H_0$	$67.80^{+0.43}_{-0.65}$	$100\theta_D$	$0.16096^{+0.00019}_{-0.00028}$	$\chi_{6DF}^2$	$0.074 \pm 0.081$
$\Omega_\Lambda$	$0.6876 \pm 0.0064$	$z_{\text{eq}}$	$3336^{+55}_{-20}$	$\chi_{\text{MGS}}^2$	$1.16 \pm 0.43$
$\Omega_m$	$0.3124 \pm 0.0064$	$k_{\text{eq}}$	$0.01026^{+0.00016}_{-0.000089}$	$\chi_{\text{DR12BAO}}^2$	$5.3 \pm 1.7$
$\Omega_m h^2$	$0.1436^{+0.0011}_{-0.0019}$	$100\theta_{\text{eq}}$	$0.8266^{+0.0035}_{-0.012}$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.5$
$\Omega_\nu h^2$	$0.00252^{+0.00019}_{-0.0019}$	$100\theta_{s,\text{eq}}$	$0.4564^{+0.0018}_{-0.0061}$	$\chi_{\text{CMB}}^2$	$11945.3 \pm 6.0$
$\Omega_m h^3$	$0.09734^{+0.00032}_{-0.0015}$	$H(0.15)$	$73.11^{+0.36}_{-0.62}$	$\chi_{\text{BAO}}^2$	$6.5 \pm 1.5$
$\sigma_8$	$0.792^{+0.019}_{-0.011}$	$D_M(0.15)$	$639.4^{+5.7}_{-3.7}$		

$$\bar{\chi}_{\text{eff}}^2 = 11960.11; R - 1 = 0.03672$$



8.56 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Cooke17\_Aver15

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02238 \pm 0.00015$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.443^{+0.010}_{-0.0070}$	$H(0.51)$	$90.02^{+0.18}_{-0.55}$
$\Omega_{\mathrm{c}} h^2$	$0.1186^{+0.0030}_{-0.0020}$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.592^{+0.014}_{-0.0082}$	$D_{\mathrm{M}}(0.51)$	$1975^{+15}_{-8.2}$
$100\theta_{\mathrm{MC}}$	$1.04085 \pm 0.00032$	$\sigma_8/h^{0.5}$	$0.962^{+0.022}_{-0.012}$	$H(0.61)$	$95.67^{+0.15}_{-0.54}$
$\tau$	$0.0562^{+0.0068}_{-0.0077}$	$r_{\mathrm{drag}} h$	$99.43 \pm 0.81$	$D_{\mathrm{M}}(0.61)$	$2298^{+17}_{-8.7}$
$m_{\nu, \mathrm{sterile}}^{\mathrm{eff}} [\mathrm{eV}]$	$< 0.192$	$\langle d^2 \rangle^{1/2}$	$2.429 \pm 0.021$	$H(2.33)$	$237.09^{+0.71}_{-1.4}$
$N_{\mathrm{eff}}$	$< 3.13$	$z_{\mathrm{re}}$	$7.87 \pm 0.74$	$D_{\mathrm{M}}(2.33)$	$5741^{+31}_{-7.4}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.047 \pm 0.015$	$10^9 A_{\mathrm{s}}$	$2.105^{+0.030}_{-0.033}$	$f\sigma_8(0.15)$	$0.447^{+0.011}_{-0.0068}$
$n_{\mathrm{s}}$	$0.9683^{+0.0044}_{-0.0052}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.881 \pm 0.012$	$\sigma_8(0.15)$	$0.732^{+0.018}_{-0.010}$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0025$	$D_{40}$	$1223 \pm 13$	$f\sigma_8(0.38)$	$0.465^{+0.011}_{-0.0065}$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25$	$D_{220}$	$5725 \pm 39$	$\sigma_8(0.38)$	$0.649^{+0.016}_{-0.0095}$
$A_{143}^{\mathrm{PS}}$	$41 \pm 8$	$D_{810}$	$2537 \pm 13$	$f\sigma_8(0.51)$	$0.464^{+0.011}_{-0.0064}$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{1420}$	$815.7 \pm 4.7$	$\sigma_8(0.51)$	$0.607^{+0.015}_{-0.0090}$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7$	$D_{2000}$	$229.9 \pm 1.6$	$f\sigma_8(0.61)$	$0.459^{+0.011}_{-0.0063}$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.8}_{-2.5}$	$n_{\mathrm{s}, 0.002}$	$0.9683^{+0.0044}_{-0.0052}$	$\sigma_8(0.61)$	$0.578^{+0.015}_{-0.0086}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	$0.24639^{+0.00019}_{-0.00099}$	$f\sigma_8(2.33)$	$0.2915^{+0.0075}_{-0.0045}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.57^{+0.40}_{-0.16}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24772^{+0.00019}_{-0.00099}$	$\sigma_8(2.33)$	$0.3003^{+0.0078}_{-0.0048}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.609^{+0.027}_{-0.033}$	$f_{2000}^{143}$	$30.4 \pm 2.9$
$A^{\mathrm{kSZ}}$	$4.9^{+2.8}_{-3.5}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.745^{+0.072}_{-0.017}$	$f_{2000}^{217}$	$107.4 \pm 2.0$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$z_*$	$1090.00^{+0.22}_{-0.26}$	$f_{2000}^{143 \times 217}$	$32.6 \pm 2.0$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$r_*$	$144.03^{+0.81}_{-0.28}$	$\chi_{\mathrm{lensing}}^2$	$9.4 \pm 1.0$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04100^{+0.00036}_{-0.00031}$	$\chi_{\mathrm{simall}}^2$	$397.3 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.835^{+0.076}_{-0.027}$	$\chi_{\mathrm{lowl}}^2$	$22.84 \pm 0.87$
$c_{100}$	$0.9976 \pm 0.0011$	$z_{\mathrm{drag}}$	$1060.05^{+0.34}_{-0.41}$	$\chi_{\mathrm{CamSpec}}^2$	$11515.6 \pm 5.7$
$c_{217}$	$1.0012 \pm 0.0016$	$r_{\mathrm{drag}}$	$146.68^{+0.84}_{-0.30}$	$\chi_{\mathrm{Aver15}}^2$	$0.55 \pm 0.45$
$c_{TE}$	$0.9970 \pm 0.0049$	$k_{\mathrm{D}}$	$0.14107^{+0.00036}_{-0.00068}$	$\chi_{\mathrm{Cooke17}}^2$	$0.12 \pm 0.16$
$c_{EE}$	$0.9930 \pm 0.0050$	$100\theta_{\mathrm{D}}$	$0.16096^{+0.00018}_{-0.00027}$	$\chi_{6\mathrm{DF}}^2$	$0.074 \pm 0.081$
$H_0$	$67.79^{+0.43}_{-0.65}$	$z_{\mathrm{eq}}$	$3336^{+55}_{-19}$	$\chi_{\mathrm{MGS}}^2$	$1.16 \pm 0.42$
$\Omega_{\Lambda}$	$0.6875 \pm 0.0064$	$k_{\mathrm{eq}}$	$0.01026^{+0.00016}_{-0.000087}$	$\chi_{\mathrm{DR12BAO}}^2$	$5.3 \pm 1.7$
$\Omega_{\mathrm{m}}$	$0.3125 \pm 0.0064$	$100\theta_{\mathrm{eq}}$	$0.8266^{+0.0035}_{-0.012}$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.5$
$\Omega_{\mathrm{m}} h^2$	$0.1435^{+0.0011}_{-0.0019}$	$100\theta_{\mathrm{s,eq}}$	$0.4564^{+0.0018}_{-0.0061}$	$\chi_{\mathrm{CMB}}^2$	$11945.2 \pm 5.9$
$\Omega_{\nu} h^2$	$0.00254^{+0.00019}_{-0.0019}$	$H(0.15)$	$73.10^{+0.35}_{-0.61}$	$\chi_{\mathrm{BAO}}^2$	$6.5 \pm 1.4$
$\Omega_{\mathrm{m}} h^3$	$0.09731^{+0.00034}_{-0.0015}$	$D_{\mathrm{M}}(0.15)$	$639.5^{+5.7}_{-3.6}$	$\chi_{\mathrm{Abund}}^2$	$0.67 \pm 0.51$
$\sigma_8$	$0.792^{+0.019}_{-0.011}$	$H(0.38)$	$83.27^{+0.24}_{-0.56}$		
$S_8$	$0.808^{+0.019}_{-0.013}$	$D_{\mathrm{M}}(0.38)$	$1525^{+12}_{-7.1}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11960.15; R - 1 = 0.03562$$



8.57 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02241^{+0.00015}_{-0.00016}$	$S_8$	$0.810^{+0.019}_{-0.013}$	$H(0.38)$	$83.44^{+0.24}_{-0.76}$
$\Omega_c h^2$	$0.1192^{+0.0031}_{-0.0025}$	$\sigma_8 \Omega_m^{0.5}$	$0.443^{+0.011}_{-0.0070}$	$D_M(0.38)$	$1522^{+16}_{-7.2}$
$100\theta_{MC}$	$1.04081^{+0.00036}_{-0.00032}$	$\sigma_8 \Omega_m^{0.25}$	$0.593^{+0.014}_{-0.0085}$	$H(0.51)$	$90.21^{+0.19}_{-0.75}$
$\tau$	$0.0569^{+0.0058}_{-0.0079}$	$\sigma_8/h^{0.5}$	$0.963^{+0.022}_{-0.011}$	$D_M(0.51)$	$1971^{+20}_{-8.2}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.174$	$r_{\text{drag}} h$	$99.48 \pm 0.83$	$H(0.61)$	$95.86^{+0.16}_{-0.75}$
$N_{\text{eff}}$	$< 3.16$	$\langle d^2 \rangle^{1/2}$	$2.428 \pm 0.021$	$D_M(0.61)$	$2293^{+22}_{-8.7}$
$\ln(10^{10} A_s)$	$3.049^{+0.013}_{-0.016}$	$z_{\text{re}}$	$7.95^{+0.62}_{-0.78}$	$H(2.33)$	$237.48^{+0.75}_{-1.9}$
$n_s$	$0.9694^{+0.0045}_{-0.0060}$	$10^9 A_s$	$2.110^{+0.027}_{-0.035}$	$D_M(2.33)$	$5730^{+42}_{-9.2}$
$y_{\text{cal}}$	$1.0008 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.883^{+0.012}_{-0.014}$	$f\sigma_8(0.15)$	$0.448^{+0.011}_{-0.0068}$
$A_{100}^{\text{PS}}$	$243 \pm 25$	$D_{40}$	$1222 \pm 13$	$\sigma_8(0.15)$	$0.734^{+0.019}_{-0.011}$
$A_{143}^{\text{PS}}$	$41 \pm 8$	$D_{220}$	$5726 \pm 39$	$f\sigma_8(0.38)$	$0.466^{+0.011}_{-0.0066}$
$A_{217}^{\text{PS}}$	$102 \pm 10$	$D_{810}$	$2538 \pm 13$	$\sigma_8(0.38)$	$0.650^{+0.017}_{-0.010}$
$A_{217}^{\text{CIB}}$	$40 \pm 7$	$D_{1420}$	$815.6 \pm 4.8$	$f\sigma_8(0.51)$	$0.465^{+0.011}_{-0.0066}$
$A_{143}^{\text{tSZ}}$	$3.8^{+1.8}_{-2.5}$	$D_{2000}$	$229.8 \pm 1.7$	$\sigma_8(0.51)$	$0.609^{+0.016}_{-0.0097}$
$r_{143 \times 217}^{\text{PS}}$	$0.65 \pm 0.13$	$n_{s,0.002}$	$0.9694^{+0.0045}_{-0.0060}$	$f\sigma_8(0.61)$	$0.460^{+0.011}_{-0.0065}$
$r_{143 \times 217}^{\text{CIB}}$	$0.57^{+0.40}_{-0.15}$	$Y_P$	$0.24676^{+0.00026}_{-0.0014}$	$\sigma_8(0.61)$	$0.579^{+0.015}_{-0.0093}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24809^{+0.00026}_{-0.0014}$	$f\sigma_8(2.33)$	$0.2923^{+0.0077}_{-0.0048}$
$A^{\text{kSZ}}$	$4.9 \pm 2.7$	$10^5 D/H$	$2.614^{+0.029}_{-0.041}$	$\sigma_8(2.33)$	$0.3012^{+0.0081}_{-0.0052}$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.20$	Age/Gyr	$13.72^{+0.10}_{-0.022}$	$f_{2000}^{143}$	$30.5 \pm 3.0$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.17$	$z_*$	$1090.04^{+0.24}_{-0.31}$	$f_{2000}^{217}$	$107.5 \pm 2.0$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$r_*$	$143.8^{+1.1}_{-0.32}$	$f_{2000}^{143 \times 217}$	$32.8 \pm 2.1$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04094^{+0.00041}_{-0.00032}$	$\chi_{\text{lensing}}^2$	$9.46 \pm 0.99$
$c_{100}$	$0.9976 \pm 0.0010$	$D_M(z_*)/\text{Gpc}$	$13.81^{+0.10}_{-0.030}$	$\chi_{\text{small}}^2$	$397.3 \pm 2.1$
$c_{217}$	$1.0012 \pm 0.0016$	$z_{\text{drag}}$	$1060.15^{+0.35}_{-0.49}$	$\chi_{\text{lowl}}^2$	$22.72 \pm 0.89$
$c_{TE}$	$0.9971 \pm 0.0049$	$r_{\text{drag}}$	$146.4^{+1.1}_{-0.34}$	$\chi_{\text{CamSpec}}^2$	$11516.0 \pm 5.8$
$c_{EE}$	$0.9933 \pm 0.0051$	$k_D$	$0.14127^{+0.00038}_{-0.00088}$	$\chi_{6\text{DF}}^2$	$0.071 \pm 0.081$
$H_0$	$67.95^{+0.43}_{-0.80}$	$100\theta_D$	$0.16102^{+0.00020}_{-0.00035}$	$\chi_{\text{MGS}}^2$	$1.19 \pm 0.44$
$\Omega_\Lambda$	$0.6880 \pm 0.0066$	$z_{\text{eq}}$	$3338^{+51}_{-18}$	$\chi_{\text{DR12BAO}}^2$	$5.2 \pm 1.7$
$\Omega_m$	$0.3120 \pm 0.0066$	$k_{\text{eq}}$	$0.01028^{+0.00016}_{-0.000096}$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.4$
$\Omega_m h^2$	$0.1440^{+0.0011}_{-0.0024}$	$100\theta_{\text{eq}}$	$0.8263^{+0.0032}_{-0.011}$	$\chi_{\text{CMB}}^2$	$11945.5 \pm 6.0$
$\Omega_\nu h^2$	$0.00240^{+0.00029}_{-0.0018}$	$100\theta_{s,\text{eq}}$	$0.4562^{+0.0016}_{-0.0056}$	$\chi_{\text{BAO}}^2$	$6.5 \pm 1.4$
$\Omega_m h^3$	$0.09786^{+0.00041}_{-0.0021}$	$H(0.15)$	$73.27^{+0.35}_{-0.78}$		
$\sigma_8$	$0.794^{+0.020}_{-0.012}$	$D_M(0.15)$	$638.1^{+7.1}_{-3.7}$		

$$\bar{\chi}_{\text{eff}}^2 = 11959.80; R - 1 = 0.03599$$



8.58 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02242^{+0.00015}_{-0.00016}$	$S_8$	$0.809^{+0.019}_{-0.013}$	$H(0.38)$	$83.51^{+0.24}_{-0.78}$
$\Omega_c h^2$	$0.1192^{+0.0030}_{-0.0026}$	$\sigma_8 \Omega_m^{0.5}$	$0.443^{+0.010}_{-0.0069}$	$D_M(0.38)$	$1520^{+16}_{-7.1}$
$100\theta_{MC}$	$1.04082^{+0.00037}_{-0.00032}$	$\sigma_8 \Omega_m^{0.25}$	$0.594^{+0.014}_{-0.0084}$	$H(0.51)$	$90.26^{+0.20}_{-0.78}$
$\tau$	$0.0572^{+0.0059}_{-0.0079}$	$\sigma_8/h^{0.5}$	$0.964^{+0.022}_{-0.011}$	$D_M(0.51)$	$1969^{+20}_{-8.2}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.163$	$r_{\text{drag}} h$	$99.62 \pm 0.80$	$H(0.61)$	$95.91^{+0.18}_{-0.78}$
$N_{\text{eff}}$	$< 3.16$	$\langle d^2 \rangle^{1/2}$	$2.426 \pm 0.021$	$D_M(0.61)$	$2291^{+23}_{-8.8}$
$\ln(10^{10} A_s)$	$3.050^{+0.013}_{-0.016}$	$z_{\text{re}}$	$7.97^{+0.62}_{-0.78}$	$H(2.33)$	$237.42^{+0.72}_{-1.9}$
$n_s$	$0.9699^{+0.0045}_{-0.0060}$	$10^9 A_s$	$2.111^{+0.027}_{-0.035}$	$D_M(2.33)$	$5728^{+44}_{-10}$
$y_{\text{cal}}$	$1.0008 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.883^{+0.012}_{-0.014}$	$f\sigma_8(0.15)$	$0.448^{+0.010}_{-0.0067}$
$A_{100}^{\text{PS}}$	$243 \pm 25$	$D_{40}$	$1221 \pm 13$	$\sigma_8(0.15)$	$0.735^{+0.018}_{-0.011}$
$A_{143}^{\text{PS}}$	$41 \pm 8$	$D_{220}$	$5727 \pm 39$	$f\sigma_8(0.38)$	$0.466^{+0.011}_{-0.0066}$
$A_{217}^{\text{PS}}$	$102 \pm 10$	$D_{810}$	$2538 \pm 13$	$\sigma_8(0.38)$	$0.651^{+0.016}_{-0.010}$
$A_{217}^{\text{CIB}}$	$40 \pm 7$	$D_{1420}$	$815.7 \pm 4.8$	$f\sigma_8(0.51)$	$0.465^{+0.011}_{-0.0066}$
$A_{143}^{\text{tSZ}}$	$3.7^{+1.8}_{-2.5}$	$D_{2000}$	$229.8 \pm 1.7$	$\sigma_8(0.51)$	$0.610^{+0.015}_{-0.0096}$
$r_{143 \times 217}^{\text{PS}}$	$0.65 \pm 0.13$	$n_{s,0.002}$	$0.9699^{+0.0045}_{-0.0060}$	$f\sigma_8(0.61)$	$0.460^{+0.011}_{-0.0065}$
$r_{143 \times 217}^{\text{CIB}}$	$0.57^{+0.41}_{-0.15}$	$Y_P$	$0.24679^{+0.00026}_{-0.0014}$	$\sigma_8(0.61)$	$0.580^{+0.015}_{-0.0092}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24813^{+0.00026}_{-0.0014}$	$f\sigma_8(2.33)$	$0.2928^{+0.0075}_{-0.0048}$
$A^{\text{kSZ}}$	$4.9 \pm 2.7$	$10^5 D/H$	$2.614^{+0.028}_{-0.042}$	$\sigma_8(2.33)$	$0.3017^{+0.0079}_{-0.0051}$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.20$	Age/Gyr	$13.71^{+0.10}_{-0.023}$	$f_{2000}^{143}$	$30.5 \pm 3.0$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.17$	$z_*$	$1090.02^{+0.23}_{-0.31}$	$f_{2000}^{217}$	$107.4 \pm 2.0$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$r_*$	$143.8^{+1.1}_{-0.31}$	$f_{2000}^{143 \times 217}$	$32.7 \pm 2.1$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04094^{+0.00042}_{-0.00032}$	$\chi_{\text{lensing}}^2$	$9.5 \pm 1.0$
$c_{100}$	$0.9976 \pm 0.0010$	$D_M(z_*)/\text{Gpc}$	$13.81^{+0.11}_{-0.029}$	$\chi_{\text{small}}^2$	$397.4 \pm 2.1$
$c_{217}$	$1.0012 \pm 0.0016$	$z_{\text{drag}}$	$1060.17^{+0.35}_{-0.50}$	$\chi_{\text{lowl}}^2$	$22.66 \pm 0.88$
$c_{TE}$	$0.9971 \pm 0.0050$	$r_{\text{drag}}$	$146.4^{+1.2}_{-0.33}$	$\chi_{\text{CamSpec}}^2$	$11516.1 \pm 5.8$
$c_{EE}$	$0.9934 \pm 0.0051$	$k_D$	$0.14126^{+0.00037}_{-0.00091}$	$\chi_{\text{JLA}}^2$	$1035.11 \pm 0.33$
$H_0$	$68.04^{+0.42}_{-0.82}$	$100\theta_D$	$0.16102^{+0.00019}_{-0.00036}$	$\chi_{\text{6DF}}^2$	$0.059 \pm 0.070$
$\Omega_\Lambda$	$0.6891 \pm 0.0063$	$z_{\text{eq}}$	$3337^{+50}_{-18}$	$\chi_{\text{MGS}}^2$	$1.25 \pm 0.43$
$\Omega_m$	$0.3109 \pm 0.0063$	$k_{\text{eq}}$	$0.01028^{+0.00016}_{-0.000099}$	$\chi_{\text{DR12BAO}}^2$	$4.9 \pm 1.5$
$\Omega_m h^2$	$0.1439^{+0.0011}_{-0.0024}$	$100\theta_{\text{eq}}$	$0.8265^{+0.0031}_{-0.010}$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.5$
$\Omega_\nu h^2$	$0.00231^{+0.00025}_{-0.0018}$	$100\theta_{s,\text{eq}}$	$0.4563^{+0.0016}_{-0.0055}$	$\chi_{\text{CMB}}^2$	$11945.7 \pm 6.1$
$\Omega_m h^3$	$0.09792^{+0.00042}_{-0.0021}$	$H(0.15)$	$73.35^{+0.35}_{-0.80}$	$\chi_{\text{BAO}}^2$	$6.3 \pm 1.2$
$\sigma_8$	$0.795^{+0.019}_{-0.012}$	$D_M(0.15)$	$637.3^{+7.2}_{-3.6}$		

$$\bar{\chi}_{\text{eff}}^2 = 12994.82; R - 1 = 0.03782$$



8.59 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Aver15\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02239 \pm 0.00015$	$S_8$	$0.809^{+0.019}_{-0.013}$	$H(0.38)$	$83.29^{+0.25}_{-0.57}$
$\Omega_c h^2$	$0.1186^{+0.0029}_{-0.0020}$	$\sigma_8 \Omega_m^{0.5}$	$0.443^{+0.010}_{-0.0071}$	$D_M(0.38)$	$1525^{+12}_{-7.2}$
$100\theta_{MC}$	$1.04085 \pm 0.00032$	$\sigma_8 \Omega_m^{0.25}$	$0.592^{+0.014}_{-0.0083}$	$H(0.51)$	$90.04^{+0.19}_{-0.56}$
$\tau$	$0.0568^{+0.0058}_{-0.0078}$	$\sigma_8/h^{0.5}$	$0.962^{+0.022}_{-0.012}$	$D_M(0.51)$	$1975^{+15}_{-8.4}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.191$	$r_{\text{drag}} h$	$99.45 \pm 0.81$	$H(0.61)$	$95.69^{+0.15}_{-0.55}$
$N_{\text{eff}}$	$< 3.13$	$\langle d^2 \rangle^{1/2}$	$2.429 \pm 0.020$	$D_M(0.61)$	$2298^{+17}_{-8.9}$
$\ln(10^{10} A_s)$	$3.048^{+0.013}_{-0.016}$	$z_{\text{re}}$	$7.93^{+0.62}_{-0.77}$	$H(2.33)$	$237.10^{+0.70}_{-1.5}$
$n_s$	$0.9685^{+0.0044}_{-0.0052}$	$10^9 A_s$	$2.108^{+0.026}_{-0.033}$	$D_M(2.33)$	$5740^{+31}_{-7.4}$
$y_{\text{cal}}$	$1.0008 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.881 \pm 0.012$	$f\sigma_8(0.15)$	$0.447^{+0.011}_{-0.0068}$
$A_{100}^{\text{PS}}$	$242 \pm 25$	$D_{40}$	$1223 \pm 13$	$\sigma_8(0.15)$	$0.732^{+0.018}_{-0.010}$
$A_{143}^{\text{PS}}$	$41 \pm 8$	$D_{220}$	$5726 \pm 39$	$f\sigma_8(0.38)$	$0.465^{+0.011}_{-0.0066}$
$A_{217}^{\text{PS}}$	$102 \pm 10$	$D_{810}$	$2537 \pm 13$	$\sigma_8(0.38)$	$0.649^{+0.016}_{-0.0094}$
$A_{217}^{\text{CIB}}$	$40 \pm 7$	$D_{1420}$	$815.7 \pm 4.7$	$f\sigma_8(0.51)$	$0.464^{+0.011}_{-0.0064}$
$A_{143}^{\text{tSZ}}$	$3.7^{+1.8}_{-2.5}$	$D_{2000}$	$229.9 \pm 1.6$	$\sigma_8(0.51)$	$0.607^{+0.015}_{-0.0089}$
$r_{143 \times 217}^{\text{PS}}$	$0.65 \pm 0.13$	$n_{s,0.002}$	$0.9685^{+0.0044}_{-0.0052}$	$f\sigma_8(0.61)$	$0.459^{+0.011}_{-0.0063}$
$r_{143 \times 217}^{\text{CIB}}$	$0.57^{+0.40}_{-0.16}$	$Y_P$	$0.24641^{+0.00019}_{-0.0010}$	$\sigma_8(0.61)$	$0.578^{+0.015}_{-0.0085}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24774^{+0.00019}_{-0.0010}$	$f\sigma_8(2.33)$	$0.2917^{+0.0074}_{-0.0044}$
$A^{\text{kSZ}}$	$4.9 \pm 2.7$	$10^5 D/H$	$2.609^{+0.028}_{-0.035}$	$\sigma_8(2.33)$	$0.3005^{+0.0078}_{-0.0047}$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.20$	$\text{Age/Gyr}$	$13.743^{+0.074}_{-0.017}$	$f_{2000}^{143}$	$30.3 \pm 2.9$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.17$	$z_*$	$1090.00^{+0.23}_{-0.27}$	$f_{2000}^{217}$	$107.3 \pm 2.0$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$r_*$	$144.01^{+0.83}_{-0.27}$	$f_{2000}^{143 \times 217}$	$32.6 \pm 2.0$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.16$	$100\theta_*$	$1.04099^{+0.00037}_{-0.00031}$	$\chi_{\text{lensing}}^2$	$9.41 \pm 0.96$
$c_{100}$	$0.9976 \pm 0.0010$	$D_M(z_*)/\text{Gpc}$	$13.834^{+0.078}_{-0.027}$	$\chi_{\text{simall}}^2$	$397.3 \pm 2.0$
$c_{217}$	$1.0012 \pm 0.0016$	$z_{\text{drag}}$	$1060.07^{+0.35}_{-0.42}$	$\chi_{\text{lowl}}^2$	$22.83 \pm 0.87$
$c_{TE}$	$0.9970 \pm 0.0049$	$r_{\text{drag}}$	$146.66^{+0.87}_{-0.29}$	$\chi_{\text{CamSpec}}^2$	$11515.7 \pm 5.7$
$c_{EE}$	$0.9930 \pm 0.0050$	$k_D$	$0.14109^{+0.00037}_{-0.00069}$	$\chi_{\text{Aver15}}^2$	$0.57 \pm 0.48$
$H_0$	$67.81^{+0.43}_{-0.65}$	$100\theta_D$	$0.16096^{+0.00019}_{-0.00029}$	$\chi_{6\text{DF}}^2$	$0.072 \pm 0.080$
$\Omega_\Lambda$	$0.6877 \pm 0.0064$	$z_{\text{eq}}$	$3336^{+54}_{-19}$	$\chi_{\text{MGS}}^2$	$1.17 \pm 0.43$
$\Omega_m$	$0.3123 \pm 0.0064$	$k_{\text{eq}}$	$0.01026^{+0.00016}_{-0.000088}$	$\chi_{\text{DR12BAO}}^2$	$5.2 \pm 1.7$
$\Omega_m h^2$	$0.1436^{+0.0011}_{-0.0019}$	$100\theta_{\text{eq}}$	$0.8267^{+0.0034}_{-0.011}$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.5$
$\Omega_\nu h^2$	$0.00253^{+0.00019}_{-0.0019}$	$100\theta_{s,\text{eq}}$	$0.4564^{+0.0018}_{-0.0060}$	$\chi_{\text{CMB}}^2$	$11945.2 \pm 5.9$
$\Omega_m h^3$	$0.09735^{+0.00033}_{-0.0015}$	$H(0.15)$	$73.12^{+0.36}_{-0.62}$	$\chi_{\text{BAO}}^2$	$6.5 \pm 1.4$
$\sigma_8$	$0.793^{+0.019}_{-0.011}$	$D_M(0.15)$	$639.3^{+5.7}_{-3.7}$		

$$\bar{\chi}_{\text{eff}}^2 = 11960.01; R - 1 = 0.03614$$



8.60 base\_nnu\_meffsterile\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Cooke17\_Aver15\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02239 \pm 0.00015$	$\sigma_8 \Omega_m^{0.5}$	$0.443^{+0.010}_{-0.0070}$	$H(0.51)$	$90.03^{+0.18}_{-0.55}$
$\Omega_c h^2$	$0.1186^{+0.0030}_{-0.0020}$	$\sigma_8 \Omega_m^{0.25}$	$0.592^{+0.014}_{-0.0082}$	$D_M(0.51)$	$1975^{+15}_{-8.2}$
$100\theta_{MC}$	$1.04085 \pm 0.00032$	$\sigma_8/h^{0.5}$	$0.962^{+0.022}_{-0.012}$	$H(0.61)$	$95.68^{+0.15}_{-0.54}$
$\tau$	$0.0567^{+0.0058}_{-0.0078}$	$r_{\text{drag}} h$	$99.44 \pm 0.81$	$D_M(0.61)$	$2298^{+17}_{-8.8}$
$m_{\nu, \text{sterile}}^{\text{eff}} [\text{eV}]$	$< 0.192$	$\langle d^2 \rangle^{1/2}$	$2.430 \pm 0.020$	$H(2.33)$	$237.08^{+0.71}_{-1.4}$
$N_{\text{eff}}$	$< 3.13$	$z_{\text{re}}$	$7.92^{+0.62}_{-0.77}$	$D_M(2.33)$	$5741^{+31}_{-7.5}$
$\ln(10^{10} A_s)$	$3.048^{+0.013}_{-0.016}$	$10^9 A_s$	$2.107^{+0.026}_{-0.033}$	$f\sigma_8(0.15)$	$0.447^{+0.010}_{-0.0068}$
$n_s$	$0.9684^{+0.0044}_{-0.0052}$	$10^9 A_s e^{-2\tau}$	$1.881 \pm 0.012$	$\sigma_8(0.15)$	$0.732^{+0.018}_{-0.010}$
$y_{\text{cal}}$	$1.0008 \pm 0.0025$	$D_{40}$	$1223 \pm 13$	$f\sigma_8(0.38)$	$0.465^{+0.011}_{-0.0065}$
$A_{100}^{\text{PS}}$	$242 \pm 25$	$D_{220}$	$5725 \pm 39$	$\sigma_8(0.38)$	$0.649^{+0.016}_{-0.0094}$
$A_{143}^{\text{PS}}$	$41 \pm 8$	$D_{810}$	$2537 \pm 13$	$f\sigma_8(0.51)$	$0.464^{+0.011}_{-0.0063}$
$A_{217}^{\text{PS}}$	$102 \pm 10$	$D_{1420}$	$815.7 \pm 4.7$	$\sigma_8(0.51)$	$0.607^{+0.015}_{-0.0089}$
$A_{217}^{\text{CIB}}$	$40 \pm 7$	$D_{2000}$	$229.9 \pm 1.6$	$f\sigma_8(0.61)$	$0.459^{+0.011}_{-0.0062}$
$A_{143}^{\text{tSZ}}$	$3.7^{+1.8}_{-2.5}$	$n_{s,0.002}$	$0.9684^{+0.0044}_{-0.0052}$	$\sigma_8(0.61)$	$0.578^{+0.015}_{-0.0085}$
$r_{143 \times 217}^{\text{PS}}$	$0.65 \pm 0.13$	$Y_{\text{P}}$	$0.24640^{+0.00020}_{-0.0010}$	$f\sigma_8(2.33)$	$0.2916^{+0.0075}_{-0.0044}$
$r_{143 \times 217}^{\text{CIB}}$	$0.57^{+0.40}_{-0.16}$	$Y_{\text{P}}^{\text{BBN}}$	$0.24773^{+0.00020}_{-0.0010}$	$\sigma_8(2.33)$	$0.3004^{+0.0078}_{-0.0047}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^5 \text{D}/\text{H}$	$2.609^{+0.027}_{-0.033}$	$f_{2000}^{143}$	$30.3 \pm 2.9$
$A^{\text{kSZ}}$	$4.9 \pm 2.7$	$\text{Age}/\text{Gyr}$	$13.744^{+0.073}_{-0.017}$	$f_{2000}^{217}$	$107.3 \pm 2.0$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.20$	$z_*$	$1090.00^{+0.22}_{-0.26}$	$f_{2000}^{143 \times 217}$	$32.6 \pm 2.0$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.17$	$r_*$	$144.03^{+0.82}_{-0.28}$	$\chi_{\text{lensing}}^2$	$9.40 \pm 0.96$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04100^{+0.00036}_{-0.00031}$	$\chi_{\text{simall}}^2$	$397.3 \pm 2.0$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.16$	$D_M(z_*)/\text{Gpc}$	$13.835^{+0.077}_{-0.027}$	$\chi_{\text{lowl}}^2$	$22.84 \pm 0.87$
$c_{100}$	$0.9976 \pm 0.0010$	$z_{\text{drag}}$	$1060.05^{+0.34}_{-0.41}$	$\chi_{\text{CamSpec}}^2$	$11515.6 \pm 5.7$
$c_{217}$	$1.0012 \pm 0.0016$	$r_{\text{drag}}$	$146.68^{+0.85}_{-0.30}$	$\chi_{\text{Aver15}}^2$	$0.56 \pm 0.46$
$c_{TE}$	$0.9970 \pm 0.0049$	$k_{\text{D}}$	$0.14108^{+0.00037}_{-0.00068}$	$\chi_{\text{Cooke17}}^2$	$0.12 \pm 0.16$
$c_{EE}$	$0.9930 \pm 0.0050$	$100\theta_{\text{D}}$	$0.16096^{+0.00018}_{-0.00027}$	$\chi_{6\text{DF}}^2$	$0.073 \pm 0.080$
$H_0$	$67.80^{+0.42}_{-0.65}$	$z_{\text{eq}}$	$3336^{+55}_{-19}$	$\chi_{\text{MGS}}^2$	$1.16 \pm 0.42$
$\Omega_{\Lambda}$	$0.6876 \pm 0.0063$	$k_{\text{eq}}$	$0.01026^{+0.00016}_{-0.000086}$	$\chi_{\text{DR12BAO}}^2$	$5.3 \pm 1.7$
$\Omega_{\text{m}}$	$0.3124 \pm 0.0063$	$100\theta_{\text{eq}}$	$0.8267^{+0.0034}_{-0.012}$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.5$
$\Omega_{\text{m}} h^2$	$0.1435^{+0.0011}_{-0.0019}$	$100\theta_{\text{s,eq}}$	$0.4564^{+0.0017}_{-0.0061}$	$\chi_{\text{CMB}}^2$	$11945.1 \pm 5.9$
$\Omega_{\nu} h^2$	$0.00254^{+0.00032}_{-0.0019}$	$H(0.15)$	$73.11^{+0.35}_{-0.61}$	$\chi_{\text{BAO}}^2$	$6.5 \pm 1.4$
$\Omega_{\text{m}} h^3$	$0.09732^{+0.00034}_{-0.0015}$	$D_M(0.15)$	$639.4^{+5.7}_{-3.6}$	$\chi_{\text{Abund}}^2$	$0.67 \pm 0.52$
$\sigma_8$	$0.792^{+0.019}_{-0.011}$	$H(0.38)$	$83.28^{+0.24}_{-0.57}$		
$S_8$	$0.808^{+0.019}_{-0.013}$	$D_M(0.38)$	$1525^{+12}_{-7.1}$		

$$\bar{\chi}_{\text{eff}}^2 = 11960.05; R - 1 = 0.03510$$



## 9 nnu+mnu

### 9.1 base\_nnu\_mnu\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022010	$0.02193^{+0.00040}_{-0.00034}$	$S_8$	0.8458	$0.836 \pm 0.026$	$100\theta_{s,eq}$	0.4461	$0.4456 \pm 0.0068$
$\Omega_c h^2$	0.11840	$0.1199 \pm 0.0041$	$\sigma_8 \Omega_m^{0.5}$	0.4633	$0.458 \pm 0.014$	$H(0.15)$	71.48	$70.1^{+3.9}_{-2.6}$
$100\theta_{MC}$	1.04105	$1.04076 \pm 0.00060$	$\sigma_8 \Omega_m^{0.25}$	0.6156	$0.597^{+0.027}_{-0.013}$	$D_M(0.15)$	654.6	$672^{+23}_{-43}$
$\tau$	0.0504	$0.0509 \pm 0.0082$	$\sigma_8/h^{0.5}$	1.0056	$0.969^{+0.045}_{-0.018}$	$H(0.38)$	81.64	$80.7^{+3.3}_{-2.5}$
$\Sigma m_\nu$ [eV]	0.001	$< 0.241$	$r_{drag}h$	98.45	$95.5^{+5.2}_{-2.5}$	$D_M(0.38)$	1559	$1592^{+51}_{-89}$
$N_{eff}$	2.874	$2.93 \pm 0.30$	$\langle d^2 \rangle^{1/2}$	2.4706	$2.461 \pm 0.047$	$H(0.51)$	88.37	$87.7^{+3.1}_{-2.5}$
$\ln(10^{10} A_s)$	3.0306	$3.035 \pm 0.021$	$z_{re}$	7.30	$7.40 \pm 0.86$	$D_M(0.51)$	2018	$2056^{+63}_{-110}$
$n_s$	0.9573	$0.956^{+0.016}_{-0.014}$	$10^9 A_s$	2.0710	$2.080 \pm 0.045$	$H(0.61)$	94.00	$93.5^{+2.9}_{-2.5}$
$y_{cal}$	1.00012	$1.0005 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8726	$1.878 \pm 0.023$	$D_M(0.61)$	2347	$2388^{+71}_{-120}$
$A_{217}^{CIB}$	46.7	$48 \pm 7$	$D_{40}$	1238.4	$1240 \pm 23$	$H(2.33)$	234.25	$236.5 \pm 3.8$
$\xi^{tSZ \times CIB}$	0.58	—	$D_{220}$	5703.7	$5710 \pm 41$	$D_M(2.33)$	5839	$5869^{+140}_{-180}$
$A_{143}^{tSZ}$	6.92	$5.1 \pm 2.0$	$D_{810}$	2534.3	$2536 \pm 14$	$f\sigma_8(0.15)$	0.4663	$0.460^{+0.014}_{-0.013}$
$A_{100}^{PS}$	248.6	$263 \pm 29$	$D_{1420}$	816.0	$814.8 \pm 5.2$	$\sigma_8(0.15)$	0.7547	$0.716^{+0.053}_{-0.016}$
$A_{143}^{PS}$	50.6	$49 \pm 9$	$D_{2000}$	230.94	$229.6 \pm 2.3$	$f\sigma_8(0.38)$	0.4825	$0.470^{+0.019}_{-0.0096}$
$A_{143 \times 217}^{PS}$	51.9	$44 \pm 9$	$n_{s,0.002}$	0.9573	$0.956^{+0.016}_{-0.014}$	$\sigma_8(0.38)$	0.6678	$0.632^{+0.050}_{-0.015}$
$A_{217}^{PS}$	121.0	$115 \pm 10$	$Y_P$	0.24291	$0.2436 \pm 0.0042$	$f\sigma_8(0.51)$	0.4799	$0.465^{+0.021}_{-0.0084}$
$A^{kSZ}$	0.00	$< 4.86$	$Y_P^{BBN}$	0.24423	$0.2449 \pm 0.0042$	$\sigma_8(0.51)$	0.6244	$0.590^{+0.048}_{-0.015}$
$A_{100}^{dustTT}$	8.76	$8.9 \pm 1.8$	$10^5 D/H$	2.594	$2.630 \pm 0.072$	$f\sigma_8(0.61)$	0.4741	$0.458^{+0.023}_{-0.0079}$
$A_{143}^{dustTT}$	10.72	$10.7 \pm 1.8$	Age/Gyr	13.977	$14.05^{+0.32}_{-0.42}$	$\sigma_8(0.61)$	0.5938	$0.561^{+0.047}_{-0.014}$
$A_{143 \times 217}^{dustTT}$	19.62	$18.3 \pm 3.3$	$z_*$	1090.06	$1090.40^{+0.51}_{-0.59}$	$f\sigma_8(2.33)$	0.2981	$0.283^{+0.022}_{-0.0069}$
$A_{217}^{dustTT}$	95.0	$93.4 \pm 7.4$	$r_*$	146.01	$145.4 \pm 2.7$	$\sigma_8(2.33)$	0.3073	$0.290^{+0.026}_{-0.0082}$
$c_{100}$	0.99963	$0.99960 \pm 0.00061$	$100\theta_*$	1.04134	$1.04113 \pm 0.00073$	$f_{2000}^{143}$	28.88	$31 \pm 4$
$c_{217}$	0.99824	$0.99825 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	14.021	$13.96 \pm 0.25$	$f_{2000}^{143 \times 217}$	32.15	$33.6 \pm 2.6$
$H_0$	66.16	$64.5^{+4.2}_{-2.7}$	$z_{drag}$	1058.83	$1058.8^{+1.3}_{-1.2}$	$f_{2000}^{217}$	106.54	$108.2 \pm 2.4$
$\Omega_\Lambda$	0.6792	$0.650^{+0.050}_{-0.017}$	$r_{drag}$	148.81	$148.2 \pm 2.8$	$\chi_{small}^2$	395.70	$396.9 \pm 1.7$
$\Omega_m$	0.3208	$0.350^{+0.017}_{-0.050}$	$k_D$	0.13945	$0.1399 \pm 0.0020$	$\chi_{lowl}^2$	24.55	$24.9 \pm 2.6$
$\Omega_m h^2$	0.14042	$0.1440^{+0.0044}_{-0.0049}$	$100\theta_D$	0.16067	$0.16090 \pm 0.00069$	$\chi_{plik}^2$	757.2	$772.7 \pm 6.1$
$\Omega_\nu h^2$	0.00001	$< 0.00247$	$z_{eq}$	3435	$3442 \pm 73$	$\chi_{prior}^2$	1.27	$7.3 \pm 3.6$
$\Omega_m h^3$	0.0929	$0.0929 \pm 0.0063$	$k_{eq}$	0.010361	$0.01042 \pm 0.00017$	$\chi_{CMB}^2$	1177.4	$1194.5 \pm 6.1$
$\sigma_8$	0.8179	$0.778^{+0.054}_{-0.016}$	$100\theta_{eq}$	0.8064	$0.805 \pm 0.013$			

Best-fit  $\chi_{eff}^2 = 1178.71$ ;  $\bar{\chi}_{eff}^2 = 1201.83$ ;  $R - 1 = 0.00661$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.70 commander\_dx12\_v3.2.29: 24.55 plik\_rd12\_HM\_v22\_TT: 757.19



## 9.2 base\_nnu\_mnu\_plikHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022083	$0.02190^{+0.00039}_{-0.00033}$	$S_8$	0.8336	$0.839 \pm 0.017$	$100\theta_{s,eq}$	0.4479	$0.4448^{+0.0067}_{-0.0060}$
$\Omega_c h^2$	0.11708	$0.1192 \pm 0.0039$	$\sigma_8 \Omega_m^{0.5}$	0.4566	$0.4596 \pm 0.0093$	$H(0.15)$	71.70	$69.8^{+3.5}_{-2.6}$
$100\theta_{MC}$	1.04119	$1.04082 \pm 0.00061$	$\sigma_8 \Omega_m^{0.25}$	0.6093	$0.599^{+0.017}_{-0.0096}$	$D_M(0.15)$	652.1	$674^{+24}_{-39}$
$\tau$	0.0507	$0.0512 \pm 0.0080$	$\sigma_8/h^{0.5}$	0.9976	$0.973^{+0.030}_{-0.013}$	$H(0.38)$	81.75	$80.4^{+3.0}_{-2.5}$
$\Sigma m_\nu$ [eV]	0.001	$< 0.242$	$r_{drag}h$	99.15	$95.5^{+4.9}_{-2.6}$	$D_M(0.38)$	1554	$1597^{+53}_{-82}$
$N_{eff}$	2.850	$2.88 \pm 0.29$	$\langle d^2 \rangle^{1/2}$	2.4560	$2.467^{+0.033}_{-0.040}$	$H(0.51)$	88.42	$87.4^{+2.8}_{-2.5}$
$\ln(10^{10} A_s)$	3.0280	$3.034 \pm 0.021$	$z_{re}$	7.29	$7.42 \pm 0.84$	$D_M(0.51)$	2013	$2062^{+65}_{-99}$
$n_s$	0.9580	$0.954^{+0.015}_{-0.013}$	$10^9 A_s$	2.0655	$2.078 \pm 0.043$	$H(0.61)$	93.99	$93.2 \pm 2.5$
$y_{cal}$	1.00009	$1.0005 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8664	$1.875 \pm 0.022$	$D_M(0.61)$	2342	$2395^{+74}_{-110}$
$A_{217}^{CIB}$	47.1	$47 \pm 7$	$D_{40}$	1236.2	$1245 \pm 21$	$H(2.33)$	233.37	$235.8 \pm 3.7$
$\xi^{tSZ \times CIB}$	0.47	—	$D_{220}$	5713.3	$5711 \pm 41$	$D_M(2.33)$	5842	$5887^{+140}_{-160}$
$A_{143}^{tSZ}$	7.05	$5.2 \pm 2.0$	$D_{810}$	2532.6	$2536 \pm 14$	$f\sigma_8(0.15)$	0.4601	$0.4621 \pm 0.0081$
$A_{100}^{PS}$	249.6	$261 \pm 30$	$D_{1420}$	816.3	$815.1 \pm 5.3$	$\sigma_8(0.15)$	0.7510	$0.718^{+0.044}_{-0.019}$
$A_{143}^{PS}$	48.0	$48 \pm 9$	$D_{2000}$	231.19	$230.0 \pm 2.3$	$f\sigma_8(0.38)$	0.4775	$0.472^{+0.011}_{-0.0069}$
$A_{143 \times 217}^{PS}$	48.4	$44 \pm 9$	$n_{s,0.002}$	0.9580	$0.954^{+0.015}_{-0.013}$	$\sigma_8(0.38)$	0.6651	$0.633^{+0.042}_{-0.019}$
$A_{217}^{PS}$	119.5	$115 \pm 10$	$Y_P$	0.24261	$0.2429 \pm 0.0041$	$f\sigma_8(0.51)$	0.4755	$0.467^{+0.014}_{-0.0069}$
$A^{kSZ}$	0.00	$< 4.67$	$Y_P^{BBN}$	0.24393	$0.2442 \pm 0.0041$	$\sigma_8(0.51)$	0.6221	$0.592^{+0.041}_{-0.018}$
$A_{100}^{dustTT}$	8.86	$8.9 \pm 1.8$	$10^5 D/H$	2.571	$2.617 \pm 0.071$	$f\sigma_8(0.61)$	0.4702	$0.460^{+0.016}_{-0.0072}$
$A_{143}^{dustTT}$	10.81	$10.7 \pm 1.8$	Age/Gyr	13.985	$14.09^{+0.32}_{-0.39}$	$\sigma_8(0.61)$	0.5918	$0.562^{+0.039}_{-0.018}$
$A_{143 \times 217}^{dustTT}$	19.48	$18.2 \pm 3.3$	$z_*$	1089.83	$1090.31^{+0.49}_{-0.59}$	$f\sigma_8(2.33)$	0.2973	$0.284^{+0.019}_{-0.0088}$
$A_{217}^{dustTT}$	95.0	$93.5 \pm 7.4$	$r_*$	146.43	$145.8 \pm 2.6$	$\sigma_8(2.33)$	0.3068	$0.291^{+0.022}_{-0.010}$
$c_{100}$	0.99964	$0.99961 \pm 0.00061$	$100\theta_*$	1.04150	$1.04122 \pm 0.00072$	$f_{2000}^{143}$	28.63	$31 \pm 4$
$c_{217}$	0.99824	$0.99824 \pm 0.00063$	$D_M(z_*)/Gpc$	14.059	$14.01 \pm 0.24$	$f_{2000}^{143 \times 217}$	31.89	$33.2 \pm 2.6$
$H_0$	66.45	$64.3^{+3.9}_{-2.7}$	$z_{drag}$	1058.90	$1058.7 \pm 1.2$	$f_{2000}^{217}$	106.39	$107.8 \pm 2.4$
$\Omega_\Lambda$	0.6848	$0.651^{+0.047}_{-0.019}$	$r_{drag}$	149.21	$148.7 \pm 2.7$	$\chi_{lensing}^2$	8.74	$9.2 \pm 1.1$
$\Omega_m$	0.3152	$0.349^{+0.019}_{-0.047}$	$k_D$	0.13919	$0.1395 \pm 0.0019$	$\chi_{small}^2$	395.68	$396.9 \pm 1.7$
$\Omega_m h^2$	0.13918	$0.1432 \pm 0.0046$	$100\theta_D$	0.16054	$0.16077 \pm 0.00066$	$\chi_{lowl}^2$	24.31	$25.3 \pm 2.4$
$\Omega_\nu h^2$	0.00001	$< 0.00244$	$z_{eq}$	3416	$3450^{+61}_{-75}$	$\chi_{plik}^2$	757.7	$771.6 \pm 5.6$
$\Omega_m h^3$	0.0925	$0.0920 \pm 0.0059$	$k_{eq}$	0.010286	$0.01041^{+0.00015}_{-0.00017}$	$\chi_{prior}^2$	1.35	$7.3 \pm 3.6$
$\sigma_8$	0.8132	$0.780^{+0.044}_{-0.019}$	$100\theta_{eq}$	0.8101	$0.804^{+0.013}_{-0.012}$	$\chi_{CMB}^2$	1186.4	$1203.1 \pm 5.9$

Best-fit  $\chi_{eff}^2 = 1187.75$ ;  $\bar{\chi}_{eff}^2 = 1210.35$ ;  $R - 1 = 0.00978$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.74 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.68 commander\_dx12\_v3.2\_29: 24.31 plik\_rd12\_HM.v22\_TT: 757.67



### 9.3 base\_nnu\_mnu\_plikHM\_TTTEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022244	$0.02222 \pm 0.00023$ (+0.8 $\sigma$ )	$\Omega_m h^2$	0.13936	$0.1416^{+0.0030}_{-0.0035}$ (-0.5 $\sigma$ )	$k_{\text{eq}}$	0.010299	$0.01035 \pm 0.00012$ (-0.5 $\sigma$ )
$\Omega_c h^2$	0.11712	$0.1183^{+0.0028}_{-0.0031}$ (-0.4 $\sigma$ )	$\Omega_\nu h^2$	0.00000	$< 0.00122$ (-0.5 $\sigma$ )	$100\theta_{\text{eq}}$	0.8100	$0.8094 \pm 0.0070$ (+0.3 $\sigma$ )
$100\theta_{\text{MC}}$	1.041282	$1.04111 \pm 0.00044$ (+0.6 $\sigma$ )	$\Omega_m h^3$	0.09285	$0.0934 \pm 0.0039$ (+0.1 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.44774	$0.4475 \pm 0.0035$ (+0.3 $\sigma$ )
$\tau$	0.0540	$0.0535 \pm 0.0078$ (+0.3 $\sigma$ )	$\sigma_8$	0.8167	$0.799^{+0.027}_{-0.012}$ (+0.4 $\sigma$ )	$H(0.15)$	71.87	$71.3^{+1.8}_{-1.5}$ (+0.4 $\sigma$ )
$\Sigma m_\nu$ [eV]	0.000	$< 0.118$ (-0.5 $\sigma$ )	$S_8$	0.8355	$0.832 \pm 0.017$ (-0.2 $\sigma$ )	$D_{\text{M}}(0.15)$	650.5	$657^{+14}_{-18}$ (-0.4 $\sigma$ )
$N_{\text{eff}}$	2.852	$2.91 \pm 0.19$ (-0.1 $\sigma$ )	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4576	$0.4556 \pm 0.0094$ (-0.2 $\sigma$ )	$H(0.38)$	81.91	$81.6 \pm 1.6$ (+0.3 $\sigma$ )
$\ln(10^{10} A_{\text{s}})$	3.0369	$3.038 \pm 0.019$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6113	$0.603^{+0.015}_{-0.0095}$ (+0.3 $\sigma$ )	$D_{\text{M}}(0.38)$	1550.9	$1562^{+31}_{-39}$ (-0.4 $\sigma$ )
$n_{\text{s}}$	0.9593	$0.9590 \pm 0.0087$ (+0.2 $\sigma$ )	$\sigma_8/h^{0.5}$	1.0006	$0.983^{+0.024}_{-0.013}$ (+0.4 $\sigma$ )	$H(0.51)$	88.57	$88.4 \pm 1.6$ (+0.3 $\sigma$ )
$y_{\text{cal}}$	1.00060	$1.0006 \pm 0.0025$ (+0.1 $\sigma$ )	$r_{\text{drag}} h$	99.27	$97.9^{+2.2}_{-1.4}$ (+0.5 $\sigma$ )	$D_{\text{M}}(0.51)$	2008.6	$2022^{+39}_{-48}$ (-0.4 $\sigma$ )
$A_{217}^{\text{CIB}}$	43.8	$46 \pm 7$ (-0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4629	$2.454 \pm 0.031$ (-0.1 $\sigma$ )	$H(0.61)$	94.15	$94.1 \pm 1.5$ (+0.2 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.88	—	$z_{\text{re}}$	7.60	$7.58 \pm 0.80$ (+0.2 $\sigma$ )	$D_{\text{M}}(0.61)$	2337.0	$2351^{+44}_{-53}$ (-0.4 $\sigma$ )
$A_{143}^{\text{tSZ}}$	6.91	$5.6^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$10^9 A_{\text{s}}$	2.0841	$2.086 \pm 0.039$ (+0.2 $\sigma$ )	$H(2.33)$	233.57	$235.0^{+2.5}_{-2.8}$ (-0.4 $\sigma$ )
$A_{100}^{\text{PS}}$	244.0	$256 \pm 28$ (-0.2 $\sigma$ )	$10^9 A_{\text{s}} e^{-2\tau}$	1.8708	$1.874 \pm 0.018$ (-0.2 $\sigma$ )	$D_{\text{M}}(2.33)$	5833	$5835 \pm 91$ (-0.2 $\sigma$ )
$A_{143}^{\text{PS}}$	50.8	$45 \pm 8$ (-0.5 $\sigma$ )	$D_{40}$	1238.0	$1239 \pm 16$ (-0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4613	$0.4594 \pm 0.0090$ (-0.1 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	56.5	$42 \pm 9$ (-0.2 $\sigma$ )	$D_{220}$	5733.2	$5732 \pm 39$ (+0.5 $\sigma$ )	$\sigma_8(0.15)$	0.7543	$0.737^{+0.026}_{-0.011}$ (+0.4 $\sigma$ )
$A_{217}^{\text{PS}}$	123.6	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{810}$	2539.2	$2538 \pm 14$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.4790	$0.474^{+0.010}_{-0.0074}$ (+0.2 $\sigma$ )
$A^{\text{kSZ}}$	0.00	$< 3.93$ (-0.2 $\sigma$ )	$D_{1420}$	819.62	$817.9 \pm 4.9$ (+0.6 $\sigma$ )	$\sigma_8(0.38)$	0.6681	$0.652^{+0.024}_{-0.011}$ (+0.5 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.70	$8.9 \pm 1.8$ (-0.0 $\sigma$ )	$D_{2000}$	232.57	$231.5 \pm 1.8$ (+0.8 $\sigma$ )	$f\sigma_8(0.51)$	0.4772	$0.472^{+0.011}_{-0.0069}$ (+0.3 $\sigma$ )
$A_{143}^{\text{dustTT}}$	10.91	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	$n_{\text{s},0.002}$	0.9593	$0.9590 \pm 0.0087$ (+0.2 $\sigma$ )	$\sigma_8(0.51)$	0.6250	$0.609^{+0.023}_{-0.010}$ (+0.5 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	20.10	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\text{P}}$	0.24271	$0.2434 \pm 0.0027$ (-0.0 $\sigma$ )	$f\sigma_8(0.61)$	0.4719	$0.466^{+0.011}_{-0.0066}$ (+0.4 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.9	$93.8 \pm 7.3$ (+0.1 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.24402	$0.2447 \pm 0.0027$ (-0.0 $\sigma$ )	$\sigma_8(0.61)$	0.5946	$0.580^{+0.022}_{-0.0098}$ (+0.5 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1132	$0.115 \pm 0.038$	$10^5 \text{D/H}$	2.5418	$2.565 \pm 0.045$ (-0.9 $\sigma$ )	$f\sigma_8(2.33)$	0.2987	$0.292^{+0.010}_{-0.0049}$ (+0.5 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1346	$0.135 \pm 0.029$	Age/Gyr	13.964	$13.97 \pm 0.21$ (-0.2 $\sigma$ )	$\sigma_8(2.33)$	0.3083	$0.300^{+0.012}_{-0.0055}$ (+0.5 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.482 \pm 0.085$	$z_*$	1089.628	$1089.82 \pm 0.36$ (-1.0 $\sigma$ )	$f_{2000}^{143}$	27.03	$28.7 \pm 3.0$ (-0.7 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.226	$0.225 \pm 0.054$	$r_*$	146.28	$145.7 \pm 1.8$ (+0.1 $\sigma$ )	$f_{2000}^{143 \times 217}$	30.74	$31.6 \pm 2.1$ (-0.8 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.665	$0.667 \pm 0.080$	$100\theta_*$	1.04157	$1.04142 \pm 0.00054$ (+0.4 $\sigma$ )	$f_{2000}^{217}$	105.38	$106.5 \pm 2.0$ (-0.7 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.075	$2.09 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.044	$13.99 \pm 0.17$ (+0.1 $\sigma$ )	$\chi_{\text{small}}^2$	396.02	$397.1 \pm 1.9$ (+0.1 $\sigma$ )
$c_{100}$	0.99975	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$z_{\text{drag}}$	1059.28	$1059.36 \pm 0.79$ (+0.4 $\sigma$ )	$\chi_{\text{lowl}}^2$	24.29	$24.4 \pm 1.5$ (-0.2 $\sigma$ )
$c_{217}$	0.99817	$0.99818 \pm 0.00063$ (-0.1 $\sigma$ )	$r_{\text{drag}}$	149.01	$148.4 \pm 1.9$ (+0.1 $\sigma$ )	$\chi_{\text{plik}}^2$	2342.0	$2360.0 \pm 6.4$ (+261.4 $\sigma$ )
$H_0$	66.62	$66.0^{+1.9}_{-1.6}$ (+0.4 $\sigma$ )	$k_{\text{D}}$	0.13952	$0.1399 \pm 0.0014$ (+0.0 $\sigma$ )	$\chi_{\text{prior}}^2$	1.45	$11.6 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_\Lambda$	0.6860	$0.674^{+0.019}_{-0.011}$ (+0.5 $\sigma$ )	$100\theta_{\text{D}}$	0.160335	$0.16051 \pm 0.00041$ (-0.6 $\sigma$ )	$\chi_{\text{CMB}}^2$	2762.3	$2781.4 \pm 6.3$ (+261.8 $\sigma$ )
$\Omega_{\text{m}}$	0.3140	$0.326^{+0.011}_{-0.019}$ (-0.5 $\sigma$ )	$z_{\text{eq}}$	3419.4	$3423 \pm 37$ (-0.3 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 2763.73$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.02$ ;  $\bar{\chi}_{\text{eff}}^2 = 2792.98$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.15$ ;  $R - 1 = 0.00589$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.02 ( $\Delta$  0.32) commander\_dx12\_v3.2.29: 24.29 ( $\Delta$  -0.27) plik\_rd12\_HM\_v22b\_TTTEE: 2341.98



#### 9.4 base\_nnu\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022236	$0.02221 \pm 0.00022$ (+0.9 $\sigma$ )	$\Omega_m h^2$	0.13857	$0.1411^{+0.0029}_{-0.0034}$ (-0.4 $\sigma$ )	$k_{\text{eq}}$	0.010263	$0.01033 \pm 0.00011$ (-0.5 $\sigma$ )
$\Omega_c h^2$	0.11633	$0.1179^{+0.0027}_{-0.0030}$ (-0.3 $\sigma$ )	$\Omega_\nu h^2$	0.00000	$< 0.00124$ (-0.6 $\sigma$ )	$100\theta_{\text{eq}}$	0.8107	$0.8093 \pm 0.0067$ (+0.4 $\sigma$ )
$100\theta_{\text{MC}}$	1.041340	$1.04116 \pm 0.00044$ (+0.6 $\sigma$ )	$\Omega_m h^3$	0.09220	$0.0930 \pm 0.0037$ (+0.2 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.44814	$0.4474 \pm 0.0034$ (+0.4 $\sigma$ )
$\tau$	0.0528	$0.0536 \pm 0.0075$ (+0.3 $\sigma$ )	$\sigma_8$	0.8129	$0.798^{+0.022}_{-0.012}$ (+0.5 $\sigma$ )	$H(0.15)$	71.76	$71.2 \pm 1.7$ (+0.4 $\sigma$ )
$\Sigma m_\nu$ [eV]	0.000	$< 0.120$ (-0.6 $\sigma$ )	$S_8$	0.8303	$0.831 \pm 0.013$ (-0.5 $\sigma$ )	$D_{\text{M}}(0.15)$	651.4	$658^{+14}_{-18}$ (-0.5 $\sigma$ )
$N_{\text{eff}}$	2.820	$2.88 \pm 0.19$ (-0.0 $\sigma$ )	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4548	$0.4552 \pm 0.0071$ (-0.5 $\sigma$ )	$H(0.38)$	81.76	$81.5 \pm 1.5$ (+0.4 $\sigma$ )
$\ln(10^{10} A_{\text{s}})$	3.0318	$3.037 \pm 0.017$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6080	$0.603^{+0.011}_{-0.0079}$ (+0.3 $\sigma$ )	$D_{\text{M}}(0.38)$	1553.3	$1565^{+32}_{-38}$ (-0.5 $\sigma$ )
$n_{\text{s}}$	0.9587	$0.9582 \pm 0.0086$ (+0.3 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9965	$0.983^{+0.018}_{-0.011}$ (+0.4 $\sigma$ )	$H(0.51)$	88.40	$88.3 \pm 1.5$ (+0.3 $\sigma$ )
$y_{\text{cal}}$	1.00043	$1.0006 \pm 0.0025$ (+0.0 $\sigma$ )	$r_{\text{drag}} h$	99.41	$97.9^{+2.2}_{-1.4}$ (+0.6 $\sigma$ )	$D_{\text{M}}(0.51)$	2011.9	$2025^{+40}_{-46}$ (-0.4 $\sigma$ )
$A_{217}^{\text{CIB}}$	43.8	$46 \pm 7$ (-0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4557	$2.454 \pm 0.024$ (-0.3 $\sigma$ )	$H(0.61)$	93.95	$93.9 \pm 1.5$ (+0.3 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.923	$> 0.386$ (+0.1 $\sigma$ )	$z_{\text{re}}$	7.46	$7.57 \pm 0.77$ (+0.2 $\sigma$ )	$D_{\text{M}}(0.61)$	2340.9	$2354^{+45}_{-52}$ (-0.4 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.00	$5.6^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$10^9 A_{\text{s}}$	2.0734	$2.084 \pm 0.036$ (+0.1 $\sigma$ )	$H(2.33)$	232.94	$234.6^{+2.5}_{-2.8}$ (-0.3 $\sigma$ )
$A_{100}^{\text{PS}}$	243.0	$255 \pm 28$ (-0.2 $\sigma$ )	$10^9 A_{\text{s}} e^{-2\tau}$	1.8658	$1.872 \pm 0.017$ (-0.1 $\sigma$ )	$D_{\text{M}}(2.33)$	5846	$5845 \pm 88$ (-0.3 $\sigma$ )
$A_{143}^{\text{PS}}$	51.1	$45 \pm 8$ (-0.4 $\sigma$ )	$D_{40}$	1237.0	$1240 \pm 15$ (-0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4585	$0.4590 \pm 0.0066$ (-0.4 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	57.4	$42 \pm 9$ (-0.2 $\sigma$ )	$D_{220}$	5731.5	$5734 \pm 39$ (+0.5 $\sigma$ )	$\sigma_8(0.15)$	0.7508	$0.736^{+0.022}_{-0.012}$ (+0.5 $\sigma$ )
$A_{217}^{\text{PS}}$	123.5	$115 \pm 10$ (-0.0 $\sigma$ )	$D_{810}$	2537.0	$2538 \pm 14$ (+0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.4763	$0.4741^{+0.0072}_{-0.0060}$ (+0.2 $\sigma$ )
$A^{\text{kSZ}}$	0.01	$< 3.86$ (-0.2 $\sigma$ )	$D_{1420}$	819.41	$818.0 \pm 4.9$ (+0.6 $\sigma$ )	$\sigma_8(0.38)$	0.6652	$0.651^{+0.021}_{-0.011}$ (+0.5 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.72	$8.8 \pm 1.8$ (-0.0 $\sigma$ )	$D_{2000}$	232.61	$231.6 \pm 1.8$ (+0.7 $\sigma$ )	$f\sigma_8(0.51)$	0.4747	$0.4711^{+0.0080}_{-0.0059}$ (+0.3 $\sigma$ )
$A_{143}^{\text{dustTT}}$	10.93	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	$n_{\text{s},0.002}$	0.9587	$0.9582 \pm 0.0086$ (+0.3 $\sigma$ )	$\sigma_8(0.51)$	0.6223	$0.609^{+0.020}_{-0.011}$ (+0.5 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	20.22	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\text{P}}$	0.24226	$0.2431 \pm 0.0026$ (+0.0 $\sigma$ )	$f\sigma_8(0.61)$	0.4695	$0.4652^{+0.0087}_{-0.0059}$ (+0.4 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.8	$93.8 \pm 7.2$ (+0.0 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.24357	$0.2444 \pm 0.0026$ (+0.0 $\sigma$ )	$\sigma_8(0.61)$	0.5920	$0.579^{+0.019}_{-0.010}$ (+0.5 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1140	$0.115 \pm 0.038$	$10^5 \text{D/H}$	2.5320	$2.559 \pm 0.044$ (-0.8 $\sigma$ )	$f\sigma_8(2.33)$	0.2975	$0.2921^{+0.0090}_{-0.0053}$ (+0.5 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1342	$0.135 \pm 0.029$	Age/Gyr	13.994	$13.99 \pm 0.21$ (-0.3 $\sigma$ )	$\sigma_8(2.33)$	0.3071	$0.300^{+0.011}_{-0.0060}$ (+0.5 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.482 \pm 0.085$	$z_*$	1089.536	$1089.77 \pm 0.35$ (-1.0 $\sigma$ )	$f_{2000}^{143}$	26.90	$28.6 \pm 3.0$ (-0.6 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.226	$0.225 \pm 0.054$	$r_*$	146.67	$146.0 \pm 1.8$ (+0.0 $\sigma$ )	$f_{2000}^{143 \times 217}$	30.65	$31.4 \pm 2.1$ (-0.7 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.665	$0.667 \pm 0.080$	$100\theta_*$	1.04166	$1.04148 \pm 0.00053$ (+0.4 $\sigma$ )	$f_{2000}^{217}$	105.23	$106.4 \pm 2.0$ (-0.6 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.072	$2.09 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.080	$14.02 \pm 0.17$ (+0.0 $\sigma$ )	$\chi_{\text{lensing}}^2$	8.66	$9.09 \pm 0.81$ (-0.1 $\sigma$ )
$c_{100}$	0.99975	$0.99968 \pm 0.00062$ (+0.1 $\sigma$ )	$z_{\text{drag}}$	1059.17	$1059.28 \pm 0.79$ (+0.5 $\sigma$ )	$\chi_{\text{small}}^2$	395.84	$397.0 \pm 1.7$ (+0.0 $\sigma$ )
$c_{217}$	0.99816	$0.99817 \pm 0.00063$ (-0.1 $\sigma$ )	$r_{\text{drag}}$	149.40	$148.7 \pm 1.9$ (+0.0 $\sigma$ )	$\chi_{\text{lowl}}^2$	24.25	$24.5 \pm 1.5$ (-0.3 $\sigma$ )
$H_0$	66.54	$65.9^{+1.8}_{-1.6}$ (+0.5 $\sigma$ )	$k_{\text{D}}$	0.13923	$0.1397 \pm 0.0014$ (+0.1 $\sigma$ )	$\chi_{\text{plik}}^2$	2342.4	$2359.4 \pm 6.0$ (+285.4 $\sigma$ )
$\Omega_\Lambda$	0.6870	$0.674^{+0.019}_{-0.011}$ (+0.6 $\sigma$ )	$100\theta_{\text{D}}$	0.160256	$0.16045 \pm 0.00040$ (-0.5 $\sigma$ )	$\chi_{\text{prior}}^2$	1.44	$11.5 \pm 4.4$ (+1.2 $\sigma$ )
$\Omega_{\text{m}}$	0.3130	$0.326^{+0.011}_{-0.019}$ (-0.6 $\sigma$ )	$z_{\text{eq}}$	3415.2	$3423 \pm 36$ (-0.4 $\sigma$ )	$\chi_{\text{CMB}}^2$	2771.2	$2790.0 \pm 6.2$ (+269.7 $\sigma$ )

Best-fit  $\chi_{\text{eff}}^2 = 2772.59$ ;  $\Delta\chi_{\text{eff}}^2 = 1584.84$ ;  $\bar{\chi}_{\text{eff}}^2 = 2801.54$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.19$ ;  $R - 1 = 0.00830$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8: 8.66 ( $\Delta$  -0.08) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.84 ( $\Delta$  0.16) commander\_dx12\_v3.2.29: 24.25 ( $\Delta$  -0.06) plik\_rd12\_HM\_v22b\_TTTEEE: 2342.41



## 9.5 base\_nnu\_mnu\_CamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022059	$0.02190^{+0.00039}_{-0.00035}$	$\sigma_8$	0.8196	$0.776^{+0.053}_{-0.017}$	$100\theta_{\text{eq}}$	0.8085	$0.804 \pm 0.013$
$\Omega_c h^2$	0.11906	$0.1190^{+0.0038}_{-0.0043}$	$S_8$	0.8432	$0.835 \pm 0.026$	$100\theta_{\text{s,eq}}$	0.4471	$0.4451 \pm 0.0068$
$100\theta_{\text{MC}}$	1.04106	$1.04090 \pm 0.00061$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4619	$0.457 \pm 0.014$	$H(0.15)$	71.97	$69.8^{+3.7}_{-2.7}$
$\tau$	0.0516	$0.0507 \pm 0.0081$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6153	$0.596^{+0.027}_{-0.013}$	$D_{\text{M}}(0.15)$	649.8	$675^{+24}_{-41}$
$\Sigma m_\nu$ [eV]	0.001	$< 0.240$	$\sigma_8/h^{0.5}$	1.0038	$0.969^{+0.045}_{-0.018}$	$H(0.38)$	82.12	$80.3^{+3.2}_{-2.6}$
$N_{\text{eff}}$	2.934	$2.88 \pm 0.30$	$r_{\text{drag}} h$	98.85	$95.4^{+5.0}_{-2.5}$	$D_{\text{M}}(0.38)$	1548	$1599^{+53}_{-86}$
$\ln(10^{10} A_{\text{s}})$	3.0333	$3.030 \pm 0.021$	$\langle d^2 \rangle^{1/2}$	2.4661	$2.460 \pm 0.048$	$H(0.51)$	88.85	$87.3^{+2.9}_{-2.6}$
$n_{\text{s}}$	0.9589	$0.954 \pm 0.015$	$z_{\text{re}}$	7.43	$7.37 \pm 0.86$	$D_{\text{M}}(0.51)$	2005	$2065^{+66}_{-100}$
$y_{\text{cal}}$	0.99999	$1.0004 \pm 0.0025$	$10^9 A_{\text{s}}$	2.0766	$2.071 \pm 0.044$	$H(0.61)$	94.48	$93.1 \pm 2.7$
$A_{100}^{\text{PS}}$	237.8	$241 \pm 26$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8731	$1.871 \pm 0.024$	$D_{\text{M}}(0.61)$	2332	$2398^{+75}_{-120}$
$A_{143}^{\text{PS}}$	39.2	$40 \pm 9$	$D_{40}$	1235.8	$1240 \pm 23$	$H(2.33)$	234.94	$235.7 \pm 3.8$
$A_{217}^{\text{PS}}$	100.4	$102 \pm 10$	$D_{220}$	5700.8	$5700 \pm 42$	$D_{\text{M}}(2.33)$	5811	$5892^{+140}_{-170}$
$A_{217}^{\text{CIB}}$	43.8	$40 \pm 7$	$D_{810}$	2530.1	$2532 \pm 15$	$f\sigma_8(0.15)$	0.4652	$0.460^{+0.014}_{-0.013}$
$A_{143}^{\text{tSZ}}$	5.44	$3.8^{+1.8}_{-2.6}$	$D_{1420}$	813.7	$814.6 \pm 5.3$	$\sigma_8(0.15)$	0.7566	$0.714^{+0.051}_{-0.016}$
$r_{143 \times 217}^{\text{PS}}$	0.593	$0.65 \pm 0.13$	$D_{2000}$	229.96	$229.9 \pm 2.4$	$f\sigma_8(0.38)$	0.4822	$0.470^{+0.019}_{-0.0098}$
$r_{143 \times 217}^{\text{CIB}}$	0.722	$0.57^{+0.40}_{-0.16}$	$n_{\text{s},0.002}$	0.9589	$0.954 \pm 0.015$	$\sigma_8(0.38)$	0.6698	$0.630^{+0.049}_{-0.016}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.13	—	$Y_{\text{P}}$	0.24375	$0.2428 \pm 0.0042$	$f\sigma_8(0.51)$	0.4800	$0.464^{+0.021}_{-0.0084}$
$A^{\text{kSZ}}$	1.9	—	$Y_{\text{P}}^{\text{BBN}}$	0.24507	$0.2441 \pm 0.0042$	$\sigma_8(0.51)$	0.6264	$0.588^{+0.047}_{-0.015}$
$A_{100}^{\text{dust}}$	1.001	$1.01 \pm 0.20$	$10^5 \text{D}/\text{H}$	2.605	$2.615 \pm 0.072$	$f\sigma_8(0.61)$	0.4744	$0.457^{+0.023}_{-0.0079}$
$A_{143}^{\text{dust}}$	0.978	$0.97 \pm 0.18$	Age/Gyr	13.911	$14.10^{+0.34}_{-0.41}$	$\sigma_8(0.61)$	0.5958	$0.559^{+0.045}_{-0.015}$
$A_{217}^{\text{dust}}$	0.957	$0.97 \pm 0.10$	$z_*$	1090.12	$1090.29^{+0.52}_{-0.57}$	$f\sigma_8(2.33)$	0.2992	$0.282^{+0.022}_{-0.0072}$
$A_{143 \times 217}^{\text{dust}}$	0.996	$1.03 \pm 0.16$	$r_*$	145.49	$145.9 \pm 2.7$	$\sigma_8(2.33)$	0.3087	$0.289^{+0.025}_{-0.0086}$
$c_{100}$	0.99751	$0.9975 \pm 0.0011$	$100\theta_*$	1.04130	$1.04131 \pm 0.00074$	$f_{2000}^{143}$	30.30	$30 \pm 4$
$c_{217}$	1.00118	$1.0012 \pm 0.0016$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.972	$14.01 \pm 0.25$	$f_{2000}^{217}$	106.89	$107.3 \pm 2.5$
$H_0$	66.67	$64.2^{+4.1}_{-2.8}$	$z_{\text{drag}}$	1059.06	$1058.6 \pm 1.2$	$f_{2000}^{143 \times 217}$	32.32	$32.7 \pm 2.8$
$\Omega_\Lambda$	0.6825	$0.649^{+0.048}_{-0.018}$	$r_{\text{drag}}$	148.27	$148.8 \pm 2.8$	$\chi_{\text{simall}}^2$	395.79	$396.9 \pm 1.7$
$\Omega_{\text{m}}$	0.3175	$0.351^{+0.018}_{-0.048}$	$k_{\text{D}}$	0.13982	$0.1395 \pm 0.0020$	$\chi_{\text{lowl}}^2$	24.32	$25.0 \pm 2.6$
$\Omega_{\text{m}} h^2$	0.14113	$0.1431^{+0.0043}_{-0.0050}$	$100\theta_{\text{D}}$	0.16082	$0.16076 \pm 0.00068$	$\chi_{\text{CamSpec}}^2$	7048.9	$7064.2 \pm 6.0$
$\Omega_\nu h^2$	0.00001	$< 0.00243$	$z_{\text{eq}}$	3424	$3447 \pm 73$	$\chi_{\text{prior}}^2$	2.09	$7.6 \pm 3.5$
$\Omega_{\text{m}} h^3$	0.0941	$0.0918 \pm 0.0062$	$k_{\text{eq}}$	0.010371	$0.01040 \pm 0.00016$	$\chi_{\text{CMB}}^2$	7469.0	$7486.0 \pm 6.0$

Best-fit  $\chi_{\text{eff}}^2 = 7471.08$ ;  $\bar{\chi}_{\text{eff}}^2 = 7493.68$ ;  $R - 1 = 0.00504$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.79 commander\_dx12\_v3.2.29: 24.32 CamSpec like\_10.7HM: 7048.88



## 9.6 base\_nnu\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022041	$0.02187^{+0.00038}_{-0.00033}$	$S_8$	0.8351	$0.840 \pm 0.017$	$H(0.15)$	71.80	$69.5^{+3.4}_{-2.7}$
$\Omega_c h^2$	0.11764	$0.1184^{+0.0037}_{-0.0042}$	$\sigma_8 \Omega_m^{0.5}$	0.4574	$0.4601 \pm 0.0095$	$D_M(0.15)$	651.3	$677^{+24}_{-38}$
$100\theta_{MC}$	1.04112	$1.04096 \pm 0.00061$	$\sigma_8 \Omega_m^{0.25}$	0.6103	$0.599^{+0.016}_{-0.0094}$	$H(0.38)$	81.87	$80.0^{+2.9}_{-2.6}$
$\tau$	0.0506	$0.0511 \pm 0.0080$	$\sigma_8/h^{0.5}$	0.9982	$0.975^{+0.028}_{-0.013}$	$D_M(0.38)$	1552	$1605^{+54}_{-79}$
$\Sigma m_\nu$ [eV]	0.002	$< 0.230$	$r_{\text{drag}} h$	99.11	$95.4^{+4.7}_{-2.4}$	$H(0.51)$	88.55	$87.0 \pm 2.6$
$N_{\text{eff}}$	2.879	$2.82^{+0.27}_{-0.31}$	$\langle d^2 \rangle^{1/2}$	2.4570	$2.470^{+0.034}_{-0.040}$	$D_M(0.51)$	2010	$2073^{+68}_{-96}$
$\ln(10^{10} A_s)$	3.0281	$3.030 \pm 0.021$	$z_{\text{re}}$	7.30	$7.40 \pm 0.84$	$H(0.61)$	94.14	$92.8 \pm 2.5$
$n_s$	0.9579	$0.952 \pm 0.014$	$10^9 A_s$	2.0657	$2.070 \pm 0.043$	$D_M(0.61)$	2339	$2407^{+77}_{-110}$
$y_{\text{cal}}$	1.00019	$1.0004 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8670	$1.869 \pm 0.023$	$H(2.33)$	233.80	$234.9 \pm 3.7$
$A_{100}^{\text{PS}}$	236.6	$240 \pm 26$	$D_{40}$	1235.9	$1245 \pm 21$	$D_M(2.33)$	5833	$5912 \pm 150$
$A_{143}^{\text{PS}}$	37.9	$40 \pm 9$	$D_{220}$	5706.1	$5700 \pm 42$	$f\sigma_8(0.15)$	0.4609	$0.4625 \pm 0.0082$
$A_{217}^{\text{PS}}$	100.5	$102 \pm 10$	$D_{810}$	2529.6	$2532 \pm 15$	$\sigma_8(0.15)$	0.7519	$0.717^{+0.042}_{-0.018}$
$A_{217}^{\text{CIB}}$	43.8	$40^{+7}_{-8}$	$D_{1420}$	814.3	$814.9 \pm 5.2$	$f\sigma_8(0.38)$	0.4782	$0.472^{+0.011}_{-0.0069}$
$A_{143}^{\text{tSZ}}$	5.73	$3.8^{+1.8}_{-2.6}$	$D_{2000}$	230.32	$230.3 \pm 2.3$	$\sigma_8(0.38)$	0.6658	$0.633^{+0.040}_{-0.018}$
$r_{143 \times 217}^{\text{PS}}$	0.594	$0.66 \pm 0.13$	$n_{s,0.002}$	0.9579	$0.952 \pm 0.014$	$f\sigma_8(0.51)$	0.4763	$0.467^{+0.014}_{-0.0068}$
$r_{143 \times 217}^{\text{CIB}}$	0.699	$0.56^{+0.40}_{-0.17}$	$Y_P$	0.24299	$0.2420 \pm 0.0041$	$\sigma_8(0.51)$	0.6228	$0.591^{+0.039}_{-0.017}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.08	—	$Y_P^{\text{BBN}}$	0.24431	$0.2433 \pm 0.0041$	$f\sigma_8(0.61)$	0.4709	$0.459^{+0.016}_{-0.0071}$
$A^{\text{kSZ}}$	1.42	$4.8^{+2.2}_{-4.2}$	$10^5 D/H$	2.589	$2.601 \pm 0.070$	$\sigma_8(0.61)$	0.5924	$0.561^{+0.038}_{-0.017}$
$A_{100}^{\text{dust}}$	1.009	$1.00 \pm 0.20$	Age/Gyr	13.963	$14.15 \pm 0.36$	$f\sigma_8(2.33)$	0.2976	$0.283^{+0.018}_{-0.0085}$
$A_{143}^{\text{dust}}$	0.970	$0.97 \pm 0.18$	$z_*$	1089.96	$1090.22^{+0.50}_{-0.57}$	$\sigma_8(2.33)$	0.3071	$0.290^{+0.021}_{-0.0099}$
$A_{217}^{\text{dust}}$	0.962	$0.97 \pm 0.10$	$r_*$	146.16	$146.4 \pm 2.6$	$f_{2000}^{143}$	29.86	$30 \pm 4$
$A_{143 \times 217}^{\text{dust}}$	1.011	$1.03 \pm 0.16$	$100\theta_*$	1.04142	$1.04140 \pm 0.00073$	$f_{2000}^{217}$	106.59	$106.9 \pm 2.5$
$c_{100}$	0.99757	$0.9975 \pm 0.0011$	$D_M(z_*)/\text{Gpc}$	14.035	$14.06 \pm 0.24$	$f_{2000}^{143 \times 217}$	32.02	$32.2 \pm 2.7$
$c_{217}$	1.00119	$1.0011 \pm 0.0016$	$z_{\text{drag}}$	1058.87	$1058.5 \pm 1.2$	$\chi_{\text{lensing}}^2$	8.77	$9.2 \pm 1.1$
$H_0$	66.54	$63.9^{+3.7}_{-2.8}$	$r_{\text{drag}}$	148.96	$149.3 \pm 2.7$	$\chi_{\text{small}}^2$	395.68	$396.9 \pm 1.7$
$\Omega_\Lambda$	0.6845	$0.649^{+0.045}_{-0.018}$	$k_D$	0.13931	$0.1391 \pm 0.0019$	$\chi_{\text{lowl}}^2$	24.30	$25.4 \pm 2.5$
$\Omega_m$	0.3155	$0.351^{+0.018}_{-0.045}$	$100\theta_D$	0.16068	$0.16063 \pm 0.00066$	$\chi_{\text{CamSpec}}^2$	7049.2	$7063.1 \pm 5.6$
$\Omega_m h^2$	0.13970	$0.1422^{+0.0042}_{-0.0049}$	$z_{\text{eq}}$	3415	$3459^{+60}_{-74}$	$\chi_{\text{prior}}^2$	2.03	$7.6 \pm 3.5$
$\Omega_\nu h^2$	0.00002	$< 0.00230$	$k_{\text{eq}}$	0.010304	$0.01039^{+0.00015}_{-0.00016}$	$\chi_{\text{CMB}}^2$	7477.9	$7494.7 \pm 6.0$
$\Omega_m h^3$	0.0930	$0.0909^{+0.0055}_{-0.0063}$	$100\theta_{\text{eq}}$	0.8102	$0.802^{+0.013}_{-0.012}$			
$\sigma_8$	0.8143	$0.780^{+0.042}_{-0.018}$	$100\theta_{s,\text{eq}}$	0.4480	$0.4440^{+0.0067}_{-0.0059}$			

Best-fit  $\chi_{\text{eff}}^2 = 7479.93$ ;  $\bar{\chi}_{\text{eff}}^2 = 7502.27$ ;  $R - 1 = 0.00874$

$\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.77 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.68 commander\_dx12\_v3.2.29: 24.30 CamSpec like\_10.7HM: 7049.15



## 9.7 base\_nnu\_mnu\_CamSpecHM\_TTTEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022207	$0.02216 \pm 0.00024$ (+0.7 $\sigma$ )	$\Omega_m h^3$	0.09344	$0.0930^{+0.0042}_{-0.0047}$ (+0.2 $\sigma$ )	$100\theta_{\text{eq}}$	0.8125	$0.8114 \pm 0.0077$ (+0.5 $\sigma$ )
$\Omega_c h^2$	0.11732	$0.1178 \pm 0.0034$ (−0.3 $\sigma$ )	$\sigma_8$	0.8148	$0.789^{+0.033}_{-0.014}$ (+0.3 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.44907	$0.4485 \pm 0.0039$ (+0.5 $\sigma$ )
$100\theta_{\text{MC}}$	1.041148	$1.04106 \pm 0.00049$ (+0.3 $\sigma$ )	$S_8$	0.8299	$0.823 \pm 0.018$ (−0.5 $\sigma$ )	$H(0.15)$	72.19	$71.2^{+2.1}_{-1.8}$ (+0.4 $\sigma$ )
$\tau$	0.0522	$0.0522 \pm 0.0079$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4546	$0.4506 \pm 0.0098$ (−0.5 $\sigma$ )	$D_{\text{M}}(0.15)$	647.5	$659^{+16}_{-22}$ (−0.4 $\sigma$ )
$\Sigma m_\nu$ [eV]	0.001	< 0.157 (−0.4 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6086	$0.596^{+0.017}_{-0.010}$ (+0.0 $\sigma$ )	$H(0.38)$	82.20	$81.4 \pm 1.9$ (+0.4 $\sigma$ )
$N_{\text{eff}}$	2.893	$2.90 \pm 0.23$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9957	$0.972^{+0.029}_{-0.014}$ (+0.1 $\sigma$ )	$D_{\text{M}}(0.38)$	1544.2	$1567^{+37}_{-47}$ (−0.4 $\sigma$ )
$\ln(10^{10} A_s)$	3.0320	$3.032 \pm 0.020$ (+0.1 $\sigma$ )	$r_{\text{drag}} h$	99.62	$97.8^{+2.7}_{-1.5}$ (+0.5 $\sigma$ )	$H(0.51)$	88.85	$88.2 \pm 1.8$ (+0.3 $\sigma$ )
$n_s$	0.9615	$0.9599 \pm 0.0096$ (+0.4 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4479	$2.437 \pm 0.032$ (−0.5 $\sigma$ )	$D_{\text{M}}(0.51)$	2000	$2027^{+46}_{-57}$ (−0.4 $\sigma$ )
$y_{\text{cal}}$	1.00052	$1.0005 \pm 0.0026$ (+0.0 $\sigma$ )	$z_{\text{re}}$	7.43	$7.44 \pm 0.82$ (+0.1 $\sigma$ )	$H(0.61)$	94.42	$93.9 \pm 1.8$ (+0.3 $\sigma$ )
$A_{100}^{\text{PS}}$	227.1	$237 \pm 25$ (−0.2 $\sigma$ )	$10^9 A_s$	2.0740	$2.074 \pm 0.040$ (+0.1 $\sigma$ )	$D_{\text{M}}(0.61)$	2328	$2357^{+52}_{-64}$ (−0.4 $\sigma$ )
$A_{143}^{\text{PS}}$	44.4	$38 \pm 9$ (−0.3 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8684	$1.868 \pm 0.020$ (−0.1 $\sigma$ )	$H(2.33)$	233.80	$234.8 \pm 3.2$ (−0.2 $\sigma$ )
$A_{217}^{\text{PS}}$	105.7	$103 \pm 10$ (+0.1 $\sigma$ )	$D_{40}$	1230.8	$1233 \pm 16$ (−0.3 $\sigma$ )	$D_{\text{M}}(2.33)$	5818	$5846 \pm 110$ (−0.3 $\sigma$ )
$A_{217}^{\text{CIB}}$	41.2	$39 \pm 7$ (−0.2 $\sigma$ )	$D_{220}$	5716.7	$5717 \pm 40$ (+0.4 $\sigma$ )	$f\sigma_8(0.15)$	0.4584	$0.4546 \pm 0.0094$ (−0.4 $\sigma$ )
$A_{143}^{\text{tSZ}}$	6.46	$3.9^{+1.9}_{-2.5}$ (+0.1 $\sigma$ )	$D_{810}$	2534.3	$2533 \pm 14$ (+0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7528	$0.727^{+0.032}_{-0.014}$ (+0.3 $\sigma$ )
$r_{143 \times 217}^{\text{PS}}$	0.695	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$D_{1420}$	817.4	$816.5 \pm 5.2$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4767	$0.469^{+0.012}_{-0.0078}$ (−0.0 $\sigma$ )
$r_{143 \times 217}^{\text{CIB}}$	0.821	$0.54^{+0.38}_{-0.20}$ (−0.1 $\sigma$ )	$D_{2000}$	231.57	$230.9 \pm 2.1$ (+0.4 $\sigma$ )	$\sigma_8(0.38)$	0.6671	$0.643^{+0.030}_{-0.013}$ (+0.3 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.58	—	$n_{\text{s},0.002}$	0.9615	$0.9599 \pm 0.0096$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.4753	$0.466^{+0.013}_{-0.0074}$ (+0.1 $\sigma$ )
$A^{\text{kSZ}}$	0.01	$4.6^{+1.7}_{-4.4}$ (−0.1 $\sigma$ )	$Y_{\text{P}}$	0.24326	$0.2433 \pm 0.0032$ (+0.1 $\sigma$ )	$\sigma_8(0.51)$	0.6242	$0.602^{+0.028}_{-0.012}$ (+0.3 $\sigma$ )
$A_{100}^{\text{dust}}$	1.002	$1.01 \pm 0.20$ (+0.0 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.24458	$0.2446 \pm 0.0032$ (+0.1 $\sigma$ )	$f\sigma_8(0.61)$	0.4702	$0.460^{+0.014}_{-0.0073}$ (+0.2 $\sigma$ )
$A_{143}^{\text{dust}}$	0.970	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	$10^5 \text{D/H}$	2.563	$2.575 \pm 0.058$ (−0.6 $\sigma$ )	$\sigma_8(0.61)$	0.5939	$0.572^{+0.027}_{-0.012}$ (+0.3 $\sigma$ )
$A_{217}^{\text{dust}}$	0.984	$0.98 \pm 0.10$ (+0.0 $\sigma$ )	Age/Gyr	13.928	$13.99 \pm 0.25$ (−0.3 $\sigma$ )	$f\sigma_8(2.33)$	0.2985	$0.289^{+0.013}_{-0.0059}$ (+0.3 $\sigma$ )
$A_{143 \times 217}^{\text{dust}}$	1.005	$1.02 \pm 0.16$ (−0.0 $\sigma$ )	$z_*$	1089.733	$1089.85 \pm 0.43$ (−0.8 $\sigma$ )	$\sigma_8(2.33)$	0.3082	$0.297^{+0.015}_{-0.0066}$ (+0.4 $\sigma$ )
$c_{100}$	0.99775	$0.9975 \pm 0.0011$ (+0.1 $\sigma$ )	$r_*$	146.04	$145.9 \pm 2.1$ (−0.0 $\sigma$ )	$f_{2000}^{143}$	28.41	$29 \pm 3$ (−0.4 $\sigma$ )
$c_{217}$	1.00114	$1.0010 \pm 0.0016$ (−0.1 $\sigma$ )	$100\theta_*$	1.04142	$1.04140 \pm 0.00062$ (+0.1 $\sigma$ )	$f_{2000}^{217}$	105.61	$106.3 \pm 2.3$ (−0.4 $\sigma$ )
$c_{TE}$	0.9954	$0.9962 \pm 0.0051$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.023	$14.01 \pm 0.20$ (−0.0 $\sigma$ )	$f_{2000}^{143 \times 217}$	30.84	$31.5 \pm 2.5$ (−0.4 $\sigma$ )
$c_{EE}$	0.9902	$0.9904 \pm 0.0057$	$z_{\text{drag}}$	1059.25	$1059.18 \pm 0.87$ (+0.4 $\sigma$ )	$\chi_{\text{small}}^2$	395.79	$396.9 \pm 1.7$ (−0.0 $\sigma$ )
$H_0$	66.96	$65.8^{+2.3}_{-1.9}$ (+0.4 $\sigma$ )	$r_{\text{drag}}$	148.78	$148.7 \pm 2.2$ (−0.0 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.66	$23.9 \pm 1.5$ (−0.4 $\sigma$ )
$\Omega_\Lambda$	0.6888	$0.672^{+0.023}_{-0.012}$ (+0.5 $\sigma$ )	$k_{\text{D}}$	0.13956	$0.1396 \pm 0.0016$ (+0.1 $\sigma$ )	$\chi_{\text{CamSpec}}^2$	11498.0	$11515.4 \pm 6.1$ (+739.4 $\sigma$ )
$\Omega_{\text{m}}$	0.3112	$0.328^{+0.012}_{-0.023}$ (−0.5 $\sigma$ )	$100\theta_{\text{D}}$	0.16052	$0.16058 \pm 0.00053$ (−0.3 $\sigma$ )	$\chi_{\text{prior}}^2$	2.03	$8.0 \pm 3.5$ (+0.1 $\sigma$ )
$\Omega_{\text{m}} h^2$	0.13955	$0.1413^{+0.0036}_{-0.0040}$ (−0.4 $\sigma$ )	$z_{\text{eq}}$	3404.3	$3411 \pm 41$ (−0.5 $\sigma$ )	$\chi_{\text{CMB}}^2$	11917.5	$11936.2 \pm 6.2$ (+742.2 $\sigma$ )
$\Omega_\nu h^2$	0.00001	< 0.00161 (−0.4 $\sigma$ )	$k_{\text{eq}}$	0.010283	$0.01031 \pm 0.00013$ (−0.6 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 11919.53$ ;  $\Delta\chi_{\text{eff}}^2 = 4448.46$ ;  $\bar{\chi}_{\text{eff}}^2 = 11944.15$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4450.47$ ;  $R - 1 = 0.00883$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.79 ( $\Delta$  0.00) commander\_dx12\_v3.2.29: 23.66 ( $\Delta$  -0.66) CamSpec like\_10.7HM\_1400\_unified: 11498.05



## 9.8 base\_nnu\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022166	$0.02215 \pm 0.00023$ (+0.8 $\sigma$ )	$\Omega_m h^3$	0.09210	$0.0926^{+0.0041}_{-0.0045}$ (+0.3 $\sigma$ )	$100\theta_{\text{eq}}$	0.8111	$0.8102 \pm 0.0073$ (+0.6 $\sigma$ )
$\Omega_c h^2$	0.11632	$0.1175 \pm 0.0033$ (−0.2 $\sigma$ )	$\sigma_8$	0.8108	$0.795^{+0.023}_{-0.014}$ (+0.4 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.44840	$0.4479 \pm 0.0037$ (+0.6 $\sigma$ )
$100\theta_{\text{MC}}$	1.041280	$1.04111 \pm 0.00048$ (+0.3 $\sigma$ )	$S_8$	0.8283	$0.828 \pm 0.013$ (−0.7 $\sigma$ )	$H(0.15)$	71.73	$71.1 \pm 1.8$ (+0.5 $\sigma$ )
$\tau$	0.0509	$0.0532 \pm 0.0077$ (+0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4537	$0.4534 \pm 0.0071$ (−0.7 $\sigma$ )	$D_{\text{M}}(0.15)$	651.8	$659^{+16}_{-19}$ (−0.6 $\sigma$ )
$\Sigma m_\nu$ [eV]	0.000	$< 0.127$ (−0.5 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6065	$0.600^{+0.011}_{-0.0081}$ (+0.1 $\sigma$ )	$H(0.38)$	81.72	$81.4 \pm 1.7$ (+0.5 $\sigma$ )
$N_{\text{eff}}$	2.823	$2.87 \pm 0.22$ (+0.2 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9942	$0.980^{+0.018}_{-0.011}$ (+0.2 $\sigma$ )	$D_{\text{M}}(0.38)$	1554.0	$1567^{+36}_{-42}$ (−0.5 $\sigma$ )
$\ln(10^{10} A_s)$	3.0266	$3.034 \pm 0.019$ (+0.2 $\sigma$ )	$r_{\text{drag}} h$	99.40	$98.0^{+2.3}_{-1.5}$ (+0.7 $\sigma$ )	$H(0.51)$	88.36	$88.1 \pm 1.7$ (+0.4 $\sigma$ )
$n_s$	0.9585	$0.9585 \pm 0.0093$ (+0.5 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4498	$2.447 \pm 0.026$ (−0.6 $\sigma$ )	$D_{\text{M}}(0.51)$	2012.8	$2028 \pm 49$ (−0.5 $\sigma$ )
$y_{\text{cal}}$	1.00047	$1.0006 \pm 0.0026$ (+0.1 $\sigma$ )	$z_{\text{re}}$	7.28	$7.54 \pm 0.79$ (+0.2 $\sigma$ )	$H(0.61)$	93.91	$93.8 \pm 1.7$ (+0.4 $\sigma$ )
$A_{100}^{\text{PS}}$	226.9	$236 \pm 25$ (−0.2 $\sigma$ )	$10^9 A_s$	2.0627	$2.077^{+0.036}_{-0.041}$ (+0.2 $\sigma$ )	$D_{\text{M}}(0.61)$	2342	$2358 \pm 55$ (−0.5 $\sigma$ )
$A_{143}^{\text{PS}}$	45.0	$37 \pm 9$ (−0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8630	$1.868 \pm 0.020$ (−0.0 $\sigma$ )	$H(2.33)$	232.86	$234.3 \pm 3.1$ (−0.2 $\sigma$ )
$A_{217}^{\text{PS}}$	105.5	$103 \pm 10$ (+0.1 $\sigma$ )	$D_{40}$	1234.8	$1237 \pm 16$ (−0.4 $\sigma$ )	$D_{\text{M}}(2.33)$	5848	$5854 \pm 100$ (−0.4 $\sigma$ )
$A_{217}^{\text{CIB}}$	41.1	$39 \pm 7$ (−0.2 $\sigma$ )	$D_{220}$	5719.5	$5719 \pm 40$ (+0.5 $\sigma$ )	$f\sigma_8(0.15)$	0.4574	$0.4572 \pm 0.0066$ (−0.6 $\sigma$ )
$A_{143}^{\text{tSZ}}$	6.43	$4.0^{+2.0}_{-2.5}$ (+0.1 $\sigma$ )	$D_{810}$	2532.9	$2534 \pm 14$ (+0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7489	$0.733^{+0.022}_{-0.013}$ (+0.5 $\sigma$ )
$r_{143 \times 217}^{\text{PS}}$	0.713	$0.67 \pm 0.13$ (+0.1 $\sigma$ )	$D_{1420}$	817.6	$816.9 \pm 5.2$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4752	$0.4723^{+0.0072}_{-0.0061}$ (+0.0 $\sigma$ )
$r_{143 \times 217}^{\text{CIB}}$	0.826	$0.54^{+0.38}_{-0.22}$ (−0.1 $\sigma$ )	$D_{2000}$	231.86	$231.2 \pm 2.1$ (+0.4 $\sigma$ )	$\sigma_8(0.38)$	0.6635	$0.649^{+0.021}_{-0.013}$ (+0.5 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.66	—	$n_{\text{s},0.002}$	0.9585	$0.9585 \pm 0.0093$ (+0.5 $\sigma$ )	$f\sigma_8(0.51)$	0.4735	$0.4694^{+0.0081}_{-0.0062}$ (+0.2 $\sigma$ )
$A^{\text{kSZ}}$	0.04	$< 5.95$ (−0.1 $\sigma$ )	$Y_{\text{P}}$	0.24227	$0.2429 \pm 0.0031$ (+0.2 $\sigma$ )	$\sigma_8(0.51)$	0.6207	$0.607^{+0.020}_{-0.012}$ (+0.5 $\sigma$ )
$A_{100}^{\text{dust}}$	1.006	$1.00 \pm 0.20$ (+0.0 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.24359	$0.2442 \pm 0.0031$ (+0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.4683	$0.4635^{+0.0088}_{-0.0063}$ (+0.3 $\sigma$ )
$A_{143}^{\text{dust}}$	0.977	$0.95 \pm 0.17$ (−0.1 $\sigma$ )	$10^5 \text{D/H}$	2.546	$2.566 \pm 0.057$ (−0.5 $\sigma$ )	$\sigma_8(0.61)$	0.5905	$0.577^{+0.020}_{-0.012}$ (+0.5 $\sigma$ )
$A_{217}^{\text{dust}}$	0.982	$0.98 \pm 0.10$ (+0.0 $\sigma$ )	Age/Gyr	14.000	$14.01 \pm 0.24$ (−0.4 $\sigma$ )	$f\sigma_8(2.33)$	0.2967	$0.2911^{+0.0092}_{-0.0060}$ (+0.5 $\sigma$ )
$A_{143 \times 217}^{\text{dust}}$	1.005	$1.02 \pm 0.16$ (−0.0 $\sigma$ )	$z_*$	1089.625	$1089.81 \pm 0.41$ (−0.8 $\sigma$ )	$\sigma_8(2.33)$	0.3063	$0.299^{+0.011}_{-0.0068}$ (+0.5 $\sigma$ )
$c_{100}$	0.99776	$0.9976 \pm 0.0011$ (+0.1 $\sigma$ )	$r_*$	146.71	$146.2 \pm 2.1$ (−0.1 $\sigma$ )	$f_{2000}^{143}$	28.11	$28 \pm 3$ (−0.4 $\sigma$ )
$c_{217}$	1.00115	$1.0010 \pm 0.0016$ (−0.1 $\sigma$ )	$100\theta_*$	1.04160	$1.04146 \pm 0.00061$ (+0.1 $\sigma$ )	$f_{2000}^{217}$	105.39	$106.0 \pm 2.3$ (−0.3 $\sigma$ )
$c_{\text{TE}}$	0.9951	$0.9957 \pm 0.0051$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.085	$14.04 \pm 0.19$ (−0.1 $\sigma$ )	$f_{2000}^{143 \times 217}$	30.63	$31.2 \pm 2.5$ (−0.4 $\sigma$ )
$c_{\text{EE}}$	0.9894	$0.9900 \pm 0.0056$	$z_{\text{drag}}$	1059.02	$1059.09 \pm 0.85$ (+0.5 $\sigma$ )	$\chi_{\text{lensing}}^2$	8.57	$9.19 \pm 0.93$ (−0.0 $\sigma$ )
$H_0$	66.50	$65.8 \pm 1.9$ (+0.6 $\sigma$ )	$r_{\text{drag}}$	149.47	$149.0 \pm 2.2$ (−0.1 $\sigma$ )	$\chi_{\text{small}}^2$	395.68	$397.0 \pm 1.7$ (+0.0 $\sigma$ )
$\Omega_\Lambda$	0.6869	$0.674^{+0.020}_{-0.012}$ (+0.6 $\sigma$ )	$k_{\text{D}}$	0.13909	$0.1395 \pm 0.0015$ (+0.2 $\sigma$ )	$\chi_{\text{lowl}}^2$	24.10	$24.2 \pm 1.5$ (−0.5 $\sigma$ )
$\Omega_{\text{m}}$	0.3131	$0.326^{+0.012}_{-0.020}$ (−0.6 $\sigma$ )	$100\theta_{\text{D}}$	0.16036	$0.16050 \pm 0.00052$ (−0.2 $\sigma$ )	$\chi_{\text{CamSpec}}^2$	11497.8	$11514.2 \pm 5.8$ (+800.5 $\sigma$ )
$\Omega_{\text{m}} h^2$	0.13848	$0.1407 \pm 0.0037$ (−0.3 $\sigma$ )	$z_{\text{eq}}$	3411.5	$3417 \pm 39$ (−0.6 $\sigma$ )	$\chi_{\text{prior}}^2$	2.06	$8.0 \pm 3.5$ (+0.1 $\sigma$ )
$\Omega_\nu h^2$	0.00000	$< 0.00129$ (−0.5 $\sigma$ )	$k_{\text{eq}}$	0.010255	$0.01030 \pm 0.00012$ (−0.6 $\sigma$ )	$\chi_{\text{CMB}}^2$	11926.1	$11944.6 \pm 6.2$ (+744.0 $\sigma$ )

Best-fit  $\chi_{\text{eff}}^2 = 11928.16$ ;  $\Delta\chi_{\text{eff}}^2 = 4448.23$ ;  $\bar{\chi}_{\text{eff}}^2 = 11952.59$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4450.32$ ;  $R - 1 = 0.01252$

$\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.57 ( $\Delta$  -0.20) small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.68 ( $\Delta$  -0.00) commander\_dx12\_v3\_2.29: 24.10 ( $\Delta$  -0.20) CamSpec like\_10.7HM\_1400\_unified: 11497.75



## 9.9 base\_nnu\_mnu\_plikHM\_TT\_lowl\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022179	$0.02226 \pm 0.00023$	$\sigma_8 \Omega_m^{0.5}$	0.4562	$0.451 \pm 0.010$	$D_M(0.15)$	639.9	$636 \pm 13$
$\Omega_c h^2$	0.11942	$0.1204 \pm 0.0039$	$\sigma_8 \Omega_m^{0.25}$	0.6122	$0.605^{+0.013}_{-0.011}$	$H(0.38)$	83.07	$83.6 \pm 1.5$
$100\theta_{MC}$	1.04094	$1.04084 \pm 0.00057$	$\sigma_8/h^{0.5}$	0.9980	$0.983^{+0.020}_{-0.014}$	$D_M(0.38)$	1526.8	$1519 \pm 29$
$\tau$	0.0529	$0.0536 \pm 0.0081$	$r_{\text{drag}} h$	99.99	$99.96 \pm 1.0$	$H(0.51)$	89.75	$90.3 \pm 1.6$
$\Sigma m_\nu$ [eV]	0.0015	$< 0.0790$	$\langle d^2 \rangle^{1/2}$	2.4460	$2.425^{+0.034}_{-0.031}$	$D_M(0.51)$	1978.4	$1968 \pm 37$
$N_{\text{eff}}$	3.034	$3.14 \pm 0.23$	$z_{\text{re}}$	7.56	$7.64 \pm 0.84$	$H(0.61)$	95.34	$95.9 \pm 1.6$
$\ln(10^{10} A_s)$	3.0396	$3.043 \pm 0.020$	$10^9 A_s$	2.0898	$2.098 \pm 0.042$	$D_M(0.61)$	2302.6	$2290 \pm 43$
$n_s$	0.9653	$0.9694 \pm 0.0088$	$10^9 A_s e^{-2\tau}$	1.8799	$1.884 \pm 0.021$	$H(2.33)$	235.62	$237.0 \pm 3.4$
$y_{\text{cal}}$	1.00051	$1.0006 \pm 0.0025$	$D_{40}$	1227.9	$1223 \pm 16$	$D_M(2.33)$	5763	$5730 \pm 94$
$A_{217}^{\text{CIB}}$	49.2	$48 \pm 7$	$D_{220}$	5715.5	$5719 \pm 40$	$f\sigma_8(0.15)$	0.4603	$0.4558 \pm 0.0096$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.19	—	$D_{810}$	2536.7	$2537 \pm 14$	$\sigma_8(0.15)$	0.7594	$0.750^{+0.018}_{-0.014}$
$A_{143}^{\text{tSZ}}$	7.19	$5.0 \pm 2.0$	$D_{1420}$	815.7	$814.8 \pm 5.2$	$f\sigma_8(0.38)$	0.4795	$0.4749^{+0.0099}_{-0.0087}$
$A_{100}^{\text{PS}}$	254.0	$265 \pm 29$	$D_{2000}$	230.20	$229.4 \pm 2.2$	$\sigma_8(0.38)$	0.6733	$0.665^{+0.016}_{-0.012}$
$A_{143}^{\text{PS}}$	46.9	$50 \pm 9$	$n_{s,0.002}$	0.9653	$0.9694 \pm 0.0088$	$f\sigma_8(0.51)$	0.4783	$0.4738^{+0.0098}_{-0.0084}$
$A_{143 \times 217}^{\text{PS}}$	43.2	$44 \pm 9$	$Y_P$	0.24515	$0.2465 \pm 0.0032$	$\sigma_8(0.51)$	0.6301	$0.623^{+0.015}_{-0.012}$
$A_{217}^{\text{PS}}$	118.1	$115 \pm 10$	$Y_P^{\text{BBN}}$	0.24648	$0.2479 \pm 0.0032$	$f\sigma_8(0.61)$	0.4735	$0.4691^{+0.0097}_{-0.0083}$
$A^{\text{kSZ}}$	0.00	$< 5.14$	$10^5 \text{D/H}$	2.618	$2.639 \pm 0.068$	$\sigma_8(0.61)$	0.5996	$0.593^{+0.014}_{-0.011}$
$A_{100}^{\text{dustTT}}$	8.92	$9.0 \pm 1.8$	Age/Gyr	13.798	$13.72 \pm 0.22$	$f\sigma_8(2.33)$	0.3015	$0.2991^{+0.0066}_{-0.0056}$
$A_{143}^{\text{dustTT}}$	10.74	$10.8 \pm 1.8$	$z_*$	1090.094	$1090.19 \pm 0.49$	$\sigma_8(2.33)$	0.3114	$0.3084^{+0.0073}_{-0.0060}$
$A_{143 \times 217}^{\text{dustTT}}$	19.23	$18.3 \pm 3.3$	$r_*$	144.80	$144.0 \pm 2.2$	$f_{2000}^{143}$	30.21	$31.6 \pm 3.4$
$A_{217}^{\text{dustTT}}$	94.4	$93.3 \pm 7.3$	$100\theta_*$	1.04113	$1.04098 \pm 0.00068$	$f_{2000}^{143 \times 217}$	33.04	$33.9 \pm 2.5$
$c_{100}$	0.99964	$0.99961 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	13.908	$13.83 \pm 0.21$	$f_{2000}^{217}$	107.63	$108.4 \pm 2.3$
$c_{217}$	0.99824	$0.99827 \pm 0.00063$	$z_{\text{drag}}$	1059.44	$1059.78 \pm 0.87$	$\chi_{\text{simall}}^2$	395.86	$397.1 \pm 1.8$
$H_0$	67.78	$68.2 \pm 1.4$	$r_{\text{drag}}$	147.53	$146.7 \pm 2.3$	$\chi_{\text{lowl}}^2$	23.31	$22.8 \pm 1.2$
$\Omega_\Lambda$	0.6917	$0.6913 \pm 0.0083$	$k_D$	0.14030	$0.1409 \pm 0.0017$	$\chi_{\text{plik}}^2$	758.4	$773.3 \pm 5.9$
$\Omega_m$	0.3083	$0.3087 \pm 0.0083$	$100\theta_D$	0.16100	$0.16124 \pm 0.00059$	$\chi_{6\text{DF}}^2$	0.0103	$0.057 \pm 0.077$
$\Omega_m h^2$	0.14161	$0.1434 \pm 0.0041$	$z_{\text{eq}}$	3389.2	$3368 \pm 34$	$\chi_{\text{MGS}}^2$	1.41	$1.47 \pm 0.60$
$\Omega_\nu h^2$	$1.6 \cdot 10^{-5}$	$< 0.000839$	$k_{\text{eq}}$	0.010336	$0.01034 \pm 0.00015$	$\chi_{\text{DR12BAO}}^2$	3.91	$4.6 \pm 1.6$
$\Omega_m h^3$	0.09598	$0.0978 \pm 0.0046$	$100\theta_{\text{eq}}$	0.8150	$0.8192^{+0.0060}_{-0.0068}$	$\chi_{\text{prior}}^2$	1.52	$7.4 \pm 3.7$
$\sigma_8$	0.8216	$0.812^{+0.019}_{-0.015}$	$100\theta_{s,\text{eq}}$	0.45044	$0.4525^{+0.0031}_{-0.0035}$	$\chi_{\text{BAO}}^2$	5.32	$6.2 \pm 1.3$
$S_8$	0.8329	$0.823 \pm 0.018$	$H(0.15)$	73.02	$73.4 \pm 1.4$	$\chi_{\text{CMB}}^2$	1177.6	$1193.2 \pm 5.8$

Best-fit  $\chi_{\text{eff}}^2 = 1184.40$ ;  $\bar{\chi}_{\text{eff}}^2 = 1206.70$ ;  $R - 1 = 0.00673$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.91 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 commander\_dx12\_v3.2.29: 23.31 plik\_rd12\_HM\_v22\_TT: 758.38



## 9.10 base\_nnu\_mnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022208	$0.02227 \pm 0.00023$	$\sigma_8 \Omega_m^{0.25}$	0.6119	$0.605^{+0.013}_{-0.011}$	$D_M(0.38)$	1524.2	$1516 \pm 29$
$\Omega_c h^2$	0.11952	$0.1205 \pm 0.0039$	$\sigma_8/h^{0.5}$	0.9973	$0.983^{+0.020}_{-0.014}$	$H(0.51)$	89.87	$90.4 \pm 1.5$
$100\theta_{MC}$	1.04097	$1.04083 \pm 0.00057$	$r_{\text{drag}} h$	100.11	$100.11 \pm 0.99$	$D_M(0.51)$	1975.1	$1964 \pm 36$
$\tau$	0.0530	$0.0538 \pm 0.0081$	$\langle d^2 \rangle^{1/2}$	2.4437	$2.423^{+0.033}_{-0.030}$	$H(0.61)$	95.46	$96.0 \pm 1.6$
$\Sigma m_\nu$ [eV]	0.0018	$< 0.0768$	$z_{\text{re}}$	7.57	$7.65 \pm 0.84$	$D_M(0.61)$	2298.8	$2286 \pm 42$
$N_{\text{eff}}$	3.046	$3.15 \pm 0.23$	$10^9 A_s$	2.0908	$2.099 \pm 0.042$	$H(2.33)$	235.76	$237.2 \pm 3.4$
$\ln(10^{10} A_s)$	3.0401	$3.044 \pm 0.020$	$10^9 A_s e^{-2\tau}$	1.8806	$1.885 \pm 0.021$	$D_M(2.33)$	5756	$5724 \pm 92$
$n_s$	0.9661	$0.9701 \pm 0.0086$	$D_{40}$	1226.8	$1222 \pm 15$	$f\sigma_8(0.15)$	0.4598	$0.4555 \pm 0.0095$
$y_{\text{cal}}$	1.00045	$1.0006 \pm 0.0025$	$D_{220}$	5716.7	$5719 \pm 40$	$\sigma_8(0.15)$	0.7597	$0.751^{+0.017}_{-0.014}$
$A_{217}^{\text{CIB}}$	48.8	$48 \pm 7$	$D_{810}$	2537.1	$2537 \pm 14$	$f\sigma_8(0.38)$	0.4792	$0.4748^{+0.0097}_{-0.0087}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.31	—	$D_{1420}$	815.8	$814.8 \pm 5.2$	$\sigma_8(0.38)$	0.6737	$0.666^{+0.015}_{-0.012}$
$A_{143}^{\text{tSZ}}$	7.03	$5.0 \pm 2.0$	$D_{2000}$	230.24	$229.3 \pm 2.2$	$f\sigma_8(0.51)$	0.4782	$0.4738^{+0.0096}_{-0.0084}$
$A_{100}^{\text{PS}}$	254.0	$265 \pm 28$	$n_{s,0.002}$	0.9661	$0.9701 \pm 0.0086$	$\sigma_8(0.51)$	0.6306	$0.624^{+0.015}_{-0.011}$
$A_{143}^{\text{PS}}$	49.0	$50 \pm 8$	$Y_P$	0.24533	$0.2467 \pm 0.0031$	$f\sigma_8(0.61)$	0.4734	$0.4692^{+0.0095}_{-0.0082}$
$A_{143 \times 217}^{\text{PS}}$	46.5	$44^{+9}_{-10}$	$Y_P^{\text{BBN}}$	0.24666	$0.2481 \pm 0.0031$	$\sigma_8(0.61)$	0.6000	$0.594^{+0.014}_{-0.011}$
$A_{217}^{\text{PS}}$	119.0	$115 \pm 10$	$10^5 D/H$	2.616	$2.641 \pm 0.068$	$f\sigma_8(2.33)$	0.3017	$0.2996^{+0.0064}_{-0.0055}$
$A^{\text{kSZ}}$	0.01	$< 5.18$	Age/Gyr	13.782	$13.70 \pm 0.22$	$\sigma_8(2.33)$	0.3117	$0.3089^{+0.0072}_{-0.0059}$
$A_{100}^{\text{dustTT}}$	8.87	$9.0 \pm 1.8$	$z_*$	1090.079	$1090.19 \pm 0.49$	$f_{2000}^{143}$	30.16	$31.7 \pm 3.4$
$A_{143}^{\text{dustTT}}$	10.81	$10.8 \pm 1.8$	$r_*$	144.69	$143.9 \pm 2.2$	$f_{2000}^{143 \times 217}$	33.08	$34.0 \pm 2.5$
$A_{143 \times 217}^{\text{dustTT}}$	19.34	$18.3 \pm 3.3$	$100\theta_*$	1.04113	$1.04096 \pm 0.00068$	$f_{2000}^{217}$	107.55	$108.5 \pm 2.3$
$A_{217}^{\text{dustTT}}$	94.4	$93.3 \pm 7.3$	$D_M(z_*)/\text{Gpc}$	13.897	$13.82 \pm 0.21$	$\chi_{\text{small}}^2$	395.88	$397.1 \pm 1.8$
$c_{100}$	0.99963	$0.99961 \pm 0.00061$	$z_{\text{drag}}$	1059.51	$1059.83 \pm 0.86$	$\chi_{\text{lowl}}^2$	23.21	$22.7 \pm 1.2$
$c_{217}$	0.99826	$0.99827 \pm 0.00062$	$r_{\text{drag}}$	147.41	$146.6 \pm 2.3$	$\chi_{\text{plik}}^2$	758.6	$773.4 \pm 5.9$
$H_0$	67.91	$68.3 \pm 1.4$	$k_D$	0.14041	$0.1410 \pm 0.0017$	$\chi_{\text{JLA}}^2$	1034.879	$1035.01 \pm 0.32$
$\Omega_\Lambda$	0.6927	$0.6925 \pm 0.0078$	$100\theta_D$	0.16101	$0.16126 \pm 0.00058$	$\chi_{6\text{DF}}^2$	0.0060	$0.047 \pm 0.064$
$\Omega_m$	0.3073	$0.3075 \pm 0.0078$	$z_{\text{eq}}$	3386.7	$3365 \pm 33$	$\chi_{\text{MGS}}^2$	1.47	$1.55 \pm 0.58$
$\Omega_m h^2$	0.14174	$0.1435 \pm 0.0041$	$k_{\text{eq}}$	0.010336	$0.01034 \pm 0.00015$	$\chi_{\text{DR12BAO}}^2$	3.78	$4.4 \pm 1.3$
$\Omega_\nu h^2$	0.000019	$< 0.000816$	$100\theta_{\text{eq}}$	0.8156	$0.8198^{+0.0057}_{-0.0066}$	$\chi_{\text{prior}}^2$	1.41	$7.3 \pm 3.7$
$\Omega_m h^3$	0.09626	$0.0981 \pm 0.0045$	$100\theta_{s,\text{eq}}$	0.45071	$0.4529^{+0.0029}_{-0.0034}$	$\chi_{\text{BAO}}^2$	5.26	$6.0 \pm 1.1$
$\sigma_8$	0.8219	$0.812^{+0.019}_{-0.015}$	$H(0.15)$	73.15	$73.6 \pm 1.4$	$\chi_{\text{CMB}}^2$	1177.7	$1193.2 \pm 5.8$
$S_8$	0.8318	$0.822 \pm 0.018$	$D_M(0.15)$	638.7	$635 \pm 13$			
$\sigma_8 \Omega_m^{0.5}$	0.4556	$0.450 \pm 0.010$	$H(0.38)$	83.19	$83.7 \pm 1.5$			

Best-fit  $\chi_{\text{eff}}^2 = 2219.27$ ;  $\bar{\chi}_{\text{eff}}^2 = 2241.49$ ;  $R - 1 = 0.00842$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.01 MGS: 1.47 DR12BAO: 3.78 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.88 commander\_dx12\_v3.2.29: 23.21 plik\_rd12\_HM\_v22.TT: 758.62  
SN - JLA Pantheon18: 1034.88



### 9.11 base\_nnu\_mnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022170	$0.02221 \pm 0.00022$	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6093	$0.604^{+0.013}_{-0.010}$	$D_{\text{M}}(0.38)$	1531.3	$1528 \pm 24$
$\Omega_{\text{c}}h^2$	0.11832	$0.1192 \pm 0.0032$	$\sigma_8/h^{0.5}$	0.9952	$0.983^{+0.019}_{-0.013}$	$H(0.51)$	89.46	$89.7 \pm 1.2$
$100\theta_{\text{MC}}$	1.04110	$1.04097 \pm 0.00053$	$r_{\text{drag}}h$	100.10	$99.8 \pm 1.0$	$D_{\text{M}}(0.51)$	1984.3	$1980 \pm 30$
$\tau$	0.0530	$0.0533 \pm 0.0081$	$\langle d^2 \rangle^{1/2}$	2.4416	$2.428^{+0.033}_{-0.030}$	$H(0.61)$	95.02	$95.3 \pm 1.3$
$\Sigma m_{\nu}$ [eV]	0.0016	$< 0.0726$	$z_{\text{re}}$	7.55	$7.58 \pm 0.83$	$D_{\text{M}}(0.61)$	2309.6	$2304 \pm 35$
$N_{\text{eff}}$	2.981	$3.06 \pm 0.18$	$10^9 A_{\text{s}}$	2.0828	$2.090 \pm 0.039$	$H(2.33)$	234.72	$235.9 \pm 2.8$
$\ln(10^{10} A_{\text{s}})$	3.0363	$3.039 \pm 0.019$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8734	$1.878 \pm 0.018$	$D_{\text{M}}(2.33)$	5783	$5763 \pm 75$
$n_{\text{s}}$	0.9646	$0.9666 \pm 0.0074$	$D_{40}$	1226.6	$1226 \pm 15$	$f\sigma_8(0.15)$	0.4579	$0.4550 \pm 0.0093$
$y_{\text{cal}}$	1.00014	$1.0006 \pm 0.0025$	$D_{220}$	5711.3	$5720 \pm 40$	$\sigma_8(0.15)$	0.7563	$0.748^{+0.016}_{-0.012}$
$A_{217}^{\text{CIB}}$	48.0	$48 \pm 7$	$D_{810}$	2534.3	$2536 \pm 14$	$f\sigma_8(0.38)$	0.4771	$0.4737^{+0.0094}_{-0.0082}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.38	—	$D_{1420}$	815.9	$815.3 \pm 5.1$	$\sigma_8(0.38)$	0.6706	$0.663^{+0.015}_{-0.011}$
$A_{143}^{\text{tSZ}}$	7.00	$5.1 \pm 2.0$	$D_{2000}$	230.53	$229.9 \pm 2.0$	$f\sigma_8(0.51)$	0.4761	$0.4725^{+0.0092}_{-0.0078}$
$A_{100}^{\text{PS}}$	252.6	$263 \pm 28$	$n_{\text{s},0.002}$	0.9646	$0.9666 \pm 0.0074$	$\sigma_8(0.51)$	0.6276	$0.620^{+0.014}_{-0.010}$
$A_{143}^{\text{PS}}$	48.8	$49 \pm 8$	$Y_{\text{P}}$	0.24444	$0.2454 \pm 0.0025$	$f\sigma_8(0.61)$	0.4714	$0.4676^{+0.0091}_{-0.0075}$
$A_{143 \times 217}^{\text{PS}}$	47.3	$43 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	0.24576	$0.2468 \pm 0.0025$	$\sigma_8(0.61)$	0.5973	$0.590^{+0.013}_{-0.0097}$
$A_{217}^{\text{PS}}$	119.3	$115 \pm 10$	$10^5 \text{D}/\text{H}$	2.601	$2.619 \pm 0.058$	$f\sigma_8(2.33)$	0.3003	$0.2978^{+0.0061}_{-0.0048}$
$A^{\text{kSZ}}$	0.00	$< 4.91$	Age/Gyr	13.845	$13.80 \pm 0.18$	$\sigma_8(2.33)$	0.3102	$0.3071^{+0.0068}_{-0.0052}$
$A_{100}^{\text{dustTT}}$	8.87	$9.0 \pm 1.8$	$z_*$	1089.955	$1090.05 \pm 0.43$	$f_{2000}^{143}$	29.59	$31.0 \pm 3.2$
$A_{143}^{\text{dustTT}}$	10.77	$10.7 \pm 1.8$	$r_*$	145.36	$144.8 \pm 1.8$	$f_{2000}^{143 \times 217}$	32.61	$33.4 \pm 2.3$
$A_{143 \times 217}^{\text{dustTT}}$	19.40	$18.3 \pm 3.3$	$100\theta_*$	1.04131	$1.04116 \pm 0.00061$	$f_{2000}^{217}$	107.08	$108.0 \pm 2.2$
$A_{217}^{\text{dustTT}}$	94.6	$93.5 \pm 7.3$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.959	$13.90 \pm 0.17$	$\chi_{\text{small}}^2$	395.85	$397.0 \pm 1.8$
$c_{100}$	0.99965	$0.99961 \pm 0.00061$	$z_{\text{drag}}$	1059.28	$1059.51 \pm 0.73$	$\chi_{\text{lowl}}^2$	23.32	$23.1 \pm 1.2$
$c_{217}$	0.99825	$0.99826 \pm 0.00063$	$r_{\text{drag}}$	148.10	$147.5 \pm 1.8$	$\chi_{\text{plik}}^2$	758.7	$772.5 \pm 5.7$
$H_0$	67.59	$67.7 \pm 1.2$	$k_{\text{D}}$	0.13990	$0.1403 \pm 0.0013$	$\chi_{\text{Aver15}}^2$	0.046	$0.60 \pm 0.78$
$\Omega_{\Lambda}$	0.6924	$0.6901 \pm 0.0081$	$100\theta_{\text{D}}$	0.160870	$0.16105 \pm 0.00049$	$\chi_{6\text{DF}}^2$	0.0061	$0.061 \pm 0.080$
$\Omega_{\text{m}}$	0.3076	$0.3099 \pm 0.0081$	$z_{\text{eq}}$	3386.8	$3374 \pm 33$	$\chi_{\text{MGS}}^2$	1.47	$1.39 \pm 0.57$
$\Omega_{\text{m}}h^2$	0.14050	$0.1420 \pm 0.0033$	$k_{\text{eq}}$	0.010291	$0.01030 \pm 0.00013$	$\chi_{\text{DR12BAO}}^2$	3.76	$4.8 \pm 1.7$
$\Omega_{\nu}h^2$	$1.7 \cdot 10^{-5}$	$< 0.000767$	$100\theta_{\text{eq}}$	0.8155	$0.8180^{+0.0058}_{-0.0064}$	$\chi_{\text{prior}}^2$	1.32	$7.3 \pm 3.7$
$\Omega_{\text{m}}h^3$	0.09497	$0.0962 \pm 0.0036$	$100\theta_{\text{s,eq}}$	0.45070	$0.4520^{+0.0030}_{-0.0033}$	$\chi_{\text{BAO}}^2$	5.24	$6.2 \pm 1.4$
$\sigma_8$	0.8182	$0.809^{+0.018}_{-0.013}$	$H(0.15)$	72.81	$73.0 \pm 1.2$	$\chi_{\text{CMB}}^2$	1177.9	$1192.6 \pm 5.6$
$S_8$	0.8284	$0.822 \pm 0.018$	$D_{\text{M}}(0.15)$	641.7	$641 \pm 11$			
$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4537	$0.4503 \pm 0.0099$	$H(0.38)$	82.81	$83.0 \pm 1.2$			

Best-fit  $\chi_{\text{eff}}^2 = 1184.46$ ;  $\bar{\chi}_{\text{eff}}^2 = 1206.76$ ;  $R - 1 = 0.00900$   
 $\chi_{\text{eff}}^2$ : Abund - Yp\_Aver2015: 0.05 BAO - 6DF: 0.01 MGS: 1.47 DR12BAO: 3.76 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.85 commander\_dx12\_v3.2.29: 23.32  
plik\_rd12\_HM\_v22\_TT: 758.69



## 9.12 base\_nnu\_mnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_Cooke17\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022182	$0.02221 \pm 0.00022$	$\sigma_8 \Omega_m^{0.25}$	0.6113	$0.604^{+0.013}_{-0.010}$	$D_M(0.38)$	1529.7	$1528 \pm 23$
$\Omega_c h^2$	0.11889	$0.1191 \pm 0.0029$	$\sigma_8/h^{0.5}$	0.9974	$0.983^{+0.019}_{-0.013}$	$H(0.51)$	89.58	$89.7 \pm 1.2$
$100\theta_{MC}$	1.041025	$1.04097 \pm 0.00050$	$r_{drag}h$	99.99	$99.8 \pm 1.0$	$D_M(0.51)$	1982.1	$1980 \pm 29$
$\tau$	0.0535	$0.0534 \pm 0.0080$	$\langle d^2 \rangle^{1/2}$	2.4459	$2.428 \pm 0.032$	$H(0.61)$	95.16	$95.3 \pm 1.2$
$\Sigma m_\nu$ [eV]	0.0037	$< 0.0722$	$z_{re}$	7.60	$7.59 \pm 0.83$	$D_M(0.61)$	2306.8	$2304 \pm 33$
$N_{eff}$	3.005	$3.06 \pm 0.17$	$10^9 A_s$	2.0890	$2.090 \pm 0.039$	$H(2.33)$	235.19	$235.8 \pm 2.5$
$\ln(10^{10} A_s)$	3.0393	$3.040 \pm 0.019$	$10^9 A_s e^{-2\tau}$	1.8772	$1.878 \pm 0.017$	$D_M(2.33)$	5774	$5763 \pm 70$
$n_s$	0.9649	$0.9666 \pm 0.0072$	$D_{40}$	1227.7	$1226 \pm 14$	$f\sigma_8(0.15)$	0.4597	$0.4550 \pm 0.0091$
$y_{cal}$	1.00049	$1.0006 \pm 0.0025$	$D_{220}$	5714.8	$5720 \pm 39$	$\sigma_8(0.15)$	0.7582	$0.748^{+0.016}_{-0.011}$
$A_{217}^{CIB}$	48.9	$48 \pm 7$	$D_{810}$	2536.3	$2536 \pm 14$	$f\sigma_8(0.38)$	0.4788	$0.4737^{+0.0092}_{-0.0079}$
$\xi^{tSZ \times CIB}$	0.28	—	$D_{1420}$	816.1	$815.3 \pm 5.0$	$\sigma_8(0.38)$	0.6722	$0.663^{+0.014}_{-0.010}$
$A_{143}^{tSZ}$	7.03	$5.1 \pm 2.0$	$D_{2000}$	230.52	$229.9 \pm 1.9$	$f\sigma_8(0.51)$	0.4776	$0.4725^{+0.0090}_{-0.0075}$
$A_{100}^{PS}$	254.2	$263 \pm 28$	$n_{s,0.002}$	0.9649	$0.9666 \pm 0.0072$	$\sigma_8(0.51)$	0.6291	$0.621^{+0.014}_{-0.0097}$
$A_{143}^{PS}$	47.6	$49 \pm 8$	$Y_P$	0.24477	$0.2454 \pm 0.0023$	$f\sigma_8(0.61)$	0.4728	$0.4677^{+0.0089}_{-0.0072}$
$A_{143 \times 217}^{PS}$	44.9	$43 \pm 9$	$Y_P^{BBN}$	0.24609	$0.2467 \pm 0.0023$	$\sigma_8(0.61)$	0.5987	$0.590^{+0.013}_{-0.0092}$
$A_{217}^{PS}$	118.3	$115 \pm 10$	$10^5 D/H$	2.6070	$2.619 \pm 0.050$	$f\sigma_8(2.33)$	0.3010	$0.2978^{+0.0059}_{-0.0046}$
$A^{kSZ}$	0.00	$< 4.90$	Age/Gyr	13.823	$13.80 \pm 0.17$	$\sigma_8(2.33)$	0.3109	$0.3071^{+0.0066}_{-0.0050}$
$A_{100}^{dustTT}$	8.89	$9.0 \pm 1.8$	$z_*$	1090.014	$1090.05 \pm 0.37$	$f_{2000}^{143}$	29.80	$31.0 \pm 3.1$
$A_{143}^{dustTT}$	10.79	$10.7 \pm 1.8$	$r_*$	145.08	$144.8 \pm 1.6$	$f_{2000}^{143 \times 217}$	32.76	$33.4 \pm 2.2$
$A_{143 \times 217}^{dustTT}$	19.24	$18.3 \pm 3.3$	$100\theta_*$	1.04123	$1.04116 \pm 0.00057$	$f_{2000}^{217}$	107.32	$108.0 \pm 2.0$
$A_{217}^{dustTT}$	94.4	$93.5 \pm 7.3$	$D_M(z_*)/\text{Gpc}$	13.933	$13.90 \pm 0.15$	$\chi_{small}^2$	395.94	$397.0 \pm 1.8$
$c_{100}$	0.99963	$0.99961 \pm 0.00061$	$z_{drag}$	1059.40	$1059.51 \pm 0.72$	$\chi_{lowl}^2$	23.33	$23.1 \pm 1.2$
$c_{217}$	0.99825	$0.99826 \pm 0.00063$	$r_{drag}$	147.81	$147.5 \pm 1.7$	$\chi_{plik}^2$	758.4	$772.3 \pm 5.7$
$H_0$	67.65	$67.7 \pm 1.1$	$k_D$	0.14012	$0.1403 \pm 0.0013$	$\chi_{Aver15}^2$	0.089	$0.54 \pm 0.69$
$\Omega_\Lambda$	0.6917	$0.6901 \pm 0.0081$	$100\theta_D$	0.160917	$0.16105 \pm 0.00042$	$\chi_{Cooke17}^2$	0.014	$0.28 \pm 0.39$
$\Omega_m$	0.3083	$0.3099 \pm 0.0081$	$z_{eq}$	3389.8	$3374 \pm 32$	$\chi_{6DF}^2$	0.0101	$0.061 \pm 0.080$
$\Omega_m h^2$	0.14111	$0.1420 \pm 0.0031$	$k_{eq}$	0.010317	$0.01030 \pm 0.00012$	$\chi_{MGS}^2$	1.41	$1.39 \pm 0.57$
$\Omega_\nu h^2$	0.000039	$< 0.000765$	$100\theta_{eq}$	0.8150	$0.8180 \pm 0.0061$	$\chi_{DR12BAO}^2$	3.89	$4.8 \pm 1.7$
$\Omega_m h^3$	0.09546	$0.0961 \pm 0.0033$	$100\theta_{s,eq}$	0.45041	$0.4520 \pm 0.0031$	$\chi_{prior}^2$	1.43	$7.3 \pm 3.7$
$\sigma_8$	0.8203	$0.809^{+0.017}_{-0.012}$	$H(0.15)$	72.88	$73.0 \pm 1.1$	$\chi_{BAO}^2$	5.31	$6.2 \pm 1.4$
$S_8$	0.8316	$0.822 \pm 0.018$	$D_M(0.15)$	641.1	$641 \pm 10$	$\chi_{CMB}^2$	1177.7	$1192.4 \pm 5.6$
$\sigma_8 \Omega_m^{0.5}$	0.4555	$0.4503 \pm 0.0097$	$H(0.38)$	82.91	$83.0 \pm 1.1$	$\chi_{Abund}^2$	0.102	$0.82 \pm 0.90$

Best-fit  $\chi_{eff}^2 = 1184.51$ ;  $\bar{\chi}_{eff}^2 = 1206.75$ ;  $R - 1 = 0.01022$   
 $\chi_{eff}^2$ : Abund - Yp\_Aver2015: 0.09 D\_Cooke2017: 0.01 BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.89 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.94 comman-  
der\_dx12\_v3\_2\_29: 23.33 plik\_rd12\_HM\_v22\_TT: 758.40



### 9.13 base\_nnu\_mnu\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02228 \pm 0.00023$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.606^{+0.013}_{-0.011}$	$D_{\text{M}}(0.38)$	$1515 \pm 29$
$\Omega_{\text{c}}h^2$	$0.1206 \pm 0.0039$	$\sigma_8/h^{0.5}$	$0.984^{+0.019}_{-0.013}$	$H(0.51)$	$90.4 \pm 1.5$
$100\theta_{\text{MC}}$	$1.04083 \pm 0.00057$	$r_{\text{drag}}h$	$100.12 \pm 0.98$	$D_{\text{M}}(0.51)$	$1963 \pm 36$
$\tau$	$0.0552^{+0.0052}_{-0.0084}$	$\langle d^2 \rangle^{1/2}$	$2.426^{+0.032}_{-0.029}$	$H(0.61)$	$96.1 \pm 1.6$
$\Sigma m_{\nu} [\text{eV}]$	$< 0.0777$	$z_{\text{re}}$	$7.80^{+0.59}_{-0.84}$	$D_{\text{M}}(0.61)$	$2285 \pm 42$
$N_{\text{eff}}$	$3.16 \pm 0.23$	$10^9 A_{\text{s}}$	$2.105^{+0.031}_{-0.042}$	$H(2.33)$	$237.2 \pm 3.4$
$\ln(10^{10} A_{\text{s}})$	$3.047^{+0.015}_{-0.020}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.885 \pm 0.021$	$D_{\text{M}}(2.33)$	$5721 \pm 92$
$n_{\text{s}}$	$0.9704 \pm 0.0086$	$D_{40}$	$1222 \pm 15$	$f\sigma_8(0.15)$	$0.4560 \pm 0.0094$
$y_{\text{cal}}$	$1.0006 \pm 0.0025$	$D_{220}$	$5719 \pm 40$	$\sigma_8(0.15)$	$0.752^{+0.017}_{-0.013}$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{810}$	$2537 \pm 14$	$f\sigma_8(0.38)$	$0.4754^{+0.0096}_{-0.0084}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$814.8 \pm 5.2$	$\sigma_8(0.38)$	$0.667^{+0.015}_{-0.012}$
$A_{143}^{\text{tSZ}}$	$5.0 \pm 2.0$	$D_{2000}$	$229.4 \pm 2.2$	$f\sigma_8(0.51)$	$0.4745^{+0.0094}_{-0.0082}$
$A_{100}^{\text{PS}}$	$265 \pm 28$	$n_{\text{s},0.002}$	$0.9704 \pm 0.0086$	$\sigma_8(0.51)$	$0.625^{+0.014}_{-0.011}$
$A_{143}^{\text{PS}}$	$50 \pm 8$	$Y_{\text{P}}$	$0.2468 \pm 0.0031$	$f\sigma_8(0.61)$	$0.4698^{+0.0093}_{-0.0080}$
$A_{143 \times 217}^{\text{PS}}$	$44^{+9}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	$0.2481 \pm 0.0031$	$\sigma_8(0.61)$	$0.594^{+0.014}_{-0.011}$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$10^5 \text{D/H}$	$2.641 \pm 0.068$	$f\sigma_8(2.33)$	$0.3000^{+0.0063}_{-0.0053}$
$A^{\text{kSZ}}$	$< 5.17$	$\text{Age/Gyr}$	$13.70 \pm 0.22$	$\sigma_8(2.33)$	$0.3094^{+0.0070}_{-0.0057}$
$A_{100}^{\text{dustTT}}$	$9.0 \pm 1.8$	$z_*$	$1090.19 \pm 0.49$	$f_{2000}^{143}$	$31.7 \pm 3.4$
$A_{143}^{\text{dustTT}}$	$10.8 \pm 1.8$	$r_*$	$143.8 \pm 2.2$	$f_{2000}^{143 \times 217}$	$33.9 \pm 2.5$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04095 \pm 0.00068$	$f_{2000}^{217}$	$108.5 \pm 2.3$
$A_{217}^{\text{dustTT}}$	$93.3 \pm 7.3$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.82 \pm 0.20$	$\chi_{\text{simall}}^2$	$397.0 \pm 1.9$
$c_{100}$	$0.99961 \pm 0.00062$	$z_{\text{drag}}$	$1059.86 \pm 0.85$	$\chi_{\text{lowl}}^2$	$22.7 \pm 1.2$
$c_{217}$	$0.99826 \pm 0.00062$	$r_{\text{drag}}$	$146.5 \pm 2.3$	$\chi_{\text{plik}}^2$	$773.2 \pm 5.9$
$H_0$	$68.4 \pm 1.4$	$k_{\text{D}}$	$0.1410 \pm 0.0017$	$\chi_{\text{JLA}}^2$	$1035.00 \pm 0.32$
$\Omega_{\Lambda}$	$0.6926 \pm 0.0078$	$100\theta_{\text{D}}$	$0.16127 \pm 0.00059$	$\chi_{6\text{DF}}^2$	$0.046 \pm 0.063$
$\Omega_{\text{m}}$	$0.3074 \pm 0.0078$	$z_{\text{eq}}$	$3364 \pm 33$	$\chi_{\text{MGS}}^2$	$1.56 \pm 0.58$
$\Omega_{\text{m}}h^2$	$0.1436 \pm 0.0041$	$k_{\text{eq}}$	$0.01034 \pm 0.00015$	$\chi_{\text{DR12BAO}}^2$	$4.4 \pm 1.3$
$\Omega_{\nu}h^2$	$< 0.000827$	$100\theta_{\text{eq}}$	$0.8199^{+0.0058}_{-0.0066}$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.7$
$\Omega_{\text{m}}h^3$	$0.0982 \pm 0.0045$	$100\theta_{\text{s,eq}}$	$0.4529^{+0.0030}_{-0.0034}$	$\chi_{\text{BAO}}^2$	$6.0 \pm 1.1$
$\sigma_8$	$0.814^{+0.018}_{-0.014}$	$H(0.15)$	$73.6 \pm 1.4$	$\chi_{\text{CMB}}^2$	$1192.9 \pm 5.7$
$S_8$	$0.823^{+0.019}_{-0.017}$	$D_{\text{M}}(0.15)$	$635 \pm 12$		
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.451^{+0.010}_{-0.0092}$	$H(0.38)$	$83.7 \pm 1.5$		

$$\bar{\chi}_{\text{eff}}^2 = 2241.24; R - 1 = 0.00999$$



## 9.14 base\_nnu\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022344	$0.02237 \pm 0.00019$ (+0.5 $\sigma$ )	$\Omega_{\nu}h^2$	$0.1 \cdot 10^{-5}$	$< 0.000607$ (−0.3 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.44971	$0.4503 \pm 0.0025$ (−0.7 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11777	$0.1184 \pm 0.0030$ (−0.5 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.09448	$0.0953 \pm 0.0036$ (−0.6 $\sigma$ )	$H(0.15)$	72.64	$72.7 \pm 1.2$ (−0.5 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.041224	$1.04113 \pm 0.00044$ (+0.5 $\sigma$ )	$\sigma_8$	0.8179	$0.811^{+0.014}_{-0.012}$ (−0.0 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	643.2	$643 \pm 11$ (+0.5 $\sigma$ )
$\tau$	0.0545	$0.0551 \pm 0.0079$ (+0.2 $\sigma$ )	$S_8$	0.8290	$0.826 \pm 0.014$ (+0.1 $\sigma$ )	$H(0.38)$	82.64	$82.7 \pm 1.2$ (−0.5 $\sigma$ )
$\Sigma m_{\nu}$ [eV]	0.0001	$< 0.0580$ (−0.3 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4541	$0.4523 \pm 0.0077$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1534.7	$1534 \pm 24$ (+0.5 $\sigma$ )
$N_{\mathrm{eff}}$	2.935	$2.98 \pm 0.18$ (−0.7 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6094	$0.6058 \pm 0.0096$ (+0.1 $\sigma$ )	$H(0.51)$	89.28	$89.4 \pm 1.2$ (−0.6 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0394	$3.042 \pm 0.018$ (−0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9961	$0.988^{+0.014}_{-0.012}$ (+0.3 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1988.6	$1988 \pm 31$ (+0.5 $\sigma$ )
$n_{\mathrm{s}}$	0.9629	$0.9644 \pm 0.0072$ (−0.6 $\sigma$ )	$r_{\mathrm{drag}}h$	99.99	$99.66 \pm 0.90$ (−0.3 $\sigma$ )	$H(0.61)$	94.84	$95.0 \pm 1.3$ (−0.6 $\sigma$ )
$y_{\mathrm{cal}}$	1.00058	$1.0006 \pm 0.0025$ (+0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4498	$2.441 \pm 0.027$ (+0.5 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2314.5	$2313 \pm 35$ (+0.5 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	46.9	$46 \pm 7$ (−0.3 $\sigma$ )	$z_{\mathrm{re}}$	7.65	$7.71 \pm 0.80$ (+0.1 $\sigma$ )	$H(2.33)$	234.38	$235.2 \pm 2.7$ (−0.5 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.43	—	$10^9 A_{\mathrm{s}}$	2.0894	$2.095 \pm 0.039$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5793	$5782 \pm 76$ (+0.6 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	7.23	$5.5^{+2.1}_{-1.9}$ (+0.3 $\sigma$ )	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8735	$1.876 \pm 0.018$ (−0.4 $\sigma$ )	$f\sigma_8(0.15)$	0.4582	$0.4568 \pm 0.0073$ (+0.1 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	248.3	$257 \pm 28$ (−0.3 $\sigma$ )	$D_{40}$	1232.7	$1231 \pm 14$ (+0.5 $\sigma$ )	$\sigma_8(0.15)$	0.7560	$0.750^{+0.013}_{-0.011}$ (−0.0 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	45.5	$45 \pm 8$ (−0.6 $\sigma$ )	$D_{220}$	5736.9	$5736 \pm 38$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4773	$0.4753 \pm 0.0072$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	46.0	$42 \pm 9$ (−0.2 $\sigma$ )	$D_{810}$	2538.3	$2538 \pm 14$ (+0.1 $\sigma$ )	$\sigma_8(0.38)$	0.6703	$0.665^{+0.012}_{-0.010}$ (−0.1 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	118.9	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{1420}$	818.63	$817.9 \pm 4.8$ (+0.6 $\sigma$ )	$f\sigma_8(0.51)$	0.4762	$0.4739 \pm 0.0072$ (+0.0 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.00	$< 4.05$ (−0.3 $\sigma$ )	$D_{2000}$	231.94	$231.4 \pm 1.8$ (+0.9 $\sigma$ )	$\sigma_8(0.51)$	0.6273	$0.622^{+0.011}_{-0.0098}$ (−0.1 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.81	$8.9 \pm 1.8$ (−0.1 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.9629	$0.9644 \pm 0.0072$ (−0.6 $\sigma$ )	$f\sigma_8(0.61)$	0.4714	$0.4690 \pm 0.0071$ (−0.0 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	10.98	$10.8 \pm 1.8$ (+0.0 $\sigma$ )	$Y_{\mathrm{P}}$	0.24388	$0.2445 \pm 0.0025$ (−0.6 $\sigma$ )	$\sigma_8(0.61)$	0.5969	$0.592^{+0.011}_{-0.0094}$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.61	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24520	$0.2458 \pm 0.0025$ (−0.6 $\sigma$ )	$f\sigma_8(2.33)$	0.30013	$0.2982 \pm 0.0051$ (−0.1 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	94.9	$93.8 \pm 7.4$ (+0.1 $\sigma$ )	$10^5 \mathrm{D}/\mathrm{H}$	2.5517	$2.564 \pm 0.046$ (−1.1 $\sigma$ )	$\sigma_8(2.33)$	0.3100	$0.3075^{+0.0057}_{-0.0051}$ (−0.1 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1143	$0.114 \pm 0.038$	Age/Gyr	13.870	$13.84 \pm 0.18$ (+0.6 $\sigma$ )	$f_{2000}^{143}$	27.97	$28.8 \pm 3.0$ (−0.8 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1342	$0.134 \pm 0.029$	$z_*$	1089.642	$1089.72 \pm 0.35$ (−1.0 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.26	$31.6 \pm 2.1$ (−0.9 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.481	$0.482 \pm 0.084$	$r_*$	145.60	$145.2 \pm 1.8$ (+0.5 $\sigma$ )	$f_{2000}^{217}$	106.02	$106.5 \pm 2.0$ (−0.8 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.224	$0.224 \pm 0.054$	$100\theta_*$	1.04145	$1.04135 \pm 0.00054$ (+0.5 $\sigma$ )	$\chi_{\mathrm{small}}^2$	396.06	$397.2 \pm 2.0$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.664	$0.664 \pm 0.080$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.981	$13.94 \pm 0.16$ (+0.5 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	23.72	$23.6 \pm 1.2$ (+0.6 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.085	$2.08 \pm 0.27$	$z_{\mathrm{drag}}$	1059.63	$1059.76 \pm 0.71$ (−0.0 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2342.8	$2359.7 \pm 6.3$ (+267.9 $\sigma$ )
$c_{100}$	0.99971	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$r_{\mathrm{drag}}$	148.29	$147.9 \pm 1.8$ (+0.5 $\sigma$ )	$\chi_{6\mathrm{DF}}^2$	0.0102	$0.062 \pm 0.079$ (+0.1 $\sigma$ )
$c_{217}$	0.99818	$0.99819 \pm 0.00062$ (−0.1 $\sigma$ )	$k_{\mathrm{D}}$	0.14001	$0.1403 \pm 0.0014$ (−0.3 $\sigma$ )	$\chi_{\mathrm{MGS}}^2$	1.407	$1.29 \pm 0.49$ (−0.3 $\sigma$ )
$H_0$	67.43	$67.4 \pm 1.2$ (−0.5 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160487	$0.16060 \pm 0.00041$ (−1.1 $\sigma$ )	$\chi_{\mathrm{DR12BAO}}^2$	3.91	$4.9 \pm 1.6$ (+0.1 $\sigma$ )
$\Omega_{\Lambda}$	0.6918	$0.6890 \pm 0.0073$ (−0.3 $\sigma$ )	$z_{\mathrm{eq}}$	3399.0	$3393 \pm 26$ (+0.7 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.75	$11.5 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3082	$0.3110 \pm 0.0073$ (+0.3 $\sigma$ )	$k_{\mathrm{eq}}$	0.010296	$0.01031 \pm 0.00012$ (−0.2 $\sigma$ )	$\chi_{\mathrm{BAO}}^2$	5.33	$6.2 \pm 1.3$ (+0.0 $\sigma$ )
$\Omega_{\mathrm{m}}h^2$	0.14011	$0.1413 \pm 0.0032$ (−0.5 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.81389	$0.8151 \pm 0.0049$ (−0.6 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	2762.6	$2780.5 \pm 6.1$ (+274.6 $\sigma$ )

Best-fit  $\chi_{\mathrm{eff}}^2 = 2769.67$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1585.27$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2798.17$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.47$ ;  $R - 1 = 0.00732$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.01 ( $\Delta$  0.00) MGS: 1.41 ( $\Delta$  0.00) DR12BAO: 3.91 ( $\Delta$  0.01) CMB - small\_100x143.offlike5\_EE\_Aplanck\_B: 396.06 ( $\Delta$  0.19) commander\_dx12.v3.2.29: 23.72 ( $\Delta$  0.40) plik\_rd12\_HM\_v22b\_TTTEEE: 2342.81



### 9.15 base\_nnu\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022340	$0.02239 \pm 0.00018$ (+0.5 $\sigma$ )	$\Omega_m h^3$	0.09455	$0.0955 \pm 0.0035$ (−0.6 $\sigma$ )	$D_M(0.15)$	643.0	$642 \pm 10$ (+0.6 $\sigma$ )
$\Omega_c h^2$	0.11784	$0.1185 \pm 0.0030$ (−0.5 $\sigma$ )	$\sigma_8$	0.8170	$0.812^{+0.014}_{-0.012}$ (−0.0 $\sigma$ )	$H(0.38)$	82.66	$82.9 \pm 1.2$ (−0.6 $\sigma$ )
$100\theta_{MC}$	1.041195	$1.04112 \pm 0.00043$ (+0.5 $\sigma$ )	$S_8$	0.8281	$0.825 \pm 0.014$ (+0.1 $\sigma$ )	$D_M(0.38)$	1534.4	$1532 \pm 24$ (+0.6 $\sigma$ )
$\tau$	0.0531	$0.0553 \pm 0.0079$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4536	$0.4519 \pm 0.0076$ (+0.1 $\sigma$ )	$H(0.51)$	89.30	$89.5 \pm 1.2$ (−0.6 $\sigma$ )
$\Sigma m_\nu$ [eV]	0.0008	$< 0.0552$ (−0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6088	$0.6057 \pm 0.0095$ (+0.1 $\sigma$ )	$D_M(0.51)$	1988.2	$1984 \pm 30$ (+0.6 $\sigma$ )
$N_{\text{eff}}$	2.939	$3.00 \pm 0.18$ (−0.7 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9949	$0.988^{+0.014}_{-0.012}$ (+0.3 $\sigma$ )	$H(0.61)$	94.87	$95.1 \pm 1.3$ (−0.6 $\sigma$ )
$\ln(10^{10} A_s)$	3.0367	$3.042 \pm 0.018$ (−0.1 $\sigma$ )	$r_{\text{drag}} h$	99.99	$99.81 \pm 0.84$ (−0.3 $\sigma$ )	$D_M(0.61)$	2314.0	$2309 \pm 34$ (+0.6 $\sigma$ )
$n_s$	0.9633	$0.9651 \pm 0.0071$ (−0.6 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4457	$2.439 \pm 0.026$ (+0.5 $\sigma$ )	$H(2.33)$	234.43	$235.3 \pm 2.7$ (−0.5 $\sigma$ )
$y_{\text{cal}}$	1.00042	$1.0006 \pm 0.0025$ (+0.0 $\sigma$ )	$z_{\text{re}}$	7.51	$7.73 \pm 0.80$ (+0.1 $\sigma$ )	$D_M(2.33)$	5792	$5776 \pm 75$ (+0.6 $\sigma$ )
$A_{217}^{\text{CIB}}$	46.0	$46 \pm 7$ (−0.3 $\sigma$ )	$10^9 A_s$	2.0837	$2.096 \pm 0.039$ (−0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4577	$0.4564 \pm 0.0073$ (+0.1 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.55	—	$10^9 A_s e^{-2\tau}$	1.8736	$1.876 \pm 0.018$ (−0.4 $\sigma$ )	$\sigma_8(0.15)$	0.7552	$0.750^{+0.013}_{-0.011}$ (−0.0 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.17	$5.5^{+2.1}_{-1.9}$ (+0.3 $\sigma$ )	$D_{40}$	1231.1	$1230 \pm 14$ (+0.6 $\sigma$ )	$f\sigma_8(0.38)$	0.4767	$0.4752 \pm 0.0072$ (+0.0 $\sigma$ )
$A_{100}^{\text{PS}}$	247.0	$257 \pm 28$ (−0.3 $\sigma$ )	$D_{220}$	5733.7	$5736 \pm 38$ (+0.4 $\sigma$ )	$\sigma_8(0.38)$	0.6695	$0.665^{+0.012}_{-0.010}$ (−0.1 $\sigma$ )
$A_{143}^{\text{PS}}$	47.4	$45 \pm 8$ (−0.6 $\sigma$ )	$D_{810}$	2538.1	$2538 \pm 14$ (+0.0 $\sigma$ )	$f\sigma_8(0.51)$	0.4756	$0.4740 \pm 0.0071$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	49.5	$42 \pm 9$ (−0.2 $\sigma$ )	$D_{1420}$	818.63	$817.9 \pm 4.8$ (+0.6 $\sigma$ )	$\sigma_8(0.51)$	0.6266	$0.623^{+0.011}_{-0.0098}$ (−0.1 $\sigma$ )
$A_{217}^{\text{PS}}$	120.5	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	231.90	$231.4 \pm 1.8$ (+0.9 $\sigma$ )	$f\sigma_8(0.61)$	0.4708	$0.4691 \pm 0.0071$ (−0.0 $\sigma$ )
$A^{\text{kSZ}}$	0.00	$< 4.04$ (−0.3 $\sigma$ )	$n_{s,0.002}$	0.9633	$0.9651 \pm 0.0071$ (−0.6 $\sigma$ )	$\sigma_8(0.61)$	0.5963	$0.593^{+0.010}_{-0.0094}$ (−0.1 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.78	$8.9 \pm 1.8$ (−0.1 $\sigma$ )	$Y_P$	0.24394	$0.2447 \pm 0.0025$ (−0.7 $\sigma$ )	$f\sigma_8(2.33)$	0.29980	$0.2986 \pm 0.0050$ (−0.2 $\sigma$ )
$A_{143}^{\text{dustTT}}$	10.96	$10.8 \pm 1.8$ (+0.0 $\sigma$ )	$Y_P^{\text{BBN}}$	0.24526	$0.2460 \pm 0.0025$ (−0.7 $\sigma$ )	$\sigma_8(2.33)$	0.3097	$0.3080 \pm 0.0054$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	19.78	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5539	$2.565 \pm 0.046$ (−1.1 $\sigma$ )	$f_{2000}^{143}$	27.87	$28.9 \pm 3.0$ (−0.8 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.2	$93.8 \pm 7.3$ (+0.1 $\sigma$ )	Age/Gyr	13.867	$13.83 \pm 0.18$ (+0.6 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.27	$31.6 \pm 2.1$ (−0.9 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1146	$0.114 \pm 0.038$	$z_*$	1089.656	$1089.71 \pm 0.34$ (−1.0 $\sigma$ )	$f_{2000}^{217}$	105.93	$106.5 \pm 2.0$ (−0.8 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1355	$0.134 \pm 0.029$	$r_*$	145.57	$145.1 \pm 1.8$ (+0.6 $\sigma$ )	$\chi_{\text{small}}^2$	395.86	$397.2 \pm 2.1$ (+0.1 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.480	$0.482 \pm 0.084$	$100\theta_*$	1.04142	$1.04133 \pm 0.00053$ (+0.5 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.60	$23.5 \pm 1.1$ (+0.6 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.226	$0.224 \pm 0.053$	$D_M(z_*)/\text{Gpc}$	13.978	$13.93 \pm 0.16$ (+0.5 $\sigma$ )	$\chi_{\text{plik}}^2$	2343.2	$2359.9 \pm 6.3$ (+269.2 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.663	$0.664 \pm 0.081$	$z_{\text{drag}}$	1059.63	$1059.82 \pm 0.70$ (−0.0 $\sigma$ )	$\chi_{\text{JLA}}^2$	1034.910	$1035.07 \pm 0.33$ (+0.2 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.075	$2.07 \pm 0.27$	$r_{\text{drag}}$	148.25	$147.8 \pm 1.8$ (+0.5 $\sigma$ )	$\chi_{6\text{DF}}^2$	0.0104	$0.049 \pm 0.064$ (+0.0 $\sigma$ )
$c_{100}$	0.99973	$0.99968 \pm 0.00062$ (+0.1 $\sigma$ )	$k_D$	0.14003	$0.1404 \pm 0.0013$ (−0.4 $\sigma$ )	$\chi_{\text{MGS}}^2$	1.407	$1.36 \pm 0.47$ (−0.3 $\sigma$ )
$c_{217}$	0.99815	$0.99820 \pm 0.00061$ (−0.1 $\sigma$ )	$100\theta_D$	0.160503	$0.16062 \pm 0.00040$ (−1.1 $\sigma$ )	$\chi_{\text{DR12BAO}}^2$	3.92	$4.6 \pm 1.4$ (+0.2 $\sigma$ )
$H_0$	67.44	$67.6 \pm 1.1$ (−0.6 $\sigma$ )	$z_{\text{eq}}$	3398.6	$3390 \pm 25$ (+0.8 $\sigma$ )	$\chi_{\text{prior}}^2$	1.62	$11.4 \pm 4.6$ (+1.1 $\sigma$ )
$\Omega_\Lambda$	0.6918	$0.6902 \pm 0.0068$ (−0.3 $\sigma$ )	$k_{\text{eq}}$	0.010298	$0.01031 \pm 0.00012$ (−0.2 $\sigma$ )	$\chi_{\text{BAO}}^2$	5.337	$6.0 \pm 1.1$ (+0.0 $\sigma$ )
$\Omega_m$	0.3082	$0.3098 \pm 0.0068$ (+0.3 $\sigma$ )	$100\theta_{\text{eq}}$	0.81393	$0.8157 \pm 0.0047$ (−0.7 $\sigma$ )	$\chi_{\text{CMB}}^2$	2762.7	$2780.6 \pm 6.1$ (+275.7 $\sigma$ )
$\Omega_m h^2$	0.14018	$0.1413 \pm 0.0032$ (−0.5 $\sigma$ )	$100\theta_{s,\text{eq}}$	0.44974	$0.4506 \pm 0.0024$ (−0.7 $\sigma$ )			
$\Omega_\nu h^2$	$0.8 \cdot 10^{-5}$	$< 0.000577$ (−0.3 $\sigma$ )	$H(0.15)$	72.66	$72.8 \pm 1.1$ (−0.6 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 3804.54$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.27$ ;  $\bar{\chi}_{\text{eff}}^2 = 3833.11$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.62$ ;  $R - 1 = 0.00833$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.01 ( $\Delta$  0.00) MGS: 1.41 ( $\Delta$  -0.07) DR12BAO: 3.92 ( $\Delta$  0.14) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.86 ( $\Delta$  -0.02) commander\_dx12\_v3\_2\_29: 23.60 ( $\Delta$  0.39) plik\_rd12\_HM\_v22b\_TTTEEE: 2343.21 SN - JLA Pantheon18: 1034.91 ( $\Delta$  0.03)



9.16 base\_nnu\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022317	$0.02236 \pm 0.00017$ (+0.7 $\sigma$ )	$\Omega_m h^3$	0.09401	$0.0949 \pm 0.0030$ (−0.4 $\sigma$ )	$D_M(0.15)$	644.9	$644.3 \pm 9.4$ (+0.3 $\sigma$ )
$\Omega_c h^2$	0.11747	$0.1181 \pm 0.0026$ (−0.3 $\sigma$ )	$\sigma_8$	0.8174	$0.810^{+0.014}_{-0.011}$ (+0.1 $\sigma$ )	$H(0.38)$	82.46	$82.6 \pm 1.0$ (−0.4 $\sigma$ )
$100\theta_{MC}$	1.041290	$1.04116 \pm 0.00040$ (+0.4 $\sigma$ )	$S_8$	0.8298	$0.825 \pm 0.014$ (+0.2 $\sigma$ )	$D_M(0.38)$	1538.6	$1537 \pm 21$ (+0.3 $\sigma$ )
$\tau$	0.0545	$0.0551 \pm 0.0079$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4545	$0.4521 \pm 0.0076$ (+0.2 $\sigma$ )	$H(0.51)$	89.10	$89.3 \pm 1.1$ (−0.4 $\sigma$ )
$\Sigma m_\nu$ [eV]	0.0012	$< 0.0573$ (−0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6095	$0.6053^{+0.0096}_{-0.0087}$ (+0.2 $\sigma$ )	$D_M(0.51)$	1993.4	$1991 \pm 27$ (+0.4 $\sigma$ )
$N_{\text{eff}}$	2.910	$2.96 \pm 0.15$ (−0.5 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9969	$0.988^{+0.014}_{-0.012}$ (+0.3 $\sigma$ )	$H(0.61)$	94.66	$94.9 \pm 1.1$ (−0.4 $\sigma$ )
$\ln(10^{10} A_s)$	3.0384	$3.041 \pm 0.018$ (+0.1 $\sigma$ )	$r_{\text{drag}} h$	99.88	$99.63 \pm 0.87$ (−0.2 $\sigma$ )	$D_M(0.61)$	2319.9	$2316 \pm 30$ (+0.4 $\sigma$ )
$n_s$	0.9630	$0.9638 \pm 0.0064$ (−0.4 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4499	$2.442 \pm 0.026$ (+0.4 $\sigma$ )	$H(2.33)$	234.08	$234.9 \pm 2.3$ (−0.3 $\sigma$ )
$y_{\text{cal}}$	1.00043	$1.0006 \pm 0.0025$ (+0.0 $\sigma$ )	$z_{\text{re}}$	7.65	$7.70 \pm 0.79$ (+0.1 $\sigma$ )	$D_M(2.33)$	5804	$5790 \pm 65$ (+0.4 $\sigma$ )
$A_{217}^{\text{CIB}}$	44.7	$46 \pm 7$ (−0.2 $\sigma$ )	$10^9 A_s$	2.0872	$2.093 \pm 0.037$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4586	$0.4566 \pm 0.0072$ (+0.2 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.734	$> 0.380$ (+0.1 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8718	$1.874 \pm 0.016$ (−0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7554	$0.749^{+0.013}_{-0.011}$ (+0.1 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.08	$5.5^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$D_{40}$	1231.1	$1232 \pm 13$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4774	$0.4749 \pm 0.0070$ (+0.1 $\sigma$ )
$A_{100}^{\text{PS}}$	243.9	$257 \pm 28$ (−0.2 $\sigma$ )	$D_{220}$	5729.5	$5736 \pm 38$ (+0.4 $\sigma$ )	$\sigma_8(0.38)$	0.6697	$0.664^{+0.011}_{-0.0095}$ (+0.1 $\sigma$ )
$A_{143}^{\text{PS}}$	49.1	$45 \pm 8$ (−0.5 $\sigma$ )	$D_{810}$	2538.4	$2538 \pm 13$ (+0.1 $\sigma$ )	$f\sigma_8(0.51)$	0.4762	$0.4736 \pm 0.0069$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	53.4	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{1420}$	819.29	$818.0 \pm 4.8$ (+0.5 $\sigma$ )	$\sigma_8(0.51)$	0.6267	$0.621^{+0.011}_{-0.0089}$ (+0.1 $\sigma$ )
$A_{217}^{\text{PS}}$	122.3	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	232.29	$231.5 \pm 1.8$ (+0.8 $\sigma$ )	$f\sigma_8(0.61)$	0.4713	$0.4686 \pm 0.0068$ (+0.1 $\sigma$ )
$A^{\text{kSZ}}$	0.00	$< 3.99$ (−0.2 $\sigma$ )	$n_{s,0.002}$	0.9630	$0.9638 \pm 0.0064$ (−0.4 $\sigma$ )	$\sigma_8(0.61)$	0.5963	$0.591^{+0.010}_{-0.0085}$ (+0.1 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.78	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P$	0.24354	$0.2443 \pm 0.0021$ (−0.5 $\sigma$ )	$f\sigma_8(2.33)$	0.29979	$0.2979^{+0.0048}_{-0.0043}$ (+0.0 $\sigma$ )
$A_{143}^{\text{dustTT}}$	10.93	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{\text{BBN}}$	0.24486	$0.2456 \pm 0.0021$ (−0.5 $\sigma$ )	$\sigma_8(2.33)$	0.3096	$0.3072^{+0.0054}_{-0.0046}$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	20.05	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5484	$2.560 \pm 0.041$ (−1.0 $\sigma$ )	$f_{2000}^{143}$	27.31	$28.7 \pm 2.9$ (−0.7 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.7	$93.8 \pm 7.3$ (+0.0 $\sigma$ )	Age/Gyr	13.896	$13.86 \pm 0.15$ (+0.4 $\sigma$ )	$f_{2000}^{143 \times 217}$	30.92	$31.5 \pm 2.0$ (−0.8 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1136	$0.114 \pm 0.038$	$z_*$	1089.628	$1089.69 \pm 0.32$ (−0.8 $\sigma$ )	$f_{2000}^{217}$	105.60	$106.4 \pm 1.9$ (−0.7 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1348	$0.134 \pm 0.029$	$r_*$	145.83	$145.4 \pm 1.5$ (+0.3 $\sigma$ )	$\chi_{\text{small}}^2$	396.06	$397.2 \pm 2.0$ (+0.1 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.482 \pm 0.084$	$100\theta_*$	1.041526	$1.04139 \pm 0.00048$ (+0.4 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.64	$23.6 \pm 1.1$ (+0.4 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.227	$0.224 \pm 0.053$	$D_M(z_*)/\text{Gpc}$	14.001	$13.96 \pm 0.14$ (+0.3 $\sigma$ )	$\chi_{\text{plik}}^2$	2342.9	$2359.4 \pm 6.2$ (+277.0 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.666	$0.664 \pm 0.080$	$z_{\text{drag}}$	1059.51	$1059.69 \pm 0.62$ (+0.3 $\sigma$ )	$\chi_{\text{Aver15}}^2$	0.000	$0.31 \pm 0.43$ (−0.4 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.083	$2.07 \pm 0.27$	$r_{\text{drag}}$	148.53	$148.1 \pm 1.6$ (+0.3 $\sigma$ )	$\chi_{6\text{DF}}^2$	0.0155	$0.062 \pm 0.078$ (+0.0 $\sigma$ )
$c_{100}$	0.99973	$0.99968 \pm 0.00062$ (+0.1 $\sigma$ )	$k_D$	0.13984	$0.1402 \pm 0.0012$ (−0.1 $\sigma$ )	$\chi_{\text{MGS}}^2$	1.343	$1.27 \pm 0.47$ (−0.2 $\sigma$ )
$c_{217}$	0.99814	$0.99819 \pm 0.00061$ (−0.1 $\sigma$ )	$100\theta_D$	0.160448	$0.16056 \pm 0.00036$ (−1.0 $\sigma$ )	$\chi_{\text{DR12BAO}}^2$	4.05	$4.9 \pm 1.6$ (+0.1 $\sigma$ )
$H_0$	67.24	$67.3 \pm 1.0$ (−0.3 $\sigma$ )	$z_{\text{eq}}$	3402.5	$3394 \pm 25$ (+0.6 $\sigma$ )	$\chi_{\text{prior}}^2$	1.55	$11.4 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_\Lambda$	0.6908	$0.6887 \pm 0.0070$ (−0.2 $\sigma$ )	$k_{\text{eq}}$	0.010289	$0.01030 \pm 0.00011$ (−0.0 $\sigma$ )	$\chi_{\text{BAO}}^2$	5.40	$6.2 \pm 1.3$ (+0.0 $\sigma$ )
$\Omega_m$	0.3092	$0.3113 \pm 0.0070$ (+0.2 $\sigma$ )	$100\theta_{\text{eq}}$	0.81321	$0.8148 \pm 0.0047$ (−0.5 $\sigma$ )	$\chi_{\text{CMB}}^2$	2762.5	$2780.2 \pm 6.1$ (+281.9 $\sigma$ )
$\Omega_m h^2$	0.13980	$0.1410 \pm 0.0028$ (−0.3 $\sigma$ )	$100\theta_{s,\text{eq}}$	0.44938	$0.4502 \pm 0.0024$ (−0.6 $\sigma$ )			
$\Omega_\nu h^2$	$1.2 \cdot 10^{-5}$	$< 0.000598$ (−0.3 $\sigma$ )	$H(0.15)$	72.46	$72.6 \pm 1.0$ (−0.3 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 2769.50$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.04$ ;  $\bar{\chi}_{\text{eff}}^2 = 2798.18$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.42$ ;  $R - 1 = 0.00755$   
 $\chi_{\text{eff}}^2$ : Abund - Yp\_Aver2015: 0.00 ( $\Delta$  -0.05) BAO - 6DF: 0.02 ( $\Delta$  0.01) MGS: 1.34 ( $\Delta$  -0.13) DR12BAO: 4.05 ( $\Delta$  0.29) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.06 ( $\Delta$  0.21) commander\_dx12\_v3\_2\_29: 23.64 ( $\Delta$  0.32) plik\_rd12\_HM\_v22b\_TTTEEE: 2342.85



### 9.17 base\_nnu\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Cooke17\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022321	$0.02236 \pm 0.00017$ (+0.7 $\sigma$ )	$\Omega_m h^3$	0.09463	$0.0954 \pm 0.0029$ (−0.2 $\sigma$ )	$D_M(0.15)$	643.4	$643.1 \pm 9.1$ (+0.2 $\sigma$ )
$\Omega_c h^2$	0.11806	$0.1186 \pm 0.0025$ (−0.2 $\sigma$ )	$\sigma_8$	0.8187	$0.812^{+0.013}_{-0.011}$ (+0.2 $\sigma$ )	$H(0.38)$	82.64	$82.8 \pm 1.0$ (−0.2 $\sigma$ )
$100\theta_{MC}$	1.041148	$1.04110 \pm 0.00039$ (+0.3 $\sigma$ )	$S_8$	0.8310	$0.827 \pm 0.014$ (+0.3 $\sigma$ )	$D_M(0.38)$	1535.0	$1534 \pm 20$ (+0.2 $\sigma$ )
$\tau$	0.0543	$0.0550 \pm 0.0079$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4552	$0.4528 \pm 0.0075$ (+0.3 $\sigma$ )	$H(0.51)$	89.30	$89.5 \pm 1.0$ (−0.2 $\sigma$ )
$\Sigma m_\nu$ [eV]	0.0016	$< 0.0573$ (−0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6104	$0.6063 \pm 0.0092$ (+0.2 $\sigma$ )	$D_M(0.51)$	1988.9	$1987 \pm 26$ (+0.2 $\sigma$ )
$N_{\text{eff}}$	2.945	$2.99 \pm 0.14$ (−0.4 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9973	$0.989^{+0.014}_{-0.012}$ (+0.3 $\sigma$ )	$H(0.61)$	94.87	$95.1 \pm 1.0$ (−0.2 $\sigma$ )
$\ln(10^{10} A_s)$	3.0396	$3.042 \pm 0.018$ (+0.1 $\sigma$ )	$r_{\text{drag}} h$	99.88	$99.63 \pm 0.87$ (−0.2 $\sigma$ )	$D_M(0.61)$	2314.7	$2312 \pm 29$ (+0.2 $\sigma$ )
$n_s$	0.9632	$0.9646 \pm 0.0063$ (−0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4509	$2.442 \pm 0.027$ (+0.4 $\sigma$ )	$H(2.33)$	234.58	$235.4 \pm 2.2$ (−0.2 $\sigma$ )
$y_{\text{cal}}$	1.00048	$1.0006 \pm 0.0025$ (+0.0 $\sigma$ )	$z_{\text{re}}$	7.64	$7.70 \pm 0.79$ (+0.1 $\sigma$ )	$D_M(2.33)$	5791	$5779 \pm 62$ (+0.2 $\sigma$ )
$A_{217}^{\text{CIB}}$	45.9	$46 \pm 7$ (−0.2 $\sigma$ )	$10^9 A_s$	2.0896	$2.095 \pm 0.037$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4592	$0.4573 \pm 0.0071$ (+0.3 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.55	—	$10^9 A_s e^{-2\tau}$	1.8746	$1.876 \pm 0.016$ (−0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7566	$0.750^{+0.012}_{-0.010}$ (+0.2 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.15	$5.5^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$D_{40}$	1232.0	$1231 \pm 13$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4781	$0.4757 \pm 0.0069$ (+0.2 $\sigma$ )
$A_{100}^{\text{PS}}$	247.0	$258 \pm 28$ (−0.2 $\sigma$ )	$D_{220}$	5732.2	$5734 \pm 37$ (+0.4 $\sigma$ )	$\sigma_8(0.38)$	0.6708	$0.665^{+0.011}_{-0.0093}$ (+0.2 $\sigma$ )
$A_{143}^{\text{PS}}$	47.7	$45 \pm 8$ (−0.4 $\sigma$ )	$D_{810}$	2538.3	$2538 \pm 13$ (+0.1 $\sigma$ )	$f\sigma_8(0.51)$	0.4769	$0.4743 \pm 0.0068$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	49.4	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{1420}$	818.43	$817.7 \pm 4.7$ (+0.5 $\sigma$ )	$\sigma_8(0.51)$	0.6277	$0.622^{+0.011}_{-0.0088}$ (+0.1 $\sigma$ )
$A_{217}^{\text{PS}}$	120.7	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	231.81	$231.3 \pm 1.7$ (+0.8 $\sigma$ )	$f\sigma_8(0.61)$	0.4720	$0.4694 \pm 0.0067$ (+0.2 $\sigma$ )
$A^{\text{kSZ}}$	0.00	$< 4.07$ (−0.2 $\sigma$ )	$n_{s,0.002}$	0.9632	$0.9646 \pm 0.0063$ (−0.3 $\sigma$ )	$\sigma_8(0.61)$	0.5973	$0.592^{+0.010}_{-0.0084}$ (+0.1 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.81	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P$	0.24401	$0.2446 \pm 0.0020$ (−0.3 $\sigma$ )	$f\sigma_8(2.33)$	0.30029	$0.2984^{+0.0047}_{-0.0042}$ (+0.1 $\sigma$ )
$A_{143}^{\text{dustTT}}$	10.92	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{\text{BBN}}$	0.24533	$0.2460 \pm 0.0020$ (−0.3 $\sigma$ )	$\sigma_8(2.33)$	0.31014	$0.3077^{+0.0053}_{-0.0045}$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	19.89	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5595	$2.570 \pm 0.038$ (−1.0 $\sigma$ )	$f_{2000}^{143}$	27.98	$29.0 \pm 2.9$ (−0.6 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.5	$93.8 \pm 7.3$ (+0.0 $\sigma$ )	Age/Gyr	13.865	$13.84 \pm 0.15$ (+0.2 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.32	$31.8 \pm 2.0$ (−0.7 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1135	$0.114 \pm 0.038$	$z_*$	1089.705	$1089.76 \pm 0.29$ (−0.8 $\sigma$ )	$f_{2000}^{217}$	106.04	$106.6 \pm 1.9$ (−0.7 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1349	$0.134 \pm 0.029$	$r_*$	145.49	$145.1 \pm 1.4$ (+0.2 $\sigma$ )	$\chi_{\text{small}}^2$	396.03	$397.2 \pm 2.0$ (+0.1 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.482 \pm 0.084$	$100\theta_*$	1.041377	$1.04131 \pm 0.00046$ (+0.3 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.67	$23.5 \pm 1.1$ (+0.3 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.224	$0.224 \pm 0.053$	$D_M(z_*)/\text{Gpc}$	13.971	$13.93 \pm 0.13$ (+0.2 $\sigma$ )	$\chi_{\text{plik}}^2$	2342.9	$2359.4 \pm 6.2$ (+280.4 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.666	$0.664 \pm 0.081$	$z_{\text{drag}}$	1059.59	$1059.75 \pm 0.61$ (+0.3 $\sigma$ )	$\chi_{\text{Aver15}}^2$	0.012	$0.32 \pm 0.44$ (−0.3 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.077	$2.08 \pm 0.27$	$r_{\text{drag}}$	148.19	$147.8 \pm 1.5$ (+0.2 $\sigma$ )	$\chi_{\text{Cooke17}}^2$	0.388	$0.43 \pm 0.47$ (+0.4 $\sigma$ )
$c_{100}$	0.99973	$0.99968 \pm 0.00062$ (+0.1 $\sigma$ )	$k_D$	0.14007	$0.1404 \pm 0.0011$ (+0.0 $\sigma$ )	$\chi_{6\text{DF}}^2$	0.0155	$0.062 \pm 0.078$ (+0.0 $\sigma$ )
$c_{217}$	0.99818	$0.99820 \pm 0.00061$ (−0.1 $\sigma$ )	$100\theta_D$	0.160538	$0.16064 \pm 0.00033$ (−1.0 $\sigma$ )	$\chi_{\text{MGS}}^2$	1.343	$1.27 \pm 0.47$ (−0.2 $\sigma$ )
$H_0$	67.40	$67.43 \pm 0.99$ (−0.2 $\sigma$ )	$z_{\text{eq}}$	3400.9	$3393 \pm 25$ (+0.6 $\sigma$ )	$\chi_{\text{DR12BAO}}^2$	4.06	$4.9 \pm 1.6$ (+0.1 $\sigma$ )
$\Omega_\Lambda$	0.6909	$0.6888 \pm 0.0070$ (−0.2 $\sigma$ )	$k_{\text{eq}}$	0.010309	$0.01032 \pm 0.00010$ (+0.1 $\sigma$ )	$\chi_{\text{prior}}^2$	1.64	$11.4 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_m$	0.3091	$0.3112 \pm 0.0070$ (+0.2 $\sigma$ )	$100\theta_{\text{eq}}$	0.81344	$0.8149 \pm 0.0047$ (−0.5 $\sigma$ )	$\chi_{\text{BAO}}^2$	5.42	$6.2 \pm 1.3$ (+0.0 $\sigma$ )
$\Omega_m h^2$	0.14040	$0.1415 \pm 0.0026$ (−0.2 $\sigma$ )	$100\theta_{s,\text{eq}}$	0.44949	$0.4502 \pm 0.0024$ (−0.5 $\sigma$ )	$\chi_{\text{CMB}}^2$	2762.6	$2780.1 \pm 6.0$ (+285.5 $\sigma$ )
$\Omega_\nu h^2$	$1.6 \cdot 10^{-5}$	$< 0.000603$ (−0.3 $\sigma$ )	$H(0.15)$	72.63	$72.69 \pm 0.99$ (−0.2 $\sigma$ )	$\chi_{\text{Abund}}^2$	0.400	$0.75 \pm 0.59$ (−0.1 $\sigma$ )

Best-fit  $\chi_{\text{eff}}^2 = 2770.02$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.51$ ;  $\bar{\chi}_{\text{eff}}^2 = 2798.56$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.81$ ;  $R - 1 = 0.00801$   
 $\chi_{\text{eff}}^2$ : Abund - Yp\_Aver2015: 0.01 ( $\Delta$  -0.08) D\_Cooke2017: 0.39 ( $\Delta$  0.37) BAO - 6DF: 0.02 ( $\Delta$  0.01) MGS: 1.34 ( $\Delta$  -0.06) DR12BAO: 4.06 ( $\Delta$  0.17) CMB - small.100x143\_offlike5\_EE\_Aplanck\_B: 396.03 ( $\Delta$  0.09) commander\_dx12\_v3.2.29: 23.67 ( $\Delta$  0.34) plik\_rd12\_HM\_v22b.TTTEEE: 2342.87



9.18 base\_nnu\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02239 \pm 0.00018 \quad (+0.5\sigma)$	$\Omega_{\text{m}}h^3$	$0.0956 \pm 0.0035 \quad (-0.6\sigma)$	$D_{\text{M}}(0.15)$	$642 \pm 10 \quad (+0.6\sigma)$
$\Omega_{\text{c}}h^2$	$0.1185 \pm 0.0030 \quad (-0.5\sigma)$	$\sigma_8$	$0.813 \pm 0.013 \quad (-0.1\sigma)$	$H(0.38)$	$82.9 \pm 1.2 \quad (-0.6\sigma)$
$100\theta_{\text{MC}}$	$1.04112 \pm 0.00043 \quad (+0.5\sigma)$	$S_8$	$0.826 \pm 0.014 \quad (+0.1\sigma)$	$D_{\text{M}}(0.38)$	$1531 \pm 24 \quad (+0.6\sigma)$
$\tau$	$0.0563^{+0.0055}_{-0.0084} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4522 \pm 0.0075 \quad (+0.1\sigma)$	$H(0.51)$	$89.6 \pm 1.2 \quad (-0.6\sigma)$
$\Sigma m_{\nu} [\text{eV}]$	$< 0.0558 \quad (-0.3\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6062 \pm 0.0094 \quad (+0.0\sigma)$	$D_{\text{M}}(0.51)$	$1984 \pm 30 \quad (+0.6\sigma)$
$N_{\text{eff}}$	$3.00 \pm 0.18 \quad (-0.7\sigma)$	$\sigma_8/h^{0.5}$	$0.989^{+0.014}_{-0.011} \quad (+0.3\sigma)$	$H(0.61)$	$95.2 \pm 1.3 \quad (-0.6\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.044^{+0.015}_{-0.019} \quad (-0.1\sigma)$	$r_{\text{drag}}h$	$99.82 \pm 0.84 \quad (-0.3\sigma)$	$D_{\text{M}}(0.61)$	$2309 \pm 34 \quad (+0.6\sigma)$
$n_{\text{s}}$	$0.9653 \pm 0.0070 \quad (-0.6\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.441 \pm 0.026 \quad (+0.5\sigma)$	$H(2.33)$	$235.3 \pm 2.7 \quad (-0.5\sigma)$
$y_{\text{cal}}$	$1.0006 \pm 0.0025 \quad (+0.0\sigma)$	$z_{\text{re}}$	$7.83^{+0.60}_{-0.83} \quad (+0.0\sigma)$	$D_{\text{M}}(2.33)$	$5775 \pm 74 \quad (+0.6\sigma)$
$A_{217}^{\text{CIB}}$	$46 \pm 7 \quad (-0.3\sigma)$	$10^9 A_{\text{s}}$	$2.100^{+0.030}_{-0.040} \quad (-0.1\sigma)$	$f\sigma_8(0.15)$	$0.4568 \pm 0.0072 \quad (+0.1\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_{\text{s}} e^{-2\tau}$	$1.876 \pm 0.018 \quad (-0.4\sigma)$	$\sigma_8(0.15)$	$0.751 \pm 0.012 \quad (-0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.3\sigma)$	$D_{40}$	$1230 \pm 14 \quad (+0.6\sigma)$	$f\sigma_8(0.38)$	$0.4756 \pm 0.0071 \quad (+0.0\sigma)$
$A_{100}^{\text{PS}}$	$257 \pm 28 \quad (-0.3\sigma)$	$D_{220}$	$5737 \pm 38 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.666 \pm 0.011 \quad (-0.1\sigma)$
$A_{143}^{\text{PS}}$	$45 \pm 8 \quad (-0.6\sigma)$	$D_{810}$	$2538 \pm 14 \quad (+0.0\sigma)$	$f\sigma_8(0.51)$	$0.4744 \pm 0.0070 \quad (-0.0\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.2\sigma)$	$D_{1420}$	$817.9 \pm 4.8 \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.623 \pm 0.011 \quad (-0.1\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$231.4 \pm 1.8 \quad (+0.9\sigma)$	$f\sigma_8(0.61)$	$0.4695 \pm 0.0069 \quad (-0.0\sigma)$
$A^{\text{kSZ}}$	$< 4.03 \quad (-0.3\sigma)$	$n_{\text{s},0.002}$	$0.9653 \pm 0.0070 \quad (-0.6\sigma)$	$\sigma_8(0.61)$	$0.593 \pm 0.010 \quad (-0.1\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\text{P}}$	$0.2447 \pm 0.0024 \quad (-0.7\sigma)$	$f\sigma_8(2.33)$	$0.2989 \pm 0.0048 \quad (-0.2\sigma)$
$A_{143}^{\text{dustTT}}$	$10.8 \pm 1.8 \quad (+0.0\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.2460 \pm 0.0025 \quad (-0.7\sigma)$	$\sigma_8(2.33)$	$0.3083 \pm 0.0053 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \text{D/H}$	$2.565 \pm 0.045 \quad (-1.1\sigma)$	$f_{2000}^{143}$	$28.8 \pm 3.0 \quad (-0.8\sigma)$
$A_{217}^{\text{dustTT}}$	$93.8 \pm 7.3 \quad (+0.1\sigma)$	Age/Gyr	$13.83 \pm 0.18 \quad (+0.6\sigma)$	$f_{2000}^{143 \times 217}$	$31.6 \pm 2.1 \quad (-0.9\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$z_*$	$1089.71 \pm 0.34 \quad (-1.0\sigma)$	$f_{2000}^{217}$	$106.5 \pm 2.0 \quad (-0.8\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134 \pm 0.029$	$r_*$	$145.1 \pm 1.8 \quad (+0.6\sigma)$	$\chi_{\text{small}}^2$	$397.2 \pm 2.1 \quad (+0.1\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.482 \pm 0.084$	$100\theta_*$	$1.04132 \pm 0.00053 \quad (+0.5\sigma)$	$\chi_{\text{lowl}}^2$	$23.5 \pm 1.1 \quad (+0.6\sigma)$
$A_{143}^{\text{dustTE}}$	$0.224 \pm 0.053$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.93 \pm 0.16 \quad (+0.6\sigma)$	$\chi_{\text{plik}}^2$	$2359.7 \pm 6.2 \quad (+270.6\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.664 \pm 0.080$	$z_{\text{drag}}$	$1059.83 \pm 0.70 \quad (-0.0\sigma)$	$\chi_{\text{JLA}}^2$	$1035.06 \pm 0.33 \quad (+0.2\sigma)$
$A_{217}^{\text{dustTE}}$	$2.07 \pm 0.27$	$r_{\text{drag}}$	$147.7 \pm 1.8 \quad (+0.5\sigma)$	$\chi_{6\text{DF}}^2$	$0.048 \pm 0.063 \quad (+0.0\sigma)$
$c_{100}$	$0.99968 \pm 0.00062 \quad (+0.1\sigma)$	$k_{\text{D}}$	$0.1404 \pm 0.0013 \quad (-0.4\sigma)$	$\chi_{\text{MGS}}^2$	$1.37 \pm 0.47 \quad (-0.3\sigma)$
$c_{217}$	$0.99820 \pm 0.00061 \quad (-0.1\sigma)$	$100\theta_{\text{D}}$	$0.16062 \pm 0.00040 \quad (-1.1\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.6 \pm 1.4 \quad (+0.2\sigma)$
$H_0$	$67.6 \pm 1.1 \quad (-0.6\sigma)$	$z_{\text{eq}}$	$3389 \pm 24 \quad (+0.8\sigma)$	$\chi_{\text{prior}}^2$	$11.4 \pm 4.6 \quad (+1.1\sigma)$
$\Omega_{\Lambda}$	$0.6903 \pm 0.0068 \quad (-0.3\sigma)$	$k_{\text{eq}}$	$0.01031 \pm 0.00012 \quad (-0.2\sigma)$	$\chi_{\text{BAO}}^2$	$6.0 \pm 1.1 \quad (+0.0\sigma)$
$\Omega_{\text{m}}$	$0.3097 \pm 0.0068 \quad (+0.3\sigma)$	$100\theta_{\text{eq}}$	$0.8158 \pm 0.0046 \quad (-0.7\sigma)$	$\chi_{\text{CMB}}^2$	$2780.4 \pm 6.1 \quad (+279.3\sigma)$
$\Omega_{\text{m}}h^2$	$0.1414 \pm 0.0032 \quad (-0.5\sigma)$	$100\theta_{\text{s,eq}}$	$0.4507 \pm 0.0024 \quad (-0.7\sigma)$		
$\Omega_{\nu}h^2$	$< 0.000584 \quad (-0.3\sigma)$	$H(0.15)$	$72.8 \pm 1.1 \quad (-0.6\sigma)$		

$\bar{\chi}_{\text{eff}}^2 = 3832.93$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.68$ ;  $R - 1 = 0.00910$



## 9.19 base\_nnu\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022176	$0.02224 \pm 0.00024$	$\sigma_8 \Omega_m^{0.5}$	0.4540	$0.450 \pm 0.010$	$H(0.38)$	83.24	$83.2 \pm 1.6$
$\Omega_c h^2$	0.11946	$0.1196 \pm 0.0041$	$\sigma_8 \Omega_m^{0.25}$	0.6101	$0.603^{+0.013}_{-0.011}$	$D_M(0.38)$	1523.1	$1525 \pm 31$
$100\theta_{MC}$	1.04098	$1.04099 \pm 0.00059$	$\sigma_8/h^{0.5}$	0.9945	$0.982^{+0.020}_{-0.014}$	$H(0.51)$	89.91	$90.0 \pm 1.6$
$\tau$	0.0520	$0.0537 \pm 0.0080$	$r_{\text{drag}} h$	100.22	$99.9 \pm 1.1$	$D_M(0.51)$	1973.8	$1975 \pm 39$
$\Sigma m_\nu$ [eV]	0.0004	$< 0.0807$	$\langle d^2 \rangle^{1/2}$	2.4376	$2.422 \pm 0.033$	$H(0.61)$	95.49	$95.6 \pm 1.7$
$N_{\text{eff}}$	3.051	$3.09 \pm 0.24$	$z_{\text{re}}$	7.47	$7.62 \pm 0.82$	$D_M(0.61)$	2297.4	$2299 \pm 45$
$\ln(10^{10} A_s)$	3.0359	$3.040 \pm 0.020$	$10^9 A_s$	2.0820	$2.090 \pm 0.042$	$H(2.33)$	235.71	$236.3 \pm 3.6$
$n_s$	0.9659	$0.9685 \pm 0.0090$	$10^9 A_s e^{-2\tau}$	1.8764	$1.877 \pm 0.022$	$D_M(2.33)$	5755	$5751 \pm 98$
$y_{\text{cal}}$	1.00023	$1.0005 \pm 0.0025$	$D_{40}$	1224.3	$1221 \pm 16$	$f\sigma_8(0.15)$	0.4582	$0.4545 \pm 0.0096$
$A_{100}^{\text{PS}}$	242.8	$243 \pm 26$	$D_{220}$	5704.9	$5709 \pm 40$	$\sigma_8(0.15)$	0.7581	$0.748^{+0.018}_{-0.014}$
$A_{143}^{\text{PS}}$	39.7	$41 \pm 9$	$D_{810}$	2531.3	$2534 \pm 14$	$f\sigma_8(0.38)$	0.4777	$0.4734^{+0.0099}_{-0.0088}$
$A_{217}^{\text{PS}}$	98.0	$101 \pm 10$	$D_{1420}$	813.6	$814.8 \pm 5.4$	$\sigma_8(0.38)$	0.6723	$0.663^{+0.016}_{-0.013}$
$A_{217}^{\text{CIB}}$	45.0	$41 \pm 8$	$D_{2000}$	229.42	$229.7 \pm 2.3$	$f\sigma_8(0.51)$	0.4768	$0.4722^{+0.0098}_{-0.0086}$
$A_{143}^{\text{tSZ}}$	5.21	$3.7^{+1.8}_{-2.6}$	$n_{s,0.002}$	0.9659	$0.9685 \pm 0.0090$	$\sigma_8(0.51)$	0.6293	$0.620^{+0.015}_{-0.012}$
$r_{143 \times 217}^{\text{PS}}$	0.582	$0.65 \pm 0.13$	$Y_P$	0.24539	$0.2458 \pm 0.0033$	$f\sigma_8(0.61)$	0.4722	$0.4675^{+0.0097}_{-0.0084}$
$r_{143 \times 217}^{\text{CIB}}$	0.714	$0.59^{+0.41}_{-0.13}$	$Y_P^{\text{BBN}}$	0.24671	$0.2472 \pm 0.0033$	$\sigma_8(0.61)$	0.5988	$0.590^{+0.014}_{-0.012}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.09	—	$10^5 \text{D}/\text{H}$	2.624	$2.624 \pm 0.070$	$f\sigma_8(2.33)$	0.3012	$0.2979^{+0.0066}_{-0.0058}$
$A^{\text{kSZ}}$	2.3	—	Age/Gyr	13.779	$13.77 \pm 0.23$	$\sigma_8(2.33)$	0.3111	$0.3072^{+0.0073}_{-0.0063}$
$A_{100}^{\text{dust}}$	1.010	$1.01 \pm 0.20$	$z_*$	1090.12	$1090.08 \pm 0.51$	$f_{2000}^{143}$	31.14	$31 \pm 4$
$A_{143}^{\text{dust}}$	0.979	$0.98 \pm 0.18$	$r_*$	144.70	$144.5 \pm 2.3$	$f_{2000}^{217}$	107.59	$107.6 \pm 2.5$
$A_{217}^{\text{dust}}$	0.966	$0.97 \pm 0.10$	$100\theta_*$	1.04115	$1.04117 \pm 0.00071$	$f_{2000}^{143 \times 217}$	33.11	$33.0 \pm 2.7$
$A_{143 \times 217}^{\text{dust}}$	1.023	$1.03 \pm 0.16$	$D_M(z_*)/\text{Gpc}$	13.898	$13.88 \pm 0.22$	$\chi_{\text{simall}}^2$	395.81	$397.0 \pm 1.7$
$c_{100}$	0.99757	$0.9975 \pm 0.0011$	$z_{\text{drag}}$	1059.44	$1059.63 \pm 0.90$	$\chi_{\text{lowl}}^2$	23.10	$22.8 \pm 1.3$
$c_{217}$	1.00164	$1.0012 \pm 0.0016$	$r_{\text{drag}}$	147.43	$147.2 \pm 2.4$	$\chi_{\text{CamSpec}}^2$	7050.2	$7064.9 \pm 5.8$
$H_0$	67.98	$67.9 \pm 1.5$	$k_D$	0.14033	$0.1405 \pm 0.0017$	$\chi_{6\text{DF}}^2$	0.0030	$0.060 \pm 0.083$
$\Omega_\Lambda$	0.6935	$0.6907 \pm 0.0084$	$100\theta_D$	0.16108	$0.16111 \pm 0.00061$	$\chi_{\text{MGS}}^2$	1.54	$1.44 \pm 0.59$
$\Omega_m$	0.3065	$0.3093 \pm 0.0084$	$z_{\text{eq}}$	3382.3	$3371 \pm 35$	$\chi_{\text{DR12BAO}}^2$	3.66	$4.7 \pm 1.7$
$\Omega_m h^2$	0.14164	$0.1425 \pm 0.0043$	$k_{\text{eq}}$	0.010327	$0.01031 \pm 0.00015$	$\chi_{\text{prior}}^2$	2.36	$7.7 \pm 3.5$
$\Omega_\nu h^2$	$0.5 \cdot 10^{-5}$	$< 0.000853$	$100\theta_{\text{eq}}$	0.8163	$0.8187 \pm 0.0065$	$\chi_{\text{BAO}}^2$	5.20	$6.2 \pm 1.4$
$\Omega_m h^3$	0.09628	$0.0968 \pm 0.0047$	$100\theta_{s,\text{eq}}$	0.45111	$0.4523 \pm 0.0033$	$\chi_{\text{CMB}}^2$	7469.1	$7484.7 \pm 5.7$
$\sigma_8$	0.8200	$0.809^{+0.019}_{-0.015}$	$H(0.15)$	73.21	$73.2 \pm 1.5$			
$S_8$	0.8289	$0.821 \pm 0.018$	$D_M(0.15)$	638.1	$639 \pm 13$			

Best-fit  $\chi_{\text{eff}}^2 = 7476.70$ ;  $\bar{\chi}_{\text{eff}}^2 = 7498.64$ ;  $R - 1 = 0.00711$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.54 DR12BAO: 3.66 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.81 commander\_dx12\_v3.2\_29: 23.10 CamSpec like\_10.7HM: 7050.23



## 9.20 base\_nnu\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022227	$0.02226 \pm 0.00023$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4538	$0.4491 \pm 0.0099$	$H(0.38)$	83.49	$83.4 \pm 1.5$
$\Omega_{\mathrm{c}}h^2$	0.11973	$0.1197 \pm 0.0040$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6107	$0.603^{+0.013}_{-0.011}$	$D_{\mathrm{M}}(0.38)$	1517.7	$1521 \pm 30$
$100\theta_{\mathrm{MC}}$	1.04101	$1.04098 \pm 0.00059$	$\sigma_8/h^{0.5}$	0.9950	$0.981^{+0.020}_{-0.014}$	$H(0.51)$	90.16	$90.1 \pm 1.6$
$\tau$	0.0532	$0.0538 \pm 0.0080$	$r_{\mathrm{drag}}h$	100.44	$100.07 \pm 0.99$	$D_{\mathrm{M}}(0.51)$	1967.1	$1971 \pm 38$
$\Sigma m_{\nu}$ [eV]	0.0000	$< 0.0789$	$\langle d^2 \rangle^{1/2}$	2.4347	$2.420 \pm 0.032$	$H(0.61)$	95.74	$95.7 \pm 1.6$
$N_{\mathrm{eff}}$	3.079	$3.10 \pm 0.24$	$z_{\mathrm{re}}$	7.59	$7.64^{+0.83}_{-0.75}$	$D_{\mathrm{M}}(0.61)$	2289.8	$2294 \pm 43$
$\ln(10^{10}A_{\mathrm{s}})$	3.0394	$3.040 \pm 0.020$	$10^9 A_{\mathrm{s}}$	2.0893	$2.092 \pm 0.042$	$H(2.33)$	236.02	$236.4 \pm 3.6$
$n_{\mathrm{s}}$	0.9682	$0.9693 \pm 0.0087$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8785	$1.878 \pm 0.022$	$D_{\mathrm{M}}(2.33)$	5741	$5744 \pm 96$
$y_{\mathrm{cal}}$	1.00038	$1.0005 \pm 0.0025$	$D_{40}$	1220.8	$1220 \pm 15$	$f\sigma_8(0.15)$	0.4582	$0.4541 \pm 0.0094$
$A_{100}^{\mathrm{PS}}$	238.1	$243 \pm 25$	$D_{220}$	5704.1	$5709 \pm 40$	$\sigma_8(0.15)$	0.7601	$0.748^{+0.017}_{-0.014}$
$A_{143}^{\mathrm{PS}}$	39.6	$41 \pm 9$	$D_{810}$	2533.4	$2534 \pm 14$	$f\sigma_8(0.38)$	0.4781	$0.4732^{+0.0097}_{-0.0088}$
$A_{217}^{\mathrm{PS}}$	100.6	$101 \pm 10$	$D_{1420}$	814.6	$814.8 \pm 5.4$	$\sigma_8(0.38)$	0.6743	$0.664^{+0.015}_{-0.013}$
$A_{217}^{\mathrm{CIB}}$	45.5	$41 \pm 8$	$D_{2000}$	229.76	$229.6 \pm 2.3$	$f\sigma_8(0.51)$	0.4774	$0.4722^{+0.0096}_{-0.0085}$
$A_{143}^{\mathrm{tSZ}}$	6.22	$3.7^{+1.8}_{-2.6}$	$n_{\mathrm{s},0.002}$	0.9682	$0.9693 \pm 0.0087$	$\sigma_8(0.51)$	0.6312	$0.621^{+0.014}_{-0.012}$
$r_{143 \times 217}^{\mathrm{PS}}$	0.571	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	0.24577	$0.2460 \pm 0.0033$	$f\sigma_8(0.61)$	0.4729	$0.4675^{+0.0095}_{-0.0084}$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.771	$> 0.467$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24710	$0.2474 \pm 0.0033$	$\sigma_8(0.61)$	0.6007	$0.591^{+0.014}_{-0.012}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.02	—	$10^5 \mathrm{D}/\mathrm{H}$	2.624	$2.625 \pm 0.070$	$f\sigma_8(2.33)$	0.3022	$0.2984 \pm 0.0062$
$A^{\mathrm{kSZ}}$	0.5	—	Age/Gyr	13.746	$13.75 \pm 0.23$	$\sigma_8(2.33)$	0.3123	$0.3077^{+0.0071}_{-0.0062}$
$A_{100}^{\mathrm{dust}}$	1.014	$1.01 \pm 0.19$	$z_{*}$	1090.10	$1090.08 \pm 0.50$	$f_{2000}^{143}$	30.85	$31 \pm 4$
$A_{143}^{\mathrm{dust}}$	0.990	$0.98 \pm 0.18$	$r_{*}$	144.45	$144.4 \pm 2.3$	$f_{2000}^{217}$	107.43	$107.6 \pm 2.5$
$A_{217}^{\mathrm{dust}}$	0.963	$0.97 \pm 0.10$	$100\theta_{*}$	1.04115	$1.04115 \pm 0.00071$	$f_{2000}^{143 \times 217}$	32.82	$33.0 \pm 2.7$
$A_{143 \times 217}^{\mathrm{dust}}$	1.000	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	13.875	$13.87 \pm 0.21$	$\chi_{\mathrm{simall}}^2$	395.87	$397.0 \pm 1.8$
$c_{100}$	0.99755	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	1059.59	$1059.69 \pm 0.88$	$\chi_{\mathrm{lowl}}^2$	22.77	$22.7 \pm 1.2$
$c_{217}$	1.00139	$1.0012 \pm 0.0016$	$r_{\mathrm{drag}}$	147.17	$147.1 \pm 2.4$	$\chi_{\mathrm{CamSpec}}^2$	7050.7	$7065.1 \pm 5.8$
$H_0$	68.25	$68.1 \pm 1.4$	$k_{\mathrm{D}}$	0.14055	$0.1406 \pm 0.0017$	$\chi_{\mathrm{JLA}}^2$	1034.804	$1035.02 \pm 0.34$
$\Omega_{\Lambda}$	0.6952	$0.6920 \pm 0.0078$	$100\theta_{\mathrm{D}}$	0.16111	$0.16113 \pm 0.00060$	$\chi_{6\mathrm{DF}}^2$	0.0001	$0.048 \pm 0.066$
$\Omega_{\mathrm{m}}$	0.3048	$0.3080 \pm 0.0078$	$z_{\mathrm{eq}}$	3377.4	$3367 \pm 33$	$\chi_{\mathrm{MGS}}^2$	1.68	$1.52 \pm 0.57$
$\Omega_{\mathrm{m}}h^2$	0.14195	$0.1426 \pm 0.0042$	$k_{\mathrm{eq}}$	0.010331	$0.01031 \pm 0.00015$	$\chi_{\mathrm{DR12BAO}}^2$	3.50	$4.4 \pm 1.4$
$\Omega_{\nu}h^2$	$0.1 \cdot 10^{-5}$	$< 0.000835$	$100\theta_{\mathrm{eq}}$	0.8174	$0.8195 \pm 0.0062$	$\chi_{\mathrm{prior}}^2$	2.15	$7.7 \pm 3.5$
$\Omega_{\mathrm{m}}h^3$	0.09688	$0.0971 \pm 0.0047$	$100\theta_{\mathrm{s,eq}}$	0.45163	$0.4527 \pm 0.0032$	$\chi_{\mathrm{BAO}}^2$	5.18	$6.0 \pm 1.1$
$\sigma_8$	0.8220	$0.809^{+0.018}_{-0.015}$	$H(0.15)$	73.47	$73.3 \pm 1.4$	$\chi_{\mathrm{CMB}}^2$	7469.3	$7484.8 \pm 5.7$
$S_8$	0.8285	$0.820 \pm 0.018$	$D_{\mathrm{M}}(0.15)$	635.7	$638 \pm 13$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 8511.44$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 8533.53$ ;  $R - 1 = 0.00839$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.50 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 commander\_dx12\_v3.2.29: 22.77 CamSpec like\_10.7HM: 7050.67  
SN - JLA Pantheon18: 1034.80



## 9.21 base\_nnu\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_post\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022168	$0.02221 \pm 0.00022$	$\sigma_8 \Omega_m^{0.5}$	0.4537	$0.4491 \pm 0.0099$	$H(0.38)$	82.82	$82.8 \pm 1.2$
$\Omega_c h^2$	0.11839	$0.1185 \pm 0.0032$	$\sigma_8 \Omega_m^{0.25}$	0.6092	$0.602^{+0.013}_{-0.011}$	$D_M(0.38)$	1531.1	$1532 \pm 25$
$100\theta_{MC}$	1.04116	$1.04109 \pm 0.00053$	$\sigma_8/h^{0.5}$	0.9949	$0.981^{+0.020}_{-0.014}$	$H(0.51)$	89.47	$89.5 \pm 1.3$
$\tau$	0.0531	$0.0535 \pm 0.0079$	$r_{\text{drag}} h$	100.10	$99.8 \pm 1.0$	$D_M(0.51)$	1984.0	$1985 \pm 31$
$\Sigma m_\nu$ [eV]	0.0006	$< 0.0759$	$\langle d^2 \rangle^{1/2}$	2.4414	$2.425 \pm 0.032$	$H(0.61)$	95.04	$95.1 \pm 1.3$
$N_{\text{eff}}$	2.982	$3.02 \pm 0.19$	$z_{\text{re}}$	7.56	$7.59^{+0.83}_{-0.74}$	$D_M(0.61)$	2309.2	$2310 \pm 36$
$\ln(10^{10} A_s)$	3.0354	$3.037 \pm 0.019$	$10^9 A_s$	2.0808	$2.084 \pm 0.039$	$H(2.33)$	234.77	$235.3 \pm 2.8$
$n_s$	0.9643	$0.9664 \pm 0.0075$	$10^9 A_s e^{-2\tau}$	1.8713	$1.873 \pm 0.019$	$D_M(2.33)$	5782	$5777 \pm 77$
$y_{\text{cal}}$	1.00029	$1.0005 \pm 0.0025$	$D_{40}$	1226.0	$1223 \pm 15$	$f\sigma_8(0.15)$	0.4578	$0.4538 \pm 0.0093$
$A_{100}^{\text{PS}}$	238.2	$241 \pm 25$	$D_{220}$	5705.3	$5709 \pm 40$	$\sigma_8(0.15)$	0.7561	$0.745^{+0.016}_{-0.012}$
$A_{143}^{\text{PS}}$	38.0	$40 \pm 9$	$D_{810}$	2531.0	$2533 \pm 14$	$f\sigma_8(0.38)$	0.4770	$0.4724^{+0.0094}_{-0.0082}$
$A_{217}^{\text{PS}}$	99.4	$101 \pm 10$	$D_{1420}$	814.7	$815.2 \pm 5.3$	$\sigma_8(0.38)$	0.6705	$0.661^{+0.015}_{-0.011}$
$A_{217}^{\text{CIB}}$	44.4	$41 \pm 7$	$D_{2000}$	230.15	$230.1 \pm 2.1$	$f\sigma_8(0.51)$	0.4760	$0.4712^{+0.0093}_{-0.0079}$
$A_{143}^{\text{tSZ}}$	5.35	$3.8^{+1.8}_{-2.5}$	$n_{s,0.002}$	0.9643	$0.9664 \pm 0.0075$	$\sigma_8(0.51)$	0.6275	$0.619^{+0.014}_{-0.010}$
$r_{143 \times 217}^{\text{PS}}$	0.573	$0.65 \pm 0.13$	$Y_P$	0.24446	$0.2449 \pm 0.0026$	$f\sigma_8(0.61)$	0.4713	$0.4663^{+0.0091}_{-0.0076}$
$r_{143 \times 217}^{\text{CIB}}$	0.704	$0.58^{+0.40}_{-0.14}$	$Y_P^{\text{BBN}}$	0.24578	$0.2463 \pm 0.0026$	$\sigma_8(0.61)$	0.5971	$0.589^{+0.013}_{-0.0099}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.05	—	$10^5 \text{D/H}$	2.602	$2.608 \pm 0.059$	$f\sigma_8(2.33)$	0.3002	$0.2969^{+0.0059}_{-0.0049}$
$A^{\text{kSZ}}$	1.83	$4.9 \pm 2.7$	Age/Gyr	13.842	$13.83 \pm 0.18$	$\sigma_8(2.33)$	0.3102	$0.3061^{+0.0066}_{-0.0053}$
$A_{100}^{\text{dust}}$	1.006	$1.01 \pm 0.19$	$z_*$	1089.966	$1089.97 \pm 0.43$	$f_{2000}^{143}$	30.28	$30 \pm 3$
$A_{143}^{\text{dust}}$	0.981	$0.98 \pm 0.18$	$r_*$	145.33	$145.1 \pm 1.8$	$f_{2000}^{217}$	106.91	$107.2 \pm 2.3$
$A_{217}^{\text{dust}}$	0.956	$0.97 \pm 0.10$	$100\theta_*$	1.04137	$1.04131 \pm 0.00061$	$f_{2000}^{143 \times 217}$	32.24	$32.5 \pm 2.5$
$A_{143 \times 217}^{\text{dust}}$	1.003	$1.03 \pm 0.16$	$D_M(z_*)/\text{Gpc}$	13.956	$13.94 \pm 0.17$	$\chi_{\text{small}}^2$	395.88	$397.0 \pm 1.7$
$c_{100}$	0.99744	$0.9975 \pm 0.0011$	$z_{\text{drag}}$	1059.28	$1059.42 \pm 0.75$	$\chi_{\text{lowl}}^2$	23.28	$23.0 \pm 1.2$
$c_{217}$	1.00128	$1.0012 \pm 0.0016$	$r_{\text{drag}}$	148.08	$147.8 \pm 1.9$	$\chi_{\text{CamSpec}}^2$	7050.0	$7064.4 \pm 5.7$
$H_0$	67.60	$67.5 \pm 1.2$	$k_D$	0.13992	$0.1401 \pm 0.0014$	$\chi_{\text{Aver15}}^2$	0.049	$0.52 \pm 0.71$
$\Omega_\Lambda$	0.6924	$0.6898 \pm 0.0081$	$100\theta_D$	0.160885	$0.16096 \pm 0.00050$	$\chi_{6\text{DF}}^2$	0.0061	$0.063 \pm 0.083$
$\Omega_m$	0.3076	$0.3102 \pm 0.0081$	$z_{\text{eq}}$	3387.9	$3375 \pm 33$	$\chi_{\text{MGS}}^2$	1.47	$1.38 \pm 0.57$
$\Omega_m h^2$	0.14057	$0.1414 \pm 0.0034$	$k_{\text{eq}}$	0.010296	$0.01028 \pm 0.00013$	$\chi_{\text{DR12BAO}}^2$	3.76	$4.8 \pm 1.7$
$\Omega_\nu h^2$	$0.6 \cdot 10^{-5}$	$< 0.000798$	$100\theta_{\text{eq}}$	0.8154	$0.8179 \pm 0.0062$	$\chi_{\text{prior}}^2$	2.20	$7.7 \pm 3.5$
$\Omega_m h^3$	0.09502	$0.0955 \pm 0.0036$	$100\theta_{s,\text{eq}}$	0.45062	$0.4519 \pm 0.0032$	$\chi_{\text{BAO}}^2$	5.23	$6.2 \pm 1.4$
$\sigma_8$	0.8180	$0.806^{+0.018}_{-0.013}$	$H(0.15)$	72.82	$72.8 \pm 1.2$	$\chi_{\text{CMB}}^2$	7469.2	$7484.4 \pm 5.6$
$S_8$	0.8283	$0.820 \pm 0.018$	$D_M(0.15)$	641.6	$642 \pm 11$			

Best-fit  $\chi_{\text{eff}}^2 = 7476.67$ ;  $\bar{\chi}_{\text{eff}}^2 = 7498.80$ ;  $R - 1 = 0.00899$   
 $\chi_{\text{eff}}^2$ : Abund - Yp\_Aver2015: 0.05 BAO - 6DF: 0.01 MGS: 1.47 DR12BAO: 3.76 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.88 commander\_dx12\_v3.2.29: 23.28  
CamSpec like\_10.7HM: 7050.02



## 9.22 base\_nnu\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_post\_Cooke17\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022178	$0.02220 \pm 0.00022$	$\sigma_8 \Omega_m^{0.25}$	0.6102	$0.602^{+0.013}_{-0.010}$	$H(0.51)$	89.46	$89.6 \pm 1.2$
$\Omega_c h^2$	0.11854	$0.1186 \pm 0.0029$	$\sigma_8/h^{0.5}$	0.9962	$0.982^{+0.019}_{-0.014}$	$D_M(0.51)$	1984.9	$1984 \pm 30$
$100\theta_{MC}$	1.04111	$1.04107 \pm 0.00050$	$r_{drag}h$	99.99	$99.8 \pm 1.0$	$H(0.61)$	95.03	$95.2 \pm 1.2$
$\tau$	0.0530	$0.0535 \pm 0.0079$	$\langle d^2 \rangle^{1/2}$	2.4445	$2.425 \pm 0.032$	$D_M(0.61)$	2310.1	$2309 \pm 34$
$\Sigma m_\nu$ [eV]	0.0020	$< 0.0758$	$z_{re}$	7.55	$7.59^{+0.83}_{-0.74}$	$H(2.33)$	234.88	$235.4 \pm 2.6$
$N_{eff}$	2.983	$3.03 \pm 0.17$	$10^9 A_s$	2.0837	$2.085 \pm 0.038$	$D_M(2.33)$	5782	$5774 \pm 72$
$\ln(10^{10} A_s)$	3.0367	$3.037 \pm 0.018$	$10^9 A_s e^{-2\tau}$	1.8742	$1.873 \pm 0.018$	$f\sigma_8(0.15)$	0.4588	$0.4540 \pm 0.0092$
$n_s$	0.9642	$0.9666 \pm 0.0072$	$D_{40}$	1227.8	$1223 \pm 14$	$\sigma_8(0.15)$	0.7568	$0.746^{+0.016}_{-0.012}$
$y_{cal}$	1.00061	$1.0005 \pm 0.0025$	$D_{220}$	5712.2	$5709 \pm 40$	$f\sigma_8(0.38)$	0.4779	$0.4726^{+0.0093}_{-0.0080}$
$A_{100}^{PS}$	233.9	$242 \pm 25$	$D_{810}$	2534.3	$2533 \pm 14$	$\sigma_8(0.38)$	0.6710	$0.661^{+0.014}_{-0.011}$
$A_{143}^{PS}$	45.4	$40 \pm 9$	$D_{1420}$	815.8	$815.1 \pm 5.2$	$f\sigma_8(0.51)$	0.4768	$0.4713^{+0.0091}_{-0.0076}$
$A_{217}^{PS}$	103.4	$101 \pm 10$	$D_{2000}$	230.50	$230.0 \pm 2.0$	$\sigma_8(0.51)$	0.6280	$0.619^{+0.013}_{-0.0099}$
$A_{217}^{CIB}$	41.7	$41 \pm 7$	$n_{s,0.002}$	0.9642	$0.9666 \pm 0.0072$	$f\sigma_8(0.61)$	0.4719	$0.4665^{+0.0090}_{-0.0073}$
$A_{143}^{tSZ}$	5.45	$3.8^{+1.8}_{-2.5}$	$Y_P$	0.24448	$0.2450 \pm 0.0023$	$\sigma_8(0.61)$	0.5975	$0.589^{+0.013}_{-0.0095}$
$r_{143 \times 217}^{PS}$	0.695	$0.65 \pm 0.13$	$Y_P^{BBN}$	0.24580	$0.2464 \pm 0.0023$	$f\sigma_8(2.33)$	0.3004	$0.2970^{+0.0058}_{-0.0047}$
$r_{143 \times 217}^{CIB}$	0.763	$0.58^{+0.40}_{-0.14}$	$10^5 D/H$	2.600	$2.610 \pm 0.050$	$\sigma_8(2.33)$	0.3103	$0.3062^{+0.0065}_{-0.0051}$
$\xi^{tSZ \times CIB}$	0.63	—	Age/Gyr	13.842	$13.82 \pm 0.17$	$f_{2000}^{143}$	29.93	$30.3 \pm 3.2$
$A^{kSZ}$	2.09	$4.9 \pm 2.7$	$z_*$	1089.966	$1089.99 \pm 0.37$	$f_{2000}^{217}$	106.81	$107.3 \pm 2.2$
$A_{100}^{dust}$	1.006	$1.01 \pm 0.19$	$r_*$	145.28	$145.0 \pm 1.7$	$f_{2000}^{143 \times 217}$	32.23	$32.6 \pm 2.3$
$A_{143}^{dust}$	0.984	$0.98 \pm 0.18$	$100\theta_*$	1.04132	$1.04129 \pm 0.00057$	$\chi_{small}^2$	395.86	$397.0 \pm 1.7$
$A_{217}^{dust}$	0.975	$0.97 \pm 0.10$	$D_M(z_*)/\text{Gpc}$	13.952	$13.93 \pm 0.16$	$\chi_{lowl}^2$	23.35	$23.0 \pm 1.1$
$A_{143 \times 217}^{dust}$	1.017	$1.03 \pm 0.16$	$z_{drag}$	1059.32	$1059.43 \pm 0.74$	$\chi_{CamSpec}^2$	7050.2	$7064.2 \pm 5.6$
$c_{100}$	0.99769	$0.9975 \pm 0.0011$	$r_{drag}$	148.02	$147.8 \pm 1.7$	$\chi_{Aver15}^2$	0.051	$0.47 \pm 0.63$
$c_{217}$	1.00127	$1.0012 \pm 0.0016$	$k_D$	0.13998	$0.1401 \pm 0.0013$	$\chi_{Cooke17}^2$	0.036	$0.29 \pm 0.41$
$H_0$	67.55	$67.6 \pm 1.2$	$100\theta_D$	0.160864	$0.16098 \pm 0.00043$	$\chi_{6DF}^2$	0.0102	$0.063 \pm 0.083$
$\Omega_\Lambda$	0.6916	$0.6898 \pm 0.0081$	$z_{eq}$	3391.1	$3375 \pm 33$	$\chi_{MGS}^2$	1.41	$1.39 \pm 0.57$
$\Omega_m$	0.3084	$0.3102 \pm 0.0081$	$k_{eq}$	0.010306	$0.01028 \pm 0.00013$	$\chi_{DR12BAO}^2$	3.89	$4.8 \pm 1.7$
$\Omega_m h^2$	0.14074	$0.1415 \pm 0.0031$	$100\theta_{eq}$	0.8148	$0.8179 \pm 0.0061$	$\chi_{prior}^2$	2.01	$7.7 \pm 3.4$
$\Omega_\nu h^2$	0.000021	$< 0.000800$	$100\theta_{s,eq}$	0.45031	$0.4519 \pm 0.0032$	$\chi_{BAO}^2$	5.30	$6.2 \pm 1.4$
$\Omega_m h^3$	0.09507	$0.0956 \pm 0.0034$	$H(0.15)$	72.78	$72.8 \pm 1.1$	$\chi_{CMB}^2$	7469.4	$7484.2 \pm 5.5$
$\sigma_8$	0.8188	$0.807^{+0.017}_{-0.013}$	$D_M(0.15)$	642.0	$642 \pm 10$	$\chi_{Abund}^2$	0.087	$0.76 \pm 0.84$
$S_8$	0.8302	$0.820 \pm 0.018$	$H(0.38)$	82.80	$82.9 \pm 1.2$			
$\sigma_8 \Omega_m^{0.5}$	0.4547	$0.4493 \pm 0.0098$	$D_M(0.38)$	1531.9	$1531 \pm 24$			

Best-fit  $\chi_{eff}^2 = 7476.77$ ;  $\bar{\chi}_{eff}^2 = 7498.82$ ;  $R - 1 = 0.00839$

$\chi_{eff}^2$ : Abund - Yp\_Aver2015: 0.05 D\_Cooke2017: 0.04 BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.88 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.86 commander\_dx12\_v3\_2\_29: 23.35 CamSpec like\_10.7HM: 7050.16



### 9.23 base\_nnu\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_post\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02227 \pm 0.00023$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4495 \pm 0.0099$	$H(0.38)$	$83.4 \pm 1.5$
$\Omega_{\text{c}}h^2$	$0.1197 \pm 0.0040$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.604^{+0.013}_{-0.011}$	$D_{\text{M}}(0.38)$	$1521 \pm 30$
$100\theta_{\text{MC}}$	$1.04098 \pm 0.00059$	$\sigma_8/h^{0.5}$	$0.982^{+0.019}_{-0.013}$	$H(0.51)$	$90.1 \pm 1.6$
$\tau$	$0.0552^{+0.0054}_{-0.0079}$	$r_{\text{drag}}h$	$100.09 \pm 0.99$	$D_{\text{M}}(0.51)$	$1971 \pm 38$
$\Sigma m_{\nu} [\text{eV}]$	$< 0.0799$	$\langle d^2 \rangle^{1/2}$	$2.423 \pm 0.031$	$H(0.61)$	$95.7 \pm 1.6$
$N_{\text{eff}}$	$3.10 \pm 0.24$	$z_{\text{re}}$	$7.78^{+0.60}_{-0.80}$	$D_{\text{M}}(0.61)$	$2294 \pm 43$
$\ln(10^{10}A_{\text{s}})$	$3.043^{+0.016}_{-0.019}$	$10^9 A_{\text{s}}$	$2.098^{+0.034}_{-0.040}$	$H(2.33)$	$236.4 \pm 3.6$
$n_{\text{s}}$	$0.9695 \pm 0.0087$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.878 \pm 0.022$	$D_{\text{M}}(2.33)$	$5742 \pm 96$
$y_{\text{cal}}$	$1.0005 \pm 0.0025$	$D_{40}$	$1220 \pm 15$	$f\sigma_8(0.15)$	$0.4545 \pm 0.0094$
$A_{100}^{\text{PS}}$	$243 \pm 26$	$D_{220}$	$5709 \pm 41$	$\sigma_8(0.15)$	$0.749^{+0.017}_{-0.014}$
$A_{143}^{\text{PS}}$	$41 \pm 9$	$D_{810}$	$2534 \pm 14$	$f\sigma_8(0.38)$	$0.4737^{+0.0096}_{-0.0086}$
$A_{217}^{\text{PS}}$	$101 \pm 10$	$D_{1420}$	$814.8 \pm 5.4$	$\sigma_8(0.38)$	$0.665^{+0.015}_{-0.012}$
$A_{217}^{\text{CIB}}$	$41^{+7}_{-8}$	$D_{2000}$	$229.6 \pm 2.3$	$f\sigma_8(0.51)$	$0.4727^{+0.0095}_{-0.0084}$
$A_{143}^{\text{tSZ}}$	$3.7^{+1.8}_{-2.6}$	$n_{\text{s},0.002}$	$0.9695 \pm 0.0087$	$\sigma_8(0.51)$	$0.622^{+0.014}_{-0.012}$
$r_{143 \times 217}^{\text{PS}}$	$0.65 \pm 0.13$	$Y_{\text{P}}$	$0.2461 \pm 0.0032$	$f\sigma_8(0.61)$	$0.4681^{+0.0094}_{-0.0082}$
$r_{143 \times 217}^{\text{CIB}}$	$> 0.464$	$Y_{\text{P}}^{\text{BBN}}$	$0.2474 \pm 0.0033$	$\sigma_8(0.61)$	$0.592^{+0.014}_{-0.011}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^5 \text{D}/\text{H}$	$2.625 \pm 0.070$	$f\sigma_8(2.33)$	$0.2988^{+0.0063}_{-0.0057}$
$A^{\text{kSZ}}$	—	$\text{Age}/\text{Gyr}$	$13.75 \pm 0.23$	$\sigma_8(2.33)$	$0.3081^{+0.0070}_{-0.0061}$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.19$	$z_*$	$1090.08 \pm 0.50$	$f_{2000}^{143}$	$31 \pm 4$
$A_{143}^{\text{dust}}$	$0.98 \pm 0.18$	$r_*$	$144.4 \pm 2.3$	$f_{2000}^{217}$	$107.6 \pm 2.4$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04114 \pm 0.00071$	$f_{2000}^{143 \times 217}$	$33.0 \pm 2.7$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.87 \pm 0.21$	$\chi_{\text{simall}}^2$	$397.0 \pm 1.8$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\text{drag}}$	$1059.71 \pm 0.88$	$\chi_{\text{lowl}}^2$	$22.7 \pm 1.2$
$c_{217}$	$1.0012 \pm 0.0016$	$r_{\text{drag}}$	$147.1 \pm 2.4$	$\chi_{\text{CamSpec}}^2$	$7064.9 \pm 5.8$
$H_0$	$68.1 \pm 1.4$	$k_{\text{D}}$	$0.1406 \pm 0.0017$	$\chi_{\text{JLA}}^2$	$1035.02 \pm 0.34$
$\Omega_{\Lambda}$	$0.6921 \pm 0.0078$	$100\theta_{\text{D}}$	$0.16114 \pm 0.00060$	$\chi_{6\text{DF}}^2$	$0.047 \pm 0.065$
$\Omega_{\text{m}}$	$0.3079 \pm 0.0078$	$z_{\text{eq}}$	$3366 \pm 33$	$\chi_{\text{MGS}}^2$	$1.54 \pm 0.57$
$\Omega_{\text{m}}h^2$	$0.1426 \pm 0.0042$	$k_{\text{eq}}$	$0.01031 \pm 0.00015$	$\chi_{\text{DR12BAO}}^2$	$4.4 \pm 1.4$
$\Omega_{\nu}h^2$	$< 0.000846$	$100\theta_{\text{eq}}$	$0.8196 \pm 0.0062$	$\chi_{\text{prior}}^2$	$7.7 \pm 3.5$
$\Omega_{\text{m}}h^3$	$0.0972 \pm 0.0047$	$100\theta_{\text{s,eq}}$	$0.4528 \pm 0.0032$	$\chi_{\text{BAO}}^2$	$6.0 \pm 1.1$
$\sigma_8$	$0.810^{+0.018}_{-0.015}$	$H(0.15)$	$73.3 \pm 1.4$	$\chi_{\text{CMB}}^2$	$7484.6 \pm 5.6$
$S_8$	$0.821 \pm 0.018$	$D_{\text{M}}(0.15)$	$637 \pm 13$		

$$\bar{\chi}_{\text{eff}}^2 = 8533.27; R - 1 = 0.00802$$



## 9.24 base\_nnu\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022242	$0.02230 \pm 0.00019$ (+0.2 $\sigma$ )	$\sigma_8$	0.8138	$0.806^{+0.016}_{-0.013}$ (−0.2 $\sigma$ )	$H(0.15)$	72.47	$72.7 \pm 1.3$ (−0.3 $\sigma$ )
$\Omega_c h^2$	0.11694	$0.1181 \pm 0.0034$ (−0.4 $\sigma$ )	$S_8$	0.8240	$0.819 \pm 0.015$ (−0.1 $\sigma$ )	$D_M(0.15)$	644.7	$643 \pm 12$ (+0.3 $\sigma$ )
$100\theta_{MC}$	1.041220	$1.04106 \pm 0.00048$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4513	$0.4487 \pm 0.0082$ (−0.1 $\sigma$ )	$H(0.38)$	82.42	$82.7 \pm 1.4$ (−0.3 $\sigma$ )
$\tau$	0.0531	$0.0532 \pm 0.0079$ (−0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6060	$0.601^{+0.011}_{-0.0096}$ (−0.1 $\sigma$ )	$D_M(0.38)$	1538.6	$1534 \pm 27$ (+0.3 $\sigma$ )
$\Sigma m_\nu$ [eV]	0.0023	$< 0.0731$ (−0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9922	$0.981^{+0.017}_{-0.012}$ (−0.0 $\sigma$ )	$H(0.51)$	89.04	$89.4 \pm 1.4$ (−0.3 $\sigma$ )
$N_{\text{eff}}$	2.904	$2.99 \pm 0.21$ (−0.4 $\sigma$ )	$r_{\text{drag}} h$	100.10	$99.77 \pm 0.96$ (−0.1 $\sigma$ )	$D_M(0.51)$	1993.7	$1988 \pm 35$ (+0.3 $\sigma$ )
$\ln(10^{10} A_s)$	3.0327	$3.036 \pm 0.019$ (−0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4388	$2.426 \pm 0.028$ (+0.1 $\sigma$ )	$H(0.61)$	94.58	$95.0 \pm 1.4$ (−0.3 $\sigma$ )
$n_s$	0.9633	$0.9655 \pm 0.0079$ (−0.3 $\sigma$ )	$z_{\text{re}}$	7.51	$7.53 \pm 0.81$ (−0.1 $\sigma$ )	$D_M(0.61)$	2320.4	$2313 \pm 40$ (+0.3 $\sigma$ )
$y_{\text{cal}}$	1.00041	$1.0005 \pm 0.0025$ (+0.0 $\sigma$ )	$10^9 A_s$	2.0753	$2.082 \pm 0.039$ (−0.2 $\sigma$ )	$H(2.33)$	233.63	$235.1 \pm 3.1$ (−0.3 $\sigma$ )
$A_{100}^{\text{PS}}$	226.8	$238 \pm 25$ (−0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8662	$1.872 \pm 0.020$ (−0.3 $\sigma$ )	$D_M(2.33)$	5810	$5784 \pm 86$ (+0.3 $\sigma$ )
$A_{143}^{\text{PS}}$	47.3	$38 \pm 9$ (−0.3 $\sigma$ )	$D_{40}$	1227.0	$1226 \pm 14$ (+0.3 $\sigma$ )	$f\sigma_8(0.15)$	0.4555	$0.4534 \pm 0.0078$ (−0.1 $\sigma$ )
$A_{217}^{\text{PS}}$	105.8	$102 \pm 10$ (+0.1 $\sigma$ )	$D_{220}$	5716.1	$5721 \pm 39$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7522	$0.745^{+0.015}_{-0.013}$ (−0.2 $\sigma$ )
$A_{217}^{\text{CIB}}$	40.9	$39 \pm 7$ (−0.2 $\sigma$ )	$D_{810}$	2533.4	$2534 \pm 14$ (+0.0 $\sigma$ )	$f\sigma_8(0.38)$	0.4746	$0.4719 \pm 0.0078$ (−0.2 $\sigma$ )
$A_{143}^{\text{tSZ}}$	6.33	$3.9^{+1.9}_{-2.5}$ (+0.1 $\sigma$ )	$D_{1420}$	817.5	$816.4 \pm 5.0$ (+0.3 $\sigma$ )	$\sigma_8(0.38)$	0.6670	$0.660^{+0.013}_{-0.012}$ (−0.2 $\sigma$ )
$r_{143 \times 217}^{\text{PS}}$	0.725	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$D_{2000}$	231.58	$230.7 \pm 2.1$ (+0.5 $\sigma$ )	$f\sigma_8(0.51)$	0.4736	$0.4706 \pm 0.0078$ (−0.2 $\sigma$ )
$r_{143 \times 217}^{\text{CIB}}$	0.849	$0.56^{+0.39}_{-0.19}$ (−0.1 $\sigma$ )	$n_{s,0.002}$	0.9633	$0.9655 \pm 0.0079$ (−0.3 $\sigma$ )	$\sigma_8(0.51)$	0.6243	$0.618^{+0.013}_{-0.011}$ (−0.2 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.76	—	$Y_P$	0.24342	$0.2446 \pm 0.0029$ (−0.4 $\sigma$ )	$f\sigma_8(0.61)$	0.4689	$0.4658 \pm 0.0078$ (−0.2 $\sigma$ )
$A^{\text{kSZ}}$	0.15	$4.6^{+1.7}_{-4.4}$ (−0.1 $\sigma$ )	$Y_P^{\text{BBN}}$	0.24474	$0.2459 \pm 0.0029$ (−0.4 $\sigma$ )	$\sigma_8(0.61)$	0.5941	$0.588^{+0.012}_{-0.011}$ (−0.2 $\sigma$ )
$A_{100}^{\text{dust}}$	1.019	$1.01 \pm 0.20$ (−0.0 $\sigma$ )	$10^5 \text{D/H}$	2.560	$2.581 \pm 0.057$ (−0.6 $\sigma$ )	$f\sigma_8(2.33)$	0.2987	$0.2965 \pm 0.0056$ (−0.2 $\sigma$ )
$A_{143}^{\text{dust}}$	0.984	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	Age/Gyr	13.910	$13.85 \pm 0.21$ (+0.3 $\sigma$ )	$\sigma_8(2.33)$	0.3086	$0.3057 \pm 0.0061$ (−0.2 $\sigma$ )
$A_{217}^{\text{dust}}$	0.988	$0.98 \pm 0.10$ (+0.1 $\sigma$ )	$z_*$	1089.669	$1089.79 \pm 0.41$ (−0.6 $\sigma$ )	$f_{2000}^{143}$	28.53	$29 \pm 3$ (−0.4 $\sigma$ )
$A_{143 \times 217}^{\text{dust}}$	1.012	$1.02 \pm 0.16$ (−0.0 $\sigma$ )	$r_*$	146.06	$145.3 \pm 2.0$ (+0.3 $\sigma$ )	$f_{2000}^{217}$	105.56	$106.5 \pm 2.3$ (−0.4 $\sigma$ )
$c_{100}$	0.99774	$0.9975 \pm 0.0011$ (+0.0 $\sigma$ )	$100\theta_*$	1.04148	$1.04129 \pm 0.00060$ (+0.2 $\sigma$ )	$f_{2000}^{143 \times 217}$	30.91	$31.7 \pm 2.4$ (−0.5 $\sigma$ )
$c_{217}$	1.00116	$1.0011 \pm 0.0016$ (−0.1 $\sigma$ )	$D_M(z_*)/\text{Gpc}$	14.024	$13.95 \pm 0.19$ (+0.3 $\sigma$ )	$\chi_{\text{small}}^2$	395.84	$396.9 \pm 1.7$ (−0.1 $\sigma$ )
$c_{TE}$	0.9957	$0.9965 \pm 0.0051$	$z_{\text{drag}}$	1059.28	$1059.59 \pm 0.76$ (−0.1 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.33	$23.1 \pm 1.2$ (+0.3 $\sigma$ )
$c_{EE}$	0.9908	$0.9918 \pm 0.0055$	$r_{\text{drag}}$	148.79	$148.0 \pm 2.1$ (+0.3 $\sigma$ )	$\chi_{\text{CamSpec}}^2$	11498.5	$11515.1 \pm 6.0$ (+761.3 $\sigma$ )
$H_0$	67.27	$67.4 \pm 1.3$ (−0.3 $\sigma$ )	$k_D$	0.13954	$0.1401 \pm 0.0015$ (−0.2 $\sigma$ )	$\chi_{6\text{DF}}^2$	0.0063	$0.059 \pm 0.078$ (−0.0 $\sigma$ )
$\Omega_\Lambda$	0.6924	$0.6897 \pm 0.0077$ (−0.1 $\sigma$ )	$100\theta_D$	0.16054	$0.16073 \pm 0.00050$ (−0.6 $\sigma$ )	$\chi_{\text{MGS}}^2$	1.47	$1.36 \pm 0.53$ (−0.1 $\sigma$ )
$\Omega_m$	0.3076	$0.3103 \pm 0.0077$ (+0.1 $\sigma$ )	$z_{\text{eq}}$	3390.8	$3380 \pm 29$ (+0.3 $\sigma$ )	$\chi_{\text{DR12BAO}}^2$	3.77	$4.8 \pm 1.6$ (+0.0 $\sigma$ )
$\Omega_m h^2$	0.13921	$0.1411 \pm 0.0036$ (−0.3 $\sigma$ )	$k_{\text{eq}}$	0.010249	$0.01028 \pm 0.00013$ (−0.2 $\sigma$ )	$\chi_{\text{prior}}^2$	1.99	$7.8 \pm 3.4$ (+0.0 $\sigma$ )
$\Omega_\nu h^2$	0.000024	$< 0.000766$ (−0.1 $\sigma$ )	$100\theta_{\text{eq}}$	0.8151	$0.8171 \pm 0.0054$ (−0.2 $\sigma$ )	$\chi_{\text{BAO}}^2$	5.25	$6.2 \pm 1.3$ (−0.0 $\sigma$ )
$\Omega_m h^3$	0.09365	$0.0952 \pm 0.0040$ (−0.3 $\sigma$ )	$100\theta_{s,\text{eq}}$	0.45039	$0.4514 \pm 0.0028$ (−0.3 $\sigma$ )	$\chi_{\text{CMB}}^2$	11917.7	$11935.2 \pm 6.0$ (+778.7 $\sigma$ )

Best-fit  $\chi_{\text{eff}}^2 = 11924.95$ ;  $\Delta\chi_{\text{eff}}^2 = 4448.26$ ;  $\bar{\chi}_{\text{eff}}^2 = 11949.25$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4450.61$ ;  $R - 1 = 0.00978$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.01 ( $\Delta$  0.00) MGS: 1.47 ( $\Delta$  -0.07) DR12BAO: 3.77 ( $\Delta$  0.10) CMB - simall-100x143.offlike5\_EE\_Aplanck.B: 395.84 ( $\Delta$  0.03) commander\_dx12.v3.2.29: 23.33 ( $\Delta$  0.23) CamSpec like\_10.7HM.1400.unified: 11498.54



**9.25 base\_nnu\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Pantheon18**

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022281	$0.02232 \pm 0.00019$ (+0.2 $\sigma$ )	$S_8$	0.8234	$0.818 \pm 0.015$ (−0.1 $\sigma$ )	$H(0.38)$	82.67	$82.9 \pm 1.3$ (−0.3 $\sigma$ )
$\Omega_{\text{c}}h^2$	0.11745	$0.1183 \pm 0.0034$ (−0.3 $\sigma$ )	$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4510	$0.4483 \pm 0.0081$ (−0.1 $\sigma$ )	$D_{\text{M}}(0.38)$	1533.4	$1531 \pm 27$ (+0.3 $\sigma$ )
$100\theta_{\text{MC}}$	1.041163	$1.04105 \pm 0.00048$ (+0.1 $\sigma$ )	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6061	$0.601^{+0.011}_{-0.0096}$ (−0.1 $\sigma$ )	$H(0.51)$	89.30	$89.6 \pm 1.4$ (−0.3 $\sigma$ )
$\tau$	0.0525	$0.0534^{+0.0072}_{-0.0081}$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9914	$0.981^{+0.016}_{-0.012}$ (−0.0 $\sigma$ )	$D_{\text{M}}(0.51)$	1987.2	$1984 \pm 34$ (+0.3 $\sigma$ )
$\Sigma m_{\nu}$ [eV]	0.0004	$< 0.0699$ (−0.1 $\sigma$ )	$r_{\text{drag}}h$	100.22	$99.93 \pm 0.90$ (−0.1 $\sigma$ )	$H(0.61)$	94.84	$95.1 \pm 1.4$ (−0.3 $\sigma$ )
$N_{\text{eff}}$	2.938	$3.01 \pm 0.21$ (−0.4 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4364	$2.424 \pm 0.028$ (+0.1 $\sigma$ )	$D_{\text{M}}(0.61)$	2313.0	$2309 \pm 39$ (+0.3 $\sigma$ )
$\ln(10^{10}A_{\text{s}})$	3.0329	$3.037 \pm 0.019$ (−0.2 $\sigma$ )	$z_{\text{re}}$	7.45	$7.55 \pm 0.81$ (−0.1 $\sigma$ )	$H(2.33)$	234.11	$235.2 \pm 3.1$ (−0.3 $\sigma$ )
$n_{\text{s}}$	0.9640	$0.9663 \pm 0.0077$ (−0.3 $\sigma$ )	$10^9 A_{\text{s}}$	2.0756	$2.084 \pm 0.039$ (−0.2 $\sigma$ )	$D_{\text{M}}(2.33)$	5794	$5776 \pm 85$ (+0.3 $\sigma$ )
$y_{\text{cal}}$	1.00039	$1.0006 \pm 0.0025$ (+0.0 $\sigma$ )	$10^9 A_{\text{s}}e^{-2\tau}$	1.8689	$1.872 \pm 0.020$ (−0.3 $\sigma$ )	$f\sigma_8(0.15)$	0.4552	$0.4530 \pm 0.0078$ (−0.1 $\sigma$ )
$A_{100}^{\text{PS}}$	229.2	$239 \pm 25$ (−0.2 $\sigma$ )	$D_{40}$	1226.8	$1225 \pm 14$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7531	$0.746^{+0.014}_{-0.013}$ (−0.2 $\sigma$ )
$A_{143}^{\text{PS}}$	43.1	$39 \pm 9$ (−0.3 $\sigma$ )	$D_{220}$	5720.4	$5722 \pm 39$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4746	$0.4719 \pm 0.0078$ (−0.1 $\sigma$ )
$A_{217}^{\text{PS}}$	104.4	$102 \pm 10$ (+0.1 $\sigma$ )	$D_{810}$	2533.7	$2534 \pm 14$ (+0.0 $\sigma$ )	$\sigma_8(0.38)$	0.6679	$0.661^{+0.013}_{-0.011}$ (−0.2 $\sigma$ )
$A_{217}^{\text{CIB}}$	42.2	$40 \pm 7$ (−0.2 $\sigma$ )	$D_{1420}$	817.1	$816.3 \pm 5.0$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.4737	$0.4708 \pm 0.0077$ (−0.2 $\sigma$ )
$A_{143}^{\text{tSZ}}$	6.53	$3.9^{+1.9}_{-2.5}$ (+0.1 $\sigma$ )	$D_{2000}$	231.29	$230.7 \pm 2.1$ (+0.4 $\sigma$ )	$\sigma_8(0.51)$	0.6251	$0.619^{+0.012}_{-0.011}$ (−0.2 $\sigma$ )
$r_{143 \times 217}^{\text{PS}}$	0.675	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$n_{\text{s},0.002}$	0.9640	$0.9663 \pm 0.0077$ (−0.3 $\sigma$ )	$f\sigma_8(0.61)$	0.4691	$0.4660 \pm 0.0077$ (−0.2 $\sigma$ )
$r_{143 \times 217}^{\text{CIB}}$	0.804	$0.56^{+0.39}_{-0.18}$ (−0.1 $\sigma$ )	$Y_{\text{P}}$	0.24391	$0.2448 \pm 0.0028$ (−0.4 $\sigma$ )	$\sigma_8(0.61)$	0.5949	$0.589^{+0.012}_{-0.010}$ (−0.2 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.45	—	$Y_{\text{P}}^{\text{BBN}}$	0.24523	$0.2461 \pm 0.0029$ (−0.4 $\sigma$ )	$f\sigma_8(2.33)$	0.2992	$0.2970 \pm 0.0054$ (−0.2 $\sigma$ )
$A^{\text{kSZ}}$	0.00	$4.6^{+1.9}_{-4.3}$ (−0.1 $\sigma$ )	$10^5 \text{D}/\text{H}$	2.565	$2.583 \pm 0.057$ (−0.6 $\sigma$ )	$\sigma_8(2.33)$	0.3091	$0.3063 \pm 0.0060$ (−0.2 $\sigma$ )
$A_{100}^{\text{dust}}$	1.009	$1.01 \pm 0.20$ (−0.0 $\sigma$ )	Age/Gyr	13.873	$13.83 \pm 0.20$ (+0.3 $\sigma$ )	$f_{2000}^{143}$	28.79	$29 \pm 3$ (−0.4 $\sigma$ )
$A_{143}^{\text{dust}}$	0.974	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	$z_*$	1089.696	$1089.79 \pm 0.41$ (−0.6 $\sigma$ )	$f_{2000}^{217}$	105.86	$106.6 \pm 2.3$ (−0.4 $\sigma$ )
$A_{217}^{\text{dust}}$	0.980	$0.98 \pm 0.10$ (+0.1 $\sigma$ )	$r_*$	145.72	$145.2 \pm 2.0$ (+0.3 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.17	$31.8 \pm 2.5$ (−0.5 $\sigma$ )
$A_{143 \times 217}^{\text{dust}}$	1.011	$1.03 \pm 0.16$ (−0.0 $\sigma$ )	$100\theta_*$	1.04140	$1.04127 \pm 0.00059$ (+0.2 $\sigma$ )	$\chi_{\text{small}}^2$	395.79	$397.0 \pm 1.8$ (−0.0 $\sigma$ )
$c_{100}$	0.99775	$0.9975 \pm 0.0011$ (+0.0 $\sigma$ )	$D_{\text{M}}(z_*)/\text{Gpc}$	13.993	$13.94 \pm 0.19$ (+0.3 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.28	$23.0 \pm 1.1$ (+0.3 $\sigma$ )
$c_{217}$	1.00120	$1.0011 \pm 0.0016$ (−0.1 $\sigma$ )	$z_{\text{drag}}$	1059.44	$1059.65 \pm 0.75$ (−0.1 $\sigma$ )	$\chi_{\text{CamSpec}}^2$	11498.6	$11515.2 \pm 6.0$ (+764.5 $\sigma$ )
$c_{TE}$	0.9957	$0.9966 \pm 0.0051$	$r_{\text{drag}}$	148.43	$147.9 \pm 2.1$ (+0.3 $\sigma$ )	$\chi_{\text{JLA}}^2$	1034.853	$1035.05 \pm 0.34$ (+0.1 $\sigma$ )
$c_{EE}$	0.9909	$0.9920 \pm 0.0055$	$k_{\text{D}}$	0.13981	$0.1402 \pm 0.0015$ (−0.2 $\sigma$ )	$\chi_{6\text{DF}}^2$	0.0030	$0.047 \pm 0.064$ (−0.0 $\sigma$ )
$H_0$	67.52	$67.6 \pm 1.3$ (−0.3 $\sigma$ )	$100\theta_{\text{D}}$	0.16059	$0.16076 \pm 0.00050$ (−0.6 $\sigma$ )	$\chi_{\text{MGS}}^2$	1.54	$1.44 \pm 0.51$ (−0.2 $\sigma$ )
$\Omega_{\Lambda}$	0.6935	$0.6910 \pm 0.0073$ (−0.1 $\sigma$ )	$z_{\text{eq}}$	3388.0	$3377 \pm 28$ (+0.3 $\sigma$ )	$\chi_{\text{DR12BAO}}^2$	3.67	$4.5 \pm 1.4$ (+0.0 $\sigma$ )
$\Omega_{\text{m}}$	0.3065	$0.3090 \pm 0.0073$ (+0.1 $\sigma$ )	$k_{\text{eq}}$	0.010265	$0.01028 \pm 0.00013$ (−0.2 $\sigma$ )	$\chi_{\text{prior}}^2$	2.03	$7.9 \pm 3.5$ (+0.0 $\sigma$ )
$\Omega_{\text{m}}h^2$	0.13973	$0.1412 \pm 0.0036$ (−0.3 $\sigma$ )	$100\theta_{\text{eq}}$	0.8156	$0.8178 \pm 0.0052$ (−0.3 $\sigma$ )	$\chi_{\text{BAO}}^2$	5.21	$6.0 \pm 1.1$ (−0.0 $\sigma$ )
$\Omega_{\nu}h^2$	$0.4 \cdot 10^{-5}$	$< 0.000732$ (−0.1 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.45067	$0.4518 \pm 0.0027$ (−0.3 $\sigma$ )	$\chi_{\text{CMB}}^2$	11917.7	$11935.2 \pm 6.0$ (+778.3 $\sigma$ )
$\Omega_{\text{m}}h^3$	0.09434	$0.0955^{+0.0038}_{-0.0042}$ (−0.3 $\sigma$ )	$H(0.15)$	72.71	$72.8 \pm 1.3$ (−0.3 $\sigma$ )			
$\sigma_8$	0.8146	$0.807^{+0.015}_{-0.013}$ (−0.2 $\sigma$ )	$D_{\text{M}}(0.15)$	642.5	$642 \pm 12$ (+0.3 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 12959.81$ ;  $\Delta\chi_{\text{eff}}^2 = 4448.37$ ;  $\bar{\chi}_{\text{eff}}^2 = 12984.10$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4450.57$ ;  $R - 1 = 0.01027$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 ( $\Delta$  0.00) MGS: 1.54 ( $\Delta$  -0.14) DR12BAO: 3.67 ( $\Delta$  0.16) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.79 ( $\Delta$  -0.08) commander\_dx12\_v3\_2\_29: 23.28 ( $\Delta$  0.52) CamSpec like\_10.7HM.1400\_unified: 11498.65 SN - JLA Pantheon18: 1034.85 ( $\Delta$  0.05)



## 9.26 base\_nnu\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022260	$0.02228 \pm 0.00018$ (+0.4 $\sigma$ )	$S_8$	0.8258	$0.819 \pm 0.015$ (−0.1 $\sigma$ )	$H(0.38)$	82.46	$82.6 \pm 1.1$ (−0.2 $\sigma$ )
$\Omega_c h^2$	0.11727	$0.1177 \pm 0.0028$ (−0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4523	$0.4484 \pm 0.0081$ (−0.1 $\sigma$ )	$D_M(0.38)$	1538.1	$1537 \pm 23$ (+0.2 $\sigma$ )
$100\theta_{MC}$	1.041159	$1.04111 \pm 0.00043$ (+0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6070	$0.601^{+0.011}_{-0.0091}$ (−0.1 $\sigma$ )	$H(0.51)$	89.09	$89.2 \pm 1.2$ (−0.2 $\sigma$ )
$\tau$	0.0529	$0.0532 \pm 0.0079$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9931	$0.981^{+0.017}_{-0.012}$ (−0.0 $\sigma$ )	$D_M(0.51)$	1993.0	$1991 \pm 29$ (+0.2 $\sigma$ )
$\Sigma m_\nu$ [eV]	0.0025	$< 0.0715$ (−0.1 $\sigma$ )	$r_{drag} h$	99.99	$99.73 \pm 0.93$ (−0.1 $\sigma$ )	$H(0.61)$	94.64	$94.8 \pm 1.2$ (−0.2 $\sigma$ )
$N_{eff}$	2.915	$2.97 \pm 0.17$ (−0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4417	$2.427 \pm 0.028$ (+0.1 $\sigma$ )	$D_M(0.61)$	2319.6	$2317 \pm 33$ (+0.2 $\sigma$ )
$\ln(10^{10} A_s)$	3.0333	$3.035 \pm 0.018$ (−0.1 $\sigma$ )	$z_{re}$	7.49	$7.52 \pm 0.80$ (−0.1 $\sigma$ )	$H(2.33)$	233.90	$234.7 \pm 2.5$ (−0.2 $\sigma$ )
$n_s$	0.9630	$0.9647 \pm 0.0068$ (−0.2 $\sigma$ )	$10^9 A_s$	2.0767	$2.080 \pm 0.037$ (−0.1 $\sigma$ )	$D_M(2.33)$	5806	$5794 \pm 70$ (+0.2 $\sigma$ )
$y_{cal}$	1.00043	$1.0006 \pm 0.0025$ (+0.0 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8682	$1.870 \pm 0.017$ (−0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4564	$0.4531 \pm 0.0077$ (−0.1 $\sigma$ )
$A_{100}^{PS}$	227.9	$238 \pm 25$ (−0.1 $\sigma$ )	$D_{40}$	1228.6	$1226 \pm 14$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7529	$0.744^{+0.014}_{-0.011}$ (−0.1 $\sigma$ )
$A_{143}^{PS}$	44.6	$38 \pm 8$ (−0.2 $\sigma$ )	$D_{220}$	5720.0	$5721 \pm 39$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4754	$0.4715^{+0.0079}_{-0.0071}$ (−0.1 $\sigma$ )
$A_{217}^{PS}$	104.8	$102 \pm 10$ (+0.1 $\sigma$ )	$D_{810}$	2534.0	$2533 \pm 14$ (+0.0 $\sigma$ )	$\sigma_8(0.38)$	0.6675	$0.659^{+0.013}_{-0.010}$ (−0.1 $\sigma$ )
$A_{217}^{CIB}$	41.7	$39 \pm 7$ (−0.2 $\sigma$ )	$D_{1420}$	817.39	$816.6 \pm 5.0$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.4743	$0.4702^{+0.0078}_{-0.0068}$ (−0.1 $\sigma$ )
$A_{143}^{tSZ}$	6.48	$3.9^{+1.9}_{-2.5}$ (+0.1 $\sigma$ )	$D_{2000}$	231.51	$230.9 \pm 1.9$ (+0.4 $\sigma$ )	$\sigma_8(0.51)$	0.6248	$0.617^{+0.012}_{-0.0097}$ (−0.1 $\sigma$ )
$r_{143 \times 217}^{PS}$	0.700	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$n_{s,0.002}$	0.9630	$0.9647 \pm 0.0068$ (−0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.4695	$0.4654^{+0.0077}_{-0.0067}$ (−0.1 $\sigma$ )
$r_{143 \times 217}^{CIB}$	0.821	$0.55^{+0.39}_{-0.19}$ (−0.1 $\sigma$ )	$Y_P$	0.24358	$0.2443 \pm 0.0023$ (−0.3 $\sigma$ )	$\sigma_8(0.61)$	0.5945	$0.587^{+0.011}_{-0.0093}$ (−0.1 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.59	—	$Y_P^{BBN}$	0.24490	$0.2456 \pm 0.0023$ (−0.3 $\sigma$ )	$f\sigma_8(2.33)$	0.29892	$0.2961^{+0.0052}_{-0.0047}$ (−0.1 $\sigma$ )
$A^{kSZ}$	0.01	$4.5^{+1.6}_{-4.4}$ (−0.1 $\sigma$ )	$10^5 D/H$	2.5607	$2.575 \pm 0.049$ (−0.6 $\sigma$ )	$\sigma_8(2.33)$	0.3087	$0.3053^{+0.0059}_{-0.0051}$ (−0.1 $\sigma$ )
$A_{100}^{dust}$	1.007	$1.01 \pm 0.20$ (−0.0 $\sigma$ )	Age/Gyr	13.899	$13.87 \pm 0.17$ (+0.2 $\sigma$ )	$f_{2000}^{143}$	28.46	$29.0 \pm 3.2$ (−0.4 $\sigma$ )
$A_{143}^{dust}$	0.973	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	$z_*$	1089.684	$1089.75 \pm 0.37$ (−0.5 $\sigma$ )	$f_{2000}^{217}$	105.58	$106.4 \pm 2.2$ (−0.4 $\sigma$ )
$A_{217}^{dust}$	0.981	$0.98 \pm 0.10$ (+0.1 $\sigma$ )	$r_*$	145.90	$145.5 \pm 1.7$ (+0.2 $\sigma$ )	$f_{2000}^{143 \times 217}$	30.92	$31.5 \pm 2.3$ (−0.4 $\sigma$ )
$A_{143 \times 217}^{dust}$	1.006	$1.02 \pm 0.16$ (−0.0 $\sigma$ )	$100\theta_*$	1.04141	$1.04135 \pm 0.00052$ (+0.1 $\sigma$ )	$\chi_{small}^2$	395.83	$396.9 \pm 1.7$ (−0.0 $\sigma$ )
$c_{100}$	0.99779	$0.9975 \pm 0.0011$ (+0.0 $\sigma$ )	$D_M(z_*)/\text{Gpc}$	14.010	$13.97 \pm 0.15$ (+0.2 $\sigma$ )	$\chi_{lowl}^2$	23.45	$23.2 \pm 1.1$ (+0.2 $\sigma$ )
$c_{217}$	1.00120	$1.0011 \pm 0.0016$ (−0.1 $\sigma$ )	$z_{drag}$	1059.36	$1059.50 \pm 0.64$ (+0.1 $\sigma$ )	$\chi_{CamSpec}^2$	11498.3	$11514.7 \pm 5.9$ (+780.2 $\sigma$ )
$c_{TE}$	0.9955	$0.9963 \pm 0.0050$	$r_{drag}$	148.62	$148.2 \pm 1.7$ (+0.2 $\sigma$ )	$\chi_{Aver15}^2$	0.000	$0.37 \pm 0.52$ (−0.2 $\sigma$ )
$c_{EE}$	0.9906	$0.9915 \pm 0.0053$	$k_D$	0.13968	$0.1399 \pm 0.0012$ (−0.1 $\sigma$ )	$\chi_{6DF}^2$	0.0102	$0.060 \pm 0.077$ (−0.0 $\sigma$ )
$H_0$	67.28	$67.3 \pm 1.1$ (−0.2 $\sigma$ )	$100\theta_D$	0.160534	$0.16068 \pm 0.00043$ (−0.6 $\sigma$ )	$\chi_{MGS}^2$	1.41	$1.33 \pm 0.51$ (−0.1 $\sigma$ )
$\Omega_\Lambda$	0.6917	$0.6894 \pm 0.0075$ (−0.1 $\sigma$ )	$z_{eq}$	3394.3	$3382 \pm 27$ (+0.2 $\sigma$ )	$\chi_{DR12BAO}^2$	3.90	$4.8 \pm 1.6$ (+0.0 $\sigma$ )
$\Omega_m$	0.3083	$0.3106 \pm 0.0075$ (+0.1 $\sigma$ )	$k_{eq}$	0.010268	$0.01027 \pm 0.00011$ (−0.1 $\sigma$ )	$\chi_{prior}^2$	2.00	$7.8 \pm 3.4$ (+0.1 $\sigma$ )
$\Omega_m h^2$	0.13956	$0.1406 \pm 0.0030$ (−0.2 $\sigma$ )	$100\theta_{eq}$	0.8144	$0.8168 \pm 0.0052$ (−0.2 $\sigma$ )	$\chi_{BAO}^2$	5.31	$6.2 \pm 1.3$ (−0.0 $\sigma$ )
$\Omega_\nu h^2$	0.000026	$< 0.000747$ (−0.1 $\sigma$ )	$100\theta_{s,eq}$	0.45006	$0.4513 \pm 0.0026$ (−0.2 $\sigma$ )	$\chi_{CMB}^2$	11917.6	$11934.8 \pm 5.9$ (+794.3 $\sigma$ )
$\Omega_m h^3$	0.09389	$0.0947 \pm 0.0033$ (−0.2 $\sigma$ )	$H(0.15)$	72.48	$72.5 \pm 1.1$ (−0.2 $\sigma$ )			
$\sigma_8$	0.8146	$0.805^{+0.015}_{-0.012}$ (−0.1 $\sigma$ )	$D_M(0.15)$	644.6	$644 \pm 10$ (+0.2 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 11924.93$ ;  $\Delta\chi_{eff}^2 = 4448.25$ ;  $\bar{\chi}_{eff}^2 = 11949.22$ ;  $\Delta\bar{\chi}_{eff}^2 = 4450.42$ ;  $R - 1 = 0.01005$   
 $\chi_{eff}^2$ : Abund - Yp\_Aver2015: 0.00 ( $\Delta$  -0.05) BAO - 6DF: 0.01 ( $\Delta$  0.00) MGS: 1.41 ( $\Delta$  -0.07) DR12BAO: 3.90 ( $\Delta$  0.14) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.83 ( $\Delta$  -0.04) commander\_dx12\_v3.2\_29: 23.45 ( $\Delta$  0.17) CamSpec like\_10.7HM\_1400\_unified: 11498.32



9.27 base\_nnu\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Cooke17\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022251	$0.02228 \pm 0.00018$ (+0.4 $\sigma$ )	$S_8$	0.8282	$0.820 \pm 0.015$ (−0.0 $\sigma$ )	$H(0.38)$	82.70	$82.7 \pm 1.1$ (−0.1 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11809	$0.1182 \pm 0.0026$ (−0.2 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4536	$0.4490 \pm 0.0081$ (−0.0 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1533.6	$1535 \pm 22$ (+0.1 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.041077	$1.04105 \pm 0.00040$ (−0.0 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6088	$0.601^{+0.011}_{-0.0089}$ (−0.0 $\sigma$ )	$H(0.51)$	89.35	$89.4 \pm 1.1$ (−0.1 $\sigma$ )
$\tau$	0.0531	$0.0531 \pm 0.0078$ (−0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9946	$0.981^{+0.017}_{-0.012}$ (−0.0 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1987.1	$1988 \pm 28$ (+0.1 $\sigma$ )
$\Sigma m_{\nu}$ [eV]	0.0034	< 0.0723 (−0.1 $\sigma$ )	$r_{\mathrm{drag}}h$	99.99	$99.74 \pm 0.93$ (−0.1 $\sigma$ )	$H(0.61)$	94.92	$95.0 \pm 1.1$ (−0.1 $\sigma$ )
$N_{\mathrm{eff}}$	2.959	$2.99 \pm 0.16$ (−0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4422	$2.427 \pm 0.028$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2312.7	$2313 \pm 31$ (+0.1 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0355	$3.036 \pm 0.018$ (−0.1 $\sigma$ )	$z_{\mathrm{re}}$	7.53	$7.52 \pm 0.80$ (−0.1 $\sigma$ )	$H(2.33)$	234.58	$235.1 \pm 2.3$ (−0.1 $\sigma$ )
$n_{\mathrm{s}}$	0.9642	$0.9654 \pm 0.0066$ (−0.2 $\sigma$ )	$10^9 A_{\mathrm{s}}$	2.0810	$2.082 \pm 0.037$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5789	$5784 \pm 66$ (+0.1 $\sigma$ )
$y_{\mathrm{cal}}$	1.00034	$1.0005 \pm 0.0025$ (+0.0 $\sigma$ )	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8715	$1.872 \pm 0.016$ (−0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4578	$0.4536 \pm 0.0077$ (−0.0 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	229.6	$239 \pm 25$ (−0.1 $\sigma$ )	$D_{40}$	1226.9	$1226 \pm 14$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7552	$0.745^{+0.014}_{-0.011}$ (−0.1 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	44.4	$39 \pm 8$ (−0.2 $\sigma$ )	$D_{220}$	5714.7	$5720 \pm 39$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4768	$0.4721^{+0.0078}_{-0.0069}$ (−0.1 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	103.9	$102 \pm 10$ (+0.1 $\sigma$ )	$D_{810}$	2533.7	$2534 \pm 14$ (+0.1 $\sigma$ )	$\sigma_8(0.38)$	0.6695	$0.660^{+0.013}_{-0.0099}$ (−0.1 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	42.7	$39 \pm 7$ (−0.2 $\sigma$ )	$D_{1420}$	816.54	$816.2 \pm 4.9$ (+0.2 $\sigma$ )	$f\sigma_8(0.51)$	0.4757	$0.4708^{+0.0077}_{-0.0067}$ (−0.1 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	6.51	$3.9^{+1.9}_{-2.5}$ (+0.1 $\sigma$ )	$D_{2000}$	231.02	$230.6 \pm 1.8$ (+0.3 $\sigma$ )	$\sigma_8(0.51)$	0.6266	$0.618^{+0.013}_{-0.0094}$ (−0.1 $\sigma$ )
$r_{143 \times 217}^{\mathrm{PS}}$	0.676	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.9642	$0.9654 \pm 0.0066$ (−0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.4709	$0.4660^{+0.0076}_{-0.0065}$ (−0.1 $\sigma$ )
$r_{143 \times 217}^{\mathrm{CIB}}$	0.833	$0.56^{+0.39}_{-0.18}$ (−0.1 $\sigma$ )	$Y_{\mathrm{P}}$	0.24418	$0.2446 \pm 0.0022$ (−0.2 $\sigma$ )	$\sigma_8(0.61)$	0.5963	$0.588^{+0.011}_{-0.0090}$ (−0.1 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.49	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24550	$0.2459 \pm 0.0022$ (−0.2 $\sigma$ )	$f\sigma_8(2.33)$	0.29983	$0.2965^{+0.0052}_{-0.0045}$ (−0.1 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.00	$4.6^{+2.0}_{-4.1}$ (−0.1 $\sigma$ )	$10^5 \mathrm{D}/\mathrm{H}$	2.5780	$2.584 \pm 0.044$ (−0.5 $\sigma$ )	$\sigma_8(2.33)$	0.3097	$0.3057^{+0.0059}_{-0.0049}$ (−0.1 $\sigma$ )
$A_{100}^{\mathrm{dust}}$	1.008	$1.01 \pm 0.20$ (−0.0 $\sigma$ )	Age/Gyr	13.859	$13.85 \pm 0.16$ (+0.1 $\sigma$ )	$f_{2000}^{143}$	29.13	$29.3 \pm 3.1$ (−0.3 $\sigma$ )
$A_{143}^{\mathrm{dust}}$	0.974	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	$z_*$	1089.813	$1089.81 \pm 0.33$ (−0.5 $\sigma$ )	$f_{2000}^{217}$	106.06	$106.6 \pm 2.1$ (−0.3 $\sigma$ )
$A_{217}^{\mathrm{dust}}$	0.978	$0.98 \pm 0.10$ (+0.1 $\sigma$ )	$r_*$	145.46	$145.3 \pm 1.5$ (+0.1 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.41	$31.8 \pm 2.2$ (−0.4 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dust}}$	1.000	$1.03 \pm 0.16$ (−0.0 $\sigma$ )	$100\theta_*$	1.041302	$1.04128 \pm 0.00048$ (−0.0 $\sigma$ )	$\chi_{\mathrm{small}}^2$	395.85	$396.9 \pm 1.7$ (−0.0 $\sigma$ )
$c_{100}$	0.99775	$0.9975 \pm 0.0011$ (+0.0 $\sigma$ )	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.970	$13.95 \pm 0.14$ (+0.1 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	23.31	$23.1 \pm 1.1$ (+0.2 $\sigma$ )
$c_{217}$	1.00127	$1.0011 \pm 0.0016$ (−0.1 $\sigma$ )	$z_{\mathrm{drag}}$	1059.44	$1059.55 \pm 0.63$ (+0.2 $\sigma$ )	$\chi_{\mathrm{CamSpec}}^2$	11498.5	$11514.7 \pm 5.9$ (+788.8 $\sigma$ )
$c_{TE}$	0.9960	$0.9966 \pm 0.0050$	$r_{\mathrm{drag}}$	148.18	$148.0 \pm 1.6$ (+0.1 $\sigma$ )	$\chi_{\mathrm{Aver15}}^2$	0.023	$0.36 \pm 0.50$ (−0.2 $\sigma$ )
$c_{EE}$	0.9914	$0.9920 \pm 0.0052$	$k_{\mathrm{D}}$	0.13996	$0.1401 \pm 0.0012$ (−0.0 $\sigma$ )	$\chi_{\mathrm{Cooke17}}^2$	0.182	$0.35 \pm 0.45$ (+0.2 $\sigma$ )
$H_0$	67.48	$67.4 \pm 1.1$ (−0.1 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160679	$0.16075 \pm 0.00038$ (−0.5 $\sigma$ )	$\chi_{6\mathrm{DF}}^2$	0.0102	$0.059 \pm 0.077$ (−0.0 $\sigma$ )
$\Omega_{\Lambda}$	0.6917	$0.6895 \pm 0.0075$ (−0.0 $\sigma$ )	$z_{\mathrm{eq}}$	3393.0	$3381 \pm 27$ (+0.2 $\sigma$ )	$\chi_{\mathrm{MGS}}^2$	1.41	$1.33 \pm 0.51$ (−0.1 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3083	$0.3105 \pm 0.0075$ (+0.0 $\sigma$ )	$k_{\mathrm{eq}}$	0.010295	$0.01028 \pm 0.00011$ (−0.0 $\sigma$ )	$\chi_{\mathrm{DR12BAO}}^2$	3.90	$4.8 \pm 1.6$ (+0.0 $\sigma$ )
$\Omega_{\mathrm{m}}h^2$	0.14037	$0.1411 \pm 0.0028$ (−0.1 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8146	$0.8170 \pm 0.0052$ (−0.2 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	2.04	$7.8 \pm 3.4$ (+0.1 $\sigma$ )
$\Omega_{\nu}h^2$	0.000036	< 0.000760 (−0.1 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.45016	$0.4514 \pm 0.0026$ (−0.2 $\sigma$ )	$\chi_{\mathrm{BAO}}^2$	5.32	$6.2 \pm 1.3$ (−0.0 $\sigma$ )
$\Omega_{\mathrm{m}}h^3$	0.09472	$0.0951 \pm 0.0031$ (−0.1 $\sigma$ )	$H(0.15)$	72.70	$72.7 \pm 1.1$ (−0.1 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	11917.6	$11934.7 \pm 5.8$ (+803.3 $\sigma$ )
$\sigma_8$	0.8170	$0.806^{+0.015}_{-0.012}$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	642.7	$643.3 \pm 9.8$ (+0.1 $\sigma$ )	$\chi_{\mathrm{Abund}}^2$	0.205	$0.71 \pm 0.67$ (−0.1 $\sigma$ )

Best-fit  $\chi_{\mathrm{eff}}^2 = 11925.20$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 4448.43$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 11949.45$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.64$ ;  $R - 1 = 0.01051$   
 $\chi_{\mathrm{eff}}^2$ : Abund - Yp\_Aver2015: 0.02 ( $\Delta$  -0.03) D\_Cooke2017: 0.18 ( $\Delta$  0.15) BAO - 6DF: 0.01 ( $\Delta$  0.00) MGS: 1.41 ( $\Delta$  0.00) DR12BAO: 3.90 ( $\Delta$  0.02) CMB - simall\_100x143\_offlike5\_EE\_Aplan 395.85 ( $\Delta$  -0.02) commander\_dx12\_v3.2\_29: 23.31 ( $\Delta$  -0.04) CamSpec like\_10.7HM\_1400\_unified: 11498.48



**9.28 base\_nnu\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_Pantheon18\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02232 \pm 0.00019 \quad (+0.2\sigma)$	$S_8$	$0.819 \pm 0.015 \quad (-0.1\sigma)$	$H(0.38)$	$82.9 \pm 1.3 \quad (-0.3\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1183 \pm 0.0034 \quad (-0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4488 \pm 0.0080 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1531 \pm 27 \quad (+0.3\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04105 \pm 0.00048 \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.602^{+0.011}_{-0.0094} \quad (-0.1\sigma)$	$H(0.51)$	$89.6 \pm 1.4 \quad (-0.3\sigma)$
$\tau$	$0.0548^{+0.0047}_{-0.0085} \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.982^{+0.016}_{-0.012} \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1983 \pm 34 \quad (+0.3\sigma)$
$\Sigma m_{\nu} [\mathrm{eV}]$	$< 0.0705 \quad (-0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.95 \pm 0.91 \quad (-0.1\sigma)$	$H(0.61)$	$95.2 \pm 1.4 \quad (-0.3\sigma)$
$N_{\mathrm{eff}}$	$3.01 \pm 0.21 \quad (-0.4\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.427 \pm 0.027 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2308 \pm 39 \quad (+0.3\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.039^{+0.015}_{-0.019} \quad (-0.2\sigma)$	$z_{\mathrm{re}}$	$7.70^{+0.53}_{-0.85} \quad (-0.1\sigma)$	$H(2.33)$	$235.2 \pm 3.1 \quad (-0.3\sigma)$
$n_{\mathrm{s}}$	$0.9665 \pm 0.0077 \quad (-0.4\sigma)$	$10^9 A_{\mathrm{s}}$	$2.090^{+0.031}_{-0.039} \quad (-0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5775 \pm 85 \quad (+0.3\sigma)$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.872 \pm 0.020 \quad (-0.3\sigma)$	$f\sigma_8(0.15)$	$0.4535 \pm 0.0076 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$239 \pm 25 \quad (-0.2\sigma)$	$D_{40}$	$1224 \pm 14 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.747^{+0.014}_{-0.012} \quad (-0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$38 \pm 9 \quad (-0.3\sigma)$	$D_{220}$	$5722 \pm 39 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4724 \pm 0.0076 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2534 \pm 14 \quad (+0.0\sigma)$	$\sigma_8(0.38)$	$0.662^{+0.013}_{-0.011} \quad (-0.2\sigma)$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7 \quad (-0.2\sigma)$	$D_{1420}$	$816.3 \pm 5.0 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4713 \pm 0.0076 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5} \quad (+0.1\sigma)$	$D_{2000}$	$230.7 \pm 2.1 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.620^{+0.012}_{-0.011} \quad (-0.2\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9665 \pm 0.0077 \quad (-0.4\sigma)$	$f\sigma_8(0.61)$	$0.4666 \pm 0.0075 \quad (-0.2\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.39}_{-0.18} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.2449 \pm 0.0028 \quad (-0.4\sigma)$	$\sigma_8(0.61)$	$0.590^{+0.012}_{-0.010} \quad (-0.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2462 \pm 0.0029 \quad (-0.4\sigma)$	$f\sigma_8(2.33)$	$0.2974 \pm 0.0053 \quad (-0.2\sigma)$
$A^{\mathrm{kSZ}}$	$4.6^{+1.8}_{-4.3} \quad (-0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.583 \pm 0.057 \quad (-0.6\sigma)$	$\sigma_8(2.33)$	$0.3067 \pm 0.0059 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.83 \pm 0.20 \quad (+0.3\sigma)$	$f_{2000}^{143}$	$29 \pm 3 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$z_*$	$1089.79 \pm 0.42 \quad (-0.6\sigma)$	$f_{2000}^{217}$	$106.5 \pm 2.3 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$r_*$	$145.1 \pm 2.0 \quad (+0.3\sigma)$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.5 \quad (-0.5\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_*$	$1.04126 \pm 0.00059 \quad (+0.2\sigma)$	$\chi_{\mathrm{small}}^2$	$396.9 \pm 1.8 \quad (-0.0\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.94 \pm 0.19 \quad (+0.3\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.0 \pm 1.1 \quad (+0.3\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$z_{\mathrm{drag}}$	$1059.66 \pm 0.75 \quad (-0.1\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11515.1 \pm 6.0 \quad (+770.7\sigma)$
$c_{TE}$	$0.9965 \pm 0.0051$	$r_{\mathrm{drag}}$	$147.8 \pm 2.1 \quad (+0.3\sigma)$	$\chi_{\mathrm{JLA}}^2$	$1035.04 \pm 0.33 \quad (+0.1\sigma)$
$c_{EE}$	$0.9920 \pm 0.0055$	$k_{\mathrm{D}}$	$0.1402 \pm 0.0015 \quad (-0.2\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.046 \pm 0.063 \quad (-0.0\sigma)$
$H_0$	$67.6 \pm 1.3 \quad (-0.3\sigma)$	$100\theta_{\mathrm{D}}$	$0.16076 \pm 0.00050 \quad (-0.6\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.45 \pm 0.52 \quad (-0.2\sigma)$
$\Omega_{\Lambda}$	$0.6912 \pm 0.0073 \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3376 \pm 27 \quad (+0.3\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.5 \pm 1.3 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}$	$0.3088 \pm 0.0073 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.01028 \pm 0.00013 \quad (-0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.9 \pm 3.5 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1412 \pm 0.0036 \quad (-0.3\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8179 \pm 0.0052 \quad (-0.3\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.1 \quad (-0.0\sigma)$
$\Omega_{\nu}h^2$	$< 0.000738 \quad (-0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4518 \pm 0.0027 \quad (-0.3\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11935.0 \pm 5.9 \quad (+789.4\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.0955 \pm 0.0040 \quad (-0.3\sigma)$	$H(0.15)$	$72.9 \pm 1.3 \quad (-0.3\sigma)$		
$\sigma_8$	$0.808^{+0.015}_{-0.013} \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$641 \pm 12 \quad (+0.3\sigma)$		

$\bar{\chi}_{\mathrm{eff}}^2 = 12983.89$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.62$ ;  $R - 1 = 0.01046$



## 9.29 base\_nnu\_mnu\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}} h^2$	0.022184	$0.02223 \pm 0.00024$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	0.6092	$0.6062 \pm 0.0089$	$D_{\mathrm{M}}(0.38)$	1531.5	$1524 \pm 30$
$\Omega_{\mathrm{c}} h^2$	0.11826	$0.1199 \pm 0.0038$	$\sigma_8/h^{0.5}$	0.9952	$0.986_{-0.010}^{+0.013}$	$H(0.51)$	89.45	$90.0 \pm 1.6$
$100\theta_{\mathrm{MC}}$	1.04106	$1.04090 \pm 0.00057$	$r_{\mathrm{drag}} h$	100.10	$99.9 \pm 1.0$	$D_{\mathrm{M}}(0.51)$	1984.5	$1974 \pm 38$
$\tau$	0.0530	$0.0544 \pm 0.0077$	$\langle d^2 \rangle^{1/2}$	2.4418	$2.433 \pm 0.024$	$H(0.61)$	95.01	$95.6 \pm 1.6$
$\Sigma m_{\nu}$ [eV]	0.0004	$< 0.0687$	$z_{\mathrm{re}}$	7.55	$7.70 \pm 0.78$	$D_{\mathrm{M}}(0.61)$	2309.8	$2298 \pm 44$
$N_{\mathrm{eff}}$	2.978	$3.09 \pm 0.23$	$10^9 A_{\mathrm{s}}$	2.0835	$2.098_{-0.040}^{+0.036}$	$H(2.33)$	234.68	$236.4 \pm 3.4$
$\ln(10^{10} A_{\mathrm{s}})$	3.0366	$3.044 \pm 0.018$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8739	$1.882 \pm 0.021$	$D_{\mathrm{M}}(2.33)$	5783	$5748 \pm 95$
$n_{\mathrm{s}}$	0.9646	$0.9674 \pm 0.0089$	$D_{40}$	1227.2	$1226 \pm 15$	$f\sigma_8(0.15)$	0.4578	$0.4568 \pm 0.0068$
$y_{\mathrm{cal}}$	1.00030	$1.0006 \pm 0.0025$	$D_{220}$	5715.0	$5722 \pm 41$	$\sigma_8(0.15)$	0.7563	$0.751 \pm 0.013$
$A_{217}^{\mathrm{CIB}}$	47.4	$48 \pm 7$	$D_{810}$	2535.4	$2537 \pm 14$	$f\sigma_8(0.38)$	0.4771	$0.4757 \pm 0.0067$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.46	—	$D_{1420}$	816.3	$815.1 \pm 5.2$	$\sigma_8(0.38)$	0.6706	$0.666 \pm 0.012$
$A_{143}^{\mathrm{tSZ}}$	7.02	$5.0 \pm 2.0$	$D_{2000}$	230.71	$229.7 \pm 2.2$	$f\sigma_8(0.51)$	0.4761	$0.4745 \pm 0.0067$
$A_{100}^{\mathrm{PS}}$	250.8	$264 \pm 29$	$n_{\mathrm{s},0.002}$	0.9646	$0.9674 \pm 0.0089$	$\sigma_8(0.51)$	0.6276	$0.624 \pm 0.011$
$A_{143}^{\mathrm{PS}}$	49.7	$49 \pm 9$	$Y_{\mathrm{P}}$	0.24441	$0.2459 \pm 0.0032$	$f\sigma_8(0.61)$	0.4713	$0.4697 \pm 0.0067$
$A_{143 \times 217}^{\mathrm{PS}}$	49.4	$43 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24573	$0.2472 \pm 0.0032$	$\sigma_8(0.61)$	0.5972	$0.593 \pm 0.011$
$A_{217}^{\mathrm{PS}}$	120.2	$115 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	2.597	$2.628 \pm 0.067$	$f\sigma_8(2.33)$	0.3003	$0.2993 \pm 0.0053$
$A^{\mathrm{kSZ}}$	0.01	$< 4.94$	Age/Gyr	13.847	$13.76 \pm 0.23$	$\sigma_8(2.33)$	0.3102	$0.3086 \pm 0.0058$
$A_{100}^{\mathrm{dustTT}}$	8.87	$8.9 \pm 1.8$	$z_*$	1089.930	$1090.12 \pm 0.47$	$f_{2000}^{143}$	29.40	$31.2 \pm 3.4$
$A_{143}^{\mathrm{dustTT}}$	10.82	$10.7 \pm 1.8$	$r_*$	145.37	$144.4 \pm 2.2$	$f_{2000}^{143 \times 217}$	32.52	$33.6 \pm 2.5$
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.63	$18.3 \pm 3.3$	$100\theta_*$	1.04128	$1.04107 \pm 0.00068$	$f_{2000}^{217}$	106.94	$108.2 \pm 2.3$
$A_{217}^{\mathrm{dustTT}}$	95.1	$93.4 \pm 7.4$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.961	$13.87 \pm 0.21$	$\chi_{\mathrm{lensing}}^2$	8.81	$9.52 \pm 0.90$
$c_{100}$	0.99965	$0.99962 \pm 0.00062$	$z_{\mathrm{drag}}$	1059.32	$1059.64 \pm 0.89$	$\chi_{\mathrm{small}}^2$	395.85	$397.1 \pm 1.8$
$c_{217}$	0.99825	$0.99826 \pm 0.00063$	$r_{\mathrm{drag}}$	148.11	$147.1 \pm 2.3$	$\chi_{\mathrm{lowl}}^2$	23.32	$23.2 \pm 1.3$
$H_0$	67.58	$67.9 \pm 1.5$	$k_{\mathrm{D}}$	0.13991	$0.1406 \pm 0.0017$	$\chi_{\mathrm{plik}}^2$	758.7	$772.4 \pm 5.6$
$\Omega_{\Lambda}$	0.6925	$0.6906 \pm 0.0084$	$100\theta_{\mathrm{D}}$	0.16084	$0.16112 \pm 0.00058$	$\chi_{6\mathrm{DF}}^2$	0.0061	$0.060 \pm 0.082$
$\Omega_{\mathrm{m}}$	0.3075	$0.3094 \pm 0.0084$	$z_{\mathrm{eq}}$	3386.9	$3375 \pm 31$	$\chi_{\mathrm{MGS}}^2$	1.47	$1.42 \pm 0.59$
$\Omega_{\mathrm{m}} h^2$	0.14045	$0.1427 \pm 0.0040$	$k_{\mathrm{eq}}$	0.010290	$0.01033 \pm 0.00014$	$\chi_{\mathrm{DR12BAO}}^2$	3.77	$4.7 \pm 1.7$
$\Omega_{\nu} h^2$	$0.5 \cdot 10^{-5}$	$< 0.000725$	$100\theta_{\mathrm{eq}}$	0.8155	$0.8179 \pm 0.0059$	$\chi_{\mathrm{prior}}^2$	1.32	$7.3 \pm 3.6$
$\Omega_{\mathrm{m}} h^3$	0.09492	$0.0970 \pm 0.0046$	$100\theta_{\mathrm{s,eq}}$	0.45069	$0.4519 \pm 0.0030$	$\chi_{\mathrm{CMB}}^2$	1186.6	$1202.1 \pm 5.7$
$\sigma_8$	0.8181	$0.813 \pm 0.013$	$H(0.15)$	72.80	$73.2 \pm 1.5$	$\chi_{\mathrm{BAO}}^2$	5.24	$6.2 \pm 1.4$
$S_8$	0.8283	$0.825 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	641.7	$639 \pm 13$			
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	0.4537	$0.4521 \pm 0.0072$	$H(0.38)$	82.80	$83.3 \pm 1.5$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 1193.21$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1215.63$ ;  $R - 1 = 0.00858$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.01 MGS: 1.47 DR12BAO: 3.77 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.81 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.85 commander\_dx12\_v3\_2\_29: 23.32 plik\_rd12\_HM\_v22\_TT: 758.66



### 9.30 base\_nnu\_mnu\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022226	$0.02225 \pm 0.00024$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6090	$0.6063 \pm 0.0088$	$D_{\mathrm{M}}(0.38)$	1527.8	$1521 \pm 29$
$\Omega_{\mathrm{c}}h^2$	0.11853	$0.1200 \pm 0.0037$	$\sigma_8/h^{0.5}$	0.9943	$0.986^{+0.013}_{-0.010}$	$H(0.51)$	89.63	$90.1 \pm 1.5$
$100\theta_{\mathrm{MC}}$	1.04103	$1.04089 \pm 0.00056$	$r_{\mathrm{drag}}h$	100.22	$100.04 \pm 0.97$	$D_{\mathrm{M}}(0.51)$	1979.9	$1970 \pm 37$
$\tau$	0.0531	$0.0547 \pm 0.0076$	$\langle d^2 \rangle^{1/2}$	2.4407	$2.431 \pm 0.024$	$H(0.61)$	95.19	$95.8 \pm 1.6$
$\Sigma m_{\nu}$ [eV]	0.0005	$< 0.0657$	$z_{\mathrm{re}}$	7.55	$7.73 \pm 0.77$	$D_{\mathrm{M}}(0.61)$	2304.5	$2293 \pm 42$
$N_{\mathrm{eff}}$	3.000	$3.11 \pm 0.23$	$10^9 A_{\mathrm{s}}$	2.0849	$2.101 \pm 0.038$	$H(2.33)$	234.97	$236.6 \pm 3.4$
$\ln(10^{10} A_{\mathrm{s}})$	3.0373	$3.045 \pm 0.018$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8749	$1.883 \pm 0.020$	$D_{\mathrm{M}}(2.33)$	5773	$5740 \pm 93$
$n_{\mathrm{s}}$	0.9649	$0.9682 \pm 0.0086$	$D_{40}$	1227.5	$1225 \pm 15$	$f\sigma_8(0.15)$	0.4574	$0.4565 \pm 0.0067$
$y_{\mathrm{cal}}$	1.00035	$1.0006 \pm 0.0025$	$D_{220}$	5719.5	$5723 \pm 41$	$\sigma_8(0.15)$	0.7567	$0.752 \pm 0.012$
$A_{217}^{\mathrm{CIB}}$	49.4	$48 \pm 7$	$D_{810}$	2534.8	$2537 \pm 14$	$f\sigma_8(0.38)$	0.4769	$0.4757 \pm 0.0067$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.22	—	$D_{1420}$	815.8	$815.1 \pm 5.2$	$\sigma_8(0.38)$	0.6711	$0.667 \pm 0.011$
$A_{143}^{\mathrm{tSZ}}$	7.20	$5.0 \pm 2.0$	$D_{2000}$	230.47	$229.7 \pm 2.2$	$f\sigma_8(0.51)$	0.4760	$0.4747 \pm 0.0066$
$A_{100}^{\mathrm{PS}}$	253.6	$264 \pm 29$	$n_{\mathrm{s},0.002}$	0.9649	$0.9682 \pm 0.0086$	$\sigma_8(0.51)$	0.6282	$0.625 \pm 0.011$
$A_{143}^{\mathrm{PS}}$	46.4	$49 \pm 8$	$Y_{\mathrm{P}}$	0.24472	$0.2461 \pm 0.0031$	$f\sigma_8(0.61)$	0.4713	$0.4700 \pm 0.0067$
$A_{143 \times 217}^{\mathrm{PS}}$	43.2	$43 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24604	$0.2475 \pm 0.0031$	$\sigma_8(0.61)$	0.5978	$0.594 \pm 0.010$
$A_{217}^{\mathrm{PS}}$	117.1	$115 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	2.597	$2.630 \pm 0.066$	$f\sigma_8(2.33)$	0.3006	$0.2998 \pm 0.0051$
$A^{\mathrm{kSZ}}$	0.01	$< 5.01$	Age/Gyr	13.822	$13.74 \pm 0.22$	$\sigma_8(2.33)$	0.3106	$0.3092 \pm 0.0056$
$A_{100}^{\mathrm{dustTT}}$	8.87	$8.9 \pm 1.8$	$z_*$	1089.921	$1090.12 \pm 0.47$	$f_{2000}^{143}$	29.84	$31.3 \pm 3.4$
$A_{143}^{\mathrm{dustTT}}$	10.86	$10.7 \pm 1.8$	$r_*$	145.16	$144.3 \pm 2.2$	$f_{2000}^{143 \times 217}$	32.74	$33.6 \pm 2.5$
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.32	$18.3 \pm 3.3$	$100\theta_*$	1.04123	$1.04105 \pm 0.00068$	$f_{2000}^{217}$	107.23	$108.2 \pm 2.3$
$A_{217}^{\mathrm{dustTT}}$	94.4	$93.4 \pm 7.4$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.941	$13.86 \pm 0.20$	$\chi_{\mathrm{lensing}}^2$	8.80	$9.54 \pm 0.90$
$c_{100}$	0.99961	$0.99962 \pm 0.00062$	$z_{\mathrm{drag}}$	1059.44	$1059.70 \pm 0.87$	$\chi_{\mathrm{small}}^2$	395.86	$397.1 \pm 1.8$
$c_{217}$	0.99826	$0.99827 \pm 0.00062$	$r_{\mathrm{drag}}$	147.88	$147.0 \pm 2.3$	$\chi_{\mathrm{lowl}}^2$	23.32	$23.1 \pm 1.2$
$H_0$	67.77	$68.1 \pm 1.4$	$k_{\mathrm{D}}$	0.14010	$0.1407 \pm 0.0016$	$\chi_{\mathrm{plik}}^2$	758.5	$772.5 \pm 5.5$
$\Omega_{\Lambda}$	0.6935	$0.6919 \pm 0.0078$	$100\theta_{\mathrm{D}}$	0.16085	$0.16115 \pm 0.00058$	$\chi_{\mathrm{JLA}}^2$	1034.852	$1035.03 \pm 0.34$
$\Omega_{\mathrm{m}}$	0.3065	$0.3081 \pm 0.0078$	$z_{\mathrm{eq}}$	3384.4	$3371 \pm 30$	$\chi_{6\mathrm{DF}}^2$	0.0030	$0.048 \pm 0.066$
$\Omega_{\mathrm{m}}h^2$	0.14076	$0.1428 \pm 0.0040$	$k_{\mathrm{eq}}$	0.010297	$0.01033 \pm 0.00014$	$\chi_{\mathrm{MGS}}^2$	1.54	$1.51 \pm 0.56$
$\Omega_{\nu}h^2$	$0.5 \cdot 10^{-5}$	$< 0.000696$	$100\theta_{\mathrm{eq}}$	0.8161	$0.8187 \pm 0.0056$	$\chi_{\mathrm{DR12BAO}}^2$	3.67	$4.5 \pm 1.4$
$\Omega_{\mathrm{m}}h^3$	0.09539	$0.0973 \pm 0.0045$	$100\theta_{\mathrm{s,eq}}$	0.45095	$0.4523 \pm 0.0028$	$\chi_{\mathrm{prior}}^2$	1.58	$7.3 \pm 3.6$
$\sigma_8$	0.8185	$0.814 \pm 0.013$	$H(0.15)$	72.98	$73.4 \pm 1.4$	$\chi_{\mathrm{CMB}}^2$	1186.5	$1202.2 \pm 5.7$
$S_8$	0.8273	$0.825 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	640.1	$637 \pm 13$	$\chi_{\mathrm{BAO}}^2$	5.21	$6.0 \pm 1.1$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4531	$0.4517 \pm 0.0071$	$H(0.38)$	82.98	$83.4 \pm 1.5$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 2228.14$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2250.50$ ;  $R - 1 = 0.00908$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.54 DR12BAO: 3.67 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p.teb\_consext8: 8.80 small\_100x143.offlike5\_EE\_Aplanck\_B: 395.86 comman-  
der\_dx12.v3.2.29: 23.32 plik\_rd12\_HM.v22\_TT: 758.53 SN - JLA Pantheon18: 1034.85



### 9.31 base\_nnu\_mnu\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022155	$0.02219 \pm 0.00022$	$\sigma_8 \Omega_m^{0.25}$	0.6078	$0.6051 \pm 0.0084$	$D_M(0.38)$	1538.7	$1532 \pm 25$
$\Omega_c h^2$	0.11736	$0.1188 \pm 0.0030$	$\sigma_8/h^{0.5}$	0.9945	$0.987^{+0.013}_{-0.010}$	$H(0.51)$	89.07	$89.6 \pm 1.2$
$100\theta_{MC}$	1.04116	$1.04101 \pm 0.00052$	$r_{drag}h$	99.99	$99.76 \pm 0.99$	$D_M(0.51)$	1993.8	$1984 \pm 31$
$\tau$	0.0529	$0.0542 \pm 0.0076$	$\langle d^2 \rangle^{1/2}$	2.4443	$2.436 \pm 0.023$	$H(0.61)$	94.62	$95.2 \pm 1.3$
$\Sigma m_\nu$ [eV]	0.0019	$< 0.0640$	$z_{re}$	7.52	$7.67 \pm 0.77$	$D_M(0.61)$	2320.4	$2309 \pm 36$
$N_{eff}$	2.922	$3.03 \pm 0.18$	$10^9 A_s$	2.0790	$2.092 \pm 0.035$	$H(2.33)$	233.87	$235.5 \pm 2.7$
$\ln(10^{10} A_s)$	3.0345	$3.041 \pm 0.017$	$10^9 A_s e^{-2\tau}$	1.8701	$1.877 \pm 0.018$	$D_M(2.33)$	5807	$5774 \pm 76$
$n_s$	0.9625	$0.9651 \pm 0.0074$	$D_{40}$	1230.2	$1229 \pm 14$	$f\sigma_8(0.15)$	0.4571	$0.4563 \pm 0.0067$
$y_{cal}$	1.00032	$1.0006 \pm 0.0025$	$D_{220}$	5718.9	$5723 \pm 40$	$\sigma_8(0.15)$	0.7537	$0.749^{+0.012}_{-0.011}$
$A_{217}^{CIB}$	46.4	$48 \pm 7$	$D_{810}$	2535.3	$2536 \pm 14$	$f\sigma_8(0.38)$	0.4760	$0.4748 \pm 0.0063$
$\xi^{tSZ \times CIB}$	0.63	—	$D_{1420}$	816.9	$815.5 \pm 5.2$	$\sigma_8(0.38)$	0.6682	$0.664^{+0.011}_{-0.0096}$
$A_{143}^{tSZ}$	6.92	$5.1 \pm 2.0$	$D_{2000}$	231.09	$230.1 \pm 2.1$	$f\sigma_8(0.51)$	0.4749	$0.4736 \pm 0.0062$
$A_{100}^{PS}$	249.4	$262 \pm 28$	$n_{s,0.002}$	0.9625	$0.9651 \pm 0.0074$	$\sigma_8(0.51)$	0.6254	$0.622^{+0.010}_{-0.0092}$
$A_{143}^{PS}$	51.2	$48 \pm 8$	$Y_P$	0.24363	$0.2450 \pm 0.0025$	$f\sigma_8(0.61)$	0.4701	$0.4687 \pm 0.0062$
$A_{143 \times 217}^{PS}$	53.0	$43 \pm 9$	$Y_P^{BBN}$	0.24495	$0.2463 \pm 0.0025$	$\sigma_8(0.61)$	0.5951	$0.5916^{+0.0099}_{-0.0088}$
$A_{217}^{PS}$	121.6	$115 \pm 10$	$10^5 D/H$	2.583	$2.612 \pm 0.057$	$f\sigma_8(2.33)$	0.29921	$0.2982 \pm 0.0046$
$A^{kSZ}$	0.01	$< 4.73$	Age/Gyr	13.903	$13.82 \pm 0.18$	$\sigma_8(2.33)$	0.3090	$0.3075 \pm 0.0052$
$A_{100}^{dustTT}$	8.75	$8.9 \pm 1.8$	$z_*$	1089.831	$1090.02 \pm 0.41$	$f_{2000}^{143}$	28.86	$30.7 \pm 3.2$
$A_{143}^{dustTT}$	10.75	$10.7 \pm 1.8$	$r_*$	145.92	$145.0 \pm 1.8$	$f_{2000}^{143 \times 217}$	32.17	$33.2 \pm 2.3$
$A_{143 \times 217}^{dustTT}$	19.64	$18.3 \pm 3.3$	$100\theta_*$	1.04142	$1.04122 \pm 0.00060$	$f_{2000}^{217}$	106.57	$107.8 \pm 2.1$
$A_{217}^{dustTT}$	95.1	$93.4 \pm 7.4$	$D_M(z_*)/\text{Gpc}$	14.012	$13.93 \pm 0.16$	$\chi_{lensing}^2$	8.70	$9.39 \pm 0.85$
$c_{100}$	0.99968	$0.99962 \pm 0.00061$	$z_{drag}$	1059.13	$1059.42 \pm 0.74$	$\chi_{small}^2$	395.86	$397.0 \pm 1.7$
$c_{217}$	0.99823	$0.99825 \pm 0.00062$	$r_{drag}$	148.68	$147.7 \pm 1.8$	$\chi_{lowl}^2$	23.62	$23.4 \pm 1.2$
$H_0$	67.25	$67.5 \pm 1.2$	$k_D$	0.13951	$0.1401 \pm 0.0013$	$\chi_{plik}^2$	758.6	$771.8 \pm 5.4$
$\Omega_\Lambda$	0.6914	$0.6895 \pm 0.0080$	$100\theta_D$	0.160706	$0.16098 \pm 0.00049$	$\chi_{Aver15}^2$	0.000	$0.52 \pm 0.71$
$\Omega_m$	0.3086	$0.3105 \pm 0.0080$	$z_{eq}$	3390.5	$3379 \pm 29$	$\chi_{6DF}^2$	0.0103	$0.063 \pm 0.084$
$\Omega_m h^2$	0.13954	$0.1416 \pm 0.0032$	$k_{eq}$	0.010261	$0.01030 \pm 0.00012$	$\chi_{MGS}^2$	1.41	$1.35 \pm 0.55$
$\Omega_\nu h^2$	$2.0 \cdot 10^{-5}$	$< 0.000675$	$100\theta_{eq}$	0.8148	$0.8170 \pm 0.0055$	$\chi_{DR12BAO}^2$	3.88	$4.8 \pm 1.7$
$\Omega_m h^3$	0.09383	$0.0956 \pm 0.0036$	$100\theta_{s,eq}$	0.45034	$0.4514 \pm 0.0028$	$\chi_{prior}^2$	1.16	$7.3 \pm 3.6$
$\sigma_8$	0.8155	$0.811^{+0.013}_{-0.011}$	$H(0.15)$	72.45	$72.8 \pm 1.2$	$\chi_{CMB}^2$	1186.8	$1201.6 \pm 5.6$
$S_8$	0.8271	$0.825 \pm 0.013$	$D_M(0.15)$	644.9	$642 \pm 11$	$\chi_{BAO}^2$	5.29	$6.2 \pm 1.4$
$\sigma_8 \Omega_m^{0.5}$	0.4530	$0.4517 \pm 0.0071$	$H(0.38)$	82.43	$82.9 \pm 1.2$			

Best-fit  $\chi_{eff}^2 = 1193.28$ ;  $\bar{\chi}_{eff}^2 = 1215.62$ ;  $R - 1 = 0.00900$   
 $\chi_{eff}^2$ : Abund - Yp\_Aver2015: 0.00 BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.88 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.70 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.86 commander\_dx12\_v3\_2\_29: 23.62 plik\_rd12\_HM\_v22\_TT: 758.65



9.32 base\_nnu\_mnu\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Cooke17\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022170	$0.02219 \pm 0.00022$	$\sigma_8/h^{0.5}$	0.9946	$0.987^{+0.013}_{-0.010}$	$D_{\text{M}}(0.51)$	1987.1	$1984 \pm 30$
$\Omega_{\text{c}}h^2$	0.11793	$0.1189 \pm 0.0028$	$r_{\text{drag}}h$	100.10	$99.77 \pm 0.99$	$H(0.61)$	94.89	$95.2 \pm 1.2$
$100\theta_{\text{MC}}$	1.041075	$1.04100 \pm 0.00049$	$\langle d^2 \rangle^{1/2}$	2.4417	$2.436 \pm 0.023$	$D_{\text{M}}(0.61)$	2312.7	$2309 \pm 34$
$\tau$	0.0530	$0.0542 \pm 0.0076$	$z_{\text{re}}$	7.55	$7.67 \pm 0.77$	$H(2.33)$	234.40	$235.5 \pm 2.5$
$\Sigma m_{\nu} [\text{eV}]$	0.0030	$< 0.0640$	$10^9 A_{\text{s}}$	2.0830	$2.092 \pm 0.035$	$D_{\text{M}}(2.33)$	5791	$5773 \pm 71$
$N_{\text{eff}}$	2.962	$3.03 \pm 0.17$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8734	$1.877 \pm 0.017$	$f\sigma_8(0.15)$	0.4574	$0.4563 \pm 0.0065$
$\ln(10^{10} A_{\text{s}})$	3.0364	$3.041 \pm 0.017$	$D_{40}$	1227.8	$1229 \pm 14$	$\sigma_8(0.15)$	0.7554	$0.749^{+0.012}_{-0.010}$
$n_{\text{s}}$	0.9643	$0.9652 \pm 0.0071$	$D_{220}$	5717.4	$5722 \pm 40$	$f\sigma_8(0.38)$	0.4766	$0.4749 \pm 0.0061$
$y_{\text{cal}}$	1.00064	$1.0006 \pm 0.0025$	$D_{810}$	2536.5	$2536 \pm 14$	$\sigma_8(0.38)$	0.6698	$0.664^{+0.011}_{-0.0093}$
$A_{217}^{\text{CIB}}$	47.3	$48 \pm 7$	$D_{1420}$	816.9	$815.5 \pm 5.0$	$f\sigma_8(0.51)$	0.4756	$0.4737 \pm 0.0060$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.47	—	$D_{2000}$	230.94	$230.0 \pm 1.9$	$\sigma_8(0.51)$	0.6269	$0.622^{+0.010}_{-0.0088}$
$A_{143}^{\text{tSZ}}$	6.99	$5.1 \pm 2.0$	$n_{\text{s},0.002}$	0.9643	$0.9652 \pm 0.0071$	$f\sigma_8(0.61)$	0.4708	$0.4688 \pm 0.0060$
$A_{100}^{\text{PS}}$	251.1	$263 \pm 28$	$Y_{\text{P}}$	0.24418	$0.2451 \pm 0.0023$	$\sigma_8(0.61)$	0.5965	$0.5917^{+0.0097}_{-0.0085}$
$A_{143}^{\text{PS}}$	49.6	$48 \pm 8$	$Y_{\text{P}}^{\text{BBN}}$	0.24550	$0.2464 \pm 0.0023$	$f\sigma_8(2.33)$	0.30000	$0.2983 \pm 0.0045$
$A_{143 \times 217}^{\text{PS}}$	49.5	$43 \pm 9$	$10^5 \text{D}/\text{H}$	2.5942	$2.613 \pm 0.049$	$\sigma_8(2.33)$	0.30989	$0.3076^{+0.0052}_{-0.0047}$
$A_{217}^{\text{PS}}$	120.4	$115 \pm 10$	Age/Gyr	13.864	$13.82 \pm 0.17$	$f_{2000}^{143}$	29.27	$30.8 \pm 3.1$
$A^{\text{kSZ}}$	0.00	$< 4.74$	$z_*$	1089.904	$1090.03 \pm 0.36$	$f_{2000}^{143 \times 217}$	32.43	$33.2 \pm 2.2$
$A_{100}^{\text{dustTT}}$	8.81	$8.9 \pm 1.8$	$r_*$	145.56	$145.0 \pm 1.6$	$f_{2000}^{217}$	106.94	$107.8 \pm 2.0$
$A_{143}^{\text{dustTT}}$	10.80	$10.7 \pm 1.8$	$100\theta_*$	1.04131	$1.04121 \pm 0.00056$	$\chi_{\text{lensing}}^2$	8.77	$9.39 \pm 0.84$
$A_{143 \times 217}^{\text{dustTT}}$	19.54	$18.3 \pm 3.3$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.978	$13.92 \pm 0.15$	$\chi_{\text{simall}}^2$	395.85	$397.0 \pm 1.7$
$A_{217}^{\text{dustTT}}$	95.0	$93.4 \pm 7.4$	$z_{\text{drag}}$	1059.25	$1059.42 \pm 0.74$	$\chi_{\text{lowl}}^2$	23.32	$23.4 \pm 1.1$
$c_{100}$	0.99966	$0.99962 \pm 0.00061$	$r_{\text{drag}}$	148.30	$147.7 \pm 1.7$	$\chi_{\text{plik}}^2$	758.7	$771.6 \pm 5.3$
$c_{217}$	0.99824	$0.99825 \pm 0.00062$	$k_{\text{D}}$	0.13976	$0.1402 \pm 0.0013$	$\chi_{\text{Aver15}}^2$	0.023	$0.47 \pm 0.63$
$H_0$	67.50	$67.6 \pm 1.2$	$100\theta_{\text{D}}$	0.160807	$0.16099 \pm 0.00042$	$\chi_{\text{Cooke17}}^2$	0.064	$0.27 \pm 0.39$
$\Omega_{\Lambda}$	0.6924	$0.6896 \pm 0.0079$	$z_{\text{eq}}$	3386.1	$3379 \pm 29$	$\chi_{6\text{DF}}^2$	0.0061	$0.063 \pm 0.083$
$\Omega_{\text{m}}$	0.3076	$0.3104 \pm 0.0079$	$k_{\text{eq}}$	0.010276	$0.01030 \pm 0.00011$	$\chi_{\text{MGS}}^2$	1.47	$1.36 \pm 0.55$
$\Omega_{\text{m}}h^2$	0.14013	$0.1416 \pm 0.0030$	$100\theta_{\text{eq}}$	0.8156	$0.8170 \pm 0.0054$	$\chi_{\text{DR12BAO}}^2$	3.76	$4.8 \pm 1.7$
$\Omega_{\nu}h^2$	$3.2 \cdot 10^{-5}$	$< 0.000676$	$100\theta_{\text{s,eq}}$	0.45075	$0.4515 \pm 0.0028$	$\chi_{\text{prior}}^2$	1.33	$7.3 \pm 3.6$
$\Omega_{\text{m}}h^3$	0.09458	$0.0957 \pm 0.0033$	$H(0.15)$	72.71	$72.8 \pm 1.1$	$\chi_{\text{CMB}}^2$	1186.7	$1201.4 \pm 5.5$
$\sigma_8$	0.8172	$0.811^{+0.012}_{-0.011}$	$D_{\text{M}}(0.15)$	642.6	$642 \pm 11$	$\chi_{\text{BAO}}^2$	5.24	$6.2 \pm 1.4$
$S_8$	0.8274	$0.825 \pm 0.013$	$H(0.38)$	82.69	$82.9 \pm 1.2$	$\chi_{\text{Abund}}^2$	0.087	$0.74 \pm 0.83$
$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4532	$0.4517 \pm 0.0069$	$D_{\text{M}}(0.38)$	1533.5	$1531 \pm 24$			
$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6086	$0.6052 \pm 0.0082$	$H(0.51)$	89.34	$89.6 \pm 1.2$			

Best-fit  $\chi_{\text{eff}}^2 = 1193.33$ ;  $\bar{\chi}_{\text{eff}}^2 = 1215.63$ ;  $R - 1 = 0.00841$   
 $\chi_{\text{eff}}^2$ : Abund - Yp\_Aver2015: 0.02 D\_Cooke2017: 0.06 BAO - 6DF: 0.01 MGS: 1.47 DR12BAO: 3.76 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.77  
simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.85 commander\_dx12\_v3.2\_29: 23.32 plik\_rd12\_HM\_v22\_TT: 758.73



### 9.33 base\_nnu\_mnu\_plikHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02226 \pm 0.00023$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6065 \pm 0.0088$	$D_{\mathrm{M}}(0.38)$	$1520 \pm 29$
$\Omega_{\mathrm{c}}h^2$	$0.1200 \pm 0.0037$	$\sigma_8/h^{0.5}$	$0.987^{+0.013}_{-0.010}$	$H(0.51)$	$90.2 \pm 1.5$
$100\theta_{\mathrm{MC}}$	$1.04089 \pm 0.00056$	$r_{\mathrm{drag}}h$	$100.07 \pm 0.97$	$D_{\mathrm{M}}(0.51)$	$1970 \pm 37$
$\tau$	$0.0556^{+0.0055}_{-0.0081}$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.023$	$H(0.61)$	$95.8 \pm 1.6$
$\Sigma m_{\nu}$ [eV]	$< 0.0670$	$z_{\mathrm{re}}$	$7.83^{+0.60}_{-0.80}$	$D_{\mathrm{M}}(0.61)$	$2292 \pm 42$
$N_{\mathrm{eff}}$	$3.11 \pm 0.23$	$10^9 A_{\mathrm{s}}$	$2.104^{+0.031}_{-0.039}$	$H(2.33)$	$236.6 \pm 3.4$
$\ln(10^{10} A_{\mathrm{s}})$	$3.046^{+0.015}_{-0.018}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.883 \pm 0.020$	$D_{\mathrm{M}}(2.33)$	$5739 \pm 92$
$n_{\mathrm{s}}$	$0.9684 \pm 0.0086$	$D_{40}$	$1225 \pm 15$	$f\sigma_8(0.15)$	$0.4566 \pm 0.0067$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{220}$	$5723 \pm 41$	$\sigma_8(0.15)$	$0.753 \pm 0.012$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2537 \pm 14$	$f\sigma_8(0.38)$	$0.4759 \pm 0.0066$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815.1 \pm 5.2$	$\sigma_8(0.38)$	$0.668 \pm 0.011$
$A_{143}^{\mathrm{tSZ}}$	$5.0 \pm 2.0$	$D_{2000}$	$229.7 \pm 2.2$	$f\sigma_8(0.51)$	$0.4749 \pm 0.0066$
$A_{100}^{\mathrm{PS}}$	$264 \pm 29$	$n_{\mathrm{s},0.002}$	$0.9684 \pm 0.0086$	$\sigma_8(0.51)$	$0.625 \pm 0.011$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}$	$0.2462 \pm 0.0031$	$f\sigma_8(0.61)$	$0.4702 \pm 0.0066$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2475 \pm 0.0031$	$\sigma_8(0.61)$	$0.595 \pm 0.010$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.630 \pm 0.066$	$f\sigma_8(2.33)$	$0.3000 \pm 0.0051$
$A^{\mathrm{kSZ}}$	$< 5.01$	$\mathrm{Age}/\mathrm{Gyr}$	$13.74 \pm 0.22$	$\sigma_8(2.33)$	$0.3095 \pm 0.0056$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$z_*$	$1090.12 \pm 0.47$	$f_{2000}^{143}$	$31.3 \pm 3.4$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$r_*$	$144.3 \pm 2.2$	$f_{2000}^{143 \times 217}$	$33.6 \pm 2.5$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04105 \pm 0.00068$	$f_{2000}^{217}$	$108.2 \pm 2.3$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.4$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.86 \pm 0.20$	$\chi_{\mathrm{lensing}}^2$	$9.51 \pm 0.88$
$c_{100}$	$0.99962 \pm 0.00062$	$z_{\mathrm{drag}}$	$1059.71 \pm 0.87$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.8$
$c_{217}$	$0.99827 \pm 0.00062$	$r_{\mathrm{drag}}$	$147.0 \pm 2.3$	$\chi_{\mathrm{lowl}}^2$	$23.0 \pm 1.2$
$H_0$	$68.1 \pm 1.4$	$k_{\mathrm{D}}$	$0.1407 \pm 0.0016$	$\chi_{\mathrm{plik}}^2$	$772.4 \pm 5.5$
$\Omega_{\Lambda}$	$0.6921 \pm 0.0077$	$100\theta_{\mathrm{D}}$	$0.16116 \pm 0.00058$	$\chi_{\mathrm{JLA}}^2$	$1035.02 \pm 0.33$
$\Omega_{\mathrm{m}}$	$0.3079 \pm 0.0077$	$z_{\mathrm{eq}}$	$3370 \pm 29$	$\chi_{6\mathrm{DF}}^2$	$0.046 \pm 0.065$
$\Omega_{\mathrm{m}}h^2$	$0.1428 \pm 0.0040$	$k_{\mathrm{eq}}$	$0.01033 \pm 0.00014$	$\chi_{\mathrm{MGS}}^2$	$1.52 \pm 0.56$
$\Omega_{\nu}h^2$	$< 0.000711$	$100\theta_{\mathrm{eq}}$	$0.8189 \pm 0.0055$	$\chi_{\mathrm{DR12BAO}}^2$	$4.4 \pm 1.3$
$\Omega_{\mathrm{m}}h^3$	$0.0973 \pm 0.0045$	$100\theta_{\mathrm{s,eq}}$	$0.4524 \pm 0.0028$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.6$
$\sigma_8$	$0.814 \pm 0.013$	$H(0.15)$	$73.4 \pm 1.4$	$\chi_{\mathrm{CMB}}^2$	$1202.0 \pm 5.7$
$S_8$	$0.825 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$637 \pm 13$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.1$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4518 \pm 0.0071$	$H(0.38)$	$83.5 \pm 1.5$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2250.35; R - 1 = 0.00891$$



9.34 base\_nnu\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022329	$0.02236 \pm 0.00019$ (+0.5 $\sigma$ )	$\Omega_{\text{m}}h^3$	0.09360	$0.0948 \pm 0.0035$ (−0.5 $\sigma$ )	$D_{\text{M}}(0.15)$	645.3	$644 \pm 11$ (+0.4 $\sigma$ )
$\Omega_{\text{c}}h^2$	0.11694	$0.1180 \pm 0.0029$ (−0.5 $\sigma$ )	$\sigma_8$	0.8158	$0.811 \pm 0.011$ (−0.2 $\sigma$ )	$H(0.38)$	82.38	$82.6 \pm 1.2$ (−0.4 $\sigma$ )
$100\theta_{\text{MC}}$	1.041277	$1.04116 \pm 0.00044$ (+0.5 $\sigma$ )	$S_8$	0.8271	$0.825 \pm 0.011$ (−0.0 $\sigma$ )	$D_{\text{M}}(0.38)$	1539.7	$1537 \pm 24$ (+0.4 $\sigma$ )
$\tau$	0.0546	$0.0552 \pm 0.0075$ (+0.1 $\sigma$ )	$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4530	$0.4520 \pm 0.0062$ (−0.0 $\sigma$ )	$H(0.51)$	89.00	$89.3 \pm 1.2$ (−0.5 $\sigma$ )
$\Sigma m_{\nu}$ [eV]	0.0002	$< 0.0549$ (−0.3 $\sigma$ )	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6079	$0.6054 \pm 0.0076$ (−0.1 $\sigma$ )	$D_{\text{M}}(0.51)$	1995.1	$1991 \pm 30$ (+0.4 $\sigma$ )
$N_{\text{eff}}$	2.890	$2.96 \pm 0.18$ (−0.6 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9952	$0.988^{+0.011}_{-0.0094}$ (+0.2 $\sigma$ )	$H(0.61)$	94.55	$94.9 \pm 1.2$ (−0.5 $\sigma$ )
$\ln(10^{10}A_{\text{s}})$	3.0376	$3.041 \pm 0.017$ (−0.1 $\sigma$ )	$r_{\text{drag}}h$	99.98	$99.67 \pm 0.88$ (−0.2 $\sigma$ )	$D_{\text{M}}(0.61)$	2321.9	$2317 \pm 35$ (+0.4 $\sigma$ )
$n_{\text{s}}$	0.9627	$0.9636 \pm 0.0071$ (−0.4 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4478	$2.442 \pm 0.022$ (+0.4 $\sigma$ )	$H(2.33)$	233.67	$234.8 \pm 2.6$ (−0.5 $\sigma$ )
$y_{\text{cal}}$	1.00055	$1.0006 \pm 0.0024$ (+0.0 $\sigma$ )	$z_{\text{re}}$	7.64	$7.71 \pm 0.76$ (+0.0 $\sigma$ )	$D_{\text{M}}(2.33)$	5811	$5791 \pm 74$ (+0.5 $\sigma$ )
$A_{217}^{\text{CIB}}$	43.5	$46 \pm 7$ (−0.2 $\sigma$ )	$10^9 A_{\text{s}}$	2.0856	$2.093 \pm 0.035$ (−0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4571	$0.4565 \pm 0.0059$ (−0.0 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.98	—	$10^9 A_{\text{s}}e^{-2\tau}$	1.8698	$1.874 \pm 0.017$ (−0.4 $\sigma$ )	$\sigma_8(0.15)$	0.7540	$0.749 \pm 0.011$ (−0.2 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.02	$5.6^{+2.1}_{-1.9}$ (+0.3 $\sigma$ )	$D_{40}$	1231.5	$1232 \pm 13$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4761	$0.4749 \pm 0.0057$ (−0.1 $\sigma$ )
$A_{100}^{\text{PS}}$	241.9	$256 \pm 28$ (−0.3 $\sigma$ )	$D_{220}$	5734.0	$5738 \pm 37$ (+0.4 $\sigma$ )	$\sigma_8(0.38)$	0.6685	$0.6641 \pm 0.0098$ (−0.2 $\sigma$ )
$A_{143}^{\text{PS}}$	52.2	$44 \pm 8$ (−0.6 $\sigma$ )	$D_{810}$	2538.6	$2538 \pm 13$ (+0.1 $\sigma$ )	$f\sigma_8(0.51)$	0.4750	$0.4736 \pm 0.0057$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	59.1	$42 \pm 9$ (−0.2 $\sigma$ )	$D_{1420}$	819.77	$818.1 \pm 4.8$ (+0.6 $\sigma$ )	$\sigma_8(0.51)$	0.6257	$0.6215 \pm 0.0094$ (−0.2 $\sigma$ )
$A_{217}^{\text{PS}}$	124.3	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	232.54	$231.6 \pm 1.8$ (+0.9 $\sigma$ )	$f\sigma_8(0.61)$	0.4702	$0.4687 \pm 0.0057$ (−0.2 $\sigma$ )
$A^{\text{kSZ}}$	0.01	$< 3.92$ (−0.3 $\sigma$ )	$n_{\text{s},0.002}$	0.9627	$0.9636 \pm 0.0071$ (−0.4 $\sigma$ )	$\sigma_8(0.61)$	0.5954	$0.5914 \pm 0.0090$ (−0.2 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.77	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_{\text{P}}$	0.24327	$0.2442 \pm 0.0024$ (−0.5 $\sigma$ )	$f\sigma_8(2.33)$	0.29933	$0.2980 \pm 0.0044$ (−0.2 $\sigma$ )
$A_{143}^{\text{dustTT}}$	10.97	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.24459	$0.2455 \pm 0.0024$ (−0.5 $\sigma$ )	$\sigma_8(2.33)$	0.30918	$0.3073 \pm 0.0049$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	20.47	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 \text{D/H}$	2.5391	$2.558 \pm 0.045$ (−1.0 $\sigma$ )	$f_{2000}^{143}$	27.11	$28.6 \pm 3.0$ (−0.8 $\sigma$ )
$A_{217}^{\text{dustTT}}$	96.2	$93.8 \pm 7.3$ (+0.1 $\sigma$ )	Age/Gyr	13.913	$13.87 \pm 0.18$ (+0.5 $\sigma$ )	$f_{2000}^{143 \times 217}$	30.84	$31.5 \pm 2.1$ (−0.9 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1139	$0.114 \pm 0.038$	$z_*$	1089.543	$1089.67 \pm 0.33$ (−1.0 $\sigma$ )	$f_{2000}^{217}$	105.33	$106.4 \pm 2.0$ (−0.8 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1347	$0.135 \pm 0.029$	$r_*$	146.06	$145.4 \pm 1.7$ (+0.5 $\sigma$ )	$\chi_{\text{lensing}}^2$	8.663	$9.11 \pm 0.68$ (−0.4 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.481 \pm 0.085$	$100\theta_*$	1.04154	$1.04140 \pm 0.00053$ (+0.5 $\sigma$ )	$\chi_{\text{small}}^2$	396.05	$397.1 \pm 1.9$ (+0.1 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.223	$0.224 \pm 0.054$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.024	$13.97 \pm 0.16$ (+0.5 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.64	$23.7 \pm 1.2$ (+0.4 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.665	$0.665 \pm 0.080$	$z_{\text{drag}}$	1059.47	$1059.69 \pm 0.70$ (+0.1 $\sigma$ )	$\chi_{\text{plik}}^2$	2343.0	$2359.2 \pm 5.9$ (+285.2 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.072	$2.08 \pm 0.27$	$r_{\text{drag}}$	148.76	$148.1 \pm 1.8$ (+0.4 $\sigma$ )	$\chi_{6\text{DF}}^2$	0.0107	$0.060 \pm 0.077$ (−0.0 $\sigma$ )
$c_{100}$	0.99975	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$k_{\text{D}}$	0.13969	$0.1401 \pm 0.0013$ (−0.3 $\sigma$ )	$\chi_{\text{MGS}}^2$	1.407	$1.29 \pm 0.48$ (−0.2 $\sigma$ )
$c_{217}$	0.99814	$0.99818 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_{\text{D}}$	0.160372	$0.16054 \pm 0.00040$ (−1.0 $\sigma$ )	$\chi_{\text{DR12BAO}}^2$	3.91	$4.9 \pm 1.6$ (+0.1 $\sigma$ )
$H_0$	67.21	$67.3 \pm 1.1$ (−0.4 $\sigma$ )	$z_{\text{eq}}$	3399.3	$3394 \pm 24$ (+0.6 $\sigma$ )	$\chi_{\text{prior}}^2$	1.45	$11.5 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_{\Lambda}$	0.6917	$0.6890 \pm 0.0072$ (−0.2 $\sigma$ )	$k_{\text{eq}}$	0.010266	$0.01030 \pm 0.00011$ (−0.2 $\sigma$ )	$\chi_{\text{CMB}}^2$	2771.4	$2789.1 \pm 6.0$ (+276.3 $\sigma$ )
$\Omega_{\text{m}}$	0.3083	$0.3110 \pm 0.0072$ (+0.2 $\sigma$ )	$100\theta_{\text{eq}}$	0.81381	$0.8149 \pm 0.0046$ (−0.5 $\sigma$ )	$\chi_{\text{BAO}}^2$	5.33	$6.2 \pm 1.3$ (−0.0 $\sigma$ )
$\Omega_{\text{m}}h^2$	0.13927	$0.1408 \pm 0.0031$ (−0.5 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.44968	$0.4502 \pm 0.0023$ (−0.6 $\sigma$ )			
$\Omega_{\nu}h^2$	$0.2 \cdot 10^{-5}$	$< 0.000573$ (−0.3 $\sigma$ )	$H(0.15)$	72.41	$72.6 \pm 1.2$ (−0.4 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 2778.17$ ;  $\Delta\chi_{\text{eff}}^2 = 1584.95$ ;  $\bar{\chi}_{\text{eff}}^2 = 2806.81$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.19$ ;  $R - 1 = 0.00810$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.01 ( $\Delta$  0.00) MGS: 1.41 ( $\Delta$  -0.07) DR12BAO: 3.91 ( $\Delta$  0.15) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.66 ( $\Delta$  -0.15) simall\_100x143\_offlike5\_EE\_Aplanck 396.05 ( $\Delta$  0.20) commander\_dx12\_v3\_2.29: 23.64 ( $\Delta$  0.32) plik\_rd12\_HM\_v22b\_TTTEEE: 2343.02



### 9.35 base\_nnu\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022338	$0.02238 \pm 0.00018$ (+0.5 $\sigma$ )	$\Omega_m h^3$	0.09363	$0.0951 \pm 0.0034$ (−0.5 $\sigma$ )	$D_M(0.15)$	644.6	$643 \pm 10$ (+0.5 $\sigma$ )
$\Omega_c h^2$	0.11681	$0.1181 \pm 0.0029$ (−0.5 $\sigma$ )	$\sigma_8$	0.8146	$0.812 \pm 0.011$ (−0.2 $\sigma$ )	$H(0.38)$	82.43	$82.7 \pm 1.2$ (−0.5 $\sigma$ )
$100\theta_{MC}$	1.041304	$1.04116 \pm 0.00044$ (+0.5 $\sigma$ )	$S_8$	0.8245	$0.825 \pm 0.011$ (+0.0 $\sigma$ )	$D_M(0.38)$	1538.4	$1534 \pm 23$ (+0.5 $\sigma$ )
$\tau$	0.0537	$0.0555 \pm 0.0075$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4516	$0.4517 \pm 0.0061$ (+0.0 $\sigma$ )	$H(0.51)$	89.04	$89.4 \pm 1.2$ (−0.5 $\sigma$ )
$\Sigma m_\nu$ [eV]	0.0006	$< 0.0518$ (−0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6065	$0.6055 \pm 0.0075$ (−0.1 $\sigma$ )	$D_M(0.51)$	1993.5	$1987 \pm 30$ (+0.5 $\sigma$ )
$N_{\text{eff}}$	2.891	$2.97 \pm 0.17$ (−0.6 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9930	$0.988^{+0.011}_{-0.0093}$ (+0.2 $\sigma$ )	$H(0.61)$	94.58	$95.0 \pm 1.2$ (−0.5 $\sigma$ )
$\ln(10^{10} A_s)$	3.0354	$3.042 \pm 0.017$ (−0.2 $\sigma$ )	$r_{\text{drag}} h$	100.11	$99.81 \pm 0.84$ (−0.2 $\sigma$ )	$D_M(0.61)$	2320.2	$2313 \pm 34$ (+0.5 $\sigma$ )
$n_s$	0.9631	$0.9643 \pm 0.0070$ (−0.5 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4425	$2.441 \pm 0.022$ (+0.4 $\sigma$ )	$H(2.33)$	233.60	$234.9 \pm 2.6$ (−0.5 $\sigma$ )
$y_{\text{cal}}$	1.00048	$1.0006 \pm 0.0024$ (−0.0 $\sigma$ )	$z_{\text{re}}$	7.55	$7.74 \pm 0.75$ (+0.0 $\sigma$ )	$D_M(2.33)$	5810	$5785 \pm 73$ (+0.5 $\sigma$ )
$A_{217}^{\text{CIB}}$	43.5	$46 \pm 7$ (−0.2 $\sigma$ )	$10^9 A_s$	2.0810	$2.095 \pm 0.035$ (−0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4558	$0.4562 \pm 0.0058$ (−0.0 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.95	—	$10^9 A_s e^{-2\tau}$	1.8692	$1.875 \pm 0.017$ (−0.4 $\sigma$ )	$\sigma_8(0.15)$	0.7530	$0.750 \pm 0.011$ (−0.2 $\sigma$ )
$A_{143}^{\text{tSZ}}$	6.93	$5.6^{+2.2}_{-1.9}$ (+0.3 $\sigma$ )	$D_{40}$	1230.2	$1231 \pm 13$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4749	$0.4749 \pm 0.0057$ (−0.1 $\sigma$ )
$A_{100}^{\text{PS}}$	243.0	$256 \pm 28$ (−0.3 $\sigma$ )	$D_{220}$	5734.2	$5739 \pm 37$ (+0.4 $\sigma$ )	$\sigma_8(0.38)$	0.6677	$0.6651 \pm 0.0096$ (−0.2 $\sigma$ )
$A_{143}^{\text{PS}}$	51.6	$44 \pm 8$ (−0.6 $\sigma$ )	$D_{810}$	2538.6	$2538 \pm 13$ (+0.0 $\sigma$ )	$f\sigma_8(0.51)$	0.4739	$0.4737 \pm 0.0057$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	58.1	$42 \pm 9$ (−0.2 $\sigma$ )	$D_{1420}$	819.89	$818.2 \pm 4.8$ (+0.6 $\sigma$ )	$\sigma_8(0.51)$	0.6249	$0.6224 \pm 0.0092$ (−0.2 $\sigma$ )
$A_{217}^{\text{PS}}$	124.1	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	232.56	$231.6 \pm 1.8$ (+0.9 $\sigma$ )	$f\sigma_8(0.61)$	0.4692	$0.4688 \pm 0.0057$ (−0.2 $\sigma$ )
$A^{\text{kSZ}}$	0.01	$< 3.91$ (−0.3 $\sigma$ )	$n_{s,0.002}$	0.9631	$0.9643 \pm 0.0070$ (−0.5 $\sigma$ )	$\sigma_8(0.61)$	0.5947	$0.5923 \pm 0.0088$ (−0.2 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.79	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P$	0.24329	$0.2444 \pm 0.0024$ (−0.6 $\sigma$ )	$f\sigma_8(2.33)$	0.29903	$0.2984 \pm 0.0043$ (−0.3 $\sigma$ )
$A_{143}^{\text{dustTT}}$	10.96	$10.8 \pm 1.8$ (+0.0 $\sigma$ )	$Y_P^{\text{BBN}}$	0.24461	$0.2457 \pm 0.0024$ (−0.6 $\sigma$ )	$\sigma_8(2.33)$	0.30891	$0.3079 \pm 0.0048$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	20.30	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5378	$2.559 \pm 0.045$ (−1.1 $\sigma$ )	$f_{2000}^{143}$	26.94	$28.6 \pm 3.0$ (−0.8 $\sigma$ )
$A_{217}^{\text{dustTT}}$	96.1	$93.8 \pm 7.3$ (+0.1 $\sigma$ )	Age/Gyr	13.910	$13.85 \pm 0.17$ (+0.5 $\sigma$ )	$f_{2000}^{143 \times 217}$	30.72	$31.5 \pm 2.1$ (−0.9 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1144	$0.114 \pm 0.038$	$z_*$	1089.521	$1089.67 \pm 0.33$ (−1.0 $\sigma$ )	$f_{2000}^{217}$	105.29	$106.4 \pm 2.0$ (−0.8 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1344	$0.135 \pm 0.029$	$r_*$	146.09	$145.3 \pm 1.7$ (+0.5 $\sigma$ )	$\chi_{\text{lensing}}^2$	8.609	$9.12 \pm 0.68$ (−0.5 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.481	$0.481 \pm 0.085$	$100\theta_*$	1.04156	$1.04138 \pm 0.00053$ (+0.5 $\sigma$ )	$\chi_{\text{small}}^2$	395.92	$397.2 \pm 1.9$ (+0.1 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.225	$0.224 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	14.026	$13.96 \pm 0.16$ (+0.5 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.52	$23.6 \pm 1.1$ (+0.4 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.664	$0.665 \pm 0.080$	$z_{\text{drag}}$	1059.51	$1059.74 \pm 0.69$ (+0.0 $\sigma$ )	$\chi_{\text{plik}}^2$	2343.5	$2359.3 \pm 5.9$ (+285.9 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.072	$2.08 \pm 0.27$	$r_{\text{drag}}$	148.78	$148.0 \pm 1.8$ (+0.5 $\sigma$ )	$\chi_{\text{JLA}}^2$	1034.881	$1035.07 \pm 0.33$ (+0.1 $\sigma$ )
$c_{100}$	0.99975	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$k_D$	0.13967	$0.1402 \pm 0.0013$ (−0.3 $\sigma$ )	$\chi_{6\text{DF}}^2$	0.0060	$0.048 \pm 0.064$ (+0.0 $\sigma$ )
$c_{217}$	0.99815	$0.99818 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_D$	0.160373	$0.16056 \pm 0.00040$ (−1.0 $\sigma$ )	$\chi_{\text{MGS}}^2$	1.473	$1.37 \pm 0.47$ (−0.2 $\sigma$ )
$H_0$	67.28	$67.4 \pm 1.1$ (−0.5 $\sigma$ )	$z_{\text{eq}}$	3395.7	$3391 \pm 23$ (+0.7 $\sigma$ )	$\chi_{\text{DR12BAO}}^2$	3.77	$4.6 \pm 1.4$ (+0.1 $\sigma$ )
$\Omega_\Lambda$	0.6926	$0.6902 \pm 0.0068$ (−0.2 $\sigma$ )	$k_{\text{eq}}$	0.010256	$0.01030 \pm 0.00011$ (−0.2 $\sigma$ )	$\chi_{\text{prior}}^2$	1.39	$11.5 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_m$	0.3074	$0.3098 \pm 0.0068$ (+0.2 $\sigma$ )	$100\theta_{\text{eq}}$	0.81450	$0.8155 \pm 0.0045$ (−0.6 $\sigma$ )	$\chi_{\text{CMB}}^2$	2771.6	$2789.2 \pm 6.0$ (+277.0 $\sigma$ )
$\Omega_m h^2$	0.13915	$0.1409 \pm 0.0031$ (−0.5 $\sigma$ )	$100\theta_{s,\text{eq}}$	0.45004	$0.4505 \pm 0.0023$ (−0.6 $\sigma$ )	$\chi_{\text{BAO}}^2$	5.251	$6.0 \pm 1.1$ (−0.0 $\sigma$ )
$\Omega_\nu h^2$	$0.6 \cdot 10^{-5}$	$< 0.000541$ (−0.3 $\sigma$ )	$H(0.15)$	72.48	$72.7 \pm 1.1$ (−0.5 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 3813.11$ ;  $\Delta\chi_{\text{eff}}^2 = 1584.97$ ;  $\bar{\chi}_{\text{eff}}^2 = 3841.73$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.23$ ;  $R - 1 = 0.00935$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.01 ( $\Delta$  0.00) MGS: 1.47 ( $\Delta$  -0.07) DR12BAO: 3.77 ( $\Delta$  0.11) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.61 ( $\Delta$  -0.20) simall\_100x143\_offlike5\_EE\_Aplanck 395.92 ( $\Delta$  0.07) commander\_dx12\_v3\_2.29: 23.52 ( $\Delta$  0.20) plik\_rd12\_HM\_v22b\_TTTEEE: 2343.54 SN - JLA Pantheon18: 1034.88 ( $\Delta$  0.03)



### 9.36 base\_nnu\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022306	$0.02235 \pm 0.00017$ (+0.7 $\sigma$ )	$\Omega_m h^3$	0.09345	$0.0946 \pm 0.0029$ (−0.3 $\sigma$ )	$D_M(0.15)$	646.2	$645.0 \pm 9.3$ (+0.3 $\sigma$ )
$\Omega_c h^2$	0.11694	$0.1178 \pm 0.0025$ (−0.3 $\sigma$ )	$\sigma_8$	0.8147	$0.810^{+0.011}_{-0.0099}$ (−0.0 $\sigma$ )	$H(0.38)$	82.29	$82.5 \pm 1.0$ (−0.3 $\sigma$ )
$100\theta_{MC}$	1.041303	$1.04119 \pm 0.00040$ (+0.3 $\sigma$ )	$S_8$	0.8271	$0.825 \pm 0.011$ (+0.0 $\sigma$ )	$D_M(0.38)$	1541.6	$1538 \pm 21$ (+0.3 $\sigma$ )
$\tau$	0.0531	$0.0552 \pm 0.0075$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4530	$0.4520 \pm 0.0061$ (+0.0 $\sigma$ )	$H(0.51)$	88.92	$89.2 \pm 1.0$ (−0.3 $\sigma$ )
$\Sigma m_\nu$ [eV]	0.0013	$< 0.0541$ (−0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6075	$0.6052 \pm 0.0073$ (+0.0 $\sigma$ )	$D_M(0.51)$	1997.4	$1993 \pm 26$ (+0.3 $\sigma$ )
$N_{\text{eff}}$	2.883	$2.95 \pm 0.15$ (−0.4 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9945	$0.988^{+0.011}_{-0.0094}$ (+0.1 $\sigma$ )	$H(0.61)$	94.47	$94.8 \pm 1.1$ (−0.3 $\sigma$ )
$\ln(10^{10} A_s)$	3.0346	$3.041 \pm 0.016$ (−0.0 $\sigma$ )	$r_{\text{drag}} h$	99.88	$99.65 \pm 0.87$ (−0.1 $\sigma$ )	$D_M(0.61)$	2324.6	$2319 \pm 30$ (+0.3 $\sigma$ )
$n_s$	0.9620	$0.9632 \pm 0.0064$ (−0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4468	$2.443 \pm 0.022$ (+0.3 $\sigma$ )	$H(2.33)$	233.62	$234.7 \pm 2.2$ (−0.3 $\sigma$ )
$y_{\text{cal}}$	1.00057	$1.0006 \pm 0.0024$ (+0.0 $\sigma$ )	$z_{\text{re}}$	7.50	$7.71 \pm 0.76$ (+0.1 $\sigma$ )	$D_M(2.33)$	5816	$5796 \pm 64$ (+0.3 $\sigma$ )
$A_{217}^{\text{CIB}}$	44.4	$46 \pm 7$ (−0.2 $\sigma$ )	$10^9 A_s$	2.0794	$2.092 \pm 0.034$ (−0.0 $\sigma$ )	$f\sigma_8(0.15)$	0.4571	$0.4564 \pm 0.0058$ (+0.0 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.835	$> 0.381$ (+0.1 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8698	$1.873 \pm 0.015$ (−0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7529	$0.749^{+0.010}_{-0.0094}$ (−0.0 $\sigma$ )
$A_{143}^{\text{tSZ}}$	6.99	$5.6^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$D_{40}$	1232.3	$1233 \pm 13$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4758	$0.4748 \pm 0.0055$ (−0.0 $\sigma$ )
$A_{100}^{\text{PS}}$	244.2	$255 \pm 28$ (−0.3 $\sigma$ )	$D_{220}$	5733.5	$5738 \pm 37$ (+0.4 $\sigma$ )	$\sigma_8(0.38)$	0.6675	$0.6637^{+0.0095}_{-0.0086}$ (−0.1 $\sigma$ )
$A_{143}^{\text{PS}}$	50.4	$44 \pm 8$ (−0.5 $\sigma$ )	$D_{810}$	2538.7	$2538 \pm 13$ (+0.1 $\sigma$ )	$f\sigma_8(0.51)$	0.4746	$0.4734 \pm 0.0055$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	55.7	$42 \pm 9$ (−0.2 $\sigma$ )	$D_{1420}$	819.71	$818.2 \pm 4.7$ (+0.5 $\sigma$ )	$\sigma_8(0.51)$	0.6246	$0.6212^{+0.0091}_{-0.0081}$ (−0.1 $\sigma$ )
$A_{217}^{\text{PS}}$	122.9	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	232.49	$231.7 \pm 1.7$ (+0.8 $\sigma$ )	$f\sigma_8(0.61)$	0.4698	$0.4684 \pm 0.0054$ (−0.0 $\sigma$ )
$A^{\text{kSZ}}$	0.00	$< 3.83$ (−0.2 $\sigma$ )	$n_{s,0.002}$	0.9620	$0.9632 \pm 0.0064$ (−0.3 $\sigma$ )	$\sigma_8(0.61)$	0.5943	$0.5910^{+0.0087}_{-0.0078}$ (−0.1 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.71	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P$	0.24316	$0.2440 \pm 0.0021$ (−0.4 $\sigma$ )	$f\sigma_8(2.33)$	0.29880	$0.2978 \pm 0.0041$ (−0.1 $\sigma$ )
$A_{143}^{\text{dustTT}}$	10.92	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{\text{BBN}}$	0.24447	$0.2453 \pm 0.0021$ (−0.4 $\sigma$ )	$\sigma_8(2.33)$	0.30859	$0.3071 \pm 0.0046$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	20.08	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5408	$2.555 \pm 0.040$ (−1.0 $\sigma$ )	$f_{2000}^{143}$	27.20	$28.5 \pm 2.9$ (−0.7 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.5	$93.8 \pm 7.3$ (+0.1 $\sigma$ )	Age/Gyr	13.923	$13.88 \pm 0.15$ (+0.3 $\sigma$ )	$f_{2000}^{143 \times 217}$	30.85	$31.4 \pm 2.0$ (−0.8 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1130	$0.114 \pm 0.038$	$z_*$	1089.564	$1089.65 \pm 0.31$ (−0.9 $\sigma$ )	$f_{2000}^{217}$	105.48	$106.3 \pm 1.9$ (−0.7 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1335	$0.135 \pm 0.029$	$r_*$	146.12	$145.6 \pm 1.5$ (+0.3 $\sigma$ )	$\chi_{\text{lensing}}^2$	8.650	$9.09 \pm 0.67$ (−0.4 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.483	$0.481 \pm 0.085$	$100\theta_*$	1.041572	$1.04143 \pm 0.00048$ (+0.4 $\sigma$ )	$\chi_{\text{simall}}^2$	395.86	$397.1 \pm 1.9$ (+0.1 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.224	$0.224 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	14.029	$13.98 \pm 0.14$ (+0.3 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.71	$23.7 \pm 1.1$ (+0.3 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.665	$0.665 \pm 0.080$	$z_{\text{drag}}$	1059.44	$1059.64 \pm 0.62$ (+0.3 $\sigma$ )	$\chi_{\text{plik}}^2$	2343.0	$2358.9 \pm 5.8$ (+295.7 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.090	$2.08 \pm 0.27$	$r_{\text{drag}}$	148.83	$148.2 \pm 1.5$ (+0.3 $\sigma$ )	$\chi_{\text{Aver15}}^2$	0.011	$0.28 \pm 0.40$ (−0.3 $\sigma$ )
$c_{100}$	0.99973	$0.99968 \pm 0.00061$ (+0.1 $\sigma$ )	$k_D$	0.13963	$0.1400 \pm 0.0011$ (−0.1 $\sigma$ )	$\chi_{6\text{DF}}^2$	0.0155	$0.060 \pm 0.077$ (−0.0 $\sigma$ )
$c_{217}$	0.99815	$0.99818 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_D$	0.160379	$0.16052 \pm 0.00035$ (−0.9 $\sigma$ )	$\chi_{\text{MGS}}^2$	1.343	$1.28 \pm 0.47$ (−0.1 $\sigma$ )
$H_0$	67.11	$67.2 \pm 1.0$ (−0.3 $\sigma$ )	$z_{\text{eq}}$	3402.1	$3395 \pm 24$ (+0.5 $\sigma$ )	$\chi_{\text{DR12BAO}}^2$	4.04	$4.9 \pm 1.6$ (+0.0 $\sigma$ )
$\Omega_\Lambda$	0.6908	$0.6888 \pm 0.0070$ (−0.1 $\sigma$ )	$k_{\text{eq}}$	0.010269	$0.010290 \pm 0.000099$ (−0.1 $\sigma$ )	$\chi_{\text{prior}}^2$	1.52	$11.4 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_m$	0.3092	$0.3112 \pm 0.0070$ (+0.1 $\sigma$ )	$100\theta_{\text{eq}}$	0.81325	$0.8147 \pm 0.0045$ (−0.4 $\sigma$ )	$\chi_{\text{CMB}}^2$	2771.3	$2788.8 \pm 5.9$ (+285.4 $\sigma$ )
$\Omega_m h^2$	0.13926	$0.1406 \pm 0.0027$ (−0.3 $\sigma$ )	$100\theta_{s,\text{eq}}$	0.44941	$0.4501 \pm 0.0023$ (−0.5 $\sigma$ )	$\chi_{\text{BAO}}^2$	5.40	$6.2 \pm 1.3$ (−0.0 $\sigma$ )
$\Omega_\nu h^2$	$1.4 \cdot 10^{-5}$	$< 0.000564$ (−0.2 $\sigma$ )	$H(0.15)$	72.32	$72.5 \pm 1.0$ (−0.3 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 2778.19$ ;  $\Delta\chi_{\text{eff}}^2 = 1584.91$ ;  $\bar{\chi}_{\text{eff}}^2 = 2806.77$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.16$ ;  $R - 1 = 0.00843$   
 $\chi_{\text{eff}}^2$ : Abund - Yp\_Aver2015: 0.01 ( $\Delta$  0.01) BAO - 6DF: 0.01 ( $\Delta$  0.00) MGS: 1.34 ( $\Delta$  -0.06) DR12BAO: 4.04 ( $\Delta$  0.16) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.65 ( $\Delta$  -0.05) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.86 ( $\Delta$  0.00) commander\_dx12\_v3.2.29: 23.71 ( $\Delta$  0.09) plik\_rd12\_HM\_v22b\_TTTEEE: 2343.05



### 9.37 base\_nnu\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Cooke17\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022312	$0.02235 \pm 0.00017$ (+0.7 $\sigma$ )	$\sigma_8$	0.8166	$0.812^{+0.011}_{-0.0097}$ (+0.1 $\sigma$ )	$D_M(0.38)$	1536.7	$1535 \pm 20$ (+0.2 $\sigma$ )
$\Omega_c h^2$	0.11778	$0.1183 \pm 0.0024$ (−0.2 $\sigma$ )	$S_8$	0.8290	$0.826 \pm 0.011$ (+0.1 $\sigma$ )	$H(0.51)$	89.20	$89.4 \pm 1.0$ (−0.2 $\sigma$ )
$100\theta_{MC}$	1.041187	$1.04112 \pm 0.00039$ (+0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4540	$0.4526 \pm 0.0061$ (+0.1 $\sigma$ )	$D_M(0.51)$	1991.1	$1989 \pm 26$ (+0.2 $\sigma$ )
$\tau$	0.0531	$0.0550 \pm 0.0075$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6089	$0.6060 \pm 0.0072$ (+0.1 $\sigma$ )	$H(0.61)$	94.77	$95.0 \pm 1.0$ (−0.2 $\sigma$ )
$\Sigma m_\nu$ [eV]	0.0028	$< 0.0548$ (−0.2 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9952	$0.989^{+0.011}_{-0.0094}$ (+0.2 $\sigma$ )	$D_M(0.61)$	2317.2	$2315 \pm 29$ (+0.2 $\sigma$ )
$N_{\text{eff}}$	2.930	$2.97 \pm 0.14$ (−0.3 $\sigma$ )	$r_{\text{drag}} h$	99.87	$99.65 \pm 0.87$ (−0.1 $\sigma$ )	$H(2.33)$	234.34	$235.1 \pm 2.1$ (−0.2 $\sigma$ )
$\ln(10^{10} A_s)$	3.0358	$3.041 \pm 0.016$ (+0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4465	$2.443 \pm 0.022$ (+0.3 $\sigma$ )	$D_M(2.33)$	5797	$5786 \pm 61$ (+0.2 $\sigma$ )
$n_s$	0.9630	$0.9639 \pm 0.0062$ (−0.2 $\sigma$ )	$z_{\text{re}}$	7.51	$7.70 \pm 0.76$ (+0.0 $\sigma$ )	$f\sigma_8(0.15)$	0.4581	$0.4570 \pm 0.0057$ (+0.1 $\sigma$ )
$y_{\text{cal}}$	1.00019	$1.0006 \pm 0.0024$ (+0.0 $\sigma$ )	$10^9 A_s$	2.0817	$2.094 \pm 0.034$ (+0.0 $\sigma$ )	$\sigma_8(0.15)$	0.7547	$0.750^{+0.010}_{-0.0091}$ (+0.0 $\sigma$ )
$A_{217}^{\text{CIB}}$	45.5	$46 \pm 7$ (−0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8720	$1.875 \pm 0.015$ (−0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.4769	$0.4755 \pm 0.0055$ (+0.1 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.63	—	$D_{40}$	1230.6	$1232 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6690	$0.6647^{+0.0095}_{-0.0084}$ (+0.0 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.08	$5.6^{+2.2}_{-1.9}$ (+0.2 $\sigma$ )	$D_{220}$	5727.4	$5736 \pm 37$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.4757	$0.4741 \pm 0.0054$ (+0.1 $\sigma$ )
$A_{100}^{\text{PS}}$	246.8	$256 \pm 28$ (−0.2 $\sigma$ )	$D_{810}$	2536.6	$2538 \pm 13$ (+0.1 $\sigma$ )	$\sigma_8(0.51)$	0.6261	$0.6221^{+0.0091}_{-0.0080}$ (+0.0 $\sigma$ )
$A_{143}^{\text{PS}}$	48.9	$45 \pm 8$ (−0.4 $\sigma$ )	$D_{1420}$	818.17	$817.9 \pm 4.7$ (+0.5 $\sigma$ )	$f\sigma_8(0.61)$	0.4708	$0.4691 \pm 0.0053$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	51.3	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{2000}$	231.78	$231.4 \pm 1.7$ (+0.7 $\sigma$ )	$\sigma_8(0.61)$	0.5957	$0.5919^{+0.0087}_{-0.0077}$ (+0.0 $\sigma$ )
$A_{217}^{\text{PS}}$	121.3	$115 \pm 10$ (+0.0 $\sigma$ )	$n_{s,0.002}$	0.9630	$0.9639 \pm 0.0062$ (−0.2 $\sigma$ )	$f\sigma_8(2.33)$	0.29953	$0.2983 \pm 0.0041$ (−0.0 $\sigma$ )
$A^{\text{kSZ}}$	0.00	$< 3.97$ (−0.2 $\sigma$ )	$Y_P$	0.24380	$0.2444 \pm 0.0020$ (−0.3 $\sigma$ )	$\sigma_8(2.33)$	0.30934	$0.3076 \pm 0.0045$ (−0.0 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.79	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P^{\text{BBN}}$	0.24512	$0.2457 \pm 0.0020$ (−0.3 $\sigma$ )	$f_{2000}^{143}$	27.95	$28.9 \pm 2.9$ (−0.6 $\sigma$ )
$A_{143}^{\text{dustTT}}$	10.98	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5561	$2.565 \pm 0.037$ (−1.0 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.32	$31.7 \pm 2.0$ (−0.7 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	20.01	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	Age/Gyr	13.879	$13.85 \pm 0.15$ (+0.2 $\sigma$ )	$f_{2000}^{217}$	105.90	$106.5 \pm 1.9$ (−0.6 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.6	$93.8 \pm 7.3$ (+0.0 $\sigma$ )	$z_*$	1089.678	$1089.72 \pm 0.28$ (−0.9 $\sigma$ )	$\chi_{\text{lensing}}^2$	8.749	$9.14 \pm 0.66$ (−0.3 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1143	$0.114 \pm 0.038$	$r_*$	145.65	$145.3 \pm 1.4$ (+0.2 $\sigma$ )	$\chi_{\text{small}}^2$	395.85	$397.1 \pm 1.9$ (+0.1 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1348	$0.135 \pm 0.029$	$100\theta_*$	1.041427	$1.04135 \pm 0.00046$ (+0.2 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.62	$23.6 \pm 1.1$ (+0.2 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.481	$0.481 \pm 0.085$	$D_M(z_*)/\text{Gpc}$	13.986	$13.95 \pm 0.13$ (+0.2 $\sigma$ )	$\chi_{\text{plik}}^2$	2343.2	$2358.9 \pm 5.8$ (+299.0 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.224	$0.225 \pm 0.054$	$z_{\text{drag}}$	1059.55	$1059.70 \pm 0.61$ (+0.4 $\sigma$ )	$\chi_{\text{Aver15}}^2$	0.003	$0.29 \pm 0.40$ (−0.3 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.662	$0.665 \pm 0.080$	$r_{\text{drag}}$	148.35	$148.0 \pm 1.5$ (+0.1 $\sigma$ )	$\chi_{\text{Cooke17}}^2$	0.434	$0.48 \pm 0.49$ (+0.5 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.073	$2.08 \pm 0.27$	$k_D$	0.13995	$0.1402 \pm 0.0011$ (+0.1 $\sigma$ )	$\chi_{6DF}^2$	0.0157	$0.061 \pm 0.077$ (−0.0 $\sigma$ )
$c_{100}$	0.99972	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$100\theta_D$	0.160509	$0.16060 \pm 0.00033$ (−0.9 $\sigma$ )	$\chi_{\text{MGS}}^2$	1.343	$1.28 \pm 0.47$ (−0.1 $\sigma$ )
$c_{217}$	0.99817	$0.99819 \pm 0.00062$ (−0.1 $\sigma$ )	$z_{\text{eq}}$	3400.9	$3394 \pm 24$ (+0.5 $\sigma$ )	$\chi_{\text{DR12BAO}}^2$	4.06	$4.9 \pm 1.6$ (+0.0 $\sigma$ )
$H_0$	67.32	$67.4 \pm 1.0$ (−0.2 $\sigma$ )	$k_{\text{eq}}$	0.010298	$0.010307 \pm 0.000096$ (+0.1 $\sigma$ )	$\chi_{\text{prior}}^2$	1.56	$11.5 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_\Lambda$	0.6909	$0.6889 \pm 0.0070$ (−0.1 $\sigma$ )	$100\theta_{\text{eq}}$	0.81343	$0.8149 \pm 0.0045$ (−0.4 $\sigma$ )	$\chi_{\text{CMB}}^2$	2771.4	$2788.8 \pm 5.9$ (+288.6 $\sigma$ )
$\Omega_m$	0.3091	$0.3111 \pm 0.0070$ (+0.1 $\sigma$ )	$100\theta_{s,\text{eq}}$	0.44950	$0.4502 \pm 0.0023$ (−0.4 $\sigma$ )	$\chi_{\text{BAO}}^2$	5.41	$6.2 \pm 1.3$ (−0.0 $\sigma$ )
$\Omega_m h^2$	0.14012	$0.1411 \pm 0.0026$ (−0.2 $\sigma$ )	$H(0.15)$	72.55	$72.61 \pm 0.99$ (−0.2 $\sigma$ )	$\chi_{\text{Abund}}^2$	0.437	$0.77 \pm 0.59$ (+0.0 $\sigma$ )
$\Omega_\nu h^2$	$2.9 \cdot 10^{-5}$	$< 0.000574$ (−0.2 $\sigma$ )	$D_M(0.15)$	644.1	$643.8 \pm 9.1$ (+0.2 $\sigma$ )			
$\Omega_m h^3$	0.09434	$0.0951 \pm 0.0028$ (−0.2 $\sigma$ )	$H(0.38)$	82.55	$82.68 \pm 0.99$ (−0.2 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 2778.82$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.49$ ;  $\bar{\chi}_{\text{eff}}^2 = 2807.26$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.63$ ;  $R - 1 = 0.00868$   
 $\chi_{\text{eff}}^2$ : Abund - Yp\_Aver2015: 0.00 ( $\Delta$  -0.02) D\_Cooke2017: 0.43 ( $\Delta$  0.37) BAO - 6DF: 0.02 ( $\Delta$  0.01) MGS: 1.34 ( $\Delta$  -0.13) DR12BAO: 4.06 ( $\Delta$  0.30) CMB - smi-cadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb\_consext8: 8.75 ( $\Delta$  -0.02) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.85 ( $\Delta$  -0.00) commander\_dx12\_v3.2\_29: 23.62 ( $\Delta$  0.30) plik\_rd12\_HM\_v22b\_TTTEEE 2343.18



### 9.38 base\_nnu\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02238 \pm 0.00018 \quad (+0.5\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.0951 \pm 0.0034 \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.15)$	$643 \pm 10 \quad (+0.5\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1181 \pm 0.0029 \quad (-0.5\sigma)$	$\sigma_8$	$0.812 \pm 0.011 \quad (-0.2\sigma)$	$H(0.38)$	$82.7 \pm 1.2 \quad (-0.5\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04116 \pm 0.00044 \quad (+0.5\sigma)$	$S_8$	$0.825 \pm 0.011 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1534 \pm 23 \quad (+0.5\sigma)$
$\tau$	$0.0563^{+0.0055}_{-0.0079} \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4518 \pm 0.0061 \quad (+0.0\sigma)$	$H(0.51)$	$89.4 \pm 1.2 \quad (-0.5\sigma)$
$\Sigma m_{\nu} [\mathrm{eV}]$	$< 0.0528 \quad (-0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6057 \pm 0.0075 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1987 \pm 30 \quad (+0.5\sigma)$
$N_{\mathrm{eff}}$	$2.97 \pm 0.17 \quad (-0.6\sigma)$	$\sigma_8/h^{0.5}$	$0.989^{+0.011}_{-0.0092} \quad (+0.2\sigma)$	$H(0.61)$	$95.0 \pm 1.2 \quad (-0.5\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.014}_{-0.017} \quad (-0.2\sigma)$	$r_{\mathrm{drag}}h$	$99.83 \pm 0.83 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.61)$	$2312 \pm 34 \quad (+0.5\sigma)$
$n_{\mathrm{s}}$	$0.9644 \pm 0.0069 \quad (-0.5\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.442 \pm 0.021 \quad (+0.4\sigma)$	$H(2.33)$	$234.9 \pm 2.6 \quad (-0.5\sigma)$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0024 \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.83^{+0.59}_{-0.77} \quad (-0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	$5784 \pm 73 \quad (+0.5\sigma)$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.098^{+0.029}_{-0.035} \quad (-0.2\sigma)$	$f\sigma_8(0.15)$	$0.4564 \pm 0.0058 \quad (-0.0\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.874 \pm 0.017 \quad (-0.4\sigma)$	$\sigma_8(0.15)$	$0.751 \pm 0.010 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.6^{+2.2}_{-1.9} \quad (+0.3\sigma)$	$D_{40}$	$1231 \pm 13 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4751 \pm 0.0057 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$256 \pm 28 \quad (-0.3\sigma)$	$D_{220}$	$5738 \pm 37 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6655 \pm 0.0096 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$44 \pm 8 \quad (-0.6\sigma)$	$D_{810}$	$2538 \pm 13 \quad (+0.0\sigma)$	$f\sigma_8(0.51)$	$0.4739 \pm 0.0056 \quad (-0.1\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.2\sigma)$	$D_{1420}$	$818.1 \pm 4.8 \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.6228 \pm 0.0091 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$231.6 \pm 1.8 \quad (+0.9\sigma)$	$f\sigma_8(0.61)$	$0.4691 \pm 0.0056 \quad (-0.2\sigma)$
$A^{\mathrm{kSZ}}$	$< 3.92 \quad (-0.3\sigma)$	$n_{\mathrm{s},0.002}$	$0.9644 \pm 0.0069 \quad (-0.5\sigma)$	$\sigma_8(0.61)$	$0.5927 \pm 0.0087 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.2444 \pm 0.0024 \quad (-0.6\sigma)$	$f\sigma_8(2.33)$	$0.2987 \pm 0.0043 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.8 \quad (+0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2457 \pm 0.0024 \quad (-0.6\sigma)$	$\sigma_8(2.33)$	$0.3081 \pm 0.0047 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.559 \pm 0.045 \quad (-1.1\sigma)$	$f_{2000}^{143}$	$28.6 \pm 3.0 \quad (-0.8\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.8 \pm 7.3 \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.85 \pm 0.17 \quad (+0.5\sigma)$	$f_{2000}^{143 \times 217}$	$31.5 \pm 2.1 \quad (-0.9\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.038$	$z_*$	$1089.66 \pm 0.33 \quad (-1.0\sigma)$	$f_{2000}^{217}$	$106.4 \pm 2.0 \quad (-0.8\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.029$	$r_*$	$145.3 \pm 1.7 \quad (+0.5\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.10 \pm 0.66 \quad (-0.5\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.481 \pm 0.084$	$100\theta_*$	$1.04138 \pm 0.00053 \quad (+0.5\sigma)$	$\chi_{\mathrm{small}}^2$	$397.2 \pm 2.0 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.224 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.96 \pm 0.16 \quad (+0.5\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.6 \pm 1.1 \quad (+0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.665 \pm 0.080$	$z_{\mathrm{drag}}$	$1059.75 \pm 0.69 \quad (+0.0\sigma)$	$\chi_{\mathrm{plik}}^2$	$2359.2 \pm 5.9 \quad (+286.4\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.08 \pm 0.27$	$r_{\mathrm{drag}}$	$148.0 \pm 1.8 \quad (+0.5\sigma)$	$\chi_{\mathrm{JLA}}^2$	$1035.06 \pm 0.33 \quad (+0.1\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.1402 \pm 0.0013 \quad (-0.3\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.047 \pm 0.062 \quad (+0.0\sigma)$
$c_{217}$	$0.99818 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16056 \pm 0.00040 \quad (-1.0\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.38 \pm 0.47 \quad (-0.3\sigma)$
$H_0$	$67.5 \pm 1.1 \quad (-0.5\sigma)$	$z_{\mathrm{eq}}$	$3390 \pm 23 \quad (+0.7\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.3 \quad (+0.1\sigma)$
$\Omega_{\Lambda}$	$0.6904 \pm 0.0067 \quad (-0.2\sigma)$	$k_{\mathrm{eq}}$	$0.01029 \pm 0.00011 \quad (-0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.5 \quad (+1.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3096 \pm 0.0067 \quad (+0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8156 \pm 0.0044 \quad (-0.6\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2789.0 \pm 6.0 \quad (+278.7\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1409 \pm 0.0031 \quad (-0.5\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4506 \pm 0.0022 \quad (-0.6\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.1 \quad (-0.0\sigma)$
$\Omega_{\nu}h^2$	$< 0.000552 \quad (-0.3\sigma)$	$H(0.15)$	$72.7 \pm 1.1 \quad (-0.5\sigma)$		

$\bar{\chi}_{\mathrm{eff}}^2 = 3841.56$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.21$ ;  $R - 1 = 0.01012$



### 9.39 base\_nnu\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022197	$0.02221 \pm 0.00023$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4546	$0.4519 \pm 0.0071$	$H(0.38)$	83.07	$83.0 \pm 1.5$
$\Omega_{\mathrm{c}}h^2$	0.11915	$0.1191 \pm 0.0038$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6104	$0.6057 \pm 0.0087$	$D_{\mathrm{M}}(0.38)$	1526.5	$1530 \pm 30$
$100\theta_{\mathrm{MC}}$	1.04103	$1.04104 \pm 0.00058$	$\sigma_8/h^{0.5}$	0.9955	$0.987^{+0.012}_{-0.010}$	$H(0.51)$	89.74	$89.7 \pm 1.6$
$\tau$	0.0530	$0.0548^{+0.0070}_{-0.0077}$	$r_{\mathrm{drag}}h$	100.10	$99.8 \pm 1.0$	$D_{\mathrm{M}}(0.51)$	1978.1	$1982 \pm 39$
$\Sigma m_{\nu}$ [eV]	0.0026	$< 0.0640$	$\langle d^2 \rangle^{1/2}$	2.4429	$2.434 \pm 0.024$	$H(0.61)$	95.32	$95.3 \pm 1.6$
$N_{\mathrm{eff}}$	3.024	$3.04 \pm 0.24$	$z_{\mathrm{re}}$	7.56	$7.73 \pm 0.77$	$D_{\mathrm{M}}(0.61)$	2302.3	$2306 \pm 44$
$\ln(10^{10}A_{\mathrm{s}})$	3.0373	$3.041 \pm 0.018$	$10^9 A_{\mathrm{s}}$	2.0848	$2.093 \pm 0.038$	$H(2.33)$	235.44	$235.7 \pm 3.4$
$n_{\mathrm{s}}$	0.9647	$0.9663 \pm 0.0088$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8752	$1.876 \pm 0.021$	$D_{\mathrm{M}}(2.33)$	5765	$5768 \pm 96$
$y_{\mathrm{cal}}$	1.00039	$1.0006 \pm 0.0025$	$D_{40}$	1227.0	$1225 \pm 15$	$f\sigma_8(0.15)$	0.4588	$0.4566 \pm 0.0068$
$A_{100}^{\mathrm{PS}}$	243.8	$242 \pm 25$	$D_{220}$	5710.1	$5713 \pm 40$	$\sigma_8(0.15)$	0.7578	$0.750 \pm 0.012$
$A_{143}^{\mathrm{PS}}$	37.1	$40 \pm 9$	$D_{810}$	2531.6	$2534 \pm 14$	$f\sigma_8(0.38)$	0.4781	$0.4752 \pm 0.0066$
$A_{217}^{\mathrm{PS}}$	99.5	$101 \pm 10$	$D_{1420}$	814.0	$815.1 \pm 5.3$	$\sigma_8(0.38)$	0.6719	$0.665 \pm 0.011$
$A_{217}^{\mathrm{CIB}}$	42.6	$41 \pm 7$	$D_{2000}$	229.75	$230.0 \pm 2.3$	$f\sigma_8(0.51)$	0.4770	$0.4740 \pm 0.0066$
$A_{143}^{\mathrm{tSZ}}$	4.28	$3.8^{+1.8}_{-2.5}$	$n_{\mathrm{s},0.002}$	0.9647	$0.9663 \pm 0.0088$	$\sigma_8(0.51)$	0.6289	$0.623 \pm 0.011$
$r_{143 \times 217}^{\mathrm{PS}}$	0.542	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	0.24503	$0.2452 \pm 0.0032$	$f\sigma_8(0.61)$	0.4723	$0.4691 \pm 0.0066$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.657	$0.58^{+0.41}_{-0.14}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24636	$0.2465 \pm 0.0032$	$\sigma_8(0.61)$	0.5984	$0.592 \pm 0.010$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.00	—	$10^5 \mathrm{D}/\mathrm{H}$	2.611	$2.613 \pm 0.068$	$f\sigma_8(2.33)$	0.3010	$0.2986 \pm 0.0052$
$A^{\mathrm{kSZ}}$	3.7	—	Age/Gyr	13.802	$13.81 \pm 0.23$	$\sigma_8(2.33)$	0.3109	$0.3080 \pm 0.0057$
$A_{100}^{\mathrm{dust}}$	0.999	$1.01 \pm 0.19$	$z_*$	1090.039	$1090.03 \pm 0.48$	$f_{2000}^{143}$	30.81	$30 \pm 4$
$A_{143}^{\mathrm{dust}}$	0.977	$0.97 \pm 0.18$	$r_*$	144.90	$144.9 \pm 2.2$	$f_{2000}^{217}$	107.42	$107.3 \pm 2.4$
$A_{217}^{\mathrm{dust}}$	0.974	$0.97 \pm 0.10$	$100\theta_*$	1.04122	$1.04124 \pm 0.00070$	$f_{2000}^{143 \times 217}$	32.56	$32.7 \pm 2.7$
$A_{143 \times 217}^{\mathrm{dust}}$	1.009	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.916	$13.91 \pm 0.21$	$\chi_{\mathrm{lensing}}^2$	8.90	$9.51 \pm 0.92$
$c_{100}$	0.99736	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	1059.44	$1059.49 \pm 0.87$	$\chi_{\mathrm{small}}^2$	395.85	$397.1 \pm 1.9$
$c_{217}$	1.00127	$1.0012 \pm 0.0016$	$r_{\mathrm{drag}}$	147.63	$147.6 \pm 2.3$	$\chi_{\mathrm{lowl}}^2$	23.31	$23.2 \pm 1.3$
$H_0$	67.80	$67.6 \pm 1.5$	$k_{\mathrm{D}}$	0.14025	$0.1403 \pm 0.0017$	$\chi_{\mathrm{CamSpec}}^2$	7049.9	$7063.7 \pm 5.4$
$\Omega_{\Lambda}$	0.6925	$0.6899 \pm 0.0082$	$100\theta_{\mathrm{D}}$	0.16096	$0.16100 \pm 0.00059$	$\chi_{6\mathrm{DF}}^2$	0.0062	$0.062 \pm 0.083$
$\Omega_{\mathrm{m}}$	0.3075	$0.3101 \pm 0.0082$	$z_{\mathrm{eq}}$	3387.5	$3380 \pm 31$	$\chi_{\mathrm{MGS}}^2$	1.47	$1.38 \pm 0.56$
$\Omega_{\mathrm{m}}h^2$	0.14137	$0.1419 \pm 0.0040$	$k_{\mathrm{eq}}$	0.010324	$0.01031 \pm 0.00014$	$\chi_{\mathrm{DR12BAO}}^2$	3.77	$4.8 \pm 1.7$
$\Omega_{\nu}h^2$	$2.8 \cdot 10^{-5}$	$< 0.000673$	$100\theta_{\mathrm{eq}}$	0.8155	$0.8171 \pm 0.0058$	$\chi_{\mathrm{prior}}^2$	2.33	$7.6 \pm 3.4$
$\Omega_{\mathrm{m}}h^3$	0.09586	$0.0960^{+0.0042}_{-0.0048}$	$100\theta_{\mathrm{s,eq}}$	0.45065	$0.4515 \pm 0.0029$	$\chi_{\mathrm{CMB}}^2$	7478.0	$7493.5 \pm 5.7$
$\sigma_8$	0.8198	$0.812 \pm 0.013$	$H(0.15)$	73.04	$72.9 \pm 1.5$	$\chi_{\mathrm{BAO}}^2$	5.25	$6.2 \pm 1.4$
$S_8$	0.8299	$0.825 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	639.7	$641 \pm 13$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 7485.59$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 7507.28$ ;  $R - 1 = 0.00494$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.01 MGS: 1.47 DR12BAO: 3.77 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p.teb\_consext8: 8.90 small\_100x143.offlike5\_EE\_Aplanck\_B: 395.85 comman-  
der\_dx12\_v3\_2\_29: 23.31 CamSpec like\_10.7HM: 7049.94



#### 9.40 base\_nnu\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022187	$0.02223 \pm 0.00023$	$\sigma_8 \Omega_m^{0.5}$	0.4533	$0.4515 \pm 0.0070$	$H(0.38)$	83.01	$83.1 \pm 1.5$
$\Omega_c h^2$	0.11869	$0.1192 \pm 0.0038$	$\sigma_8 \Omega_m^{0.25}$	0.6092	$0.6057 \pm 0.0087$	$D_M(0.38)$	1527.3	$1526 \pm 29$
$100\theta_{MC}$	1.04110	$1.04103 \pm 0.00058$	$\sigma_8/h^{0.5}$	0.9944	$0.987^{+0.012}_{-0.010}$	$H(0.51)$	89.66	$89.8 \pm 1.5$
$\tau$	0.0530	$0.0550 \pm 0.0075$	$r_{\text{drag}} h$	100.22	$99.97 \pm 0.95$	$D_M(0.51)$	1979.3	$1977 \pm 37$
$\Sigma m_\nu$ [eV]	0.0013	$< 0.0616$	$\langle d^2 \rangle^{1/2}$	2.4402	$2.432 \pm 0.023$	$H(0.61)$	95.23	$95.4 \pm 1.6$
$N_{\text{eff}}$	3.008	$3.06 \pm 0.23$	$z_{\text{re}}$	7.56	$7.76 \pm 0.76$	$D_M(0.61)$	2303.8	$2301 \pm 43$
$\ln(10^{10} A_s)$	3.0365	$3.042 \pm 0.018$	$10^9 A_s$	2.0833	$2.095 \pm 0.038$	$H(2.33)$	235.07	$235.9 \pm 3.4$
$n_s$	0.9648	$0.9672 \pm 0.0086$	$10^9 A_s e^{-2\tau}$	1.8737	$1.877 \pm 0.020$	$D_M(2.33)$	5771	$5759 \pm 94$
$y_{\text{cal}}$	1.00044	$1.0006 \pm 0.0025$	$D_{40}$	1226.4	$1224 \pm 15$	$f\sigma_8(0.15)$	0.4576	$0.4562 \pm 0.0067$
$A_{100}^{\text{PS}}$	238.6	$242 \pm 25$	$D_{220}$	5710.6	$5714 \pm 40$	$\sigma_8(0.15)$	0.7569	$0.751 \pm 0.012$
$A_{143}^{\text{PS}}$	38.8	$41 \pm 9$	$D_{810}$	2532.1	$2534 \pm 14$	$f\sigma_8(0.38)$	0.4770	$0.4752 \pm 0.0066$
$A_{217}^{\text{PS}}$	99.7	$101 \pm 10$	$D_{1420}$	814.6	$815.1 \pm 5.3$	$\sigma_8(0.38)$	0.6712	$0.666 \pm 0.011$
$A_{217}^{\text{CIB}}$	45.3	$41 \pm 7$	$D_{2000}$	229.98	$229.9 \pm 2.3$	$f\sigma_8(0.51)$	0.4761	$0.4741 \pm 0.0066$
$A_{143}^{\text{tSZ}}$	6.10	$3.8^{+1.8}_{-2.6}$	$n_{s,0.002}$	0.9648	$0.9672 \pm 0.0086$	$\sigma_8(0.51)$	0.6283	$0.623 \pm 0.011$
$r_{143 \times 217}^{\text{PS}}$	0.559	$0.65 \pm 0.13$	$Y_P$	0.24481	$0.2454 \pm 0.0032$	$f\sigma_8(0.61)$	0.4714	$0.4693 \pm 0.0066$
$r_{143 \times 217}^{\text{CIB}}$	0.764	$0.58^{+0.42}_{-0.13}$	$Y_P^{\text{BBN}}$	0.24613	$0.2468 \pm 0.0032$	$\sigma_8(0.61)$	0.5979	$0.593 \pm 0.010$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.01	—	$10^5 \text{D}/\text{H}$	2.607	$2.615 \pm 0.068$	$f\sigma_8(2.33)$	0.3007	$0.2992 \pm 0.0050$
$A^{\text{kSZ}}$	0.9	—	Age/Gyr	13.817	$13.79 \pm 0.22$	$\sigma_8(2.33)$	0.3106	$0.3086 \pm 0.0055$
$A_{100}^{\text{dust}}$	1.018	$1.01 \pm 0.19$	$z_*$	1089.993	$1090.03 \pm 0.48$	$f_{2000}^{143}$	30.80	$31 \pm 4$
$A_{143}^{\text{dust}}$	0.986	$0.97 \pm 0.18$	$r_*$	145.11	$144.7 \pm 2.2$	$f_{2000}^{217}$	107.29	$107.4 \pm 2.4$
$A_{217}^{\text{dust}}$	0.963	$0.97 \pm 0.10$	$100\theta_*$	1.04129	$1.04121 \pm 0.00069$	$f_{2000}^{143 \times 217}$	32.61	$32.8 \pm 2.7$
$A_{143 \times 217}^{\text{dust}}$	1.004	$1.03 \pm 0.16$	$D_M(z_*)/\text{Gpc}$	13.936	$13.90 \pm 0.21$	$\chi_{\text{lensing}}^2$	8.87	$9.55 \pm 0.93$
$c_{100}$	0.99757	$0.9975 \pm 0.0011$	$z_{\text{drag}}$	1059.40	$1059.56 \pm 0.86$	$\chi_{\text{small}}^2$	395.85	$397.1 \pm 1.9$
$c_{217}$	1.00137	$1.0012 \pm 0.0016$	$r_{\text{drag}}$	147.84	$147.4 \pm 2.3$	$\chi_{\text{lowl}}^2$	23.25	$23.0 \pm 1.2$
$H_0$	67.79	$67.8 \pm 1.4$	$k_D$	0.14008	$0.1404 \pm 0.0017$	$\chi_{\text{CamSpec}}^2$	7050.1	$7063.8 \pm 5.5$
$\Omega_\Lambda$	0.6934	$0.6912 \pm 0.0076$	$100\theta_D$	0.16094	$0.16103 \pm 0.00059$	$\chi_{\text{JLA}}^2$	1034.856	$1035.05 \pm 0.35$
$\Omega_m$	0.3066	$0.3088 \pm 0.0076$	$z_{\text{eq}}$	3383.9	$3376 \pm 29$	$\chi_{6\text{DF}}^2$	0.0030	$0.049 \pm 0.067$
$\Omega_m h^2$	0.14089	$0.1420 \pm 0.0040$	$k_{\text{eq}}$	0.010301	$0.01031 \pm 0.00014$	$\chi_{\text{MGS}}^2$	1.54	$1.47 \pm 0.54$
$\Omega_\nu h^2$	$1.4 \cdot 10^{-5}$	$< 0.000648$	$100\theta_{\text{eq}}$	0.8161	$0.8178 \pm 0.0055$	$\chi_{\text{DR12BAO}}^2$	3.65	$4.5 \pm 1.4$
$\Omega_m h^3$	0.09550	$0.0964^{+0.0042}_{-0.0047}$	$100\theta_{s,\text{eq}}$	0.45100	$0.4518 \pm 0.0028$	$\chi_{\text{prior}}^2$	2.17	$7.6 \pm 3.4$
$\sigma_8$	0.8187	$0.813 \pm 0.013$	$H(0.15)$	73.00	$73.1 \pm 1.4$	$\chi_{\text{CMB}}^2$	7478.0	$7493.5 \pm 5.7$
$S_8$	0.8277	$0.824 \pm 0.013$	$D_M(0.15)$	639.9	$640 \pm 13$	$\chi_{\text{BAO}}^2$	5.20	$6.0 \pm 1.1$

Best-fit  $\chi_{\text{eff}}^2 = 8520.27$ ;  $\bar{\chi}_{\text{eff}}^2 = 8542.17$ ;  $R - 1 = 0.00504$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.54 DR12BAO: 3.65 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p.teb\_consext8: 8.87 small\_100x143.offlike5\_EE\_Aplanck\_B: 395.85 comman-  
der\_dx12\_v3\_2\_29: 23.25 CamSpec like\_10.7HM: 7050.07 SN - JLA Pantheon18: 1034.86



9.41 base\_nnu\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}} h^2$	0.022135	$0.02219 \pm 0.00022$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4536	$0.4516 \pm 0.0070$	$H(0.38)$	82.61	$82.7 \pm 1.2$
$\Omega_{\text{c}} h^2$	0.11799	$0.1183 \pm 0.0030$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6086	$0.6048 \pm 0.0082$	$D_{\text{M}}(0.38)$	1535.5	$1536 \pm 25$
$100\theta_{\text{MC}}$	1.04120	$1.04111 \pm 0.00053$	$\sigma_8/h^{0.5}$	0.9947	$0.987^{+0.012}_{-0.010}$	$H(0.51)$	89.25	$89.4 \pm 1.2$
$\tau$	0.0529	$0.0547 \pm 0.0075$	$r_{\text{drag}} h$	99.98	$99.72 \pm 0.97$	$D_{\text{M}}(0.51)$	1989.6	$1989 \pm 31$
$\Sigma m_{\nu} [\text{eV}]$	0.0008	$< 0.0610$	$\langle d^2 \rangle^{1/2}$	2.4437	$2.436 \pm 0.023$	$H(0.61)$	94.82	$94.9 \pm 1.3$
$N_{\text{eff}}$	2.953	$2.99 \pm 0.18$	$z_{\text{re}}$	7.54	$7.70 \pm 0.76$	$D_{\text{M}}(0.61)$	2315.5	$2315 \pm 35$
$\ln(10^{10} A_{\text{s}})$	3.0338	$3.039 \pm 0.017$	$10^9 A_{\text{s}}$	2.0776	$2.089^{+0.033}_{-0.037}$	$H(2.33)$	234.38	$235.0 \pm 2.7$
$n_{\text{s}}$	0.9628	$0.9647 \pm 0.0073$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8690	$1.872 \pm 0.018$	$D_{\text{M}}(2.33)$	5795	$5787 \pm 76$
$y_{\text{cal}}$	1.00022	$1.0006 \pm 0.0025$	$D_{40}$	1228.0	$1227 \pm 14$	$f\sigma_8(0.15)$	0.4577	$0.4561 \pm 0.0066$
$A_{100}^{\text{PS}}$	239.2	$241 \pm 25$	$D_{220}$	5705.1	$5713 \pm 40$	$\sigma_8(0.15)$	0.7547	$0.749 \pm 0.011$
$A_{143}^{\text{PS}}$	38.0	$40 \pm 9$	$D_{810}$	2529.9	$2533 \pm 14$	$f\sigma_8(0.38)$	0.4766	$0.4746 \pm 0.0062$
$A_{217}^{\text{PS}}$	99.8	$101 \pm 10$	$D_{1420}$	814.4	$815.4 \pm 5.2$	$\sigma_8(0.38)$	0.6691	$0.664 \pm 0.010$
$A_{217}^{\text{CIB}}$	44.5	$40 \pm 7$	$D_{2000}$	230.13	$230.3 \pm 2.1$	$f\sigma_8(0.51)$	0.4755	$0.4732 \pm 0.0061$
$A_{143}^{\text{tSZ}}$	5.75	$3.8^{+1.8}_{-2.5}$	$n_{\text{s},0.002}$	0.9628	$0.9647 \pm 0.0073$	$\sigma_8(0.51)$	0.6262	$0.6211 \pm 0.0095$
$r_{143 \times 217}^{\text{PS}}$	0.568	$0.65 \pm 0.13$	$Y_{\text{P}}$	0.24405	$0.2446 \pm 0.0025$	$f\sigma_8(0.61)$	0.4707	$0.4683 \pm 0.0060$
$r_{143 \times 217}^{\text{CIB}}$	0.742	$0.57^{+0.41}_{-0.15}$	$Y_{\text{P}}^{\text{BBN}}$	0.24537	$0.2459 \pm 0.0025$	$\sigma_8(0.61)$	0.5958	$0.5910 \pm 0.0092$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.04	—	$10^5 \text{D}/\text{H}$	2.598	$2.602 \pm 0.058$	$f\sigma_8(2.33)$	0.29956	$0.2979 \pm 0.0045$
$A^{\text{kSZ}}$	1.45	$4.8^{+2.6}_{-3.6}$	Age/Gyr	13.873	$13.85 \pm 0.18$	$\sigma_8(2.33)$	0.30941	$0.3072 \pm 0.0050$
$A_{100}^{\text{dust}}$	1.010	$1.01 \pm 0.19$	$z_*$	1089.945	$1089.95 \pm 0.42$	$f_{2000}^{143}$	30.35	$30 \pm 3$
$A_{143}^{\text{dust}}$	0.992	$0.97 \pm 0.17$	$r_*$	145.61	$145.3 \pm 1.8$	$f_{2000}^{217}$	106.97	$107.0 \pm 2.2$
$A_{217}^{\text{dust}}$	0.961	$0.97 \pm 0.10$	$100\theta_*$	1.04143	$1.04135 \pm 0.00061$	$f_{2000}^{143 \times 217}$	32.31	$32.4 \pm 2.5$
$A_{143 \times 217}^{\text{dust}}$	0.9998	$1.03 \pm 0.16$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.982	$13.95 \pm 0.16$	$\chi_{\text{lensing}}^2$	8.80	$9.41 \pm 0.87$
$c_{100}$	0.99755	$0.9975 \pm 0.0011$	$z_{\text{drag}}$	1059.17	$1059.34 \pm 0.73$	$\chi_{\text{simall}}^2$	395.86	$397.1 \pm 1.8$
$c_{217}$	1.00120	$1.0012 \pm 0.0016$	$r_{\text{drag}}$	148.37	$148.1 \pm 1.8$	$\chi_{\text{lowl}}^2$	23.49	$23.3 \pm 1.2$
$H_0$	67.39	$67.4 \pm 1.2$	$k_{\text{D}}$	0.13970	$0.1399 \pm 0.0013$	$\chi_{\text{CamSpec}}^2$	7050.0	$7063.3 \pm 5.3$
$\Omega_{\Lambda}$	0.6914	$0.6891 \pm 0.0078$	$100\theta_{\text{D}}$	0.160838	$0.16089 \pm 0.00049$	$\chi_{\text{Aver15}}^2$	0.014	$0.45 \pm 0.64$
$\Omega_{\text{m}}$	0.3086	$0.3109 \pm 0.0078$	$z_{\text{eq}}$	3390.8	$3383 \pm 29$	$\chi_{6\text{DF}}^2$	0.0105	$0.064 \pm 0.083$
$\Omega_{\text{m}} h^2$	0.14014	$0.1410 \pm 0.0032$	$k_{\text{eq}}$	0.010284	$0.01029 \pm 0.00012$	$\chi_{\text{MGS}}^2$	1.41	$1.33 \pm 0.53$
$\Omega_{\nu} h^2$	$0.8 \cdot 10^{-5}$	$< 0.000639$	$100\theta_{\text{eq}}$	0.8148	$0.8164 \pm 0.0054$	$\chi_{\text{DR12BAO}}^2$	3.87	$4.8 \pm 1.7$
$\Omega_{\text{m}} h^3$	0.09443	$0.0950 \pm 0.0035$	$100\theta_{\text{s,eq}}$	0.45033	$0.4511 \pm 0.0027$	$\chi_{\text{prior}}^2$	2.06	$7.5 \pm 3.4$
$\sigma_8$	0.8166	$0.810 \pm 0.012$	$H(0.15)$	72.61	$72.6 \pm 1.2$	$\chi_{\text{CMB}}^2$	7478.1	$7493.1 \pm 5.5$
$S_8$	0.8282	$0.825 \pm 0.013$	$D_{\text{M}}(0.15)$	643.5	$644 \pm 11$	$\chi_{\text{BAO}}^2$	5.29	$6.2 \pm 1.4$

Best-fit  $\chi_{\text{eff}}^2 = 7485.47$ ;  $\bar{\chi}_{\text{eff}}^2 = 7507.32$ ;  $R - 1 = 0.00578$   
 $\chi_{\text{eff}}^2$ : Abund - Yp\_Aver2015: 0.01 BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.88 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.80 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.86 commander\_dx12\_v3\_2\_29: 23.49 CamSpec like\_10.7HM: 7049.95



# 9.42 base\_nnu\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Cooke17\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022159	$0.02218 \pm 0.00022$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6086	$0.6051 \pm 0.0079$	$H(0.51)$	89.40	$89.4 \pm 1.2$
$\Omega_{\mathrm{c}}h^2$	0.11818	$0.1185 \pm 0.0028$	$\sigma_8/h^{0.5}$	0.9943	$0.987^{+0.012}_{-0.010}$	$D_{\mathrm{M}}(0.51)$	1985.6	$1988 \pm 30$
$100\theta_{\mathrm{MC}}$	1.041106	$1.04109 \pm 0.00050$	$r_{\mathrm{drag}}h$	100.09	$99.72 \pm 0.97$	$H(0.61)$	94.97	$95.0 \pm 1.2$
$\tau$	0.0530	$0.0546 \pm 0.0075$	$\langle d^2 \rangle^{1/2}$	2.4415	$2.436 \pm 0.023$	$D_{\mathrm{M}}(0.61)$	2311.0	$2313 \pm 34$
$\Sigma m_{\nu}$ [eV]	0.0024	$< 0.0613$	$z_{\mathrm{re}}$	7.55	$7.70 \pm 0.76$	$H(2.33)$	234.59	$235.2 \pm 2.5$
$N_{\mathrm{eff}}$	2.973	$3.00 \pm 0.17$	$10^9 A_{\mathrm{s}}$	2.0802	$2.090^{+0.033}_{-0.037}$	$D_{\mathrm{M}}(2.33)$	5786	$5783 \pm 71$
$\ln(10^{10} A_{\mathrm{s}})$	3.0351	$3.039 \pm 0.017$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8711	$1.873 \pm 0.017$	$f\sigma_8(0.15)$	0.4574	$0.4563 \pm 0.0064$
$n_{\mathrm{s}}$	0.9638	$0.9650 \pm 0.0071$	$D_{40}$	1227.1	$1227 \pm 14$	$\sigma_8(0.15)$	0.7554	$0.749^{+0.011}_{-0.0099}$
$y_{\mathrm{cal}}$	1.00059	$1.0006 \pm 0.0025$	$D_{220}$	5708.9	$5712 \pm 39$	$f\sigma_8(0.38)$	0.4766	$0.4748 \pm 0.0060$
$A_{100}^{\mathrm{PS}}$	237.8	$242 \pm 25$	$D_{810}$	2531.7	$2533 \pm 14$	$\sigma_8(0.38)$	0.6698	$0.664^{+0.010}_{-0.0091}$
$A_{143}^{\mathrm{PS}}$	37.8	$40 \pm 9$	$D_{1420}$	814.9	$815.2 \pm 5.1$	$f\sigma_8(0.51)$	0.4756	$0.4735 \pm 0.0059$
$A_{217}^{\mathrm{PS}}$	99.2	$101 \pm 10$	$D_{2000}$	230.21	$230.2 \pm 1.9$	$\sigma_8(0.51)$	0.6269	$0.6214^{+0.0096}_{-0.0086}$
$A_{217}^{\mathrm{CIB}}$	45.2	$40 \pm 7$	$n_{\mathrm{s},0.002}$	0.9638	$0.9650 \pm 0.0071$	$f\sigma_8(0.61)$	0.4708	$0.4686 \pm 0.0058$
$A_{143}^{\mathrm{tSZ}}$	6.05	$3.8^{+1.8}_{-2.5}$	$Y_{\mathrm{P}}$	0.24433	$0.2447 \pm 0.0023$	$\sigma_8(0.61)$	0.5965	$0.5913^{+0.0092}_{-0.0083}$
$r_{143 \times 217}^{\mathrm{PS}}$	0.542	$0.65 \pm 0.13$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24565	$0.2460 \pm 0.0023$	$f\sigma_8(2.33)$	0.29998	$0.2980 \pm 0.0044$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.794	$0.57^{+0.41}_{-0.15}$	$10^5 \mathrm{D}/\mathrm{H}$	2.6004	$2.606 \pm 0.049$	$\sigma_8(2.33)$	0.30987	$0.3073 \pm 0.0048$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.01	—	Age/Gyr	13.853	$13.85 \pm 0.17$	$f_{2000}^{143}$	30.44	$30.2 \pm 3.2$
$A^{\mathrm{kSZ}}$	1.06	$4.9^{+2.7}_{-3.5}$	$z_*$	1089.951	$1089.98 \pm 0.36$	$f_{2000}^{217}$	107.02	$107.1 \pm 2.1$
$A_{100}^{\mathrm{dust}}$	1.010	$1.01 \pm 0.19$	$r_*$	145.44	$145.2 \pm 1.6$	$f_{2000}^{143 \times 217}$	32.25	$32.5 \pm 2.3$
$A_{143}^{\mathrm{dust}}$	0.995	$0.97 \pm 0.18$	$100\theta_*$	1.04133	$1.04132 \pm 0.00057$	$\chi_{\mathrm{lensing}}^2$	8.82	$9.42 \pm 0.85$
$A_{217}^{\mathrm{dust}}$	0.963	$0.97 \pm 0.10$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.967	$13.95 \pm 0.15$	$\chi_{\mathrm{simall}}^2$	395.85	$397.0 \pm 1.8$
$A_{143 \times 217}^{\mathrm{dust}}$	0.982	$1.03 \pm 0.16$	$z_{\mathrm{drag}}$	1059.25	$1059.35 \pm 0.72$	$\chi_{\mathrm{lowl}}^2$	23.32	$23.3 \pm 1.1$
$c_{100}$	0.99752	$0.9975 \pm 0.0011$	$r_{\mathrm{drag}}$	148.19	$148.0 \pm 1.7$	$\chi_{\mathrm{CamSpec}}^2$	7049.98	$7063.1 \pm 5.3$
$c_{217}$	1.00128	$1.0012 \pm 0.0016$	$k_{\mathrm{D}}$	0.13983	$0.1400 \pm 0.0013$	$\chi_{\mathrm{Aver15}}^2$	0.036	$0.41 \pm 0.57$
$H_0$	67.54	$67.4 \pm 1.1$	$100\theta_{\mathrm{D}}$	0.160864	$0.16093 \pm 0.00042$	$\chi_{\mathrm{Cooke17}}^2$	0.035	$0.29 \pm 0.41$
$\Omega_{\Lambda}$	0.6923	$0.6891 \pm 0.0078$	$z_{\mathrm{eq}}$	3386.7	$3382 \pm 28$	$\chi_{6\mathrm{DF}}^2$	0.0064	$0.064 \pm 0.083$
$\Omega_{\mathrm{m}}$	0.3077	$0.3109 \pm 0.0078$	$k_{\mathrm{eq}}$	0.010286	$0.01029 \pm 0.00011$	$\chi_{\mathrm{MGS}}^2$	1.47	$1.33 \pm 0.53$
$\Omega_{\mathrm{m}}h^2$	0.14037	$0.1412 \pm 0.0030$	$100\theta_{\mathrm{eq}}$	0.8155	$0.8165 \pm 0.0053$	$\chi_{\mathrm{DR12BAO}}^2$	3.76	$4.8 \pm 1.7$
$\Omega_{\nu}h^2$	$2.6 \cdot 10^{-5}$	$< 0.000644$	$100\theta_{\mathrm{s,eq}}$	0.45070	$0.4512 \pm 0.0027$	$\chi_{\mathrm{prior}}^2$	2.22	$7.6 \pm 3.4$
$\Omega_{\mathrm{m}}h^3$	0.09481	$0.0952 \pm 0.0033$	$H(0.15)$	72.76	$72.7 \pm 1.1$	$\chi_{\mathrm{CMB}}^2$	7478.0	$7492.9 \pm 5.5$
$\sigma_8$	0.8172	$0.810^{+0.012}_{-0.010}$	$D_{\mathrm{M}}(0.15)$	642.1	$643 \pm 10$	$\chi_{\mathrm{BAO}}^2$	5.24	$6.2 \pm 1.4$
$S_8$	0.8276	$0.825 \pm 0.012$	$H(0.38)$	82.76	$82.7 \pm 1.1$	$\chi_{\mathrm{Abund}}^2$	0.071	$0.70 \pm 0.78$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4533	$0.4518 \pm 0.0068$	$D_{\mathrm{M}}(0.38)$	1532.3	$1534 \pm 23$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 7485.51$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 7507.35$ ;  $R - 1 = 0.00593$   
 $\chi_{\mathrm{eff}}^2$ : Abund - Yp\_Aver2015: 0.04 D\_Cooke2017: 0.04 BAO - 6DF: 0.01 MGS: 1.47 DR12BAO: 3.76 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.82  
simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.85 commander\_dx12\_v3.2\_29: 23.32 CamSpec like\_10.7HM: 7049.98



### 9.43 base\_nnu\_mnu\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02224 \pm 0.00023$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4515 \pm 0.0070$	$H(0.38)$	$83.2 \pm 1.5$
$\Omega_{\text{c}}h^2$	$0.1192 \pm 0.0038$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6059 \pm 0.0087$	$D_{\text{M}}(0.38)$	$1526 \pm 29$
$100\theta_{\text{MC}}$	$1.04102 \pm 0.00058$	$\sigma_8/h^{0.5}$	$0.987^{+0.012}_{-0.010}$	$H(0.51)$	$89.9 \pm 1.5$
$\tau$	$0.0558^{+0.0055}_{-0.0079}$	$r_{\text{drag}}h$	$100.00 \pm 0.95$	$D_{\text{M}}(0.51)$	$1977 \pm 37$
$\Sigma m_{\nu} [\text{eV}]$	$< 0.0629$	$\langle d^2 \rangle^{1/2}$	$2.433 \pm 0.023$	$H(0.61)$	$95.5 \pm 1.6$
$N_{\text{eff}}$	$3.06 \pm 0.23$	$z_{\text{re}}$	$7.84^{+0.60}_{-0.78}$	$D_{\text{M}}(0.61)$	$2301 \pm 43$
$\ln(10^{10}A_{\text{s}})$	$3.044^{+0.015}_{-0.018}$	$10^9 A_{\text{s}}$	$2.099^{+0.032}_{-0.039}$	$H(2.33)$	$235.9 \pm 3.4$
$n_{\text{s}}$	$0.9674 \pm 0.0085$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.877 \pm 0.020$	$D_{\text{M}}(2.33)$	$5758 \pm 94$
$y_{\text{cal}}$	$1.0006 \pm 0.0025$	$D_{40}$	$1224 \pm 15$	$f\sigma_8(0.15)$	$0.4563 \pm 0.0067$
$A_{100}^{\text{PS}}$	$242 \pm 25$	$D_{220}$	$5713 \pm 40$	$\sigma_8(0.15)$	$0.752 \pm 0.012$
$A_{143}^{\text{PS}}$	$40 \pm 9$	$D_{810}$	$2534 \pm 14$	$f\sigma_8(0.38)$	$0.4753 \pm 0.0066$
$A_{217}^{\text{PS}}$	$101 \pm 10$	$D_{1420}$	$815.0 \pm 5.3$	$\sigma_8(0.38)$	$0.666 \pm 0.011$
$A_{217}^{\text{CIB}}$	$41 \pm 7$	$D_{2000}$	$229.9 \pm 2.3$	$f\sigma_8(0.51)$	$0.4743 \pm 0.0066$
$A_{143}^{\text{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$n_{\text{s},0.002}$	$0.9674 \pm 0.0085$	$\sigma_8(0.51)$	$0.624 \pm 0.010$
$r_{143 \times 217}^{\text{PS}}$	$0.65 \pm 0.13$	$Y_{\text{P}}$	$0.2455 \pm 0.0032$	$f\sigma_8(0.61)$	$0.4695 \pm 0.0066$
$r_{143 \times 217}^{\text{CIB}}$	$0.58^{+0.41}_{-0.14}$	$Y_{\text{P}}^{\text{BBN}}$	$0.2468 \pm 0.0032$	$\sigma_8(0.61)$	$0.594 \pm 0.010$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^5 \text{D}/\text{H}$	$2.615 \pm 0.067$	$f\sigma_8(2.33)$	$0.2994 \pm 0.0050$
$A^{\text{kSZ}}$	—	$\text{Age}/\text{Gyr}$	$13.79 \pm 0.22$	$\sigma_8(2.33)$	$0.3088 \pm 0.0055$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.19$	$z_*$	$1090.03 \pm 0.48$	$f_{2000}^{143}$	$30 \pm 4$
$A_{143}^{\text{dust}}$	$0.97 \pm 0.18$	$r_*$	$144.7 \pm 2.2$	$f_{2000}^{217}$	$107.4 \pm 2.4$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04121 \pm 0.00069$	$f_{2000}^{143 \times 217}$	$32.7 \pm 2.7$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.90 \pm 0.21$	$\chi_{\text{lensing}}^2$	$9.52 \pm 0.91$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\text{drag}}$	$1059.58 \pm 0.86$	$\chi_{\text{simall}}^2$	$397.1 \pm 1.9$
$c_{217}$	$1.0012 \pm 0.0016$	$r_{\text{drag}}$	$147.4 \pm 2.3$	$\chi_{\text{lowl}}^2$	$23.0 \pm 1.2$
$H_0$	$67.8 \pm 1.4$	$k_{\text{D}}$	$0.1404 \pm 0.0017$	$\chi_{\text{CamSpec}}^2$	$7063.8 \pm 5.5$
$\Omega_{\Lambda}$	$0.6914 \pm 0.0076$	$100\theta_{\text{D}}$	$0.16103 \pm 0.00059$	$\chi_{\text{JLA}}^2$	$1035.04 \pm 0.34$
$\Omega_{\text{m}}$	$0.3086 \pm 0.0076$	$z_{\text{eq}}$	$3374 \pm 29$	$\chi_{6\text{DF}}^2$	$0.047 \pm 0.065$
$\Omega_{\text{m}}h^2$	$0.1420 \pm 0.0040$	$k_{\text{eq}}$	$0.01031 \pm 0.00014$	$\chi_{\text{MGS}}^2$	$1.48 \pm 0.55$
$\Omega_{\nu}h^2$	$< 0.000663$	$100\theta_{\text{eq}}$	$0.8180 \pm 0.0055$	$\chi_{\text{DR12BAO}}^2$	$4.5 \pm 1.4$
$\Omega_{\text{m}}h^3$	$0.0964^{+0.0043}_{-0.0047}$	$100\theta_{\text{s,eq}}$	$0.4520 \pm 0.0028$	$\chi_{\text{prior}}^2$	$7.6 \pm 3.5$
$\sigma_8$	$0.813 \pm 0.013$	$H(0.15)$	$73.1 \pm 1.4$	$\chi_{\text{CMB}}^2$	$7493.4 \pm 5.6$
$S_8$	$0.824 \pm 0.013$	$D_{\text{M}}(0.15)$	$639 \pm 13$	$\chi_{\text{BAO}}^2$	$6.0 \pm 1.1$

$$\bar{\chi}_{\text{eff}}^2 = 8542.04; R - 1 = 0.00589$$



9.44    base\_nnu\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022261	$0.02228 \pm 0.00019$ (+0.3 $\sigma$ )	$S_8$	0.8250	$0.822 \pm 0.011$ (−0.2 $\sigma$ )	$H(0.38)$	82.32	$82.6 \pm 1.3$ (−0.3 $\sigma$ )
$\Omega_{\text{c}}h^2$	0.11682	$0.1178 \pm 0.0033$ (−0.3 $\sigma$ )	$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4519	$0.4504 \pm 0.0062$ (−0.2 $\sigma$ )	$D_{\text{M}}(0.38)$	1540.8	$1537 \pm 27$ (+0.3 $\sigma$ )
$100\theta_{\text{MC}}$	1.041213	$1.04111 \pm 0.00047$ (+0.1 $\sigma$ )	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6064	$0.6034 \pm 0.0079$ (−0.3 $\sigma$ )	$H(0.51)$	88.94	$89.2 \pm 1.4$ (−0.3 $\sigma$ )
$\tau$	0.0531	$0.0545 \pm 0.0073$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9929	$0.985^{+0.012}_{-0.0094}$ (−0.1 $\sigma$ )	$D_{\text{M}}(0.51)$	1996.5	$1992 \pm 34$ (+0.3 $\sigma$ )
$\Sigma m_{\nu}$ [eV]	0.0008	$< 0.0604$ (−0.1 $\sigma$ )	$r_{\text{drag}}h$	99.99	$99.73 \pm 0.92$ (−0.1 $\sigma$ )	$H(0.61)$	94.48	$94.8 \pm 1.4$ (−0.3 $\sigma$ )
$N_{\text{eff}}$	2.889	$2.96 \pm 0.20$ (−0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4431	$2.435 \pm 0.022$ (+0.1 $\sigma$ )	$D_{\text{M}}(0.61)$	2323.6	$2318 \pm 39$ (+0.3 $\sigma$ )
$\ln(10^{10}A_{\text{s}})$	3.0331	$3.038 \pm 0.017$ (−0.2 $\sigma$ )	$z_{\text{re}}$	7.51	$7.65 \pm 0.74$ (−0.1 $\sigma$ )	$H(2.33)$	233.51	$234.7 \pm 3.0$ (−0.3 $\sigma$ )
$n_{\text{s}}$	0.9621	$0.9641 \pm 0.0077$ (−0.2 $\sigma$ )	$10^9 A_{\text{s}}$	2.0762	$2.087 \pm 0.036$ (−0.2 $\sigma$ )	$D_{\text{M}}(2.33)$	5815	$5794 \pm 84$ (+0.3 $\sigma$ )
$y_{\text{cal}}$	1.00066	$1.0007 \pm 0.0024$ (+0.0 $\sigma$ )	$10^9 A_{\text{s}}e^{-2\tau}$	1.8669	$1.871 \pm 0.019$ (−0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4559	$0.4550 \pm 0.0060$ (−0.2 $\sigma$ )
$A_{100}^{\text{PS}}$	226.8	$238 \pm 25$ (−0.2 $\sigma$ )	$D_{40}$	1230.5	$1229 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7521	$0.747 \pm 0.011$ (−0.3 $\sigma$ )
$A_{143}^{\text{PS}}$	45.8	$38 \pm 9$ (−0.3 $\sigma$ )	$D_{220}$	5725.4	$5725 \pm 38$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4749	$0.4734 \pm 0.0059$ (−0.3 $\sigma$ )
$A_{217}^{\text{PS}}$	105.8	$103 \pm 10$ (+0.1 $\sigma$ )	$D_{810}$	2534.8	$2535 \pm 13$ (+0.0 $\sigma$ )	$\sigma_8(0.38)$	0.6668	$0.662 \pm 0.011$ (−0.3 $\sigma$ )
$A_{217}^{\text{CIB}}$	41.1	$39 \pm 7$ (−0.2 $\sigma$ )	$D_{1420}$	817.99	$816.8 \pm 5.0$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.4737	$0.4721 \pm 0.0060$ (−0.3 $\sigma$ )
$A_{143}^{\text{tSZ}}$	6.50	$3.9^{+1.9}_{-2.5}$ (+0.1 $\sigma$ )	$D_{2000}$	231.81	$231.0 \pm 2.0$ (+0.4 $\sigma$ )	$\sigma_8(0.51)$	0.6240	$0.620 \pm 0.010$ (−0.3 $\sigma$ )
$r_{143 \times 217}^{\text{PS}}$	0.715	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$n_{\text{s},0.002}$	0.9621	$0.9641 \pm 0.0077$ (−0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.4690	$0.4672 \pm 0.0060$ (−0.3 $\sigma$ )
$r_{143 \times 217}^{\text{CIB}}$	0.841	$0.54^{+0.37}_{-0.21}$ (−0.1 $\sigma$ )	$Y_{\text{P}}$	0.24322	$0.2442 \pm 0.0028$ (−0.3 $\sigma$ )	$\sigma_8(0.61)$	0.5938	$0.5897 \pm 0.0096$ (−0.3 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.69	—	$Y_{\text{P}}^{\text{BBN}}$	0.24454	$0.2455 \pm 0.0028$ (−0.3 $\sigma$ )	$f\sigma_8(2.33)$	0.29854	$0.2972 \pm 0.0048$ (−0.3 $\sigma$ )
$A^{\text{kSZ}}$	0.01	$< 6.00$ (−0.1 $\sigma$ )	$10^5 \text{D}/\text{H}$	2.552	$2.573 \pm 0.055$ (−0.6 $\sigma$ )	$\sigma_8(2.33)$	0.3084	$0.3065 \pm 0.0053$ (−0.3 $\sigma$ )
$A_{100}^{\text{dust}}$	0.9995	$1.01 \pm 0.20$ (−0.0 $\sigma$ )	Age/Gyr	13.923	$13.87 \pm 0.20$ (+0.3 $\sigma$ )	$f_{2000}^{143}$	28.30	$29 \pm 3$ (−0.4 $\sigma$ )
$A_{143}^{\text{dust}}$	0.973	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	$z_*$	1089.618	$1089.75 \pm 0.40$ (−0.6 $\sigma$ )	$f_{2000}^{217}$	105.51	$106.3 \pm 2.2$ (−0.4 $\sigma$ )
$A_{217}^{\text{dust}}$	0.983	$0.98 \pm 0.10$ (+0.1 $\sigma$ )	$r_*$	146.15	$145.5 \pm 2.0$ (+0.3 $\sigma$ )	$f_{2000}^{143 \times 217}$	30.75	$31.4 \pm 2.4$ (−0.5 $\sigma$ )
$A_{143 \times 217}^{\text{dust}}$	1.001	$1.02 \pm 0.16$ (−0.0 $\sigma$ )	$100\theta_*$	1.04148	$1.04135 \pm 0.00058$ (+0.2 $\sigma$ )	$\chi_{\text{lensing}}^2$	8.62	$9.27 \pm 0.82$ (−0.3 $\sigma$ )
$c_{100}$	0.99780	$0.9976 \pm 0.0010$ (+0.1 $\sigma$ )	$D_{\text{M}}(z_*)/\text{Gpc}$	14.033	$13.97 \pm 0.18$ (+0.3 $\sigma$ )	$\chi_{\text{small}}^2$	395.85	$397.0 \pm 1.7$ (−0.1 $\sigma$ )
$c_{217}$	1.00113	$1.0011 \pm 0.0016$ (−0.1 $\sigma$ )	$z_{\text{drag}}$	1059.32	$1059.50 \pm 0.75$ (+0.0 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.58	$23.4 \pm 1.2$ (+0.2 $\sigma$ )
$c_{TE}$	0.9954	$0.9961 \pm 0.0051$	$r_{\text{drag}}$	148.88	$148.2 \pm 2.0$ (+0.3 $\sigma$ )	$\chi_{\text{CamSpec}}^2$	11498.2	$11514.1 \pm 5.7$ (+817.0 $\sigma$ )
$c_{EE}$	0.9901	$0.9914 \pm 0.0055$	$k_{\text{D}}$	0.13952	$0.1400 \pm 0.0014$ (−0.2 $\sigma$ )	$\chi_{6\text{DF}}^2$	0.0104	$0.059 \pm 0.077$ (−0.0 $\sigma$ )
$H_0$	67.16	$67.3 \pm 1.3$ (−0.2 $\sigma$ )	$100\theta_{\text{D}}$	0.160455	$0.16066 \pm 0.00049$ (−0.6 $\sigma$ )	$\chi_{\text{MGS}}^2$	1.407	$1.33 \pm 0.50$ (−0.1 $\sigma$ )
$\Omega_{\Lambda}$	0.6916	$0.6893 \pm 0.0074$ (−0.1 $\sigma$ )	$z_{\text{eq}}$	3395.2	$3386 \pm 26$ (+0.2 $\sigma$ )	$\chi_{\text{DR12BAO}}^2$	3.90	$4.8 \pm 1.6$ (+0.0 $\sigma$ )
$\Omega_{\text{m}}$	0.3084	$0.3107 \pm 0.0074$ (+0.1 $\sigma$ )	$k_{\text{eq}}$	0.010252	$0.01028 \pm 0.00012$ (−0.2 $\sigma$ )	$\chi_{\text{prior}}^2$	2.01	$7.8 \pm 3.4$ (+0.1 $\sigma$ )
$\Omega_{\text{m}}h^2$	0.13909	$0.1406 \pm 0.0035$ (−0.3 $\sigma$ )	$100\theta_{\text{eq}}$	0.8143	$0.8160 \pm 0.0050$ (−0.2 $\sigma$ )	$\chi_{\text{CMB}}^2$	11926.3	$11943.7 \pm 5.9$ (+787.6 $\sigma$ )
$\Omega_{\nu}h^2$	$0.9 \cdot 10^{-5}$	$< 0.000630$ (−0.1 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.44999	$0.4509 \pm 0.0025$ (−0.2 $\sigma$ )	$\chi_{\text{BAO}}^2$	5.31	$6.2 \pm 1.3$ (−0.0 $\sigma$ )
$\Omega_{\text{m}}h^3$	0.09341	$0.0947 \pm 0.0039$ (−0.3 $\sigma$ )	$H(0.15)$	72.36	$72.5 \pm 1.3$ (−0.3 $\sigma$ )			
$\sigma_8$	0.8137	$0.808 \pm 0.012$ (−0.3 $\sigma$ )	$D_{\text{M}}(0.15)$	645.7	$645 \pm 12$ (+0.2 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 11933.58$ ;  $\Delta\chi_{\text{eff}}^2 = 4448.00$ ;  $\bar{\chi}_{\text{eff}}^2 = 11957.66$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4450.38$ ;  $R - 1 = 0.00614$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.01 ( $\Delta$  0.00) MGS: 1.41 ( $\Delta$  -0.07) DR12BAO: 3.90 ( $\Delta$  0.12) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.62 ( $\Delta$  -0.29) small\_100x143\_offlike5\_EE\_Aplanck 395.85 ( $\Delta$  -0.01) commander\_dx12\_v3.2\_29: 23.58 ( $\Delta$  0.27) CamSpec like\_10.7HM\_1400\_unified: 11498.22



# 9.45 base\_nnu\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022256	$0.02230 \pm 0.00019$ (+0.3 $\sigma$ )	$S_8$	0.8240	$0.822 \pm 0.011$ (−0.2 $\sigma$ )	$H(0.38)$	82.43	$82.7 \pm 1.3$ (−0.3 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11693	$0.1180 \pm 0.0033$ (−0.3 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4513	$0.4501 \pm 0.0062$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1538.4	$1534 \pm 26$ (+0.3 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.041216	$1.04109 \pm 0.00047$ (+0.1 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6061	$0.6035 \pm 0.0078$ (−0.3 $\sigma$ )	$H(0.51)$	89.05	$89.4 \pm 1.4$ (−0.3 $\sigma$ )
$\tau$	0.0532	$0.0547 \pm 0.0073$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9922	$0.985^{+0.011}_{-0.0093}$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1993.5	$1988 \pm 33$ (+0.3 $\sigma$ )
$\Sigma m_{\nu}$ [eV]	0.0006	$< 0.0576$ (−0.1 $\sigma$ )	$r_{\mathrm{drag}}h$	100.10	$99.87 \pm 0.86$ (−0.1 $\sigma$ )	$H(0.61)$	94.58	$95.0 \pm 1.4$ (−0.3 $\sigma$ )
$N_{\mathrm{eff}}$	2.903	$2.98 \pm 0.20$ (−0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4400	$2.434 \pm 0.022$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2320.2	$2313 \pm 38$ (+0.3 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0331	$3.039 \pm 0.017$ (−0.2 $\sigma$ )	$z_{\mathrm{re}}$	7.52	$7.68 \pm 0.74$ (−0.1 $\sigma$ )	$H(2.33)$	233.63	$234.8 \pm 2.9$ (−0.3 $\sigma$ )
$n_{\mathrm{s}}$	0.9629	$0.9648 \pm 0.0075$ (−0.3 $\sigma$ )	$10^9A_{\mathrm{s}}$	2.0761	$2.088 \pm 0.036$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5810	$5787 \pm 83$ (+0.3 $\sigma$ )
$y_{\mathrm{cal}}$	1.00048	$1.0007 \pm 0.0024$ (+0.0 $\sigma$ )	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8665	$1.872 \pm 0.019$ (−0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4554	$0.4547 \pm 0.0059$ (−0.2 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	228.2	$238 \pm 25$ (−0.2 $\sigma$ )	$D_{40}$	1228.3	$1228 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7523	$0.748 \pm 0.011$ (−0.3 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	42.6	$38 \pm 9$ (−0.3 $\sigma$ )	$D_{220}$	5720.4	$5726 \pm 38$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4746	$0.4734 \pm 0.0059$ (−0.3 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	104.7	$103 \pm 10$ (+0.1 $\sigma$ )	$D_{810}$	2533.7	$2535 \pm 14$ (+0.0 $\sigma$ )	$\sigma_8(0.38)$	0.6671	$0.663 \pm 0.010$ (−0.3 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	41.7	$39^{+7}_{-8}$ (−0.2 $\sigma$ )	$D_{1420}$	817.5	$816.7 \pm 5.0$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.4736	$0.4723 \pm 0.0059$ (−0.3 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	6.47	$3.9^{+1.9}_{-2.5}$ (+0.1 $\sigma$ )	$D_{2000}$	231.58	$231.0 \pm 2.1$ (+0.5 $\sigma$ )	$\sigma_8(0.51)$	0.6244	$0.6207 \pm 0.0097$ (−0.3 $\sigma$ )
$r_{143 \times 217}^{\mathrm{PS}}$	0.680	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.9629	$0.9648 \pm 0.0075$ (−0.3 $\sigma$ )	$f\sigma_8(0.61)$	0.4689	$0.4675 \pm 0.0060$ (−0.3 $\sigma$ )
$r_{143 \times 217}^{\mathrm{CIB}}$	0.790	$0.55^{+0.38}_{-0.21}$ (−0.1 $\sigma$ )	$Y_{\mathrm{P}}$	0.24341	$0.2444 \pm 0.0028$ (−0.3 $\sigma$ )	$\sigma_8(0.61)$	0.5941	$0.5907 \pm 0.0094$ (−0.3 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.47	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24473	$0.2457 \pm 0.0028$ (−0.3 $\sigma$ )	$f\sigma_8(2.33)$	0.29875	$0.2977 \pm 0.0046$ (−0.3 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.01	$< 6.01$ (−0.1 $\sigma$ )	$10^5\mathrm{D}/\mathrm{H}$	2.557	$2.575 \pm 0.055$ (−0.6 $\sigma$ )	$\sigma_8(2.33)$	0.3086	$0.3071 \pm 0.0051$ (−0.3 $\sigma$ )
$A_{100}^{\mathrm{dust}}$	1.006	$1.01 \pm 0.20$ (−0.0 $\sigma$ )	Age/Gyr	13.909	$13.86 \pm 0.20$ (+0.3 $\sigma$ )	$f_{2000}^{143}$	28.37	$29 \pm 3$ (−0.4 $\sigma$ )
$A_{143}^{\mathrm{dust}}$	0.967	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	$z_*$	1089.650	$1089.76 \pm 0.40$ (−0.6 $\sigma$ )	$f_{2000}^{217}$	105.61	$106.4 \pm 2.2$ (−0.4 $\sigma$ )
$A_{217}^{\mathrm{dust}}$	0.982	$0.98 \pm 0.10$ (+0.1 $\sigma$ )	$r_*$	146.06	$145.4 \pm 2.0$ (+0.3 $\sigma$ )	$f_{2000}^{143 \times 217}$	30.84	$31.5 \pm 2.4$ (−0.5 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dust}}$	1.011	$1.03 \pm 0.16$ (−0.0 $\sigma$ )	$100\theta_*$	1.04147	$1.04132 \pm 0.00058$ (+0.2 $\sigma$ )	$\chi_{\mathrm{lensing}}^2$	8.66	$9.30 \pm 0.83$ (−0.3 $\sigma$ )
$c_{100}$	0.99774	$0.9976 \pm 0.0010$ (+0.0 $\sigma$ )	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	14.024	$13.96 \pm 0.18$ (+0.3 $\sigma$ )	$\chi_{\mathrm{small}}^2$	395.86	$397.0 \pm 1.7$ (−0.1 $\sigma$ )
$c_{217}$	1.00119	$1.0011 \pm 0.0016$ (−0.1 $\sigma$ )	$z_{\mathrm{drag}}$	1059.32	$1059.56 \pm 0.74$ (−0.0 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	23.43	$23.3 \pm 1.1$ (+0.2 $\sigma$ )
$c_{TE}$	0.9954	$0.9962 \pm 0.0051$	$r_{\mathrm{drag}}$	148.78	$148.1 \pm 2.0$ (+0.3 $\sigma$ )	$\chi_{\mathrm{CamSpec}}^2$	11498.3	$11514.2 \pm 5.7$ (+816.5 $\sigma$ )
$c_{EE}$	0.9904	$0.9916 \pm 0.0054$	$k_{\mathrm{D}}$	0.13956	$0.1400 \pm 0.0014$ (−0.2 $\sigma$ )	$\chi_{\mathrm{JLA}}^2$	1034.885	$1035.06 \pm 0.33$ (+0.0 $\sigma$ )
$H_0$	67.28	$67.5 \pm 1.3$ (−0.3 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160512	$0.16069 \pm 0.00049$ (−0.6 $\sigma$ )	$\chi_{6\mathrm{DF}}^2$	0.0061	$0.047 \pm 0.063$ (−0.0 $\sigma$ )
$\Omega_{\Lambda}$	0.6925	$0.6905 \pm 0.0070$ (−0.1 $\sigma$ )	$z_{\mathrm{eq}}$	3391.2	$3383 \pm 25$ (+0.3 $\sigma$ )	$\chi_{\mathrm{MGS}}^2$	1.473	$1.40 \pm 0.49$ (−0.1 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3075	$0.3095 \pm 0.0070$ (+0.1 $\sigma$ )	$k_{\mathrm{eq}}$	0.010250	$0.01028 \pm 0.00012$ (−0.2 $\sigma$ )	$\chi_{\mathrm{DR12BAO}}^2$	3.77	$4.5 \pm 1.3$ (+0.0 $\sigma$ )
$\Omega_{\mathrm{m}}h^2$	0.13919	$0.1407 \pm 0.0035$ (−0.3 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.81501	$0.8167 \pm 0.0048$ (−0.2 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	2.07	$7.8 \pm 3.4$ (+0.1 $\sigma$ )
$\Omega_{\nu}h^2$	$0.6 \cdot 10^{-5}$	$< 0.000600$ (−0.1 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.45036	$0.4512 \pm 0.0024$ (−0.2 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	11926.3	$11943.8 \pm 5.9$ (+785.8 $\sigma$ )
$\Omega_{\mathrm{m}}h^3$	0.09365	$0.0950 \pm 0.0039$ (−0.3 $\sigma$ )	$H(0.15)$	72.47	$72.7 \pm 1.3$ (−0.3 $\sigma$ )	$\chi_{\mathrm{BAO}}^2$	5.245	$6.0 \pm 1.1$ (−0.0 $\sigma$ )
$\sigma_8$	0.8139	$0.809 \pm 0.012$ (−0.3 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	644.6	$643 \pm 12$ (+0.3 $\sigma$ )			

Best-fit  $\chi_{\mathrm{eff}}^2 = 12968.49$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 4448.22$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 12992.58$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.41$ ;  $R - 1 = 0.00612$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.01 ( $\Delta$  0.00) MGS: 1.47 ( $\Delta$  -0.07) DR12BAO: 3.77 ( $\Delta$  0.11) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.66 ( $\Delta$  -0.21) simall\_100x143\_offlike5\_EE\_Aplanck 395.86 ( $\Delta$  0.01) commander\_dx12\_v3\_2.29: 23.43 ( $\Delta$  0.18) CamSpec like\_10.7HM\_1400\_unified: 11498.34 SN - JLA Pantheon18: 1034.88 ( $\Delta$  0.03)



9.46 base\_nnu\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022234	$0.02227 \pm 0.00018$ (+0.4 $\sigma$ )	$S_8$	0.8245	$0.822 \pm 0.011$ (−0.2 $\sigma$ )	$H(0.38)$	82.26	$82.5 \pm 1.1$ (−0.2 $\sigma$ )
$\Omega_c h^2$	0.11665	$0.1176 \pm 0.0027$ (−0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4516	$0.4503 \pm 0.0062$ (−0.2 $\sigma$ )	$D_M(0.38)$	1542.0	$1539 \pm 23$ (+0.2 $\sigma$ )
$100\theta_{MC}$	1.041261	$1.04113 \pm 0.00042$ (+0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6059	$0.6031 \pm 0.0076$ (−0.2 $\sigma$ )	$H(0.51)$	88.88	$89.1 \pm 1.1$ (−0.2 $\sigma$ )
$\tau$	0.0531	$0.0544 \pm 0.0073$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9925	$0.985^{+0.012}_{-0.0094}$ (−0.1 $\sigma$ )	$D_M(0.51)$	1998.0	$1994 \pm 29$ (+0.2 $\sigma$ )
$\Sigma m_\nu$ [eV]	0.0022	$< 0.0590$ (−0.0 $\sigma$ )	$r_{\text{drag}} h$	99.99	$99.70 \pm 0.88$ (−0.0 $\sigma$ )	$H(0.61)$	94.41	$94.7 \pm 1.2$ (−0.2 $\sigma$ )
$N_{\text{eff}}$	2.881	$2.95 \pm 0.17$ (−0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4419	$2.436 \pm 0.022$ (−0.0 $\sigma$ )	$D_M(0.61)$	2325.3	$2320 \pm 33$ (+0.2 $\sigma$ )
$\ln(10^{10} A_s)$	3.0323	$3.037 \pm 0.016$ (−0.1 $\sigma$ )	$z_{\text{re}}$	7.51	$7.64 \pm 0.74$ (−0.1 $\sigma$ )	$H(2.33)$	233.35	$234.5 \pm 2.5$ (−0.2 $\sigma$ )
$n_s$	0.9621	$0.9636 \pm 0.0067$ (−0.2 $\sigma$ )	$10^9 A_s$	2.0744	$2.085 \pm 0.034$ (−0.1 $\sigma$ )	$D_M(2.33)$	5820	$5801 \pm 70$ (+0.2 $\sigma$ )
$y_{\text{cal}}$	1.00037	$1.0007 \pm 0.0024$ (+0.0 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8653	$1.870 \pm 0.016$ (−0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4557	$0.4548 \pm 0.0059$ (−0.2 $\sigma$ )
$A_{100}^{\text{PS}}$	224.9	$237 \pm 25$ (−0.2 $\sigma$ )	$D_{40}$	1229.3	$1229 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7515	$0.746^{+0.011}_{-0.0097}$ (−0.2 $\sigma$ )
$A_{143}^{\text{PS}}$	49.7	$38 \pm 8$ (−0.2 $\sigma$ )	$D_{220}$	5719.8	$5725 \pm 38$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4746	$0.4732 \pm 0.0057$ (−0.2 $\sigma$ )
$A_{217}^{\text{PS}}$	106.4	$103 \pm 10$ (+0.1 $\sigma$ )	$D_{810}$	2533.7	$2534 \pm 13$ (+0.1 $\sigma$ )	$\sigma_8(0.38)$	0.6663	$0.6617^{+0.0099}_{-0.0089}$ (−0.2 $\sigma$ )
$A_{217}^{\text{CIB}}$	40.5	$39^{+7}_{-7}$ (−0.2 $\sigma$ )	$D_{1420}$	817.72	$816.9 \pm 4.9$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.4734	$0.4719 \pm 0.0057$ (−0.2 $\sigma$ )
$A_{143}^{\text{tSZ}}$	6.50	$3.9^{+1.9}_{-2.5}$ (+0.1 $\sigma$ )	$D_{2000}$	231.74	$231.1 \pm 1.9$ (+0.4 $\sigma$ )	$\sigma_8(0.51)$	0.6236	$0.6193^{+0.0094}_{-0.0085}$ (−0.2 $\sigma$ )
$r_{143 \times 217}^{\text{PS}}$	0.752	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$n_{s,0.002}$	0.9621	$0.9636 \pm 0.0067$ (−0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.4686	$0.4670 \pm 0.0056$ (−0.2 $\sigma$ )
$r_{143 \times 217}^{\text{CIB}}$	0.895	$0.54^{+0.37}_{-0.21}$ (−0.1 $\sigma$ )	$Y_{\text{P}}$	0.24310	$0.2440 \pm 0.0023$ (−0.2 $\sigma$ )	$\sigma_8(0.61)$	0.5933	$0.5893 \pm 0.0088$ (−0.2 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.93	—	$Y_{\text{P}}^{\text{BBN}}$	0.24441	$0.2453 \pm 0.0023$ (−0.2 $\sigma$ )	$f\sigma_8(2.33)$	0.29834	$0.2970 \pm 0.0043$ (−0.2 $\sigma$ )
$A^{\text{kSZ}}$	0.01	$< 5.96$ (−0.1 $\sigma$ )	$10^5 D/H$	2.5537	$2.570 \pm 0.049$ (−0.6 $\sigma$ )	$\sigma_8(2.33)$	0.30815	$0.3063 \pm 0.0048$ (−0.2 $\sigma$ )
$A_{100}^{\text{dust}}$	1.010	$1.01 \pm 0.20$ (−0.0 $\sigma$ )	Age/Gyr	13.933	$13.89 \pm 0.17$ (+0.2 $\sigma$ )	$f_{2000}^{143}$	28.40	$28.7 \pm 3.1$ (−0.4 $\sigma$ )
$A_{143}^{\text{dust}}$	0.979	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	$z_*$	1089.628	$1089.73 \pm 0.35$ (−0.5 $\sigma$ )	$f_{2000}^{217}$	105.40	$106.2 \pm 2.1$ (−0.4 $\sigma$ )
$A_{217}^{\text{dust}}$	0.991	$0.98 \pm 0.10$ (+0.1 $\sigma$ )	$r_*$	146.26	$145.7 \pm 1.6$ (+0.2 $\sigma$ )	$f_{2000}^{143 \times 217}$	30.79	$31.3 \pm 2.3$ (−0.4 $\sigma$ )
$A_{143 \times 217}^{\text{dust}}$	1.005	$1.03 \pm 0.16$ (−0.0 $\sigma$ )	$100\theta_*$	1.04153	$1.04139 \pm 0.00051$ (+0.1 $\sigma$ )	$\chi_{\text{lensing}}^2$	8.62	$9.24 \pm 0.81$ (−0.2 $\sigma$ )
$c_{100}$	0.99787	$0.9976 \pm 0.0010$ (+0.0 $\sigma$ )	$D_M(z_*)/\text{Gpc}$	14.043	$13.99 \pm 0.15$ (+0.2 $\sigma$ )	$\chi_{\text{simall}}^2$	395.85	$397.0 \pm 1.7$ (−0.1 $\sigma$ )
$c_{217}$	1.00123	$1.0011 \pm 0.0016$ (−0.1 $\sigma$ )	$z_{\text{drag}}$	1059.25	$1059.45 \pm 0.64$ (+0.2 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.55	$23.5 \pm 1.1$ (+0.1 $\sigma$ )
$c_{TE}$	0.9956	$0.9960 \pm 0.0050$	$r_{\text{drag}}$	149.00	$148.4 \pm 1.7$ (+0.2 $\sigma$ )	$\chi_{\text{CamSpec}}^2$	11498.3	$11513.7 \pm 5.6$ (+834.9 $\sigma$ )
$c_{EE}$	0.9905	$0.9912 \pm 0.0053$	$k_{\text{D}}$	0.13941	$0.1398 \pm 0.0012$ (−0.1 $\sigma$ )	$\chi_{\text{Aver15}}^2$	0.014	$0.35 \pm 0.48$ (−0.2 $\sigma$ )
$H_0$	67.11	$67.2 \pm 1.1$ (−0.1 $\sigma$ )	$100\theta_{\text{D}}$	0.160472	$0.16062 \pm 0.00042$ (−0.5 $\sigma$ )	$\chi_{6\text{DF}}^2$	0.0102	$0.058 \pm 0.076$ (−0.1 $\sigma$ )
$\Omega_\Lambda$	0.6916	$0.6891 \pm 0.0071$ (−0.0 $\sigma$ )	$z_{\text{eq}}$	3394.4	$3387 \pm 25$ (+0.2 $\sigma$ )	$\chi_{\text{MGS}}^2$	1.407	$1.31 \pm 0.48$ (−0.0 $\sigma$ )
$\Omega_m$	0.3084	$0.3109 \pm 0.0071$ (+0.0 $\sigma$ )	$k_{\text{eq}}$	0.010244	$0.01027 \pm 0.00010$ (−0.2 $\sigma$ )	$\chi_{\text{DR12BAO}}^2$	3.88	$4.8 \pm 1.6$ (−0.0 $\sigma$ )
$\Omega_m h^2$	0.13891	$0.1404 \pm 0.0029$ (−0.2 $\sigma$ )	$100\theta_{\text{eq}}$	0.81439	$0.8158 \pm 0.0047$ (−0.1 $\sigma$ )	$\chi_{\text{prior}}^2$	1.92	$7.8 \pm 3.4$ (+0.1 $\sigma$ )
$\Omega_\nu h^2$	$2.3 \cdot 10^{-5}$	$< 0.000612$ (−0.0 $\sigma$ )	$100\theta_{s,\text{eq}}$	0.45006	$0.4507 \pm 0.0024$ (−0.1 $\sigma$ )	$\chi_{\text{CMB}}^2$	11926.4	$11943.4 \pm 5.8$ (+802.2 $\sigma$ )
$\Omega_m h^3$	0.09322	$0.0943 \pm 0.0032$ (−0.2 $\sigma$ )	$H(0.15)$	72.30	$72.4 \pm 1.1$ (−0.2 $\sigma$ )	$\chi_{\text{BAO}}^2$	5.30	$6.1 \pm 1.3$ (−0.1 $\sigma$ )
$\sigma_8$	0.8131	$0.808^{+0.011}_{-0.010}$ (−0.2 $\sigma$ )	$D_M(0.15)$	646.2	$645 \pm 10$ (+0.1 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 11933.58$ ;  $\Delta\chi_{\text{eff}}^2 = 4448.11$ ;  $\bar{\chi}_{\text{eff}}^2 = 11957.68$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4450.36$ ;  $R - 1 = 0.00718$   
 $\chi_{\text{eff}}^2$ : Abund - Yp\_Aver2015: 0.01 ( $\Delta$  0.00) BAO - 6DF: 0.01 ( $\Delta$  0.00) MGS: 1.41 ( $\Delta$  0.00) DR12BAO: 3.88 ( $\Delta$  0.00) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.62 ( $\Delta$  -0.18) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.85 ( $\Delta$  -0.01) commander\_dx12\_v3\_2\_29: 23.55 ( $\Delta$  0.06) CamSpec like\_10.7HM\_1400\_unified: 11498.33



# 9.47 base\_nnu\_mnu\_CamSpecHM\_TTTEE\_lowl\_lowE\_lensing\_BAO\_post\_Cooke17\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022234	$0.02227 \pm 0.00018$ (+0.4 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4525	$0.4508 \pm 0.0061$ (−0.1 $\sigma$ )	$H(0.51)$	89.13	$89.3 \pm 1.1$ (−0.1 $\sigma$ )
$\Omega_c h^2$	0.11744	$0.1181 \pm 0.0026$ (−0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6073	$0.6039 \pm 0.0074$ (−0.2 $\sigma$ )	$D_M(0.51)$	1992.1	$1990 \pm 27$ (+0.1 $\sigma$ )
$100\theta_{MC}$	1.041130	$1.04107 \pm 0.00040$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9934	$0.986^{+0.012}_{-0.0093}$ (−0.1 $\sigma$ )	$H(0.61)$	94.69	$94.9 \pm 1.1$ (−0.1 $\sigma$ )
$\tau$	0.0531	$0.0543 \pm 0.0073$ (−0.0 $\sigma$ )	$r_{\text{drag}} h$	99.99	$99.72 \pm 0.88$ (−0.0 $\sigma$ )	$D_M(0.61)$	2318.5	$2316 \pm 31$ (+0.1 $\sigma$ )
$\Sigma m_\nu$ [eV]	0.0012	$< 0.0598$ (−0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4418	$2.435 \pm 0.022$ (−0.0 $\sigma$ )	$H(2.33)$	234.01	$234.9 \pm 2.3$ (−0.1 $\sigma$ )
$N_{\text{eff}}$	2.925	$2.98 \pm 0.16$ (−0.2 $\sigma$ )	$z_{\text{re}}$	7.52	$7.64 \pm 0.74$ (−0.1 $\sigma$ )	$D_M(2.33)$	5803	$5790 \pm 66$ (+0.1 $\sigma$ )
$\ln(10^{10} A_s)$	3.0332	$3.038 \pm 0.016$ (−0.1 $\sigma$ )	$10^9 A_s$	2.0765	$2.087 \pm 0.034$ (−0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4566	$0.4554 \pm 0.0058$ (−0.2 $\sigma$ )
$n_s$	0.9629	$0.9644 \pm 0.0065$ (−0.1 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8672	$1.872 \pm 0.016$ (−0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7533	$0.748^{+0.011}_{-0.0094}$ (−0.1 $\sigma$ )
$y_{\text{cal}}$	1.00013	$1.0006 \pm 0.0024$ (+0.0 $\sigma$ )	$D_{40}$	1227.8	$1228 \pm 13$ (+0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.4756	$0.4738 \pm 0.0056$ (−0.2 $\sigma$ )
$A_{100}^{\text{PS}}$	230.5	$238 \pm 25$ (−0.1 $\sigma$ )	$D_{220}$	5713.7	$5723 \pm 38$ (+0.3 $\sigma$ )	$\sigma_8(0.38)$	0.6679	$0.6627^{+0.0099}_{-0.0086}$ (−0.1 $\sigma$ )
$A_{143}^{\text{PS}}$	42.3	$38 \pm 8$ (−0.2 $\sigma$ )	$D_{810}$	2531.4	$2534 \pm 13$ (+0.1 $\sigma$ )	$f\sigma_8(0.51)$	0.4745	$0.4725 \pm 0.0055$ (−0.2 $\sigma$ )
$A_{217}^{\text{PS}}$	103.4	$103 \pm 10$ (+0.1 $\sigma$ )	$D_{1420}$	816.14	$816.5 \pm 4.9$ (+0.2 $\sigma$ )	$\sigma_8(0.51)$	0.6250	$0.6202^{+0.0094}_{-0.0082}$ (−0.1 $\sigma$ )
$A_{217}^{\text{CIB}}$	42.8	$39^{+7}_{-7}$ (−0.2 $\sigma$ )	$D_{2000}$	231.02	$230.8 \pm 1.8$ (+0.3 $\sigma$ )	$f\sigma_8(0.61)$	0.4697	$0.4676 \pm 0.0055$ (−0.2 $\sigma$ )
$A_{143}^{\text{tSZ}}$	6.50	$3.9^{+1.9}_{-2.5}$ (+0.1 $\sigma$ )	$n_{s,0.002}$	0.9629	$0.9644 \pm 0.0065$ (−0.1 $\sigma$ )	$\sigma_8(0.61)$	0.5947	$0.5901^{+0.0090}_{-0.0079}$ (−0.1 $\sigma$ )
$r_{143 \times 217}^{\text{PS}}$	0.661	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$Y_P$	0.24370	$0.2444 \pm 0.0022$ (−0.1 $\sigma$ )	$f\sigma_8(2.33)$	0.29904	$0.2974 \pm 0.0042$ (−0.1 $\sigma$ )
$r_{143 \times 217}^{\text{CIB}}$	0.794	$0.55^{+0.38}_{-0.20}$ (−0.1 $\sigma$ )	$Y_P^{\text{BBN}}$	0.24502	$0.2457 \pm 0.0022$ (−0.1 $\sigma$ )	$\sigma_8(2.33)$	0.30888	$0.3067 \pm 0.0047$ (−0.1 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.38	—	$10^5 D/H$	2.5692	$2.580 \pm 0.044$ (−0.5 $\sigma$ )	$f_{2000}^{143}$	28.95	$29.1 \pm 3.0$ (−0.3 $\sigma$ )
$A^{\text{kSZ}}$	0.02	$< 6.04$ (−0.1 $\sigma$ )	Age/Gyr	13.893	$13.86 \pm 0.16$ (+0.1 $\sigma$ )	$f_{2000}^{217}$	105.93	$106.4 \pm 2.1$ (−0.3 $\sigma$ )
$A_{100}^{\text{dust}}$	0.998	$1.01 \pm 0.20$ (+0.0 $\sigma$ )	$z_*$	1089.741	$1089.80 \pm 0.32$ (−0.5 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.29	$31.6 \pm 2.2$ (−0.4 $\sigma$ )
$A_{143}^{\text{dust}}$	0.972	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	$r_*$	145.83	$145.4 \pm 1.5$ (+0.1 $\sigma$ )	$\chi_{\text{lensing}}^2$	8.70	$9.28 \pm 0.79$ (−0.2 $\sigma$ )
$A_{217}^{\text{dust}}$	0.974	$0.98 \pm 0.10$ (+0.1 $\sigma$ )	$100\theta_*$	1.041376	$1.04131 \pm 0.00048$ (−0.0 $\sigma$ )	$\chi_{\text{small}}^2$	395.85	$396.9 \pm 1.7$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{\text{dust}}$	1.008	$1.03 \pm 0.16$ (−0.0 $\sigma$ )	$D_M(z_*)/\text{Gpc}$	14.003	$13.96 \pm 0.14$ (+0.1 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.46	$23.4 \pm 1.0$ (+0.1 $\sigma$ )
$c_{100}$	0.99768	$0.9976 \pm 0.0010$ (+0.0 $\sigma$ )	$z_{\text{drag}}$	1059.32	$1059.51 \pm 0.63$ (+0.2 $\sigma$ )	$\chi_{\text{CamSpec}}^2$	11498.3	$11513.7 \pm 5.6$ (+846.8 $\sigma$ )
$c_{217}$	1.00121	$1.0011 \pm 0.0016$ (−0.1 $\sigma$ )	$r_{\text{drag}}$	148.55	$148.1 \pm 1.6$ (+0.1 $\sigma$ )	$\chi_{\text{Aver15}}^2$	0.001	$0.33 \pm 0.46$ (−0.1 $\sigma$ )
$c_{TE}$	0.99580	$0.9963 \pm 0.0050$	$k_D$	0.13969	$0.1400 \pm 0.0011$ (+0.0 $\sigma$ )	$\chi_{\text{Cooke17}}^2$	0.269	$0.38 \pm 0.48$ (+0.2 $\sigma$ )
$c_{EE}$	0.9910	$0.9918 \pm 0.0051$	$100\theta_D$	0.160600	$0.16071 \pm 0.00038$ (−0.5 $\sigma$ )	$\chi_{6\text{DF}}^2$	0.0101	$0.057 \pm 0.075$ (−0.1 $\sigma$ )
$H_0$	67.31	$67.3 \pm 1.1$ (−0.1 $\sigma$ )	$z_{\text{eq}}$	3392.9	$3386 \pm 25$ (+0.1 $\sigma$ )	$\chi_{\text{MGS}}^2$	1.407	$1.32 \pm 0.48$ (−0.0 $\sigma$ )
$\Omega_\Lambda$	0.6917	$0.6893^{+0.0073}_{-0.0066}$ (+0.0 $\sigma$ )	$k_{\text{eq}}$	0.010271	$0.010284 \pm 0.000098$ (−0.1 $\sigma$ )	$\chi_{\text{DR12BAO}}^2$	3.89	$4.8 \pm 1.6$ (−0.0 $\sigma$ )
$\Omega_m$	0.3083	$0.3107 \pm 0.0071$ (−0.0 $\sigma$ )	$100\theta_{\text{eq}}$	0.81459	$0.8160 \pm 0.0047$ (−0.1 $\sigma$ )	$\chi_{\text{prior}}^2$	2.09	$7.8 \pm 3.4$ (+0.1 $\sigma$ )
$\Omega_m h^2$	0.13969	$0.1408 \pm 0.0027$ (−0.1 $\sigma$ )	$100\theta_{s,\text{eq}}$	0.45016	$0.4509 \pm 0.0024$ (−0.1 $\sigma$ )	$\chi_{\text{CMB}}^2$	11926.3	$11943.3 \pm 5.8$ (+814.0 $\sigma$ )
$\Omega_\nu h^2$	$1.2 \cdot 10^{-5}$	$< 0.000628$ (−0.0 $\sigma$ )	$H(0.15)$	72.52	$72.6 \pm 1.0$ (−0.1 $\sigma$ )	$\chi_{\text{BAO}}^2$	5.31	$6.1 \pm 1.3$ (−0.1 $\sigma$ )
$\Omega_m h^3$	0.09402	$0.0949 \pm 0.0031$ (−0.1 $\sigma$ )	$D_M(0.15)$	644.3	$644.0 \pm 9.7$ (+0.1 $\sigma$ )	$\chi_{\text{Abund}}^2$	0.270	$0.72 \pm 0.67$ (+0.0 $\sigma$ )
$\sigma_8$	0.8150	$0.809^{+0.011}_{-0.0099}$ (−0.1 $\sigma$ )	$H(0.38)$	82.50	$82.6 \pm 1.1$ (−0.1 $\sigma$ )			
$S_8$	0.8262	$0.823 \pm 0.011$ (−0.1 $\sigma$ )	$D_M(0.38)$	1537.4	$1536 \pm 22$ (+0.1 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 11933.95$ ;  $\Delta\chi_{\text{eff}}^2 = 4448.44$ ;  $\bar{\chi}_{\text{eff}}^2 = 11957.95$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4450.60$ ;  $R - 1 = 0.00786$   
 $\chi_{\text{eff}}^2$ : Abund - Yp\_Aver2015: 0.00 ( $\Delta$  -0.03) D\_Cooke2017: 0.27 ( $\Delta$  0.23) BAO - 6DF: 0.01 ( $\Delta$  0.00) MGS: 1.41 ( $\Delta$  -0.07) DR12BAO: 3.89 ( $\Delta$  0.13) CMB - smi-cadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.70 ( $\Delta$  -0.12) small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.85 ( $\Delta$  0.00) commander\_dx12\_v3.2.29: 23.46 ( $\Delta$  0.14) CamSpec like\_10.7HM\_1400\_unified: 11498.26



9.48 base\_nnu\_mnu\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_BAO\_post\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02230 \pm 0.00019 \quad (+0.3\sigma)$	$S_8$	$0.822 \pm 0.011 \quad (-0.2\sigma)$	$H(0.38)$	$82.7 \pm 1.3 \quad (-0.3\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1180 \pm 0.0032 \quad (-0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4502 \pm 0.0062 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.38)$	$1534 \pm 26 \quad (+0.3\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04109 \pm 0.00047 \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6037 \pm 0.0078 \quad (-0.2\sigma)$	$H(0.51)$	$89.4 \pm 1.4 \quad (-0.3\sigma)$
$\tau$	$0.0555^{+0.0054}_{-0.0076} \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.986^{+0.011}_{-0.0092} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1987 \pm 33 \quad (+0.3\sigma)$
$\Sigma m_{\nu} [\mathrm{eV}]$	$< 0.0589 \quad (-0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.89 \pm 0.86 \quad (-0.1\sigma)$	$H(0.61)$	$95.0 \pm 1.4 \quad (-0.3\sigma)$
$N_{\mathrm{eff}}$	$2.98 \pm 0.20 \quad (-0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.435 \pm 0.022 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2313 \pm 38 \quad (+0.3\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.040^{+0.014}_{-0.017} \quad (-0.2\sigma)$	$z_{\mathrm{re}}$	$7.76^{+0.58}_{-0.76} \quad (-0.1\sigma)$	$H(2.33)$	$234.8 \pm 2.9 \quad (-0.3\sigma)$
$n_{\mathrm{s}}$	$0.9650 \pm 0.0075 \quad (-0.3\sigma)$	$10^9 A_{\mathrm{s}}$	$2.092^{+0.029}_{-0.037} \quad (-0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5786 \pm 83 \quad (+0.3\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0024 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.872 \pm 0.018 \quad (-0.2\sigma)$	$f\sigma_8(0.15)$	$0.4548 \pm 0.0059 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$238 \pm 25 \quad (-0.2\sigma)$	$D_{40}$	$1228 \pm 13 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.748 \pm 0.011 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{PS}}$	$38 \pm 9 \quad (-0.3\sigma)$	$D_{220}$	$5725 \pm 38 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4736 \pm 0.0059 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2535 \pm 13 \quad (+0.0\sigma)$	$\sigma_8(0.38)$	$0.664 \pm 0.010 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{CIB}}$	$39^{+7}_{-8} \quad (-0.2\sigma)$	$D_{1420}$	$816.7 \pm 5.0 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4725 \pm 0.0059 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5} \quad (+0.1\sigma)$	$D_{2000}$	$231.0 \pm 2.0 \quad (+0.4\sigma)$	$\sigma_8(0.51)$	$0.6211 \pm 0.0097 \quad (-0.3\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9650 \pm 0.0075 \quad (-0.3\sigma)$	$f\sigma_8(0.61)$	$0.4677 \pm 0.0059 \quad (-0.3\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.54^{+0.38}_{-0.21} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.2444 \pm 0.0028 \quad (-0.3\sigma)$	$\sigma_8(0.61)$	$0.5910 \pm 0.0093 \quad (-0.3\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2458 \pm 0.0028 \quad (-0.3\sigma)$	$f\sigma_8(2.33)$	$0.2979 \pm 0.0046 \quad (-0.3\sigma)$
$A^{\mathrm{kSZ}}$	$< 6.01 \quad (-0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.575 \pm 0.055 \quad (-0.6\sigma)$	$\sigma_8(2.33)$	$0.3073 \pm 0.0051 \quad (-0.3\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.85 \pm 0.20 \quad (+0.3\sigma)$	$f_{2000}^{143}$	$29 \pm 3 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$z_*$	$1089.75 \pm 0.40 \quad (-0.6\sigma)$	$f_{2000}^{217}$	$106.4 \pm 2.2 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$r_*$	$145.4 \pm 2.0 \quad (+0.3\sigma)$	$f_{2000}^{143 \times 217}$	$31.5 \pm 2.4 \quad (-0.5\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_*$	$1.04132 \pm 0.00058 \quad (+0.2\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.25 \pm 0.78 \quad (-0.3\sigma)$
$c_{100}$	$0.9976 \pm 0.0010 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.96 \pm 0.18 \quad (+0.3\sigma)$	$\chi_{\mathrm{small}}^2$	$397.0 \pm 1.7 \quad (-0.1\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$z_{\mathrm{drag}}$	$1059.57 \pm 0.74 \quad (-0.0\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.3 \pm 1.1 \quad (+0.2\sigma)$
$c_{TE}$	$0.9961 \pm 0.0051$	$r_{\mathrm{drag}}$	$148.1 \pm 2.0 \quad (+0.3\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11514.1 \pm 5.7 \quad (+815.9\sigma)$
$c_{EE}$	$0.9916 \pm 0.0054$	$k_{\mathrm{D}}$	$0.1401 \pm 0.0014 \quad (-0.2\sigma)$	$\chi_{\mathrm{JLA}}^2$	$1035.05 \pm 0.33 \quad (+0.0\sigma)$
$H_0$	$67.5 \pm 1.3 \quad (-0.3\sigma)$	$100\theta_{\mathrm{D}}$	$0.16069 \pm 0.00049 \quad (-0.6\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.045 \pm 0.062 \quad (-0.0\sigma)$
$\Omega_{\Lambda}$	$0.6907 \pm 0.0069 \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3382 \pm 25 \quad (+0.3\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.41 \pm 0.49 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3093 \pm 0.0069 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.01027 \pm 0.00012 \quad (-0.2\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.5 \pm 1.3 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1408 \pm 0.0035 \quad (-0.3\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8168 \pm 0.0048 \quad (-0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_{\nu}h^2$	$< 0.000614 \quad (-0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4513 \pm 0.0024 \quad (-0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11943.7 \pm 5.9 \quad (+788.0\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.0950 \pm 0.0039 \quad (-0.3\sigma)$	$H(0.15)$	$72.7 \pm 1.3 \quad (-0.3\sigma)$	$\chi_{\mathrm{BAO}}^2$	$5.9 \pm 1.0 \quad (-0.0\sigma)$
$\sigma_8$	$0.810 \pm 0.012 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.15)$	$643 \pm 12 \quad (+0.3\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 12992.45; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.41; R - 1 = 0.00689$$



9.49 base\_nnu\_mnu\_lensing\_lenspriors\_BAO\_Cooke17\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02194	$0.02209 \pm 0.00070$	$D_{810}$	2560	$2159 \pm 500$	$D_{\text{M}}(0.51)$	1929	$1862 \pm 92$
$\Omega_{\text{c}}h^2$	0.1349	$0.155^{+0.022}_{-0.029}$	$D_{1420}$	790	$629^{+200}_{-200}$	$H(0.61)$	99.8	$105.2^{+6.0}_{-7.6}$
$100\theta_{\text{MC}}$	1.0843	$1.110^{+0.038}_{-0.033}$	$D_{2000}$	230	$182^{+50}_{-70}$	$D_{\text{M}}(0.61)$	2239	$2158 \pm 110$
$\Sigma m_{\nu} [\text{eV}]$	0.95	$1.69^{+0.60}_{-1.2}$	$n_{\text{s},0.002}$	0.9616	$0.960 \pm 0.020$	$H(2.33)$	254.1	$273^{+21}_{-26}$
$N_{\text{eff}}$	2.908	$2.96 \pm 0.28$	$Y_{\text{P}}$	0.24334	$0.2441 \pm 0.0041$	$D_{\text{M}}(2.33)$	5486	$5224 \pm 340$
$\ln(10^{10}A_{\text{s}})$	3.103	$3.02 \pm 0.12$	$Y_{\text{P}}^{\text{BBN}}$	0.24466	$0.2454 \pm 0.0041$	$f\sigma_8(0.15)$	0.4566	$0.457 \pm 0.018$
$n_{\text{s}}$	0.9616	$0.960 \pm 0.020$	$10^5\text{D}/\text{H}$	2.618	$2.612 \pm 0.095$	$\sigma_8(0.15)$	0.6938	$0.668 \pm 0.040$
$H_0$	68.39	$70.2^{+2.4}_{-3.0}$	Age/Gyr	13.13	$12.50 \pm 0.83$	$f\sigma_8(0.38)$	0.4655	$0.458^{+0.019}_{-0.017}$
$\Omega_{\Lambda}$	0.6438	$0.608^{+0.052}_{-0.045}$	$z_*$	1091.90	$1093.8^{+2.2}_{-2.8}$	$\sigma_8(0.38)$	0.6119	$0.586 \pm 0.038$
$\Omega_{\text{m}}$	0.3562	$0.392^{+0.045}_{-0.052}$	$r_*$	141.3	$136.2 \pm 6.8$	$f\sigma_8(0.51)$	0.4599	$0.450^{+0.020}_{-0.017}$
$\Omega_{\text{m}}h^2$	0.1666	$0.195^{+0.028}_{-0.041}$	$100\theta_*$	1.0849	$1.111^{+0.038}_{-0.033}$	$\sigma_8(0.51)$	0.5715	$0.547 \pm 0.036$
$\Omega_{\nu}h^2$	0.0098	$0.0175^{+0.0062}_{-0.012}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.02	$12.29^{+0.92}_{-1.0}$	$f\sigma_8(0.61)$	0.4525	$0.441^{+0.022}_{-0.018}$
$\Omega_{\text{m}}h^3$	0.1140	$0.137^{+0.022}_{-0.035}$	$z_{\text{drag}}$	1060.12	$1062.1 \pm 3.0$	$\sigma_8(0.61)$	0.5432	$0.519 \pm 0.035$
$\sigma_8$	0.7542	$0.729 \pm 0.040$	$r_{\text{drag}}$	144.0	$138.7 \pm 7.0$	$f\sigma_8(2.33)$	0.2799	$0.266^{+0.021}_{-0.017}$
$S_8$	0.8219	$0.830 \pm 0.036$	$k_{\text{D}}$	0.1446	$0.1511^{+0.0073}_{-0.0091}$	$\sigma_8(2.33)$	0.2826	$0.268 \pm 0.020$
$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4502	$0.455 \pm 0.020$	$100\theta_{\text{D}}$	0.16680	$0.1700^{+0.0048}_{-0.0044}$	$\chi^2_{\text{lensing}}$	7.55	$10.0 \pm 2.1$
$\sigma_8\Omega_{\text{m}}^{0.25}$	0.5827	$0.576 \pm 0.023$	$z_{\text{eq}}$	3818	$4281^{+500}_{-700}$	$\chi^2_{\text{Aver15}}$	0.00	$1.0 \pm 1.5$
$\sigma_8/h^{0.5}$	0.912	$0.871 \pm 0.056$	$k_{\text{eq}}$	0.01156	$0.0131^{+0.0016}_{-0.0022}$	$\chi^2_{\text{Cooke17}}$	0.00	$1.0 \pm 1.4$
$r_{\text{drag}}h$	98.49	$97.2 \pm 2.0$	$100\theta_{\text{eq}}$	0.779	$0.744^{+0.046}_{-0.056}$	$\chi^2_{6\text{DF}}$	0.106	$0.41 \pm 0.41$
$\langle d^2 \rangle^{1/2}$	2.519	$2.503 \pm 0.054$	$100\theta_{\text{s,eq}}$	0.4325	$0.415^{+0.024}_{-0.029}$	$\chi^2_{\text{MGS}}$	0.927	$0.70 \pm 0.63$
$z_{\text{re}}$	8.27	$8.66^{+0.50}_{-0.58}$	$H(0.15)$	74.47	$77.0^{+3.1}_{-3.9}$	$\chi^2_{\text{DR12BAO}}$	2.11	$3.8 \pm 1.6$
$10^9A_{\text{s}}$	2.226	$2.07^{+0.22}_{-0.27}$	$D_{\text{M}}(0.15)$	630.8	$613 \pm 26$	$\chi^2_{\text{prior}}$	0.01	$1.0 \pm 1.4$
$10^9A_{\text{s}}e^{-2\tau}$	1.994	$1.85^{+0.20}_{-0.24}$	$H(0.38)$	86.0	$89.9^{+4.5}_{-5.6}$	$\chi^2_{\text{BAO}}$	3.14	$4.9 \pm 1.8$
$D_{40}$	1268	$1153^{+200}_{-200}$	$D_{\text{M}}(0.38)$	1494	$1445 \pm 68$	$\chi^2_{\text{Abund}}$	0.00	$2.1 \pm 2.0$
$D_{220}$	5675	$4980^{+900}_{-1000}$	$H(0.51)$	93.5	$98.3^{+5.3}_{-6.7}$			

Best-fit  $\chi^2_{\text{eff}} = 10.70$ ;  $\bar{\chi}^2_{\text{eff}} = 17.95$ ;  $R - 1 = 0.01127$   
 $\chi^2_{\text{eff}}$ : Abund - Yp\_Aver2015: 0.00 D\_Cooke2017: 0.00 BAO - 6DF: 0.11 MGS: 0.93 DR12BAO: 2.11 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged:  
7.55



## 9.50 base\_nnu\_mnu\_lensing\_lenspriors\_BAO\_Cooke17\_Aver15\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02206	$0.02213^{+0.00065}_{-0.00074}$	$D_{810}$	2768	$2842 \pm 310$	$D_M(0.51)$	1983	$1972 \pm 64$
$\Omega_c h^2$	0.1173	$0.119^{+0.011}_{-0.013}$	$D_{1420}$	886	$902 \pm 100$	$H(0.61)$	95.28	$96.2 \pm 3.5$
$100\theta_{MC}$	1.0487	$1.054^{+0.016}_{-0.019}$	$D_{2000}$	250.3	$257^{+28}_{-32}$	$D_M(0.61)$	2308	$2294 \pm 75$
$\Sigma m_\nu$ [eV]	0.297	$0.50^{+0.20}_{-0.40}$	$n_{s,0.002}$	0.9572	$0.960 \pm 0.020$	$H(2.33)$	236.1	$239^{+10}_{-11}$
$N_{\text{eff}}$	2.949	$2.99 \pm 0.28$	$Y_P$	0.24396	$0.2444 \pm 0.0039$	$D_M(2.33)$	5765	$5715 \pm 210$
$\ln(10^{10} A_s)$	3.128	$3.159 \pm 0.091$	$Y_P^{\text{BBN}}$	0.24529	$0.2458 \pm 0.0039$	$f\sigma_8(0.15)$	0.4501	$0.445 \pm 0.016$
$n_s$	0.9572	$0.960 \pm 0.020$	$10^5 D/H$	2.610	$2.614^{+0.096}_{-0.087}$	$\sigma_8(0.15)$	0.7322	$0.717 \pm 0.027$
$H_0$	67.50	$67.8 \pm 2.1$	Age/Gyr	13.80	$13.68 \pm 0.51$	$f\sigma_8(0.38)$	0.4684	$0.462 \pm 0.015$
$\Omega_\Lambda$	0.6874	$0.682^{+0.020}_{-0.017}$	$z_*$	1090.01	$1090.2 \pm 1.1$	$\sigma_8(0.38)$	0.6496	$0.635 \pm 0.024$
$\Omega_m$	0.3126	$0.318^{+0.017}_{-0.020}$	$r_*$	145.82	$145.0 \pm 4.3$	$f\sigma_8(0.51)$	0.4672	$0.460 \pm 0.015$
$\Omega_m h^2$	0.1424	$0.147^{+0.012}_{-0.015}$	$100\theta_*$	1.0491	$1.055^{+0.016}_{-0.019}$	$\sigma_8(0.51)$	0.6082	$0.595 \pm 0.023$
$\Omega_\nu h^2$	0.00312	$0.0052^{+0.0020}_{-0.0042}$	$D_M(z_*)/\text{Gpc}$	13.90	$13.76 \pm 0.57$	$f\sigma_8(0.61)$	0.4624	$0.455 \pm 0.014$
$\Omega_m h^3$	0.0962	$0.0998^{+0.010}_{-0.013}$	$z_{\text{drag}}$	1058.98	$1059.3 \pm 2.3$	$\sigma_8(0.61)$	0.5789	$0.566 \pm 0.022$
$\sigma_8$	0.7920	$0.775 \pm 0.028$	$r_{\text{drag}}$	148.61	$147.8 \pm 4.6$	$f\sigma_8(2.33)$	0.2954	$0.290^{+0.010}_{-0.0089}$
$S_8$	0.8085	$0.798 \pm 0.031$	$k_D$	0.13944	$0.1404 \pm 0.0044$	$\sigma_8(2.33)$	0.3025	$0.296^{+0.012}_{-0.011}$
$\sigma_8 \Omega_m^{0.5}$	0.4428	$0.437 \pm 0.017$	$100\theta_D$	0.16209	$0.1629 \pm 0.0024$	$\chi^2_{\text{lensing}}$	7.62	$9.4 \pm 2.0$
$\sigma_8 \Omega_m^{0.25}$	0.5922	$0.582 \pm 0.020$	$z_{\text{eq}}$	3373	$3409^{+220}_{-270}$	$\chi^2_{\text{Aver15}}$	0.009	$1.0 \pm 1.5$
$\sigma_8/h^{0.5}$	0.9640	$0.942^{+0.038}_{-0.032}$	$k_{\text{eq}}$	0.01023	$0.01037^{+0.00074}_{-0.00086}$	$\chi^2_{\text{Cooke17}}$	0.007	$0.99 \pm 1.4$
$r_{\text{drag}} h$	100.32	$100.2 \pm 1.2$	$100\theta_{\text{eq}}$	0.8240	$0.825 \pm 0.032$	$\chi^2_{\text{JLA}}$	1035.11	$1036.1 \pm 1.8$
$\langle d^2 \rangle^{1/2}$	2.506	$2.527 \pm 0.054$	$100\theta_{s,\text{eq}}$	0.4554	$0.456 \pm 0.016$	$\chi^2_{6\text{DF}}$	0.0003	$0.054 \pm 0.075$
$z_{\text{re}}$	7.811	$7.87 \pm 0.24$	$H(0.15)$	72.80	$73.3 \pm 2.3$	$\chi^2_{\text{MGS}}$	1.68	$1.71 \pm 0.67$
$10^9 A_s$	2.283	$2.37 \pm 0.22$	$D_M(0.15)$	642.2	$639 \pm 20$	$\chi^2_{\text{DR12BAO}}$	2.98	$3.8 \pm 1.4$
$10^9 A_s e^{-2\tau}$	2.045	$2.12 \pm 0.19$	$H(0.38)$	82.93	$83.6 \pm 2.8$	$\chi^2_{\text{prior}}$	0.02	$1.0 \pm 1.4$
$D_{40}$	1365	$1397^{+120}_{-140}$	$D_M(0.38)$	1531.2	$1523 \pm 48$	$\chi^2_{\text{BAO}}$	4.66	$5.6 \pm 1.7$
$D_{220}$	6296	$6494^{+720}_{-830}$	$H(0.51)$	89.66	$90.5 \pm 3.2$	$\chi^2_{\text{Abund}}$	0.02	$2.0 \pm 2.0$

Best-fit  $\chi^2_{\text{eff}} = 1047.43$ ;  $\bar{\chi}^2_{\text{eff}} = 1054.19$ ;  $R - 1 = 0.07982$   
 $\chi^2_{\text{eff}}$ : Abund - Yp\_Aver2015: 0.01 D\_Cooke2017: 0.01 BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 2.98 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmargd:  
7.62 SN - JLA Pantheon18: 1035.11



# 9.51 base\_nnu\_mnu\_lensing\_lenspriors\_BAO\_Cooke17\_Aver15\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}} h^2$	0.02194	$0.02203 \pm 0.00072$	$D_{810}$	2908	$2928^{+210}_{-310}$	$D_{\mathrm{M}}(0.51)$	2012	$2010 \pm 51$
$\Omega_{\mathrm{c}} h^2$	0.1114	$0.1118 \pm 0.0061$	$D_{1420}$	931	$938^{+71}_{-100}$	$H(0.61)$	93.65	$93.8 \pm 2.3$
$100\theta_{\mathrm{MC}}$	1.04089	$1.04092 \pm 0.00058$	$D_{2000}$	262.2	$264^{+21}_{-30}$	$D_{\mathrm{M}}(0.61)$	2342	$2340 \pm 59$
$\Sigma m_{\nu} [\mathrm{eV}]$	0.267	$0.29^{+0.13}_{-0.24}$	$n_{\mathrm{s},0.002}$	0.9602	$0.962 \pm 0.019$	$H(2.33)$	231.1	$231.6 \pm 5.4$
$N_{\mathrm{eff}}$	2.910	$2.94 \pm 0.28$	$Y_{\mathrm{P}}$	0.24337	$0.2437 \pm 0.0041$	$D_{\mathrm{M}}(2.33)$	5868	$5860 \pm 140$
$\ln(10^{10} A_{\mathrm{s}})$	3.169	$3.172^{+0.074}_{-0.093}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24469	$0.2450 \pm 0.0041$	$f\sigma_8(0.15)$	0.4442	$0.442^{+0.013}_{-0.012}$
$n_{\mathrm{s}}$	0.9602	$0.962 \pm 0.019$	$10^5 \mathrm{D}/\mathrm{H}$	2.619	$2.616 \pm 0.092$	$\sigma_8(0.15)$	0.7302	$0.727^{+0.026}_{-0.021}$
$H_0$	66.69	$66.8 \pm 1.8$	Age/Gyr	14.051	$14.03 \pm 0.33$	$f\sigma_8(0.38)$	0.4638	$0.462^{+0.014}_{-0.012}$
$\Omega_{\Lambda}$	0.6939	$0.6931 \pm 0.0090$	$z_*$	1089.59	$1089.57 \pm 0.64$	$\sigma_8(0.38)$	0.6484	$0.645^{+0.023}_{-0.019}$
$\Omega_{\mathrm{m}}$	0.3061	$0.3069 \pm 0.0090$	$r_*$	147.71	$147.5 \pm 3.4$	$f\sigma_8(0.51)$	0.4633	$0.461^{+0.014}_{-0.011}$
$\Omega_{\mathrm{m}} h^2$	0.1362	$0.1369 \pm 0.0063$	$100\theta_*$	1.04133	$1.04133 \pm 0.00064$	$\sigma_8(0.51)$	0.6074	$0.604^{+0.021}_{-0.018}$
$\Omega_{\nu} h^2$	0.00278	$0.0030^{+0.0013}_{-0.0025}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	14.185	$14.16 \pm 0.33$	$f\sigma_8(0.61)$	0.4591	$0.457^{+0.013}_{-0.011}$
$\Omega_{\mathrm{m}} h^3$	0.0908	$0.0915^{+0.0059}_{-0.0068}$	$z_{\mathrm{drag}}$	1058.22	$1058.5 \pm 2.2$	$\sigma_8(0.61)$	0.5783	$0.575^{+0.020}_{-0.017}$
$\sigma_8$	0.7892	$0.785^{+0.028}_{-0.023}$	$r_{\mathrm{drag}}$	150.59	$150.3 \pm 3.7$	$f\sigma_8(2.33)$	0.2951	$0.2936^{+0.0084}_{-0.0074}$
$S_8$	0.7972	$0.794^{+0.027}_{-0.023}$	$k_{\mathrm{D}}$	0.13748	$0.1378 \pm 0.0032$	$\sigma_8(2.33)$	0.3027	$0.3011^{+0.0098}_{-0.0084}$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	0.4367	$0.435^{+0.015}_{-0.013}$	$100\theta_{\mathrm{D}}$	0.16109	$0.16108 \pm 0.00073$	$\chi^2_{\mathrm{lensing}}$	7.51	$9.2 \pm 1.7$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	0.5870	$0.585^{+0.020}_{-0.017}$	$z_{\mathrm{eq}}$	3247	$3245^{+89}_{-80}$	$\chi^2_{\mathrm{Aver15}}$	0.00	$1.0 \pm 1.5$
$\sigma_8/h^{0.5}$	0.9664	$0.961^{+0.032}_{-0.027}$	$k_{\mathrm{eq}}$	0.009820	$0.00983 \pm 0.00033$	$\chi^2_{\mathrm{Cooke17}}$	0.000	$0.97 \pm 1.4$
$r_{\mathrm{drag}} h$	100.43	$100.3 \pm 1.2$	$100\theta_{\mathrm{eq}}$	0.8412	$0.842^{+0.014}_{-0.018}$	$\chi^2_{6\mathrm{DF}}$	0.0001	$0.057 \pm 0.078$
$\langle d^2 \rangle^{1/2}$	2.523	$2.522^{+0.049}_{-0.056}$	$100\theta_{\mathrm{s,eq}}$	0.4642	$0.4648^{+0.0075}_{-0.0096}$	$\chi^2_{\mathrm{MGS}}$	1.68	$1.70 \pm 0.69$
$z_{\mathrm{re}}$	7.716	$7.71 \pm 0.11$	$H(0.15)$	71.81	$71.9 \pm 1.9$	$\chi^2_{\mathrm{DR12BAO}}$	3.39	$4.3 \pm 1.4$
$10^9 A_{\mathrm{s}}$	2.379	$2.39^{+0.16}_{-0.23}$	$D_{\mathrm{M}}(0.15)$	650.5	$650 \pm 17$	$\chi^2_{\mathrm{prior}}$	0.00	$1.9 \pm 1.9$
$10^9 A_{\mathrm{s}} e^{-2\tau}$	2.131	$2.14^{+0.14}_{-0.21}$	$H(0.38)$	81.64	$81.8 \pm 2.0$	$\chi^2_{\mathrm{BAO}}$	5.07	$6.1 \pm 1.4$
$D_{40}$	1426	$1426^{+100}_{-120}$	$D_{\mathrm{M}}(0.38)$	1552.6	$1551 \pm 40$	$\chi^2_{\mathrm{Abund}}$	0.00	$2.0 \pm 2.0$
$D_{220}$	6689	$6733^{+490}_{-730}$	$H(0.51)$	88.18	$88.3 \pm 2.1$			

Best-fit  $\chi^2_{\mathrm{eff}} = 12.58$ ;  $\bar{\chi}^2_{\mathrm{eff}} = 19.19$ ;  $R - 1 = 0.00759$   
 $\chi^2_{\mathrm{eff}}$ : Abund - Yp\_Aver2015: 0.00 D\_Cooke2017: 0.00 BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.39 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmarged: 7.51



## 9.52 base\_nnu\_mnu\_lensing\_lenspriors\_BAO\_Cooke17\_Aver15\_theta\_post\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02198	$0.02204^{+0.00067}_{-0.00075}$	$D_{810}$	2893	$2928^{+210}_{-310}$	$D_M(0.51)$	2008	$2007 \pm 50$
$\Omega_c h^2$	0.1117	$0.1119^{+0.0057}_{-0.0063}$	$D_{1420}$	926	$938^{+71}_{-100}$	$H(0.61)$	93.80	$93.9 \pm 2.2$
$100\theta_{MC}$	1.04090	$1.04091 \pm 0.00058$	$D_{2000}$	260.9	$264^{+21}_{-30}$	$D_M(0.61)$	2337	$2337 \pm 58$
$\Sigma m_\nu$ [eV]	0.261	$0.29^{+0.12}_{-0.24}$	$n_{s,0.002}$	0.9608	$0.962 \pm 0.019$	$H(2.33)$	231.3	$231.6 \pm 5.4$
$N_{\text{eff}}$	2.924	$2.95 \pm 0.28$	$Y_P$	0.24359	$0.2438 \pm 0.0041$	$D_M(2.33)$	5859	$5856 \pm 140$
$\ln(10^{10} A_s)$	3.165	$3.173^{+0.074}_{-0.093}$	$Y_P^{\text{BBN}}$	0.24491	$0.2451 \pm 0.0041$	$f\sigma_8(0.15)$	0.4436	$0.442^{+0.014}_{-0.011}$
$n_s$	0.9608	$0.962 \pm 0.019$	$10^5 D/H$	2.616	$2.615 \pm 0.092$	$\sigma_8(0.15)$	0.7304	$0.728^{+0.025}_{-0.021}$
$H_0$	66.85	$66.9 \pm 1.8$	Age/Gyr	14.030	$14.02 \pm 0.33$	$f\sigma_8(0.38)$	0.4634	$0.462^{+0.014}_{-0.011}$
$\Omega_\Lambda$	0.6948	$0.6942 \pm 0.0083$	$z_*$	1089.57	$1089.56 \pm 0.64$	$\sigma_8(0.38)$	0.6487	$0.646^{+0.022}_{-0.018}$
$\Omega_m$	0.3052	$0.3058 \pm 0.0083$	$r_*$	147.54	$147.4 \pm 3.5$	$f\sigma_8(0.51)$	0.4630	$0.461^{+0.014}_{-0.011}$
$\Omega_m h^2$	0.1364	$0.1369 \pm 0.0064$	$100\theta_*$	1.04132	$1.04132 \pm 0.00064$	$\sigma_8(0.51)$	0.6077	$0.605^{+0.021}_{-0.017}$
$\Omega_\nu h^2$	0.00272	$0.0030^{+0.0012}_{-0.0026}$	$D_M(z_*)/\text{Gpc}$	14.168	$14.16 \pm 0.33$	$f\sigma_8(0.61)$	0.4588	$0.457^{+0.014}_{-0.011}$
$\Omega_m h^3$	0.0912	$0.0917^{+0.0059}_{-0.0067}$	$z_{\text{drag}}$	1058.33	$1058.5 \pm 2.2$	$\sigma_8(0.61)$	0.5786	$0.576^{+0.020}_{-0.016}$
$\sigma_8$	0.7893	$0.786^{+0.028}_{-0.022}$	$r_{\text{drag}}$	150.39	$150.2 \pm 3.7$	$f\sigma_8(2.33)$	0.2952	$0.2941^{+0.0083}_{-0.0072}$
$S_8$	0.7961	$0.794^{+0.027}_{-0.023}$	$k_D$	0.13765	$0.1379 \pm 0.0032$	$\sigma_8(2.33)$	0.3029	$0.3016^{+0.0097}_{-0.0082}$
$\sigma_8 \Omega_m^{0.5}$	0.4360	$0.435^{+0.015}_{-0.012}$	$100\theta_D$	0.16109	$0.16108 \pm 0.00072$	$\chi^2_{\text{lensing}}$	7.51	$9.2 \pm 1.7$
$\sigma_8 \Omega_m^{0.25}$	0.5867	$0.585^{+0.020}_{-0.016}$	$z_{\text{eq}}$	3247	$3243^{+89}_{-79}$	$\chi^2_{\text{Aver15}}$	0.00	$1.0 \pm 1.5$
$\sigma_8/h^{0.5}$	0.9654	$0.962^{+0.032}_{-0.026}$	$k_{\text{eq}}$	0.009832	$0.00983 \pm 0.00033$	$\chi^2_{\text{Cooke17}}$	0.000	$0.96 \pm 1.3$
$r_{\text{drag}} h$	100.54	$100.5 \pm 1.1$	$100\theta_{\text{eq}}$	0.8411	$0.843^{+0.014}_{-0.018}$	$\chi^2_{\text{JLA}}$	1034.814	$1034.97 \pm 0.30$
$\langle d^2 \rangle^{1/2}$	2.516	$2.522^{+0.049}_{-0.056}$	$100\theta_{s,\text{eq}}$	0.4642	$0.4650^{+0.0075}_{-0.0095}$	$\chi^2_{6\text{DF}}$	0.0002	$0.049 \pm 0.067$
$z_{\text{re}}$	7.713	$7.71 \pm 0.11$	$H(0.15)$	71.97	$72.0 \pm 1.8$	$\chi^2_{\text{MGS}}$	1.75	$1.77 \pm 0.66$
$10^9 A_s$	2.368	$2.39^{+0.16}_{-0.23}$	$D_M(0.15)$	649.0	$649 \pm 17$	$\chi^2_{\text{DR12BAO}}$	3.35	$4.2 \pm 1.2$
$10^9 A_s e^{-2\tau}$	2.122	$2.15^{+0.14}_{-0.21}$	$H(0.38)$	81.80	$81.9 \pm 2.0$	$\chi^2_{\text{prior}}$	0.00	$1.9 \pm 1.9$
$D_{40}$	1418	$1427^{+100}_{-120}$	$D_M(0.38)$	1549.3	$1549 \pm 39$	$\chi^2_{\text{BAO}}$	5.10	$6.0 \pm 1.2$
$D_{220}$	6655	$6737^{+490}_{-730}$	$H(0.51)$	88.33	$88.4 \pm 2.1$	$\chi^2_{\text{Abund}}$	0.00	$2.0 \pm 2.0$

Best-fit  $\chi^2_{\text{eff}} = 1047.43$ ;  $\bar{\chi}^2_{\text{eff}} = 1054.04$ ;  $R - 1 = 0.00615$

$\chi^2_{\text{eff}}$ : Abund - Yp\_Aver2015: 0.00 D\_Cooke2017: 0.00 BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.35 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8\_CMBmargd: 7.51 SN - JLA Pantheon18: 1034.81



### 9.53 base\_nnu\_mnu\_BAO\_Cooke17\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02201	$0.02211 \pm 0.00070$	Age/Gyr	12.45	$12.6 \pm 1.2$	$H(0.38)$	90.1	$89.4^{+6.5}_{-8.7}$
$\Omega_{\text{c}}h^2$	0.164	$0.148^{+0.041}_{-0.062}$	$z_*$	1093.95	$1093.6^{+3.3}_{-4.1}$	$D_{\text{M}}(0.38)$	1432	$1460 \pm 110$
$100\theta_{\text{MC}}$	1.0994	$1.111 \pm 0.040$	$r_*$	135.1	$138 \pm 11$	$H(0.51)$	98.3	$97.8^{+7.6}_{-10}$
$\Sigma m_{\nu}$ [eV]	0.31	—	$100\theta_*$	1.0997	$1.112 \pm 0.040$	$D_{\text{M}}(0.51)$	1846	$1880 \pm 150$
$N_{\text{eff}}$	2.940	$2.97 \pm 0.28$	$D_{\text{M}}(z_*)/\text{Gpc}$	12.28	$12.4^{+1.3}_{-1.5}$	$H(0.61)$	105.1	$104.7^{+8.5}_{-11}$
$H_0$	71.01	$69.7^{+3.8}_{-5.0}$	$z_{\text{drag}}$	1061.99	$1062.0^{+3.4}_{-4.2}$	$D_{\text{M}}(0.61)$	2141	$2179 \pm 180$
$\Omega_{\Lambda}$	0.625	$0.605^{+0.059}_{-0.049}$	$r_{\text{drag}}$	137.6	$140 \pm 11$	$H(2.33)$	270.3	$272^{+28}_{-37}$
$\Omega_{\text{m}}$	0.375	$0.395^{+0.049}_{-0.059}$	$k_{\text{D}}$	0.1515	$0.150^{+0.011}_{-0.014}$	$D_{\text{M}}(2.33)$	5205	$5276 \pm 520$
$\Omega_{\text{m}}h^2$	0.1893	$0.195^{+0.034}_{-0.057}$	$100\theta_{\text{D}}$	0.1689	$0.1700 \pm 0.0055$	$\chi^2_{\text{Aver15}}$	0.00	$1.0 \pm 1.4$
$\Omega_{\nu}h^2$	0.0032	$< 0.0343$	$z_{\text{eq}}$	4509	$4100^{+1000}_{-1000}$	$\chi^2_{\text{Cooke17}}$	0.00	$1.0 \pm 1.5$
$\Omega_{\text{m}}h^3$	0.1344	$0.138^{+0.026}_{-0.051}$	$k_{\text{eq}}$	0.01367	$0.0126^{+0.0028}_{-0.0045}$	$\chi^2_{6\text{DF}}$	0.204	$0.45 \pm 0.47$
$r_{\text{drag}}h$	97.73	$97.1 \pm 2.2$	$100\theta_{\text{eq}}$	0.698	$0.82^{+0.10}_{-0.21}$	$\chi^2_{\text{MGS}}$	0.672	$0.71 \pm 0.67$
$Y_{\text{P}}$	0.24382	$0.2442 \pm 0.0040$	$100\theta_{\text{s,eq}}$	0.390	$0.453^{+0.057}_{-0.11}$	$\chi^2_{\text{DR12BAO}}$	2.11	$4.0 \pm 1.9$
$Y_{\text{P}}^{\text{BBN}}$	0.24514	$0.2455 \pm 0.0040$	$H(0.15)$	77.6	$76.5^{+4.8}_{-6.3}$	$\chi^2_{\text{BAO}}$	2.98	$5.1 \pm 2.1$
$10^5\text{D}/\text{H}$	2.618	$2.610 \pm 0.094$	$D_{\text{M}}(0.15)$	606.2	$619 \pm 43$	$\chi^2_{\text{Abund}}$	0.00	$2.0 \pm 2.0$

Best-fit  $\chi^2_{\text{eff}} = 2.99$ ;  $\bar{\chi}^2_{\text{eff}} = 7.18$ ;  $R - 1 = 0.00490$

$\chi^2_{\text{eff}}$ : Abund - Yp\_Aver2015: 0.00 D\_Cooke2017: 0.00 BAO - 6DF: 0.20 MGS: 0.67 DR12BAO: 2.11

### 9.54 base\_nnu\_mnu\_BAO\_Cooke17\_Aver15\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02200	$0.02208 \pm 0.00069$	$z_*$	1090.45	$1088.5^{+1.5}_{-1.9}$	$H(0.51)$	90.30	$86.1^{+4.0}_{-5.0}$
$\Omega_{\text{c}}h^2$	0.1220	$0.085^{+0.024}_{-0.031}$	$r_*$	144.8	$152.3 \pm 7.1$	$D_{\text{M}}(0.51)$	1970	$2071 \pm 100$
$100\theta_{\text{MC}}$	1.0497	$1.050 \pm 0.020$	$100\theta_*$	1.0500	$1.051 \pm 0.020$	$H(0.61)$	95.97	$91.6^{+4.3}_{-5.4}$
$\Sigma m_{\nu}$ [eV]	0.06	—	$D_{\text{M}}(z_*)/\text{Gpc}$	13.79	$14.51 \pm 0.89$	$D_{\text{M}}(0.61)$	2292	$2410 \pm 120$
$N_{\text{eff}}$	2.925	$2.96 \pm 0.28$	$z_{\text{drag}}$	1059.09	$1057.8 \pm 2.6$	$H(2.33)$	237.9	$227^{+13}_{-16}$
$H_0$	67.97	$64.7^{+2.6}_{-3.3}$	$r_{\text{drag}}$	147.6	$155.2 \pm 7.4$	$D_{\text{M}}(2.33)$	5723	$6017 \pm 330$
$\Omega_{\Lambda}$	0.6870	$0.685 \pm 0.021$	$k_{\text{D}}$	0.1405	$0.1341^{+0.0056}_{-0.0070}$	$\chi^2_{\text{Aver15}}$	0.00	$1.0 \pm 1.4$
$\Omega_{\text{m}}$	0.3130	$0.315 \pm 0.021$	$100\theta_{\text{D}}$	0.16212	$0.1619 \pm 0.0027$	$\chi^2_{\text{Cooke17}}$	0.002	$0.96 \pm 1.3$
$\Omega_{\text{m}}h^2$	0.1446	$0.133^{+0.014}_{-0.020}$	$z_{\text{eq}}$	3497	$2592^{+600}_{-700}$	$\chi^2_{\text{JLA}}$	1035.14	$1036.1 \pm 1.8$
$\Omega_{\nu}h^2$	0.0006	$< 0.0342$	$k_{\text{eq}}$	0.01059	$0.0081^{+0.0016}_{-0.0021}$	$\chi^2_{6\text{DF}}$	0.0003	$0.053 \pm 0.075$
$\Omega_{\text{m}}h^3$	0.0983	$0.086^{+0.011}_{-0.017}$	$100\theta_{\text{eq}}$	0.802	$1.07^{+0.13}_{-0.27}$	$\chi^2_{\text{MGS}}$	1.68	$1.75 \pm 0.67$
$r_{\text{drag}}h$	100.32	$100.3 \pm 1.2$	$100\theta_{\text{s,eq}}$	0.444	$0.581^{+0.067}_{-0.14}$	$\chi^2_{\text{DR12BAO}}$	2.95	$4.0 \pm 1.6$
$Y_{\text{P}}$	0.24361	$0.2441 \pm 0.0040$	$H(0.15)$	73.30	$69.8^{+2.9}_{-3.7}$	$\chi^2_{\text{BAO}}$	4.63	$5.8 \pm 1.8$
$Y_{\text{P}}^{\text{BBN}}$	0.24493	$0.2454 \pm 0.0040$	$D_{\text{M}}(0.15)$	637.8	$671 \pm 31$	$\chi^2_{\text{Abund}}$	0.00	$2.0 \pm 1.9$
$10^5\text{D}/\text{H}$	2.614	$2.613 \pm 0.092$	$H(0.38)$	83.51	$79.6^{+3.5}_{-4.4}$			
Age/Gyr	13.70	$14.41 \pm 0.80$	$D_{\text{M}}(0.38)$	1521	$1599 \pm 76$			

Best-fit  $\chi^2_{\text{eff}} = 1039.77$ ;  $\bar{\chi}^2_{\text{eff}} = 1043.83$ ;  $R - 1 = 0.00972$

$\chi^2_{\text{eff}}$ : Abund - Yp\_Aver2015: 0.00 D\_Cooke2017: 0.00 BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 2.95 SN - JLA Pantheon18: 1035.14



9.55    base\_nnu\_mnu\_BAO\_Cooke17\_Aver15\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02187	$0.02207^{+0.00066}_{-0.00074}$	$z_*$	1089.32	$1087.87^{+0.92}_{-1.3}$	$H(0.51)$	87.41	$84.5^{+2.5}_{-3.6}$
$\Omega_{\text{c}}h^2$	0.1072	$0.078^{+0.019}_{-0.029}$	$r_*$	149.0	$154.3^{+6.1}_{-4.9}$	$D_{\text{M}}(0.51)$	2030	$2102^{+85}_{-70}$
$100\theta_{\text{MC}}$	1.04087	$1.04092 \pm 0.00059$	$100\theta_*$	1.04143	$1.04174 \pm 0.00068$	$H(0.61)$	92.84	$89.8^{+2.7}_{-3.8}$
$\Sigma m_{\nu}$ [eV]	0.47	—	$D_{\text{M}}(z_*)/\text{Gpc}$	14.31	$14.81^{+0.58}_{-0.47}$	$D_{\text{M}}(0.61)$	2363	$2447^{+99}_{-81}$
$N_{\text{eff}}$	2.883	$2.96 \pm 0.28$	$z_{\text{drag}}$	1057.76	$1057.2 \pm 2.3$	$H(2.33)$	229.1	$221.7^{+6.5}_{-9.1}$
$H_0$	66.09	$63.9^{+2.0}_{-2.8}$	$r_{\text{drag}}$	151.9	$157.2^{+6.3}_{-5.2}$	$D_{\text{M}}(2.33)$	5920	$6128^{+240}_{-200}$
$\Omega_{\Lambda}$	0.6935	$0.6926 \pm 0.0091$	$k_{\text{D}}$	0.13623	$0.1321^{+0.0035}_{-0.0052}$	$\chi^2_{\text{Aver15}}$	0.02	$1.0 \pm 1.4$
$\Omega_{\text{m}}$	0.3065	$0.3074 \pm 0.0091$	$100\theta_{\text{D}}$	0.16117	$0.16075 \pm 0.00083$	$\chi^2_{\text{Cooke17}}$	0.00	$1.0 \pm 1.5$
$\Omega_{\text{m}}h^2$	0.1339	$0.1255^{+0.0070}_{-0.011}$	$z_{\text{eq}}$	3153	$2429^{+400}_{-700}$	$\chi^2_{6\text{DF}}$	0.0001	$0.058 \pm 0.082$
$\Omega_{\nu}h^2$	0.0048	$< 0.0340$	$k_{\text{eq}}$	0.00952	$0.0076^{+0.0011}_{-0.0020}$	$\chi^2_{\text{MGS}}$	1.68	$1.71 \pm 0.70$
$\Omega_{\text{m}}h^3$	0.0885	$0.0804^{+0.0064}_{-0.010}$	$100\theta_{\text{eq}}$	0.860	$1.10^{+0.11}_{-0.28}$	$\chi^2_{\text{DR12BAO}}$	3.37	$4.3 \pm 1.5$
$r_{\text{drag}}h$	100.42	$100.3 \pm 1.2$	$100\theta_{\text{s,eq}}$	0.474	$0.597^{+0.059}_{-0.14}$	$\chi^2_{\text{prior}}$	0.002	$0.98 \pm 1.4$
$Y_{\text{P}}$	0.24297	$0.2440 \pm 0.0040$	$H(0.15)$	71.18	$68.8^{+2.1}_{-3.0}$	$\chi^2_{\text{BAO}}$	5.04	$6.1 \pm 1.5$
$Y_{\text{P}}^{\text{BBN}}$	0.24429	$0.2453 \pm 0.0040$	$D_{\text{M}}(0.15)$	656.3	$680^{+28}_{-23}$	$\chi^2_{\text{Abund}}$	0.03	$2.1 \pm 2.1$
$10^5\text{D}/\text{H}$	2.623	$2.615 \pm 0.096$	$H(0.38)$	80.92	$78.3^{+2.4}_{-3.3}$			
Age/Gyr	14.17	$14.67^{+0.58}_{-0.47}$	$D_{\text{M}}(0.38)$	1567	$1622^{+66}_{-55}$			

Best-fit  $\chi^2_{\text{eff}} = 5.07$ ;  $\bar{\chi}^2_{\text{eff}} = 9.13$ ;  $R - 1 = 0.00353$   
 $\chi^2_{\text{eff}}$ : Abund - Yp\_Aver2015: 0.02 D\_Cooke2017: 0.00 BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.37

9.56    base\_nnu\_mnu\_BAO\_Cooke17\_Aver15\_Pantheon18\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02193	$0.02204 \pm 0.00068$	$z_*$	1089.73	$1087.83^{+0.86}_{-1.3}$	$H(0.51)$	88.47	$84.4^{+2.4}_{-3.6}$
$\Omega_{\text{c}}h^2$	0.1130	$0.078^{+0.018}_{-0.030}$	$r_*$	147.3	$154.6^{+6.2}_{-4.8}$	$D_{\text{M}}(0.51)$	2005	$2104^{+86}_{-68}$
$100\theta_{\text{MC}}$	1.04090	$1.04090 \pm 0.00058$	$100\theta_*$	1.04129	$1.04174 \pm 0.00066$	$H(0.61)$	93.95	$89.7^{+2.6}_{-3.8}$
$\Sigma m_{\nu}$ [eV]	0.18	—	$D_{\text{M}}(z_*)/\text{Gpc}$	14.14	$14.84^{+0.59}_{-0.46}$	$D_{\text{M}}(0.61)$	2334	$2449^{+100}_{-79}$
$N_{\text{eff}}$	2.916	$2.94 \pm 0.27$	$z_{\text{drag}}$	1058.29	$1057.1^{+2.1}_{-2.3}$	$H(2.33)$	231.7	$221.2^{+6.3}_{-9.1}$
$H_0$	66.96	$63.9^{+2.0}_{-2.8}$	$r_{\text{drag}}$	150.2	$157.6^{+6.4}_{-5.0}$	$D_{\text{M}}(2.33)$	5850	$6137^{+240}_{-190}$
$\Omega_{\Lambda}$	0.6949	$0.6939 \pm 0.0084$	$k_{\text{D}}$	0.13787	$0.1319^{+0.0034}_{-0.0052}$	$\chi^2_{\text{Aver15}}$	0.001	$0.98 \pm 1.4$
$\Omega_{\text{m}}$	0.3051	$0.3061 \pm 0.0084$	$100\theta_{\text{D}}$	0.16109	$0.16074 \pm 0.00081$	$\chi^2_{\text{Cooke17}}$	0.002	$0.97 \pm 1.4$
$\Omega_{\text{m}}h^2$	0.1368	$0.1249^{+0.0068}_{-0.010}$	$z_{\text{eq}}$	3281	$2422^{+400}_{-700}$	$\chi^2_{\text{JLA}}$	1034.813	$1034.98 \pm 0.32$
$\Omega_{\nu}h^2$	0.0019	$< 0.0338$	$k_{\text{eq}}$	0.00993	$0.0075^{+0.0011}_{-0.0020}$	$\chi^2_{6\text{DF}}$	0.0002	$0.049 \pm 0.069$
$\Omega_{\text{m}}h^3$	0.0916	$0.0800^{+0.0062}_{-0.010}$	$100\theta_{\text{eq}}$	0.834	$1.11^{+0.11}_{-0.28}$	$\chi^2_{\text{MGS}}$	1.75	$1.81 \pm 0.66$
$r_{\text{drag}}h$	100.54	$100.5 \pm 1.1$	$100\theta_{\text{s,eq}}$	0.461	$0.599^{+0.058}_{-0.14}$	$\chi^2_{\text{DR12BAO}}$	3.348	$4.1 \pm 1.2$
$Y_{\text{P}}$	0.24345	$0.2437 \pm 0.0039$	$H(0.15)$	72.09	$68.8^{+2.1}_{-3.0}$	$\chi^2_{\text{prior}}$	0.000	$0.9 \pm 1.3$
$Y_{\text{P}}^{\text{BBN}}$	0.24477	$0.2451 \pm 0.0040$	$D_{\text{M}}(0.15)$	647.9	$680^{+28}_{-23}$	$\chi^2_{\text{BAO}}$	5.10	$5.9 \pm 1.2$
$10^5\text{D}/\text{H}$	2.623	$2.614 \pm 0.092$	$H(0.38)$	81.93	$78.2^{+2.3}_{-3.3}$	$\chi^2_{\text{Abund}}$	0.00	$1.9 \pm 1.9$
Age/Gyr	14.01	$14.69^{+0.59}_{-0.46}$	$D_{\text{M}}(0.38)$	1547	$1623^{+67}_{-53}$			

Best-fit  $\chi^2_{\text{eff}} = 1039.91$ ;  $\bar{\chi}^2_{\text{eff}} = 1043.81$ ;  $R - 1 = 0.00806$   
 $\chi^2_{\text{eff}}$ : Abund - Yp\_Aver2015: 0.00 D\_Cooke2017: 0.00 BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.35 SN - JLA Pantheon18: 1034.81



### 9.57 base\_nnu\_mnu\_BAO\_Cooke17Marc\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02175	$0.02185 \pm 0.00056$	Age/Gyr	13.23	$12.7 \pm 1.2$	$H(0.38)$	84.9	$88.9^{+6.2}_{-8.3}$
$\Omega_{\text{c}}h^2$	0.1178	$0.145^{+0.039}_{-0.060}$	$z_*$	1091.92	$1093.7^{+3.1}_{-3.9}$	$D_{\text{M}}(0.38)$	1520	$1467 \pm 110$
$100\theta_{\text{MC}}$	1.0968	$1.110 \pm 0.038$	$r_*$	143.3	$138 \pm 11$	$H(0.51)$	92.6	$97.2^{+7.2}_{-9.8}$
$\Sigma m_{\nu}$ [eV]	2.67	—	$100\theta_*$	1.0976	$1.111 \pm 0.038$	$D_{\text{M}}(0.51)$	1960	$1890 \pm 140$
$N_{\text{eff}}$	2.923	$2.98 \pm 0.28$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.06	$12.5^{+1.2}_{-1.4}$	$H(0.61)$	98.9	$104.0^{+8.1}_{-11}$
$H_0$	66.90	$69.3^{+3.7}_{-4.9}$	$z_{\text{drag}}$	1059.47	$1061.3^{+3.2}_{-3.9}$	$D_{\text{M}}(0.61)$	2274	$2191 \pm 170$
$\Omega_{\Lambda}$	0.626	$0.607^{+0.055}_{-0.048}$	$r_{\text{drag}}$	146.1	$141 \pm 11$	$H(2.33)$	254.3	$270^{+27}_{-35}$
$\Omega_{\text{m}}$	0.374	$0.393^{+0.048}_{-0.055}$	$k_{\text{D}}$	0.1430	$0.149^{+0.010}_{-0.013}$	$D_{\text{M}}(2.33)$	5530	$5305 \pm 500$
$\Omega_{\text{m}}h^2$	0.1674	$0.192^{+0.033}_{-0.054}$	$100\theta_{\text{D}}$	0.1682	$0.1702 \pm 0.0053$	$\chi^2_{\text{Cooke17Marc}}$	0.00	$1.0 \pm 1.4$
$\Omega_{\nu}h^2$	0.0279	$< 0.0343$	$z_{\text{eq}}$	3391	$4018^{+900}_{-1000}$	$\chi^2_{\text{Aver15}}$	0.00	$1.0 \pm 1.4$
$\Omega_{\text{m}}h^3$	0.1120	$0.135^{+0.026}_{-0.048}$	$k_{\text{eq}}$	0.01041	$0.0124^{+0.0027}_{-0.0042}$	$\chi^2_{6\text{DF}}$	0.203	$0.43 \pm 0.43$
$r_{\text{drag}}h$	97.75	$97.2 \pm 2.1$	$100\theta_{\text{eq}}$	0.869	$0.82^{+0.10}_{-0.21}$	$\chi^2_{\text{MGS}}$	0.672	$0.70 \pm 0.66$
$Y_{\text{P}}$	0.24345	$0.2441 \pm 0.0040$	$100\theta_{\text{s,eq}}$	0.481	$0.456^{+0.056}_{-0.11}$	$\chi^2_{\text{DR12BAO}}$	2.11	$3.9 \pm 1.8$
$Y_{\text{P}}^{\text{BBN}}$	0.24477	$0.2455 \pm 0.0041$	$H(0.15)$	73.1	$76.1^{+4.6}_{-6.1}$	$\chi^2_{\text{BAO}}$	2.98	$5.0 \pm 2.0$
$10^5\text{D}/\text{H}$	2.6610	$2.659 \pm 0.043$	$D_{\text{M}}(0.15)$	643.6	$623 \pm 41$	$\chi^2_{\text{Abund}}$	0.00	$2.0 \pm 2.0$

Best-fit  $\chi^2_{\text{eff}} = 2.99$ ;  $\bar{\chi}^2_{\text{eff}} = 7.06$ ;  $R - 1 = 0.00313$

$\chi^2_{\text{eff}}$ : Abund - D\_Cooke2017\_marcucci: 0.00 Yp\_Aver2015: 0.00 BAO - 6DF: 0.20 MGS: 0.67 DR12BAO: 2.11

### 9.58 base\_nnu\_mnu\_BAO\_Cooke17Marc\_Aver15\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02179	$0.02186 \pm 0.00054$	$z_*$	1090.16	$1088.8^{+1.5}_{-1.8}$	$H(0.51)$	89.06	$86.0^{+3.8}_{-4.8}$
$\Omega_{\text{c}}h^2$	0.1150	$0.085^{+0.024}_{-0.031}$	$r_*$	146.7	$152.4 \pm 6.8$	$D_{\text{M}}(0.51)$	1996	$2073 \pm 96$
$100\theta_{\text{MC}}$	1.0475	$1.050 \pm 0.019$	$100\theta_*$	1.0479	$1.051 \pm 0.019$	$H(0.61)$	94.65	$91.5^{+4.2}_{-5.2}$
$\Sigma m_{\nu}$ [eV]	0.35	—	$D_{\text{M}}(z_*)/\text{Gpc}$	14.00	$14.51 \pm 0.84$	$D_{\text{M}}(0.61)$	2323	$2412 \pm 110$
$N_{\text{eff}}$	2.939	$2.98 \pm 0.27$	$z_{\text{drag}}$	1058.14	$1057.2 \pm 2.3$	$H(2.33)$	234.5	$227^{+13}_{-15}$
$H_0$	67.08	$64.7^{+2.5}_{-3.2}$	$r_{\text{drag}}$	149.6	$155.4 \pm 7.0$	$D_{\text{M}}(2.33)$	5803	$6021 \pm 320$
$\Omega_{\Lambda}$	0.6879	$0.685 \pm 0.020$	$k_{\text{D}}$	0.1383	$0.1338^{+0.0053}_{-0.0067}$	$\chi^2_{\text{Cooke17Marc}}$	0.00	$1.0 \pm 1.4$
$\Omega_{\text{m}}$	0.3121	$0.315 \pm 0.020$	$100\theta_{\text{D}}$	0.16231	$0.1623 \pm 0.0025$	$\chi^2_{\text{Aver15}}$	0.001	$0.97 \pm 1.4$
$\Omega_{\text{m}}h^2$	0.1404	$0.132^{+0.014}_{-0.019}$	$z_{\text{eq}}$	3317	$2585^{+600}_{-700}$	$\chi^2_{\text{JLA}}$	1035.09	$1036.0 \pm 1.6$
$\Omega_{\nu}h^2$	0.0036	$< 0.0340$	$k_{\text{eq}}$	0.01005	$0.0080^{+0.0015}_{-0.0021}$	$\chi^2_{6\text{DF}}$	0.0002	$0.054 \pm 0.075$
$\Omega_{\text{m}}h^3$	0.0942	$0.086^{+0.011}_{-0.017}$	$100\theta_{\text{eq}}$	0.833	$1.07^{+0.13}_{-0.27}$	$\chi^2_{\text{MGS}}$	1.68	$1.74 \pm 0.67$
$r_{\text{drag}}h$	100.34	$100.3 \pm 1.2$	$100\theta_{\text{s,eq}}$	0.460	$0.580^{+0.066}_{-0.14}$	$\chi^2_{\text{DR12BAO}}$	3.00	$3.9 \pm 1.6$
$Y_{\text{P}}$	0.24369	$0.2442 \pm 0.0039$	$H(0.15)$	72.33	$69.8^{+2.8}_{-3.6}$	$\chi^2_{\text{BAO}}$	4.68	$5.7 \pm 1.8$
$Y_{\text{P}}^{\text{BBN}}$	0.24501	$0.2455 \pm 0.0039$	$D_{\text{M}}(0.15)$	646.2	$672 \pm 30$	$\chi^2_{\text{Abund}}$	0.00	$2.0 \pm 2.0$
$10^5\text{D}/\text{H}$	2.6597	$2.660 \pm 0.043$	$H(0.38)$	82.39	$79.5^{+3.4}_{-4.3}$			
Age/Gyr	13.89	$14.42 \pm 0.76$	$D_{\text{M}}(0.38)$	1541	$1601 \pm 73$			

Best-fit  $\chi^2_{\text{eff}} = 1039.76$ ;  $\bar{\chi}^2_{\text{eff}} = 1043.75$ ;  $R - 1 = 0.00814$

$\chi^2_{\text{eff}}$ : Abund - D\_Cooke2017\_marcucci: 0.00 Yp\_Aver2015: 0.00 BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.00 SN - JLA Pantheon18: 1035.09



### 9.59 base\_nnu\_mnu\_BAO\_Cooke17Marc\_Aver15\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02173	$0.02181 \pm 0.00056$	$z_*$	1088.67	$1088.10^{+0.64}_{-1.3}$	$H(0.51)$	85.48	$84.2^{+2.5}_{-3.5}$
$\Omega_{\text{c}}h^2$	0.0931	$0.077^{+0.018}_{-0.030}$	$r_*$	152.3	$154.8^{+6.1}_{-5.0}$	$D_{\text{M}}(0.51)$	2077	$2112^{+85}_{-70}$
$100\theta_{\text{MC}}$	1.04086	$1.04092 \pm 0.00060$	$100\theta_*$	1.04167	$1.04179 \pm 0.00068$	$H(0.61)$	90.80	$89.4^{+2.7}_{-3.7}$
$\Sigma m_{\nu}$ [eV]	1.31	—	$D_{\text{M}}(z_*)/\text{Gpc}$	14.62	$14.86^{+0.58}_{-0.48}$	$D_{\text{M}}(0.61)$	2417	$2458^{+99}_{-81}$
$N_{\text{eff}}$	2.912	$2.95^{+0.26}_{-0.30}$	$z_{\text{drag}}$	1056.73	$1056.5 \pm 2.0$	$H(2.33)$	224.4	$220.9^{+6.6}_{-8.9}$
$H_0$	64.56	$63.6^{+2.0}_{-2.7}$	$r_{\text{drag}}$	155.3	$157.9^{+6.3}_{-5.3}$	$D_{\text{M}}(2.33)$	6051	$6152^{+240}_{-200}$
$\Omega_{\Lambda}$	0.6919	$0.6919 \pm 0.0090$	$k_{\text{D}}$	0.13307	$0.1314^{+0.0036}_{-0.0050}$	$\chi^2_{\text{Cooke17Marc}}$	0.001	$0.99 \pm 1.4$
$\Omega_{\text{m}}$	0.3081	$0.3081 \pm 0.0090$	$100\theta_{\text{D}}$	0.16148	$0.16106 \pm 0.00055$	$\chi^2_{\text{Aver15}}$	0.01	$1.0 \pm 1.5$
$\Omega_{\text{m}}h^2$	0.1284	$0.1247^{+0.0072}_{-0.010}$	$z_{\text{eq}}$	2794	$2388^{+400}_{-700}$	$\chi^2_{6\text{DF}}$	0.0011	$0.057 \pm 0.083$
$\Omega_{\nu}h^2$	0.0136	$0.026 \pm 0.015$	$k_{\text{eq}}$	0.00850	$0.0075^{+0.0011}_{-0.0020}$	$\chi^2_{\text{MGS}}$	1.61	$1.69 \pm 0.69$
$\Omega_{\text{m}}h^3$	0.0829	$0.0795^{+0.0065}_{-0.010}$	$100\theta_{\text{eq}}$	0.946	$1.12^{+0.13}_{-0.29}$	$\chi^2_{\text{DR12BAO}}$	3.37	$4.3 \pm 1.5$
$r_{\text{drag}}h$	100.30	$100.3 \pm 1.2$	$100\theta_{\text{s,eq}}$	0.519	$0.606^{+0.068}_{-0.15}$	$\chi^2_{\text{prior}}$	0.004	$1.0 \pm 1.5$
$Y_{\text{P}}$	0.24329	$0.2438 \pm 0.0041$	$H(0.15)$	69.55	$68.5^{+2.1}_{-2.9}$	$\chi^2_{\text{BAO}}$	4.98	$6.0 \pm 1.5$
$Y_{\text{P}}^{\text{BBN}}$	0.24461	$0.2451 \pm 0.0041$	$D_{\text{M}}(0.15)$	671.7	$683^{+28}_{-23}$	$\chi^2_{\text{Abund}}$	0.01	$2.0 \pm 2.1$
$10^5\text{D}/\text{H}$	2.6616	$2.661 \pm 0.043$	$H(0.38)$	79.12	$77.9^{+2.4}_{-3.3}$			
$\text{Age}/\text{Gyr}$	14.49	$14.73^{+0.58}_{-0.48}$	$D_{\text{M}}(0.38)$	1603	$1630^{+66}_{-55}$			

Best-fit  $\chi^2_{\text{eff}} = 4.99$ ;  $\bar{\chi}^2_{\text{eff}} = 9.06$ ;  $R - 1 = 0.01055$

$\chi^2_{\text{eff}}$ : Abund - D.Cooke2017\_marcucci: 0.00 Yp\_Aver2015: 0.01 BAO - 6DF: 0.00 MGS: 1.61 DR12BAO: 3.37

### 9.60 base\_nnu\_mnu\_BAO\_Cooke17Marc\_Aver15\_Pantheon18\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02176	$0.02183 \pm 0.00055$	$z_*$	1089.95	$1088.13^{+0.67}_{-1.3}$	$H(0.51)$	88.34	$84.4^{+2.5}_{-3.6}$
$\Omega_{\text{c}}h^2$	0.1127	$0.078^{+0.019}_{-0.030}$	$r_*$	147.4	$154.5^{+6.2}_{-4.9}$	$D_{\text{M}}(0.51)$	2009	$2104^{+86}_{-68}$
$100\theta_{\text{MC}}$	1.04093	$1.04091 \pm 0.00061$	$100\theta_*$	1.04136	$1.04176 \pm 0.00069$	$H(0.61)$	93.82	$89.7^{+2.6}_{-3.8}$
$\Sigma m_{\nu}$ [eV]	0.22	—	$D_{\text{M}}(z_*)/\text{Gpc}$	14.16	$14.83^{+0.59}_{-0.46}$	$D_{\text{M}}(0.61)$	2338	$2449^{+100}_{-79}$
$N_{\text{eff}}$	2.930	$2.97 \pm 0.28$	$z_{\text{drag}}$	1057.87	$1056.6^{+1.9}_{-2.1}$	$H(2.33)$	231.6	$221.3^{+6.4}_{-9.2}$
$H_0$	66.79	$63.8^{+2.0}_{-2.8}$	$r_{\text{drag}}$	150.3	$157.6^{+6.4}_{-5.1}$	$D_{\text{M}}(2.33)$	5857	$6136^{+250}_{-190}$
$\Omega_{\Lambda}$	0.6935	$0.6934 \pm 0.0082$	$k_{\text{D}}$	0.13749	$0.1316^{+0.0034}_{-0.0052}$	$\chi^2_{\text{Cooke17Marc}}$	0.001	$0.96 \pm 1.3$
$\Omega_{\text{m}}$	0.3065	$0.3066 \pm 0.0082$	$100\theta_{\text{D}}$	0.16141	$0.16109^{+0.00061}_{-0.00049}$	$\chi^2_{\text{Aver15}}$	0.000	$1.0 \pm 1.5$
$\Omega_{\text{m}}h^2$	0.1367	$0.1251^{+0.0069}_{-0.011}$	$z_{\text{eq}}$	3265	$2414^{+400}_{-700}$	$\chi^2_{\text{JLA}}$	1034.851	$1034.99 \pm 0.32$
$\Omega_{\nu}h^2$	0.0022	$< 0.0343$	$k_{\text{eq}}$	0.00989	$0.0075^{+0.0011}_{-0.0020}$	$\chi^2_{6\text{DF}}$	0.0001	$0.048 \pm 0.069$
$\Omega_{\text{m}}h^3$	0.0913	$0.0801^{+0.0063}_{-0.010}$	$100\theta_{\text{eq}}$	0.837	$1.11^{+0.13}_{-0.29}$	$\chi^2_{\text{MGS}}$	1.68	$1.79 \pm 0.65$
$r_{\text{drag}}h$	100.42	$100.5 \pm 1.1$	$100\theta_{\text{s,eq}}$	0.462	$0.601^{+0.067}_{-0.15}$	$\chi^2_{\text{DR12BAO}}$	3.366	$4.1 \pm 1.2$
$Y_{\text{P}}$	0.24355	$0.2440 \pm 0.0040$	$H(0.15)$	71.93	$68.8^{+2.1}_{-3.0}$	$\chi^2_{\text{prior}}$	0.00	$1.0 \pm 1.4$
$Y_{\text{P}}^{\text{BBN}}$	0.24487	$0.2453 \pm 0.0040$	$D_{\text{M}}(0.15)$	649.4	$680^{+28}_{-23}$	$\chi^2_{\text{BAO}}$	5.04	$5.9 \pm 1.3$
$10^5\text{D}/\text{H}$	2.6619	$2.660 \pm 0.042$	$H(0.38)$	81.78	$78.2^{+2.3}_{-3.3}$	$\chi^2_{\text{Abund}}$	0.00	$2.0 \pm 2.0$
$\text{Age}/\text{Gyr}$	14.02	$14.69^{+0.59}_{-0.46}$	$D_{\text{M}}(0.38)$	1550	$1624^{+67}_{-53}$			

Best-fit  $\chi^2_{\text{eff}} = 1039.90$ ;  $\bar{\chi}^2_{\text{eff}} = 1043.87$ ;  $R - 1 = 0.00926$

$\chi^2_{\text{eff}}$ : Abund - D.Cooke2017\_marcucci: 0.00 Yp\_Aver2015: 0.00 BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 3.37 SN - JLA Pantheon18: 1034.85



### 9.61 base\_nnu\_mnu\_BAO\_Cooke17Adel\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02251	$0.02252 \pm 0.00064$	Age/Gyr	12.33	$12.6^{+1.1}_{-1.3}$	$H(0.38)$	91.0	$89.4^{+6.6}_{-8.6}$
$\Omega_{\text{c}}h^2$	0.168	$0.147^{+0.041}_{-0.062}$	$z_*$	1093.53	$1092.9^{+3.2}_{-4.0}$	$D_{\text{M}}(0.38)$	1419	$1459 \pm 110$
$100\theta_{\text{MC}}$	1.1016	$1.110^{+0.042}_{-0.037}$	$r_*$	134.0	$138 \pm 11$	$H(0.51)$	99.3	$97.7^{+7.7}_{-10}$
$\Sigma m_{\nu}$ [eV]	0.26	—	$100\theta_*$	1.1019	$1.111^{+0.042}_{-0.037}$	$D_{\text{M}}(0.51)$	1829	$1880 \pm 150$
$N_{\text{eff}}$	2.934	$2.94 \pm 0.28$	$D_{\text{M}}(z_*)/\text{Gpc}$	12.16	$12.4^{+1.2}_{-1.5}$	$H(0.61)$	106.1	$104.6^{+8.6}_{-11}$
$H_0$	71.66	$69.8^{+3.9}_{-5.0}$	$z_{\text{drag}}$	1063.37	$1062.9^{+3.4}_{-3.9}$	$D_{\text{M}}(0.61)$	2121	$2179 \pm 180$
$\Omega_{\Lambda}$	0.624	$0.608^{+0.056}_{-0.050}$	$r_{\text{drag}}$	136.4	$140 \pm 11$	$H(2.33)$	273.1	$271^{+28}_{-36}$
$\Omega_{\text{m}}$	0.376	$0.392^{+0.050}_{-0.056}$	$k_{\text{D}}$	0.1535	$0.151^{+0.011}_{-0.014}$	$D_{\text{M}}(2.33)$	5155	$5280^{+480}_{-550}$
$\Omega_{\text{m}}h^2$	0.1932	$0.194^{+0.035}_{-0.057}$	$100\theta_{\text{D}}$	0.1684	$0.1691 \pm 0.0055$	$\chi^2_{\text{Cooke17Adel}}$	0.006	$1.0 \pm 1.4$
$\Omega_{\nu}h^2$	0.0027	$< 0.0341$	$z_{\text{eq}}$	4622	$4096^{+1000}_{-1000}$	$\chi^2_{\text{Aver15}}$	0.01	$1.0 \pm 1.5$
$\Omega_{\text{m}}h^3$	0.1384	$0.138^{+0.027}_{-0.051}$	$k_{\text{eq}}$	0.01400	$0.0126^{+0.0028}_{-0.0044}$	$\chi^2_{6\text{DF}}$	0.206	$0.43 \pm 0.45$
$r_{\text{drag}}h$	97.72	$97.2 \pm 2.2$	$100\theta_{\text{eq}}$	0.688	$0.818^{+0.098}_{-0.21}$	$\chi^2_{\text{MGS}}$	0.672	$0.74 \pm 0.69$
$Y_{\text{P}}$	0.24394	$0.2440 \pm 0.0041$	$100\theta_{\text{s,eq}}$	0.384	$0.452^{+0.053}_{-0.11}$	$\chi^2_{\text{DR12BAO}}$	2.11	$3.9 \pm 1.9$
$Y_{\text{P}}^{\text{BBN}}$	0.24526	$0.2453 \pm 0.0041$	$H(0.15)$	78.4	$76.6^{+4.8}_{-6.3}$	$\chi^2_{\text{BAO}}$	2.98	$5.1 \pm 2.1$
$10^5\text{D}/\text{H}$	2.522	$2.523 \pm 0.067$	$D_{\text{M}}(0.15)$	600.7	$619 \pm 43$	$\chi^2_{\text{Abund}}$	0.01	$2.0 \pm 2.1$

Best-fit  $\chi^2_{\text{eff}} = 3.00$ ;  $\bar{\chi}^2_{\text{eff}} = 7.14$ ;  $R - 1 = 0.00205$

$\chi^2_{\text{eff}}$ : Abund - D\_Cooke2017\_adelberger: 0.01 Yp\_Aver2015: 0.01 BAO - 6DF: 0.21 MGS: 0.67 DR12BAO: 2.11

### 9.62 base\_nnu\_mnu\_BAO\_Cooke17Adel\_Aver15\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02246	$0.02252 \pm 0.00065$	$z_*$	1089.95	$1088.0^{+1.5}_{-1.8}$	$H(0.51)$	90.77	$86.5^{+4.2}_{-5.0}$
$\Omega_{\text{c}}h^2$	0.1231	$0.086^{+0.025}_{-0.031}$	$r_*$	144.2	$151.8 \pm 7.2$	$D_{\text{M}}(0.51)$	1959	$2063 \pm 100$
$100\theta_{\text{MC}}$	1.0506	$1.052 \pm 0.020$	$100\theta_*$	1.0508	$1.052 \pm 0.020$	$H(0.61)$	96.5	$92.0^{+4.6}_{-5.5}$
$\Sigma m_{\nu}$ [eV]	0.05	—	$D_{\text{M}}(z_*)/\text{Gpc}$	13.72	$14.44 \pm 0.90$	$D_{\text{M}}(0.61)$	2279	$2400 \pm 120$
$N_{\text{eff}}$	2.921	$2.94 \pm 0.29$	$z_{\text{drag}}$	1060.28	$1058.8 \pm 2.5$	$H(2.33)$	239.1	$228^{+13}_{-16}$
$H_0$	68.34	$65.0^{+2.8}_{-3.3}$	$r_{\text{drag}}$	146.8	$154.6 \pm 7.5$	$D_{\text{M}}(2.33)$	5693	$5991 \pm 340$
$\Omega_{\Lambda}$	0.6873	$0.685^{+0.022}_{-0.020}$	$k_{\text{D}}$	0.1417	$0.1352^{+0.0059}_{-0.0070}$	$\chi^2_{\text{Cooke17Adel}}$	0.00	$1.0 \pm 1.5$
$\Omega_{\text{m}}$	0.3127	$0.315^{+0.020}_{-0.022}$	$100\theta_{\text{D}}$	0.16155	$0.1614 \pm 0.0027$	$\chi^2_{\text{Aver15}}$	0.00	$1.1 \pm 1.5$
$\Omega_{\text{m}}h^2$	0.1460	$0.134^{+0.015}_{-0.020}$	$z_{\text{eq}}$	3538	$2625^{+600}_{-700}$	$\chi^2_{\text{JLA}}$	1035.12	$1036.1 \pm 1.8$
$\Omega_{\nu}h^2$	0.0005	$< 0.0348$	$k_{\text{eq}}$	0.01071	$0.0082^{+0.0016}_{-0.0021}$	$\chi^2_{6\text{DF}}$	0.0002	$0.053 \pm 0.074$
$\Omega_{\text{m}}h^3$	0.0998	$0.087^{+0.012}_{-0.018}$	$100\theta_{\text{eq}}$	0.797	$1.06^{+0.13}_{-0.27}$	$\chi^2_{\text{MGS}}$	1.68	$1.74 \pm 0.66$
$r_{\text{drag}}h$	100.33	$100.3 \pm 1.2$	$100\theta_{\text{s,eq}}$	0.441	$0.577^{+0.067}_{-0.14}$	$\chi^2_{\text{DR12BAO}}$	2.97	$4.0 \pm 1.6$
$Y_{\text{P}}$	0.24375	$0.2440 \pm 0.0041$	$H(0.15)$	73.70	$70.1^{+3.1}_{-3.7}$	$\chi^2_{\text{BAO}}$	4.64	$5.7 \pm 1.8$
$Y_{\text{P}}^{\text{BBN}}$	0.24507	$0.2453 \pm 0.0041$	$D_{\text{M}}(0.15)$	634.3	$668 \pm 32$	$\chi^2_{\text{Abund}}$	0.00	$2.1 \pm 2.1$
$10^5\text{D}/\text{H}$	2.526	$2.525 \pm 0.068$	$H(0.38)$	83.96	$80.0^{+3.8}_{-4.5}$			
Age/Gyr	13.63	$14.34 \pm 0.81$	$D_{\text{M}}(0.38)$	1512	$1593 \pm 78$			

Best-fit  $\chi^2_{\text{eff}} = 1039.76$ ;  $\bar{\chi}^2_{\text{eff}} = 1043.96$ ;  $R - 1 = 0.00624$

$\chi^2_{\text{eff}}$ : Abund - D\_Cooke2017\_adelberger: 0.00 Yp\_Aver2015: 0.00 BAO - 6DF: 0.00 MGS: 1.68 DR12BAO: 2.96 SN - JLA Pantheon18: 1035.12



### 9.63 base\_nnu\_mnu\_BAO\_Cooke17Adel\_Aver15\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02240	$0.02249 \pm 0.00062$	$z_*$	1088.62	$1087.34^{+0.77}_{-1.3}$	$H(0.51)$	87.57	$84.7^{+2.5}_{-3.5}$
$\Omega_{\text{c}}h^2$	0.1061	$0.079^{+0.019}_{-0.029}$	$r_*$	148.8	$154.0^{+6.0}_{-4.9}$	$D_{\text{M}}(0.51)$	2026	$2096^{+84}_{-70}$
$100\theta_{\text{MC}}$	1.04089	$1.04090 \pm 0.00060$	$100\theta_*$	1.04141	$1.04167 \pm 0.00068$	$H(0.61)$	93.00	$90.0^{+2.7}_{-3.7}$
$\Sigma m_{\nu}$ [eV]	0.56	—	$D_{\text{M}}(z_*)/\text{Gpc}$	14.29	$14.79^{+0.57}_{-0.47}$	$D_{\text{M}}(0.61)$	2359	$2440^{+97}_{-81}$
$N_{\text{eff}}$	2.895	$2.94 \pm 0.28$	$z_{\text{drag}}$	1058.94	$1058.2 \pm 2.1$	$H(2.33)$	229.5	$222.0^{+6.5}_{-9.0}$
$H_0$	66.22	$64.1^{+2.0}_{-2.7}$	$r_{\text{drag}}$	151.5	$156.8^{+6.2}_{-5.2}$	$D_{\text{M}}(2.33)$	5909	$6114^{+240}_{-200}$
$\Omega_{\Lambda}$	0.6936	$0.6940 \pm 0.0090$	$k_{\text{D}}$	0.13703	$0.1329^{+0.0036}_{-0.0051}$	$\chi^2_{\text{Cooke17Adel}}$	0.001	$1.0 \pm 1.5$
$\Omega_{\text{m}}$	0.3064	$0.3060 \pm 0.0090$	$100\theta_{\text{D}}$	0.16049	$0.16010^{+0.00070}_{-0.00061}$	$\chi^2_{\text{Aver15}}$	0.00	$1.0 \pm 1.4$
$\Omega_{\text{m}}h^2$	0.1343	$0.1258^{+0.0071}_{-0.010}$	$z_{\text{eq}}$	3134	$2456 \pm 500$	$\chi^2_{6\text{DF}}$	0.00098	$0.056 \pm 0.079$
$\Omega_{\nu}h^2$	0.0058	$< 0.0329$	$k_{\text{eq}}$	0.00948	$0.0076^{+0.0011}_{-0.0020}$	$\chi^2_{\text{MGS}}$	1.61	$1.74 \pm 0.70$
$\Omega_{\text{m}}h^3$	0.0890	$0.0808^{+0.0065}_{-0.010}$	$100\theta_{\text{eq}}$	0.866	$1.09^{+0.10}_{-0.27}$	$\chi^2_{\text{DR12BAO}}$	3.51	$4.3 \pm 1.4$
$r_{\text{drag}}h$	100.32	$100.4 \pm 1.2$	$100\theta_{\text{s,eq}}$	0.477	$0.592^{+0.054}_{-0.14}$	$\chi^2_{\text{prior}}$	0.000	$1.0 \pm 1.5$
$Y_{\text{P}}$	0.24337	$0.2439 \pm 0.0040$	$H(0.15)$	71.31	$69.0^{+2.2}_{-2.9}$	$\chi^2_{\text{BAO}}$	5.12	$6.1 \pm 1.4$
$Y_{\text{P}}^{\text{BBN}}$	0.24469	$0.2452 \pm 0.0040$	$D_{\text{M}}(0.15)$	655.1	$678^{+27}_{-23}$	$\chi^2_{\text{Abund}}$	0.00	$2.0 \pm 2.0$
$10^5\text{D}/\text{H}$	2.529	$2.526 \pm 0.067$	$H(0.38)$	81.07	$78.5^{+2.4}_{-3.3}$			
Age/Gyr	14.15	$14.64^{+0.57}_{-0.47}$	$D_{\text{M}}(0.38)$	1564	$1618^{+65}_{-55}$			

Best-fit  $\chi^2_{\text{eff}} = 5.12$ ;  $\bar{\chi}^2_{\text{eff}} = 9.16$ ;  $R - 1 = 0.00663$

$\chi^2_{\text{eff}}$ : Abund - D.Cooke2017\_adelberger: 0.00 Yp\_Aver2015: 0.00 BAO - 6DF: 0.00 MGS: 1.61 DR12BAO: 3.51

### 9.64 base\_nnu\_mnu\_BAO\_Cooke17Adel\_Aver15\_Pantheon18\_theta

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02241	$0.02248 \pm 0.00062$	$z_*$	1089.11	$1087.25^{+0.73}_{-1.2}$	$H(0.51)$	88.67	$84.5^{+2.3}_{-3.4}$
$\Omega_{\text{c}}h^2$	0.1128	$0.077^{+0.018}_{-0.027}$	$r_*$	147.0	$154.5^{+5.9}_{-4.6}$	$D_{\text{M}}(0.51)$	2000	$2100^{+83}_{-64}$
$100\theta_{\text{MC}}$	1.04095	$1.04088 \pm 0.00059$	$100\theta_*$	1.04130	$1.04167 \pm 0.00066$	$H(0.61)$	94.15	$89.8^{+2.5}_{-3.6}$
$\Sigma m_{\nu}$ [eV]	0.19	—	$D_{\text{M}}(z_*)/\text{Gpc}$	14.12	$14.83^{+0.56}_{-0.44}$	$D_{\text{M}}(0.61)$	2328	$2445^{+96}_{-75}$
$N_{\text{eff}}$	2.898	$2.93 \pm 0.27$	$z_{\text{drag}}$	1059.40	$1058.1^{+2.0}_{-2.2}$	$H(2.33)$	232.0	$221.3^{+6.1}_{-8.7}$
$H_0$	67.15	$64.0^{+1.9}_{-2.7}$	$r_{\text{drag}}$	149.7	$157.3^{+6.1}_{-4.8}$	$D_{\text{M}}(2.33)$	5838	$6130^{+240}_{-180}$
$\Omega_{\Lambda}$	0.6957	$0.6951 \pm 0.0082$	$k_{\text{D}}$	0.13872	$0.1325^{+0.0033}_{-0.0049}$	$\chi^2_{\text{Cooke17Adel}}$	0.000	$0.9 \pm 1.3$
$\Omega_{\text{m}}$	0.3043	$0.3049 \pm 0.0082$	$100\theta_{\text{D}}$	0.16038	$0.16008 \pm 0.00065$	$\chi^2_{\text{Aver15}}$	0.002	$0.97 \pm 1.3$
$\Omega_{\text{m}}h^2$	0.1372	$0.1250^{+0.0066}_{-0.010}$	$z_{\text{eq}}$	3297	$2409^{+400}_{-700}$	$\chi^2_{\text{JLA}}$	1034.793	$1034.94 \pm 0.27$
$\Omega_{\nu}h^2$	0.0020	$0.026^{+0.015}_{-0.018}$	$k_{\text{eq}}$	0.00996	$0.0075^{+0.0011}_{-0.0019}$	$\chi^2_{6\text{DF}}$	0.0002	$0.048 \pm 0.069$
$\Omega_{\text{m}}h^3$	0.0921	$0.0802^{+0.0061}_{-0.0098}$	$100\theta_{\text{eq}}$	0.833	$1.11^{+0.12}_{-0.28}$	$\chi^2_{\text{MGS}}$	1.75	$1.82 \pm 0.66$
$r_{\text{drag}}h$	100.55	$100.5 \pm 1.1$	$100\theta_{\text{s,eq}}$	0.459	$0.601^{+0.064}_{-0.14}$	$\chi^2_{\text{DR12BAO}}$	3.418	$4.1 \pm 1.1$
$Y_{\text{P}}$	0.24341	$0.2438 \pm 0.0039$	$H(0.15)$	72.28	$68.9^{+2.0}_{-2.8}$	$\chi^2_{\text{prior}}$	0.006	$0.96 \pm 1.3$
$Y_{\text{P}}^{\text{BBN}}$	0.24473	$0.2451 \pm 0.0039$	$D_{\text{M}}(0.15)$	646.1	$679^{+27}_{-21}$	$\chi^2_{\text{BAO}}$	5.17	$6.0 \pm 1.2$
$10^5\text{D}/\text{H}$	2.528	$2.527 \pm 0.065$	$H(0.38)$	82.12	$78.3^{+2.2}_{-3.2}$	$\chi^2_{\text{Abund}}$	0.00	$1.9 \pm 1.8$
Age/Gyr	13.98	$14.68^{+0.56}_{-0.44}$	$D_{\text{M}}(0.38)$	1543	$1620^{+64}_{-50}$			

Best-fit  $\chi^2_{\text{eff}} = 1039.97$ ;  $\bar{\chi}^2_{\text{eff}} = 1043.82$ ;  $R - 1 = 0.01456$

$\chi^2_{\text{eff}}$ : Abund - D.Cooke2017\_adelberger: 0.00 Yp\_Aver2015: 0.00 BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.42 SN - JLA Pantheon18: 1034.79



# 10 nnu+nrn

## 10.1 base\_nnu\_nrn\_plikHM\_TTTEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022135	$0.02216 \pm 0.00023$	$\Omega_m h^2$	0.13853	$0.1390 \pm 0.0034$	$100\theta_{\text{eq}}$	0.8044	$0.8049 \pm 0.0077$
$\Omega_c h^2$	0.11575	$0.1162 \pm 0.0032$	$\Omega_m h^3$	0.08991	$0.0906^{+0.0039}_{-0.0044}$	$100\theta_{\text{s,eq}}$	0.44490	$0.4452 \pm 0.0039$
$100\theta_{\text{MC}}$	1.041436	$1.04139 \pm 0.00048$	$\sigma_8$	0.7989	$0.800 \pm 0.012$	$H(0.15)$	70.25	$70.5 \pm 1.6$
$\tau$	0.0548	$0.0549 \pm 0.0079$	$S_8$	0.8365	$0.836 \pm 0.016$	$D_{\text{M}}(0.15)$	666.7	$665 \pm 16$
$N_{\text{eff}}$	2.711	$2.74 \pm 0.22$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4582	$0.4579 \pm 0.0089$	$H(0.38)$	80.43	$80.7 \pm 1.6$
$\ln(10^{10} A_{\text{s}})$	3.0364	$3.037 \pm 0.018$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6050	$0.6051 \pm 0.0088$	$D_{\text{M}}(0.38)$	1585.6	$1582 \pm 36$
$n_{\text{s}}$	0.9500	$0.950 \pm 0.011$	$\sigma_8/h^{0.5}$	0.9917	$0.991 \pm 0.012$	$H(0.51)$	87.17	$87.4 \pm 1.6$
$dn_{\text{s}}/d \ln k$	-0.0105	$-0.0119 \pm 0.0079$	$r_{\text{drag}} h$	97.52	$97.6 \pm 1.4$	$D_{\text{M}}(0.51)$	2051.3	$2046 \pm 45$
$y_{\text{cal}}$	1.00054	$1.0005 \pm 0.0025$	$\langle d^2 \rangle^{1/2}$	2.4579	$2.455 \pm 0.030$	$H(0.61)$	92.79	$93.0 \pm 1.6$
$A_{217}^{\text{CIB}}$	46.8	$47 \pm 7$	$z_{\text{re}}$	7.68	$7.66 \pm 0.79$	$D_{\text{M}}(0.61)$	2385	$2379 \pm 51$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.49	—	$10^9 A_{\text{s}}$	2.0830	$2.085 \pm 0.039$	$H(2.33)$	232.43	$232.9 \pm 3.0$
$A_{143}^{\text{tSZ}}$	7.06	$5.2 \pm 2.0$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8666	$1.868 \pm 0.019$	$D_{\text{M}}(2.33)$	5912	$5899 \pm 100$
$A_{100}^{\text{PS}}$	249.9	$261 \pm 28$	$D_{40}$	1225.2	$1223 \pm 19$	$f\sigma_8(0.15)$	0.4613	$0.4611 \pm 0.0082$
$A_{143}^{\text{PS}}$	48.8	$47 \pm 8$	$D_{220}$	5729.1	$5729 \pm 39$	$\sigma_8(0.15)$	0.7366	$0.737 \pm 0.011$
$A_{143 \times 217}^{\text{PS}}$	49.0	$42 \pm 9$	$D_{810}$	2540.0	$2539 \pm 14$	$f\sigma_8(0.38)$	0.4755	$0.4755 \pm 0.0070$
$A_{217}^{\text{PS}}$	120.4	$115 \pm 10$	$D_{1420}$	817.62	$816.0 \pm 5.0$	$\sigma_8(0.38)$	0.6511	$0.652 \pm 0.010$
$A^{\text{kSZ}}$	0.00	$< 4.56$	$D_{2000}$	231.55	$230.8 \pm 1.9$	$f\sigma_8(0.51)$	0.4721	$0.4722 \pm 0.0066$
$A_{100}^{\text{dustTT}}$	8.71	$8.8 \pm 1.8$	$n_{\text{s},0.002}$	0.9838	$0.988 \pm 0.021$	$\sigma_8(0.51)$	0.6086	$0.609 \pm 0.010$
$A_{143}^{\text{dustTT}}$	10.87	$10.8 \pm 1.8$	$Y_{\text{P}}$	0.24071	$0.2411 \pm 0.0031$	$f\sigma_8(0.61)$	0.4659	$0.4660 \pm 0.0064$
$A_{143 \times 217}^{\text{dustTT}}$	19.76	$18.5 \pm 3.3$	$Y_{\text{P}}^{\text{BBN}}$	0.24202	$0.2424 \pm 0.0031$	$\sigma_8(0.61)$	0.5787	$0.5793 \pm 0.0097$
$A_{217}^{\text{dustTT}}$	95.1	$93.6 \pm 7.3$	$10^5 \text{D}/\text{H}$	2.513	$2.520 \pm 0.053$	$f\sigma_8(2.33)$	0.2912	$0.2915 \pm 0.0051$
$A_{100}^{\text{dustTE}}$	0.1152	$0.114 \pm 0.038$	Age/Gyr	14.148	$14.12 \pm 0.24$	$\sigma_8(2.33)$	0.2994	$0.2998 \pm 0.0056$
$A_{100 \times 143}^{\text{dustTE}}$	0.1350	$0.134 \pm 0.030$	$z_*$	1089.507	$1089.55 \pm 0.38$	$f_{2000}^{143}$	28.82	$30.1 \pm 3.1$
$A_{100 \times 217}^{\text{dustTE}}$	0.484	$0.481 \pm 0.085$	$r_*$	147.47	$147.2 \pm 2.1$	$f_{2000}^{143 \times 217}$	31.94	$32.5 \pm 2.2$
$A_{143}^{\text{dustTE}}$	0.224	$0.224 \pm 0.054$	$100\theta_*$	1.04186	$1.04180 \pm 0.00061$	$f_{2000}^{217}$	106.53	$107.3 \pm 2.0$
$A_{143 \times 217}^{\text{dustTE}}$	0.665	$0.665 \pm 0.081$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.154	$14.13 \pm 0.20$	$\chi_{\text{simall}}^2$	396.09	$397.1 \pm 1.7$
$A_{217}^{\text{dustTE}}$	2.087	$2.08 \pm 0.27$	$z_{\text{drag}}$	1058.83	$1058.92 \pm 0.85$	$\chi_{\text{lowl}}^2$	22.41	$22.5 \pm 1.5$
$c_{100}$	0.99976	$0.99971 \pm 0.00061$	$r_{\text{drag}}$	150.24	$150.0 \pm 2.2$	$\chi_{\text{plik}}^2$	2343.2	$2360.1 \pm 6.1$
$c_{217}$	0.99818	$0.99821 \pm 0.00063$	$k_{\text{D}}$	0.13872	$0.1389 \pm 0.0015$	$\chi_{\text{prior}}^2$	1.51	$11.4 \pm 4.5$
$H_0$	64.90	$65.1 \pm 1.7$	$100\theta_{\text{D}}$	0.16000	$0.16007 \pm 0.00050$	$\chi_{\text{CMB}}^2$	2761.7	$2779.7 \pm 6.1$
$\Omega_{\Lambda}$	0.6712	$0.672 \pm 0.012$	$z_{\text{eq}}$	3450.0	$3448 \pm 42$			
$\Omega_{\text{m}}$	0.3288	$0.328 \pm 0.012$	$k_{\text{eq}}$	0.010290	$0.01031 \pm 0.00012$			

Best-fit  $\chi_{\text{eff}}^2 = 2763.19$ ;  $\bar{\chi}_{\text{eff}}^2 = 2791.11$ ;  $R - 1 = 0.01356$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.09 commander\_dx12\_v3.2.29: 22.41 plik\_rd12\_HM\_v22b\_TTTEE: 2343.18



## 10.2 base\_nnu\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022331	$0.02236 \pm 0.00018$	$\Omega_m h^3$	0.09294	$0.0937^{+0.0035}_{-0.0041}$	$H(0.15)$	71.85	$72.1 \pm 1.3$
$\Omega_c h^2$	0.11659	$0.1172^{+0.0030}_{-0.0035}$	$\sigma_8$	0.8022	$0.803 \pm 0.012$	$D_M(0.15)$	650.8	$649 \pm 12$
$100\theta_{MC}$	1.041312	$1.04127 \pm 0.00048$	$S_8$	0.8217	$0.822 \pm 0.013$	$H(0.38)$	81.90	$82.1 \pm 1.3$
$\tau$	0.0568	$0.0566 \pm 0.0077$	$\sigma_8 \Omega_m^{0.5}$	0.4500	$0.4501 \pm 0.0073$	$D_M(0.38)$	1551.3	$1547 \pm 27$
$N_{\text{eff}}$	2.870	$2.91^{+0.18}_{-0.21}$	$\sigma_8 \Omega_m^{0.25}$	0.6008	$0.6012 \pm 0.0086$	$H(0.51)$	88.58	$88.8 \pm 1.4$
$\ln(10^{10} A_s)$	3.0423	$3.043 \pm 0.018$	$\sigma_8/h^{0.5}$	0.9830	$0.982 \pm 0.010$	$D_M(0.51)$	2009.1	$2003 \pm 34$
$n_s$	0.9605	$0.9602 \pm 0.0083$	$r_{\text{drag}} h$	99.19	$99.25 \pm 0.87$	$H(0.61)$	94.16	$94.4 \pm 1.4$
$dn_s/d \ln k$	-0.0064	$-0.0080 \pm 0.0075$	$\langle d^2 \rangle^{1/2}$	2.4329	$2.431 \pm 0.026$	$D_M(0.61)$	2337.4	$2331 \pm 39$
$y_{\text{cal}}$	1.00065	$1.0006 \pm 0.0025$	$z_{\text{re}}$	7.86	$7.83 \pm 0.77$	$H(2.33)$	233.71	$234.3^{+2.7}_{-3.0}$
$A_{217}^{\text{CIB}}$	47.1	$47 \pm 7$	$10^9 A_s$	2.0954	$2.098^{+0.035}_{-0.040}$	$D_M(2.33)$	5832	$5817 \pm 84$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.51	—	$10^9 A_s e^{-2\tau}$	1.8705	$1.873 \pm 0.018$	$f\sigma_8(0.15)$	0.4543	$0.4545 \pm 0.0070$
$A_{143}^{\text{tSZ}}$	7.11	$5.3 \pm 2.0$	$D_{40}$	1219.0	$1217 \pm 19$	$\sigma_8(0.15)$	0.7409	$0.742 \pm 0.011$
$A_{100}^{\text{PS}}$	249.2	$262 \pm 28$	$D_{220}$	5734.6	$5738 \pm 39$	$f\sigma_8(0.38)$	0.4718	$0.4720 \pm 0.0067$
$A_{143}^{\text{PS}}$	48.7	$47 \pm 8$	$D_{810}$	2540.2	$2539 \pm 14$	$\sigma_8(0.38)$	0.6564	$0.657 \pm 0.010$
$A_{143 \times 217}^{\text{PS}}$	49.4	$42 \pm 9$	$D_{1420}$	818.51	$817.0 \pm 4.9$	$f\sigma_8(0.51)$	0.4700	$0.4703 \pm 0.0066$
$A_{217}^{\text{PS}}$	120.0	$115 \pm 10$	$D_{2000}$	231.61	$230.8 \pm 1.8$	$\sigma_8(0.51)$	0.6142	$0.6150 \pm 0.0095$
$A^{\text{kSZ}}$	0.00	$< 4.71$	$n_{s,0.002}$	0.9812	$0.986 \pm 0.021$	$f\sigma_8(0.61)$	0.4648	$0.4652 \pm 0.0065$
$A_{100}^{\text{dustTT}}$	8.80	$8.8 \pm 1.8$	$Y_P$	0.24299	$0.2435 \pm 0.0027$	$\sigma_8(0.61)$	0.5843	$0.5851 \pm 0.0091$
$A_{143}^{\text{dustTT}}$	10.95	$10.9 \pm 1.8$	$Y_P^{\text{BBN}}$	0.24431	$0.2448 \pm 0.0027$	$f\sigma_8(2.33)$	0.29451	$0.2949 \pm 0.0047$
$A_{143 \times 217}^{\text{dustTT}}$	19.78	$18.5 \pm 3.2$	$10^5 D/H$	2.532	$2.539 \pm 0.052$	$\sigma_8(2.33)$	0.3035	$0.3039 \pm 0.0050$
$A_{217}^{\text{dustTT}}$	94.8	$93.5 \pm 7.3$	Age/Gyr	13.962	$13.93 \pm 0.20$	$f_{2000}^{143}$	28.68	$30.0 \pm 3.1$
$A_{100}^{\text{dustTE}}$	0.1141	$0.115 \pm 0.038$	$z_*$	1089.496	$1089.55 \pm 0.38$	$f_{2000}^{143 \times 217}$	31.90	$32.6 \pm 2.2$
$A_{100 \times 143}^{\text{dustTE}}$	0.1343	$0.134 \pm 0.029$	$r_*$	146.25	$145.9 \pm 2.0$	$f_{2000}^{217}$	106.47	$107.3 \pm 2.0$
$A_{100 \times 217}^{\text{dustTE}}$	0.479	$0.479 \pm 0.085$	$100\theta_*$	1.04162	$1.04155 \pm 0.00059$	$\chi_{\text{simall}}^2$	396.37	$397.2 \pm 1.9$
$A_{143}^{\text{dustTE}}$	0.224	$0.224 \pm 0.055$	$D_M(z_*)/\text{Gpc}$	14.041	$14.01 \pm 0.18$	$\chi_{\text{lowl}}^2$	22.08	$22.2 \pm 1.5$
$A_{143 \times 217}^{\text{dustTE}}$	0.664	$0.661 \pm 0.082$	$z_{\text{drag}}$	1059.47	$1059.60 \pm 0.73$	$\chi_{\text{plik}}^2$	2344.7	$2361.1 \pm 6.2$
$A_{217}^{\text{dustTE}}$	2.071	$2.06 \pm 0.27$	$r_{\text{drag}}$	148.95	$148.6 \pm 2.0$	$\chi_{6\text{DF}}^2$	0.070	$0.095 \pm 0.10$
$c_{100}$	0.99975	$0.99969 \pm 0.00061$	$k_D$	0.13957	$0.1399 \pm 0.0014$	$\chi_{\text{MGS}}^2$	0.982	$1.07 \pm 0.44$
$c_{217}$	0.99820	$0.99819 \pm 0.00063$	$100\theta_D$	0.160307	$0.16038 \pm 0.00047$	$\chi_{\text{DR12BAO}}^2$	5.26	$5.6 \pm 2.0$
$H_0$	66.59	$66.8 \pm 1.3$	$z_{\text{eq}}$	3400.4	$3399 \pm 26$	$\chi_{\text{prior}}^2$	1.58	$11.6 \pm 4.6$
$\Omega_\Lambda$	0.6852	$0.6857 \pm 0.0072$	$k_{\text{eq}}$	0.010255	$0.01028^{+0.00011}_{-0.00013}$	$\chi_{\text{BAO}}^2$	6.31	$6.8 \pm 1.7$
$\Omega_m$	0.3148	$0.3143 \pm 0.0072$	$100\theta_{\text{eq}}$	0.81369	$0.8140 \pm 0.0049$	$\chi_{\text{CMB}}^2$	2763.1	$2780.6 \pm 6.2$
$\Omega_m h^2$	0.13957	$0.1402^{+0.0031}_{-0.0036}$	$100\theta_{s,\text{eq}}$	0.44962	$0.4497 \pm 0.0025$			

Best-fit  $\chi_{\text{eff}}^2 = 2770.98$ ;  $\bar{\chi}_{\text{eff}}^2 = 2798.94$ ;  $R - 1 = 0.03824$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.07 MGS: 0.98 DR12BAO: 5.26 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.37 commander\_dx12\_v3\_2\_29: 22.08 plik\_rd12\_HM\_v22b\_TTTEEE: 2344.66



### 10.3 base\_nnu\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022113	$0.02216 \pm 0.00022$	$\Omega_m h^2$	0.13764	$0.1385 \pm 0.0033$	$100\theta_{\text{eq}}$	0.8049	$0.8060 \pm 0.0069$
$\Omega_c h^2$	0.11489	$0.1157 \pm 0.0032$	$\Omega_m h^3$	0.08913	$0.0903 \pm 0.0041$	$100\theta_{\text{s,eq}}$	0.44518	$0.4457 \pm 0.0035$
$100\theta_{\text{MC}}$	1.041532	$1.04144 \pm 0.00048$	$\sigma_8$	0.7952	$0.797 \pm 0.011$	$H(0.15)$	70.08	$70.5 \pm 1.6$
$\tau$	0.0536	$0.0540 \pm 0.0074$	$S_8$	0.8317	$0.831 \pm 0.013$	$D_{\text{M}}(0.15)$	668.2	$665 \pm 15$
$N_{\text{eff}}$	2.672	$2.73 \pm 0.22$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4556	$0.4554 \pm 0.0070$	$H(0.38)$	80.22	$80.6 \pm 1.6$
$\ln(10^{10} A_{\text{s}})$	3.0309	$3.034 \pm 0.017$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6019	$0.6025 \pm 0.0072$	$D_{\text{M}}(0.38)$	1589.5	$1581 \pm 35$
$n_{\text{s}}$	0.9494	$0.950 \pm 0.011$	$\sigma_8/h^{0.5}$	0.9881	$0.9876 \pm 0.0090$	$H(0.51)$	86.94	$87.4 \pm 1.6$
$dn_{\text{s}}/d \ln k$	-0.0098	$-0.0111 \pm 0.0079$	$r_{\text{drag}} h$	97.61	$97.8 \pm 1.2$	$D_{\text{M}}(0.51)$	2056.4	$2046 \pm 43$
$y_{\text{cal}}$	1.00027	$1.0004 \pm 0.0025$	$\langle d^2 \rangle^{1/2}$	2.4525	$2.450 \pm 0.024$	$H(0.61)$	92.54	$93.0 \pm 1.6$
$A_{217}^{\text{CIB}}$	45.6	$47 \pm 7$	$z_{\text{re}}$	7.53	$7.57 \pm 0.74$	$D_{\text{M}}(0.61)$	2390.7	$2379 \pm 49$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.68	—	$10^9 A_{\text{s}}$	2.0716	$2.078 \pm 0.035$	$H(2.33)$	231.70	$232.5 \pm 2.9$
$A_{143}^{\text{tSZ}}$	6.95	$5.2 \pm 2.0$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8611	$1.865 \pm 0.018$	$D_{\text{M}}(2.33)$	5928	$5903 \pm 98$
$A_{100}^{\text{PS}}$	247.2	$261 \pm 28$	$D_{40}$	1225.8	$1223 \pm 19$	$f\sigma_8(0.15)$	0.4587	$0.4587 \pm 0.0064$
$A_{143}^{\text{PS}}$	50.6	$46 \pm 8$	$D_{220}$	5727.1	$5731 \pm 39$	$\sigma_8(0.15)$	0.7332	$0.735 \pm 0.011$
$A_{143 \times 217}^{\text{PS}}$	53.1	$42 \pm 9$	$D_{810}$	2538.1	$2537 \pm 14$	$f\sigma_8(0.38)$	0.4730	$0.4734 \pm 0.0057$
$A_{217}^{\text{PS}}$	121.8	$115 \pm 10$	$D_{1420}$	817.9	$816.1 \pm 5.0$	$\sigma_8(0.38)$	0.6482	$0.650 \pm 0.010$
$A^{\text{kSZ}}$	0.00	$< 4.56$	$D_{2000}$	231.82	$230.9 \pm 1.9$	$f\sigma_8(0.51)$	0.4697	$0.4703 \pm 0.0056$
$A_{100}^{\text{dustTT}}$	8.72	$8.8 \pm 1.8$	$n_{\text{s},0.002}$	0.9809	$0.986 \pm 0.021$	$\sigma_8(0.51)$	0.6059	$0.6078 \pm 0.0098$
$A_{143}^{\text{dustTT}}$	10.90	$10.8 \pm 1.8$	$Y_{\text{P}}$	0.24014	$0.2410 \pm 0.0031$	$f\sigma_8(0.61)$	0.4636	$0.4643 \pm 0.0056$
$A_{143 \times 217}^{\text{dustTT}}$	20.00	$18.5 \pm 3.2$	$Y_{\text{P}}^{\text{BBN}}$	0.24145	$0.2423 \pm 0.0031$	$\sigma_8(0.61)$	0.5761	$0.5779 \pm 0.0095$
$A_{217}^{\text{dustTT}}$	95.4	$93.5 \pm 7.3$	$10^5 D/\text{H}$	2.503	$2.515 \pm 0.052$	$f\sigma_8(2.33)$	0.2899	$0.2909 \pm 0.0050$
$A_{100}^{\text{dustTE}}$	0.1134	$0.115 \pm 0.038$	Age/Gyr	14.188	$14.13 \pm 0.23$	$\sigma_8(2.33)$	0.2981	$0.2993 \pm 0.0055$
$A_{100 \times 143}^{\text{dustTE}}$	0.1346	$0.134 \pm 0.030$	$z_*$	1089.420	$1089.49 \pm 0.37$	$f_{2000}^{143}$	28.30	$29.9 \pm 3.1$
$A_{100 \times 217}^{\text{dustTE}}$	0.479	$0.482 \pm 0.084$	$r_*$	147.93	$147.4 \pm 2.1$	$f_{2000}^{143 \times 217}$	31.60	$32.4 \pm 2.2$
$A_{143}^{\text{dustTE}}$	0.226	$0.225 \pm 0.054$	$100\theta_*$	1.04198	$1.04185 \pm 0.00061$	$f_{2000}^{217}$	106.09	$107.1 \pm 2.0$
$A_{143 \times 217}^{\text{dustTE}}$	0.664	$0.665 \pm 0.081$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.197	$14.15 \pm 0.19$	$\chi_{\text{lensing}}^2$	8.63	$9.17 \pm 0.81$
$A_{217}^{\text{dustTE}}$	2.074	$2.07 \pm 0.27$	$z_{\text{drag}}$	1058.67	$1058.88 \pm 0.84$	$\chi_{\text{small}}^2$	395.91	$396.8 \pm 1.5$
$c_{100}$	0.99976	$0.99971 \pm 0.00061$	$r_{\text{drag}}$	150.72	$150.2 \pm 2.2$	$\chi_{\text{lowl}}^2$	22.56	$22.6 \pm 1.5$
$c_{217}$	0.99817	$0.99820 \pm 0.00063$	$k_{\text{D}}$	0.13837	$0.1388 \pm 0.0015$	$\chi_{\text{plik}}^2$	2343.4	$2359.8 \pm 5.9$
$H_0$	64.76	$65.2 \pm 1.6$	$100\theta_{\text{D}}$	0.159919	$0.16004 \pm 0.00050$	$\chi_{\text{prior}}^2$	1.39	$11.4 \pm 4.5$
$\Omega_{\Lambda}$	0.6718	$0.673 \pm 0.011$	$z_{\text{eq}}$	3446.9	$3441 \pm 37$	$\chi_{\text{CMB}}^2$	2770.6	$2788.4 \pm 6.1$
$\Omega_{\text{m}}$	0.3282	$0.327 \pm 0.011$	$k_{\text{eq}}$	0.010253	$0.01028 \pm 0.00011$			

Best-fit  $\chi_{\text{eff}}^2 = 2771.94$ ;  $\bar{\chi}_{\text{eff}}^2 = 2799.77$ ;  $R - 1 = 0.01835$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.63 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.92 commander\_dx12\_v3.2\_29: 22.56 plik\_rd12\_HM\_v22b\_TTTEEE: 2343.45



#### 10.4 base\_nnu\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02235 \pm 0.00018$	$\Omega_{\mathrm{m}}h^3$	$0.0934^{+0.0036}_{-0.0040}$	$H(0.15)$	$71.9 \pm 1.3$
$\Omega_{\mathrm{c}}h^2$	$0.1169^{+0.0030}_{-0.0033}$	$\sigma_8$	$0.803 \pm 0.011$	$D_{\mathrm{M}}(0.15)$	$650 \pm 12$
$100\theta_{\mathrm{MC}}$	$1.04130 \pm 0.00048$	$S_8$	$0.822 \pm 0.011$	$H(0.38)$	$82.0 \pm 1.3$
$\tau$	$0.0571 \pm 0.0072$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4503 \pm 0.0060$	$D_{\mathrm{M}}(0.38)$	$1550 \pm 27$
$N_{\mathrm{eff}}$	$2.89 \pm 0.19$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6012 \pm 0.0073$	$H(0.51)$	$88.7 \pm 1.3$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044 \pm 0.016$	$\sigma_8/h^{0.5}$	$0.9830 \pm 0.0084$	$D_{\mathrm{M}}(0.51)$	$2007 \pm 34$
$n_{\mathrm{s}}$	$0.9593 \pm 0.0083$	$r_{\mathrm{drag}}h$	$99.20 \pm 0.84$	$H(0.61)$	$94.3 \pm 1.4$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0077 \pm 0.0075$	$\langle d^2 \rangle^{1/2}$	$2.434 \pm 0.022$	$D_{\mathrm{M}}(0.61)$	$2335 \pm 39$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025$	$z_{\mathrm{re}}$	$7.88 \pm 0.71$	$H(2.33)$	$234.0 \pm 2.8$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$10^9 A_{\mathrm{s}}$	$2.099 \pm 0.034$	$D_{\mathrm{M}}(2.33)$	$5826 \pm 83$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.872 \pm 0.017$	$f\sigma_8(0.15)$	$0.4546 \pm 0.0058$
$A_{143}^{\mathrm{tSZ}}$	$5.3 \pm 2.0$	$D_{40}$	$1220 \pm 19$	$\sigma_8(0.15)$	$0.741 \pm 0.010$
$A_{100}^{\mathrm{PS}}$	$261 \pm 28$	$D_{220}$	$5741 \pm 39$	$f\sigma_8(0.38)$	$0.4720 \pm 0.0057$
$A_{143}^{\mathrm{PS}}$	$46 \pm 8$	$D_{810}$	$2540 \pm 14$	$\sigma_8(0.38)$	$0.6569 \pm 0.0093$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9$	$D_{1420}$	$817.2 \pm 4.9$	$f\sigma_8(0.51)$	$0.4703 \pm 0.0057$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$D_{2000}$	$231.0 \pm 1.8$	$\sigma_8(0.51)$	$0.6146 \pm 0.0089$
$A^{\mathrm{kSZ}}$	$< 4.62$	$n_{\mathrm{s},0.002}$	$0.984 \pm 0.021$	$f\sigma_8(0.61)$	$0.4651 \pm 0.0057$
$A_{100}^{\mathrm{dust}TT}$	$8.8 \pm 1.8$	$Y_{\mathrm{P}}$	$0.2432 \pm 0.0027$	$\sigma_8(0.61)$	$0.5847 \pm 0.0086$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.7$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2445 \pm 0.0027$	$f\sigma_8(2.33)$	$0.2947 \pm 0.0045$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.2$	$10^5 \mathrm{D}/\mathrm{H}$	$2.535 \pm 0.051$	$\sigma_8(2.33)$	$0.3037 \pm 0.0048$
$A_{217}^{\mathrm{dust}TT}$	$93.6 \pm 7.3$	$\mathrm{Age}/\mathrm{Gyr}$	$13.95 \pm 0.20$	$f_{2000}^{143}$	$29.9 \pm 3.1$
$A_{100}^{\mathrm{dust}TE}$	$0.115 \pm 0.038$	$z_*$	$1089.52 \pm 0.37$	$f_{2000}^{143 \times 217}$	$32.4 \pm 2.2$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.134 \pm 0.030$	$r_*$	$146.1 \pm 1.9$	$f_{2000}^{217}$	$107.2 \pm 2.0$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.480 \pm 0.084$	$100\theta_*$	$1.04159 \pm 0.00059$	$\chi_{\mathrm{lensing}}^2$	$9.09 \pm 0.64$
$A_{143}^{\mathrm{dust}TE}$	$0.225 \pm 0.055$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.03 \pm 0.18$	$\chi_{\mathrm{simall}}^2$	$397.2 \pm 1.8$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.661 \pm 0.081$	$z_{\mathrm{drag}}$	$1059.53 \pm 0.73$	$\chi_{\mathrm{lowl}}^2$	$22.4 \pm 1.5$
$A_{217}^{\mathrm{dust}TE}$	$2.06 \pm 0.27$	$r_{\mathrm{drag}}$	$148.8 \pm 2.0$	$\chi_{\mathrm{plik}}^2$	$2360.6 \pm 6.1$
$c_{100}$	$0.99970 \pm 0.00061$	$k_{\mathrm{D}}$	$0.1397 \pm 0.0014$	$\chi_{6\mathrm{DF}}^2$	$0.099 \pm 0.098$
$c_{217}$	$0.99818 \pm 0.00062$	$100\theta_{\mathrm{D}}$	$0.16033 \pm 0.00046$	$\chi_{\mathrm{MGS}}^2$	$1.04 \pm 0.42$
$H_0$	$66.7 \pm 1.3$	$z_{\mathrm{eq}}$	$3401 \pm 25$	$\chi_{\mathrm{DR12BAO}}^2$	$5.7 \pm 1.9$
$\Omega_{\Lambda}$	$0.6853 \pm 0.0070$	$k_{\mathrm{eq}}$	$0.01027^{+0.00011}_{-0.00012}$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.6$
$\Omega_{\mathrm{m}}$	$0.3147 \pm 0.0070$	$100\theta_{\mathrm{eq}}$	$0.8137 \pm 0.0047$	$\chi_{\mathrm{CMB}}^2$	$2789.2 \pm 6.2$
$\Omega_{\mathrm{m}}h^2$	$0.1399^{+0.0031}_{-0.0034}$	$100\theta_{\mathrm{s,eq}}$	$0.4496 \pm 0.0024$	$\chi_{\mathrm{BAO}}^2$	$6.8 \pm 1.7$

$\bar{\chi}_{\mathrm{eff}}^2 = 2807.63$ ;  $R - 1 = 0.03868$



# 10.5 base\_nnu\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02216 \pm 0.00022$	$\Omega_{\mathrm{m}}h^2$	$0.1390 \pm 0.0034$	$100\theta_{\mathrm{eq}}$	$0.8051 \pm 0.0077$
$\Omega_{\mathrm{c}}h^2$	$0.1162 \pm 0.0032$	$\Omega_{\mathrm{m}}h^3$	$0.0906 \pm 0.0042$	$100\theta_{\mathrm{s,eq}}$	$0.4452 \pm 0.0039$
$100\theta_{\mathrm{MC}}$	$1.04140 \pm 0.00048$	$\sigma_8$	$0.800 \pm 0.011$	$H(0.15)$	$70.5 \pm 1.6$
$\tau$	$0.0559^{+0.0054}_{-0.0084}$	$S_8$	$0.837 \pm 0.016$	$D_{\mathrm{M}}(0.15)$	$665 \pm 16$
$N_{\mathrm{eff}}$	$2.75 \pm 0.22$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4582 \pm 0.0089$	$H(0.38)$	$80.7 \pm 1.6$
$\ln(10^{10}A_{\mathrm{s}})$	$3.039^{+0.015}_{-0.019}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6056 \pm 0.0087$	$D_{\mathrm{M}}(0.38)$	$1581 \pm 36$
$n_{\mathrm{s}}$	$0.950 \pm 0.011$	$\sigma_8/h^{0.5}$	$0.992 \pm 0.012$	$H(0.51)$	$87.4 \pm 1.6$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0121 \pm 0.0080$	$r_{\mathrm{drag}}h$	$97.6 \pm 1.4$	$D_{\mathrm{M}}(0.51)$	$2045 \pm 45$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$\langle d^2 \rangle^{1/2}$	$2.457 \pm 0.030$	$H(0.61)$	$93.1 \pm 1.6$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$z_{\mathrm{re}}$	$7.78^{+0.58}_{-0.83}$	$D_{\mathrm{M}}(0.61)$	$2378 \pm 51$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}}$	$2.089^{+0.031}_{-0.039}$	$H(2.33)$	$232.9 \pm 3.0$
$A_{143}^{\mathrm{tSZ}}$	$5.2 \pm 2.0$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.868 \pm 0.018$	$D_{\mathrm{M}}(2.33)$	$5898 \pm 100$
$A_{100}^{\mathrm{PS}}$	$261 \pm 28$	$D_{40}$	$1222 \pm 19$	$f\sigma_8(0.15)$	$0.4614 \pm 0.0082$
$A_{143}^{\mathrm{PS}}$	$47 \pm 8$	$D_{220}$	$5729 \pm 39$	$\sigma_8(0.15)$	$0.738 \pm 0.011$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9$	$D_{810}$	$2538 \pm 14$	$f\sigma_8(0.38)$	$0.4758 \pm 0.0069$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$D_{1420}$	$816.0 \pm 5.0$	$\sigma_8(0.38)$	$0.652 \pm 0.010$
$A^{\mathrm{kSZ}}$	$< 4.54$	$D_{2000}$	$230.8 \pm 1.9$	$f\sigma_8(0.51)$	$0.4726 \pm 0.0065$
$A_{100}^{\mathrm{dust}TT}$	$8.8 \pm 1.8$	$n_{\mathrm{s},0.002}$	$0.989 \pm 0.021$	$\sigma_8(0.51)$	$0.6099 \pm 0.0098$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.8$	$Y_{\mathrm{P}}$	$0.2412 \pm 0.0031$	$f\sigma_8(0.61)$	$0.4664 \pm 0.0063$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.3$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2425 \pm 0.0031$	$\sigma_8(0.61)$	$0.5799 \pm 0.0094$
$A_{217}^{\mathrm{dust}TT}$	$93.6 \pm 7.3$	$10^5 \mathrm{D}/\mathrm{H}$	$2.519 \pm 0.053$	$f\sigma_8(2.33)$	$0.2918 \pm 0.0050$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.038$	Age/Gyr	$14.12 \pm 0.24$	$\sigma_8(2.33)$	$0.3002 \pm 0.0054$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.134 \pm 0.030$	$z_*$	$1089.55 \pm 0.38$	$f_{2000}^{143}$	$30.1 \pm 3.1$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.481 \pm 0.085$	$r_*$	$147.2 \pm 2.1$	$f_{2000}^{143 \times 217}$	$32.5 \pm 2.2$
$A_{143}^{\mathrm{dust}TE}$	$0.224 \pm 0.054$	$100\theta_*$	$1.04180 \pm 0.00061$	$f_{2000}^{217}$	$107.3 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.665 \pm 0.081$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.13 \pm 0.20$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.8$
$A_{217}^{\mathrm{dust}TE}$	$2.08 \pm 0.27$	$z_{\mathrm{drag}}$	$1058.94 \pm 0.85$	$\chi_{\mathrm{lowl}}^2$	$22.5 \pm 1.5$
$c_{100}$	$0.99971 \pm 0.00062$	$r_{\mathrm{drag}}$	$149.9 \pm 2.2$	$\chi_{\mathrm{plik}}^2$	$2360.0 \pm 6.1$
$c_{217}$	$0.99821 \pm 0.00063$	$k_{\mathrm{D}}$	$0.1390 \pm 0.0015$	$\chi_{\mathrm{prior}}^2$	$11.4 \pm 4.5$
$H_0$	$65.1 \pm 1.7$	$100\theta_{\mathrm{D}}$	$0.16007 \pm 0.00050$	$\chi_{\mathrm{CMB}}^2$	$2779.5 \pm 6.0$
$\Omega_{\Lambda}$	$0.672 \pm 0.012$	$z_{\mathrm{eq}}$	$3447 \pm 42$		
$\Omega_{\mathrm{m}}$	$0.328 \pm 0.012$	$k_{\mathrm{eq}}$	$0.01030 \pm 0.00012$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2790.91; R - 1 = 0.01332$$



## 10.6 base\_nnu\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02236 \pm 0.00018$	$\Omega_{\mathrm{m}}h^3$	$0.0937^{+0.0035}_{-0.0041}$	$H(0.15)$	$72.1 \pm 1.3$
$\Omega_{\mathrm{c}}h^2$	$0.1172^{+0.0030}_{-0.0035}$	$\sigma_8$	$0.803 \pm 0.012$	$D_{\mathrm{M}}(0.15)$	$649 \pm 12$
$100\theta_{\mathrm{MC}}$	$1.04128 \pm 0.00048$	$S_8$	$0.822 \pm 0.013$	$H(0.38)$	$82.1 \pm 1.3$
$\tau$	$0.0573^{+0.0062}_{-0.0080}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4503 \pm 0.0072$	$D_{\mathrm{M}}(0.38)$	$1547 \pm 27$
$N_{\mathrm{eff}}$	$2.91^{+0.18}_{-0.21}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6015 \pm 0.0085$	$H(0.51)$	$88.8 \pm 1.4$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.015}_{-0.019}$	$\sigma_8/h^{0.5}$	$0.983 \pm 0.010$	$D_{\mathrm{M}}(0.51)$	$2003 \pm 34$
$n_{\mathrm{s}}$	$0.9602 \pm 0.0083$	$r_{\mathrm{drag}}h$	$99.26 \pm 0.87$	$H(0.61)$	$94.4 \pm 1.4$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0081 \pm 0.0075$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.025$	$D_{\mathrm{M}}(0.61)$	$2331 \pm 39$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$z_{\mathrm{re}}$	$7.90^{+0.64}_{-0.80}$	$H(2.33)$	$234.2^{+2.7}_{-3.0}$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$10^9 A_{\mathrm{s}}$	$2.100^{+0.032}_{-0.039}$	$D_{\mathrm{M}}(2.33)$	$5818 \pm 84$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.873 \pm 0.018$	$f\sigma_8(0.15)$	$0.4547 \pm 0.0070$
$A_{143}^{\mathrm{tSZ}}$	$5.2 \pm 2.0$	$D_{40}$	$1217 \pm 19$	$\sigma_8(0.15)$	$0.742 \pm 0.011$
$A_{100}^{\mathrm{PS}}$	$262 \pm 28$	$D_{220}$	$5737 \pm 39$	$f\sigma_8(0.38)$	$0.4723 \pm 0.0067$
$A_{143}^{\mathrm{PS}}$	$47 \pm 8$	$D_{810}$	$2539 \pm 14$	$\sigma_8(0.38)$	$0.6576 \pm 0.0099$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9$	$D_{1420}$	$816.9 \pm 4.8$	$f\sigma_8(0.51)$	$0.4706 \pm 0.0065$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$D_{2000}$	$230.8 \pm 1.8$	$\sigma_8(0.51)$	$0.6153 \pm 0.0094$
$A^{\mathrm{kSZ}}$	$< 4.70$	$n_{\mathrm{s},0.002}$	$0.986 \pm 0.021$	$f\sigma_8(0.61)$	$0.4654 \pm 0.0065$
$A_{100}^{\mathrm{dust}TT}$	$8.8 \pm 1.8$	$Y_{\mathrm{P}}$	$0.2435 \pm 0.0027$	$\sigma_8(0.61)$	$0.5854 \pm 0.0090$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2448 \pm 0.0027$	$f\sigma_8(2.33)$	$0.2951 \pm 0.0046$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.6 \pm 3.2$	$10^5 \mathrm{D}/\mathrm{H}$	$2.539 \pm 0.052$	$\sigma_8(2.33)$	$0.3041 \pm 0.0049$
$A_{217}^{\mathrm{dust}TT}$	$93.6 \pm 7.3$	$\mathrm{Age}/\mathrm{Gyr}$	$13.93 \pm 0.20$	$f_{2000}^{143}$	$30.1 \pm 3.1$
$A_{100}^{\mathrm{dust}TE}$	$0.115 \pm 0.038$	$z_*$	$1089.54 \pm 0.38$	$f_{2000}^{143 \times 217}$	$32.6 \pm 2.2$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.134 \pm 0.030$	$r_*$	$145.9 \pm 1.9$	$f_{2000}^{217}$	$107.3 \pm 2.0$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.479 \pm 0.085$	$100\theta_*$	$1.04155 \pm 0.00059$	$\chi_{\mathrm{simall}}^2$	$397.2 \pm 1.9$
$A_{143}^{\mathrm{dust}TE}$	$0.224 \pm 0.055$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.01 \pm 0.18$	$\chi_{\mathrm{lowl}}^2$	$22.2 \pm 1.5$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.661 \pm 0.082$	$z_{\mathrm{drag}}$	$1059.60 \pm 0.73$	$\chi_{\mathrm{plik}}^2$	$2361.0 \pm 6.2$
$A_{217}^{\mathrm{dust}TE}$	$2.06 \pm 0.27$	$r_{\mathrm{drag}}$	$148.6 \pm 2.0$	$\chi_{6\mathrm{DF}}^2$	$0.094 \pm 0.099$
$c_{100}$	$0.99970 \pm 0.00062$	$k_{\mathrm{D}}$	$0.1398 \pm 0.0014$	$\chi_{\mathrm{MGS}}^2$	$1.08 \pm 0.44$
$c_{217}$	$0.99819 \pm 0.00063$	$100\theta_{\mathrm{D}}$	$0.16037 \pm 0.00047$	$\chi_{\mathrm{DR12BAO}}^2$	$5.6 \pm 2.0$
$H_0$	$66.8 \pm 1.3$	$z_{\mathrm{eq}}$	$3399 \pm 26$	$\chi_{\mathrm{prior}}^2$	$11.6 \pm 4.6$
$\Omega_{\Lambda}$	$0.6858 \pm 0.0072$	$k_{\mathrm{eq}}$	$0.01028^{+0.00011}_{-0.00013}$	$\chi_{\mathrm{BAO}}^2$	$6.8 \pm 1.7$
$\Omega_{\mathrm{m}}$	$0.3142 \pm 0.0072$	$100\theta_{\mathrm{eq}}$	$0.8140 \pm 0.0049$	$\chi_{\mathrm{CMB}}^2$	$2780.4 \pm 6.1$
$\Omega_{\mathrm{m}}h^2$	$0.1402^{+0.0031}_{-0.0036}$	$100\theta_{\mathrm{s,eq}}$	$0.4498 \pm 0.0025$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2798.78; R - 1 = 0.04433$$



## 10.7 base\_nnu\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02217 \pm 0.00022$	$\Omega_{\text{m}}h^2$	$0.1385 \pm 0.0033$	$100\theta_{\text{eq}}$	$0.8064 \pm 0.0069$
$\Omega_{\text{c}}h^2$	$0.1157 \pm 0.0032$	$\Omega_{\text{m}}h^3$	$0.0904 \pm 0.0041$	$100\theta_{\text{s,eq}}$	$0.4459 \pm 0.0035$
$100\theta_{\text{MC}}$	$1.04145 \pm 0.00048$	$\sigma_8$	$0.798 \pm 0.011$	$H(0.15)$	$70.5 \pm 1.6$
$\tau$	$0.0551^{+0.0051}_{-0.0077}$	$S_8$	$0.832 \pm 0.013$	$D_{\text{M}}(0.15)$	$664 \pm 15$
$N_{\text{eff}}$	$2.73 \pm 0.22$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4555 \pm 0.0070$	$H(0.38)$	$80.7 \pm 1.6$
$\ln(10^{10}A_{\text{s}})$	$3.036^{+0.014}_{-0.017}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6028 \pm 0.0072$	$D_{\text{M}}(0.38)$	$1580 \pm 34$
$n_{\text{s}}$	$0.950 \pm 0.010$	$\sigma_8/h^{0.5}$	$0.9881 \pm 0.0089$	$H(0.51)$	$87.4 \pm 1.6$
$\text{d}n_{\text{s}}/\text{d}\ln k$	$-0.0112 \pm 0.0079$	$r_{\text{drag}}h$	$97.9 \pm 1.2$	$D_{\text{M}}(0.51)$	$2045 \pm 43$
$y_{\text{cal}}$	$1.0004 \pm 0.0025$	$\langle d^2 \rangle^{1/2}$	$2.451 \pm 0.024$	$H(0.61)$	$93.0 \pm 1.6$
$A_{217}^{\text{CIB}}$	$47 \pm 7$	$z_{\text{re}}$	$7.69^{+0.54}_{-0.77}$	$D_{\text{M}}(0.61)$	$2377 \pm 49$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_{\text{s}}$	$2.082^{+0.029}_{-0.035}$	$H(2.33)$	$232.5 \pm 2.9$
$A_{143}^{\text{tSZ}}$	$5.2 \pm 2.0$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.865 \pm 0.018$	$D_{\text{M}}(2.33)$	$5901 \pm 98$
$A_{100}^{\text{PS}}$	$261 \pm 28$	$D_{40}$	$1223 \pm 18$	$f\sigma_8(0.15)$	$0.4588 \pm 0.0065$
$A_{143}^{\text{PS}}$	$46 \pm 8$	$D_{220}$	$5731 \pm 38$	$\sigma_8(0.15)$	$0.736 \pm 0.010$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9$	$D_{810}$	$2537 \pm 14$	$f\sigma_8(0.38)$	$0.4736 \pm 0.0057$
$A_{217}^{\text{PS}}$	$114 \pm 10$	$D_{1420}$	$816.1 \pm 5.0$	$\sigma_8(0.38)$	$0.6508 \pm 0.0099$
$A^{\text{kSZ}}$	$< 4.53$	$D_{2000}$	$230.9 \pm 1.8$	$f\sigma_8(0.51)$	$0.4706 \pm 0.0055$
$A_{100}^{\text{dust}TT}$	$8.8 \pm 1.8$	$n_{\text{s},0.002}$	$0.986 \pm 0.021$	$\sigma_8(0.51)$	$0.6085 \pm 0.0095$
$A_{143}^{\text{dust}TT}$	$10.8 \pm 1.8$	$Y_{\text{P}}$	$0.2410 \pm 0.0031$	$f\sigma_8(0.61)$	$0.4646 \pm 0.0055$
$A_{143 \times 217}^{\text{dust}TT}$	$18.5 \pm 3.2$	$Y_{\text{P}}^{\text{BBN}}$	$0.2423 \pm 0.0031$	$\sigma_8(0.61)$	$0.5786 \pm 0.0092$
$A_{217}^{\text{dust}TT}$	$93.5 \pm 7.3$	$10^5 \text{D}/\text{H}$	$2.514 \pm 0.052$	$f\sigma_8(2.33)$	$0.2912 \pm 0.0049$
$A_{100}^{\text{dust}TE}$	$0.115 \pm 0.038$	$\text{Age}/\text{Gyr}$	$14.12 \pm 0.23$	$\sigma_8(2.33)$	$0.2997 \pm 0.0054$
$A_{100 \times 143}^{\text{dust}TE}$	$0.134 \pm 0.030$	$z_*$	$1089.48 \pm 0.37$	$f_{2000}^{143}$	$29.9 \pm 3.1$
$A_{100 \times 217}^{\text{dust}TE}$	$0.481 \pm 0.084$	$r_*$	$147.4 \pm 2.1$	$f_{2000}^{143 \times 217}$	$32.4 \pm 2.2$
$A_{143}^{\text{dust}TE}$	$0.225 \pm 0.055$	$100\theta_*$	$1.04185 \pm 0.00061$	$f_{2000}^{217}$	$107.1 \pm 2.0$
$A_{143 \times 217}^{\text{dust}TE}$	$0.665 \pm 0.081$	$D_{\text{M}}(z_*)/\text{Gpc}$	$14.14 \pm 0.19$	$\chi_{\text{lensing}}^2$	$9.18 \pm 0.82$
$A_{217}^{\text{dust}TE}$	$2.07 \pm 0.27$	$z_{\text{drag}}$	$1058.90 \pm 0.83$	$\chi_{\text{simall}}^2$	$396.8 \pm 1.5$
$c_{100}$	$0.99971 \pm 0.00061$	$r_{\text{drag}}$	$150.1 \pm 2.2$	$\chi_{\text{lowl}}^2$	$22.6 \pm 1.5$
$c_{217}$	$0.99821 \pm 0.00063$	$k_{\text{D}}$	$0.1388 \pm 0.0015$	$\chi_{\text{plik}}^2$	$2359.6 \pm 5.9$
$H_0$	$65.2 \pm 1.6$	$100\theta_{\text{D}}$	$0.16004 \pm 0.00050$	$\chi_{\text{prior}}^2$	$11.4 \pm 4.5$
$\Omega_{\Lambda}$	$0.674 \pm 0.011$	$z_{\text{eq}}$	$3440 \pm 37$	$\chi_{\text{CMB}}^2$	$2788.2 \pm 6.0$
$\Omega_{\text{m}}$	$0.326 \pm 0.011$	$k_{\text{eq}}$	$0.01027 \pm 0.00011$		

$$\bar{\chi}_{\text{eff}}^2 = 2799.54; R - 1 = 0.01748$$



10.8 base\_nnu\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02235 \pm 0.00018$	$\Omega_{\text{m}}h^3$	$0.0933^{+0.0036}_{-0.0040}$	$H(0.15)$	$72.0 \pm 1.3$
$\Omega_{\text{c}}h^2$	$0.1169^{+0.0030}_{-0.0033}$	$\sigma_8$	$0.803 \pm 0.011$	$D_{\text{M}}(0.15)$	$650 \pm 12$
$100\theta_{\text{MC}}$	$1.04130 \pm 0.00048$	$S_8$	$0.822 \pm 0.011$	$H(0.38)$	$82.0 \pm 1.3$
$\tau$	$0.0575^{+0.0063}_{-0.0074}$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4503 \pm 0.0060$	$D_{\text{M}}(0.38)$	$1550 \pm 27$
$N_{\text{eff}}$	$2.89 \pm 0.19$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6013 \pm 0.0073$	$H(0.51)$	$88.7 \pm 1.3$
$\ln(10^{10}A_{\text{s}})$	$3.045^{+0.015}_{-0.016}$	$\sigma_8/h^{0.5}$	$0.9832 \pm 0.0083$	$D_{\text{M}}(0.51)$	$2007 \pm 34$
$n_{\text{s}}$	$0.9593 \pm 0.0083$	$r_{\text{drag}}h$	$99.21 \pm 0.84$	$H(0.61)$	$94.3 \pm 1.4$
$\text{d}n_{\text{s}}/\text{d}\ln k$	$-0.0078 \pm 0.0075$	$\langle d^2 \rangle^{1/2}$	$2.435 \pm 0.022$	$D_{\text{M}}(0.61)$	$2335 \pm 39$
$y_{\text{cal}}$	$1.0007 \pm 0.0025$	$z_{\text{re}}$	$7.92^{+0.64}_{-0.73}$	$H(2.33)$	$234.0 \pm 2.8$
$A_{217}^{\text{CIB}}$	$47 \pm 7$	$10^9 A_{\text{s}}$	$2.100^{+0.030}_{-0.035}$	$D_{\text{M}}(2.33)$	$5826 \pm 83$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_{\text{s}} e^{-2\tau}$	$1.872 \pm 0.017$	$f\sigma_8(0.15)$	$0.4546 \pm 0.0058$
$A_{143}^{\text{tSZ}}$	$5.3 \pm 2.0$	$D_{40}$	$1219 \pm 19$	$\sigma_8(0.15)$	$0.742 \pm 0.010$
$A_{100}^{\text{PS}}$	$261 \pm 28$	$D_{220}$	$5741 \pm 39$	$f\sigma_8(0.38)$	$0.4721 \pm 0.0057$
$A_{143}^{\text{PS}}$	$46 \pm 8$	$D_{810}$	$2539 \pm 14$	$\sigma_8(0.38)$	$0.6571 \pm 0.0093$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9$	$D_{1420}$	$817.1 \pm 4.8$	$f\sigma_8(0.51)$	$0.4704 \pm 0.0057$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$D_{2000}$	$231.0 \pm 1.8$	$\sigma_8(0.51)$	$0.6148 \pm 0.0088$
$A^{\text{kSZ}}$	$< 4.61$	$n_{\text{s},0.002}$	$0.984 \pm 0.021$	$f\sigma_8(0.61)$	$0.4652 \pm 0.0057$
$A_{100}^{\text{dust}TT}$	$8.8 \pm 1.8$	$Y_{\text{P}}$	$0.2432 \pm 0.0027$	$\sigma_8(0.61)$	$0.5849 \pm 0.0085$
$A_{143}^{\text{dust}TT}$	$10.9 \pm 1.7$	$Y_{\text{P}}^{\text{BBN}}$	$0.2445 \pm 0.0027$	$f\sigma_8(2.33)$	$0.2948 \pm 0.0044$
$A_{143 \times 217}^{\text{dust}TT}$	$18.6 \pm 3.2$	$10^5 \text{D/H}$	$2.535 \pm 0.051$	$\sigma_8(2.33)$	$0.3038 \pm 0.0048$
$A_{217}^{\text{dust}TT}$	$93.6 \pm 7.3$	$\text{Age/Gyr}$	$13.95 \pm 0.20$	$f_{2000}^{143}$	$29.9 \pm 3.1$
$A_{100}^{\text{dust}TE}$	$0.115 \pm 0.038$	$z_*$	$1089.52 \pm 0.37$	$f_{2000}^{143 \times 217}$	$32.4 \pm 2.2$
$A_{100 \times 143}^{\text{dust}TE}$	$0.134 \pm 0.030$	$r_*$	$146.1 \pm 1.9$	$f_{2000}^{217}$	$107.2 \pm 2.0$
$A_{100 \times 217}^{\text{dust}TE}$	$0.479 \pm 0.084$	$100\theta_*$	$1.04159 \pm 0.00059$	$\chi_{\text{lensing}}^2$	$9.07 \pm 0.62$
$A_{143}^{\text{dust}TE}$	$0.224 \pm 0.055$	$D_{\text{M}}(z_*)/\text{Gpc}$	$14.03 \pm 0.18$	$\chi_{\text{simall}}^2$	$397.2 \pm 1.8$
$A_{143 \times 217}^{\text{dust}TE}$	$0.661 \pm 0.081$	$z_{\text{drag}}$	$1059.53 \pm 0.72$	$\chi_{\text{lowl}}^2$	$22.4 \pm 1.5$
$A_{217}^{\text{dust}TE}$	$2.06 \pm 0.27$	$r_{\text{drag}}$	$148.8 \pm 2.0$	$\chi_{\text{plik}}^2$	$2360.5 \pm 6.1$
$c_{100}$	$0.99970 \pm 0.00061$	$k_{\text{D}}$	$0.1397 \pm 0.0014$	$\chi_{6\text{DF}}^2$	$0.097 \pm 0.096$
$c_{217}$	$0.99818 \pm 0.00062$	$100\theta_{\text{D}}$	$0.16033 \pm 0.00046$	$\chi_{\text{MGS}}^2$	$1.05 \pm 0.42$
$H_0$	$66.7 \pm 1.3$	$z_{\text{eq}}$	$3401 \pm 25$	$\chi_{\text{DR12BAO}}^2$	$5.7 \pm 1.9$
$\Omega_{\Lambda}$	$0.6853 \pm 0.0069$	$k_{\text{eq}}$	$0.01027^{+0.00011}_{-0.00012}$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.6$
$\Omega_{\text{m}}$	$0.3147 \pm 0.0069$	$100\theta_{\text{eq}}$	$0.8137 \pm 0.0047$	$\chi_{\text{CMB}}^2$	$2789.2 \pm 6.2$
$\Omega_{\text{m}}h^2$	$0.1399 \pm 0.0033$	$100\theta_{\text{s,eq}}$	$0.4496 \pm 0.0024$	$\chi_{\text{BAO}}^2$	$6.8 \pm 1.6$

$\bar{\chi}_{\text{eff}}^2 = 2807.49$ ;  $R - 1 = 0.04192$



# 11 nnu+yhe

## 11.1 base\_nnu\_yhe\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.021996	$0.02207 \pm 0.00032$	$S_8$	0.8463	$0.841 \pm 0.025$	$100\theta_{s,eq}$	0.4442	$0.4467 \pm 0.0075$
$\Omega_c h^2$	0.1168	$0.1190^{+0.0063}_{-0.0083}$	$\sigma_8 \Omega_m^{0.5}$	0.4635	$0.461 \pm 0.014$	$H(0.15)$	70.22	$71.5^{+3.0}_{-3.6}$
$100\theta_{MC}$	1.04151	$1.0413 \pm 0.0020$	$\sigma_8 \Omega_m^{0.25}$	0.6107	$0.610 \pm 0.012$	$D_M(0.15)$	667.1	$657 \pm 32$
$\tau$	0.0521	$0.0516 \pm 0.0081$	$\sigma_8/h^{0.5}$	0.9994	$0.994 \pm 0.017$	$H(0.38)$	80.47	$81.7^{+3.0}_{-3.6}$
$N_{eff}$	2.74	$2.92^{+0.44}_{-0.58}$	$r_{drag}h$	97.18	$98.0 \pm 2.4$	$D_M(0.38)$	1586	$1562 \pm 71$
$Y_P$	0.2526	$0.251^{+0.033}_{-0.029}$	$\langle d^2 \rangle^{1/2}$	2.4737	$2.459 \pm 0.046$	$H(0.51)$	87.25	$88.5^{+3.0}_{-3.7}$
$\ln(10^{10} A_s)$	3.0334	$3.036 \pm 0.023$	$z_{re}$	7.50	$7.44 \pm 0.85$	$D_M(0.51)$	2051	$2022 \pm 89$
$n_s$	0.9561	$0.960 \pm 0.014$	$10^9 A_s$	2.0768	$2.082 \pm 0.047$	$H(0.61)$	92.91	$94.1^{+3.1}_{-3.8}$
$y_{cal}$	1.00053	$1.0005 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8713	$1.878 \pm 0.027$	$D_M(0.61)$	2384	$2351 \pm 100$
$A_{217}^{CIB}$	47.0	$48 \pm 7$	$D_{40}$	1240.3	$1236 \pm 23$	$H(2.33)$	233.1	$235.1^{+5.7}_{-7.2}$
$\xi^{tSZ \times CIB}$	0.57	—	$D_{220}$	5708.2	$5712 \pm 42$	$D_M(2.33)$	5903	$5837 \pm 210$
$A_{143}^{tSZ}$	6.89	$5.0 \pm 2.0$	$D_{810}$	2537.2	$2536 \pm 14$	$f\sigma_8(0.15)$	0.4664	$0.464 \pm 0.012$
$A_{100}^{PS}$	250.5	$264 \pm 29$	$D_{1420}$	816.5	$814.3 \pm 5.3$	$\sigma_8(0.15)$	0.7417	$0.745 \pm 0.017$
$A_{143}^{PS}$	51.7	$50 \pm 9$	$D_{2000}$	230.78	$229.5 \pm 2.4$	$f\sigma_8(0.38)$	0.4801	$0.4790 \pm 0.0098$
$A_{143 \times 217}^{PS}$	52.6	$44 \pm 9$	$n_{s,0.002}$	0.9561	$0.960 \pm 0.014$	$\sigma_8(0.38)$	0.6553	$0.659 \pm 0.016$
$A_{217}^{PS}$	121.7	$115 \pm 10$	$Y_P$	0.2526	$0.251^{+0.033}_{-0.029}$	$f\sigma_8(0.51)$	0.4763	$0.4761 \pm 0.0091$
$A^{kSZ}$	0.01	$< 4.96$	$Y_P^{BBN}$	0.2540	$0.253^{+0.033}_{-0.029}$	$\sigma_8(0.51)$	0.6124	$0.616 \pm 0.015$
$A_{100}^{dustTT}$	8.82	$8.9 \pm 1.8$	Age/Gyr	14.127	$13.97 \pm 0.49$	$f\sigma_8(0.61)$	0.4698	$0.4701 \pm 0.0088$
$A_{143}^{dustTT}$	10.74	$10.7 \pm 1.8$	$z_*$	1090.28	$1090.41 \pm 0.72$	$\sigma_8(0.61)$	0.5822	$0.586 \pm 0.015$
$A_{143 \times 217}^{dustTT}$	19.63	$18.3 \pm 3.3$	$r_*$	147.06	$145.7^{+4.8}_{-4.3}$	$f\sigma_8(2.33)$	0.2928	$0.2950 \pm 0.0080$
$A_{217}^{dustTT}$	95.0	$93.4 \pm 7.3$	$100\theta_*$	1.04163	$1.0414 \pm 0.0014$	$\sigma_8(2.33)$	0.3010	$0.3037 \pm 0.0089$
$c_{100}$	0.99965	$0.99960 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	14.118	$13.99^{+0.44}_{-0.40}$	$f_{2000}^{143}$	29.44	$31 \pm 4$
$c_{217}$	0.99824	$0.99826 \pm 0.00062$	$z_{drag}$	1058.98	$1059.3 \pm 1.2$	$f_{2000}^{143 \times 217}$	32.67	$33.8 \pm 2.8$
$H_0$	64.84	$66.1^{+3.0}_{-3.6}$	$r_{drag}$	149.89	$148.5^{+4.9}_{-4.4}$	$f_{2000}^{217}$	107.11	$108.3 \pm 2.6$
$\Omega_\Lambda$	0.6682	$0.675^{+0.021}_{-0.019}$	$k_D$	0.13838	$0.1395^{+0.0037}_{-0.0046}$	$\chi_{small}^2$	395.90	$396.9 \pm 1.6$
$\Omega_m$	0.3318	$0.325 \pm 0.020$	$100\theta_D$	0.16080	$0.16110 \pm 0.00075$	$\chi_{lowl}^2$	24.59	$24.3 \pm 2.3$
$\Omega_m h^2$	0.1395	$0.1417^{+0.0063}_{-0.0084}$	$z_{eq}$	3457	$3432 \pm 84$	$\chi_{plik}^2$	757.4	$772.6 \pm 6.1$
$\Omega_m h^3$	0.0904	$0.0938^{+0.0076}_{-0.011}$	$k_{eq}$	0.010337	$0.01037^{+0.00019}_{-0.00024}$	$\chi_{prior}^2$	1.26	$7.3 \pm 3.6$
$\sigma_8$	0.8047	$0.808 \pm 0.017$	$100\theta_{eq}$	0.8028	$0.808 \pm 0.015$	$\chi_{CMB}^2$	1177.9	$1193.8 \pm 5.9$

Best-fit  $\chi_{eff}^2 = 1179.18$ ;  $\bar{\chi}_{eff}^2 = 1201.13$ ;  $R - 1 = 0.01463$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.90 commander\_dx12.v3.2\_29: 24.59 plik\_rd12\_HM.v22\_TT: 757.43



## 11.2 base\_nnu\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022258	$0.02226 \pm 0.00024$	$\sigma_8 \Omega_m^{0.25}$	0.6026	$0.606 \pm 0.011$	$D_M(0.38)$	1526.0	$1516 \pm 47$
$\Omega_c h^2$	0.1192	$0.1212^{+0.0062}_{-0.0081}$	$\sigma_8/h^{0.5}$	0.9814	$0.983 \pm 0.012$	$H(0.51)$	89.83	$90.5^{+2.3}_{-2.9}$
$100\theta_{MC}$	1.04105	$1.0408 \pm 0.0019$	$r_{drag}h$	99.88	$99.9 \pm 1.1$	$D_M(0.51)$	1977	$1964 \pm 60$
$\tau$	0.0533	$0.0539 \pm 0.0079$	$\langle d^2 \rangle^{1/2}$	2.4231	$2.426 \pm 0.028$	$H(0.61)$	95.44	$96.1^{+2.4}_{-3.0}$
$N_{eff}$	3.065	$3.18^{+0.39}_{-0.51}$	$z_{re}$	7.60	$7.66 \pm 0.82$	$D_M(0.61)$	2301	$2286 \pm 69$
$Y_P$	0.2473	$0.245^{+0.033}_{-0.029}$	$10^9 A_s$	2.0910	$2.100 \pm 0.042$	$H(2.33)$	236.0	$237.6^{+5.4}_{-6.7}$
$\ln(10^{10} A_s)$	3.0402	$3.044 \pm 0.020$	$10^9 A_s e^{-2\tau}$	1.8797	$1.886 \pm 0.024$	$D_M(2.33)$	5757	$5721^{+170}_{-150}$
$n_s$	0.9685	$0.9697 \pm 0.0087$	$D_{40}$	1221.8	$1222 \pm 17$	$f\sigma_8(0.15)$	0.4541	$0.4562 \pm 0.0090$
$y_{cal}$	1.00045	$1.0006 \pm 0.0025$	$D_{220}$	5718.4	$5719 \pm 41$	$\sigma_8(0.15)$	0.7469	$0.751 \pm 0.015$
$A_{217}^{CIB}$	50.2	$48 \pm 7$	$D_{810}$	2537.1	$2537 \pm 14$	$f\sigma_8(0.38)$	0.4729	$0.4752 \pm 0.0089$
$\xi^{tSZ \times CIB}$	0.11	—	$D_{1420}$	815.9	$814.8 \pm 5.4$	$\sigma_8(0.38)$	0.6623	$0.666 \pm 0.014$
$A_{143}^{tSZ}$	7.13	$5.0 \pm 2.0$	$D_{2000}$	229.94	$229.3 \pm 2.4$	$f\sigma_8(0.51)$	0.4718	$0.4741 \pm 0.0089$
$A_{100}^{PS}$	256.4	$266 \pm 29$	$n_{s,0.002}$	0.9685	$0.9697 \pm 0.0087$	$\sigma_8(0.51)$	0.6199	$0.623 \pm 0.013$
$A_{143}^{PS}$	46.6	$50 \pm 9$	$Y_P$	0.2473	$0.245^{+0.033}_{-0.029}$	$f\sigma_8(0.61)$	0.4670	$0.4694 \pm 0.0088$
$A_{143 \times 217}^{PS}$	41.4	$44^{+9}_{-10}$	$Y_P^{BBN}$	0.2487	$0.246^{+0.033}_{-0.029}$	$\sigma_8(0.61)$	0.5899	$0.593 \pm 0.013$
$A_{217}^{PS}$	116.9	$115 \pm 10$	Age/Gyr	13.782	$13.70^{+0.40}_{-0.36}$	$f\sigma_8(2.33)$	0.2975	$0.2993 \pm 0.0064$
$A^{kSZ}$	0.00	$< 5.09$	$z_*$	1090.08	$1090.21 \pm 0.68$	$\sigma_8(2.33)$	0.3068	$0.3087 \pm 0.0069$
$A_{100}^{dustTT}$	8.95	$9.0 \pm 1.8$	$r_*$	144.62	$143.7^{+4.1}_{-3.7}$	$f_{2000}^{143}$	30.68	$32 \pm 4$
$A_{143}^{dustTT}$	10.80	$10.8 \pm 1.8$	$100\theta_*$	1.04118	$1.0409 \pm 0.0013$	$f_{2000}^{143 \times 217}$	33.37	$34.0 \pm 2.9$
$A_{143 \times 217}^{dustTT}$	19.14	$18.4 \pm 3.3$	$D_M(z_*)/\text{Gpc}$	13.890	$13.81^{+0.38}_{-0.34}$	$f_{2000}^{217}$	107.90	$108.4 \pm 2.6$
$A_{217}^{dustTT}$	94.1	$93.4 \pm 7.4$	$z_{drag}$	1059.70	$1059.8 \pm 1.1$	$\chi_{small}^2$	395.88	$397.0 \pm 1.8$
$c_{100}$	0.99964	$0.99962 \pm 0.00061$	$r_{drag}$	147.32	$146.4^{+4.2}_{-3.8}$	$\chi_{lowl}^2$	22.69	$22.8 \pm 1.3$
$c_{217}$	0.99827	$0.99828 \pm 0.00062$	$k_D$	0.14040	$0.1412^{+0.0034}_{-0.0042}$	$\chi_{plik}^2$	760.2	$774.2 \pm 5.9$
$H_0$	67.80	$68.3^{+2.0}_{-2.4}$	$100\theta_D$	0.16110	$0.16125 \pm 0.00074$	$\chi_{6DF}^2$	0.0154	$0.059 \pm 0.080$
$\Omega_\Lambda$	0.6908	$0.6913 \pm 0.0086$	$z_{eq}$	3372.3	$3368 \pm 44$	$\chi_{MGS}^2$	1.34	$1.45 \pm 0.60$
$\Omega_m$	0.3092	$0.3087 \pm 0.0086$	$k_{eq}$	0.010306	$0.01037^{+0.00020}_{-0.00025}$	$\chi_{DR12BAO}^2$	4.04	$4.7 \pm 1.6$
$\Omega_m h^2$	0.1421	$0.1441^{+0.0062}_{-0.0081}$	$100\theta_{eq}$	0.8185	$0.8192 \pm 0.0074$	$\chi_{prior}^2$	1.52	$7.3 \pm 3.6$
$\Omega_m h^3$	0.0964	$0.0986^{+0.0066}_{-0.0091}$	$100\theta_{s,eq}$	0.45217	$0.4525 \pm 0.0038$	$\chi_{BAO}^2$	5.39	$6.2 \pm 1.4$
$\sigma_8$	0.8080	$0.813 \pm 0.016$	$H(0.15)$	73.06	$73.6^{+2.1}_{-2.5}$	$\chi_{CMB}^2$	1178.8	$1194.0 \pm 5.9$
$S_8$	0.8204	$0.824 \pm 0.017$	$D_M(0.15)$	639.6	$635 \pm 20$			
$\sigma_8 \Omega_m^{0.5}$	0.4493	$0.4514 \pm 0.0092$	$H(0.38)$	83.13	$83.7^{+2.2}_{-2.7}$			

Best-fit  $\chi_{eff}^2 = 1185.69$ ;  $\bar{\chi}_{eff}^2 = 1207.58$ ;  $R - 1 = 0.02042$

$\chi_{eff}^2$ : BAO - 6DF: 0.01 MGS: 1.34 DR12BAO: 4.04 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.88 commander\_dx12\_v3.2.29: 22.69 plik\_rd12\_HM\_v22.TT: 760.21



### 11.3 base\_nnu\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022005	$0.02207 \pm 0.00030$	$\sigma_8 \Omega_m^{0.5}$	0.4582	$0.4576 \pm 0.0090$	$D_M(0.15)$	671.6	$661 \pm 29$
$\Omega_c h^2$	0.1145	$0.1170^{+0.0060}_{-0.0077}$	$\sigma_8 \Omega_m^{0.25}$	0.6043	$0.6061 \pm 0.0089$	$H(0.38)$	79.90	$81.1^{+2.8}_{-3.3}$
$100\theta_{MC}$	1.04200	$1.0417 \pm 0.0019$	$\sigma_8/h^{0.5}$	0.9930	$0.992 \pm 0.012$	$D_M(0.38)$	1597	$1573 \pm 66$
$\tau$	0.0502	$0.0514 \pm 0.0080$	$r_{drag}h$	97.35	$98.0 \pm 1.9$	$H(0.51)$	86.62	$87.8^{+2.9}_{-3.4}$
$N_{eff}$	2.627	$2.81^{+0.43}_{-0.54}$	$\langle d^2 \rangle^{1/2}$	2.4621	$2.455 \pm 0.032$	$D_M(0.51)$	2066	$2036 \pm 83$
$Y_P$	0.2565	$0.256^{+0.032}_{-0.028}$	$z_{re}$	7.27	$7.40 \pm 0.83$	$H(0.61)$	92.22	$93.5^{+2.9}_{-3.4}$
$\ln(10^{10} A_s)$	3.0242	$3.031 \pm 0.022$	$10^9 A_s$	2.0578	$2.073 \pm 0.046$	$D_M(0.61)$	2401	$2367 \pm 94$
$n_s$	0.9547	$0.959 \pm 0.012$	$10^9 A_s e^{-2\tau}$	1.8613	$1.871 \pm 0.026$	$H(2.33)$	231.3	$233.4^{+5.5}_{-6.7}$
$y_{cal}$	1.00029	$1.0004 \pm 0.0025$	$D_{40}$	1239.1	$1235 \pm 19$	$D_M(2.33)$	5948	$5878 \pm 200$
$A_{217}^{CIB}$	46.5	$48 \pm 7$	$D_{220}$	5710.9	$5714 \pm 42$	$f\sigma_8(0.15)$	0.4612	$0.4610 \pm 0.0081$
$\xi^{tSZ \times CIB}$	0.62	—	$D_{810}$	2534.9	$2535 \pm 14$	$\sigma_8(0.15)$	0.7346	$0.741 \pm 0.016$
$A_{143}^{tSZ}$	6.87	$5.0 \pm 2.0$	$D_{1420}$	816.6	$814.5 \pm 5.4$	$f\sigma_8(0.38)$	0.4750	$0.4762 \pm 0.0070$
$A_{100}^{PS}$	250.2	$263 \pm 29$	$D_{2000}$	230.93	$229.6 \pm 2.4$	$\sigma_8(0.38)$	0.6492	$0.655 \pm 0.015$
$A_{143}^{PS}$	52.2	$49 \pm 9$	$n_{s,0.002}$	0.9547	$0.959 \pm 0.012$	$f\sigma_8(0.51)$	0.4714	$0.4732 \pm 0.0070$
$A_{143 \times 217}^{PS}$	53.5	$44 \pm 9$	$Y_P$	0.2565	$0.256^{+0.032}_{-0.028}$	$\sigma_8(0.51)$	0.6067	$0.613 \pm 0.015$
$A_{217}^{PS}$	122.2	$115 \pm 10$	$Y_P^{BBN}$	0.2579	$0.257^{+0.032}_{-0.028}$	$f\sigma_8(0.61)$	0.4651	$0.4673 \pm 0.0073$
$A^{kSZ}$	0.00	$< 4.92$	Age/Gyr	14.234	$14.07 \pm 0.47$	$\sigma_8(0.61)$	0.5768	$0.583 \pm 0.014$
$A_{100}^{dustTT}$	8.83	$8.9 \pm 1.8$	$z_*$	1090.17	$1090.36 \pm 0.70$	$f\sigma_8(2.33)$	0.2902	$0.2933 \pm 0.0076$
$A_{143}^{dustTT}$	10.81	$10.7 \pm 1.8$	$r_*$	148.29	$146.8 \pm 4.4$	$\sigma_8(2.33)$	0.2983	$0.3018 \pm 0.0085$
$A_{143 \times 217}^{dustTT}$	19.83	$18.3 \pm 3.3$	$100\theta_*$	1.04205	$1.0417 \pm 0.0013$	$f_{2000}^{143}$	29.35	$31 \pm 4$
$A_{217}^{dustTT}$	95.4	$93.4 \pm 7.2$	$D_M(z_*)/\text{Gpc}$	14.231	$14.09 \pm 0.40$	$f_{2000}^{143 \times 217}$	32.56	$33.7 \pm 2.8$
$c_{100}$	0.99966	$0.99959 \pm 0.00062$	$z_{drag}$	1058.90	$1059.3 \pm 1.2$	$f_{2000}^{217}$	106.95	$108.2 \pm 2.6$
$c_{217}$	0.99822	$0.99827 \pm 0.00062$	$r_{drag}$	151.14	$149.6 \pm 4.5$	$\chi_{lensing}^2$	8.48	$9.3 \pm 1.0$
$H_0$	64.41	$65.6^{+2.8}_{-3.2}$	$k_D$	0.13737	$0.1385^{+0.0036}_{-0.0043}$	$\chi_{simall}^2$	395.70	$396.8 \pm 1.5$
$\Omega_\Lambda$	0.6694	$0.675^{+0.018}_{-0.016}$	$100\theta_D$	0.16070	$0.16105 \pm 0.00074$	$\chi_{lowl}^2$	24.56	$24.3 \pm 2.0$
$\Omega_m$	0.3306	$0.325 \pm 0.017$	$z_{eq}$	3457	$3435 \pm 72$	$\chi_{plik}^2$	757.9	$772.0 \pm 5.8$
$\Omega_m h^2$	0.1372	$0.1397^{+0.0061}_{-0.0077}$	$k_{eq}$	0.010251	$0.01031^{+0.00017}_{-0.00021}$	$\chi_{prior}^2$	1.16	$7.3 \pm 3.6$
$\Omega_m h^3$	0.0884	$0.0918^{+0.0072}_{-0.0096}$	$100\theta_{eq}$	0.8031	$0.807 \pm 0.012$	$\chi_{CMB}^2$	1186.7	$1202.4 \pm 5.9$
$\sigma_8$	0.7969	$0.803 \pm 0.016$	$100\theta_{s,eq}$	0.4443	$0.4465 \pm 0.0064$			
$S_8$	0.8366	$0.836 \pm 0.017$	$H(0.15)$	69.74	$70.9^{+2.8}_{-3.2}$			

Best-fit  $\chi_{eff}^2 = 1187.84$ ;  $\bar{\chi}_{eff}^2 = 1209.69$ ;  $R - 1 = 0.01748$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consect8: 8.48 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.70 commander\_dx12\_v3.2\_29: 24.56 plik\_rd12\_HM.v22\_TT: 757.94



#### 11.4 base\_nnu\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022245	$0.02226 \pm 0.00024$	$\sigma_8 \Omega_m^{0.5}$	0.4511	$0.4517 \pm 0.0071$	$D_M(0.15)$	641.9	$639 \pm 20$
$\Omega_c h^2$	0.1190	$0.1200^{+0.0058}_{-0.0072}$	$\sigma_8 \Omega_m^{0.25}$	0.6040	$0.6053 \pm 0.0089$	$H(0.38)$	82.90	$83.3^{+2.1}_{-2.5}$
$100\theta_{MC}$	1.04108	$1.0410 \pm 0.0018$	$\sigma_8/h^{0.5}$	0.9842	$0.9847 \pm 0.0095$	$D_M(0.38)$	1531.0	$1525 \pm 45$
$\tau$	0.0544	$0.0550 \pm 0.0073$	$r_{drag}h$	99.65	$99.8 \pm 1.0$	$H(0.51)$	89.61	$90.0^{+2.2}_{-2.6}$
$N_{eff}$	3.036	$3.10^{+0.37}_{-0.46}$	$\langle d^2 \rangle^{1/2}$	2.4306	$2.432 \pm 0.023$	$D_M(0.51)$	1983	$1976 \pm 58$
$Y_P$	0.2473	$0.247^{+0.031}_{-0.028}$	$z_{re}$	7.71	$7.77 \pm 0.74$	$H(0.61)$	95.22	$95.6^{+2.3}_{-2.7}$
$\ln(10^{10} A_s)$	3.0425	$3.045 \pm 0.017$	$10^9 A_s$	2.0957	$2.102 \pm 0.036$	$D_M(0.61)$	2308	$2299 \pm 66$
$n_s$	0.9675	$0.9682 \pm 0.0085$	$10^9 A_s e^{-2\tau}$	1.8796	$1.883 \pm 0.022$	$H(2.33)$	235.8	$236.6^{+5.0}_{-6.0}$
$y_{cal}$	1.00046	$1.0007 \pm 0.0025$	$D_{40}$	1224.0	$1225 \pm 17$	$D_M(2.33)$	5769	$5749 \pm 150$
$A_{217}^{CIB}$	48.4	$48 \pm 7$	$D_{220}$	5720.0	$5723 \pm 41$	$f\sigma_8(0.15)$	0.4557	$0.4564 \pm 0.0069$
$\xi^{tSZ \times CIB}$	0.34	—	$D_{810}$	2538.3	$2538 \pm 14$	$\sigma_8(0.15)$	0.7475	$0.750 \pm 0.013$
$A_{143}^{tSZ}$	7.06	$5.0 \pm 2.0$	$D_{1420}$	816.5	$815.2 \pm 5.4$	$f\sigma_8(0.38)$	0.4741	$0.4751 \pm 0.0070$
$A_{100}^{PS}$	252.8	$266 \pm 29$	$D_{2000}$	230.28	$229.6 \pm 2.4$	$\sigma_8(0.38)$	0.6626	$0.665 \pm 0.012$
$A_{143}^{PS}$	49.2	$50 \pm 9$	$n_{s,0.002}$	0.9675	$0.9682 \pm 0.0085$	$f\sigma_8(0.51)$	0.4728	$0.4738 \pm 0.0070$
$A_{143 \times 217}^{PS}$	47.3	$44 \pm 9$	$Y_P$	0.2473	$0.247^{+0.031}_{-0.028}$	$\sigma_8(0.51)$	0.6201	$0.622 \pm 0.011$
$A_{217}^{PS}$	119.8	$115 \pm 10$	$Y_P^{BBN}$	0.2487	$0.249^{+0.031}_{-0.029}$	$f\sigma_8(0.61)$	0.4678	$0.4690 \pm 0.0071$
$A^{kSZ}$	0.00	$< 5.01$	Age/Gyr	13.812	$13.76 \pm 0.36$	$\sigma_8(0.61)$	0.5901	$0.592 \pm 0.011$
$A_{100}^{dustTT}$	8.90	$8.9 \pm 1.8$	$z_*$	1090.07	$1090.19 \pm 0.68$	$f\sigma_8(2.33)$	0.2975	$0.2986 \pm 0.0057$
$A_{143}^{dustTT}$	10.75	$10.7 \pm 1.8$	$r_*$	144.83	$144.4 \pm 3.7$	$\sigma_8(2.33)$	0.3068	$0.3079 \pm 0.0062$
$A_{143 \times 217}^{dustTT}$	19.37	$18.3 \pm 3.3$	$100\theta_*$	1.04123	$1.0411 \pm 0.0012$	$\chi^2_{lensing}$	8.87	$9.43 \pm 0.85$
$A_{217}^{dustTT}$	94.6	$93.3 \pm 7.5$	$D_M(z_*)/\text{Gpc}$	13.909	$13.87 \pm 0.34$	$\chi^2_{small}$	396.08	$397.1 \pm 1.7$
$c_{100}$	0.99968	$0.99962 \pm 0.00061$	$z_{drag}$	1059.63	$1059.8 \pm 1.1$	$\chi^2_{lowl}$	22.88	$23.0 \pm 1.3$
$c_{217}$	0.99826	$0.99828 \pm 0.00062$	$r_{drag}$	147.54	$147.1 \pm 3.7$	$\chi^2_{plik}$	759.9	$773.4 \pm 5.8$
$H_0$	67.54	$67.9^{+1.9}_{-2.3}$	$k_D$	0.14025	$0.1406^{+0.0032}_{-0.0038}$	$\chi^2_{6DF}$	0.0290	$0.064 \pm 0.084$
$\Omega_\Lambda$	0.6890	$0.6898 \pm 0.0083$	$100\theta_D$	0.16104	$0.16120 \pm 0.00074$	$\chi^2_{MGS}$	1.22	$1.36 \pm 0.56$
$\Omega_m$	0.3110	$0.3102 \pm 0.0083$	$z_{eq}$	3379.7	$3376 \pm 44$	$\chi^2_{DR12BAO}$	4.36	$4.9 \pm 1.7$
$\Omega_m h^2$	0.1419	$0.1429^{+0.0058}_{-0.0072}$	$k_{eq}$	0.010308	$0.01034^{+0.00018}_{-0.00021}$	$\chi^2_{prior}$	1.32	$7.3 \pm 3.7$
$\Omega_m h^3$	0.0958	$0.0972^{+0.0063}_{-0.0082}$	$100\theta_{eq}$	0.8171	$0.8179 \pm 0.0072$	$\chi^2_{CMB}$	1187.7	$1202.9 \pm 5.9$
$\sigma_8$	0.8088	$0.811 \pm 0.014$	$100\theta_{s,eq}$	0.45146	$0.4518 \pm 0.0037$	$\chi^2_{BAO}$	5.61	$6.3 \pm 1.4$
$S_8$	0.8236	$0.825 \pm 0.013$	$H(0.15)$	72.81	$73.2^{+2.0}_{-2.4}$			

Best-fit  $\chi^2_{eff} = 1194.67$ ;  $\bar{\chi}^2_{eff} = 1216.49$ ;  $R - 1 = 0.01644$   
 $\chi^2_{eff}$ : BAO - 6DF: 0.03 MGS: 1.22 DR12BAO: 4.36 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.87 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.08 comman-  
der\_dx12\_v3\_2\_29: 22.88 plik\_rd12\_HM\_v22\_TT: 759.91



# 11.5 base\_nnu\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02210 \pm 0.00032$	$S_8$	$0.841 \pm 0.025$	$100\theta_{s,eq}$	$0.4472 \pm 0.0074$
$\Omega_c h^2$	$0.1191^{+0.0062}_{-0.0083}$	$\sigma_8 \Omega_m^{0.5}$	$0.460 \pm 0.014$	$H(0.15)$	$71.6^{+2.9}_{-3.6}$
$100\theta_{MC}$	$1.0413 \pm 0.0020$	$\sigma_8 \Omega_m^{0.25}$	$0.611 \pm 0.012$	$D_M(0.15)$	$655 \pm 31$
$\tau$	$0.0535^{+0.0044}_{-0.0085}$	$\sigma_8/h^{0.5}$	$0.995 \pm 0.017$	$H(0.38)$	$81.9^{+2.9}_{-3.6}$
$N_{eff}$	$2.94^{+0.44}_{-0.58}$	$r_{drag}h$	$98.2 \pm 2.3$	$D_M(0.38)$	$1558 \pm 70$
$Y_P$	$0.251^{+0.033}_{-0.029}$	$\langle d^2 \rangle^{1/2}$	$2.460 \pm 0.046$	$H(0.51)$	$88.7^{+3.0}_{-3.7}$
$\ln(10^{10} A_s)$	$3.040 \pm 0.020$	$z_{re}$	$7.65^{+0.49}_{-0.87}$	$D_M(0.51)$	$2017 \pm 88$
$n_s$	$0.961 \pm 0.013$	$10^9 A_s$	$2.091^{+0.038}_{-0.043}$	$H(0.61)$	$94.3^{+3.0}_{-3.8}$
$y_{cal}$	$1.0005 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.879 \pm 0.027$	$D_M(0.61)$	$2345 \pm 100$
$A_{217}^{CIB}$	$48 \pm 7$	$D_{40}$	$1235 \pm 22$	$H(2.33)$	$235.3^{+5.7}_{-7.2}$
$\xi^{tSZ \times CIB}$	—	$D_{220}$	$5712 \pm 42$	$D_M(2.33)$	$5827 \pm 210$
$A_{143}^{tSZ}$	$5.0 \pm 2.0$	$D_{810}$	$2536 \pm 14$	$f\sigma_8(0.15)$	$0.464 \pm 0.012$
$A_{100}^{PS}$	$264 \pm 29$	$D_{1420}$	$814.3 \pm 5.3$	$\sigma_8(0.15)$	$0.747^{+0.015}_{-0.017}$
$A_{143}^{PS}$	$50 \pm 9$	$D_{2000}$	$229.5 \pm 2.4$	$f\sigma_8(0.38)$	$0.4795 \pm 0.0098$
$A_{143 \times 217}^{PS}$	$44^{+9}_{-10}$	$n_{s,0.002}$	$0.961 \pm 0.013$	$\sigma_8(0.38)$	$0.661^{+0.014}_{-0.016}$
$A_{217}^{PS}$	$115 \pm 10$	$Y_P$	$0.251^{+0.033}_{-0.029}$	$f\sigma_8(0.51)$	$0.4767 \pm 0.0090$
$A^{kSZ}$	$< 4.97$	$Y_P^{BBN}$	$0.253^{+0.033}_{-0.029}$	$\sigma_8(0.51)$	$0.618^{+0.014}_{-0.015}$
$A_{100}^{dustTT}$	$8.9 \pm 1.8$	Age/Gyr	$13.95 \pm 0.49$	$f\sigma_8(0.61)$	$0.4708 \pm 0.0087$
$A_{143}^{dustTT}$	$10.7 \pm 1.8$	$z_*$	$1090.40 \pm 0.72$	$\sigma_8(0.61)$	$0.588^{+0.013}_{-0.015}$
$A_{143 \times 217}^{dustTT}$	$18.3 \pm 3.3$	$r_*$	$145.6^{+4.8}_{-4.3}$	$f\sigma_8(2.33)$	$0.2959^{+0.0071}_{-0.0080}$
$A_{217}^{dustTT}$	$93.4 \pm 7.3$	$100\theta_*$	$1.0413 \pm 0.0014$	$\sigma_8(2.33)$	$0.3046^{+0.0079}_{-0.0089}$
$c_{100}$	$0.99960 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	$13.98^{+0.44}_{-0.39}$	$f_{2000}^{143}$	$31 \pm 4$
$c_{217}$	$0.99826 \pm 0.00062$	$z_{drag}$	$1059.4 \pm 1.2$	$f_{2000}^{143 \times 217}$	$33.8 \pm 2.9$
$H_0$	$66.3^{+3.0}_{-3.6}$	$r_{drag}$	$148.4^{+4.9}_{-4.4}$	$f_{2000}^{217}$	$108.3 \pm 2.6$
$\Omega_\Lambda$	$0.676 \pm 0.020$	$k_D$	$0.1396^{+0.0037}_{-0.0046}$	$\chi_{small}^2$	$396.8 \pm 1.6$
$\Omega_m$	$0.324 \pm 0.020$	$100\theta_D$	$0.16112 \pm 0.00075$	$\chi_{lowl}^2$	$24.2 \pm 2.3$
$\Omega_m h^2$	$0.1419^{+0.0063}_{-0.0084}$	$z_{eq}$	$3427 \pm 83$	$\chi_{plik}^2$	$772.5 \pm 6.2$
$\Omega_m h^3$	$0.0942^{+0.0075}_{-0.011}$	$k_{eq}$	$0.01037^{+0.00019}_{-0.00024}$	$\chi_{prior}^2$	$7.3 \pm 3.6$
$\sigma_8$	$0.810^{+0.015}_{-0.017}$	$100\theta_{eq}$	$0.809 \pm 0.014$	$\chi_{CMB}^2$	$1193.5 \pm 5.8$

$\bar{\chi}_{eff}^2 = 1200.83$ ;  $R - 1 = 0.01329$



## 11.6 base\_nnu\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02227 \pm 0.00024$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.606^{+0.010}_{-0.012}$	$D_{\text{M}}(0.38)$	$1516 \pm 47$
$\Omega_{\text{c}}h^2$	$0.1211^{+0.0062}_{-0.0080}$	$\sigma_8/h^{0.5}$	$0.984 \pm 0.011$	$H(0.51)$	$90.5^{+2.3}_{-2.8}$
$100\theta_{\text{MC}}$	$1.0408 \pm 0.0019$	$r_{\text{drag}}h$	$99.96 \pm 1.1$	$D_{\text{M}}(0.51)$	$1964 \pm 60$
$\tau$	$0.0551^{+0.0056}_{-0.0078}$	$\langle d^2 \rangle^{1/2}$	$2.429 \pm 0.027$	$H(0.61)$	$96.1^{+2.4}_{-3.0}$
$N_{\text{eff}}$	$3.18^{+0.39}_{-0.50}$	$z_{\text{re}}$	$7.79^{+0.59}_{-0.81}$	$D_{\text{M}}(0.61)$	$2286 \pm 69$
$Y_{\text{P}}$	$0.245^{+0.032}_{-0.029}$	$10^9 A_{\text{s}}$	$2.105^{+0.033}_{-0.041}$	$H(2.33)$	$237.5^{+5.4}_{-6.6}$
$\ln(10^{10} A_{\text{s}})$	$3.047^{+0.016}_{-0.019}$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.886 \pm 0.024$	$D_{\text{M}}(2.33)$	$5721 \pm 160$
$n_{\text{s}}$	$0.9699 \pm 0.0087$	$D_{40}$	$1222 \pm 17$	$f\sigma_8(0.15)$	$0.4566^{+0.0083}_{-0.0093}$
$y_{\text{cal}}$	$1.0006 \pm 0.0025$	$D_{220}$	$5719 \pm 41$	$\sigma_8(0.15)$	$0.752^{+0.014}_{-0.016}$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{810}$	$2537 \pm 14$	$f\sigma_8(0.38)$	$0.4757^{+0.0081}_{-0.0093}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$814.8 \pm 5.4$	$\sigma_8(0.38)$	$0.667^{+0.012}_{-0.014}$
$A_{143}^{\text{tSZ}}$	$5.0 \pm 2.0$	$D_{2000}$	$229.3 \pm 2.4$	$f\sigma_8(0.51)$	$0.4746^{+0.0080}_{-0.0092}$
$A_{100}^{\text{PS}}$	$266 \pm 29$	$n_{\text{s},0.002}$	$0.9699 \pm 0.0087$	$\sigma_8(0.51)$	$0.624^{+0.012}_{-0.013}$
$A_{143}^{\text{PS}}$	$50 \pm 9$	$Y_{\text{P}}$	$0.245^{+0.032}_{-0.029}$	$f\sigma_8(0.61)$	$0.4699^{+0.0079}_{-0.0092}$
$A_{143 \times 217}^{\text{PS}}$	$44^{+9}_{-10}$	$Y_{\text{P}}^{\text{BBN}}$	$0.247^{+0.032}_{-0.029}$	$\sigma_8(0.61)$	$0.594^{+0.011}_{-0.013}$
$A_{217}^{\text{PS}}$	$115 \pm 10$	Age/Gyr	$13.70 \pm 0.38$	$f\sigma_8(2.33)$	$0.2997^{+0.0058}_{-0.0066}$
$A^{\text{kSZ}}$	$< 5.05$	$z_*$	$1090.21 \pm 0.68$	$\sigma_8(2.33)$	$0.3091^{+0.0062}_{-0.0071}$
$A_{100}^{\text{dustTT}}$	$9.0 \pm 1.8$	$r_*$	$143.7 \pm 3.9$	$f_{2000}^{143}$	$32 \pm 4$
$A_{143}^{\text{dustTT}}$	$10.8 \pm 1.8$	$100\theta_*$	$1.0409 \pm 0.0013$	$f_{2000}^{143 \times 217}$	$33.9 \pm 2.9$
$A_{143 \times 217}^{\text{dustTT}}$	$18.4 \pm 3.3$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.81^{+0.38}_{-0.34}$	$f_{2000}^{217}$	$108.4 \pm 2.6$
$A_{217}^{\text{dustTT}}$	$93.4 \pm 7.4$	$z_{\text{drag}}$	$1059.8 \pm 1.1$	$\chi_{\text{simall}}^2$	$397.0 \pm 1.8$
$c_{100}$	$0.99962 \pm 0.00061$	$r_{\text{drag}}$	$146.4 \pm 4.0$	$\chi_{\text{lowl}}^2$	$22.8 \pm 1.3$
$c_{217}$	$0.99828 \pm 0.00062$	$k_{\text{D}}$	$0.1412^{+0.0034}_{-0.0041}$	$\chi_{\text{plik}}^2$	$774.0 \pm 5.9$
$H_0$	$68.3^{+2.0}_{-2.4}$	$100\theta_{\text{D}}$	$0.16126 \pm 0.00074$	$\chi_{6\text{DF}}^2$	$0.058 \pm 0.079$
$\Omega_{\Lambda}$	$0.6915 \pm 0.0086$	$z_{\text{eq}}$	$3368 \pm 44$	$\chi_{\text{MGS}}^2$	$1.47 \pm 0.60$
$\Omega_{\text{m}}$	$0.3085 \pm 0.0086$	$k_{\text{eq}}$	$0.01036^{+0.00020}_{-0.00024}$	$\chi_{\text{DR12BAO}}^2$	$4.7 \pm 1.6$
$\Omega_{\text{m}}h^2$	$0.1440^{+0.0062}_{-0.0080}$	$100\theta_{\text{eq}}$	$0.8193 \pm 0.0074$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.6$
$\Omega_{\text{m}}h^3$	$0.0986^{+0.0067}_{-0.0090}$	$100\theta_{\text{s,eq}}$	$0.4526 \pm 0.0038$	$\chi_{\text{BAO}}^2$	$6.2 \pm 1.3$
$\sigma_8$	$0.813^{+0.014}_{-0.017}$	$H(0.15)$	$73.6^{+2.1}_{-2.5}$	$\chi_{\text{CMB}}^2$	$1193.8 \pm 5.8$
$S_8$	$0.825^{+0.016}_{-0.017}$	$D_{\text{M}}(0.15)$	$635 \pm 20$		
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4518^{+0.0085}_{-0.0095}$	$H(0.38)$	$83.8^{+2.2}_{-2.7}$		

$\bar{\chi}_{\text{eff}}^2 = 1207.34$ ;  $R - 1 = 0.02392$



## 11.7 base\_nnu\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02210 \pm 0.00029$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4572 \pm 0.0090$	$D_{\text{M}}(0.15)$	$659 \pm 28$
$\Omega_{\text{c}}h^2$	$0.1171^{+0.0060}_{-0.0076}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6065 \pm 0.0089$	$H(0.38)$	$81.3^{+2.7}_{-3.2}$
$100\theta_{\text{MC}}$	$1.0416 \pm 0.0019$	$\sigma_8/h^{0.5}$	$0.992 \pm 0.012$	$D_{\text{M}}(0.38)$	$1568 \pm 64$
$\tau$	$0.0533^{+0.0045}_{-0.0082}$	$r_{\text{drag}}h$	$98.3 \pm 1.9$	$H(0.51)$	$88.0^{+2.8}_{-3.3}$
$N_{\text{eff}}$	$2.83^{+0.42}_{-0.53}$	$\langle d^2 \rangle^{1/2}$	$2.455 \pm 0.032$	$D_{\text{M}}(0.51)$	$2030 \pm 81$
$Y_{\text{P}}$	$0.255^{+0.032}_{-0.028}$	$z_{\text{re}}$	$7.61^{+0.47}_{-0.86}$	$H(0.61)$	$93.7^{+2.9}_{-3.4}$
$\ln(10^{10}A_{\text{s}})$	$3.036 \pm 0.019$	$10^9 A_{\text{s}}$	$2.082 \pm 0.041$	$D_{\text{M}}(0.61)$	$2360 \pm 92$
$n_{\text{s}}$	$0.960 \pm 0.012$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.871 \pm 0.026$	$H(2.33)$	$233.6^{+5.5}_{-6.6}$
$y_{\text{cal}}$	$1.0005 \pm 0.0025$	$D_{40}$	$1234 \pm 19$	$D_{\text{M}}(2.33)$	$5866 \pm 190$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{220}$	$5714 \pm 42$	$f\sigma_8(0.15)$	$0.4608 \pm 0.0081$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{810}$	$2535 \pm 14$	$\sigma_8(0.15)$	$0.742 \pm 0.015$
$A_{143}^{\text{tSZ}}$	$5.0 \pm 2.0$	$D_{1420}$	$814.5 \pm 5.4$	$f\sigma_8(0.38)$	$0.4764 \pm 0.0070$
$A_{100}^{\text{PS}}$	$264 \pm 29$	$D_{2000}$	$229.6 \pm 2.4$	$\sigma_8(0.38)$	$0.657 \pm 0.014$
$A_{143}^{\text{PS}}$	$49 \pm 9$	$n_{\text{s},0.002}$	$0.960 \pm 0.012$	$f\sigma_8(0.51)$	$0.4737 \pm 0.0069$
$A_{143 \times 217}^{\text{PS}}$	$44 \pm 9$	$Y_{\text{P}}$	$0.255^{+0.032}_{-0.028}$	$\sigma_8(0.51)$	$0.614 \pm 0.014$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$Y_{\text{P}}^{\text{BBN}}$	$0.257^{+0.032}_{-0.029}$	$f\sigma_8(0.61)$	$0.4679 \pm 0.0071$
$A^{\text{kSZ}}$	$< 4.93$	Age/Gyr	$14.04 \pm 0.46$	$\sigma_8(0.61)$	$0.584 \pm 0.014$
$A_{100}^{\text{dust}TT}$	$8.9 \pm 1.8$	$z_*$	$1090.34 \pm 0.70$	$f\sigma_8(2.33)$	$0.2942 \pm 0.0073$
$A_{143}^{\text{dust}TT}$	$10.7 \pm 1.8$	$r_*$	$146.6 \pm 4.3$	$\sigma_8(2.33)$	$0.3028 \pm 0.0081$
$A_{143 \times 217}^{\text{dust}TT}$	$18.3 \pm 3.3$	$100\theta_*$	$1.0416 \pm 0.0013$	$f_{2000}^{143}$	$31 \pm 4$
$A_{217}^{\text{dust}TT}$	$93.4 \pm 7.2$	$D_{\text{M}}(z_*)/\text{Gpc}$	$14.08 \pm 0.40$	$f_{2000}^{143 \times 217}$	$33.7 \pm 2.8$
$c_{100}$	$0.99960 \pm 0.00062$	$z_{\text{drag}}$	$1059.4 \pm 1.2$	$f_{2000}^{217}$	$108.2 \pm 2.6$
$c_{217}$	$0.99827 \pm 0.00062$	$r_{\text{drag}}$	$149.4 \pm 4.4$	$\chi_{\text{lensing}}^2$	$9.3 \pm 1.0$
$H_0$	$65.8^{+2.7}_{-3.1}$	$k_{\text{D}}$	$0.1387^{+0.0036}_{-0.0043}$	$\chi_{\text{simall}}^2$	$396.7 \pm 1.5$
$\Omega_{\Lambda}$	$0.677 \pm 0.016$	$100\theta_{\text{D}}$	$0.16107 \pm 0.00074$	$\chi_{\text{lowl}}^2$	$24.1 \pm 1.9$
$\Omega_{\text{m}}$	$0.323 \pm 0.016$	$z_{\text{eq}}$	$3428 \pm 70$	$\chi_{\text{plik}}^2$	$772.0 \pm 5.8$
$\Omega_{\text{m}}h^2$	$0.1398^{+0.0061}_{-0.0077}$	$k_{\text{eq}}$	$0.01030^{+0.00017}_{-0.00021}$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.6$
$\Omega_{\text{m}}h^3$	$0.0923^{+0.0072}_{-0.0095}$	$100\theta_{\text{eq}}$	$0.809 \pm 0.012$	$\chi_{\text{CMB}}^2$	$1202.1 \pm 5.8$
$\sigma_8$	$0.805 \pm 0.015$	$100\theta_{\text{s,eq}}$	$0.4471 \pm 0.0062$		
$S_8$	$0.835 \pm 0.016$	$H(0.15)$	$71.2^{+2.7}_{-3.2}$		

$\bar{\chi}_{\text{eff}}^2 = 1209.43$ ;  $R - 1 = 0.01928$



## 11.8 base\_nnu\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02226 \pm 0.00024$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6055 \pm 0.0089$	$D_{\mathrm{M}}(0.38)$	$1525 \pm 45$
$\Omega_{\mathrm{c}}h^2$	$0.1199^{+0.0058}_{-0.0071}$	$\sigma_8/h^{0.5}$	$0.9851 \pm 0.0093$	$H(0.51)$	$90.0^{+2.2}_{-2.6}$
$100\theta_{\mathrm{MC}}$	$1.0410 \pm 0.0018$	$r_{\mathrm{drag}}h$	$99.8 \pm 1.0$	$D_{\mathrm{M}}(0.51)$	$1976 \pm 57$
$\tau$	$0.0557^{+0.0059}_{-0.0074}$	$\langle d^2 \rangle^{1/2}$	$2.433 \pm 0.022$	$H(0.61)$	$95.6^{+2.3}_{-2.7}$
$N_{\mathrm{eff}}$	$3.10^{+0.37}_{-0.46}$	$z_{\mathrm{re}}$	$7.85^{+0.62}_{-0.75}$	$D_{\mathrm{M}}(0.61)$	$2299 \pm 66$
$Y_{\mathrm{P}}$	$0.248 \pm 0.030$	$10^9 A_{\mathrm{s}}$	$2.105^{+0.031}_{-0.035}$	$H(2.33)$	$236.5^{+5.0}_{-5.9}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.047^{+0.015}_{-0.017}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.883 \pm 0.022$	$D_{\mathrm{M}}(2.33)$	$5750 \pm 150$
$n_{\mathrm{s}}$	$0.9683 \pm 0.0085$	$D_{40}$	$1225 \pm 17$	$f\sigma_8(0.15)$	$0.4565 \pm 0.0069$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025$	$D_{220}$	$5723 \pm 41$	$\sigma_8(0.15)$	$0.750 \pm 0.013$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2538 \pm 14$	$f\sigma_8(0.38)$	$0.4752 \pm 0.0069$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815.2 \pm 5.4$	$\sigma_8(0.38)$	$0.665 \pm 0.012$
$A_{143}^{\mathrm{tSZ}}$	$5.0 \pm 2.0$	$D_{2000}$	$229.6 \pm 2.4$	$f\sigma_8(0.51)$	$0.4740 \pm 0.0070$
$A_{100}^{\mathrm{PS}}$	$266 \pm 29$	$n_{\mathrm{s},0.002}$	$0.9683 \pm 0.0085$	$\sigma_8(0.51)$	$0.622 \pm 0.011$
$A_{143}^{\mathrm{PS}}$	$50 \pm 9$	$Y_{\mathrm{P}}$	$0.248 \pm 0.030$	$f\sigma_8(0.61)$	$0.4691 \pm 0.0070$
$A_{143 \times 217}^{\mathrm{PS}}$	$44 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.249 \pm 0.030$	$\sigma_8(0.61)$	$0.592 \pm 0.011$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	Age/Gyr	$13.77 \pm 0.36$	$f\sigma_8(2.33)$	$0.2987 \pm 0.0057$
$A^{\mathrm{kSZ}}$	$< 4.99$	$z_*$	$1090.19 \pm 0.68$	$\sigma_8(2.33)$	$0.3081 \pm 0.0061$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$r_*$	$144.4 \pm 3.6$	$f_{2000}^{143}$	$32 \pm 4$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$100\theta_*$	$1.0411 \pm 0.0012$	$f_{2000}^{143 \times 217}$	$33.8 \pm 2.9$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.87 \pm 0.33$	$f_{2000}^{217}$	$108.3 \pm 2.6$
$A_{217}^{\mathrm{dust}TT}$	$93.3 \pm 7.5$	$z_{\mathrm{drag}}$	$1059.8 \pm 1.1$	$\chi_{\mathrm{lensing}}^2$	$9.39 \pm 0.81$
$c_{100}$	$0.99962 \pm 0.00061$	$r_{\mathrm{drag}}$	$147.1 \pm 3.7$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.8$
$c_{217}$	$0.99828 \pm 0.00062$	$k_{\mathrm{D}}$	$0.1406^{+0.0032}_{-0.0038}$	$\chi_{\mathrm{lowl}}^2$	$23.0 \pm 1.3$
$H_0$	$67.9^{+1.9}_{-2.3}$	$100\theta_{\mathrm{D}}$	$0.16120 \pm 0.00074$	$\chi_{\mathrm{plik}}^2$	$773.3 \pm 5.8$
$\Omega_{\Lambda}$	$0.6900 \pm 0.0083$	$z_{\mathrm{eq}}$	$3376 \pm 44$	$\chi_{6\mathrm{DF}}^2$	$0.062 \pm 0.082$
$\Omega_{\mathrm{m}}$	$0.3100 \pm 0.0083$	$k_{\mathrm{eq}}$	$0.01033^{+0.00018}_{-0.00021}$	$\chi_{\mathrm{MGS}}^2$	$1.37 \pm 0.56$
$\Omega_{\mathrm{m}}h^2$	$0.1428^{+0.0058}_{-0.0071}$	$100\theta_{\mathrm{eq}}$	$0.8180 \pm 0.0072$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.7$
$\Omega_{\mathrm{m}}h^3$	$0.0971^{+0.0063}_{-0.0081}$	$100\theta_{\mathrm{s,eq}}$	$0.4519 \pm 0.0037$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8$	$0.812 \pm 0.013$	$H(0.15)$	$73.2^{+2.0}_{-2.3}$	$\chi_{\mathrm{CMB}}^2$	$1202.8 \pm 5.8$
$S_8$	$0.825 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$639 \pm 19$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4518 \pm 0.0071$	$H(0.38)$	$83.3^{+2.1}_{-2.5}$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1216.32; R - 1 = 0.01882$$



## 11.9 base\_nnu\_yhe\_plikHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022215	$0.02225 \pm 0.00022$ (+0.6 $\sigma$ )	$\Omega_m$	0.3227	$0.321 \pm 0.011$ (−0.2 $\sigma$ )	$k_{\text{eq}}$	0.010297	$0.01033 \pm 0.00016$ (−0.2 $\sigma$ )
$\Omega_c h^2$	0.11668	$0.1179^{+0.0045}_{-0.0050}$ (−0.1 $\sigma$ )	$\Omega_m h^2$	0.13954	$0.1408^{+0.0045}_{-0.0051}$ (−0.1 $\sigma$ )	$100\theta_{\text{eq}}$	0.8083	$0.8094 \pm 0.0079$ (+0.1 $\sigma$ )
$100\theta_{\text{MC}}$	1.04140	$1.0413 \pm 0.0012$ (+0.0 $\sigma$ )	$\Omega_m h^3$	0.0918	$0.0934^{+0.0050}_{-0.0060}$ (−0.1 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.44689	$0.4474 \pm 0.0040$ (+0.1 $\sigma$ )
$\tau$	0.0539	$0.0536 \pm 0.0079$ (+0.3 $\sigma$ )	$\sigma_8$	0.8029	$0.806 \pm 0.013$ (−0.1 $\sigma$ )	$H(0.15)$	71.08	$71.6^{+1.7}_{-2.0}$ (+0.0 $\sigma$ )
$N_{\text{eff}}$	2.807	$2.89^{+0.29}_{-0.33}$ (−0.1 $\sigma$ )	$S_8$	0.8327	$0.833 \pm 0.017$ (−0.3 $\sigma$ )	$D_{\text{M}}(0.15)$	658.4	$654 \pm 18$ (−0.1 $\sigma$ )
$Y_{\text{P}}$	0.2449	$0.246 \pm 0.018$ (−0.2 $\sigma$ )	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4561	$0.4564 \pm 0.0092$ (−0.3 $\sigma$ )	$H(0.38)$	81.22	$81.7^{+1.8}_{-2.0}$ (+0.0 $\sigma$ )
$\ln(10^{10} A_{\text{s}})$	3.0357	$3.038 \pm 0.019$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6051	$0.6063 \pm 0.0096$ (−0.3 $\sigma$ )	$D_{\text{M}}(0.38)$	1567.6	$1558 \pm 40$ (−0.1 $\sigma$ )
$n_{\text{s}}$	0.9584	$0.9597 \pm 0.0086$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9901	$0.990 \pm 0.012$ (−0.3 $\sigma$ )	$H(0.51)$	87.95	$88.5^{+1.8}_{-2.1}$ (+0.0 $\sigma$ )
$y_{\text{cal}}$	1.00047	$1.0007 \pm 0.0025$ (+0.1 $\sigma$ )	$r_{\text{drag}} h$	98.23	$98.4 \pm 1.3$ (+0.2 $\sigma$ )	$D_{\text{M}}(0.51)$	2029	$2017 \pm 50$ (−0.1 $\sigma$ )
$A_{217}^{\text{CIB}}$	43.8	$46 \pm 7$ (−0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4575	$2.456 \pm 0.031$ (−0.1 $\sigma$ )	$H(0.61)$	93.57	$94.1^{+1.9}_{-2.2}$ (−0.0 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.89	—	$z_{\text{re}}$	7.60	$7.58 \pm 0.81$ (+0.2 $\sigma$ )	$D_{\text{M}}(0.61)$	2359	$2345 \pm 57$ (−0.1 $\sigma$ )
$A_{143}^{\text{tSZ}}$	6.90	$5.5^{+2.2}_{-1.9}$ (+0.2 $\sigma$ )	$10^9 A_{\text{s}}$	2.0815	$2.086 \pm 0.040$ (+0.1 $\sigma$ )	$H(2.33)$	233.45	$234.5 \pm 4.1$ (−0.1 $\sigma$ )
$A_{100}^{\text{PS}}$	243.8	$257 \pm 28$ (−0.3 $\sigma$ )	$10^9 A_{\text{s}} e^{-2\tau}$	1.8689	$1.874 \pm 0.020$ (−0.1 $\sigma$ )	$D_{\text{M}}(2.33)$	5865	$5834 \pm 120$ (−0.0 $\sigma$ )
$A_{143}^{\text{PS}}$	51.4	$45 \pm 8$ (−0.5 $\sigma$ )	$D_{40}$	1238.1	$1238 \pm 16$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4597	$0.4602 \pm 0.0086$ (−0.3 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	57.2	$42 \pm 9$ (−0.2 $\sigma$ )	$D_{220}$	5729.7	$5733 \pm 38$ (+0.5 $\sigma$ )	$\sigma_8(0.15)$	0.7408	$0.743 \pm 0.012$ (−0.1 $\sigma$ )
$A_{217}^{\text{PS}}$	124.0	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{810}$	2539.1	$2538 \pm 14$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.4754	$0.4762 \pm 0.0076$ (−0.3 $\sigma$ )
$A^{\text{kSZ}}$	0.00	$< 3.97$ (−0.2 $\sigma$ )	$D_{1420}$	819.66	$817.9 \pm 4.7$ (+0.7 $\sigma$ )	$\sigma_8(0.38)$	0.6555	$0.658 \pm 0.011$ (−0.1 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.69	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$D_{2000}$	232.45	$231.5 \pm 1.8$ (+0.8 $\sigma$ )	$f\sigma_8(0.51)$	0.4727	$0.4737 \pm 0.0073$ (−0.3 $\sigma$ )
$A_{143}^{\text{dustTT}}$	10.86	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	$n_{\text{s},0.002}$	0.9584	$0.9597 \pm 0.0086$ (−0.0 $\sigma$ )	$\sigma_8(0.51)$	0.6130	$0.615 \pm 0.011$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	20.06	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\text{P}}$	0.2449	$0.246 \pm 0.018$ (−0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.4669	$0.4681 \pm 0.0071$ (−0.2 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.8	$93.9 \pm 7.3$ (+0.1 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.2463	$0.247 \pm 0.018$ (−0.2 $\sigma$ )	$\sigma_8(0.61)$	0.5829	$0.585 \pm 0.010$ (−0.1 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1149	$0.115 \pm 0.038$	Age/Gyr	14.039	$13.97 \pm 0.29$ (−0.0 $\sigma$ )	$f\sigma_8(2.33)$	0.2935	$0.2948 \pm 0.0053$ (−0.0 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1340	$0.135 \pm 0.029$	$z_*$	1089.700	$1089.85 \pm 0.45$ (−0.8 $\sigma$ )	$\sigma_8(2.33)$	0.3021	$0.3035 \pm 0.0058$ (−0.0 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.483 \pm 0.084$	$r_*$	146.63	$145.9 \pm 2.8$ (+0.0 $\sigma$ )	$f_{2000}^{143}$	27.20	$28.9 \pm 3.1$ (−0.7 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.222	$0.225 \pm 0.054$	$100\theta_*$	1.04168	$1.04153 \pm 0.00094$ (+0.1 $\sigma$ )	$f_{2000}^{143 \times 217}$	30.92	$31.7 \pm 2.2$ (−0.7 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.665	$0.667 \pm 0.080$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.077	$14.01 \pm 0.26$ (+0.0 $\sigma$ )	$f_{2000}^{217}$	105.51	$106.6 \pm 2.1$ (−0.6 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.094	$2.09 \pm 0.27$	$z_{\text{drag}}$	1059.25	$1059.48 \pm 0.84$ (+0.1 $\sigma$ )	$\chi_{\text{small}}^2$	396.03	$397.1 \pm 1.8$ (+0.1 $\sigma$ )
$c_{100}$	0.99974	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$r_{\text{drag}}$	149.38	$148.7 \pm 2.9$ (+0.0 $\sigma$ )	$\chi_{\text{lowl}}^2$	24.26	$24.3 \pm 1.6$ (−0.0 $\sigma$ )
$c_{217}$	0.99814	$0.99818 \pm 0.00063$ (−0.1 $\sigma$ )	$k_{\text{D}}$	0.13918	$0.1397^{+0.0024}_{-0.0027}$ (+0.1 $\sigma$ )	$\chi_{\text{plik}}^2$	2343.1	$2360.3 \pm 6.2$ (+258.3 $\sigma$ )
$H_0$	65.76	$66.2^{+1.7}_{-2.0}$ (+0.0 $\sigma$ )	$100\theta_{\text{D}}$	0.160354	$0.16056 \pm 0.00048$ (−0.7 $\sigma$ )	$\chi_{\text{prior}}^2$	1.37	$11.5 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_{\Lambda}$	0.6773	$0.679 \pm 0.011$ (+0.2 $\sigma$ )	$z_{\text{eq}}$	3429.1	$3424 \pm 44$ (−0.1 $\sigma$ )	$\chi_{\text{CMB}}^2$	2763.3	$2781.7 \pm 6.1$ (+268.3 $\sigma$ )

Best-fit  $\chi_{\text{eff}}^2 = 2764.72$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.54$ ;  $\bar{\chi}_{\text{eff}}^2 = 2793.18$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1592.05$ ;  $R - 1 = 0.01243$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.03 ( $\Delta$  0.13) commander\_dx12\_v3.2.29: 24.26 ( $\Delta$  -0.33) plik\_rd12\_HM\_v22b\_TTTEEE: 2343.05



## 11.10 base\_nnu\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022350	$0.02239 \pm 0.00019$ (+0.5 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.0946	$0.0956 \pm 0.0054$ (−0.4 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	645.7	$643 \pm 15$ (+0.4 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11794	$0.1186 \pm 0.0048$ (−0.3 $\sigma$ )	$\sigma_8$	0.8053	$0.807 \pm 0.013$ (−0.3 $\sigma$ )	$H(0.38)$	82.48	$82.8 \pm 1.7$ (−0.4 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.04108	$1.0411 \pm 0.0012$ (+0.2 $\sigma$ )	$S_8$	0.8222	$0.823 \pm 0.014$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1539.7	$1534 \pm 34$ (+0.4 $\sigma$ )
$\tau$	0.0551	$0.0555 \pm 0.0079$ (+0.2 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4503	$0.4508 \pm 0.0079$ (−0.1 $\sigma$ )	$H(0.51)$	89.17	$89.5 \pm 1.8$ (−0.4 $\sigma$ )
$N_{\mathrm{eff}}$	2.962	$3.01 \pm 0.30$ (−0.4 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6022	$0.6033 \pm 0.0096$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1994.3	$1987 \pm 43$ (+0.4 $\sigma$ )
$Y_{\mathrm{P}}$	0.2422	$0.244 \pm 0.018$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9829	$0.983 \pm 0.011$ (+0.0 $\sigma$ )	$H(0.61)$	94.77	$95.1 \pm 1.9$ (−0.4 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0401	$3.043 \pm 0.019$ (−0.1 $\sigma$ )	$r_{\mathrm{drag}}h$	99.42	$99.55 \pm 0.88$ (−0.4 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2320	$2313 \pm 50$ (+0.4 $\sigma$ )
$n_{\mathrm{s}}$	0.9648	$0.9652 \pm 0.0072$ (−0.5 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4350	$2.437 \pm 0.026$ (+0.4 $\sigma$ )	$H(2.33)$	234.91	$235.5 \pm 4.1$ (−0.3 $\sigma$ )
$y_{\mathrm{cal}}$	1.00029	$1.0007 \pm 0.0024$ (+0.1 $\sigma$ )	$z_{\mathrm{re}}$	7.71	$7.75 \pm 0.80$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5796	$5779 \pm 110$ (+0.4 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	44.5	$46 \pm 7$ (−0.3 $\sigma$ )	$10^9 A_{\mathrm{s}}$	2.0908	$2.097 \pm 0.040$ (−0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4548	$0.4553 \pm 0.0077$ (−0.1 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.82	—	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8726	$1.877 \pm 0.020$ (−0.4 $\sigma$ )	$\sigma_8(0.15)$	0.7440	$0.746 \pm 0.012$ (−0.3 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	7.03	$5.6^{+2.2}_{-1.9}$ (+0.3 $\sigma$ )	$D_{40}$	1227.9	$1230 \pm 14$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4728	$0.4735 \pm 0.0075$ (−0.2 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	244.5	$257 \pm 28$ (−0.3 $\sigma$ )	$D_{220}$	5729.3	$5738 \pm 38$ (+0.5 $\sigma$ )	$\sigma_8(0.38)$	0.6594	$0.661 \pm 0.011$ (−0.3 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	50.7	$45 \pm 8$ (−0.6 $\sigma$ )	$D_{810}$	2538.4	$2539 \pm 14$ (+0.1 $\sigma$ )	$f\sigma_8(0.51)$	0.4712	$0.4721 \pm 0.0074$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	55.6	$42 \pm 9$ (−0.2 $\sigma$ )	$D_{1420}$	819.43	$818.2 \pm 4.8$ (+0.6 $\sigma$ )	$\sigma_8(0.51)$	0.6170	$0.619 \pm 0.010$ (−0.4 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	122.8	$115.0 \pm 9.9$ (+0.0 $\sigma$ )	$D_{2000}$	232.14	$231.4 \pm 1.8$ (+0.9 $\sigma$ )	$f\sigma_8(0.61)$	0.4662	$0.4671 \pm 0.0073$ (−0.3 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.01	$< 4.03$ (−0.3 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.9648	$0.9652 \pm 0.0072$ (−0.5 $\sigma$ )	$\sigma_8(0.61)$	0.5871	$0.589 \pm 0.010$ (−0.4 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.83	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_{\mathrm{P}}$	0.2422	$0.244 \pm 0.018$ (−0.0 $\sigma$ )	$f\sigma_8(2.33)$	0.2960	$0.2969 \pm 0.0052$ (−0.4 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	10.99	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.2435	$0.246 \pm 0.018$ (−0.0 $\sigma$ )	$\sigma_8(2.33)$	0.3051	$0.3061 \pm 0.0055$ (−0.4 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	20.28	$18.6 \pm 3.2$ (+0.1 $\sigma$ )	Age/Gyr	13.874	$13.83 \pm 0.27$ (+0.4 $\sigma$ )	$f_{2000}^{143}$	27.46	$29.0 \pm 3.1$ (−0.7 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	95.9	$93.8 \pm 7.1$ (+0.1 $\sigma$ )	$z_*$	1089.600	$1089.73 \pm 0.43$ (−0.7 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.06	$31.8 \pm 2.2$ (−0.8 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1142	$0.114 \pm 0.038$	$r_*$	145.42	$145.1 \pm 2.7$ (+0.3 $\sigma$ )	$f_{2000}^{217}$	105.56	$106.7 \pm 2.1$ (−0.7 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1341	$0.135 \pm 0.029$	$100\theta_*$	1.04138	$1.04133 \pm 0.00092$ (+0.3 $\sigma$ )	$\chi_{\mathrm{small}}^2$	396.16	$397.3 \pm 2.0$ (+0.1 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.483	$0.481 \pm 0.085$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.964	$13.93 \pm 0.25$ (+0.3 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	23.25	$23.4 \pm 1.2$ (+0.4 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.225	$0.225 \pm 0.055$	$z_{\mathrm{drag}}$	1059.59	$1059.83 \pm 0.78$ (+0.0 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2344.8	$2361.2 \pm 6.2$ (+267.4 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.667	$0.664 \pm 0.081$	$r_{\mathrm{drag}}$	148.10	$147.7 \pm 2.8$ (+0.3 $\sigma$ )	$\chi_{6\mathrm{DF}}^2$	0.0474	$0.069 \pm 0.082$ (+0.1 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.081	$2.08 \pm 0.27$	$k_{\mathrm{D}}$	0.14020	$0.1405 \pm 0.0025$ (−0.2 $\sigma$ )	$\chi_{\mathrm{MGS}}^2$	1.097	$1.23 \pm 0.47$ (−0.4 $\sigma$ )
$c_{100}$	0.99974	$0.99966 \pm 0.00061$ (+0.1 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160470	$0.16063 \pm 0.00047$ (−0.8 $\sigma$ )	$\chi_{\mathrm{DR12BAO}}^2$	4.80	$5.1 \pm 1.7$ (+0.2 $\sigma$ )
$c_{217}$	0.99817	$0.99817 \pm 0.00063$ (−0.2 $\sigma$ )	$z_{\mathrm{eq}}$	3390.9	$3389 \pm 33$ (+0.5 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.48	$11.6 \pm 4.5$ (+1.2 $\sigma$ )
$H_0$	67.13	$67.4 \pm 1.6$ (−0.4 $\sigma$ )	$k_{\mathrm{eq}}$	0.010291	$0.01031 \pm 0.00016$ (−0.2 $\sigma$ )	$\chi_{\mathrm{BAO}}^2$	5.94	$6.4 \pm 1.4$ (+0.1 $\sigma$ )
$\Omega_{\Lambda}$	0.6873	$0.6882 \pm 0.0072$ (−0.4 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8153	$0.8158 \pm 0.0056$ (−0.5 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	2764.2	$2781.9 \pm 6.0$ (+271.4 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3127	$0.3118 \pm 0.0072$ (+0.4 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.45045	$0.4507 \pm 0.0029$ (−0.5 $\sigma$ )			
$\Omega_{\mathrm{m}}h^2$	0.14094	$0.1417 \pm 0.0049$ (−0.3 $\sigma$ )	$H(0.15)$	72.40	$72.7 \pm 1.6$ (−0.4 $\sigma$ )			

Best-fit  $\chi_{\mathrm{eff}}^2 = 2771.61$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1585.92$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2799.87$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.29$ ;  $R - 1 = 0.02630$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.05 ( $\Delta$  0.03) MGS: 1.10 ( $\Delta$  -0.25) DR12BAO: 4.80 ( $\Delta$  0.76) CMB - simall\_100x143.offlike5\_EE\_Aplanck\_B: 396.16 ( $\Delta$  0.28) commander\_dx12.v3.2.29: 23.25 ( $\Delta$  0.56) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.78



### 11.11 base\_nnu\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022215	$0.02224 \pm 0.00022$ (+0.6 $\sigma$ )	$\Omega_m h^2$	0.13914	$0.1400^{+0.0042}_{-0.0049}$ (+0.0 $\sigma$ )	$100\theta_{s,eq}$	0.44698	$0.4474 \pm 0.0038$ (+0.1 $\sigma$ )
$\Omega_c h^2$	0.11628	$0.1171^{+0.0042}_{-0.0049}$ (+0.0 $\sigma$ )	$\Omega_m h^3$	0.0914	$0.0925^{+0.0048}_{-0.0059}$ (+0.1 $\sigma$ )	$H(0.15)$	71.01	$71.3^{+1.7}_{-1.9}$ (+0.1 $\sigma$ )
$100\theta_{MC}$	1.04151	$1.0415 \pm 0.0012$ (-0.1 $\sigma$ )	$\sigma_8$	0.8019	$0.803 \pm 0.011$ (+0.0 $\sigma$ )	$D_M(0.15)$	659.0	$656 \pm 17$ (-0.2 $\sigma$ )
$\tau$	0.0539	$0.0535 \pm 0.0076$ (+0.3 $\sigma$ )	$S_8$	0.8312	$0.831 \pm 0.013$ (-0.3 $\sigma$ )	$H(0.38)$	81.14	$81.5^{+1.7}_{-2.0}$ (+0.1 $\sigma$ )
$N_{eff}$	2.787	$2.84^{+0.27}_{-0.32}$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4552	$0.4552 \pm 0.0071$ (-0.3 $\sigma$ )	$D_M(0.38)$	1569.1	$1563 \pm 39$ (-0.2 $\sigma$ )
$Y_P$	0.2458	$0.247 \pm 0.018$ (-0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6042	$0.6046 \pm 0.0076$ (-0.2 $\sigma$ )	$H(0.51)$	87.85	$88.2^{+1.8}_{-2.0}$ (+0.1 $\sigma$ )
$\ln(10^{10} A_s)$	3.0349	$3.036 \pm 0.018$ (+0.2 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9893	$0.9886 \pm 0.0095$ (-0.3 $\sigma$ )	$D_M(0.51)$	2030.9	$2023 \pm 49$ (-0.2 $\sigma$ )
$n_s$	0.9583	$0.9589 \pm 0.0085$ (-0.0 $\sigma$ )	$r_{drag} h$	98.28	$98.4 \pm 1.2$ (+0.2 $\sigma$ )	$H(0.61)$	93.46	$93.8^{+1.8}_{-2.1}$ (+0.1 $\sigma$ )
$y_{cal}$	1.00046	$1.0007 \pm 0.0024$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4559	$2.454 \pm 0.024$ (-0.0 $\sigma$ )	$D_M(0.61)$	2362	$2353 \pm 56$ (-0.2 $\sigma$ )
$A_{217}^{CIB}$	44.0	$46 \pm 7$ (-0.3 $\sigma$ )	$z_{re}$	7.60	$7.55 \pm 0.77$ (+0.2 $\sigma$ )	$H(2.33)$	233.12	$233.8^{+3.7}_{-4.2}$ (+0.1 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.89	—	$10^9 A_s$	2.0799	$2.082 \pm 0.037$ (+0.2 $\sigma$ )	$D_M(2.33)$	5872	$5853 \pm 120$ (-0.1 $\sigma$ )
$A_{143}^{tSZ}$	6.95	$5.6^{+2.1}_{-1.9}$ (+0.3 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8673	$1.871 \pm 0.019$ (-0.0 $\sigma$ )	$f\sigma_8(0.15)$	0.4589	$0.4589 \pm 0.0067$ (-0.3 $\sigma$ )
$A_{100}^{PS}$	243.8	$256 \pm 28$ (-0.2 $\sigma$ )	$D_{40}$	1237.7	$1238 \pm 16$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7399	$0.741 \pm 0.011$ (+0.0 $\sigma$ )
$A_{143}^{PS}$	51.6	$45 \pm 8$ (-0.5 $\sigma$ )	$D_{220}$	5729.7	$5734 \pm 38$ (+0.5 $\sigma$ )	$f\sigma_8(0.38)$	0.4747	$0.4749 \pm 0.0060$ (-0.2 $\sigma$ )
$A_{143 \times 217}^{PS}$	57.1	$42 \pm 9$ (-0.2 $\sigma$ )	$D_{810}$	2538.7	$2538 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6547	$0.656 \pm 0.010$ (+0.1 $\sigma$ )
$A_{217}^{PS}$	123.5	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{1420}$	819.62	$817.9 \pm 4.7$ (+0.6 $\sigma$ )	$f\sigma_8(0.51)$	0.4720	$0.4724 \pm 0.0059$ (-0.1 $\sigma$ )
$A^{kSZ}$	0.00	$< 3.96$ (-0.2 $\sigma$ )	$D_{2000}$	232.44	$231.6 \pm 1.8$ (+0.8 $\sigma$ )	$\sigma_8(0.51)$	0.6123	$0.614 \pm 0.010$ (+0.1 $\sigma$ )
$A_{100}^{dustTT}$	8.71	$8.9 \pm 1.8$ (-0.0 $\sigma$ )	$n_{s,0.002}$	0.9583	$0.9589 \pm 0.0085$ (-0.0 $\sigma$ )	$f\sigma_8(0.61)$	0.4663	$0.4667 \pm 0.0059$ (-0.1 $\sigma$ )
$A_{143}^{dustTT}$	10.92	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P$	0.2458	$0.247 \pm 0.018$ (-0.3 $\sigma$ )	$\sigma_8(0.61)$	0.5823	$0.5836 \pm 0.0097$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.27	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.2472	$0.249 \pm 0.018$ (-0.3 $\sigma$ )	$f\sigma_8(2.33)$	0.2932	$0.2939 \pm 0.0051$ (+0.1 $\sigma$ )
$A_{217}^{dustTT}$	96.0	$93.9 \pm 7.2$ (+0.1 $\sigma$ )	Age/Gyr	14.056	$14.01 \pm 0.28$ (-0.1 $\sigma$ )	$\sigma_8(2.33)$	0.3018	$0.3026 \pm 0.0056$ (+0.1 $\sigma$ )
$A_{100}^{dustTE}$	0.1139	$0.115 \pm 0.038$	$z_*$	1089.692	$1089.82 \pm 0.44$ (-0.8 $\sigma$ )	$f_{2000}^{143}$	27.34	$28.8 \pm 3.1$ (-0.7 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1353	$0.135 \pm 0.029$	$r_*$	146.84	$146.4 \pm 2.7$ (-0.1 $\sigma$ )	$f_{2000}^{143 \times 217}$	30.98	$31.6 \pm 2.2$ (-0.7 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.483	$0.483 \pm 0.084$	$100\theta_*$	1.04177	$1.04166 \pm 0.00092$ (-0.0 $\sigma$ )	$f_{2000}^{217}$	105.51	$106.6 \pm 2.1$ (-0.6 $\sigma$ )
$A_{143}^{dustTE}$	0.227	$0.225 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	14.096	$14.05 \pm 0.25$ (-0.1 $\sigma$ )	$\chi_{lensing}^2$	8.49	$9.01 \pm 0.75$ (-0.3 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.667	$0.667 \pm 0.080$	$z_{drag}$	1059.25	$1059.42 \pm 0.84$ (+0.1 $\sigma$ )	$\chi_{small}^2$	396.03	$396.9 \pm 1.6$ (+0.1 $\sigma$ )
$A_{217}^{dustTE}$	2.090	$2.09 \pm 0.27$	$r_{drag}$	149.59	$149.1 \pm 2.8$ (-0.1 $\sigma$ )	$\chi_{lowl}^2$	24.24	$24.3 \pm 1.5$ (+0.0 $\sigma$ )
$c_{100}$	0.99974	$0.99968 \pm 0.00061$ (+0.1 $\sigma$ )	$k_D$	0.13899	$0.1393^{+0.0023}_{-0.0026}$ (+0.2 $\sigma$ )	$\chi_{plik}^2$	2343.0	$2359.9 \pm 6.0$ (+274.3 $\sigma$ )
$c_{217}$	0.99817	$0.99817 \pm 0.00063$ (-0.2 $\sigma$ )	$100\theta_D$	0.160353	$0.16052 \pm 0.00048$ (-0.7 $\sigma$ )	$\chi_{prior}^2$	1.47	$11.5 \pm 4.5$ (+1.1 $\sigma$ )
$H_0$	65.70	$66.0^{+1.7}_{-1.9}$ (+0.1 $\sigma$ )	$z_{eq}$	3428.5	$3425 \pm 42$ (-0.1 $\sigma$ )	$\chi_{CMB}^2$	2771.8	$2790.2 \pm 6.2$ (+268.3 $\sigma$ )
$\Omega_\Lambda$	0.6777	$0.679 \pm 0.010$ (+0.2 $\sigma$ )	$k_{eq}$	0.010281	$0.01030^{+0.00013}_{-0.00015}$ (-0.0 $\sigma$ )			
$\Omega_m$	0.3223	$0.321 \pm 0.010$ (-0.2 $\sigma$ )	$100\theta_{eq}$	0.8085	$0.8092 \pm 0.0074$ (+0.2 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2773.24$ ;  $\Delta\chi_{eff}^2 = 1585.40$ ;  $\bar{\chi}_{eff}^2 = 2801.64$ ;  $\Delta\bar{\chi}_{eff}^2 = 1591.95$ ;  $R - 1 = 0.01539$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp.p\_teb\_consext8: 8.49 ( $\Delta$  0.01) small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.03 ( $\Delta$  0.33) commander\_dx12\_v3.2.29: 24.23 ( $\Delta$  -0.32) plik\_rd12\_HM\_v22b\_TTTEEE: 2343.02



### 11.12 base\_nnu\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022358	$0.02238 \pm 0.00019$ (+0.5 $\sigma$ )	$\Omega_{\text{m}}h^2$	0.14037	$0.1412 \pm 0.0046$ (−0.3 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.45028	$0.4504 \pm 0.0028$ (−0.4 $\sigma$ )
$\Omega_{\text{c}}h^2$	0.11736	$0.1182 \pm 0.0045$ (−0.3 $\sigma$ )	$\Omega_{\text{m}}h^3$	0.0940	$0.0950^{+0.0048}_{-0.0054}$ (−0.3 $\sigma$ )	$H(0.15)$	72.24	$72.5 \pm 1.6$ (−0.3 $\sigma$ )
$100\theta_{\text{MC}}$	1.04126	$1.0412 \pm 0.0012$ (+0.1 $\sigma$ )	$\sigma_8$	0.8054	$0.807 \pm 0.011$ (−0.3 $\sigma$ )	$D_{\text{M}}(0.15)$	647.1	$645 \pm 14$ (+0.3 $\sigma$ )
$\tau$	0.0563	$0.0562 \pm 0.0073$ (+0.2 $\sigma$ )	$S_8$	0.8225	$0.824 \pm 0.012$ (−0.1 $\sigma$ )	$H(0.38)$	82.30	$82.6 \pm 1.7$ (−0.3 $\sigma$ )
$N_{\text{eff}}$	2.926	$2.97 \pm 0.29$ (−0.3 $\sigma$ )	$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4505	$0.4511 \pm 0.0063$ (−0.1 $\sigma$ )	$D_{\text{M}}(0.38)$	1543.0	$1538 \pm 33$ (+0.3 $\sigma$ )
$Y_{\text{P}}$	0.2443	$0.245 \pm 0.018$ (−0.1 $\sigma$ )	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6024	$0.6033 \pm 0.0077$ (−0.2 $\sigma$ )	$H(0.51)$	88.98	$89.3 \pm 1.7$ (−0.3 $\sigma$ )
$\ln(10^{10}A_{\text{s}})$	3.0426	$3.044 \pm 0.017$ (−0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9841	$0.9843 \pm 0.0090$ (−0.0 $\sigma$ )	$D_{\text{M}}(0.51)$	1998.6	$1993 \pm 42$ (+0.3 $\sigma$ )
$n_{\text{s}}$	0.9644	$0.9644 \pm 0.0071$ (−0.5 $\sigma$ )	$r_{\text{drag}}h$	99.42	$99.46 \pm 0.85$ (−0.3 $\sigma$ )	$H(0.61)$	94.57	$94.9 \pm 1.8$ (−0.3 $\sigma$ )
$y_{\text{cal}}$	1.00073	$1.0008 \pm 0.0024$ (+0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4386	$2.440 \pm 0.021$ (+0.4 $\sigma$ )	$D_{\text{M}}(0.61)$	2325.5	$2319 \pm 49$ (+0.3 $\sigma$ )
$A_{217}^{\text{CIB}}$	44.4	$46 \pm 7$ (−0.3 $\sigma$ )	$z_{\text{re}}$	7.83	$7.82 \pm 0.73$ (+0.1 $\sigma$ )	$H(2.33)$	234.43	$235.1 \pm 3.9$ (−0.3 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.80	—	$10^9 A_{\text{s}}$	2.0959	$2.099 \pm 0.035$ (−0.1 $\sigma$ )	$D_{\text{M}}(2.33)$	5808	$5791 \pm 110$ (+0.3 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.00	$5.6^{+2.1}_{-1.9}$ (+0.3 $\sigma$ )	$10^9 A_{\text{s}}e^{-2\tau}$	1.8727	$1.875 \pm 0.019$ (−0.3 $\sigma$ )	$f\sigma_8(0.15)$	0.4550	$0.4556 \pm 0.0062$ (−0.1 $\sigma$ )
$A_{100}^{\text{PS}}$	244.8	$257 \pm 28$ (−0.3 $\sigma$ )	$D_{40}$	1229.6	$1231 \pm 14$ (+0.4 $\sigma$ )	$\sigma_8(0.15)$	0.7441	$0.746 \pm 0.011$ (−0.3 $\sigma$ )
$A_{143}^{\text{PS}}$	50.5	$45 \pm 8$ (−0.5 $\sigma$ )	$D_{220}$	5736.6	$5741 \pm 37$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4729	$0.4736 \pm 0.0060$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	55.2	$42 \pm 9$ (−0.2 $\sigma$ )	$D_{810}$	2540.5	$2539 \pm 13$ (+0.1 $\sigma$ )	$\sigma_8(0.38)$	0.6595	$0.6609 \pm 0.0098$ (−0.3 $\sigma$ )
$A_{217}^{\text{PS}}$	123.0	$115.2 \pm 9.8$ (+0.1 $\sigma$ )	$D_{1420}$	820.11	$818.4 \pm 4.7$ (+0.6 $\sigma$ )	$f\sigma_8(0.51)$	0.4713	$0.4721 \pm 0.0060$ (−0.2 $\sigma$ )
$A^{\text{kSZ}}$	0.00	$< 3.94$ (−0.3 $\sigma$ )	$D_{2000}$	232.36	$231.5 \pm 1.8$ (+0.8 $\sigma$ )	$\sigma_8(0.51)$	0.6171	$0.6184 \pm 0.0094$ (−0.3 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.82	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$n_{\text{s},0.002}$	0.9644	$0.9644 \pm 0.0071$ (−0.5 $\sigma$ )	$f\sigma_8(0.61)$	0.4663	$0.4671 \pm 0.0060$ (−0.3 $\sigma$ )
$A_{143}^{\text{dustTT}}$	10.98	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	$Y_{\text{P}}$	0.2443	$0.245 \pm 0.018$ (−0.1 $\sigma$ )	$\sigma_8(0.61)$	0.5871	$0.5884 \pm 0.0090$ (−0.3 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	20.22	$18.6 \pm 3.2$ (+0.1 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.2456	$0.246 \pm 0.018$ (−0.1 $\sigma$ )	$f\sigma_8(2.33)$	0.29600	$0.2967 \pm 0.0047$ (−0.3 $\sigma$ )
$A_{217}^{\text{dustTT}}$	96.0	$93.9 \pm 7.2$ (+0.1 $\sigma$ )	Age/Gyr	13.904	$13.86 \pm 0.26$ (+0.3 $\sigma$ )	$\sigma_8(2.33)$	0.3051	$0.3058 \pm 0.0050$ (−0.3 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1152	$0.114 \pm 0.038$	$z_*$	1089.607	$1089.71 \pm 0.43$ (−0.7 $\sigma$ )	$\chi_{\text{lensing}}^2$	8.56	$9.06 \pm 0.70$ (−0.4 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1336	$0.135 \pm 0.030$	$r_*$	145.73	$145.3 \pm 2.6$ (+0.3 $\sigma$ )	$\chi_{\text{small}}^2$	396.43	$397.3 \pm 1.9$ (+0.1 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.484	$0.482 \pm 0.085$	$100\theta_*$	1.04150	$1.04141 \pm 0.00089$ (+0.3 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.32	$23.5 \pm 1.2$ (+0.4 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.223	$0.224 \pm 0.054$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.993	$13.96 \pm 0.24$ (+0.3 $\sigma$ )	$\chi_{\text{plik}}^2$	2344.5	$2360.6 \pm 6.0$ (+275.8 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.665	$0.664 \pm 0.081$	$z_{\text{drag}}$	1059.63	$1059.78 \pm 0.78$ (+0.0 $\sigma$ )	$\chi_{6\text{DF}}^2$	0.0477	$0.074 \pm 0.083$ (+0.1 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.080	$2.08 \pm 0.27$	$r_{\text{drag}}$	148.42	$148.0 \pm 2.7$ (+0.3 $\sigma$ )	$\chi_{\text{MGS}}^2$	1.097	$1.18 \pm 0.45$ (−0.3 $\sigma$ )
$c_{100}$	0.99975	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$k_{\text{D}}$	0.13991	$0.1402 \pm 0.0024$ (−0.1 $\sigma$ )	$\chi_{\text{DR12BAO}}^2$	4.79	$5.2 \pm 1.7$ (+0.2 $\sigma$ )
$c_{217}$	0.99816	$0.99816 \pm 0.00063$ (−0.2 $\sigma$ )	$100\theta_{\text{D}}$	0.160471	$0.16060 \pm 0.00047$ (−0.8 $\sigma$ )	$\chi_{\text{prior}}^2$	1.48	$11.6 \pm 4.5$ (+1.2 $\sigma$ )
$H_0$	66.98	$67.2 \pm 1.6$ (−0.3 $\sigma$ )	$z_{\text{eq}}$	3393.4	$3393 \pm 32$ (+0.4 $\sigma$ )	$\chi_{\text{CMB}}^2$	2772.8	$2790.5 \pm 6.0$ (+269.4 $\sigma$ )
$\Omega_{\Lambda}$	0.6872	$0.6875 \pm 0.0071$ (−0.3 $\sigma$ )	$k_{\text{eq}}$	0.010274	$0.01030 \pm 0.00014$ (−0.2 $\sigma$ )	$\chi_{\text{BAO}}^2$	5.94	$6.4 \pm 1.4$ (+0.1 $\sigma$ )
$\Omega_{\text{m}}$	0.3128	$0.3125 \pm 0.0071$ (+0.3 $\sigma$ )	$100\theta_{\text{eq}}$	0.8150	$0.8152 \pm 0.0055$ (−0.4 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 2780.20$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.53$ ;  $\bar{\chi}_{\text{eff}}^2 = 2808.46$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.97$ ;  $R - 1 = 0.02254$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.05 ( $\Delta$  0.02) MGS: 1.10 ( $\Delta$  -0.12) DR12BAO: 4.79 ( $\Delta$  0.43) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p-teb\_consext8: 8.56 ( $\Delta$  -0.31) small\_100x143\_offlike5\_EE\_Aplanck 396.44 ( $\Delta$  0.35) commander\_dx12\_v3\_2\_29: 23.32 ( $\Delta$  0.44) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.47



### 11.13 base\_nnu\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02226 \pm 0.00022 \quad (+0.5\sigma)$	$\Omega_{\mathrm{m}}$	$0.321 \pm 0.011 \quad (-0.2\sigma)$	$k_{\mathrm{eq}}$	$0.01033 \pm 0.00016 \quad (-0.2\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1179^{+0.0045}_{-0.0050} \quad (-0.2\sigma)$	$\Omega_{\mathrm{m}}h^2$	$0.1409^{+0.0045}_{-0.0051} \quad (-0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8097 \pm 0.0078 \quad (+0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.0413 \pm 0.0012 \quad (+0.0\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.0935^{+0.0050}_{-0.0060} \quad (-0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4476 \pm 0.0040 \quad (+0.1\sigma)$
$\tau$	$0.0550^{+0.0051}_{-0.0083} \quad (+0.2\sigma)$	$\sigma_8$	$0.807 \pm 0.012 \quad (-0.2\sigma)$	$H(0.15)$	$71.6^{+1.7}_{-2.0} \quad (-0.0\sigma)$
$N_{\mathrm{eff}}$	$2.89^{+0.29}_{-0.33} \quad (-0.1\sigma)$	$S_8$	$0.834 \pm 0.017 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.15)$	$654 \pm 17 \quad (-0.0\sigma)$
$Y_{\mathrm{P}}$	$0.246 \pm 0.018 \quad (-0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4567 \pm 0.0091 \quad (-0.3\sigma)$	$H(0.38)$	$81.8^{+1.8}_{-2.0} \quad (-0.0\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.015}_{-0.019} \quad (+0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6070 \pm 0.0095 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.38)$	$1557 \pm 39 \quad (-0.0\sigma)$
$n_{\mathrm{s}}$	$0.9601 \pm 0.0085 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.991 \pm 0.012 \quad (-0.2\sigma)$	$H(0.51)$	$88.5^{+1.8}_{-2.1} \quad (-0.0\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$r_{\mathrm{drag}}h$	$98.5 \pm 1.3 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$2015 \pm 50 \quad (-0.0\sigma)$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7 \quad (-0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.458 \pm 0.030 \quad (-0.1\sigma)$	$H(0.61)$	$94.2^{+1.9}_{-2.1} \quad (-0.0\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$z_{\mathrm{re}}$	$7.72^{+0.57}_{-0.82} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2344 \pm 57 \quad (-0.0\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.3\sigma)$	$10^9 A_{\mathrm{s}}$	$2.092^{+0.032}_{-0.040} \quad (+0.0\sigma)$	$H(2.33)$	$234.6 \pm 4.1 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$256 \pm 28 \quad (-0.3\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.874 \pm 0.020 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5832 \pm 120 \quad (+0.0\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.5\sigma)$	$D_{40}$	$1238 \pm 16 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4605 \pm 0.0085 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.2\sigma)$	$D_{220}$	$5733 \pm 38 \quad (+0.5\sigma)$	$\sigma_8(0.15)$	$0.745 \pm 0.012 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{810}$	$2538 \pm 14 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4767 \pm 0.0075 \quad (-0.3\sigma)$
$A^{\mathrm{kSZ}}$	$< 3.97 \quad (-0.2\sigma)$	$D_{1420}$	$817.8 \pm 4.8 \quad (+0.7\sigma)$	$\sigma_8(0.38)$	$0.659 \pm 0.011 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$D_{2000}$	$231.5 \pm 1.8 \quad (+0.8\sigma)$	$f\sigma_8(0.51)$	$0.4743 \pm 0.0071 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.8 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9601 \pm 0.0085 \quad (-0.1\sigma)$	$\sigma_8(0.51)$	$0.616 \pm 0.010 \quad (-0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}$	$0.246 \pm 0.018 \quad (-0.2\sigma)$	$f\sigma_8(0.61)$	$0.4686 \pm 0.0069 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.9 \pm 7.3 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.248 \pm 0.018 \quad (-0.2\sigma)$	$\sigma_8(0.61)$	$0.5862 \pm 0.0099 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.115 \pm 0.038$	Age/Gyr	$13.96 \pm 0.29 \quad (+0.0\sigma)$	$f\sigma_8(2.33)$	$0.2953 \pm 0.0051 \quad (-0.1\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.029$	$z_*$	$1089.85 \pm 0.45 \quad (-0.8\sigma)$	$\sigma_8(2.33)$	$0.3040 \pm 0.0056 \quad (-0.1\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.483 \pm 0.084$	$r_*$	$145.9 \pm 2.8 \quad (+0.1\sigma)$	$f_{2000}^{143}$	$28.9 \pm 3.1 \quad (-0.7\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.224 \pm 0.054$	$100\theta_*$	$1.04152 \pm 0.00094 \quad (+0.1\sigma)$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.2 \quad (-0.7\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.667 \pm 0.080$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.01 \pm 0.26 \quad (+0.1\sigma)$	$f_{2000}^{217}$	$106.6 \pm 2.1 \quad (-0.7\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.09 \pm 0.27$	$z_{\mathrm{drag}}$	$1059.51 \pm 0.83 \quad (+0.1\sigma)$	$\chi_{\mathrm{small}}^2$	$397.0 \pm 1.8 \quad (+0.1\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$r_{\mathrm{drag}}$	$148.6 \pm 2.9 \quad (+0.1\sigma)$	$\chi_{\mathrm{lowl}}^2$	$24.3 \pm 1.5 \quad (+0.0\sigma)$
$c_{217}$	$0.99818 \pm 0.00063 \quad (-0.1\sigma)$	$k_{\mathrm{D}}$	$0.1397^{+0.0024}_{-0.0027} \quad (+0.0\sigma)$	$\chi_{\mathrm{plik}}^2$	$2360.1 \pm 6.1 \quad (+257.8\sigma)$
$H_0$	$66.3^{+1.7}_{-2.0} \quad (+0.0\sigma)$	$100\theta_{\mathrm{D}}$	$0.16057 \pm 0.00047 \quad (-0.7\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\Lambda}$	$0.679 \pm 0.011 \quad (+0.2\sigma)$	$z_{\mathrm{eq}}$	$3422 \pm 44 \quad (-0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2781.4 \pm 6.1 \quad (+271.8\sigma)$

$\bar{\chi}_{\mathrm{eff}}^2 = 2792.90$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.06$ ;  $R - 1 = 0.01223$



### 11.14 base\_nnu\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02239 \pm 0.00019 \quad (+0.5\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.0956 \pm 0.0054 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.15)$	$643 \pm 15 \quad (+0.4\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1186 \pm 0.0048 \quad (-0.3\sigma)$	$\sigma_8$	$0.808 \pm 0.013 \quad (-0.3\sigma)$	$H(0.38)$	$82.8 \pm 1.7 \quad (-0.4\sigma)$
$100\theta_{\mathrm{MC}}$	$1.0411 \pm 0.0012 \quad (+0.2\sigma)$	$S_8$	$0.824 \pm 0.014 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1534 \pm 34 \quad (+0.4\sigma)$
$\tau$	$0.0564^{+0.0059}_{-0.0082} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4511 \pm 0.0078 \quad (-0.1\sigma)$	$H(0.51)$	$89.5 \pm 1.8 \quad (-0.4\sigma)$
$N_{\mathrm{eff}}$	$3.01 \pm 0.30 \quad (-0.4\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6038 \pm 0.0093 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1987 \pm 43 \quad (+0.4\sigma)$
$Y_{\mathrm{P}}$	$0.244 \pm 0.018 \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.984 \pm 0.011 \quad (+0.0\sigma)$	$H(0.61)$	$95.1 \pm 1.9 \quad (-0.4\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.016}_{-0.019} \quad (-0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.56 \pm 0.88 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.61)$	$2312 \pm 49 \quad (+0.4\sigma)$
$n_{\mathrm{s}}$	$0.9653 \pm 0.0071 \quad (-0.5\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.439 \pm 0.025 \quad (+0.4\sigma)$	$H(2.33)$	$235.5 \pm 4.1 \quad (-0.3\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0024 \quad (+0.1\sigma)$	$z_{\mathrm{re}}$	$7.85^{+0.64}_{-0.82} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5778 \pm 110 \quad (+0.4\sigma)$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7 \quad (-0.3\sigma)$	$10^9 A_{\mathrm{s}}$	$2.101^{+0.033}_{-0.041} \quad (-0.1\sigma)$	$f\sigma_8(0.15)$	$0.4557 \pm 0.0076 \quad (-0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.020 \quad (-0.4\sigma)$	$\sigma_8(0.15)$	$0.747 \pm 0.012 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.6^{+2.2}_{-1.9} \quad (+0.3\sigma)$	$D_{40}$	$1230 \pm 14 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4739 \pm 0.0073 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$257 \pm 28 \quad (-0.3\sigma)$	$D_{220}$	$5738 \pm 38 \quad (+0.5\sigma)$	$\sigma_8(0.38)$	$0.662 \pm 0.011 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.5\sigma)$	$D_{810}$	$2539 \pm 14 \quad (+0.1\sigma)$	$f\sigma_8(0.51)$	$0.4725 \pm 0.0072 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.2\sigma)$	$D_{1420}$	$818.1 \pm 4.8 \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.619 \pm 0.010 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{PS}}$	$115.0 \pm 9.9 \quad (+0.0\sigma)$	$D_{2000}$	$231.4 \pm 1.8 \quad (+0.8\sigma)$	$f\sigma_8(0.61)$	$0.4676 \pm 0.0071 \quad (-0.3\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.03 \quad (-0.3\sigma)$	$n_{\mathrm{s},0.002}$	$0.9653 \pm 0.0071 \quad (-0.5\sigma)$	$\sigma_8(0.61)$	$0.5895 \pm 0.0098 \quad (-0.4\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.244 \pm 0.018 \quad (-0.0\sigma)$	$f\sigma_8(2.33)$	$0.2972 \pm 0.0050 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8 \quad (+0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246 \pm 0.018 \quad (-0.0\sigma)$	$\sigma_8(2.33)$	$0.3064 \pm 0.0053 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.6 \pm 3.2 \quad (+0.1\sigma)$	Age/Gyr	$13.83 \pm 0.27 \quad (+0.4\sigma)$	$f_{2000}^{143}$	$29.0 \pm 3.1 \quad (-0.7\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.8 \pm 7.1 \quad (+0.1\sigma)$	$z_*$	$1089.73 \pm 0.44 \quad (-0.7\sigma)$	$f_{2000}^{143 \times 217}$	$31.8 \pm 2.2 \quad (-0.8\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.038$	$r_*$	$145.0 \pm 2.7 \quad (+0.3\sigma)$	$f_{2000}^{217}$	$106.7 \pm 2.1 \quad (-0.7\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.029$	$100\theta_*$	$1.04133 \pm 0.00092 \quad (+0.3\sigma)$	$\chi_{\mathrm{small}}^2$	$397.3 \pm 2.0 \quad (+0.2\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.481 \pm 0.085$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.93 \pm 0.25 \quad (+0.3\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.4 \pm 1.2 \quad (+0.4\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.224 \pm 0.054$	$z_{\mathrm{drag}}$	$1059.84 \pm 0.78 \quad (+0.0\sigma)$	$\chi_{\mathrm{plik}}^2$	$2361.0 \pm 6.1 \quad (+267.9\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.664 \pm 0.081$	$r_{\mathrm{drag}}$	$147.7 \pm 2.8 \quad (+0.3\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.068 \pm 0.080 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.08 \pm 0.27$	$k_{\mathrm{D}}$	$0.1405 \pm 0.0025 \quad (-0.2\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.23 \pm 0.47 \quad (-0.4\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16064 \pm 0.00047 \quad (-0.8\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$5.1 \pm 1.7 \quad (+0.2\sigma)$
$c_{217}$	$0.99817 \pm 0.00064 \quad (-0.2\sigma)$	$z_{\mathrm{eq}}$	$3389 \pm 33 \quad (+0.5\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.6 \pm 4.5 \quad (+1.2\sigma)$
$H_0$	$67.4 \pm 1.6 \quad (-0.4\sigma)$	$k_{\mathrm{eq}}$	$0.01031 \pm 0.00016 \quad (-0.2\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.3 \pm 1.4 \quad (+0.1\sigma)$
$\Omega_{\Lambda}$	$0.6883 \pm 0.0072 \quad (-0.4\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8159 \pm 0.0056 \quad (-0.5\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2781.7 \pm 6.0 \quad (+274.6\sigma)$
$\Omega_{\mathrm{m}}$	$0.3117 \pm 0.0072 \quad (+0.4\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4507 \pm 0.0029 \quad (-0.5\sigma)$		
$\Omega_{\mathrm{m}}h^2$	$0.1417 \pm 0.0048 \quad (-0.3\sigma)$	$H(0.15)$	$72.7 \pm 1.6 \quad (-0.4\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2799.64; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.31; R - 1 = 0.02640$$



### 11.15 base\_nnu\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02225 \pm 0.00022 \quad (+0.5\sigma)$	$\Omega_{\text{m}}h^2$	$0.1400^{+0.0042}_{-0.0049} \quad (+0.0\sigma)$	$100\theta_{\text{s,eq}}$	$0.4476 \pm 0.0037 \quad (+0.1\sigma)$
$\Omega_{\text{c}}h^2$	$0.1171^{+0.0042}_{-0.0048} \quad (-0.0\sigma)$	$\Omega_{\text{m}}h^3$	$0.0926^{+0.0048}_{-0.0058} \quad (+0.0\sigma)$	$H(0.15)$	$71.4^{+1.7}_{-1.9} \quad (+0.1\sigma)$
$100\theta_{\text{MC}}$	$1.0415 \pm 0.0012 \quad (-0.1\sigma)$	$\sigma_8$	$0.804 \pm 0.011 \quad (-0.0\sigma)$	$D_{\text{M}}(0.15)$	$656 \pm 17 \quad (-0.1\sigma)$
$\tau$	$0.0547^{+0.0050}_{-0.0078} \quad (+0.2\sigma)$	$S_8$	$0.831 \pm 0.013 \quad (-0.2\sigma)$	$H(0.38)$	$81.5^{+1.7}_{-2.0} \quad (+0.1\sigma)$
$N_{\text{eff}}$	$2.85^{+0.27}_{-0.32} \quad (+0.0\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4552 \pm 0.0071 \quad (-0.2\sigma)$	$D_{\text{M}}(0.38)$	$1561 \pm 39 \quad (-0.1\sigma)$
$Y_{\text{P}}$	$0.248 \pm 0.018 \quad (-0.3\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6050 \pm 0.0076 \quad (-0.2\sigma)$	$H(0.51)$	$88.3^{+1.8}_{-2.0} \quad (+0.1\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.038^{+0.014}_{-0.017} \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9892 \pm 0.0093 \quad (-0.2\sigma)$	$D_{\text{M}}(0.51)$	$2021 \pm 49 \quad (-0.1\sigma)$
$n_{\text{s}}$	$0.9594 \pm 0.0083 \quad (-0.1\sigma)$	$r_{\text{drag}}h$	$98.5 \pm 1.2 \quad (+0.1\sigma)$	$H(0.61)$	$93.9^{+1.8}_{-2.1} \quad (+0.1\sigma)$
$y_{\text{cal}}$	$1.0006 \pm 0.0024 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.455 \pm 0.024 \quad (+0.0\sigma)$	$D_{\text{M}}(0.61)$	$2351 \pm 56 \quad (-0.1\sigma)$
$A_{217}^{\text{CIB}}$	$46 \pm 7 \quad (-0.3\sigma)$	$z_{\text{re}}$	$7.68^{+0.54}_{-0.79} \quad (+0.1\sigma)$	$H(2.33)$	$233.8^{+3.7}_{-4.2} \quad (+0.0\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_{\text{s}}$	$2.087^{+0.030}_{-0.037} \quad (+0.1\sigma)$	$D_{\text{M}}(2.33)$	$5850 \pm 120 \quad (-0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$5.6^{+2.1}_{-1.9} \quad (+0.3\sigma)$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.870 \pm 0.019 \quad (-0.0\sigma)$	$f\sigma_8(0.15)$	$0.4590 \pm 0.0067 \quad (-0.2\sigma)$
$A_{100}^{\text{PS}}$	$256 \pm 28 \quad (-0.2\sigma)$	$D_{40}$	$1238 \pm 15 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.742 \pm 0.011 \quad (-0.0\sigma)$
$A_{143}^{\text{PS}}$	$45 \pm 8 \quad (-0.5\sigma)$	$D_{220}$	$5734 \pm 38 \quad (+0.5\sigma)$	$f\sigma_8(0.38)$	$0.4752 \pm 0.0060 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.2\sigma)$	$D_{810}$	$2537 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.657 \pm 0.010 \quad (+0.0\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{1420}$	$817.9 \pm 4.7 \quad (+0.6\sigma)$	$f\sigma_8(0.51)$	$0.4728 \pm 0.0058 \quad (-0.1\sigma)$
$A^{\text{kSZ}}$	$< 3.96 \quad (-0.3\sigma)$	$D_{2000}$	$231.5 \pm 1.8 \quad (+0.8\sigma)$	$\sigma_8(0.51)$	$0.6144 \pm 0.0097 \quad (+0.0\sigma)$
$A_{100}^{\text{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$n_{\text{s},0.002}$	$0.9594 \pm 0.0083 \quad (-0.1\sigma)$	$f\sigma_8(0.61)$	$0.4671 \pm 0.0058 \quad (-0.1\sigma)$
$A_{143}^{\text{dust}TT}$	$10.8 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.248 \pm 0.018 \quad (-0.3\sigma)$	$\sigma_8(0.61)$	$0.5844 \pm 0.0094 \quad (+0.0\sigma)$
$A_{143 \times 217}^{\text{dust}TT}$	$18.5 \pm 3.2 \quad (+0.1\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.249 \pm 0.018 \quad (-0.3\sigma)$	$f\sigma_8(2.33)$	$0.2944 \pm 0.0049 \quad (+0.0\sigma)$
$A_{217}^{\text{dust}TT}$	$93.9 \pm 7.2 \quad (+0.1\sigma)$	Age/Gyr	$14.00 \pm 0.28 \quad (-0.1\sigma)$	$\sigma_8(2.33)$	$0.3031 \pm 0.0054 \quad (+0.0\sigma)$
$A_{100}^{\text{dust}TE}$	$0.115 \pm 0.038$	$z_*$	$1089.81 \pm 0.44 \quad (-0.8\sigma)$	$f_{2000}^{143}$	$28.8 \pm 3.1 \quad (-0.7\sigma)$
$A_{100 \times 143}^{\text{dust}TE}$	$0.135 \pm 0.029$	$r_*$	$146.4 \pm 2.7 \quad (-0.1\sigma)$	$f_{2000}^{143 \times 217}$	$31.6 \pm 2.2 \quad (-0.7\sigma)$
$A_{100 \times 217}^{\text{dust}TE}$	$0.483 \pm 0.084$	$100\theta_*$	$1.04166 \pm 0.00092 \quad (+0.0\sigma)$	$f_{2000}^{217}$	$106.5 \pm 2.1 \quad (-0.6\sigma)$
$A_{143}^{\text{dust}TE}$	$0.225 \pm 0.054$	$D_{\text{M}}(z_*)/\text{Gpc}$	$14.05 \pm 0.25 \quad (-0.1\sigma)$	$\chi_{\text{lensing}}^2$	$9.00 \pm 0.75 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\text{dust}TE}$	$0.666 \pm 0.080$	$z_{\text{drag}}$	$1059.46 \pm 0.83 \quad (+0.1\sigma)$	$\chi_{\text{small}}^2$	$396.9 \pm 1.7 \quad (+0.1\sigma)$
$A_{217}^{\text{dust}TE}$	$2.09 \pm 0.27$	$r_{\text{drag}}$	$149.1 \pm 2.8 \quad (-0.1\sigma)$	$\chi_{\text{lowl}}^2$	$24.3 \pm 1.5 \quad (+0.1\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\text{D}}$	$0.1393^{+0.0023}_{-0.0026} \quad (+0.2\sigma)$	$\chi_{\text{plik}}^2$	$2359.7 \pm 6.0 \quad (+273.8\sigma)$
$c_{217}$	$0.99817 \pm 0.00063 \quad (-0.2\sigma)$	$100\theta_{\text{D}}$	$0.16053 \pm 0.00048 \quad (-0.7\sigma)$	$\chi_{\text{prior}}^2$	$11.4 \pm 4.5 \quad (+1.1\sigma)$
$H_0$	$66.1^{+1.7}_{-1.9} \quad (+0.1\sigma)$	$z_{\text{eq}}$	$3423 \pm 41 \quad (-0.1\sigma)$	$\chi_{\text{CMB}}^2$	$2789.9 \pm 6.1 \quad (+272.5\sigma)$
$\Omega_{\Lambda}$	$0.679 \pm 0.010 \quad (+0.2\sigma)$	$k_{\text{eq}}$	$0.01030 \pm 0.00014 \quad (-0.0\sigma)$		
$\Omega_{\text{m}}$	$0.321 \pm 0.010 \quad (-0.2\sigma)$	$100\theta_{\text{eq}}$	$0.8097 \pm 0.0072 \quad (+0.1\sigma)$		

$\bar{\chi}_{\text{eff}}^2 = 2801.36$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.92$ ;  $R - 1 = 0.01489$



# 11.16 base\_nnu\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02238 \pm 0.00019 \quad (+0.5\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.0950 \pm 0.0051 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.15)$	$645 \pm 14 \quad (+0.3\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1181 \pm 0.0045 \quad (-0.3\sigma)$	$\sigma_8$	$0.807 \pm 0.011 \quad (-0.3\sigma)$	$H(0.38)$	$82.6 \pm 1.7 \quad (-0.3\sigma)$
$100\theta_{\mathrm{MC}}$	$1.0412 \pm 0.0012 \quad (+0.1\sigma)$	$S_8$	$0.824 \pm 0.011 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1538 \pm 33 \quad (+0.3\sigma)$
$\tau$	$0.0568^{+0.0060}_{-0.0076} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4512 \pm 0.0063 \quad (-0.1\sigma)$	$H(0.51)$	$89.3 \pm 1.7 \quad (-0.3\sigma)$
$N_{\mathrm{eff}}$	$2.97 \pm 0.29 \quad (-0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6036 \pm 0.0076 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1993 \pm 42 \quad (+0.3\sigma)$
$Y_{\mathrm{P}}$	$0.245 \pm 0.018 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9847 \pm 0.0088 \quad (-0.0\sigma)$	$H(0.61)$	$94.9 \pm 1.8 \quad (-0.3\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.015}_{-0.017} \quad (-0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.48 \pm 0.84 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.61)$	$2318 \pm 49 \quad (+0.3\sigma)$
$n_{\mathrm{s}}$	$0.9645 \pm 0.0071 \quad (-0.5\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.441 \pm 0.021 \quad (+0.4\sigma)$	$H(2.33)$	$235.1 \pm 3.9 \quad (-0.3\sigma)$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0024 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.88^{+0.64}_{-0.74} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5791 \pm 110 \quad (+0.3\sigma)$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7 \quad (-0.3\sigma)$	$10^9 A_{\mathrm{s}}$	$2.101^{+0.030}_{-0.036} \quad (-0.1\sigma)$	$f\sigma_8(0.15)$	$0.4557 \pm 0.0061 \quad (-0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.875 \pm 0.019 \quad (-0.3\sigma)$	$\sigma_8(0.15)$	$0.746 \pm 0.011 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.6^{+2.1}_{-1.9} \quad (+0.3\sigma)$	$D_{40}$	$1231 \pm 14 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4738 \pm 0.0060 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$257 \pm 28 \quad (-0.3\sigma)$	$D_{220}$	$5740 \pm 37 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6612 \pm 0.0097 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.5\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.51)$	$0.4723 \pm 0.0060 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.2\sigma)$	$D_{1420}$	$818.3 \pm 4.7 \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.6187 \pm 0.0093 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{PS}}$	$115.2 \pm 9.9 \quad (+0.1\sigma)$	$D_{2000}$	$231.5 \pm 1.8 \quad (+0.8\sigma)$	$f\sigma_8(0.61)$	$0.4673 \pm 0.0060 \quad (-0.3\sigma)$
$A^{\mathrm{kSZ}}$	$< 3.95 \quad (-0.3\sigma)$	$n_{\mathrm{s},0.002}$	$0.9645 \pm 0.0071 \quad (-0.5\sigma)$	$\sigma_8(0.61)$	$0.5887 \pm 0.0089 \quad (-0.3\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.245 \pm 0.018 \quad (-0.1\sigma)$	$f\sigma_8(2.33)$	$0.2968 \pm 0.0046 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.247 \pm 0.018 \quad (-0.1\sigma)$	$\sigma_8(2.33)$	$0.3060 \pm 0.0050 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.6 \pm 3.2 \quad (+0.1\sigma)$	Age/Gyr	$13.86 \pm 0.26 \quad (+0.3\sigma)$	$f_{2000}^{143}$	$28.9 \pm 3.1 \quad (-0.7\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.9 \pm 7.2 \quad (+0.1\sigma)$	$z_*$	$1089.71 \pm 0.43 \quad (-0.7\sigma)$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.2 \quad (-0.7\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.038$	$r_*$	$145.3 \pm 2.6 \quad (+0.3\sigma)$	$f_{2000}^{217}$	$106.6 \pm 2.1 \quad (-0.7\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.134 \pm 0.030$	$100\theta_*$	$1.04141 \pm 0.00089 \quad (+0.2\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.03 \pm 0.66 \quad (-0.4\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.481 \pm 0.085$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.96 \pm 0.24 \quad (+0.3\sigma)$	$\chi_{\mathrm{small}}^2$	$397.3 \pm 1.9 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.224 \pm 0.054$	$z_{\mathrm{drag}}$	$1059.79 \pm 0.78 \quad (+0.0\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.5 \pm 1.2 \quad (+0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.665 \pm 0.081$	$r_{\mathrm{drag}}$	$148.0 \pm 2.7 \quad (+0.2\sigma)$	$\chi_{\mathrm{plik}}^2$	$2360.5 \pm 6.0 \quad (+275.9\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.08 \pm 0.27$	$k_{\mathrm{D}}$	$0.1402 \pm 0.0024 \quad (-0.1\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.072 \pm 0.081 \quad (+0.1\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16060 \pm 0.00047 \quad (-0.8\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.19 \pm 0.44 \quad (-0.3\sigma)$
$c_{217}$	$0.99816 \pm 0.00063 \quad (-0.2\sigma)$	$z_{\mathrm{eq}}$	$3392 \pm 32 \quad (+0.4\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$5.1 \pm 1.7 \quad (+0.2\sigma)$
$H_0$	$67.2 \pm 1.6 \quad (-0.3\sigma)$	$k_{\mathrm{eq}}$	$0.01030 \pm 0.00014 \quad (-0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.6 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\Lambda}$	$0.6876 \pm 0.0070 \quad (-0.3\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8153 \pm 0.0055 \quad (-0.4\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2790.3 \pm 6.0 \quad (+271.7\sigma)$
$\Omega_{\mathrm{m}}$	$0.3124 \pm 0.0070 \quad (+0.3\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4504 \pm 0.0028 \quad (-0.4\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.4 \pm 1.4 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1412 \pm 0.0046 \quad (-0.3\sigma)$	$H(0.15)$	$72.5 \pm 1.6 \quad (-0.3\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2808.31; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.99; R - 1 = 0.02301$$



# 11.17 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022190	$0.02222 \pm 0.00023$	$\Omega_{\mathrm{m}}h^3$	0.0905	$0.0915^{+0.0049}_{-0.0059}$	$100\theta_{\mathrm{eq}}$	0.8098	$0.8107 \pm 0.0079$
$\Omega_{\mathrm{c}}h^2$	0.11508	$0.1157^{+0.0044}_{-0.0050}$	$\sigma_8$	0.7983	$0.800 \pm 0.013$	$100\theta_{\mathrm{s,eq}}$	0.44771	$0.4481 \pm 0.0040$
$100\theta_{\mathrm{MC}}$	1.04185	$1.0419 \pm 0.0014$	$S_8$	0.8246	$0.824 \pm 0.016$	$H(0.15)$	70.90	$71.2 \pm 1.9$
$\tau$	0.0527	$0.0525 \pm 0.0080$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4516	$0.4515 \pm 0.0089$	$D_{\mathrm{M}}(0.15)$	659.9	$657 \pm 18$
$N_{\mathrm{eff}}$	2.738	$2.78^{+0.28}_{-0.33}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6004	$0.6009 \pm 0.0094$	$H(0.38)$	80.96	$81.3 \pm 1.9$
$Y_{\mathrm{P}}$	0.2548	$0.256^{+0.024}_{-0.021}$	$\sigma_8/h^{0.5}$	0.9853	$0.985 \pm 0.012$	$D_{\mathrm{M}}(0.38)$	1571.6	$1566 \pm 41$
$\ln(10^{10}A_{\mathrm{s}})$	3.0295	$3.031 \pm 0.020$	$r_{\mathrm{drag}}h$	98.58	$98.8 \pm 1.3$	$H(0.51)$	87.63	$88.0^{+1.8}_{-2.1}$
$n_{\mathrm{s}}$	0.9609	$0.9620 \pm 0.0097$	$\langle d^2 \rangle^{1/2}$	2.4401	$2.438 \pm 0.031$	$D_{\mathrm{M}}(0.51)$	2034	$2027 \pm 51$
$y_{\mathrm{cal}}$	1.00029	$1.0005 \pm 0.0025$	$z_{\mathrm{re}}$	7.50	$7.47 \pm 0.83$	$H(0.61)$	93.20	$93.5^{+1.9}_{-2.1}$
$A_{100}^{\mathrm{PS}}$	232.0	$240 \pm 26$	$10^9 A_{\mathrm{s}}$	2.0687	$2.072 \pm 0.041$	$D_{\mathrm{M}}(0.61)$	2366	$2358 \pm 58$
$A_{143}^{\mathrm{PS}}$	44.4	$40 \pm 9$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8617	$1.865 \pm 0.021$	$H(2.33)$	232.16	$232.7^{+3.9}_{-4.4}$
$A_{217}^{\mathrm{PS}}$	106.8	$102 \pm 10$	$D_{40}$	1228.2	$1228 \pm 18$	$D_{\mathrm{M}}(2.33)$	5889	$5872 \pm 120$
$A_{217}^{\mathrm{CIB}}$	39.8	$40 \pm 7$	$D_{220}$	5711.3	$5715 \pm 39$	$f\sigma_8(0.15)$	0.4555	$0.4555 \pm 0.0084$
$A_{143}^{\mathrm{tSZ}}$	5.46	$3.8^{+1.9}_{-2.5}$	$D_{810}$	2533.2	$2533 \pm 14$	$\sigma_8(0.15)$	0.7368	$0.738 \pm 0.012$
$r_{143 \times 217}^{\mathrm{PS}}$	0.731	$0.66 \pm 0.13$	$D_{1420}$	816.8	$815.7 \pm 5.2$	$f\sigma_8(0.38)$	0.4716	$0.4719 \pm 0.0075$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.649	$0.56^{+0.39}_{-0.17}$	$D_{2000}$	230.99	$230.4 \pm 2.3$	$\sigma_8(0.38)$	0.6522	$0.654 \pm 0.011$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.62	—	$n_{\mathrm{s},0.002}$	0.9609	$0.9620 \pm 0.0097$	$f\sigma_8(0.51)$	0.4693	$0.4697 \pm 0.0072$
$A^{\mathrm{kSZ}}$	1.62	$4.7^{+2.0}_{-4.2}$	$Y_{\mathrm{P}}$	0.2548	$0.256^{+0.024}_{-0.021}$	$\sigma_8(0.51)$	0.6100	$0.611 \pm 0.011$
$A_{100}^{\mathrm{dust}}$	0.994	$1.01 \pm 0.20$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.2561	$0.258^{+0.024}_{-0.021}$	$f\sigma_8(0.61)$	0.4637	$0.4642 \pm 0.0070$
$A_{143}^{\mathrm{dust}}$	0.963	$0.96 \pm 0.17$	Age/Gyr	14.097	$14.06 \pm 0.30$	$\sigma_8(0.61)$	0.5802	$0.582 \pm 0.010$
$A_{217}^{\mathrm{dust}}$	0.978	$0.97 \pm 0.10$	$z_*$	1089.96	$1090.08 \pm 0.61$	$f\sigma_8(2.33)$	0.2922	$0.2930 \pm 0.0055$
$A_{143 \times 217}^{\mathrm{dust}}$	1.046	$1.02 \pm 0.16$	$r_*$	147.41	$147.1 \pm 2.9$	$\sigma_8(2.33)$	0.3009	$0.3018 \pm 0.0059$
$c_{100}$	0.99771	$0.9975 \pm 0.0011$	$100\theta_*$	1.04190	$1.04188 \pm 0.00099$	$f_{2000}^{143}$	28.99	$30 \pm 4$
$c_{217}$	1.00096	$1.0011 \pm 0.0016$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	14.149	$14.12 \pm 0.27$	$f_{2000}^{217}$	106.16	$107.0 \pm 2.6$
$c_{TE}$	0.9966	$0.9970 \pm 0.0055$	$z_{\mathrm{drag}}$	1059.36	$1059.5 \pm 1.0$	$f_{2000}^{143 \times 217}$	31.73	$32.3 \pm 2.9$
$c_{EE}$	0.9917	$0.9926 \pm 0.0066$	$r_{\mathrm{drag}}$	150.19	$149.8 \pm 3.0$	$\chi_{\mathrm{small}}^2$	395.87	$396.9 \pm 1.7$
$H_0$	65.64	$65.9 \pm 1.9$	$k_{\mathrm{D}}$	0.13817	$0.1384^{+0.0024}_{-0.0028}$	$\chi_{\mathrm{lowl}}^2$	23.44	$23.5 \pm 1.6$
$\Omega_{\Lambda}$	0.6799	$0.681^{+0.012}_{-0.010}$	$100\theta_{\mathrm{D}}$	0.16070	$0.16087 \pm 0.00070$	$\chi_{\mathrm{CamSpec}}^2$	11498.8	$11515.3 \pm 6.1$
$\Omega_{\mathrm{m}}$	0.3201	$0.319^{+0.010}_{-0.012}$	$z_{\mathrm{eq}}$	3421.7	$3418 \pm 44$	$\chi_{\mathrm{prior}}^2$	1.94	$7.9 \pm 3.5$
$\Omega_{\mathrm{m}}h^2$	0.13791	$0.1386^{+0.0045}_{-0.0051}$	$k_{\mathrm{eq}}$	0.010225	$0.01024 \pm 0.00016$	$\chi_{\mathrm{CMB}}^2$	11918.1	$11935.7 \pm 6.2$

Best-fit  $\chi_{\mathrm{eff}}^2 = 11920.00$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 11943.57$ ;  $R - 1 = 0.00989$

$\chi_{\mathrm{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 commander\_dx12\_v3.2\_29: 23.44 CamSpec like\_10.7HM\_1400\_unified: 11498.75



### 11.18 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02233 \pm 0.00020$	$S_8$	$0.816 \pm 0.014$	$H(0.38)$	$82.2^{+1.6}_{-1.8}$
$\Omega_{\mathrm{c}}h^2$	$0.1164^{+0.0045}_{-0.0051}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4472 \pm 0.0075$	$D_{\mathrm{M}}(0.38)$	$1545 \pm 34$
$100\theta_{\mathrm{MC}}$	$1.0418 \pm 0.0014$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5988 \pm 0.0091$	$H(0.51)$	$88.8^{+1.7}_{-1.9}$
$\tau$	$0.0541 \pm 0.0077$	$\sigma_8/h^{0.5}$	$0.980 \pm 0.011$	$D_{\mathrm{M}}(0.51)$	$2002 \pm 44$
$N_{\mathrm{eff}}$	$2.88^{+0.27}_{-0.32}$	$r_{\mathrm{drag}}h$	$99.70 \pm 0.89$	$H(0.61)$	$94.4^{+1.8}_{-2.0}$
$Y_{\mathrm{P}}$	$0.257 \pm 0.022$	$\langle d^2 \rangle^{1/2}$	$2.422 \pm 0.026$	$D_{\mathrm{M}}(0.61)$	$2330 \pm 50$
$\ln(10^{10}A_{\mathrm{s}})$	$3.036 \pm 0.019$	$z_{\mathrm{re}}$	$7.63 \pm 0.78$	$H(2.33)$	$233.6 \pm 4.1$
$n_{\mathrm{s}}$	$0.9672 \pm 0.0078$	$10^9 A_{\mathrm{s}}$	$2.082 \pm 0.039$	$D_{\mathrm{M}}(2.33)$	$5823 \pm 110$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.869 \pm 0.020$	$f\sigma_8(0.15)$	$0.4518 \pm 0.0073$
$A_{100}^{\mathrm{PS}}$	$242 \pm 26$	$D_{40}$	$1220 \pm 16$	$\sigma_8(0.15)$	$0.741 \pm 0.012$
$A_{143}^{\mathrm{PS}}$	$40 \pm 9$	$D_{220}$	$5719 \pm 39$	$f\sigma_8(0.38)$	$0.4700 \pm 0.0072$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{810}$	$2534 \pm 14$	$\sigma_8(0.38)$	$0.657 \pm 0.011$
$A_{217}^{\mathrm{CIB}}$	$40^{+7}_{-8}$	$D_{1420}$	$815.7 \pm 5.2$	$f\sigma_8(0.51)$	$0.4687 \pm 0.0071$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$D_{2000}$	$230.1 \pm 2.3$	$\sigma_8(0.51)$	$0.615 \pm 0.010$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9672 \pm 0.0078$	$f\sigma_8(0.61)$	$0.4639 \pm 0.0070$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.57^{+0.41}_{-0.14}$	$Y_{\mathrm{P}}$	$0.257 \pm 0.022$	$\sigma_8(0.61)$	$0.5851 \pm 0.0098$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.258 \pm 0.022$	$f\sigma_8(2.33)$	$0.2951 \pm 0.0050$
$A^{\mathrm{kSZ}}$	—	Age/Gyr	$13.94 \pm 0.27$	$\sigma_8(2.33)$	$0.3042 \pm 0.0054$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$z_*$	$1090.05 \pm 0.59$	$f_{2000}^{143}$	$30 \pm 4$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.18$	$r_*$	$146.3 \pm 2.8$	$f_{2000}^{217}$	$107.3 \pm 2.6$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04170 \pm 0.00097$	$f_{2000}^{143 \times 217}$	$32.6 \pm 2.8$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.04 \pm 0.26$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.8$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.91 \pm 0.90$	$\chi_{\mathrm{lowl}}^2$	$22.7 \pm 1.2$
$c_{217}$	$1.0012 \pm 0.0016$	$r_{\mathrm{drag}}$	$149.0 \pm 2.9$	$\chi_{\mathrm{CamSpec}}^2$	$11516.0 \pm 6.0$
$c_{TE}$	$0.9975 \pm 0.0053$	$k_{\mathrm{D}}$	$0.1390^{+0.0024}_{-0.0028}$	$\chi_{6\mathrm{DF}}^2$	$0.058 \pm 0.073$
$c_{EE}$	$0.9937 \pm 0.0064$	$100\theta_{\mathrm{D}}$	$0.16102 \pm 0.00066$	$\chi_{\mathrm{MGS}}^2$	$1.32 \pm 0.49$
$H_0$	$67.0^{+1.5}_{-1.7}$	$z_{\mathrm{eq}}$	$3390 \pm 33$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.5$
$\Omega_{\Lambda}$	$0.6891 \pm 0.0073$	$k_{\mathrm{eq}}$	$0.01023 \pm 0.00016$	$\chi_{\mathrm{prior}}^2$	$7.9 \pm 3.5$
$\Omega_{\mathrm{m}}$	$0.3109 \pm 0.0073$	$100\theta_{\mathrm{eq}}$	$0.8160 \pm 0.0056$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.2$
$\Omega_{\mathrm{m}}h^2$	$0.1394^{+0.0045}_{-0.0051}$	$100\theta_{\mathrm{s,eq}}$	$0.4508 \pm 0.0029$	$\chi_{\mathrm{CMB}}^2$	$11935.7 \pm 6.1$
$\Omega_{\mathrm{m}}h^3$	$0.0934^{+0.0048}_{-0.0057}$	$H(0.15)$	$72.2^{+1.5}_{-1.7}$		
$\sigma_8$	$0.802 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$648 \pm 15$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11949.72; R - 1 = 0.01974$$



### 11.19 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00023$	$\sigma_8$	$0.800 \pm 0.011$	$H(0.15)$	$71.0^{+1.7}_{-2.0}$
$\Omega_{\mathrm{c}}h^2$	$0.1156^{+0.0041}_{-0.0049}$	$S_8$	$0.827 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$659 \pm 18$
$100\theta_{\mathrm{MC}}$	$1.0419 \pm 0.0014$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4530 \pm 0.0072$	$H(0.38)$	$81.1^{+1.7}_{-2.0}$
$\tau$	$0.0536 \pm 0.0074$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6021 \pm 0.0076$	$D_{\mathrm{M}}(0.38)$	$1570 \pm 40$
$N_{\mathrm{eff}}$	$2.76^{+0.27}_{-0.33}$	$\sigma_8/h^{0.5}$	$0.9873 \pm 0.0096$	$H(0.51)$	$87.8^{+1.8}_{-2.1}$
$Y_{\mathrm{P}}$	$0.255 \pm 0.022$	$r_{\mathrm{drag}}h$	$98.6 \pm 1.3$	$D_{\mathrm{M}}(0.51)$	$2033 \pm 51$
$\ln(10^{10}A_{\mathrm{s}})$	$3.033 \pm 0.018$	$\langle d^2 \rangle^{1/2}$	$2.446 \pm 0.025$	$H(0.61)$	$93.4^{+1.8}_{-2.1}$
$n_{\mathrm{s}}$	$0.9606 \pm 0.0094$	$z_{\mathrm{re}}$	$7.58 \pm 0.75$	$D_{\mathrm{M}}(0.61)$	$2364 \pm 58$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$10^9 A_{\mathrm{s}}$	$2.075 \pm 0.037$	$H(2.33)$	$232.5^{+3.7}_{-4.3}$
$A_{100}^{\mathrm{PS}}$	$239 \pm 26$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.864 \pm 0.020$	$D_{\mathrm{M}}(2.33)$	$5883 \pm 120$
$A_{143}^{\mathrm{PS}}$	$39 \pm 9$	$D_{40}$	$1231 \pm 17$	$f\sigma_8(0.15)$	$0.4568 \pm 0.0067$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10$	$D_{220}$	$5717 \pm 39$	$\sigma_8(0.15)$	$0.739 \pm 0.011$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7$	$D_{810}$	$2534 \pm 14$	$f\sigma_8(0.38)$	$0.4729 \pm 0.0060$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.9}_{-2.5}$	$D_{1420}$	$816.1 \pm 5.1$	$\sigma_8(0.38)$	$0.654 \pm 0.010$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$D_{2000}$	$230.6 \pm 2.3$	$f\sigma_8(0.51)$	$0.4705 \pm 0.0059$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.39}_{-0.19}$	$n_{\mathrm{s},0.002}$	$0.9606 \pm 0.0094$	$\sigma_8(0.51)$	$0.612 \pm 0.010$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.255 \pm 0.022$	$f\sigma_8(0.61)$	$0.4649 \pm 0.0059$
$A^{\mathrm{kSZ}}$	$4.6^{+1.7}_{-4.3}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.257 \pm 0.022$	$\sigma_8(0.61)$	$0.5817 \pm 0.0098$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	Age/Gyr	$14.08 \pm 0.29$	$f\sigma_8(2.33)$	$0.2930 \pm 0.0052$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.17$	$z_*$	$1090.04 \pm 0.59$	$\sigma_8(2.33)$	$0.3017 \pm 0.0057$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$r_*$	$147.2 \pm 2.8$	$f_{2000}^{143}$	$30 \pm 4$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$100\theta_*$	$1.04190 \pm 0.00097$	$f_{2000}^{217}$	$106.8 \pm 2.6$
$c_{100}$	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.13 \pm 0.26$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.9$
$c_{217}$	$1.0011 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.45 \pm 0.99$	$\chi_{\mathrm{lensing}}^2$	$9.05 \pm 0.78$
$c_{TE}$	$0.9966 \pm 0.0054$	$r_{\mathrm{drag}}$	$150.0 \pm 2.9$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.6$
$c_{EE}$	$0.9920 \pm 0.0065$	$k_{\mathrm{D}}$	$0.1383^{+0.0024}_{-0.0027}$	$\chi_{\mathrm{lowl}}^2$	$23.8 \pm 1.5$
$H_0$	$65.7^{+1.7}_{-1.9}$	$100\theta_{\mathrm{D}}$	$0.16079 \pm 0.00069$	$\chi_{\mathrm{CamSpec}}^2$	$11514.7 \pm 5.9$
$\Omega_{\Lambda}$	$0.679 \pm 0.011$	$z_{\mathrm{eq}}$	$3424 \pm 44$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4$
$\Omega_{\mathrm{m}}$	$0.321 \pm 0.011$	$k_{\mathrm{eq}}$	$0.01024 \pm 0.00014$	$\chi_{\mathrm{CMB}}^2$	$11944.4 \pm 6.1$
$\Omega_{\mathrm{m}}h^2$	$0.1384^{+0.0042}_{-0.0050}$	$100\theta_{\mathrm{eq}}$	$0.8096 \pm 0.0076$		
$\Omega_{\mathrm{m}}h^3$	$0.0910^{+0.0047}_{-0.0059}$	$100\theta_{\mathrm{s,eq}}$	$0.4476 \pm 0.0039$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11952.22; R - 1 = 0.01363$$



## 11.20 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02232 \pm 0.00019$	$S_8$	$0.820 \pm 0.011$	$H(0.38)$	$82.1 \pm 1.7$
$\Omega_c h^2$	$0.1164^{+0.0043}_{-0.0048}$	$\sigma_8 \Omega_m^{0.5}$	$0.4491 \pm 0.0062$	$D_M(0.38)$	$1548 \pm 34$
$100\theta_{MC}$	$1.0417 \pm 0.0014$	$\sigma_8 \Omega_m^{0.25}$	$0.6009 \pm 0.0075$	$H(0.51)$	$88.7 \pm 1.8$
$\tau$	$0.0559 \pm 0.0072$	$\sigma_8/h^{0.5}$	$0.9835 \pm 0.0089$	$D_M(0.51)$	$2005 \pm 43$
$N_{\text{eff}}$	$2.88^{+0.27}_{-0.31}$	$r_{\text{drag}} h$	$99.54 \pm 0.86$	$H(0.61)$	$94.3 \pm 1.8$
$Y_P$	$0.256 \pm 0.022$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.022$	$D_M(0.61)$	$2333 \pm 49$
$\ln(10^{10} A_s)$	$3.040 \pm 0.016$	$z_{\text{re}}$	$7.82 \pm 0.72$	$H(2.33)$	$233.6 \pm 4.0$
$n_s$	$0.9661 \pm 0.0078$	$10^9 A_s$	$2.091 \pm 0.034$	$D_M(2.33)$	$5828 \pm 110$
$y_{\text{cal}}$	$1.0008 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.870 \pm 0.019$	$f\sigma_8(0.15)$	$0.4537 \pm 0.0060$
$A_{100}^{\text{PS}}$	$242 \pm 26$	$D_{40}$	$1224 \pm 15$	$\sigma_8(0.15)$	$0.743 \pm 0.010$
$A_{143}^{\text{PS}}$	$40 \pm 9$	$D_{220}$	$5724 \pm 39$	$f\sigma_8(0.38)$	$0.4717 \pm 0.0059$
$A_{217}^{\text{PS}}$	$102 \pm 10$	$D_{810}$	$2536 \pm 14$	$\sigma_8(0.38)$	$0.6583 \pm 0.0097$
$A_{217}^{\text{CIB}}$	$40^{+7}_{-8}$	$D_{1420}$	$816.2 \pm 5.2$	$f\sigma_8(0.51)$	$0.4702 \pm 0.0059$
$A_{143}^{\text{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$D_{2000}$	$230.3 \pm 2.3$	$\sigma_8(0.51)$	$0.6161 \pm 0.0092$
$r_{143 \times 217}^{\text{PS}}$	$0.66 \pm 0.13$	$n_{s,0.002}$	$0.9661 \pm 0.0078$	$f\sigma_8(0.61)$	$0.4652 \pm 0.0059$
$r_{143 \times 217}^{\text{CIB}}$	$0.56^{+0.42}_{-0.15}$	$Y_P$	$0.256 \pm 0.022$	$\sigma_8(0.61)$	$0.5862 \pm 0.0089$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.257 \pm 0.022$	$f\sigma_8(2.33)$	$0.2956 \pm 0.0046$
$A^{\text{kSZ}}$	—	Age/Gyr	$13.95 \pm 0.26$	$\sigma_8(2.33)$	$0.3047 \pm 0.0050$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.20$	$z_*$	$1090.03 \pm 0.60$	$f_{2000}^{143}$	$30 \pm 4$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.18$	$r_*$	$146.3 \pm 2.7$	$f_{2000}^{217}$	$107.2 \pm 2.6$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04170 \pm 0.00095$	$f_{2000}^{143 \times 217}$	$32.4 \pm 2.9$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16$	$D_M(z_*)/\text{Gpc}$	$14.04 \pm 0.25$	$\chi_{\text{lensing}}^2$	$9.27 \pm 0.86$
$c_{100}$	$0.9976 \pm 0.0011$	$z_{\text{drag}}$	$1059.86 \pm 0.90$	$\chi_{\text{simall}}^2$	$397.2 \pm 1.8$
$c_{217}$	$1.0011 \pm 0.0016$	$r_{\text{drag}}$	$149.0 \pm 2.7$	$\chi_{\text{lowl}}^2$	$23.0 \pm 1.2$
$c_{TE}$	$0.9972 \pm 0.0053$	$k_D$	$0.1390^{+0.0023}_{-0.0027}$	$\chi_{\text{CamSpec}}^2$	$11515.3 \pm 6.0$
$c_{EE}$	$0.9934 \pm 0.0064$	$100\theta_D$	$0.16097 \pm 0.00067$	$\chi_{6\text{DF}}^2$	$0.068 \pm 0.079$
$H_0$	$66.8 \pm 1.6$	$z_{\text{eq}}$	$3395 \pm 33$	$\chi_{\text{MGS}}^2$	$1.22 \pm 0.46$
$\Omega_\Lambda$	$0.6877 \pm 0.0071$	$k_{\text{eq}}$	$0.01024 \pm 0.00015$	$\chi_{\text{DR12BAO}}^2$	$5.0 \pm 1.6$
$\Omega_m$	$0.3123 \pm 0.0071$	$100\theta_{\text{eq}}$	$0.8151 \pm 0.0056$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.5$
$\Omega_m h^2$	$0.1394^{+0.0043}_{-0.0049}$	$100\theta_{s,\text{eq}}$	$0.4504 \pm 0.0029$	$\chi_{\text{CMB}}^2$	$11944.7 \pm 6.2$
$\Omega_m h^3$	$0.0932^{+0.0047}_{-0.0055}$	$H(0.15)$	$72.1 \pm 1.6$	$\chi_{\text{BAO}}^2$	$6.3 \pm 1.3$
$\sigma_8$	$0.804 \pm 0.011$	$D_M(0.15)$	$649 \pm 15$		

$$\bar{\chi}_{\text{eff}}^2 = 11958.81; R - 1 = 0.01792$$



## 11.21 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02223 \pm 0.00023$	$\Omega_{\mathrm{m}}h^3$	$0.0915^{+0.0049}_{-0.0059}$	$100\theta_{\mathrm{eq}}$	$0.8110 \pm 0.0078$
$\Omega_{\mathrm{c}}h^2$	$0.1157^{+0.0044}_{-0.0050}$	$\sigma_8$	$0.801 \pm 0.012$	$100\theta_{\mathrm{s,eq}}$	$0.4483 \pm 0.0040$
$100\theta_{\mathrm{MC}}$	$1.0419 \pm 0.0014$	$S_8$	$0.825 \pm 0.016$	$H(0.15)$	$71.3 \pm 1.9$
$\tau$	$0.0542^{+0.0046}_{-0.0083}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4518 \pm 0.0089$	$D_{\mathrm{M}}(0.15)$	$657 \pm 18$
$N_{\mathrm{eff}}$	$2.78^{+0.28}_{-0.33}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6016 \pm 0.0093$	$H(0.38)$	$81.3 \pm 1.9$
$Y_{\mathrm{P}}$	$0.257^{+0.024}_{-0.021}$	$\sigma_8/h^{0.5}$	$0.986 \pm 0.012$	$D_{\mathrm{M}}(0.38)$	$1565 \pm 40$
$\ln(10^{10}A_{\mathrm{s}})$	$3.034^{+0.016}_{-0.019}$	$r_{\mathrm{drag}}h$	$98.8 \pm 1.3$	$H(0.51)$	$88.0 \pm 2.0$
$n_{\mathrm{s}}$	$0.9625 \pm 0.0096$	$\langle d^2 \rangle^{1/2}$	$2.440 \pm 0.030$	$D_{\mathrm{M}}(0.51)$	$2026 \pm 51$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$z_{\mathrm{re}}$	$7.65^{+0.50}_{-0.86}$	$H(0.61)$	$93.6 \pm 2.0$
$A_{100}^{\mathrm{PS}}$	$240 \pm 26$	$10^9 A_{\mathrm{s}}$	$2.078^{+0.032}_{-0.041}$	$D_{\mathrm{M}}(0.61)$	$2357 \pm 58$
$A_{143}^{\mathrm{PS}}$	$40 \pm 9$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.865 \pm 0.021$	$H(2.33)$	$232.7 \pm 4.2$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{40}$	$1227 \pm 18$	$D_{\mathrm{M}}(2.33)$	$5871 \pm 120$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7$	$D_{220}$	$5715 \pm 39$	$f\sigma_8(0.15)$	$0.4558 \pm 0.0084$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5}$	$D_{810}$	$2533 \pm 14$	$\sigma_8(0.15)$	$0.740 \pm 0.012$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$D_{1420}$	$815.7 \pm 5.2$	$f\sigma_8(0.38)$	$0.4724 \pm 0.0074$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.39}_{-0.18}$	$D_{2000}$	$230.4 \pm 2.3$	$\sigma_8(0.38)$	$0.655 \pm 0.011$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.9625 \pm 0.0096$	$f\sigma_8(0.51)$	$0.4703 \pm 0.0071$
$A^{\mathrm{kSZ}}$	$4.7^{+1.8}_{-4.3}$	$Y_{\mathrm{P}}$	$0.257^{+0.024}_{-0.021}$	$\sigma_8(0.51)$	$0.613 \pm 0.011$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.258^{+0.024}_{-0.021}$	$f\sigma_8(0.61)$	$0.4649 \pm 0.0069$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.17$	Age/Gyr	$14.05 \pm 0.30$	$\sigma_8(0.61)$	$0.583 \pm 0.010$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$z_*$	$1090.08 \pm 0.61$	$f\sigma_8(2.33)$	$0.2936 \pm 0.0053$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$r_*$	$147.1 \pm 2.9$	$\sigma_8(2.33)$	$0.3024 \pm 0.0058$
$c_{100}$	$0.9975 \pm 0.0010$	$100\theta_*$	$1.04188 \pm 0.00099$	$f_{2000}^{143}$	$30 \pm 4$
$c_{217}$	$1.0011 \pm 0.0016$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.11 \pm 0.27$	$f_{2000}^{217}$	$107.0 \pm 2.6$
$c_{TE}$	$0.9969 \pm 0.0055$	$z_{\mathrm{drag}}$	$1059.6 \pm 1.0$	$f_{2000}^{143 \times 217}$	$32.3 \pm 2.9$
$c_{EE}$	$0.9926 \pm 0.0066$	$r_{\mathrm{drag}}$	$149.8 \pm 3.0$	$\chi_{\mathrm{simall}}^2$	$396.8 \pm 1.7$
$H_0$	$66.0 \pm 1.9$	$k_{\mathrm{D}}$	$0.1384^{+0.0024}_{-0.0028}$	$\chi_{\mathrm{lowl}}^2$	$23.5 \pm 1.6$
$\Omega_{\Lambda}$	$0.682 \pm 0.011$	$100\theta_{\mathrm{D}}$	$0.16088 \pm 0.00071$	$\chi_{\mathrm{CamSpec}}^2$	$11515.2 \pm 6.1$
$\Omega_{\mathrm{m}}$	$0.318 \pm 0.011$	$z_{\mathrm{eq}}$	$3417 \pm 44$	$\chi_{\mathrm{prior}}^2$	$7.9 \pm 3.5$
$\Omega_{\mathrm{m}}h^2$	$0.1385^{+0.0045}_{-0.0051}$	$k_{\mathrm{eq}}$	$0.01024 \pm 0.00016$	$\chi_{\mathrm{CMB}}^2$	$11935.4 \pm 6.1$
$\bar{\chi}_{\mathrm{eff}}^2 = 11943.30; R - 1 = 0.00937$					



## 11.22 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02233 \pm 0.00020$	$S_8$	$0.817 \pm 0.014$	$H(0.38)$	$82.2^{+1.6}_{-1.8}$
$\Omega_{\mathrm{c}}h^2$	$0.1164^{+0.0044}_{-0.0051}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4476 \pm 0.0075$	$D_{\mathrm{M}}(0.38)$	$1545 \pm 34$
$100\theta_{\mathrm{MC}}$	$1.0418 \pm 0.0014$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5994 \pm 0.0089$	$H(0.51)$	$88.8^{+1.7}_{-1.9}$
$\tau$	$0.0552^{+0.0053}_{-0.0078}$	$\sigma_8/h^{0.5}$	$0.9812^{+0.0096}_{-0.011}$	$D_{\mathrm{M}}(0.51)$	$2002 \pm 44$
$N_{\mathrm{eff}}$	$2.88^{+0.27}_{-0.32}$	$r_{\mathrm{drag}}h$	$99.72 \pm 0.89$	$H(0.61)$	$94.4^{+1.7}_{-2.0}$
$Y_{\mathrm{P}}$	$0.257^{+0.023}_{-0.021}$	$\langle d^2 \rangle^{1/2}$	$2.424 \pm 0.025$	$D_{\mathrm{M}}(0.61)$	$2329 \pm 50$
$\ln(10^{10}A_{\mathrm{s}})$	$3.038^{+0.016}_{-0.018}$	$z_{\mathrm{re}}$	$7.75^{+0.57}_{-0.80}$	$H(2.33)$	$233.6^{+3.9}_{-4.3}$
$n_{\mathrm{s}}$	$0.9674 \pm 0.0079$	$10^9 A_{\mathrm{s}}$	$2.087^{+0.033}_{-0.038}$	$D_{\mathrm{M}}(2.33)$	$5823 \pm 110$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.869 \pm 0.020$	$f\sigma_8(0.15)$	$0.4522 \pm 0.0072$
$A_{100}^{\mathrm{PS}}$	$242 \pm 26$	$D_{40}$	$1220 \pm 16$	$\sigma_8(0.15)$	$0.742 \pm 0.012$
$A_{143}^{\mathrm{PS}}$	$40 \pm 9$	$D_{220}$	$5719 \pm 39$	$f\sigma_8(0.38)$	$0.4705 \pm 0.0070$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{810}$	$2534 \pm 14$	$\sigma_8(0.38)$	$0.658 \pm 0.011$
$A_{217}^{\mathrm{CIB}}$	$40^{+7}_{-8}$	$D_{1420}$	$815.7 \pm 5.2$	$f\sigma_8(0.51)$	$0.4692 \pm 0.0069$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$D_{2000}$	$230.1 \pm 2.3$	$\sigma_8(0.51)$	$0.616 \pm 0.010$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9674 \pm 0.0079$	$f\sigma_8(0.61)$	$0.4643 \pm 0.0068$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.57^{+0.42}_{-0.14}$	$Y_{\mathrm{P}}$	$0.257^{+0.023}_{-0.021}$	$\sigma_8(0.61)$	$0.5858 \pm 0.0096$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.258^{+0.023}_{-0.021}$	$f\sigma_8(2.33)$	$0.2954 \pm 0.0049$
$A^{\mathrm{kSZ}}$	—	Age/Gyr	$13.94 \pm 0.27$	$\sigma_8(2.33)$	$0.3046 \pm 0.0052$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$z_*$	$1090.05 \pm 0.59$	$f_{2000}^{143}$	$30 \pm 4$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.18$	$r_*$	$146.3 \pm 2.8$	$f_{2000}^{217}$	$107.3 \pm 2.6$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.11$	$100\theta_*$	$1.04171 \pm 0.00097$	$f_{2000}^{143 \times 217}$	$32.6 \pm 2.8$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.17$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.04 \pm 0.25$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.8$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.92 \pm 0.90$	$\chi_{\mathrm{lowl}}^2$	$22.8 \pm 1.2$
$c_{217}$	$1.0012 \pm 0.0016$	$r_{\mathrm{drag}}$	$149.0 \pm 2.8$	$\chi_{\mathrm{CamSpec}}^2$	$11515.8 \pm 6.0$
$c_{TE}$	$0.9975 \pm 0.0053$	$k_{\mathrm{D}}$	$0.1390^{+0.0024}_{-0.0028}$	$\chi_{6\mathrm{DF}}^2$	$0.057 \pm 0.071$
$c_{EE}$	$0.9936 \pm 0.0064$	$100\theta_{\mathrm{D}}$	$0.16102 \pm 0.00067$	$\chi_{\mathrm{MGS}}^2$	$1.33 \pm 0.49$
$H_0$	$67.0^{+1.5}_{-1.7}$	$z_{\mathrm{eq}}$	$3389 \pm 33$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.5$
$\Omega_{\Lambda}$	$0.6892 \pm 0.0073$	$k_{\mathrm{eq}}$	$0.01023 \pm 0.00016$	$\chi_{\mathrm{prior}}^2$	$7.9 \pm 3.5$
$\Omega_{\mathrm{m}}$	$0.3108 \pm 0.0073$	$100\theta_{\mathrm{eq}}$	$0.8161 \pm 0.0056$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.2$
$\Omega_{\mathrm{m}}h^2$	$0.1393^{+0.0045}_{-0.0051}$	$100\theta_{\mathrm{s,eq}}$	$0.4509 \pm 0.0029$	$\chi_{\mathrm{CMB}}^2$	$11935.5 \pm 6.0$
$\Omega_{\mathrm{m}}h^3$	$0.0934^{+0.0047}_{-0.0057}$	$H(0.15)$	$72.2^{+1.5}_{-1.7}$		
$\sigma_8$	$0.803 \pm 0.012$	$D_{\mathrm{M}}(0.15)$	$648 \pm 15$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11949.50; R - 1 = 0.02228$$



### 11.23 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02221 \pm 0.00023$	$\sigma_8$	$0.801 \pm 0.011$	$H(0.15)$	$71.1^{+1.7}_{-1.9}$
$\Omega_c h^2$	$0.1155^{+0.0041}_{-0.0049}$	$S_8$	$0.827 \pm 0.013$	$D_M(0.15)$	$659 \pm 18$
$100\theta_{MC}$	$1.0419 \pm 0.0014$	$\sigma_8 \Omega_m^{0.5}$	$0.4530 \pm 0.0072$	$H(0.38)$	$81.1^{+1.7}_{-2.0}$
$\tau$	$0.0546^{+0.0050}_{-0.0077}$	$\sigma_8 \Omega_m^{0.25}$	$0.6024 \pm 0.0075$	$D_M(0.38)$	$1569 \pm 40$
$N_{\text{eff}}$	$2.76^{+0.27}_{-0.33}$	$\sigma_8/h^{0.5}$	$0.9878 \pm 0.0094$	$H(0.51)$	$87.8^{+1.8}_{-2.1}$
$Y_P$	$0.256 \pm 0.022$	$r_{\text{drag}} h$	$98.6 \pm 1.2$	$D_M(0.51)$	$2031 \pm 51$
$\ln(10^{10} A_s)$	$3.035^{+0.015}_{-0.017}$	$\langle d^2 \rangle^{1/2}$	$2.446 \pm 0.025$	$H(0.61)$	$93.4^{+1.8}_{-2.1}$
$n_s$	$0.9611 \pm 0.0093$	$z_{\text{re}}$	$7.70^{+0.55}_{-0.78}$	$D_M(0.61)$	$2363 \pm 58$
$y_{\text{cal}}$	$1.0006 \pm 0.0025$	$10^9 A_s$	$2.080^{+0.031}_{-0.036}$	$H(2.33)$	$232.5^{+3.7}_{-4.3}$
$A_{100}^{\text{PS}}$	$239 \pm 26$	$10^9 A_s e^{-2\tau}$	$1.864 \pm 0.020$	$D_M(2.33)$	$5881 \pm 120$
$A_{143}^{\text{PS}}$	$39 \pm 9$	$D_{40}$	$1230 \pm 17$	$f\sigma_8(0.15)$	$0.4569 \pm 0.0067$
$A_{217}^{\text{PS}}$	$103 \pm 10$	$D_{220}$	$5717 \pm 39$	$\sigma_8(0.15)$	$0.739 \pm 0.011$
$A_{217}^{\text{CIB}}$	$40 \pm 7$	$D_{810}$	$2534 \pm 14$	$f\sigma_8(0.38)$	$0.4731 \pm 0.0059$
$A_{143}^{\text{tSZ}}$	$3.8^{+1.8}_{-2.5}$	$D_{1420}$	$816.1 \pm 5.1$	$\sigma_8(0.38)$	$0.655 \pm 0.010$
$r_{143 \times 217}^{\text{PS}}$	$0.66 \pm 0.13$	$D_{2000}$	$230.6 \pm 2.3$	$f\sigma_8(0.51)$	$0.4708 \pm 0.0058$
$r_{143 \times 217}^{\text{CIB}}$	$0.55^{+0.39}_{-0.19}$	$n_{s,0.002}$	$0.9611 \pm 0.0093$	$\sigma_8(0.51)$	$0.6123 \pm 0.0099$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.256 \pm 0.022$	$f\sigma_8(0.61)$	$0.4652 \pm 0.0058$
$A^{\text{kSZ}}$	$4.6^{+1.8}_{-4.3}$	$Y_P^{\text{BBN}}$	$0.257 \pm 0.022$	$\sigma_8(0.61)$	$0.5824 \pm 0.0096$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.19$	Age/Gyr	$14.08 \pm 0.29$	$f\sigma_8(2.33)$	$0.2934 \pm 0.0051$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.17$	$z_*$	$1090.04 \pm 0.60$	$\sigma_8(2.33)$	$0.3021 \pm 0.0055$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$r_*$	$147.2 \pm 2.8$	$f_{2000}^{143}$	$30 \pm 4$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.16$	$100\theta_*$	$1.04190 \pm 0.00097$	$f_{2000}^{217}$	$106.8 \pm 2.6$
$c_{100}$	$0.9975 \pm 0.0011$	$D_M(z_*)/\text{Gpc}$	$14.13 \pm 0.26$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.9$
$c_{217}$	$1.0011 \pm 0.0016$	$z_{\text{drag}}$	$1059.48 \pm 0.98$	$\chi_{\text{lensing}}^2$	$9.02 \pm 0.75$
$c_{TE}$	$0.9966 \pm 0.0054$	$r_{\text{drag}}$	$150.0 \pm 2.9$	$\chi_{\text{simall}}^2$	$396.9 \pm 1.6$
$c_{EE}$	$0.9921 \pm 0.0065$	$k_D$	$0.1383^{+0.0024}_{-0.0027}$	$\chi_{\text{lowl}}^2$	$23.7 \pm 1.5$
$H_0$	$65.8^{+1.7}_{-1.9}$	$100\theta_D$	$0.16081 \pm 0.00069$	$\chi_{\text{CamSpec}}^2$	$11514.6 \pm 5.9$
$\Omega_\Lambda$	$0.680 \pm 0.011$	$z_{\text{eq}}$	$3422 \pm 43$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.4$
$\Omega_m$	$0.320 \pm 0.011$	$k_{\text{eq}}$	$0.01024 \pm 0.00014$	$\chi_{\text{CMB}}^2$	$11944.2 \pm 6.1$
$\Omega_m h^2$	$0.1384^{+0.0042}_{-0.0050}$	$100\theta_{\text{eq}}$	$0.8099 \pm 0.0076$		
$\Omega_m h^3$	$0.0911^{+0.0047}_{-0.0059}$	$100\theta_{s,\text{eq}}$	$0.4477 \pm 0.0039$		

$$\bar{\chi}_{\text{eff}}^2 = 11952.01; R - 1 = 0.01202$$



# 11.24 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02232 \pm 0.00019$	$S_8$	$0.820 \pm 0.011$	$H(0.38)$	$82.1^{+1.6}_{-1.8}$
$\Omega_{\mathrm{c}}h^2$	$0.1164^{+0.0043}_{-0.0048}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4492 \pm 0.0062$	$D_{\mathrm{M}}(0.38)$	$1548 \pm 34$
$100\theta_{\mathrm{MC}}$	$1.0418 \pm 0.0014$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6011 \pm 0.0075$	$H(0.51)$	$88.7^{+1.7}_{-1.9}$
$\tau$	$0.0565^{+0.0058}_{-0.0074}$	$\sigma_8/h^{0.5}$	$0.9839 \pm 0.0087$	$D_{\mathrm{M}}(0.51)$	$2005 \pm 43$
$N_{\mathrm{eff}}$	$2.87^{+0.27}_{-0.31}$	$r_{\mathrm{drag}}h$	$99.55 \pm 0.86$	$H(0.61)$	$94.3^{+1.7}_{-1.9}$
$Y_{\mathrm{P}}$	$0.256 \pm 0.022$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.022$	$D_{\mathrm{M}}(0.61)$	$2333 \pm 49$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041 \pm 0.015$	$z_{\mathrm{re}}$	$7.87^{+0.61}_{-0.74}$	$H(2.33)$	$233.6 \pm 4.0$
$n_{\mathrm{s}}$	$0.9662 \pm 0.0078$	$10^9 A_{\mathrm{s}}$	$2.093 \pm 0.032$	$D_{\mathrm{M}}(2.33)$	$5828 \pm 110$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.870 \pm 0.019$	$f\sigma_8(0.15)$	$0.4538 \pm 0.0060$
$A_{100}^{\mathrm{PS}}$	$241 \pm 26$	$D_{40}$	$1224 \pm 15$	$\sigma_8(0.15)$	$0.743 \pm 0.010$
$A_{143}^{\mathrm{PS}}$	$40 \pm 9$	$D_{220}$	$5724 \pm 39$	$f\sigma_8(0.38)$	$0.4718 \pm 0.0059$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{810}$	$2536 \pm 14$	$\sigma_8(0.38)$	$0.6586 \pm 0.0096$
$A_{217}^{\mathrm{CIB}}$	$40^{+7}_{-8}$	$D_{1420}$	$816.2 \pm 5.2$	$f\sigma_8(0.51)$	$0.4704 \pm 0.0059$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$D_{2000}$	$230.3 \pm 2.3$	$\sigma_8(0.51)$	$0.6164 \pm 0.0091$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.12}_{-0.14}$	$n_{\mathrm{s},0.002}$	$0.9662 \pm 0.0078$	$f\sigma_8(0.61)$	$0.4654 \pm 0.0059$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.42}_{-0.15}$	$Y_{\mathrm{P}}$	$0.256 \pm 0.022$	$\sigma_8(0.61)$	$0.5865 \pm 0.0088$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.258 \pm 0.022$	$f\sigma_8(2.33)$	$0.2957 \pm 0.0046$
$A^{\mathrm{kSZ}}$	—	Age/Gyr	$13.95 \pm 0.26$	$\sigma_8(2.33)$	$0.3048 \pm 0.0049$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$z_*$	$1090.03 \pm 0.60$	$f_{2000}^{143}$	$30 \pm 4$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$r_*$	$146.3 \pm 2.7$	$f_{2000}^{217}$	$107.2 \pm 2.6$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04171 \pm 0.00095$	$f_{2000}^{143 \times 217}$	$32.4 \pm 2.9$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.05 \pm 0.25$	$\chi_{\mathrm{lensing}}^2$	$9.23 \pm 0.81$
$c_{100}$	$0.9976 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.87 \pm 0.90$	$\chi_{\mathrm{simall}}^2$	$397.2 \pm 1.9$
$c_{217}$	$1.0011 \pm 0.0016$	$r_{\mathrm{drag}}$	$149.0 \pm 2.7$	$\chi_{\mathrm{lowl}}^2$	$23.0 \pm 1.2$
$c_{TE}$	$0.9972 \pm 0.0053$	$k_{\mathrm{D}}$	$0.1390^{+0.0023}_{-0.0027}$	$\chi_{\mathrm{CamSpec}}^2$	$11515.2 \pm 6.0$
$c_{EE}$	$0.9934 \pm 0.0064$	$100\theta_{\mathrm{D}}$	$0.16097 \pm 0.00067$	$\chi_{6\mathrm{DF}}^2$	$0.067 \pm 0.077$
$H_0$	$66.8 \pm 1.6$	$z_{\mathrm{eq}}$	$3394 \pm 33$	$\chi_{\mathrm{MGS}}^2$	$1.23 \pm 0.46$
$\Omega_{\Lambda}$	$0.6879 \pm 0.0071$	$k_{\mathrm{eq}}$	$0.01024 \pm 0.00015$	$\chi_{\mathrm{DR12BAO}}^2$	$5.0 \pm 1.6$
$\Omega_{\mathrm{m}}$	$0.3121 \pm 0.0071$	$100\theta_{\mathrm{eq}}$	$0.8152 \pm 0.0056$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.5$
$\Omega_{\mathrm{m}}h^2$	$0.1394^{+0.0043}_{-0.0049}$	$100\theta_{\mathrm{s,eq}}$	$0.4504 \pm 0.0028$	$\chi_{\mathrm{CMB}}^2$	$11944.6 \pm 6.1$
$\Omega_{\mathrm{m}}h^3$	$0.0932^{+0.0046}_{-0.0055}$	$H(0.15)$	$72.1 \pm 1.6$	$\chi_{\mathrm{BAO}}^2$	$6.3 \pm 1.3$
$\sigma_8$	$0.804 \pm 0.011$	$D_{\mathrm{M}}(0.15)$	$649 \pm 15$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11958.67; R - 1 = 0.01939$$



### 11.25 base\_nnu\_yhe\_plikHM\_TT\_lowl\_lowE\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022013	$0.02207 \pm 0.00032$	$S_8$	0.8425	$0.840 \pm 0.025$	$100\theta_{s,eq}$	0.4460	$0.4475 \pm 0.0066$
$\Omega_c h^2$	0.11853	$0.1201 \pm 0.0047$	$\sigma_8 \Omega_m^{0.5}$	0.4615	$0.460 \pm 0.014$	$H(0.15)$	71.04	$71.9 \pm 2.6$
$100\theta_{MC}$	1.04099	$1.04082 \pm 0.00076$	$\sigma_8 \Omega_m^{0.25}$	0.6100	$0.610 \pm 0.012$	$D_M(0.15)$	659.2	$652 \pm 25$
$\tau$	0.0515	$0.0512 \pm 0.0082$	$\sigma_8/h^{0.5}$	0.9951	$0.993 \pm 0.016$	$H(0.38)$	81.30	$82.1 \pm 2.5$
$N_{eff}$	2.879	$3.00 \pm 0.34$	$r_{drag}h$	97.65	$98.2 \pm 2.3$	$D_M(0.38)$	1568	$1552 \pm 55$
$Y_P$	0.24393	$0.2439 \pm 0.0040$	$\langle d^2 \rangle^{1/2}$	2.4651	$2.458 \pm 0.046$	$H(0.51)$	88.10	$89.0 \pm 2.5$
$\ln(10^{10} A_s)$	3.0337	$3.036 \pm 0.022$	$z_{re}$	7.43	$7.39 \pm 0.86$	$D_M(0.51)$	2029	$2009 \pm 68$
$n_s$	0.9575	$0.960 \pm 0.014$	$10^9 A_s$	2.0773	$2.084 \pm 0.045$	$H(0.61)$	93.77	$94.6 \pm 2.5$
$y_{cal}$	1.00024	$1.0005 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8739	$1.881 \pm 0.024$	$D_M(0.61)$	2359	$2336 \pm 77$
$A_{217}^{CIB}$	47.0	$48 \pm 7$	$D_{40}$	1238.6	$1237 \pm 22$	$H(2.33)$	234.69	$236.1 \pm 4.2$
$\xi^{tSZ \times CIB}$	0.51	—	$D_{220}$	5706.3	$5714 \pm 41$	$D_M(2.33)$	5851	$5803 \pm 150$
$A_{143}^{tSZ}$	6.97	$5.1 \pm 2.0$	$D_{810}$	2535.3	$2536 \pm 14$	$f\sigma_8(0.15)$	0.4647	$0.464 \pm 0.012$
$A_{100}^{PS}$	249.7	$262 \pm 29$	$D_{1420}$	816.1	$814.9 \pm 5.0$	$\sigma_8(0.15)$	0.7435	$0.747 \pm 0.014$
$A_{143}^{PS}$	50.0	$48 \pm 8$	$D_{2000}$	230.76	$229.9 \pm 2.1$	$f\sigma_8(0.38)$	0.4793	$0.4794 \pm 0.0095$
$A_{143 \times 217}^{PS}$	50.4	$43 \pm 9$	$n_{s,0.002}$	0.9575	$0.960 \pm 0.014$	$\sigma_8(0.38)$	0.6574	$0.661 \pm 0.014$
$A_{217}^{PS}$	120.9	$115 \pm 10$	$Y_P$	0.24393	$0.2439 \pm 0.0040$	$f\sigma_8(0.51)$	0.4761	$0.4765 \pm 0.0085$
$A^{kSZ}$	0.01	$< 4.67$	$Y_P^{BBN}$	0.24525	$0.2452 \pm 0.0040$	$\sigma_8(0.51)$	0.6145	$0.618 \pm 0.013$
$A_{100}^{dustTT}$	8.83	$8.9 \pm 1.8$	Age/Gyr	14.003	$13.89 \pm 0.35$	$f\sigma_8(0.61)$	0.4699	$0.4706 \pm 0.0081$
$A_{143}^{dustTT}$	10.75	$10.7 \pm 1.8$	$z_*$	1090.116	$1090.23 \pm 0.45$	$\sigma_8(0.61)$	0.5843	$0.588 \pm 0.013$
$A_{143 \times 217}^{dustTT}$	19.50	$18.2 \pm 3.3$	$r_*$	145.93	$145.0 \pm 3.0$	$f\sigma_8(2.33)$	0.2940	$0.2958 \pm 0.0069$
$A_{217}^{dustTT}$	94.9	$93.4 \pm 7.4$	$100\theta_*$	1.04129	$1.04108 \pm 0.00083$	$\sigma_8(2.33)$	0.3024	$0.3045 \pm 0.0077$
$c_{100}$	0.99964	$0.99959 \pm 0.00061$	$D_M(z_*)/\text{Gpc}$	14.015	$13.92 \pm 0.28$	$\chi_{small}^2$	395.81	$396.9 \pm 1.6$
$c_{217}$	0.99824	$0.99825 \pm 0.00062$	$z_{drag}$	1058.90	$1059.2 \pm 1.1$	$\chi_{lowl}^2$	24.45	$24.5 \pm 2.3$
$H_0$	65.65	$66.5 \pm 2.6$	$r_{drag}$	148.73	$147.7 \pm 3.1$	$\chi_{plik}^2$	757.7	$771.7 \pm 5.9$
$\Omega_\Lambda$	0.6724	$0.676^{+0.020}_{-0.018}$	$k_D$	0.13948	$0.1402 \pm 0.0024$	$\chi_{Aver15}^2$	0.008	$1.0 \pm 1.4$
$\Omega_m$	0.3276	$0.324^{+0.018}_{-0.020}$	$100\theta_D$	0.16071	$0.16094 \pm 0.00061$	$\chi_{prior}^2$	1.30	$7.3 \pm 3.7$
$\Omega_m h^2$	0.14119	$0.1428 \pm 0.0048$	$z_{eq}$	3436	$3421 \pm 70$	$\chi_{CMB}^2$	1178.0	$1193.0 \pm 5.7$
$\Omega_m h^3$	0.0927	$0.0950^{+0.0060}_{-0.0068}$	$k_{eq}$	0.010368	$0.01040 \pm 0.00017$			
$\sigma_8$	0.8063	$0.809 \pm 0.015$	$100\theta_{eq}$	0.8063	$0.809 \pm 0.013$			

Best-fit  $\chi_{eff}^2 = 1179.25$ ;  $\bar{\chi}_{eff}^2 = 1201.30$ ;  $R - 1 = 0.00666$

$\chi_{eff}^2$ : Abund - Yp\_Aver2015: 0.01 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.81 commander\_dx12\_v3.2\_29: 24.45 plik\_rd12\_HM\_v22\_TT: 757.69



## 11.26 base\_nnu\_yhe\_plikHM\_TT\_lowl\_lowE\_Aver15\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02226 \pm 0.00023$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.605 \pm 0.010$	$D_{\mathrm{M}}(0.38)$	$1515 \pm 33$
$\Omega_{\mathrm{c}}h^2$	$0.1211 \pm 0.0045$	$\sigma_8/h^{0.5}$	$0.983 \pm 0.012$	$H(0.51)$	$90.5 \pm 1.8$
$100\theta_{\mathrm{MC}}$	$1.04068 \pm 0.00072$	$r_{\mathrm{drag}}h$	$99.95 \pm 1.0$	$D_{\mathrm{M}}(0.51)$	$1963 \pm 42$
$\tau$	$0.0534 \pm 0.0079$	$\langle d^2 \rangle^{1/2}$	$2.425 \pm 0.027$	$H(0.61)$	$96.1 \pm 1.8$
$N_{\mathrm{eff}}$	$3.18 \pm 0.27$	$z_{\mathrm{re}}$	$7.61 \pm 0.82$	$D_{\mathrm{M}}(0.61)$	$2285 \pm 48$
$Y_{\mathrm{P}}$	$0.2439 \pm 0.0039$	$10^9 A_{\mathrm{s}}$	$2.098 \pm 0.041$	$H(2.33)$	$237.6 \pm 3.9$
$\ln(10^{10} A_{\mathrm{s}})$	$3.044^{+0.020}_{-0.018}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.886 \pm 0.022$	$D_{\mathrm{M}}(2.33)$	$5718 \pm 110$
$n_{\mathrm{s}}$	$0.9694 \pm 0.0084$	$D_{40}$	$1223 \pm 15$	$f\sigma_8(0.15)$	$0.4558 \pm 0.0085$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0024$	$D_{220}$	$5720 \pm 41$	$\sigma_8(0.15)$	$0.751 \pm 0.013$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2537 \pm 14$	$f\sigma_8(0.38)$	$0.4749 \pm 0.0082$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815.1 \pm 5.0$	$\sigma_8(0.38)$	$0.666 \pm 0.012$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{2000}$	$229.5 \pm 2.1$	$f\sigma_8(0.51)$	$0.4738 \pm 0.0080$
$A_{100}^{\mathrm{PS}}$	$265 \pm 29$	$n_{\mathrm{s},0.002}$	$0.9694 \pm 0.0084$	$\sigma_8(0.51)$	$0.623 \pm 0.011$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}$	$0.2439 \pm 0.0039$	$f\sigma_8(0.61)$	$0.4691 \pm 0.0079$
$A_{143 \times 217}^{\mathrm{PS}}$	$44 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2452 \pm 0.0039$	$\sigma_8(0.61)$	$0.593 \pm 0.011$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	Age/Gyr	$13.69 \pm 0.25$	$f\sigma_8(2.33)$	$0.2991 \pm 0.0056$
$A^{\mathrm{kSZ}}$	$< 4.93$	$z_*$	$1090.14^{+0.42}_{-0.47}$	$\sigma_8(2.33)$	$0.3086 \pm 0.0060$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	$r_*$	$143.7 \pm 2.5$	$f_{2000}^{143}$	$31.5 \pm 3.3$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.8$	$100\theta_*$	$1.04088 \pm 0.00077$	$f_{2000}^{143 \times 217}$	$33.8 \pm 2.3$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.80 \pm 0.23$	$f_{2000}^{217}$	$108.3 \pm 2.2$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.3$	$z_{\mathrm{drag}}$	$1059.76 \pm 0.81$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.7$
$c_{100}$	$0.99961 \pm 0.00060$	$r_{\mathrm{drag}}$	$146.3 \pm 2.6$	$\chi_{\mathrm{lowl}}^2$	$22.8 \pm 1.1$
$c_{217}$	$0.99825 \pm 0.00064$	$k_{\mathrm{D}}$	$0.1413 \pm 0.0020$	$\chi_{\mathrm{plik}}^2$	$773.2 \pm 5.5$
$H_0$	$68.3 \pm 1.6$	$100\theta_{\mathrm{D}}$	$0.16119 \pm 0.00054$	$\chi_{\mathrm{Aver15}}^2$	$0.96 \pm 1.4$
$\Omega_{\Lambda}$	$0.6915 \pm 0.0083$	$z_{\mathrm{eq}}$	$3366 \pm 33$	$\chi_{6\mathrm{DF}}^2$	$0.057 \pm 0.078$
$\Omega_{\mathrm{m}}$	$0.3085 \pm 0.0083$	$k_{\mathrm{eq}}$	$0.01036 \pm 0.00016$	$\chi_{\mathrm{MGS}}^2$	$1.46 \pm 0.59$
$\Omega_{\mathrm{m}}h^2$	$0.1440 \pm 0.0046$	$100\theta_{\mathrm{eq}}$	$0.8194 \pm 0.0060$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.6$
$\Omega_{\mathrm{m}}h^3$	$0.0984^{+0.0049}_{-0.0054}$	$100\theta_{\mathrm{s,eq}}$	$0.4527 \pm 0.0031$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.6$
$\sigma_8$	$0.812 \pm 0.014$	$H(0.15)$	$73.6 \pm 1.6$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.3$
$S_8$	$0.823 \pm 0.016$	$D_{\mathrm{M}}(0.15)$	$635 \pm 14$	$\chi_{\mathrm{CMB}}^2$	$1193.0 \pm 5.5$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4510 \pm 0.0088$	$H(0.38)$	$83.7 \pm 1.7$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1207.49; R - 1 = 0.02393$$



## 11.27 base\_nnu\_yhe\_plikHM\_TT\_lowl\_lowE\_Aver15\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02206 \pm 0.00030$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4576 \pm 0.0091$	$D_{\mathrm{M}}(0.15)$	$654 \pm 23$
$\Omega_{\mathrm{c}}h^2$	$0.1189 \pm 0.0044$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6071 \pm 0.0084$	$H(0.38)$	$81.9 \pm 2.3$
$100\theta_{\mathrm{MC}}$	$1.04095 \pm 0.00074$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.011$	$D_{\mathrm{M}}(0.38)$	$1557 \pm 50$
$\tau$	$0.0511 \pm 0.0082$	$r_{\mathrm{drag}}h$	$98.3 \pm 1.9$	$H(0.51)$	$88.6 \pm 2.3$
$N_{\mathrm{eff}}$	$2.94 \pm 0.32$	$\langle d^2 \rangle^{1/2}$	$2.454 \pm 0.032$	$D_{\mathrm{M}}(0.51)$	$2015 \pm 63$
$Y_{\mathrm{P}}$	$0.2439 \pm 0.0040$	$z_{\mathrm{re}}$	$7.36 \pm 0.86$	$H(0.61)$	$94.3 \pm 2.4$
$\ln(10^{10}A_{\mathrm{s}})$	$3.033 \pm 0.022$	$10^9 A_{\mathrm{s}}$	$2.077 \pm 0.045$	$D_{\mathrm{M}}(0.61)$	$2343 \pm 71$
$n_{\mathrm{s}}$	$0.959 \pm 0.012$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.875 \pm 0.023$	$H(2.33)$	$235.2 \pm 4.1$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0024$	$D_{40}$	$1238 \pm 19$	$D_{\mathrm{M}}(2.33)$	$5824 \pm 140$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$D_{220}$	$5716 \pm 41$	$f\sigma_8(0.15)$	$0.4611 \pm 0.0082$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2535 \pm 14$	$\sigma_8(0.15)$	$0.743 \pm 0.014$
$A_{143}^{\mathrm{tSZ}}$	$5.2 \pm 2.0$	$D_{1420}$	$815.0 \pm 5.0$	$f\sigma_8(0.38)$	$0.4768 \pm 0.0067$
$A_{100}^{\mathrm{PS}}$	$262 \pm 29$	$D_{2000}$	$230.1 \pm 2.1$	$\sigma_8(0.38)$	$0.658 \pm 0.013$
$A_{143}^{\mathrm{PS}}$	$48 \pm 8$	$n_{\mathrm{s},0.002}$	$0.959 \pm 0.012$	$f\sigma_8(0.51)$	$0.4742 \pm 0.0065$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}$	$0.2439 \pm 0.0040$	$\sigma_8(0.51)$	$0.615 \pm 0.013$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2453 \pm 0.0040$	$f\sigma_8(0.61)$	$0.4684 \pm 0.0066$
$A^{\mathrm{kSZ}}$	$< 4.63$	Age/Gyr	$13.94 \pm 0.33$	$\sigma_8(0.61)$	$0.585 \pm 0.013$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.9$	$z_*$	$1090.11^{+0.39}_{-0.44}$	$f\sigma_8(2.33)$	$0.2946 \pm 0.0068$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$r_*$	$145.6 \pm 2.9$	$\sigma_8(2.33)$	$0.3033 \pm 0.0075$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.2 \pm 3.3$	$100\theta_*$	$1.04123 \pm 0.00081$	$f_{2000}^{143}$	$30.5 \pm 3.3$
$A_{217}^{\mathrm{dust}TT}$	$93.5 \pm 7.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.98 \pm 0.27$	$f_{2000}^{143 \times 217}$	$33.0 \pm 2.4$
$c_{100}$	$0.99960 \pm 0.00061$	$z_{\mathrm{drag}}$	$1059.1 \pm 1.0$	$f_{2000}^{217}$	$107.7 \pm 2.2$
$c_{217}$	$0.99826 \pm 0.00063$	$r_{\mathrm{drag}}$	$148.3 \pm 3.0$	$\chi_{\mathrm{lensing}}^2$	$9.4 \pm 1.0$
$H_0$	$66.3 \pm 2.4$	$k_{\mathrm{D}}$	$0.1398 \pm 0.0023$	$\chi_{\mathrm{simall}}^2$	$396.8 \pm 1.6$
$\Omega_{\Lambda}$	$0.677 \pm 0.016$	$100\theta_{\mathrm{D}}$	$0.16083 \pm 0.00058$	$\chi_{\mathrm{lowl}}^2$	$24.5 \pm 2.0$
$\Omega_{\mathrm{m}}$	$0.323 \pm 0.016$	$z_{\mathrm{eq}}$	$3417 \pm 57$	$\chi_{\mathrm{plik}}^2$	$771.1 \pm 5.4$
$\Omega_{\mathrm{m}}h^2$	$0.1416 \pm 0.0046$	$k_{\mathrm{eq}}$	$0.01035 \pm 0.00014$	$\chi_{\mathrm{Aver15}}^2$	$0.99 \pm 1.4$
$\Omega_{\mathrm{m}}h^3$	$0.0940 \pm 0.0062$	$100\theta_{\mathrm{eq}}$	$0.810 \pm 0.011$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8$	$0.806 \pm 0.014$	$100\theta_{\mathrm{s,eq}}$	$0.4478 \pm 0.0053$	$\chi_{\mathrm{CMB}}^2$	$1201.8 \pm 5.6$
$S_8$	$0.835 \pm 0.017$	$H(0.15)$	$71.6 \pm 2.3$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1210.08; R - 1 = 0.01169$$



### 11.28 base\_nnu\_yhe\_plikHM\_TT\_lowl\_lowE\_Aver15\_post\_BAO\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02225 \pm 0.00023$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6055 \pm 0.0082$	$D_{\mathrm{M}}(0.38)$	$1521 \pm 32$
$\Omega_{\mathrm{c}}h^2$	$0.1205 \pm 0.0041$	$\sigma_8/h^{0.5}$	$0.9840 \pm 0.0089$	$H(0.51)$	$90.2 \pm 1.7$
$100\theta_{\mathrm{MC}}$	$1.04074 \pm 0.00069$	$r_{\mathrm{drag}}h$	$99.80 \pm 0.99$	$D_{\mathrm{M}}(0.51)$	$1970 \pm 41$
$\tau$	$0.0546 \pm 0.0074$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.023$	$H(0.61)$	$95.8 \pm 1.7$
$N_{\mathrm{eff}}$	$3.14 \pm 0.26$	$z_{\mathrm{re}}$	$7.73 \pm 0.74$	$D_{\mathrm{M}}(0.61)$	$2293 \pm 47$
$Y_{\mathrm{P}}$	$0.2439 \pm 0.0039$	$10^9 A_{\mathrm{s}}$	$2.102 \pm 0.036$	$H(2.33)$	$237.0 \pm 3.6$
$\ln(10^{10} A_{\mathrm{s}})$	$3.045 \pm 0.017$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.884 \pm 0.020$	$D_{\mathrm{M}}(2.33)$	$5734 \pm 100$
$n_{\mathrm{s}}$	$0.9679 \pm 0.0082$	$D_{40}$	$1226 \pm 14$	$f\sigma_8(0.15)$	$0.4564 \pm 0.0066$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0024$	$D_{220}$	$5724 \pm 40$	$\sigma_8(0.15)$	$0.750 \pm 0.012$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2538 \pm 14$	$f\sigma_8(0.38)$	$0.4752 \pm 0.0064$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815.4 \pm 5.1$	$\sigma_8(0.38)$	$0.665 \pm 0.011$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{2000}$	$229.8 \pm 2.1$	$f\sigma_8(0.51)$	$0.4740 \pm 0.0064$
$A_{100}^{\mathrm{PS}}$	$264 \pm 29$	$n_{\mathrm{s},0.002}$	$0.9679 \pm 0.0082$	$\sigma_8(0.51)$	$0.623 \pm 0.010$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}$	$0.2439 \pm 0.0039$	$f\sigma_8(0.61)$	$0.4692 \pm 0.0064$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2453 \pm 0.0039$	$\sigma_8(0.61)$	$0.5925 \pm 0.0098$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	Age/Gyr	$13.73 \pm 0.24$	$f\sigma_8(2.33)$	$0.2988 \pm 0.0051$
$A^{\mathrm{kSZ}}$	$< 4.82$	$z_*$	$1090.09^{+0.39}_{-0.44}$	$\sigma_8(2.33)$	$0.3082 \pm 0.0055$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	$r_*$	$144.0 \pm 2.4$	$f_{2000}^{143}$	$31.2 \pm 3.3$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.9$	$100\theta_*$	$1.04095 \pm 0.00073$	$f_{2000}^{143 \times 217}$	$33.5 \pm 2.3$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.4$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.83 \pm 0.22$	$f_{2000}^{217}$	$108.1 \pm 2.2$
$A_{217}^{\mathrm{dust}TT}$	$93.3 \pm 7.3$	$z_{\mathrm{drag}}$	$1059.68 \pm 0.79$	$\chi_{\mathrm{lensing}}^2$	$9.43 \pm 0.82$
$c_{100}$	$0.99962 \pm 0.00060$	$r_{\mathrm{drag}}$	$146.7 \pm 2.4$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.7$
$c_{217}$	$0.99825 \pm 0.00065$	$k_{\mathrm{D}}$	$0.1410 \pm 0.0019$	$\chi_{\mathrm{lowl}}^2$	$23.1 \pm 1.2$
$H_0$	$68.1 \pm 1.6$	$100\theta_{\mathrm{D}}$	$0.16110 \pm 0.00052$	$\chi_{\mathrm{plik}}^2$	$772.4 \pm 5.3$
$\Omega_{\Lambda}$	$0.6902 \pm 0.0080$	$z_{\mathrm{eq}}$	$3371 \pm 31$	$\chi_{\mathrm{Aver15}}^2$	$0.97 \pm 1.4$
$\Omega_{\mathrm{m}}$	$0.3098 \pm 0.0080$	$k_{\mathrm{eq}}$	$0.01035 \pm 0.00014$	$\chi_{6\mathrm{DF}}^2$	$0.060 \pm 0.080$
$\Omega_{\mathrm{m}}h^2$	$0.1434 \pm 0.0042$	$100\theta_{\mathrm{eq}}$	$0.8185 \pm 0.0058$	$\chi_{\mathrm{MGS}}^2$	$1.37 \pm 0.55$
$\Omega_{\mathrm{m}}h^3$	$0.0977 \pm 0.0049$	$100\theta_{\mathrm{s,eq}}$	$0.4522 \pm 0.0029$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.7$
$\sigma_8$	$0.812 \pm 0.012$	$H(0.15)$	$73.3 \pm 1.6$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$S_8$	$0.825 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$637 \pm 14$	$\chi_{\mathrm{CMB}}^2$	$1201.9 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4517 \pm 0.0068$	$H(0.38)$	$83.5 \pm 1.6$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.4$

$\bar{\chi}_{\mathrm{eff}}^2 = 1216.46$ ;  $R - 1 = 0.02078$



### 11.29 base\_nnu\_yhe\_plikHM\_TT\_lowl\_lowE\_Aver15\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02210 \pm 0.00031$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.460 \pm 0.014$	$D_{\mathrm{M}}(0.15)$	$650 \pm 24$
$\Omega_{\mathrm{c}}h^2$	$0.1203 \pm 0.0047$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.611 \pm 0.012$	$H(0.38)$	$82.3 \pm 2.5$
$100\theta_{\mathrm{MC}}$	$1.04079 \pm 0.00076$	$\sigma_8/h^{0.5}$	$0.994 \pm 0.016$	$D_{\mathrm{M}}(0.38)$	$1548 \pm 53$
$\tau$	$0.0533^{+0.0043}_{-0.0081}$	$r_{\mathrm{drag}}h$	$98.3 \pm 2.2$	$H(0.51)$	$89.1 \pm 2.5$
$N_{\mathrm{eff}}$	$3.02 \pm 0.34$	$\langle d^2 \rangle^{1/2}$	$2.460 \pm 0.046$	$D_{\mathrm{M}}(0.51)$	$2003 \pm 67$
$Y_{\mathrm{P}}$	$0.2439 \pm 0.0040$	$z_{\mathrm{re}}$	$7.62^{+0.47}_{-0.86}$	$H(0.61)$	$94.8 \pm 2.5$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.017}_{-0.020}$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.035}_{-0.043}$	$D_{\mathrm{M}}(0.61)$	$2330 \pm 75$
$n_{\mathrm{s}}$	$0.961 \pm 0.013$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.881 \pm 0.023$	$H(2.33)$	$236.3 \pm 4.2$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{40}$	$1236 \pm 22$	$D_{\mathrm{M}}(2.33)$	$5793 \pm 140$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{220}$	$5714 \pm 41$	$f\sigma_8(0.15)$	$0.464 \pm 0.012$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2536 \pm 14$	$\sigma_8(0.15)$	$0.749 \pm 0.013$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{1420}$	$814.9 \pm 5.0$	$f\sigma_8(0.38)$	$0.4799 \pm 0.0094$
$A_{100}^{\mathrm{PS}}$	$262 \pm 29$	$D_{2000}$	$229.9 \pm 2.1$	$\sigma_8(0.38)$	$0.663 \pm 0.013$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$n_{\mathrm{s},0.002}$	$0.961 \pm 0.013$	$f\sigma_8(0.51)$	$0.4773 \pm 0.0084$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}$	$0.2439 \pm 0.0040$	$\sigma_8(0.51)$	$0.620 \pm 0.012$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2452 \pm 0.0040$	$f\sigma_8(0.61)$	$0.4715 \pm 0.0079$
$A^{\mathrm{kSZ}}$	$< 4.66$	Age/Gyr	$13.87 \pm 0.34$	$\sigma_8(0.61)$	$0.589 \pm 0.012$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$z_*$	$1090.22 \pm 0.45$	$f\sigma_8(2.33)$	$0.2968 \pm 0.0065$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$r_*$	$144.8 \pm 3.0$	$\sigma_8(2.33)$	$0.3055 \pm 0.0073$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.2 \pm 3.3$	$100\theta_*$	$1.04105 \pm 0.00082$	$f_{2000}^{143}$	$30.8 \pm 3.4$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.4$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.91 \pm 0.27$	$f_{2000}^{143 \times 217}$	$33.2 \pm 2.4$
$c_{100}$	$0.99959 \pm 0.00061$	$z_{\mathrm{drag}}$	$1059.3 \pm 1.0$	$f_{2000}^{217}$	$107.9 \pm 2.2$
$c_{217}$	$0.99826 \pm 0.00063$	$r_{\mathrm{drag}}$	$147.5 \pm 3.1$	$\chi_{\mathrm{simall}}^2$	$396.7 \pm 1.6$
$H_0$	$66.7 \pm 2.6$	$k_{\mathrm{D}}$	$0.1404 \pm 0.0023$	$\chi_{\mathrm{lowl}}^2$	$24.3 \pm 2.3$
$\Omega_{\Lambda}$	$0.678^{+0.020}_{-0.018}$	$100\theta_{\mathrm{D}}$	$0.16096 \pm 0.00061$	$\chi_{\mathrm{plik}}^2$	$771.6 \pm 5.9$
$\Omega_{\mathrm{m}}$	$0.322^{+0.018}_{-0.020}$	$z_{\mathrm{eq}}$	$3415 \pm 68$	$\chi_{\mathrm{Aver15}}^2$	$1.0 \pm 1.4$
$\Omega_{\mathrm{m}}h^2$	$0.1430 \pm 0.0048$	$k_{\mathrm{eq}}$	$0.01040 \pm 0.00017$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\Omega_{\mathrm{m}}h^3$	$0.0955^{+0.0060}_{-0.0068}$	$100\theta_{\mathrm{eq}}$	$0.810 \pm 0.013$	$\chi_{\mathrm{CMB}}^2$	$1192.7 \pm 5.6$
$\sigma_8$	$0.811 \pm 0.014$	$100\theta_{\mathrm{s,eq}}$	$0.4480 \pm 0.0065$		
$S_8$	$0.841 \pm 0.025$	$H(0.15)$	$72.1 \pm 2.5$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1200.97; R - 1 = 0.00742$$



### 11.30 base\_nnu\_yhe\_plikHM\_TT\_lowl\_lowE\_Aver15\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02227 \pm 0.00023$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.606 \pm 0.010$	$D_{\mathrm{M}}(0.38)$	$1514 \pm 33$
$\Omega_{\mathrm{c}}h^2$	$0.1211 \pm 0.0045$	$\sigma_8/h^{0.5}$	$0.984 \pm 0.011$	$H(0.51)$	$90.5 \pm 1.8$
$100\theta_{\mathrm{MC}}$	$1.04067 \pm 0.00072$	$r_{\mathrm{drag}}h$	$99.98 \pm 1.0$	$D_{\mathrm{M}}(0.51)$	$1962 \pm 42$
$\tau$	$0.0548^{+0.0054}_{-0.0079}$	$\langle d^2 \rangle^{1/2}$	$2.428 \pm 0.026$	$H(0.61)$	$96.2 \pm 1.8$
$N_{\mathrm{eff}}$	$3.18 \pm 0.27$	$z_{\mathrm{re}}$	$7.76^{+0.59}_{-0.82}$	$D_{\mathrm{M}}(0.61)$	$2284 \pm 48$
$Y_{\mathrm{P}}$	$0.2439 \pm 0.0039$	$10^9 A_{\mathrm{s}}$	$2.104 \pm 0.037$	$H(2.33)$	$237.6 \pm 3.9$
$\ln(10^{10} A_{\mathrm{s}})$	$3.046 \pm 0.018$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.886 \pm 0.022$	$D_{\mathrm{M}}(2.33)$	$5716 \pm 110$
$n_{\mathrm{s}}$	$0.9696 \pm 0.0084$	$D_{40}$	$1223 \pm 15$	$f\sigma_8(0.15)$	$0.4564 \pm 0.0084$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0024$	$D_{220}$	$5719 \pm 41$	$\sigma_8(0.15)$	$0.752 \pm 0.013$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2537 \pm 14$	$f\sigma_8(0.38)$	$0.4755 \pm 0.0080$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815.0 \pm 5.0$	$\sigma_8(0.38)$	$0.667 \pm 0.012$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{2000}$	$229.5 \pm 2.1$	$f\sigma_8(0.51)$	$0.4745 \pm 0.0078$
$A_{100}^{\mathrm{PS}}$	$264 \pm 29$	$n_{\mathrm{s},0.002}$	$0.9696 \pm 0.0084$	$\sigma_8(0.51)$	$0.624 \pm 0.011$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}$	$0.2439 \pm 0.0039$	$f\sigma_8(0.61)$	$0.4697 \pm 0.0077$
$A_{143 \times 217}^{\mathrm{PS}}$	$44 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2452 \pm 0.0039$	$\sigma_8(0.61)$	$0.594 \pm 0.011$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	Age/Gyr	$13.69 \pm 0.25$	$f\sigma_8(2.33)$	$0.2996 \pm 0.0054$
$A^{\mathrm{kSZ}}$	$< 4.87$	$z_*$	$1090.14^{+0.42}_{-0.47}$	$\sigma_8(2.33)$	$0.3091 \pm 0.0058$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	$r_*$	$143.6 \pm 2.5$	$f_{2000}^{143}$	$31.5 \pm 3.3$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.9$	$100\theta_*$	$1.04086 \pm 0.00077$	$f_{2000}^{143 \times 217}$	$33.8 \pm 2.3$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.80 \pm 0.23$	$f_{2000}^{217}$	$108.3 \pm 2.2$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.3$	$z_{\mathrm{drag}}$	$1059.77 \pm 0.80$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.7$
$c_{100}$	$0.99961 \pm 0.00060$	$r_{\mathrm{drag}}$	$146.3 \pm 2.6$	$\chi_{\mathrm{lowl}}^2$	$22.8 \pm 1.1$
$c_{217}$	$0.99826 \pm 0.00065$	$k_{\mathrm{D}}$	$0.1413 \pm 0.0020$	$\chi_{\mathrm{plik}}^2$	$773.0 \pm 5.6$
$H_0$	$68.4 \pm 1.6$	$100\theta_{\mathrm{D}}$	$0.16120^{+0.00051}_{-0.00056}$	$\chi_{\mathrm{Aver15}}^2$	$0.97 \pm 1.4$
$\Omega_{\Lambda}$	$0.6917 \pm 0.0083$	$z_{\mathrm{eq}}$	$3365 \pm 33$	$\chi_{6\mathrm{DF}}^2$	$0.056 \pm 0.077$
$\Omega_{\mathrm{m}}$	$0.3083 \pm 0.0083$	$k_{\mathrm{eq}}$	$0.01036 \pm 0.00016$	$\chi_{\mathrm{MGS}}^2$	$1.48 \pm 0.59$
$\Omega_{\mathrm{m}}h^2$	$0.1440 \pm 0.0046$	$100\theta_{\mathrm{eq}}$	$0.8196 \pm 0.0061$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.6$
$\Omega_{\mathrm{m}}h^3$	$0.0985 \pm 0.0052$	$100\theta_{\mathrm{s,eq}}$	$0.4527 \pm 0.0031$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8$	$0.813 \pm 0.014$	$H(0.15)$	$73.7 \pm 1.6$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.3$
$S_8$	$0.824 \pm 0.016$	$D_{\mathrm{M}}(0.15)$	$635 \pm 14$	$\chi_{\mathrm{CMB}}^2$	$1192.8 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4515 \pm 0.0087$	$H(0.38)$	$83.8 \pm 1.7$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1207.26$ ;  $R - 1 = 0.02342$



### 11.31 base\_nnu\_yhe\_plikHM\_TT\_lowl\_lowE\_Aver15\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02209 \pm 0.00029$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4571 \pm 0.0090$	$D_{\mathrm{M}}(0.15)$	$652 \pm 22$
$\Omega_{\mathrm{c}}h^2$	$0.1190 \pm 0.0044$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6075 \pm 0.0083$	$H(0.38)$	$82.1 \pm 2.3$
$100\theta_{\mathrm{MC}}$	$1.04092 \pm 0.00074$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.011$	$D_{\mathrm{M}}(0.38)$	$1552 \pm 48$
$\tau$	$0.0532^{+0.0043}_{-0.0081}$	$r_{\mathrm{drag}}h$	$98.5 \pm 1.8$	$H(0.51)$	$88.8 \pm 2.3$
$N_{\mathrm{eff}}$	$2.97 \pm 0.32$	$\langle d^2 \rangle^{1/2}$	$2.454 \pm 0.032$	$D_{\mathrm{M}}(0.51)$	$2009 \pm 60$
$Y_{\mathrm{P}}$	$0.2440 \pm 0.0040$	$z_{\mathrm{re}}$	$7.59^{+0.45}_{-0.87}$	$H(0.61)$	$94.5 \pm 2.3$
$\ln(10^{10}A_{\mathrm{s}})$	$3.038^{+0.017}_{-0.020}$	$10^9 A_{\mathrm{s}}$	$2.087^{+0.034}_{-0.042}$	$D_{\mathrm{M}}(0.61)$	$2336 \pm 69$
$n_{\mathrm{s}}$	$0.960 \pm 0.012$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.876 \pm 0.023$	$H(2.33)$	$235.4 \pm 4.1$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0024$	$D_{40}$	$1236 \pm 18$	$D_{\mathrm{M}}(2.33)$	$5813 \pm 140$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$D_{220}$	$5717 \pm 41$	$f\sigma_8(0.15)$	$0.4609 \pm 0.0081$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2535 \pm 14$	$\sigma_8(0.15)$	$0.745 \pm 0.013$
$A_{143}^{\mathrm{tSZ}}$	$5.2 \pm 2.0$	$D_{1420}$	$815.0 \pm 5.0$	$f\sigma_8(0.38)$	$0.4771 \pm 0.0066$
$A_{100}^{\mathrm{PS}}$	$262 \pm 29$	$D_{2000}$	$230.1 \pm 2.1$	$\sigma_8(0.38)$	$0.660 \pm 0.012$
$A_{143}^{\mathrm{PS}}$	$48 \pm 8$	$n_{\mathrm{s},0.002}$	$0.960 \pm 0.012$	$f\sigma_8(0.51)$	$0.4747 \pm 0.0064$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}$	$0.2440 \pm 0.0040$	$\sigma_8(0.51)$	$0.617 \pm 0.012$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2453 \pm 0.0040$	$f\sigma_8(0.61)$	$0.4690 \pm 0.0064$
$A^{\mathrm{kSZ}}$	$< 4.62$	Age/Gyr	$13.91 \pm 0.32$	$\sigma_8(0.61)$	$0.587 \pm 0.012$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.9$	$z_*$	$1090.10^{+0.38}_{-0.43}$	$f\sigma_8(2.33)$	$0.2956 \pm 0.0063$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$r_*$	$145.4 \pm 2.9$	$\sigma_8(2.33)$	$0.3044 \pm 0.0071$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04119 \pm 0.00080$	$f_{2000}^{143}$	$30.5 \pm 3.3$
$A_{217}^{\mathrm{dust}TT}$	$93.5 \pm 7.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.96 \pm 0.27$	$f_{2000}^{143 \times 217}$	$33.0 \pm 2.4$
$c_{100}$	$0.99960 \pm 0.00061$	$z_{\mathrm{drag}}$	$1059.1 \pm 1.0$	$f_{2000}^{217}$	$107.7 \pm 2.2$
$c_{217}$	$0.99826 \pm 0.00063$	$r_{\mathrm{drag}}$	$148.1 \pm 3.0$	$\chi_{\mathrm{lensing}}^2$	$9.4 \pm 1.0$
$H_0$	$66.5 \pm 2.3$	$k_{\mathrm{D}}$	$0.1399 \pm 0.0023$	$\chi_{\mathrm{simall}}^2$	$396.7 \pm 1.5$
$\Omega_{\Lambda}$	$0.679 \pm 0.015$	$100\theta_{\mathrm{D}}$	$0.16085^{+0.00054}_{-0.00061}$	$\chi_{\mathrm{lowl}}^2$	$24.3 \pm 1.9$
$\Omega_{\mathrm{m}}$	$0.321 \pm 0.015$	$z_{\mathrm{eq}}$	$3410 \pm 54$	$\chi_{\mathrm{plik}}^2$	$771.1 \pm 5.5$
$\Omega_{\mathrm{m}}h^2$	$0.1418 \pm 0.0046$	$k_{\mathrm{eq}}$	$0.01035 \pm 0.00014$	$\chi_{\mathrm{Aver15}}^2$	$1.0 \pm 1.4$
$\Omega_{\mathrm{m}}h^3$	$0.0944^{+0.0056}_{-0.0063}$	$100\theta_{\mathrm{eq}}$	$0.811 \pm 0.010$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8$	$0.808 \pm 0.013$	$100\theta_{\mathrm{s,eq}}$	$0.4485 \pm 0.0051$	$\chi_{\mathrm{CMB}}^2$	$1201.5 \pm 5.5$
$S_8$	$0.835 \pm 0.016$	$H(0.15)$	$71.9 \pm 2.3$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1209.75; R - 1 = 0.01470$$



### 11.32 base\_nnu\_yhe\_plikHM\_TT\_lowl\_lowE\_Aver15\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02226 \pm 0.00023$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6058 \pm 0.0081$	$D_{\mathrm{M}}(0.38)$	$1520 \pm 32$
$\Omega_{\mathrm{c}}h^2$	$0.1205 \pm 0.0041$	$\sigma_8/h^{0.5}$	$0.9845 \pm 0.0087$	$H(0.51)$	$90.2 \pm 1.7$
$100\theta_{\mathrm{MC}}$	$1.04074 \pm 0.00069$	$r_{\mathrm{drag}}h$	$99.83 \pm 0.99$	$D_{\mathrm{M}}(0.51)$	$1970 \pm 41$
$\tau$	$0.0554^{+0.0058}_{-0.0075}$	$\langle d^2 \rangle^{1/2}$	$2.433 \pm 0.022$	$H(0.61)$	$95.9 \pm 1.7$
$N_{\mathrm{eff}}$	$3.14 \pm 0.26$	$z_{\mathrm{re}}$	$7.82^{+0.63}_{-0.74}$	$D_{\mathrm{M}}(0.61)$	$2292 \pm 47$
$Y_{\mathrm{P}}$	$0.2440 \pm 0.0039$	$10^9 A_{\mathrm{s}}$	$2.105 \pm 0.034$	$H(2.33)$	$237.0 \pm 3.6$
$\ln(10^{10} A_{\mathrm{s}})$	$3.047 \pm 0.016$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.884 \pm 0.020$	$D_{\mathrm{M}}(2.33)$	$5734 \pm 100$
$n_{\mathrm{s}}$	$0.9680 \pm 0.0082$	$D_{40}$	$1226 \pm 14$	$f\sigma_8(0.15)$	$0.4566 \pm 0.0066$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0024$	$D_{220}$	$5724 \pm 40$	$\sigma_8(0.15)$	$0.751 \pm 0.011$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2537 \pm 14$	$f\sigma_8(0.38)$	$0.4754 \pm 0.0064$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815.3 \pm 5.0$	$\sigma_8(0.38)$	$0.666 \pm 0.011$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{2000}$	$229.7 \pm 2.1$	$f\sigma_8(0.51)$	$0.4743 \pm 0.0064$
$A_{100}^{\mathrm{PS}}$	$264 \pm 29$	$n_{\mathrm{s},0.002}$	$0.9680 \pm 0.0082$	$\sigma_8(0.51)$	$0.623 \pm 0.010$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}$	$0.2440 \pm 0.0039$	$f\sigma_8(0.61)$	$0.4694 \pm 0.0064$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2453 \pm 0.0039$	$\sigma_8(0.61)$	$0.5930 \pm 0.0097$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	Age/Gyr	$13.73 \pm 0.24$	$f\sigma_8(2.33)$	$0.2991 \pm 0.0050$
$A^{\mathrm{kSZ}}$	$< 4.79$	$z_*$	$1090.09^{+0.39}_{-0.44}$	$\sigma_8(2.33)$	$0.3084 \pm 0.0054$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	$r_*$	$144.0 \pm 2.4$	$f_{2000}^{143}$	$31.2 \pm 3.3$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.9$	$100\theta_*$	$1.04095 \pm 0.00073$	$f_{2000}^{143 \times 217}$	$33.5 \pm 2.3$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.4$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.83 \pm 0.22$	$f_{2000}^{217}$	$108.1 \pm 2.2$
$A_{217}^{\mathrm{dust}TT}$	$93.3 \pm 7.3$	$z_{\mathrm{drag}}$	$1059.69 \pm 0.78$	$\chi_{\mathrm{lensing}}^2$	$9.39 \pm 0.77$
$c_{100}$	$0.99962 \pm 0.00060$	$r_{\mathrm{drag}}$	$146.7 \pm 2.4$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.7$
$c_{217}$	$0.99825 \pm 0.00065$	$k_{\mathrm{D}}$	$0.1410 \pm 0.0019$	$\chi_{\mathrm{lowl}}^2$	$23.1 \pm 1.2$
$H_0$	$68.1 \pm 1.6$	$100\theta_{\mathrm{D}}$	$0.16110 \pm 0.00052$	$\chi_{\mathrm{plik}}^2$	$772.3 \pm 5.3$
$\Omega_{\Lambda}$	$0.6905 \pm 0.0080$	$z_{\mathrm{eq}}$	$3370 \pm 31$	$\chi_{\mathrm{Aver15}}^2$	$0.97 \pm 1.4$
$\Omega_{\mathrm{m}}$	$0.3095 \pm 0.0080$	$k_{\mathrm{eq}}$	$0.01035 \pm 0.00014$	$\chi_{6\mathrm{DF}}^2$	$0.058 \pm 0.078$
$\Omega_{\mathrm{m}}h^2$	$0.1434 \pm 0.0042$	$100\theta_{\mathrm{eq}}$	$0.8187 \pm 0.0057$	$\chi_{\mathrm{MGS}}^2$	$1.39 \pm 0.55$
$\Omega_{\mathrm{m}}h^3$	$0.0977 \pm 0.0049$	$100\theta_{\mathrm{s,eq}}$	$0.4523 \pm 0.0029$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.6$
$\sigma_8$	$0.812 \pm 0.012$	$H(0.15)$	$73.4 \pm 1.6$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$S_8$	$0.825 \pm 0.012$	$D_{\mathrm{M}}(0.15)$	$637 \pm 14$	$\chi_{\mathrm{CMB}}^2$	$1201.8 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4518 \pm 0.0068$	$H(0.38)$	$83.5 \pm 1.6$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.3$

$\bar{\chi}_{\mathrm{eff}}^2 = 1216.27$ ;  $R - 1 = 0.02175$



### 11.33 base\_nnu\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022222	$0.02225 \pm 0.00021$ (+0.5 $\sigma$ )	$\Omega_{\text{m}}$	0.3217	$0.321 \pm 0.011$ (−0.2 $\sigma$ )	$k_{\text{eq}}$	0.010318	$0.01035 \pm 0.00013$ (−0.3 $\sigma$ )
$\Omega_{\text{c}}h^2$	0.11746	$0.1184 \pm 0.0036$ (−0.4 $\sigma$ )	$\Omega_{\text{m}}h^2$	0.14033	$0.1412 \pm 0.0037$ (−0.3 $\sigma$ )	$100\theta_{\text{eq}}$	0.8091	$0.8098 \pm 0.0072$ (+0.0 $\sigma$ )
$100\theta_{\text{MC}}$	1.04124	$1.04112 \pm 0.00062$ (+0.4 $\sigma$ )	$\Omega_{\text{m}}h^3$	0.09269	$0.0938^{+0.0041}_{-0.0047}$ (−0.2 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.44733	$0.4477 \pm 0.0036$ (+0.0 $\sigma$ )
$\tau$	0.0539	$0.0532 \pm 0.0078$ (+0.2 $\sigma$ )	$\sigma_8$	0.8045	$0.806 \pm 0.012$ (−0.2 $\sigma$ )	$H(0.15)$	71.37	$71.7 \pm 1.6$ (−0.1 $\sigma$ )
$N_{\text{eff}}$	2.859	$2.92 \pm 0.23$ (−0.2 $\sigma$ )	$S_8$	0.8331	$0.833 \pm 0.016$ (−0.3 $\sigma$ )	$D_{\text{M}}(0.15)$	655.6	$653 \pm 15$ (+0.0 $\sigma$ )
$Y_{\text{P}}$	0.24370	$0.2437 \pm 0.0039$ (−0.0 $\sigma$ )	$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4563	$0.4565 \pm 0.0088$ (−0.3 $\sigma$ )	$H(0.38)$	81.54	$81.9 \pm 1.6$ (−0.1 $\sigma$ )
$\ln(10^{10}A_{\text{s}})$	3.0371	$3.037 \pm 0.019$ (+0.0 $\sigma$ )	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6059	$0.6065 \pm 0.0091$ (−0.3 $\sigma$ )	$D_{\text{M}}(0.38)$	1561.2	$1555 \pm 34$ (+0.1 $\sigma$ )
$n_{\text{s}}$	0.9590	$0.9596 \pm 0.0085$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9900	$0.989 \pm 0.012$ (−0.2 $\sigma$ )	$H(0.51)$	88.27	$88.6 \pm 1.6$ (−0.1 $\sigma$ )
$y_{\text{cal}}$	1.00052	$1.0006 \pm 0.0025$ (+0.0 $\sigma$ )	$r_{\text{drag}}h$	98.34	$98.4 \pm 1.3$ (+0.1 $\sigma$ )	$D_{\text{M}}(0.51)$	2020.7	$2013 \pm 42$ (+0.1 $\sigma$ )
$A_{217}^{\text{CIB}}$	45.8	$46 \pm 7$ (−0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4568	$2.455 \pm 0.029$ (−0.1 $\sigma$ )	$H(0.61)$	93.90	$94.3 \pm 1.6$ (−0.1 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.560	$> 0.380$ (+0.1 $\sigma$ )	$z_{\text{re}}$	7.61	$7.53 \pm 0.80$ (+0.2 $\sigma$ )	$D_{\text{M}}(0.61)$	2350.1	$2341 \pm 48$ (+0.1 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.13	$5.5^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$10^9 A_{\text{s}}$	2.0845	$2.085 \pm 0.039$ (+0.0 $\sigma$ )	$H(2.33)$	234.14	$234.9 \pm 3.2$ (−0.3 $\sigma$ )
$A_{100}^{\text{PS}}$	247.1	$256 \pm 27$ (−0.2 $\sigma$ )	$10^9 A_{\text{s}}e^{-2\tau}$	1.8716	$1.875 \pm 0.019$ (−0.3 $\sigma$ )	$D_{\text{M}}(2.33)$	5845	$5824 \pm 98$ (+0.1 $\sigma$ )
$A_{143}^{\text{PS}}$	47.1	$45 \pm 8$ (−0.5 $\sigma$ )	$D_{40}$	1238.0	$1239 \pm 15$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4600	$0.4602 \pm 0.0083$ (−0.3 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	49.3	$42 \pm 9$ (−0.2 $\sigma$ )	$D_{220}$	5730.0	$5733 \pm 39$ (+0.5 $\sigma$ )	$\sigma_8(0.15)$	0.7424	$0.744 \pm 0.011$ (−0.2 $\sigma$ )
$A_{217}^{\text{PS}}$	120.6	$115 \pm 10$ (−0.0 $\sigma$ )	$D_{810}$	2538.5	$2538 \pm 14$ (+0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.4760	$0.4764 \pm 0.0072$ (−0.3 $\sigma$ )
$A^{\text{kSZ}}$	0.00	$< 3.90$ (−0.2 $\sigma$ )	$D_{1420}$	818.93	$817.8 \pm 4.9$ (+0.6 $\sigma$ )	$\sigma_8(0.38)$	0.6570	$0.658 \pm 0.010$ (−0.2 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.71	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$D_{2000}$	232.08	$231.5 \pm 1.8$ (+0.7 $\sigma$ )	$f\sigma_8(0.51)$	0.4734	$0.4739 \pm 0.0069$ (−0.3 $\sigma$ )
$A_{143}^{\text{dustTT}}$	10.89	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	$n_{\text{s},0.002}$	0.9590	$0.9596 \pm 0.0085$ (−0.0 $\sigma$ )	$\sigma_8(0.51)$	0.6144	$0.6157 \pm 0.0099$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	19.70	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\text{P}}$	0.24370	$0.2437 \pm 0.0039$ (−0.0 $\sigma$ )	$f\sigma_8(0.61)$	0.4677	$0.4682 \pm 0.0067$ (−0.3 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.1	$93.8 \pm 7.3$ (+0.0 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.24502	$0.2450 \pm 0.0040$ (−0.0 $\sigma$ )	$\sigma_8(0.61)$	0.5844	$0.5856 \pm 0.0095$ (−0.2 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1140	$0.114 \pm 0.038$	Age/Gyr	13.990	$13.94 \pm 0.23$ (+0.1 $\sigma$ )	$f\sigma_8(2.33)$	0.29427	$0.2949 \pm 0.0050$ (−0.1 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1352	$0.135 \pm 0.029$	$z_*$	1089.737	$1089.81 \pm 0.33$ (−0.9 $\sigma$ )	$\sigma_8(2.33)$	0.3029	$0.3037 \pm 0.0054$ (−0.1 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.481	$0.480 \pm 0.085$	$r_*$	146.16	$145.7 \pm 2.2$ (+0.2 $\sigma$ )	$\chi_{\text{small}}^2$	396.03	$397.0 \pm 1.7$ (+0.1 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.225	$0.226 \pm 0.054$	$100\theta_*$	1.04153	$1.04140 \pm 0.00066$ (+0.4 $\sigma$ )	$\chi_{\text{lowl}}^2$	24.23	$24.3 \pm 1.5$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.670	$0.668 \pm 0.080$	$D_{\text{M}}(z_*)/\text{Gpc}$	14.033	$13.99 \pm 0.20$ (+0.2 $\sigma$ )	$\chi_{\text{plik}}^2$	2343.0	$2359.4 \pm 6.0$ (+269.1 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.096	$2.08 \pm 0.27$	$z_{\text{drag}}$	1059.28	$1059.42 \pm 0.74$ (+0.2 $\sigma$ )	$\chi_{\text{Aver15}}^2$	0.001	$0.98 \pm 1.4$ (−0.0 $\sigma$ )
$c_{100}$	0.99973	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$r_{\text{drag}}$	148.89	$148.4 \pm 2.3$ (+0.2 $\sigma$ )	$\chi_{\text{prior}}^2$	1.60	$11.5 \pm 4.5$ (+1.2 $\sigma$ )
$c_{217}$	0.99817	$0.99818 \pm 0.00062$ (−0.1 $\sigma$ )	$k_{\text{D}}$	0.13956	$0.1400 \pm 0.0017$ (−0.1 $\sigma$ )	$\chi_{\text{CMB}}^2$	2763.2	$2780.8 \pm 6.0$ (+278.5 $\sigma$ )
$H_0$	66.05	$66.4 \pm 1.6$ (−0.0 $\sigma$ )	$100\theta_{\text{D}}$	0.160413	$0.16051 \pm 0.00039$ (−0.7 $\sigma$ )			
$\Omega_{\Lambda}$	0.6783	$0.679^{+0.011}_{-0.010}$ (+0.2 $\sigma$ )	$z_{\text{eq}}$	3423.9	$3421 \pm 39$ (−0.0 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 2764.84$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.58$ ;  $\bar{\chi}_{\text{eff}}^2 = 2793.22$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.92$ ;  $R - 1 = 0.01284$   
 $\chi_{\text{eff}}^2$ : Abund - Yp\_Aver2015: 0.00 ( $\Delta$  -0.01) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.03 ( $\Delta$  0.22) commander\_dx12\_v3.2.29: 24.23 ( $\Delta$  -0.22) plik\_rd12\_HM\_v22b\_TTTEEE: 2342.98



### 11.34 base\_nnu\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02238 \pm 0.00018 \quad (+0.5\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.0957^{+0.0039}_{-0.0044} \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.15)$	$643 \pm 12 \quad (+0.5\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1188 \pm 0.0036 \quad (-0.5\sigma)$	$\sigma_8$	$0.808 \pm 0.012 \quad (-0.3\sigma)$	$H(0.38)$	$82.8 \pm 1.4 \quad (-0.5\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04102 \pm 0.00062 \quad (+0.5\sigma)$	$S_8$	$0.823 \pm 0.014 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1533 \pm 27 \quad (+0.5\sigma)$
$\tau$	$0.0552^{+0.0073}_{-0.0081} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4508 \pm 0.0075 \quad (-0.0\sigma)$	$H(0.51)$	$89.5 \pm 1.4 \quad (-0.5\sigma)$
$N_{\mathrm{eff}}$	$3.02 \pm 0.22 \quad (-0.6\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6033 \pm 0.0089 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1986 \pm 35 \quad (+0.5\sigma)$
$Y_{\mathrm{P}}$	$0.2437 \pm 0.0039 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.983 \pm 0.011 \quad (+0.1\sigma)$	$H(0.61)$	$95.2 \pm 1.5 \quad (-0.5\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043 \pm 0.018 \quad (-0.0\sigma)$	$r_{\mathrm{drag}}h$	$99.55 \pm 0.86 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.61)$	$2311 \pm 40 \quad (+0.5\sigma)$
$n_{\mathrm{s}}$	$0.9652 \pm 0.0070 \quad (-0.5\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.436 \pm 0.025 \quad (+0.4\sigma)$	$H(2.33)$	$235.7 \pm 3.2 \quad (-0.5\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.72 \pm 0.79 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5774 \pm 88 \quad (+0.5\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.096 \pm 0.039 \quad (-0.0\sigma)$	$f\sigma_8(0.15)$	$0.4553 \pm 0.0073 \quad (-0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.019 \quad (-0.4\sigma)$	$\sigma_8(0.15)$	$0.746 \pm 0.011 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.2}_{-1.9} \quad (+0.2\sigma)$	$D_{40}$	$1230 \pm 13 \quad (+0.5\sigma)$	$f\sigma_8(0.38)$	$0.4736 \pm 0.0070 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$258 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5737 \pm 38 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.661 \pm 0.010 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.5\sigma)$	$D_{810}$	$2538 \pm 14 \quad (+0.1\sigma)$	$f\sigma_8(0.51)$	$0.4722 \pm 0.0069 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.2\sigma)$	$D_{1420}$	$818.1 \pm 4.8 \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.6190 \pm 0.0097 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (-0.0\sigma)$	$D_{2000}$	$231.4 \pm 1.8 \quad (+0.9\sigma)$	$f\sigma_8(0.61)$	$0.4672 \pm 0.0068 \quad (-0.2\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.11 \quad (-0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.9652 \pm 0.0070 \quad (-0.5\sigma)$	$\sigma_8(0.61)$	$0.5890 \pm 0.0093 \quad (-0.4\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.2437 \pm 0.0039 \quad (-0.1\sigma)$	$f\sigma_8(2.33)$	$0.2970 \pm 0.0048 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2450 \pm 0.0040 \quad (-0.1\sigma)$	$\sigma_8(2.33)$	$0.3062 \pm 0.0051 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.2 \quad (+0.1\sigma)$	Age/Gyr	$13.82 \pm 0.21 \quad (+0.5\sigma)$	$f_{2000}^{143}$	$29.0 \pm 2.9 \quad (-0.8\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.7 \pm 7.3 \quad (+0.0\sigma)$	$z_*$	$1089.72 \pm 0.33 \quad (-1.0\sigma)$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.0 \quad (-0.9\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.037$	$r_*$	$144.9 \pm 2.1 \quad (+0.5\sigma)$	$f_{2000}^{217}$	$106.7 \pm 1.9 \quad (-0.8\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.029$	$100\theta_*$	$1.04126 \pm 0.00065 \quad (+0.5\sigma)$	$\chi_{\mathrm{small}}^2$	$397.2 \pm 2.0 \quad (+0.1\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.476 \pm 0.086$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.92 \pm 0.19 \quad (+0.5\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.4 \pm 1.1 \quad (+0.5\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.225 \pm 0.053$	$z_{\mathrm{drag}}$	$1059.81 \pm 0.66 \quad (+0.1\sigma)$	$\chi_{\mathrm{plik}}^2$	$2360.6 \pm 6.3 \quad (+286.3\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.665 \pm 0.081$	$r_{\mathrm{drag}}$	$147.6 \pm 2.2 \quad (+0.5\sigma)$	$\chi_{\mathrm{Aver15}}^2$	$0.98 \pm 1.4 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.07 \pm 0.27$	$k_{\mathrm{D}}$	$0.1406 \pm 0.0017 \quad (-0.3\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.067 \pm 0.081 \quad (+0.1\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16062 \pm 0.00038 \quad (-1.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.23 \pm 0.46 \quad (-0.4\sigma)$
$c_{217}$	$0.99819 \pm 0.00064 \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3388 \pm 26 \quad (+0.7\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$5.1 \pm 1.7 \quad (+0.2\sigma)$
$H_0$	$67.5 \pm 1.3 \quad (-0.5\sigma)$	$k_{\mathrm{eq}}$	$0.01032 \pm 0.00013 \quad (-0.3\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\Lambda}$	$0.6883^{+0.0073}_{-0.0066} \quad (-0.4\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8160 \pm 0.0049 \quad (-0.6\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.3 \pm 1.4 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3117 \pm 0.0070 \quad (+0.4\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4508 \pm 0.0025 \quad (-0.6\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2781.2 \pm 6.2 \quad (+290.9\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1418 \pm 0.0037 \quad (-0.5\sigma)$	$H(0.15)$	$72.7 \pm 1.3 \quad (-0.5\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2800.04; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.55; R - 1 = 0.03428$$



### 11.35 base\_nnu\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02223 \pm 0.00021 \quad (+0.6\sigma)$	$\Omega_{\text{m}}h^2$	$0.1406 \pm 0.0035 \quad (-0.2\sigma)$	$100\theta_{\text{s,eq}}$	$0.4477 \pm 0.0034 \quad (-0.0\sigma)$
$\Omega_{\text{c}}h^2$	$0.1177 \pm 0.0034 \quad (-0.3\sigma)$	$\Omega_{\text{m}}h^3$	$0.0931^{+0.0040}_{-0.0045} \quad (-0.1\sigma)$	$H(0.15)$	$71.5 \pm 1.5 \quad (-0.0\sigma)$
$100\theta_{\text{MC}}$	$1.04122 \pm 0.00062 \quad (+0.4\sigma)$	$\sigma_8$	$0.804 \pm 0.011 \quad (-0.1\sigma)$	$D_{\text{M}}(0.15)$	$654 \pm 15 \quad (+0.0\sigma)$
$\tau$	$0.0531 \pm 0.0075 \quad (+0.2\sigma)$	$S_8$	$0.831 \pm 0.013 \quad (-0.3\sigma)$	$H(0.38)$	$81.7 \pm 1.6 \quad (-0.1\sigma)$
$N_{\text{eff}}$	$2.88 \pm 0.23 \quad (-0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4553 \pm 0.0071 \quad (-0.3\sigma)$	$D_{\text{M}}(0.38)$	$1558 \pm 33 \quad (+0.0\sigma)$
$Y_{\text{P}}$	$0.2438 \pm 0.0040 \quad (-0.0\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6049 \pm 0.0074 \quad (-0.3\sigma)$	$H(0.51)$	$88.4 \pm 1.6 \quad (-0.1\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.036 \pm 0.017 \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9880 \pm 0.0090 \quad (-0.2\sigma)$	$D_{\text{M}}(0.51)$	$2017 \pm 42 \quad (+0.0\sigma)$
$n_{\text{s}}$	$0.9587 \pm 0.0084 \quad (-0.0\sigma)$	$r_{\text{drag}}h$	$98.5 \pm 1.2 \quad (+0.1\sigma)$	$H(0.61)$	$94.1 \pm 1.6 \quad (-0.1\sigma)$
$y_{\text{cal}}$	$1.0005 \pm 0.0025 \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.454 \pm 0.024 \quad (-0.0\sigma)$	$D_{\text{M}}(0.61)$	$2346 \pm 47 \quad (+0.0\sigma)$
$A_{217}^{\text{CIB}}$	$46 \pm 7 \quad (-0.2\sigma)$	$z_{\text{re}}$	$7.51 \pm 0.76 \quad (+0.2\sigma)$	$H(2.33)$	$234.4 \pm 3.1 \quad (-0.2\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	$> 0.385 \quad (+0.1\sigma)$	$10^9 A_{\text{s}}$	$2.082 \pm 0.036 \quad (+0.1\sigma)$	$D_{\text{M}}(2.33)$	$5837 \pm 97 \quad (+0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.872 \pm 0.018 \quad (-0.1\sigma)$	$f\sigma_8(0.15)$	$0.4590 \pm 0.0066 \quad (-0.3\sigma)$
$A_{100}^{\text{PS}}$	$257 \pm 27 \quad (-0.2\sigma)$	$D_{40}$	$1239 \pm 15 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.742 \pm 0.010 \quad (-0.1\sigma)$
$A_{143}^{\text{PS}}$	$44 \pm 8 \quad (-0.4\sigma)$	$D_{220}$	$5734 \pm 38 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4752 \pm 0.0058 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{810}$	$2537 \pm 14 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6567 \pm 0.0098 \quad (-0.1\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{1420}$	$817.8 \pm 4.9 \quad (+0.6\sigma)$	$f\sigma_8(0.51)$	$0.4727 \pm 0.0056 \quad (-0.2\sigma)$
$A^{\text{kSZ}}$	$< 3.91 \quad (-0.2\sigma)$	$D_{2000}$	$231.6 \pm 1.8 \quad (+0.7\sigma)$	$\sigma_8(0.51)$	$0.6142 \pm 0.0094 \quad (-0.1\sigma)$
$A_{100}^{\text{dustTT}}$	$8.8 \pm 1.8 \quad (-0.0\sigma)$	$n_{\text{s},0.002}$	$0.9587 \pm 0.0084 \quad (-0.0\sigma)$	$f\sigma_8(0.61)$	$0.4670 \pm 0.0056 \quad (-0.2\sigma)$
$A_{143}^{\text{dustTT}}$	$10.8 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.2438 \pm 0.0040 \quad (-0.0\sigma)$	$\sigma_8(0.61)$	$0.5842 \pm 0.0091 \quad (-0.1\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.4 \pm 3.2 \quad (+0.1\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.2451 \pm 0.0040 \quad (-0.0\sigma)$	$f\sigma_8(2.33)$	$0.2942 \pm 0.0048 \quad (-0.1\sigma)$
$A_{217}^{\text{dustTT}}$	$93.7 \pm 7.3 \quad (+0.0\sigma)$	Age/Gyr	$13.97 \pm 0.23 \quad (+0.1\sigma)$	$\sigma_8(2.33)$	$0.3029 \pm 0.0052 \quad (-0.0\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$z_*$	$1089.75 \pm 0.32 \quad (-0.9\sigma)$	$f_{2000}^{143}$	$28.6 \pm 2.9 \quad (-0.6\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$r_*$	$146.0 \pm 2.1 \quad (+0.2\sigma)$	$f_{2000}^{143 \times 217}$	$31.5 \pm 2.0 \quad (-0.7\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.480 \pm 0.085$	$100\theta_*$	$1.04150 \pm 0.00065 \quad (+0.3\sigma)$	$f_{2000}^{217}$	$106.4 \pm 1.9 \quad (-0.6\sigma)$
$A_{143}^{\text{dustTE}}$	$0.226 \pm 0.054$	$D_{\text{M}}(z_*)/\text{Gpc}$	$14.02 \pm 0.20 \quad (+0.2\sigma)$	$\chi_{\text{lensing}}^2$	$9.01 \pm 0.71 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.667 \pm 0.081$	$z_{\text{drag}}$	$1059.34 \pm 0.73 \quad (+0.3\sigma)$	$\chi_{\text{small}}^2$	$396.9 \pm 1.6 \quad (+0.0\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.27$	$r_{\text{drag}}$	$148.7 \pm 2.2 \quad (+0.1\sigma)$	$\chi_{\text{lowl}}^2$	$24.4 \pm 1.4 \quad (-0.0\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\text{D}}$	$0.1397 \pm 0.0017 \quad (-0.0\sigma)$	$\chi_{\text{plik}}^2$	$2359.1 \pm 5.9 \quad (+292.1\sigma)$
$c_{217}$	$0.99817 \pm 0.00064 \quad (-0.1\sigma)$	$100\theta_{\text{D}}$	$0.16046 \pm 0.00038 \quad (-0.6\sigma)$	$\chi_{\text{Aver15}}^2$	$0.99 \pm 1.4 \quad (+0.0\sigma)$
$H_0$	$66.2 \pm 1.6 \quad (-0.0\sigma)$	$z_{\text{eq}}$	$3420 \pm 36 \quad (+0.1\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.4 \quad (+1.1\sigma)$
$\Omega_{\Lambda}$	$0.679 \pm 0.010 \quad (+0.1\sigma)$	$k_{\text{eq}}$	$0.01032 \pm 0.00012 \quad (-0.2\sigma)$	$\chi_{\text{CMB}}^2$	$2789.4 \pm 6.0 \quad (+281.9\sigma)$
$\Omega_{\text{m}}$	$0.321 \pm 0.010 \quad (-0.1\sigma)$	$100\theta_{\text{eq}}$	$0.8099 \pm 0.0067 \quad (+0.0\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2801.87; \Delta\bar{\chi}_{\text{eff}}^2 = 1591.78; R - 1 = 0.01524$$



### 11.36 base\_nnu\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_BAO\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02237 \pm 0.00018 \quad (+0.5\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.0953 \pm 0.0040 \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.15)$	$644 \pm 12 \quad (+0.5\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1185 \pm 0.0035 \quad (-0.5\sigma)$	$\sigma_8$	$0.807 \pm 0.011 \quad (-0.4\sigma)$	$H(0.38)$	$82.7 \pm 1.4 \quad (-0.5\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04108 \pm 0.00061 \quad (+0.5\sigma)$	$S_8$	$0.824 \pm 0.011 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1536 \pm 27 \quad (+0.5\sigma)$
$\tau$	$0.0560^{+0.0068}_{-0.0078} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4511 \pm 0.0061 \quad (-0.1\sigma)$	$H(0.51)$	$89.4 \pm 1.4 \quad (-0.5\sigma)$
$N_{\mathrm{eff}}$	$2.99 \pm 0.21 \quad (-0.6\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6035 \pm 0.0073 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1990 \pm 34 \quad (+0.5\sigma)$
$Y_{\mathrm{P}}$	$0.2437 \pm 0.0039 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9840 \pm 0.0084 \quad (+0.0\sigma)$	$H(0.61)$	$95.0 \pm 1.4 \quad (-0.5\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044 \pm 0.016 \quad (-0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.47 \pm 0.83 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.61)$	$2315 \pm 39 \quad (+0.5\sigma)$
$n_{\mathrm{s}}$	$0.9643 \pm 0.0070 \quad (-0.4\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.440 \pm 0.021 \quad (+0.4\sigma)$	$H(2.33)$	$235.4 \pm 3.0 \quad (-0.5\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.80 \pm 0.73 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5784 \pm 86 \quad (+0.5\sigma)$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.098 \pm 0.034 \quad (-0.1\sigma)$	$f\sigma_8(0.15)$	$0.4556 \pm 0.0059 \quad (-0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	$> 0.380 \quad (+0.1\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.876 \pm 0.018 \quad (-0.4\sigma)$	$\sigma_8(0.15)$	$0.746 \pm 0.010 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.2}_{-1.9} \quad (+0.2\sigma)$	$D_{40}$	$1232 \pm 13 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4737 \pm 0.0057 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$257 \pm 27 \quad (-0.2\sigma)$	$D_{220}$	$5739 \pm 38 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6611 \pm 0.0092 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.5\sigma)$	$D_{810}$	$2538 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.51)$	$0.4722 \pm 0.0057 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.2\sigma)$	$D_{1420}$	$818.2 \pm 4.8 \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.6187 \pm 0.0087 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (-0.0\sigma)$	$D_{2000}$	$231.5 \pm 1.8 \quad (+0.8\sigma)$	$f\sigma_8(0.61)$	$0.4672 \pm 0.0057 \quad (-0.3\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.06 \quad (-0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.9643 \pm 0.0070 \quad (-0.4\sigma)$	$\sigma_8(0.61)$	$0.5887 \pm 0.0084 \quad (-0.4\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.2437 \pm 0.0039 \quad (-0.1\sigma)$	$f\sigma_8(2.33)$	$0.2968 \pm 0.0044 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2450 \pm 0.0040 \quad (-0.1\sigma)$	$\sigma_8(2.33)$	$0.3059 \pm 0.0047 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.2 \quad (+0.1\sigma)$	Age/Gyr	$13.85 \pm 0.20 \quad (+0.5\sigma)$	$f_{2000}^{143}$	$28.8 \pm 2.9 \quad (-0.7\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.7 \pm 7.3 \quad (+0.1\sigma)$	$z_*$	$1089.69 \pm 0.32 \quad (-1.0\sigma)$	$f_{2000}^{143 \times 217}$	$31.6 \pm 2.0 \quad (-0.8\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.037$	$r_*$	$145.1 \pm 2.0 \quad (+0.5\sigma)$	$f_{2000}^{217}$	$106.5 \pm 1.9 \quad (-0.7\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.029$	$100\theta_*$	$1.04133 \pm 0.00064 \quad (+0.5\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.04 \pm 0.65 \quad (-0.5\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.476 \pm 0.086$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.94 \pm 0.19 \quad (+0.5\sigma)$	$\chi_{\mathrm{small}}^2$	$397.3 \pm 2.0 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.225 \pm 0.053$	$z_{\mathrm{drag}}$	$1059.75 \pm 0.65 \quad (+0.1\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.5 \pm 1.1 \quad (+0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.665 \pm 0.081$	$r_{\mathrm{drag}}$	$147.8 \pm 2.1 \quad (+0.5\sigma)$	$\chi_{\mathrm{plik}}^2$	$2359.9 \pm 6.0 \quad (+299.4\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.07 \pm 0.27$	$k_{\mathrm{D}}$	$0.1404 \pm 0.0016 \quad (-0.3\sigma)$	$\chi_{\mathrm{Aver15}}^2$	$0.98 \pm 1.4 \quad (+0.0\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16058 \pm 0.00037 \quad (-1.0\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.071 \pm 0.082 \quad (+0.1\sigma)$
$c_{217}$	$0.99818^{+0.00061}_{-0.00067} \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3390 \pm 26 \quad (+0.6\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.18 \pm 0.44 \quad (-0.3\sigma)$
$H_0$	$67.3 \pm 1.3 \quad (-0.5\sigma)$	$k_{\mathrm{eq}}$	$0.01031 \pm 0.00012 \quad (-0.3\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$5.2 \pm 1.7 \quad (+0.2\sigma)$
$\Omega_{\Lambda}$	$0.6877^{+0.0072}_{-0.0065} \quad (-0.3\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8155 \pm 0.0048 \quad (-0.5\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.4 \quad (+1.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3123 \pm 0.0068 \quad (+0.3\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4506 \pm 0.0024 \quad (-0.6\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2789.8 \pm 6.1 \quad (+293.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1415 \pm 0.0036 \quad (-0.5\sigma)$	$H(0.15)$	$72.6 \pm 1.3 \quad (-0.5\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.4 \pm 1.4 \quad (+0.1\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 2808.62; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.16; R - 1 = 0.03124$$



### 11.37 base\_nnu\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02226 \pm 0.00021 \quad (+0.5\sigma)$	$\Omega_{\mathrm{m}}h^2$	$0.1413 \pm 0.0037 \quad (-0.3\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4478 \pm 0.0036 \quad (-0.0\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1184 \pm 0.0036 \quad (-0.4\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.0940^{+0.0041}_{-0.0047} \quad (-0.2\sigma)$	$H(0.15)$	$71.8 \pm 1.6 \quad (-0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04111 \pm 0.00062 \quad (+0.4\sigma)$	$\sigma_8$	$0.807 \pm 0.011 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.15)$	$652 \pm 15 \quad (+0.1\sigma)$
$\tau$	$0.0546^{+0.0049}_{-0.0079} \quad (+0.2\sigma)$	$S_8$	$0.834 \pm 0.016 \quad (-0.3\sigma)$	$H(0.38)$	$82.0 \pm 1.6 \quad (-0.2\sigma)$
$N_{\mathrm{eff}}$	$2.92 \pm 0.23 \quad (-0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4568 \pm 0.0087 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.38)$	$1553 \pm 33 \quad (+0.1\sigma)$
$Y_{\mathrm{P}}$	$0.2437 \pm 0.0040 \quad (-0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6072 \pm 0.0088 \quad (-0.3\sigma)$	$H(0.51)$	$88.7 \pm 1.6 \quad (-0.2\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.040^{+0.015}_{-0.018} \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.011 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$2011 \pm 42 \quad (+0.1\sigma)$
$n_{\mathrm{s}}$	$0.9600 \pm 0.0084 \quad (-0.1\sigma)$	$r_{\mathrm{drag}}h$	$98.5 \pm 1.3 \quad (+0.1\sigma)$	$H(0.61)$	$94.4 \pm 1.6 \quad (-0.2\sigma)$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025 \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.457 \pm 0.029 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2338 \pm 47 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7 \quad (-0.2\sigma)$	$z_{\mathrm{re}}$	$7.69^{+0.53}_{-0.80} \quad (+0.1\sigma)$	$H(2.33)$	$235.0 \pm 3.2 \quad (-0.3\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	$> 0.381 \quad (+0.1\sigma)$	$10^9 A_{\mathrm{s}}$	$2.092^{+0.030}_{-0.038} \quad (-0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	$5820 \pm 97 \quad (+0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.875 \pm 0.019 \quad (-0.3\sigma)$	$f\sigma_8(0.15)$	$0.4607 \pm 0.0081 \quad (-0.3\sigma)$
$A_{100}^{\mathrm{PS}}$	$256 \pm 27 \quad (-0.2\sigma)$	$D_{40}$	$1238 \pm 15 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.745 \pm 0.011 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.5\sigma)$	$D_{220}$	$5732 \pm 38 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4769 \pm 0.0070 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.2\sigma)$	$D_{810}$	$2538 \pm 14 \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.6595 \pm 0.0098 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (-0.0\sigma)$	$D_{1420}$	$817.7 \pm 4.8 \quad (+0.6\sigma)$	$f\sigma_8(0.51)$	$0.4745 \pm 0.0066 \quad (-0.3\sigma)$
$A^{\mathrm{kSZ}}$	$< 3.89 \quad (-0.2\sigma)$	$D_{2000}$	$231.5 \pm 1.8 \quad (+0.7\sigma)$	$\sigma_8(0.51)$	$0.6168 \pm 0.0093 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$n_{\mathrm{s},0.002}$	$0.9600 \pm 0.0084 \quad (-0.1\sigma)$	$f\sigma_8(0.61)$	$0.4689 \pm 0.0064 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}$	$0.2437 \pm 0.0040 \quad (-0.1\sigma)$	$\sigma_8(0.61)$	$0.5867 \pm 0.0090 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.2 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2450 \pm 0.0040 \quad (-0.1\sigma)$	$f\sigma_8(2.33)$	$0.2955 \pm 0.0047 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.8 \pm 7.3 \quad (+0.0\sigma)$	Age/Gyr	$13.93 \pm 0.23 \quad (+0.2\sigma)$	$\sigma_8(2.33)$	$0.3043 \pm 0.0051 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.038$	$z_*$	$1089.81 \pm 0.33 \quad (-0.9\sigma)$	$f_{2000}^{143}$	$28.7 \pm 2.9 \quad (-0.6\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.029$	$r_*$	$145.6 \pm 2.2 \quad (+0.3\sigma)$	$f_{2000}^{143 \times 217}$	$31.5 \pm 2.0 \quad (-0.7\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.480 \pm 0.086$	$100\theta_*$	$1.04138 \pm 0.00066 \quad (+0.4\sigma)$	$f_{2000}^{217}$	$106.5 \pm 1.9 \quad (-0.6\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.226 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.98 \pm 0.20 \quad (+0.3\sigma)$	$\chi_{\mathrm{small}}^2$	$396.9 \pm 1.8 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.668 \pm 0.081$	$z_{\mathrm{drag}}$	$1059.46 \pm 0.73 \quad (+0.2\sigma)$	$\chi_{\mathrm{lowl}}^2$	$24.3 \pm 1.5 \quad (-0.0\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.08 \pm 0.27$	$r_{\mathrm{drag}}$	$148.3 \pm 2.2 \quad (+0.2\sigma)$	$\chi_{\mathrm{plik}}^2$	$2359.2 \pm 6.0 \quad (+268.6\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.1400 \pm 0.0017 \quad (-0.2\sigma)$	$\chi_{\mathrm{Aver15}}^2$	$0.99 \pm 1.4 \quad (-0.0\sigma)$
$c_{217}$	$0.99818 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16052 \pm 0.00038 \quad (-0.7\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.5 \quad (+1.2\sigma)$
$H_0$	$66.4 \pm 1.6 \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3419 \pm 38 \quad (+0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2780.5 \pm 5.9 \quad (+283.5\sigma)$
$\Omega_{\Lambda}$	$0.680 \pm 0.011 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.01035 \pm 0.00013 \quad (-0.3\sigma)$		
$\Omega_{\mathrm{m}}$	$0.320 \pm 0.011 \quad (-0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8102 \pm 0.0071 \quad (-0.0\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2792.93; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.95; R - 1 = 0.01332$$



### 11.38 base\_nnu\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02239 \pm 0.00018 \quad (+0.5\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.0958^{+0.0039}_{-0.0044} \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.15)$	$642 \pm 12 \quad (+0.5\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1189 \pm 0.0036 \quad (-0.5\sigma)$	$\sigma_8$	$0.808 \pm 0.012 \quad (-0.4\sigma)$	$H(0.38)$	$82.9 \pm 1.4 \quad (-0.5\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04102 \pm 0.00062 \quad (+0.5\sigma)$	$S_8$	$0.824 \pm 0.013 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1532 \pm 27 \quad (+0.5\sigma)$
$\tau$	$0.0561^{+0.0056}_{-0.0082} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4512 \pm 0.0073 \quad (-0.0\sigma)$	$H(0.51)$	$89.6 \pm 1.4 \quad (-0.5\sigma)$
$N_{\mathrm{eff}}$	$3.02 \pm 0.22 \quad (-0.6\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6039 \pm 0.0086 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1985 \pm 35 \quad (+0.5\sigma)$
$Y_{\mathrm{P}}$	$0.2437 \pm 0.0040 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.984 \pm 0.010 \quad (+0.0\sigma)$	$H(0.61)$	$95.2 \pm 1.5 \quad (-0.5\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.015}_{-0.018} \quad (-0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.57 \pm 0.85 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.61)$	$2310 \pm 40 \quad (+0.5\sigma)$
$n_{\mathrm{s}}$	$0.9655 \pm 0.0070 \quad (-0.5\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.438 \pm 0.024 \quad (+0.4\sigma)$	$H(2.33)$	$235.7 \pm 3.2 \quad (-0.5\sigma)$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.82^{+0.59}_{-0.83} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5772 \pm 88 \quad (+0.5\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.100^{+0.031}_{-0.039} \quad (-0.1\sigma)$	$f\sigma_8(0.15)$	$0.4557 \pm 0.0071 \quad (-0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.019 \quad (-0.4\sigma)$	$\sigma_8(0.15)$	$0.747 \pm 0.011 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.2}_{-1.9} \quad (+0.2\sigma)$	$D_{40}$	$1230 \pm 13 \quad (+0.5\sigma)$	$f\sigma_8(0.38)$	$0.4740 \pm 0.0068 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$258 \pm 27 \quad (-0.2\sigma)$	$D_{220}$	$5737 \pm 38 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6622 \pm 0.0098 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.5\sigma)$	$D_{810}$	$2538 \pm 14 \quad (+0.1\sigma)$	$f\sigma_8(0.51)$	$0.4726 \pm 0.0066 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.2\sigma)$	$D_{1420}$	$818.0 \pm 4.8 \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.6197 \pm 0.0093 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (-0.0\sigma)$	$D_{2000}$	$231.4 \pm 1.8 \quad (+0.9\sigma)$	$f\sigma_8(0.61)$	$0.4677 \pm 0.0065 \quad (-0.3\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.13 \quad (-0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.9655 \pm 0.0070 \quad (-0.5\sigma)$	$\sigma_8(0.61)$	$0.5897 \pm 0.0089 \quad (-0.4\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.2437 \pm 0.0040 \quad (-0.1\sigma)$	$f\sigma_8(2.33)$	$0.2973 \pm 0.0046 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2450 \pm 0.0040 \quad (-0.1\sigma)$	$\sigma_8(2.33)$	$0.3065 \pm 0.0049 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.2 \quad (+0.1\sigma)$	Age/Gyr	$13.82 \pm 0.21 \quad (+0.5\sigma)$	$f_{2000}^{143}$	$29.0 \pm 2.9 \quad (-0.8\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.7 \pm 7.3 \quad (+0.0\sigma)$	$z_*$	$1089.72 \pm 0.33 \quad (-0.9\sigma)$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.0 \quad (-0.9\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.037$	$r_*$	$144.9 \pm 2.1 \quad (+0.5\sigma)$	$f_{2000}^{217}$	$106.6 \pm 1.9 \quad (-0.8\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.029$	$100\theta_*$	$1.04125 \pm 0.00065 \quad (+0.5\sigma)$	$\chi_{\mathrm{small}}^2$	$397.2 \pm 2.0 \quad (+0.2\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.476 \pm 0.086$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.91 \pm 0.19 \quad (+0.5\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.4 \pm 1.1 \quad (+0.5\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.225 \pm 0.054$	$z_{\mathrm{drag}}$	$1059.82 \pm 0.66 \quad (+0.1\sigma)$	$\chi_{\mathrm{plik}}^2$	$2360.4 \pm 6.2 \quad (+285.9\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.665 \pm 0.081$	$r_{\mathrm{drag}}$	$147.5 \pm 2.2 \quad (+0.5\sigma)$	$\chi_{\mathrm{Aver15}}^2$	$0.98 \pm 1.4 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.07 \pm 0.27$	$k_{\mathrm{D}}$	$0.1406 \pm 0.0017 \quad (-0.3\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.066 \pm 0.079 \quad (+0.1\sigma)$
$c_{100}$	$0.99965 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16063 \pm 0.00038 \quad (-1.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.23 \pm 0.46 \quad (-0.4\sigma)$
$c_{217}$	$0.99819 \pm 0.00064 \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3387 \pm 26 \quad (+0.7\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$5.0 \pm 1.6 \quad (+0.2\sigma)$
$H_0$	$67.5 \pm 1.3 \quad (-0.5\sigma)$	$k_{\mathrm{eq}}$	$0.01032 \pm 0.00013 \quad (-0.3\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.5 \quad (+1.1\sigma)$
$\Omega_{\Lambda}$	$0.6885 \pm 0.0070 \quad (-0.4\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8161 \pm 0.0049 \quad (-0.6\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.3 \pm 1.4 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3115 \pm 0.0070 \quad (+0.4\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4508 \pm 0.0025 \quad (-0.6\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2781.0 \pm 6.1 \quad (+293.6\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1419 \pm 0.0037 \quad (-0.5\sigma)$	$H(0.15)$	$72.8 \pm 1.3 \quad (-0.5\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2799.83; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.58; R - 1 = 0.03359$$



### 11.39 base\_nnu\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02225 \pm 0.00021 \quad (+0.5\sigma)$	$\Omega_{\mathrm{m}}h^2$	$0.1407 \pm 0.0035 \quad (-0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4479 \pm 0.0033 \quad (-0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1178 \pm 0.0034 \quad (-0.3\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.0933^{+0.0039}_{-0.0046} \quad (-0.2\sigma)$	$H(0.15)$	$71.6^{+1.4}_{-1.6} \quad (-0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04120 \pm 0.00062 \quad (+0.4\sigma)$	$\sigma_8$	$0.805 \pm 0.010 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$653 \pm 15 \quad (+0.1\sigma)$
$\tau$	$0.0544^{+0.0048}_{-0.0077} \quad (+0.2\sigma)$	$S_8$	$0.831 \pm 0.013 \quad (-0.2\sigma)$	$H(0.38)$	$81.8^{+1.5}_{-1.6} \quad (-0.1\sigma)$
$N_{\mathrm{eff}}$	$2.89^{+0.21}_{-0.24} \quad (-0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4553 \pm 0.0070 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.38)$	$1556 \pm 33 \quad (+0.1\sigma)$
$Y_{\mathrm{P}}$	$0.2438 \pm 0.0040 \quad (-0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6054 \pm 0.0072 \quad (-0.3\sigma)$	$H(0.51)$	$88.5^{+1.5}_{-1.7} \quad (-0.1\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.038^{+0.014}_{-0.017} \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.9886 \pm 0.0088 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$2015 \pm 41 \quad (+0.1\sigma)$
$n_{\mathrm{s}}$	$0.9593 \pm 0.0082 \quad (-0.1\sigma)$	$r_{\mathrm{drag}}h$	$98.6 \pm 1.2 \quad (+0.0\sigma)$	$H(0.61)$	$94.1^{+1.5}_{-1.7} \quad (-0.2\sigma)$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025 \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.455 \pm 0.024 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2343 \pm 47 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7 \quad (-0.2\sigma)$	$z_{\mathrm{re}}$	$7.65^{+0.52}_{-0.78} \quad (+0.1\sigma)$	$H(2.33)$	$234.5 \pm 3.1 \quad (-0.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	$> 0.383 \quad (+0.1\sigma)$	$10^9 A_{\mathrm{s}}$	$2.087^{+0.029}_{-0.035} \quad (+0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	$5833 \pm 96 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.872 \pm 0.018 \quad (-0.2\sigma)$	$f\sigma_8(0.15)$	$0.4592 \pm 0.0065 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$257 \pm 27 \quad (-0.2\sigma)$	$D_{40}$	$1239 \pm 14 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7430 \pm 0.0099 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$44 \pm 8 \quad (-0.4\sigma)$	$D_{220}$	$5733 \pm 38 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4755 \pm 0.0057 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{810}$	$2537 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6577 \pm 0.0093 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{1420}$	$817.7 \pm 4.9 \quad (+0.5\sigma)$	$f\sigma_8(0.51)$	$0.4731 \pm 0.0055 \quad (-0.2\sigma)$
$A^{\mathrm{kSZ}}$	$< 3.94 \quad (-0.2\sigma)$	$D_{2000}$	$231.6 \pm 1.8 \quad (+0.7\sigma)$	$\sigma_8(0.51)$	$0.6151 \pm 0.0089 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.8 \pm 1.8 \quad (-0.0\sigma)$	$n_{\mathrm{s},0.002}$	$0.9593 \pm 0.0082 \quad (-0.1\sigma)$	$f\sigma_8(0.61)$	$0.4675 \pm 0.0054 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}$	$0.2438 \pm 0.0040 \quad (-0.1\sigma)$	$\sigma_8(0.61)$	$0.5851 \pm 0.0086 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.4 \pm 3.2 \quad (+0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2451 \pm 0.0040 \quad (-0.1\sigma)$	$f\sigma_8(2.33)$	$0.2947 \pm 0.0046 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.6 \pm 7.3 \quad (+0.0\sigma)$	Age/Gyr	$13.96 \pm 0.23 \quad (+0.1\sigma)$	$\sigma_8(2.33)$	$0.3035 \pm 0.0050 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.038$	$z_*$	$1089.75 \pm 0.31 \quad (-0.8\sigma)$	$f_{2000}^{143}$	$28.5 \pm 2.9 \quad (-0.6\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.030$	$r_*$	$145.9 \pm 2.1 \quad (+0.2\sigma)$	$f_{2000}^{143 \times 217}$	$31.4 \pm 2.0 \quad (-0.7\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.479 \pm 0.086$	$100\theta_*$	$1.04148 \pm 0.00065 \quad (+0.4\sigma)$	$f_{2000}^{217}$	$106.4 \pm 1.9 \quad (-0.6\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.226 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.01 \pm 0.20 \quad (+0.2\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.00 \pm 0.70 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.666 \pm 0.081$	$z_{\mathrm{drag}}$	$1059.38 \pm 0.72 \quad (+0.2\sigma)$	$\chi_{\mathrm{small}}^2$	$396.8 \pm 1.7 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.08 \pm 0.27$	$r_{\mathrm{drag}}$	$148.7 \pm 2.2 \quad (+0.2\sigma)$	$\chi_{\mathrm{lowl}}^2$	$24.4 \pm 1.4 \quad (+0.0\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.1397 \pm 0.0017 \quad (-0.1\sigma)$	$\chi_{\mathrm{plik}}^2$	$2358.9 \pm 5.9 \quad (+290.7\sigma)$
$c_{217}$	$0.99817 \pm 0.00064 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16047 \pm 0.00038 \quad (-0.7\sigma)$	$\chi_{\mathrm{Aver15}}^2$	$1.0 \pm 1.4 \quad (+0.0\sigma)$
$H_0$	$66.3^{+1.5}_{-1.6} \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3418 \pm 35 \quad (+0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.4 \quad (+1.1\sigma)$
$\Omega_{\Lambda}$	$0.6799 \pm 0.0098 \quad (+0.0\sigma)$	$k_{\mathrm{eq}}$	$0.01032 \pm 0.00012 \quad (-0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2789.1 \pm 6.0 \quad (+287.4\sigma)$
$\Omega_{\mathrm{m}}$	$0.3201 \pm 0.0098 \quad (-0.0\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8104 \pm 0.0065 \quad (-0.1\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2801.62; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.87; R - 1 = 0.01633$$



# 11.40 base\_nnu\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02237 \pm 0.00018 \quad (+0.5\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.0953 \pm 0.0041 \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.15)$	$644 \pm 12 \quad (+0.5\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1185 \pm 0.0035 \quad (-0.5\sigma)$	$\sigma_8$	$0.808 \pm 0.010 \quad (-0.4\sigma)$	$H(0.38)$	$82.7 \pm 1.4 \quad (-0.5\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04108 \pm 0.00061 \quad (+0.5\sigma)$	$S_8$	$0.824 \pm 0.011 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1536 \pm 27 \quad (+0.5\sigma)$
$\tau$	$0.0566^{+0.0057}_{-0.0079} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4513 \pm 0.0061 \quad (-0.1\sigma)$	$H(0.51)$	$89.4 \pm 1.4 \quad (-0.5\sigma)$
$N_{\mathrm{eff}}$	$2.99 \pm 0.21 \quad (-0.6\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6037 \pm 0.0072 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.51)$	$1989 \pm 34 \quad (+0.5\sigma)$
$Y_{\mathrm{P}}$	$0.2437 \pm 0.0039 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9844 \pm 0.0082 \quad (-0.0\sigma)$	$H(0.61)$	$95.0 \pm 1.4 \quad (-0.5\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.014}_{-0.016} \quad (-0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.50 \pm 0.82 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.61)$	$2315 \pm 39 \quad (+0.5\sigma)$
$n_{\mathrm{s}}$	$0.9645 \pm 0.0069 \quad (-0.4\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.441 \pm 0.021 \quad (+0.4\sigma)$	$H(2.33)$	$235.4 \pm 3.0 \quad (-0.5\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.86^{+0.60}_{-0.78} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5783 \pm 86 \quad (+0.5\sigma)$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.101^{+0.029}_{-0.035} \quad (-0.1\sigma)$	$f\sigma_8(0.15)$	$0.4558 \pm 0.0059 \quad (-0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	$> 0.379 \quad (+0.1\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.876 \pm 0.018 \quad (-0.4\sigma)$	$\sigma_8(0.15)$	$0.7464 \pm 0.0098 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.2}_{-1.9} \quad (+0.2\sigma)$	$D_{40}$	$1231 \pm 13 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4739 \pm 0.0057 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$257 \pm 27 \quad (-0.2\sigma)$	$D_{220}$	$5739 \pm 38 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6615 \pm 0.0090 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.5\sigma)$	$D_{810}$	$2538 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.51)$	$0.4724 \pm 0.0056 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.2\sigma)$	$D_{1420}$	$818.2 \pm 4.8 \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.6191 \pm 0.0086 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (-0.0\sigma)$	$D_{2000}$	$231.5 \pm 1.8 \quad (+0.8\sigma)$	$f\sigma_8(0.61)$	$0.4674 \pm 0.0056 \quad (-0.3\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.07 \quad (-0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.9645 \pm 0.0069 \quad (-0.4\sigma)$	$\sigma_8(0.61)$	$0.5890 \pm 0.0082 \quad (-0.4\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.2437 \pm 0.0039 \quad (-0.1\sigma)$	$f\sigma_8(2.33)$	$0.2970 \pm 0.0043 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2451 \pm 0.0040 \quad (-0.1\sigma)$	$\sigma_8(2.33)$	$0.3061 \pm 0.0046 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.2 \quad (+0.1\sigma)$	Age/Gyr	$13.85 \pm 0.20 \quad (+0.5\sigma)$	$f_{2000}^{143}$	$28.8 \pm 2.9 \quad (-0.7\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.7 \pm 7.3 \quad (+0.1\sigma)$	$z_*$	$1089.69 \pm 0.32 \quad (-1.0\sigma)$	$f_{2000}^{143 \times 217}$	$31.6 \pm 2.0 \quad (-0.8\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.038$	$r_*$	$145.1 \pm 2.0 \quad (+0.5\sigma)$	$f_{2000}^{217}$	$106.5 \pm 1.9 \quad (-0.7\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.029$	$100\theta_*$	$1.04132 \pm 0.00064 \quad (+0.5\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.02 \pm 0.62 \quad (-0.5\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.475 \pm 0.086$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.94 \pm 0.19 \quad (+0.5\sigma)$	$\chi_{\mathrm{small}}^2$	$397.3 \pm 2.0 \quad (+0.2\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.225 \pm 0.053$	$z_{\mathrm{drag}}$	$1059.75 \pm 0.65 \quad (+0.1\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.5 \pm 1.1 \quad (+0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.665 \pm 0.081$	$r_{\mathrm{drag}}$	$147.8 \pm 2.1 \quad (+0.5\sigma)$	$\chi_{\mathrm{plik}}^2$	$2359.8 \pm 6.0 \quad (+299.6\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.07 \pm 0.27$	$k_{\mathrm{D}}$	$0.1404 \pm 0.0016 \quad (-0.3\sigma)$	$\chi_{\mathrm{Aver15}}^2$	$0.98 \pm 1.4 \quad (+0.0\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16058 \pm 0.00037 \quad (-1.0\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.069 \pm 0.080 \quad (+0.1\sigma)$
$c_{217}$	$0.99818^{+0.00061}_{-0.00067} \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3390 \pm 25 \quad (+0.6\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.19 \pm 0.43 \quad (-0.4\sigma)$
$H_0$	$67.3 \pm 1.3 \quad (-0.5\sigma)$	$k_{\mathrm{eq}}$	$0.01031 \pm 0.00012 \quad (-0.3\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$5.1 \pm 1.6 \quad (+0.2\sigma)$
$\Omega_{\Lambda}$	$0.6878 \pm 0.0068 \quad (-0.3\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8157 \pm 0.0047 \quad (-0.5\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.4 \quad (+1.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3122 \pm 0.0068 \quad (+0.3\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4506 \pm 0.0024 \quad (-0.6\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2789.7 \pm 6.1 \quad (+295.6\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1415 \pm 0.0036 \quad (-0.5\sigma)$	$H(0.15)$	$72.6 \pm 1.3 \quad (-0.5\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.4 \pm 1.3 \quad (+0.1\sigma)$

$\bar{\chi}_{\mathrm{eff}}^2 = 2808.47$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.21$ ;  $R - 1 = 0.03303$



# 11.41 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022361	$0.02219 \pm 0.00022$	$\sigma_8$	0.8214	$0.801 \pm 0.012$	$H(0.15)$	73.26	$71.7 \pm 1.7$
$\Omega_{\mathrm{c}}h^2$	0.12075	$0.1174 \pm 0.0038$	$S_8$	0.8367	$0.826 \pm 0.016$	$D_{\mathrm{M}}(0.15)$	638.0	$653 \pm 17$
$100\theta_{\mathrm{MC}}$	1.04069	$1.04117 \pm 0.00066$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4583	$0.4523 \pm 0.0087$	$H(0.38)$	83.43	$81.8 \pm 1.8$
$\tau$	0.0637	$0.0520 \pm 0.0078$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6135	$0.6020 \pm 0.0090$	$D_{\mathrm{M}}(0.38)$	1521.5	$1556 \pm 37$
$N_{\mathrm{eff}}$	3.128	$2.89 \pm 0.25$	$\sigma_8/h^{0.5}$	0.9964	$0.984 \pm 0.012$	$H(0.51)$	90.18	$88.5 \pm 1.8$
$Y_{\mathrm{P}}$	0.24385	$0.2440 \pm 0.0039$	$r_{\mathrm{drag}}h$	99.56	$98.7 \pm 1.3$	$D_{\mathrm{M}}(0.51)$	1971.1	$2014 \pm 47$
$\ln(10^{10}A_{\mathrm{s}})$	3.0665	$3.031 \pm 0.019$	$\langle d^2 \rangle^{1/2}$	2.4587	$2.441 \pm 0.030$	$H(0.61)$	95.83	$94.1 \pm 1.8$
$n_{\mathrm{s}}$	0.9690	$0.9604 \pm 0.0090$	$z_{\mathrm{re}}$	8.63	$7.41 \pm 0.80$	$D_{\mathrm{M}}(0.61)$	2294	$2343 \pm 53$
$y_{\mathrm{cal}}$	1.00188	$1.0004 \pm 0.0025$	$10^9 A_{\mathrm{s}}$	2.1467	$2.072 \pm 0.039$	$H(2.33)$	237.30	$234.1 \pm 3.4$
$A_{100}^{\mathrm{PS}}$	233.7	$237 \pm 25$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8897	$1.867 \pm 0.020$	$D_{\mathrm{M}}(2.33)$	5732	$5835 \pm 110$
$A_{143}^{\mathrm{PS}}$	47.2	$38 \pm 9$	$D_{40}$	1229.3	$1232 \pm 16$	$f\sigma_8(0.15)$	0.4629	$0.4562 \pm 0.0082$
$A_{217}^{\mathrm{PS}}$	105.6	$103 \pm 10$	$D_{220}$	5736.0	$5717 \pm 40$	$\sigma_8(0.15)$	0.7590	$0.740 \pm 0.012$
$A_{217}^{\mathrm{CIB}}$	40.8	$39 \pm 7$	$D_{810}$	2544.7	$2532 \pm 14$	$f\sigma_8(0.38)$	0.4816	$0.4728 \pm 0.0071$
$A_{143}^{\mathrm{tSZ}}$	5.40	$3.9_{-2.5}^{+2.0}$	$D_{1420}$	818.8	$816.4 \pm 5.0$	$\sigma_8(0.38)$	0.6728	$0.655 \pm 0.011$
$r_{143 \times 217}^{\mathrm{PS}}$	0.732	$0.66 \pm 0.13$	$D_{2000}$	231.31	$231.0 \pm 2.0$	$f\sigma_8(0.51)$	0.4802	$0.4706 \pm 0.0068$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.735	$0.54_{-0.21}^{+0.39}$	$n_{\mathrm{s},0.002}$	0.9690	$0.9604 \pm 0.0090$	$\sigma_8(0.51)$	0.6297	$0.613 \pm 0.010$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.76	—	$Y_{\mathrm{P}}$	0.24385	$0.2440 \pm 0.0039$	$f\sigma_8(0.61)$	0.4752	$0.4651 \pm 0.0067$
$A^{\mathrm{kSZ}}$	1.72	$< 5.97$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24517	$0.2454 \pm 0.0039$	$\sigma_8(0.61)$	0.5991	$0.583 \pm 0.010$
$A_{100}^{\mathrm{dust}}$	1.008	$1.01 \pm 0.20$	Age/Gyr	13.724	$13.97 \pm 0.26$	$f\sigma_8(2.33)$	0.3021	$0.2937 \pm 0.0053$
$A_{143}^{\mathrm{dust}}$	0.955	$0.96 \pm 0.18$	$z_*$	1089.970	$1089.80 \pm 0.37$	$\sigma_8(2.33)$	0.3115	$0.3025 \pm 0.0057$
$A_{217}^{\mathrm{dust}}$	0.978	$0.98 \pm 0.10$	$r_*$	143.85	$146.1 \pm 2.4$	$f_{2000}^{143}$	29.42	$29 \pm 3$
$A_{143 \times 217}^{\mathrm{dust}}$	1.021	$1.02 \pm 0.16$	$100\theta_*$	1.04089	$1.04146 \pm 0.00071$	$f_{2000}^{217}$	106.61	$106.2 \pm 2.2$
$c_{100}$	0.99783	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.820	$14.03 \pm 0.22$	$f_{2000}^{143 \times 217}$	31.92	$31.3 \pm 2.4$
$c_{217}$	1.00118	$1.0011 \pm 0.0016$	$z_{\mathrm{drag}}$	1059.93	$1059.22 \pm 0.78$	$\chi_{\mathrm{small}}^2$	399.05	$396.8 \pm 1.5$
$c_{TE}$	0.9961	$0.9958 \pm 0.0051$	$r_{\mathrm{drag}}$	146.50	$148.8 \pm 2.5$	$\chi_{\mathrm{lowl}}^2$	23.05	$23.9 \pm 1.4$
$c_{EE}$	0.9923	$0.9904 \pm 0.0056$	$k_{\mathrm{D}}$	0.14128	$0.1395 \pm 0.0019$	$\chi_{\mathrm{CamSpec}}^2$	11499.5	$11514.4 \pm 5.8$
$H_0$	67.96	$66.4 \pm 1.8$	$100\theta_{\mathrm{D}}$	0.160909	$0.16057 \pm 0.00047$	$\chi_{\mathrm{Aver15}}^2$	0.005	$0.96 \pm 1.4$
$\Omega_{\Lambda}$	0.6887	$0.681 \pm 0.011$	$z_{\mathrm{eq}}$	3382.8	$3408 \pm 42$	$\chi_{\mathrm{prior}}^2$	2.43	$7.9 \pm 3.5$
$\Omega_{\mathrm{m}}$	0.3113	$0.319 \pm 0.011$	$k_{\mathrm{eq}}$	0.010381	$0.01029 \pm 0.00013$	$\chi_{\mathrm{CMB}}^2$	11921.6	$11935.1 \pm 5.9$
$\Omega_{\mathrm{m}}h^2$	0.14376	$0.1402 \pm 0.0039$	$100\theta_{\mathrm{eq}}$	0.8166	$0.8119 \pm 0.0077$			
$\Omega_{\mathrm{m}}h^3$	0.09770	$0.0931_{-0.0050}^{+0.0044}$	$100\theta_{\mathrm{s,eq}}$	0.45113	$0.4488 \pm 0.0039$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 11924.04$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 11943.94$ ;  $R - 1 = 0.01231$

$\chi_{\mathrm{eff}}^2$ : Abund - Yp\_Aver2015: 0.01 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 399.05 commander\_dx12\_v3.2\_29: 23.05 CamSpec like\_10.7HM\_1400\_unified: 11499.50



# 11.42 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02230 \pm 0.00018$	$S_8$	$0.817 \pm 0.014$	$H(0.38)$	$82.7 \pm 1.5$
$\Omega_{\mathrm{c}}h^2$	$0.1181 \pm 0.0038$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4477 \pm 0.0074$	$D_{\mathrm{M}}(0.38)$	$1535 \pm 30$
$100\theta_{\mathrm{MC}}$	$1.04105 \pm 0.00063$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5997 \pm 0.0088$	$H(0.51)$	$89.4 \pm 1.5$
$\tau$	$0.0531 \pm 0.0077$	$\sigma_8/h^{0.5}$	$0.979 \pm 0.011$	$D_{\mathrm{M}}(0.51)$	$1988 \pm 38$
$N_{\mathrm{eff}}$	$3.00 \pm 0.23$	$r_{\mathrm{drag}}h$	$99.71 \pm 0.88$	$H(0.61)$	$95.0 \pm 1.6$
$Y_{\mathrm{P}}$	$0.2441 \pm 0.0039$	$\langle d^2 \rangle^{1/2}$	$2.424 \pm 0.025$	$D_{\mathrm{M}}(0.61)$	$2314 \pm 43$
$\ln(10^{10}A_{\mathrm{s}})$	$3.035 \pm 0.018$	$z_{\mathrm{re}}$	$7.52^{+0.81}_{-0.72}$	$H(2.33)$	$235.1 \pm 3.3$
$n_{\mathrm{s}}$	$0.9655 \pm 0.0072$	$10^9 A_{\mathrm{s}}$	$2.081 \pm 0.038$	$D_{\mathrm{M}}(2.33)$	$5785 \pm 94$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.871 \pm 0.020$	$f\sigma_8(0.15)$	$0.4523 \pm 0.0072$
$A_{100}^{\mathrm{PS}}$	$238 \pm 25$	$D_{40}$	$1225 \pm 13$	$\sigma_8(0.15)$	$0.742 \pm 0.011$
$A_{143}^{\mathrm{PS}}$	$38 \pm 9$	$D_{220}$	$5722 \pm 39$	$f\sigma_8(0.38)$	$0.4707 \pm 0.0069$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{810}$	$2534 \pm 14$	$\sigma_8(0.38)$	$0.658 \pm 0.010$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7$	$D_{1420}$	$816.4 \pm 4.9$	$f\sigma_8(0.51)$	$0.4694 \pm 0.0068$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+2.0}_{-2.4}$	$D_{2000}$	$230.7 \pm 2.0$	$\sigma_8(0.51)$	$0.6160^{+0.0091}_{-0.010}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9655 \pm 0.0072$	$f\sigma_8(0.61)$	$0.4646 \pm 0.0067$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.43}_{-0.16}$	$Y_{\mathrm{P}}$	$0.2441 \pm 0.0039$	$\sigma_8(0.61)$	$0.5862^{+0.0087}_{-0.0098}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2455 \pm 0.0039$	$f\sigma_8(2.33)$	$0.2956^{+0.0045}_{-0.0050}$
$A^{\mathrm{kSZ}}$	$4.6^{+2.0}_{-4.1}$	Age/Gyr	$13.85 \pm 0.22$	$\sigma_8(2.33)$	$0.3048^{+0.0048}_{-0.0054}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$z_*$	$1089.77 \pm 0.37$	$f_{2000}^{143}$	$29.2 \pm 3.2$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.17$	$r_*$	$145.3 \pm 2.2$	$f_{2000}^{217}$	$106.5 \pm 2.2$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04129 \pm 0.00067$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.3$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.95 \pm 0.20$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.6$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.58 \pm 0.69$	$\chi_{\mathrm{lowl}}^2$	$23.1 \pm 1.0$
$c_{217}$	$1.0011 \pm 0.0015$	$r_{\mathrm{drag}}$	$148.0 \pm 2.3$	$\chi_{\mathrm{CamSpec}}^2$	$11515.0 \pm 5.7$
$c_{TE}$	$0.9964 \pm 0.0049$	$k_{\mathrm{D}}$	$0.1401 \pm 0.0018$	$\chi_{\mathrm{Aver15}}^2$	$0.97 \pm 1.4$
$c_{EE}$	$0.9917 \pm 0.0054$	$100\theta_{\mathrm{D}}$	$0.16072 \pm 0.00044$	$\chi_{6\mathrm{DF}}^2$	$0.058 \pm 0.073$
$H_0$	$67.4 \pm 1.4$	$z_{\mathrm{eq}}$	$3379 \pm 28$	$\chi_{\mathrm{MGS}}^2$	$1.31 \pm 0.48$
$\Omega_{\Lambda}$	$0.6894 \pm 0.0072$	$k_{\mathrm{eq}}$	$0.01028 \pm 0.00013$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.5$
$\Omega_{\mathrm{m}}$	$0.3106 \pm 0.0072$	$100\theta_{\mathrm{eq}}$	$0.8174 \pm 0.0051$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4$
$\Omega_{\mathrm{m}}h^2$	$0.1411 \pm 0.0039$	$100\theta_{\mathrm{s,eq}}$	$0.4516 \pm 0.0026$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.2$
$\Omega_{\mathrm{m}}h^3$	$0.0951^{+0.0041}_{-0.0046}$	$H(0.15)$	$72.7 \pm 1.4$	$\chi_{\mathrm{CMB}}^2$	$11934.9 \pm 5.6$
$\sigma_8$	$0.803 \pm 0.012$	$D_{\mathrm{M}}(0.15)$	$643 \pm 13$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11949.86; R - 1 = 0.01509$$



### 11.43 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02216 \pm 0.00022$	$\sigma_8$	$0.801 \pm 0.011$	$H(0.15)$	$71.4 \pm 1.7$
$\Omega_{\mathrm{c}}h^2$	$0.1170 \pm 0.0037$	$S_8$	$0.828 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$656 \pm 16$
$100\theta_{\mathrm{MC}}$	$1.04125 \pm 0.00065$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4534 \pm 0.0069$	$H(0.38)$	$81.5 \pm 1.7$
$\tau$	$0.0526 \pm 0.0074$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6026 \pm 0.0072$	$D_{\mathrm{M}}(0.38)$	$1562 \pm 37$
$N_{\mathrm{eff}}$	$2.85 \pm 0.25$	$\sigma_8/h^{0.5}$	$0.9856 \pm 0.0089$	$H(0.51)$	$88.2 \pm 1.7$
$Y_{\mathrm{P}}$	$0.2441 \pm 0.0038$	$r_{\mathrm{drag}}h$	$98.5 \pm 1.2$	$D_{\mathrm{M}}(0.51)$	$2022 \pm 46$
$\ln(10^{10}A_{\mathrm{s}})$	$3.031 \pm 0.018$	$\langle d^2 \rangle^{1/2}$	$2.448 \pm 0.024$	$H(0.61)$	$93.8 \pm 1.8$
$n_{\mathrm{s}}$	$0.9588 \pm 0.0087$	$z_{\mathrm{re}}$	$7.47^{+0.78}_{-0.68}$	$D_{\mathrm{M}}(0.61)$	$2352 \pm 52$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$10^9 A_{\mathrm{s}}$	$2.073 \pm 0.036$	$H(2.33)$	$233.7 \pm 3.3$
$A_{100}^{\mathrm{PS}}$	$236 \pm 25$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.866 \pm 0.020$	$D_{\mathrm{M}}(2.33)$	$5852 \pm 110$
$A_{143}^{\mathrm{PS}}$	$37 \pm 9$	$D_{40}$	$1235 \pm 14$	$f\sigma_8(0.15)$	$0.4572 \pm 0.0064$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10$	$D_{220}$	$5719 \pm 38$	$\sigma_8(0.15)$	$0.739 \pm 0.011$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7$	$D_{810}$	$2533 \pm 14$	$f\sigma_8(0.38)$	$0.4733 \pm 0.0057$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+2.0}_{-2.4}$	$D_{1420}$	$816.8 \pm 4.9$	$\sigma_8(0.38)$	$0.655 \pm 0.010$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.67 \pm 0.13$	$D_{2000}$	$231.3 \pm 2.0$	$f\sigma_8(0.51)$	$0.4709 \pm 0.0056$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.53^{+0.39}_{-0.21}$	$n_{\mathrm{s},0.002}$	$0.9588 \pm 0.0087$	$\sigma_8(0.51)$	$0.6121 \pm 0.0099$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.2441 \pm 0.0038$	$f\sigma_8(0.61)$	$0.4653 \pm 0.0056$
$A^{\mathrm{kSZ}}$	$< 5.82$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2454 \pm 0.0038$	$\sigma_8(0.61)$	$0.5822 \pm 0.0096$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	Age/Gyr	$14.01 \pm 0.25$	$f\sigma_8(2.33)$	$0.2933 \pm 0.0051$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.18$	$z_*$	$1089.78 \pm 0.35$	$\sigma_8(2.33)$	$0.3020 \pm 0.0056$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$r_*$	$146.4 \pm 2.3$	$f_{2000}^{143}$	$28 \pm 3$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$100\theta_*$	$1.04155 \pm 0.00070$	$f_{2000}^{217}$	$106.0 \pm 2.2$
$c_{100}$	$0.9976 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.06 \pm 0.22$	$f_{2000}^{143 \times 217}$	$31.1 \pm 2.3$
$c_{217}$	$1.0010 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.11 \pm 0.77$	$\chi_{\mathrm{lensing}}^2$	$9.03 \pm 0.75$
$c_{TE}$	$0.9955 \pm 0.0049$	$r_{\mathrm{drag}}$	$149.2 \pm 2.4$	$\chi_{\mathrm{simall}}^2$	$396.8 \pm 1.5$
$c_{EE}$	$0.9900 \pm 0.0055$	$k_{\mathrm{D}}$	$0.1393 \pm 0.0018$	$\chi_{\mathrm{lowl}}^2$	$24.1 \pm 1.4$
$H_0$	$66.1 \pm 1.7$	$100\theta_{\mathrm{D}}$	$0.16050 \pm 0.00046$	$\chi_{\mathrm{CamSpec}}^2$	$11513.6 \pm 5.5$
$\Omega_{\Lambda}$	$0.680 \pm 0.011$	$z_{\mathrm{eq}}$	$3415 \pm 39$	$\chi_{\mathrm{Aver15}}^2$	$0.9 \pm 1.4$
$\Omega_{\mathrm{m}}$	$0.320 \pm 0.011$	$k_{\mathrm{eq}}$	$0.01028 \pm 0.00012$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4$
$\Omega_{\mathrm{m}}h^2$	$0.1398 \pm 0.0038$	$100\theta_{\mathrm{eq}}$	$0.8106 \pm 0.0072$	$\chi_{\mathrm{CMB}}^2$	$11943.6 \pm 5.8$
$\Omega_{\mathrm{m}}h^3$	$0.0924^{+0.0043}_{-0.0048}$	$100\theta_{\mathrm{s,eq}}$	$0.4481 \pm 0.0036$		

$\bar{\chi}_{\mathrm{eff}}^2 = 11952.31$ ;  $R - 1 = 0.01285$



## 11.44 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_BAO\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02229 \pm 0.00018$	$S_8$	$0.821 \pm 0.011$	$H(0.38)$	$82.6^{+1.4}_{-1.5}$
$\Omega_c h^2$	$0.1180 \pm 0.0036$	$\sigma_8 \Omega_m^{0.5}$	$0.4496 \pm 0.0061$	$D_M(0.38)$	$1538 \pm 29$
$100\theta_{MC}$	$1.04107 \pm 0.00062$	$\sigma_8 \Omega_m^{0.25}$	$0.6015 \pm 0.0073$	$H(0.51)$	$89.2 \pm 1.5$
$\tau$	$0.0549 \pm 0.0071$	$\sigma_8/h^{0.5}$	$0.9818 \pm 0.0084$	$D_M(0.51)$	$1993 \pm 37$
$N_{\text{eff}}$	$2.98^{+0.21}_{-0.23}$	$r_{\text{drag}} h$	$99.53 \pm 0.86$	$H(0.61)$	$94.8 \pm 1.5$
$Y_P$	$0.2441 \pm 0.0039$	$\langle d^2 \rangle^{1/2}$	$2.433 \pm 0.021$	$D_M(0.61)$	$2319 \pm 42$
$\ln(10^{10} A_s)$	$3.039 \pm 0.016$	$z_{\text{re}}$	$7.70 \pm 0.71$	$H(2.33)$	$234.9 \pm 3.2$
$n_s$	$0.9644 \pm 0.0071$	$10^9 A_s$	$2.089 \pm 0.033$	$D_M(2.33)$	$5793 \pm 92$
$y_{\text{cal}}$	$1.0007 \pm 0.0024$	$10^9 A_s e^{-2\tau}$	$1.872 \pm 0.019$	$f\sigma_8(0.15)$	$0.4541 \pm 0.0059$
$A_{100}^{\text{PS}}$	$237 \pm 25$	$D_{40}$	$1228 \pm 13$	$\sigma_8(0.15)$	$0.744 \pm 0.010$
$A_{143}^{\text{PS}}$	$38 \pm 9$	$D_{220}$	$5726 \pm 38$	$f\sigma_8(0.38)$	$0.4722 \pm 0.0057$
$A_{217}^{\text{PS}}$	$103 \pm 10$	$D_{810}$	$2535 \pm 13$	$\sigma_8(0.38)$	$0.6592^{+0.0087}_{-0.0097}$
$A_{217}^{\text{CIB}}$	$39 \pm 7$	$D_{1420}$	$816.9 \pm 4.9$	$f\sigma_8(0.51)$	$0.4707 \pm 0.0057$
$A_{143}^{\text{tSZ}}$	$4.0^{+2.0}_{-2.5}$	$D_{2000}$	$230.9 \pm 1.9$	$\sigma_8(0.51)$	$0.6169^{+0.0083}_{-0.0093}$
$r_{143 \times 217}^{\text{PS}}$	$0.66 \pm 0.13$	$n_{s,0.002}$	$0.9644 \pm 0.0071$	$f\sigma_8(0.61)$	$0.4658 \pm 0.0057$
$r_{143 \times 217}^{\text{CIB}}$	$0.54^{+0.42}_{-0.17}$	$Y_P$	$0.2441 \pm 0.0039$	$\sigma_8(0.61)$	$0.5870^{+0.0079}_{-0.0090}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.2454 \pm 0.0039$	$f\sigma_8(2.33)$	$0.2960^{+0.0041}_{-0.0047}$
$A^{\text{kSZ}}$	$4.5^{+1.5}_{-4.5}$	Age/Gyr	$13.87 \pm 0.22$	$\sigma_8(2.33)$	$0.3051^{+0.0044}_{-0.0050}$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.20$	$z_*$	$1089.77 \pm 0.35$	$f_{2000}^{143}$	$29.0 \pm 3.2$
$A_{143}^{\text{dust}}$	$0.95 \pm 0.17$	$r_*$	$145.4 \pm 2.1$	$f_{2000}^{217}$	$106.4 \pm 2.1$
$A_{217}^{\text{dust}}$	$0.98 \pm 0.10$	$100\theta_*$	$1.04132 \pm 0.00066$	$f_{2000}^{143 \times 217}$	$31.6 \pm 2.3$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.16$	$D_M(z_*)/\text{Gpc}$	$13.96 \pm 0.20$	$\chi_{\text{lensing}}^2$	$9.26 \pm 0.83$
$c_{100}$	$0.9976 \pm 0.0011$	$z_{\text{drag}}$	$1059.53 \pm 0.67$	$\chi_{\text{simall}}^2$	$397.0 \pm 1.6$
$c_{217}$	$1.0011 \pm 0.0016$	$r_{\text{drag}}$	$148.1 \pm 2.2$	$\chi_{\text{lowl}}^2$	$23.3 \pm 1.1$
$c_{TE}$	$0.9962 \pm 0.0049$	$k_D$	$0.1401 \pm 0.0017$	$\chi_{\text{CamSpec}}^2$	$11514.1 \pm 5.5$
$c_{EE}$	$0.9915 \pm 0.0054$	$100\theta_D$	$0.16068 \pm 0.00043$	$\chi_{\text{Aver15}}^2$	$0.96 \pm 1.4$
$H_0$	$67.2 \pm 1.4$	$z_{\text{eq}}$	$3385 \pm 27$	$\chi_{6\text{DF}}^2$	$0.068 \pm 0.080$
$\Omega_\Lambda$	$0.6880 \pm 0.0071$	$k_{\text{eq}}$	$0.01028 \pm 0.00012$	$\chi_{\text{MGS}}^2$	$1.22 \pm 0.46$
$\Omega_m$	$0.3120 \pm 0.0071$	$100\theta_{\text{eq}}$	$0.8163 \pm 0.0050$	$\chi_{\text{DR12BAO}}^2$	$5.0 \pm 1.6$
$\Omega_m h^2$	$0.1410 \pm 0.0037$	$100\theta_{s,\text{eq}}$	$0.4510 \pm 0.0025$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.4$
$\Omega_m h^3$	$0.0948^{+0.0039}_{-0.0045}$	$H(0.15)$	$72.5^{+1.3}_{-1.5}$	$\chi_{\text{CMB}}^2$	$11943.7 \pm 5.6$
$\sigma_8$	$0.805 \pm 0.011$	$D_M(0.15)$	$645 \pm 13$	$\chi_{\text{BAO}}^2$	$6.3 \pm 1.3$

$$\bar{\chi}_{\text{eff}}^2 = 11958.76; R - 1 = 0.01459$$



# 11.45 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00022$	$\sigma_8$	$0.803 \pm 0.012$	$H(0.15)$	$71.7 \pm 1.7$
$\Omega_{\mathrm{c}}h^2$	$0.1175 \pm 0.0038$	$S_8$	$0.826 \pm 0.016$	$D_{\mathrm{M}}(0.15)$	$652 \pm 16$
$100\theta_{\mathrm{MC}}$	$1.04116 \pm 0.00066$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4527 \pm 0.0087$	$H(0.38)$	$81.9 \pm 1.7$
$\tau$	$0.0538^{+0.0044}_{-0.0078}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6028 \pm 0.0088$	$D_{\mathrm{M}}(0.38)$	$1554 \pm 37$
$N_{\mathrm{eff}}$	$2.90 \pm 0.25$	$\sigma_8/h^{0.5}$	$0.985 \pm 0.011$	$H(0.51)$	$88.6 \pm 1.8$
$Y_{\mathrm{P}}$	$0.2441 \pm 0.0039$	$r_{\mathrm{drag}}h$	$98.8 \pm 1.3$	$D_{\mathrm{M}}(0.51)$	$2012 \pm 46$
$\ln(10^{10}A_{\mathrm{s}})$	$3.035^{+0.015}_{-0.018}$	$\langle d^2 \rangle^{1/2}$	$2.444 \pm 0.029$	$H(0.61)$	$94.2 \pm 1.8$
$n_{\mathrm{s}}$	$0.9609 \pm 0.0089$	$z_{\mathrm{re}}$	$7.60^{+0.48}_{-0.79}$	$D_{\mathrm{M}}(0.61)$	$2341 \pm 52$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$10^9 A_{\mathrm{s}}$	$2.079^{+0.030}_{-0.037}$	$H(2.33)$	$234.2 \pm 3.4$
$A_{100}^{\mathrm{PS}}$	$237 \pm 25$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.867 \pm 0.020$	$D_{\mathrm{M}}(2.33)$	$5831 \pm 110$
$A_{143}^{\mathrm{PS}}$	$38 \pm 9$	$D_{40}$	$1232 \pm 16$	$f\sigma_8(0.15)$	$0.4567 \pm 0.0081$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10$	$D_{220}$	$5716 \pm 40$	$\sigma_8(0.15)$	$0.741 \pm 0.011$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7$	$D_{810}$	$2532 \pm 14$	$f\sigma_8(0.38)$	$0.4734 \pm 0.0070$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+2.0}_{-2.5}$	$D_{1420}$	$816.4 \pm 5.0$	$\sigma_8(0.38)$	$0.6564^{+0.0095}_{-0.011}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$D_{2000}$	$231.0 \pm 2.0$	$f\sigma_8(0.51)$	$0.4713 \pm 0.0066$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.54^{+0.39}_{-0.20}$	$n_{\mathrm{s},0.002}$	$0.9609 \pm 0.0089$	$\sigma_8(0.51)$	$0.6140^{+0.0091}_{-0.010}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.2441 \pm 0.0039$	$f\sigma_8(0.61)$	$0.4658 \pm 0.0064$
$A^{\mathrm{kSZ}}$	$< 5.95$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2454 \pm 0.0039$	$\sigma_8(0.61)$	$0.5841^{+0.0088}_{-0.0098}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	Age/Gyr	$13.96 \pm 0.26$	$f\sigma_8(2.33)$	$0.2943 \pm 0.0050$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$z_*$	$1089.80 \pm 0.37$	$\sigma_8(2.33)$	$0.3031 \pm 0.0055$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$r_*$	$146.0 \pm 2.4$	$f_{2000}^{143}$	$29 \pm 3$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$100\theta_*$	$1.04144 \pm 0.00071$	$f_{2000}^{217}$	$106.1 \pm 2.2$
$c_{100}$	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.02 \pm 0.22$	$f_{2000}^{143 \times 217}$	$31.3 \pm 2.4$
$c_{217}$	$1.0011 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.25 \pm 0.77$	$\chi_{\mathrm{simall}}^2$	$396.7 \pm 1.5$
$c_{TE}$	$0.9957 \pm 0.0051$	$r_{\mathrm{drag}}$	$148.8 \pm 2.5$	$\chi_{\mathrm{lowl}}^2$	$23.9 \pm 1.4$
$c_{EE}$	$0.9904 \pm 0.0056$	$k_{\mathrm{D}}$	$0.1396 \pm 0.0019$	$\chi_{\mathrm{CamSpec}}^2$	$11514.2 \pm 5.9$
$H_0$	$66.5 \pm 1.7$	$100\theta_{\mathrm{D}}$	$0.16057 \pm 0.00047$	$\chi_{\mathrm{Aver15}}^2$	$0.96 \pm 1.4$
$\Omega_{\Lambda}$	$0.682 \pm 0.011$	$z_{\mathrm{eq}}$	$3406 \pm 41$	$\chi_{\mathrm{prior}}^2$	$7.9 \pm 3.5$
$\Omega_{\mathrm{m}}$	$0.318 \pm 0.011$	$k_{\mathrm{eq}}$	$0.01029 \pm 0.00013$	$\chi_{\mathrm{CMB}}^2$	$11934.8 \pm 5.8$
$\Omega_{\mathrm{m}}h^2$	$0.1403 \pm 0.0039$	$100\theta_{\mathrm{eq}}$	$0.8124 \pm 0.0076$		
$\Omega_{\mathrm{m}}h^3$	$0.0933^{+0.0044}_{-0.0050}$	$100\theta_{\mathrm{s,eq}}$	$0.4490 \pm 0.0039$		

$\bar{\chi}_{\mathrm{eff}}^2 = 11943.65$ ;  $R - 1 = 0.01349$



# 11.46 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02230 \pm 0.00018$	$S_8$	$0.818 \pm 0.013$	$H(0.38)$	$82.7 \pm 1.5$
$\Omega_{\mathrm{c}}h^2$	$0.1182 \pm 0.0038$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4482 \pm 0.0072$	$D_{\mathrm{M}}(0.38)$	$1534 \pm 30$
$100\theta_{\mathrm{MC}}$	$1.04104 \pm 0.00064$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6005 \pm 0.0085$	$H(0.51)$	$89.4 \pm 1.5$
$\tau$	$0.0546^{+0.0052}_{-0.0076}$	$\sigma_8/h^{0.5}$	$0.9798 \pm 0.0098$	$D_{\mathrm{M}}(0.51)$	$1988 \pm 37$
$N_{\mathrm{eff}}$	$3.00 \pm 0.23$	$r_{\mathrm{drag}}h$	$99.73 \pm 0.88$	$H(0.61)$	$95.0 \pm 1.6$
$Y_{\mathrm{P}}$	$0.2441 \pm 0.0039$	$\langle d^2 \rangle^{1/2}$	$2.427 \pm 0.024$	$D_{\mathrm{M}}(0.61)$	$2313 \pm 43$
$\ln(10^{10}A_{\mathrm{s}})$	$3.038^{+0.015}_{-0.018}$	$z_{\mathrm{re}}$	$7.67^{+0.56}_{-0.78}$	$H(2.33)$	$235.1 \pm 3.3$
$n_{\mathrm{s}}$	$0.9657 \pm 0.0072$	$10^9 A_{\mathrm{s}}$	$2.087^{+0.030}_{-0.037}$	$D_{\mathrm{M}}(2.33)$	$5784 \pm 94$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0024$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.871 \pm 0.020$	$f\sigma_8(0.15)$	$0.4528 \pm 0.0070$
$A_{100}^{\mathrm{PS}}$	$238 \pm 25$	$D_{40}$	$1225 \pm 13$	$\sigma_8(0.15)$	$0.744^{+0.010}_{-0.012}$
$A_{143}^{\mathrm{PS}}$	$38 \pm 9$	$D_{220}$	$5721 \pm 38$	$f\sigma_8(0.38)$	$0.4713 \pm 0.0067$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{810}$	$2533 \pm 14$	$\sigma_8(0.38)$	$0.6592^{+0.0091}_{-0.011}$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7$	$D_{1420}$	$816.4 \pm 4.9$	$f\sigma_8(0.51)$	$0.4700 \pm 0.0066$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+2.0}_{-2.4}$	$D_{2000}$	$230.7 \pm 1.9$	$\sigma_8(0.51)$	$0.6170^{+0.0086}_{-0.010}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9657 \pm 0.0072$	$f\sigma_8(0.61)$	$0.4652 \pm 0.0065$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.44}_{-0.16}$	$Y_{\mathrm{P}}$	$0.2441 \pm 0.0039$	$\sigma_8(0.61)$	$0.5871^{+0.0083}_{-0.0096}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2454 \pm 0.0039$	$f\sigma_8(2.33)$	$0.2961^{+0.0042}_{-0.0050}$
$A^{\mathrm{kSZ}}$	$4.6^{+1.9}_{-4.2}$	Age/Gyr	$13.85 \pm 0.22$	$\sigma_8(2.33)$	$0.3053^{+0.0045}_{-0.0053}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$z_*$	$1089.77 \pm 0.37$	$f_{2000}^{143}$	$29.1 \pm 3.2$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.17$	$r_*$	$145.3 \pm 2.2$	$f_{2000}^{217}$	$106.4 \pm 2.2$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04128 \pm 0.00068$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.3$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.95 \pm 0.20$	$\chi_{\mathrm{simall}}^2$	$396.8 \pm 1.6$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.58 \pm 0.68$	$\chi_{\mathrm{lowl}}^2$	$23.1 \pm 1.1$
$c_{217}$	$1.0011 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.9 \pm 2.3$	$\chi_{\mathrm{CamSpec}}^2$	$11514.8 \pm 5.7$
$c_{TE}$	$0.9964 \pm 0.0049$	$k_{\mathrm{D}}$	$0.1402 \pm 0.0017$	$\chi_{\mathrm{Aver15}}^2$	$0.96 \pm 1.4$
$c_{EE}$	$0.9916 \pm 0.0054$	$100\theta_{\mathrm{D}}$	$0.16072 \pm 0.00044$	$\chi_{6\mathrm{DF}}^2$	$0.056 \pm 0.071$
$H_0$	$67.4 \pm 1.4$	$z_{\mathrm{eq}}$	$3378 \pm 28$	$\chi_{\mathrm{MGS}}^2$	$1.33 \pm 0.49$
$\Omega_{\Lambda}$	$0.6896 \pm 0.0072$	$k_{\mathrm{eq}}$	$0.01028 \pm 0.00013$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.5$
$\Omega_{\mathrm{m}}$	$0.3104 \pm 0.0072$	$100\theta_{\mathrm{eq}}$	$0.8175 \pm 0.0052$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4$
$\Omega_{\mathrm{m}}h^2$	$0.1411 \pm 0.0039$	$100\theta_{\mathrm{s,eq}}$	$0.4516 \pm 0.0026$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.2$
$\Omega_{\mathrm{m}}h^3$	$0.0952^{+0.0040}_{-0.0046}$	$H(0.15)$	$72.7 \pm 1.4$	$\chi_{\mathrm{CMB}}^2$	$11934.7 \pm 5.6$
$\sigma_8$	$0.805^{+0.011}_{-0.012}$	$D_{\mathrm{M}}(0.15)$	$643 \pm 13$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11949.59; R - 1 = 0.01728$$



# 11.47 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02217 \pm 0.00021$	$\sigma_8$	$0.802 \pm 0.011$	$H(0.15)$	$71.5 \pm 1.7$
$\Omega_{\mathrm{c}}h^2$	$0.1170 \pm 0.0037$	$S_8$	$0.828 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$655 \pm 16$
$100\theta_{\mathrm{MC}}$	$1.04124 \pm 0.00065$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4534 \pm 0.0068$	$H(0.38)$	$81.6 \pm 1.7$
$\tau$	$0.0541^{+0.0049}_{-0.0072}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6030 \pm 0.0071$	$D_{\mathrm{M}}(0.38)$	$1560 \pm 36$
$N_{\mathrm{eff}}$	$2.86 \pm 0.25$	$\sigma_8/h^{0.5}$	$0.9862 \pm 0.0087$	$H(0.51)$	$88.3 \pm 1.7$
$Y_{\mathrm{P}}$	$0.2441 \pm 0.0038$	$r_{\mathrm{drag}}h$	$98.6 \pm 1.2$	$D_{\mathrm{M}}(0.51)$	$2020 \pm 45$
$\ln(10^{10}A_{\mathrm{s}})$	$3.034^{+0.014}_{-0.017}$	$\langle d^2 \rangle^{1/2}$	$2.449 \pm 0.024$	$H(0.61)$	$93.9 \pm 1.8$
$n_{\mathrm{s}}$	$0.9594 \pm 0.0086$	$z_{\mathrm{re}}$	$7.62^{+0.52}_{-0.73}$	$D_{\mathrm{M}}(0.61)$	$2349 \pm 52$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$10^9 A_{\mathrm{s}}$	$2.079^{+0.029}_{-0.035}$	$H(2.33)$	$233.8 \pm 3.3$
$A_{100}^{\mathrm{PS}}$	$236 \pm 25$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.866 \pm 0.019$	$D_{\mathrm{M}}(2.33)$	$5848 \pm 110$
$A_{143}^{\mathrm{PS}}$	$37 \pm 8$	$D_{40}$	$1235 \pm 14$	$f\sigma_8(0.15)$	$0.4573 \pm 0.0064$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10$	$D_{220}$	$5719 \pm 38$	$\sigma_8(0.15)$	$0.740 \pm 0.010$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7$	$D_{810}$	$2533 \pm 13$	$f\sigma_8(0.38)$	$0.4736 \pm 0.0056$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+2.0}_{-2.4}$	$D_{1420}$	$816.7 \pm 4.9$	$\sigma_8(0.38)$	$0.6556 \pm 0.0098$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.67 \pm 0.13$	$D_{2000}$	$231.2 \pm 2.0$	$f\sigma_8(0.51)$	$0.4713 \pm 0.0055$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.53^{+0.39}_{-0.21}$	$n_{\mathrm{s},0.002}$	$0.9594 \pm 0.0086$	$\sigma_8(0.51)$	$0.6132 \pm 0.0095$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.2441 \pm 0.0038$	$f\sigma_8(0.61)$	$0.4658 \pm 0.0055$
$A^{\mathrm{kSZ}}$	$< 5.79$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2454 \pm 0.0038$	$\sigma_8(0.61)$	$0.5832 \pm 0.0092$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	Age/Gyr	$14.00 \pm 0.25$	$f\sigma_8(2.33)$	$0.2938 \pm 0.0049$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.18$	$z_*$	$1089.77 \pm 0.35$	$\sigma_8(2.33)$	$0.3025 \pm 0.0053$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$r_*$	$146.4 \pm 2.3$	$f_{2000}^{143}$	$28 \pm 3$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$100\theta_*$	$1.04153 \pm 0.00070$	$f_{2000}^{217}$	$106.0 \pm 2.2$
$c_{100}$	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$14.05 \pm 0.22$	$f_{2000}^{143 \times 217}$	$31.1 \pm 2.3$
$c_{217}$	$1.0010 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.15 \pm 0.76$	$\chi_{\mathrm{lensing}}^2$	$8.99 \pm 0.71$
$c_{TE}$	$0.9955 \pm 0.0050$	$r_{\mathrm{drag}}$	$149.1 \pm 2.4$	$\chi_{\mathrm{simall}}^2$	$396.7 \pm 1.5$
$c_{EE}$	$0.9900 \pm 0.0055$	$k_{\mathrm{D}}$	$0.1393 \pm 0.0018$	$\chi_{\mathrm{lowl}}^2$	$24.1 \pm 1.4$
$H_0$	$66.2^{+1.5}_{-1.7}$	$100\theta_{\mathrm{D}}$	$0.16051 \pm 0.00045$	$\chi_{\mathrm{CamSpec}}^2$	$11513.5 \pm 5.6$
$\Omega_{\Lambda}$	$0.680 \pm 0.010$	$z_{\mathrm{eq}}$	$3412 \pm 38$	$\chi_{\mathrm{Aver15}}^2$	$0.9 \pm 1.4$
$\Omega_{\mathrm{m}}$	$0.320 \pm 0.010$	$k_{\mathrm{eq}}$	$0.01028 \pm 0.00012$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4$
$\Omega_{\mathrm{m}}h^2$	$0.1398 \pm 0.0038$	$100\theta_{\mathrm{eq}}$	$0.8112 \pm 0.0070$	$\chi_{\mathrm{CMB}}^2$	$11943.3 \pm 5.7$
$\Omega_{\mathrm{m}}h^3$	$0.0926^{+0.0043}_{-0.0048}$	$100\theta_{\mathrm{s,eq}}$	$0.4484 \pm 0.0035$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11952.02; R - 1 = 0.01312$$



## 11.48 base\_nnu\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02229 \pm 0.00018$	$S_8$	$0.821 \pm 0.011$	$H(0.38)$	$82.6^{+1.4}_{-1.5}$
$\Omega_{\mathrm{c}}h^2$	$0.1180 \pm 0.0036$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4497 \pm 0.0060$	$D_{\mathrm{M}}(0.38)$	$1538 \pm 29$
$100\theta_{\mathrm{MC}}$	$1.04108 \pm 0.00062$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6018 \pm 0.0072$	$H(0.51)$	$89.2 \pm 1.5$
$\tau$	$0.0557^{+0.0057}_{-0.0071}$	$\sigma_8/h^{0.5}$	$0.9822 \pm 0.0082$	$D_{\mathrm{M}}(0.51)$	$1993 \pm 37$
$N_{\mathrm{eff}}$	$2.98^{+0.21}_{-0.23}$	$r_{\mathrm{drag}}h$	$99.55 \pm 0.85$	$H(0.61)$	$94.8 \pm 1.5$
$Y_{\mathrm{P}}$	$0.2441 \pm 0.0039$	$\langle d^2 \rangle^{1/2}$	$2.435 \pm 0.021$	$D_{\mathrm{M}}(0.61)$	$2319 \pm 42$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.014}_{-0.016}$	$z_{\mathrm{re}}$	$7.78^{+0.60}_{-0.70}$	$H(2.33)$	$234.9 \pm 3.2$
$n_{\mathrm{s}}$	$0.9645 \pm 0.0071$	$10^9 A_{\mathrm{s}}$	$2.092^{+0.029}_{-0.033}$	$D_{\mathrm{M}}(2.33)$	$5793 \pm 92$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0024$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.871 \pm 0.019$	$f\sigma_8(0.15)$	$0.4542 \pm 0.0058$
$A_{100}^{\mathrm{PS}}$	$237 \pm 25$	$D_{40}$	$1228 \pm 13$	$\sigma_8(0.15)$	$0.7442^{+0.0093}_{-0.010}$
$A_{143}^{\mathrm{PS}}$	$38 \pm 9$	$D_{220}$	$5726 \pm 38$	$f\sigma_8(0.38)$	$0.4724 \pm 0.0057$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10$	$D_{810}$	$2535 \pm 13$	$\sigma_8(0.38)$	$0.6596^{+0.0085}_{-0.0096}$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7$	$D_{1420}$	$816.8 \pm 4.9$	$f\sigma_8(0.51)$	$0.4709 \pm 0.0056$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+2.0}_{-2.5}$	$D_{2000}$	$231.0 \pm 1.9$	$\sigma_8(0.51)$	$0.6173^{+0.0081}_{-0.0092}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9645 \pm 0.0071$	$f\sigma_8(0.61)$	$0.4660 \pm 0.0056$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.54^{+0.42}_{-0.17}$	$Y_{\mathrm{P}}$	$0.2441 \pm 0.0039$	$\sigma_8(0.61)$	$0.5874^{+0.0078}_{-0.0089}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2454 \pm 0.0039$	$f\sigma_8(2.33)$	$0.2962^{+0.0040}_{-0.0046}$
$A^{\mathrm{kSZ}}$	$< 5.99$	Age/Gyr	$13.87 \pm 0.22$	$\sigma_8(2.33)$	$0.3053^{+0.0043}_{-0.0050}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$z_*$	$1089.76 \pm 0.35$	$f_{2000}^{143}$	$28.9 \pm 3.2$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.17$	$r_*$	$145.4 \pm 2.1$	$f_{2000}^{217}$	$106.4 \pm 2.1$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$100\theta_*$	$1.04132 \pm 0.00066$	$f_{2000}^{143 \times 217}$	$31.5 \pm 2.3$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.96 \pm 0.20$	$\chi_{\mathrm{lensing}}^2$	$9.21 \pm 0.77$
$c_{100}$	$0.9976 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.53 \pm 0.67$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.7$
$c_{217}$	$1.0011 \pm 0.0016$	$r_{\mathrm{drag}}$	$148.1 \pm 2.2$	$\chi_{\mathrm{lowl}}^2$	$23.3 \pm 1.1$
$c_{TE}$	$0.9962 \pm 0.0049$	$k_{\mathrm{D}}$	$0.1401 \pm 0.0017$	$\chi_{\mathrm{CamSpec}}^2$	$11514.1 \pm 5.5$
$c_{EE}$	$0.9914 \pm 0.0054$	$100\theta_{\mathrm{D}}$	$0.16067 \pm 0.00043$	$\chi_{\mathrm{Aver15}}^2$	$0.96 \pm 1.3$
$H_0$	$67.2^{+1.3}_{-1.4}$	$z_{\mathrm{eq}}$	$3384 \pm 27$	$\chi_{6\mathrm{DF}}^2$	$0.066 \pm 0.078$
$\Omega_{\Lambda}$	$0.6881 \pm 0.0071$	$k_{\mathrm{eq}}$	$0.01028 \pm 0.00012$	$\chi_{\mathrm{MGS}}^2$	$1.23 \pm 0.46$
$\Omega_{\mathrm{m}}$	$0.3119 \pm 0.0071$	$100\theta_{\mathrm{eq}}$	$0.8164 \pm 0.0050$	$\chi_{\mathrm{DR12BAO}}^2$	$5.0 \pm 1.6$
$\Omega_{\mathrm{m}}h^2$	$0.1409 \pm 0.0037$	$100\theta_{\mathrm{s,eq}}$	$0.4511 \pm 0.0025$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.4$
$\Omega_{\mathrm{m}}h^3$	$0.0948^{+0.0039}_{-0.0045}$	$H(0.15)$	$72.5^{+1.3}_{-1.5}$	$\chi_{\mathrm{CMB}}^2$	$11943.6 \pm 5.6$
$\sigma_8$	$0.805 \pm 0.011$	$D_{\mathrm{M}}(0.15)$	$645 \pm 13$	$\chi_{\mathrm{BAO}}^2$	$6.3 \pm 1.3$

$$\bar{\chi}_{\mathrm{eff}}^2 = 11958.57; R - 1 = 0.01608$$



## 12 nrun

### 12.1 base\_nrun\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022178	$0.02216 \pm 0.00023$	$\sigma_8 \Omega_m^{0.5}$	0.4595	$0.460 \pm 0.013$	$100\theta_{s,eq}$	0.44832	$0.4480 \pm 0.0046$
$\Omega_c h^2$	0.12059	$0.1208 \pm 0.0021$	$\sigma_8 \Omega_m^{0.25}$	0.6110	$0.612 \pm 0.012$	$H(0.15)$	72.32	$72.26 \pm 0.79$
$100\theta_{MC}$	1.040803	$1.04078 \pm 0.00047$	$\sigma_8/h^{0.5}$	0.9928	$0.994 \pm 0.016$	$D_M(0.15)$	646.9	$647.7 \pm 8.0$
$\tau$	0.0531	$0.0534 \pm 0.0083$	$r_{drag}h$	98.52	$98.4 \pm 1.6$	$H(0.38)$	82.57	$82.53 \pm 0.56$
$\ln(10^{10} A_s)$	3.0432	$3.044 \pm 0.018$	$\langle d^2 \rangle^{1/2}$	2.4475	$2.451 \pm 0.038$	$D_M(0.38)$	1540.8	$1542 \pm 16$
$n_s$	0.9635	$0.9619 \pm 0.0060$	$z_{re}$	7.60	$7.62^{+0.87}_{-0.76}$	$H(0.51)$	89.374	$89.34 \pm 0.44$
$dn_s/d \ln k$	-0.0029	$-0.0043 \pm 0.0075$	$10^9 A_s$	2.0971	$2.100 \pm 0.037$	$D_M(0.51)$	1994.7	$1996 \pm 19$
$y_{cal}$	1.00044	$1.0004 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8860	$1.887 \pm 0.014$	$H(0.61)$	95.056	$95.03 \pm 0.35$
$A_{217}^{CIB}$	49.4	$48 \pm 7$	$D_{40}$	1224.5	$1225 \pm 21$	$D_M(0.61)$	2320.0	$2322 \pm 20$
$\xi^{tSZ \times CIB}$	0.24	—	$D_{220}$	5711.5	$5713 \pm 42$	$H(2.33)$	236.75	$236.8 \pm 1.3$
$A_{143}^{tSZ}$	7.04	$4.9 \pm 2.0$	$D_{810}$	2539.2	$2538 \pm 14$	$D_M(2.33)$	5774.7	$5776 \pm 17$
$A_{100}^{PS}$	256.3	$266 \pm 29$	$D_{1420}$	815.3	$813.9 \pm 5.3$	$f\sigma_8(0.15)$	0.4634	$0.464 \pm 0.012$
$A_{143}^{PS}$	49.3	$50 \pm 8$	$D_{2000}$	229.77	$229.1 \pm 2.0$	$\sigma_8(0.15)$	0.7498	$0.7498 \pm 0.0076$
$A_{143 \times 217}^{PS}$	45.4	$44 \pm 9$	$n_{s,0.002}$	0.9728	$0.976 \pm 0.023$	$f\sigma_8(0.38)$	0.4799	$0.4804 \pm 0.0096$
$A_{217}^{PS}$	118.7	$115 \pm 10$	$Y_P$	0.245317	$0.24530^{+0.00011}_{-0.000090}$	$\sigma_8(0.38)$	0.6637	$0.6636 \pm 0.0061$
$A^{kSZ}$	0.02	$< 5.30$	$Y_P^{BBN}$	0.246643	$0.24663^{+0.00011}_{-0.000090}$	$f\sigma_8(0.51)$	0.4775	$0.4778 \pm 0.0082$
$A_{100}^{dustTT}$	8.89	$9.0 \pm 1.8$	$10^5 D/H$	2.6221	$2.626 \pm 0.044$	$\sigma_8(0.51)$	0.6208	$0.6206 \pm 0.0055$
$A_{143}^{dustTT}$	10.86	$10.8 \pm 1.8$	Age/Gyr	13.8228	$13.826 \pm 0.037$	$f\sigma_8(0.61)$	0.4718	$0.4721 \pm 0.0073$
$A_{143 \times 217}^{dustTT}$	19.37	$18.3 \pm 3.3$	$z_*$	1090.215	$1090.26 \pm 0.41$	$\sigma_8(0.61)$	0.5904	$0.5902 \pm 0.0052$
$A_{217}^{dustTT}$	94.4	$93.3 \pm 7.3$	$r_*$	144.426	$144.40 \pm 0.50$	$f\sigma_8(2.33)$	0.29738	$0.2972 \pm 0.0026$
$c_{100}$	0.99963	$0.99961 \pm 0.00062$	$100\theta_*$	1.041004	$1.04098 \pm 0.00046$	$\sigma_8(2.33)$	0.30622	$0.3060 \pm 0.0027$
$c_{217}$	0.99825	$0.99827 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	13.8737	$13.872 \pm 0.046$	$f_{2000}^{143}$	30.89	$32.0 \pm 3.2$
$H_0$	66.95	$66.88 \pm 0.92$	$z_{drag}$	1059.55	$1059.50 \pm 0.50$	$f_{2000}^{143 \times 217}$	33.62	$34.2 \pm 2.2$
$\Omega_\Lambda$	0.6801	$0.679 \pm 0.013$	$r_{drag}$	147.15	$147.13 \pm 0.51$	$f_{2000}^{217}$	108.00	$108.6 \pm 2.1$
$\Omega_m$	0.3199	$0.321 \pm 0.013$	$k_D$	0.14066	$0.14066 \pm 0.00057$	$\chi_{small}^2$	395.91	$397.1 \pm 1.7$
$\Omega_m h^2$	0.14341	$0.1436 \pm 0.0020$	$100\theta_D$	0.160990	$0.16101 \pm 0.00029$	$\chi_{lowl}^2$	22.74	$23.1 \pm 2.1$
$\Omega_m h^3$	0.096015	$0.09599 \pm 0.00049$	$z_{eq}$	3411.7	$3415 \pm 49$	$\chi_{plik}^2$	759.4	$772.7 \pm 5.7$
$\sigma_8$	0.8123	$0.8124 \pm 0.0090$	$k_{eq}$	0.010413	$0.01042 \pm 0.00015$	$\chi_{prior}^2$	1.43	$7.3 \pm 3.7$
$S_8$	0.8389	$0.841 \pm 0.024$	$100\theta_{eq}$	0.8110	$0.8104 \pm 0.0090$	$\chi_{CMB}^2$	1178.0	$1192.9 \pm 5.6$

Best-fit  $\chi_{eff}^2 = 1179.45$ ;  $\bar{\chi}_{eff}^2 = 1200.22$ ;  $R - 1 = 0.00668$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.91 commander\_dx12.v3.2.29: 22.74 plik\_rd12\_HM.v22\_TT: 759.37



## 12.2 base\_nrun\_plikHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022255	$0.02225 \pm 0.00022$	$\sigma_8/h^{0.5}$	0.9819	$0.982 \pm 0.012$	$D_M(0.38)$	1529.2	$1529.1 \pm 9.3$
$\Omega_c h^2$	0.11900	$0.1190 \pm 0.0012$	$r_{\text{drag}} h$	99.76	$99.78 \pm 0.94$	$H(0.51)$	89.685	$89.69 \pm 0.29$
$100\theta_{\text{MC}}$	1.041013	$1.04100 \pm 0.00043$	$\langle d^2 \rangle^{1/2}$	2.4235	$2.424 \pm 0.029$	$D_M(0.51)$	1981.1	$1981 \pm 11$
$\tau$	0.0549	$0.0550 \pm 0.0082$	$z_{\text{re}}$	7.75	$7.74^{+0.84}_{-0.76}$	$H(0.61)$	95.291	$95.29 \pm 0.25$
$\ln(10^{10} A_s)$	3.0428	$3.043 \pm 0.018$	$10^9 A_s$	2.0964	$2.098 \pm 0.037$	$D_M(0.61)$	2305.4	$2305 \pm 12$
$n_s$	0.96634	$0.9660 \pm 0.0045$	$10^9 A_s e^{-2\tau}$	1.8784	$1.879 \pm 0.012$	$H(2.33)$	235.79	$235.78 \pm 0.81$
$dn_s/d \ln k$	-0.0034	$-0.0035 \pm 0.0075$	$D_{40}$	1216.8	$1218 \pm 20$	$D_M(2.33)$	5765.1	$5765 \pm 13$
$y_{\text{cal}}$	1.00027	$1.0006 \pm 0.0025$	$D_{220}$	5717.1	$5721 \pm 41$	$f\sigma_8(0.15)$	0.4544	$0.4544 \pm 0.0077$
$A_{217}^{\text{CIB}}$	51.1	$48 \pm 7$	$D_{810}$	2536.4	$2537 \pm 14$	$\sigma_8(0.15)$	0.7463	$0.7463 \pm 0.0070$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.06	—	$D_{1420}$	815.0	$815.0 \pm 5.1$	$f\sigma_8(0.38)$	0.4730	$0.4729 \pm 0.0065$
$A_{143}^{\text{tSZ}}$	7.16	$5.0 \pm 2.1$	$D_{2000}$	229.65	$229.6 \pm 1.9$	$\sigma_8(0.38)$	0.6617	$0.6617 \pm 0.0060$
$A_{100}^{\text{PS}}$	257.6	$264 \pm 29$	$n_{s,0.002}$	0.9773	$0.977 \pm 0.023$	$f\sigma_8(0.51)$	0.4718	$0.4717 \pm 0.0059$
$A_{143}^{\text{PS}}$	46.5	$49 \pm 8$	$Y_{\text{P}}$	0.245348	$0.245345^{+0.000095}_{-0.000080}$	$\sigma_8(0.51)$	0.6193	$0.6193 \pm 0.0055$
$A_{143 \times 217}^{\text{PS}}$	40.2	$43 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	0.246675	$0.246671^{+0.000095}_{-0.000080}$	$f\sigma_8(0.61)$	0.4669	$0.4669 \pm 0.0054$
$A_{217}^{\text{PS}}$	115.5	$114 \pm 10$	$10^5 D/H$	2.6075	$2.608 \pm 0.041$	$\sigma_8(0.61)$	0.5893	$0.5894 \pm 0.0052$
$A^{\text{kSZ}}$	0.08	$< 5.17$	Age/Gyr	13.8023	$13.802 \pm 0.029$	$f\sigma_8(2.33)$	0.29720	$0.2972 \pm 0.0026$
$A_{100}^{\text{dustTT}}$	8.98	$9.0 \pm 1.8$	$z_*$	1089.978	$1089.98 \pm 0.31$	$\sigma_8(2.33)$	0.30646	$0.3065 \pm 0.0027$
$A_{143}^{\text{dustTT}}$	10.79	$10.8 \pm 1.8$	$r_*$	144.778	$144.79 \pm 0.34$	$f_{2000}^{143}$	31.12	$31.5 \pm 3.2$
$A_{143 \times 217}^{\text{dustTT}}$	19.00	$18.4 \pm 3.3$	$100\theta_*$	1.041204	$1.04120 \pm 0.00042$	$f_{2000}^{143 \times 217}$	33.66	$33.8 \pm 2.2$
$A_{217}^{\text{dustTT}}$	93.6	$93.4 \pm 7.3$	$D_M(z_*)/\text{Gpc}$	13.9049	$13.906 \pm 0.033$	$f_{2000}^{217}$	108.00	$108.3 \pm 2.1$
$c_{100}$	0.99963	$0.99961 \pm 0.00061$	$z_{\text{drag}}$	1059.589	$1059.59 \pm 0.49$	$\chi_{\text{simall}}^2$	396.07	$397.2 \pm 1.9$
$c_{217}$	0.99828	$0.99827 \pm 0.00063$	$r_{\text{drag}}$	147.486	$147.49 \pm 0.37$	$\chi_{\text{lowl}}^2$	22.13	$22.6 \pm 1.8$
$H_0$	67.64	$67.65 \pm 0.54$	$k_{\text{D}}$	0.140363	$0.14035 \pm 0.00050$	$\chi_{\text{plik}}^2$	760.4	$773.1 \pm 5.7$
$\Omega_\Lambda$	0.6898	$0.6899 \pm 0.0073$	$100\theta_{\text{D}}$	0.160964	$0.16097 \pm 0.00029$	$\chi_{6\text{DF}}^2$	0.0220	$0.058 \pm 0.076$
$\Omega_{\text{m}}$	0.3102	$0.3101 \pm 0.0073$	$z_{\text{eq}}$	3375.5	$3375 \pm 29$	$\chi_{\text{MGS}}^2$	1.28	$1.36 \pm 0.52$
$\Omega_{\text{m}} h^2$	0.14190	$0.1419 \pm 0.0012$	$k_{\text{eq}}$	0.010303	$0.010301 \pm 0.000089$	$\chi_{\text{DR12BAO}}^2$	4.20	$4.8 \pm 1.6$
$\Omega_{\text{m}} h^3$	0.095980	$0.09597 \pm 0.00050$	$100\theta_{\text{eq}}$	0.8178	$0.8180 \pm 0.0053$	$\chi_{\text{prior}}^2$	1.60	$7.4 \pm 3.7$
$\sigma_8$	0.8075	$0.8075 \pm 0.0078$	$100\theta_{s,\text{eq}}$	0.45184	$0.4519 \pm 0.0028$	$\chi_{\text{BAO}}^2$	5.50	$6.2 \pm 1.3$
$S_8$	0.8211	$0.821 \pm 0.015$	$H(0.15)$	72.903	$72.91 \pm 0.47$	$\chi_{\text{CMB}}^2$	1178.6	$1192.9 \pm 5.6$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4497	$0.4497 \pm 0.0081$	$D_M(0.15)$	641.04	$641.0 \pm 4.6$			
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6026	$0.6026 \pm 0.0080$	$H(0.38)$	82.986	$82.99 \pm 0.35$			

Best-fit  $\chi_{\text{eff}}^2 = 1185.71$ ;  $\bar{\chi}_{\text{eff}}^2 = 1206.47$ ;  $R - 1 = 0.01307$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.28 DR12BAO: 4.20 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.07 commander\_dx12\_v3.2.29: 22.13 plik\_rd12\_HM\_v22\_TT: 760.40



### 12.3 base\_nrun\_plikHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022169	$0.02218 \pm 0.00023$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6087	$0.6085 \pm 0.0078$	$D_{\mathrm{M}}(0.15)$	646.0	$645.7 \pm 6.3$
$\Omega_{\mathrm{c}}h^2$	0.12026	$0.1202 \pm 0.0016$	$\sigma_8/h^{0.5}$	0.9898	$0.990 \pm 0.011$	$H(0.38)$	82.631	$82.66 \pm 0.46$
$100\theta_{\mathrm{MC}}$	1.040808	$1.04082 \pm 0.00045$	$r_{\mathrm{drag}}h$	98.75	$98.8 \pm 1.2$	$D_{\mathrm{M}}(0.38)$	1539.0	$1538 \pm 13$
$\tau$	0.0527	$0.0533 \pm 0.0081$	$\langle d^2 \rangle^{1/2}$	2.4447	$2.443 \pm 0.027$	$H(0.51)$	89.411	$89.44 \pm 0.37$
$\ln(10^{10}A_{\mathrm{s}})$	3.0407	$3.043 \pm 0.016$	$z_{\mathrm{re}}$	7.56	$7.60^{+0.85}_{-0.73}$	$D_{\mathrm{M}}(0.51)$	1992.6	$1992 \pm 15$
$n_{\mathrm{s}}$	0.9634	$0.9631 \pm 0.0051$	$10^9 A_{\mathrm{s}}$	2.0919	$2.096 \pm 0.033$	$H(0.61)$	95.078	$95.10 \pm 0.31$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-155 \cdot 10^{-5}$	$-0.0030 \pm 0.0074$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8827	$1.884 \pm 0.012$	$D_{\mathrm{M}}(0.61)$	2317.8	$2317 \pm 16$
$y_{\mathrm{cal}}$	1.00017	$1.0005 \pm 0.0025$	$D_{40}$	1227.4	$1225 \pm 20$	$H(2.33)$	236.52	$236.48 \pm 0.98$
$A_{217}^{\mathrm{CIB}}$	51.0	$48 \pm 7$	$D_{220}$	5712.9	$5716 \pm 41$	$D_{\mathrm{M}}(2.33)$	5774.2	$5773 \pm 15$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.01	—	$D_{810}$	2535.9	$2537 \pm 14$	$f\sigma_8(0.15)$	0.4612	$0.4609 \pm 0.0083$
$A_{143}^{\mathrm{tSZ}}$	7.22	$5.0 \pm 2.1$	$D_{1420}$	814.3	$814.2 \pm 5.2$	$\sigma_8(0.15)$	0.7483	$0.7484 \pm 0.0056$
$A_{100}^{\mathrm{PS}}$	258.2	$265 \pm 29$	$D_{2000}$	229.47	$229.3 \pm 1.9$	$f\sigma_8(0.38)$	0.4781	$0.4778 \pm 0.0064$
$A_{143}^{\mathrm{PS}}$	45.8	$50 \pm 8$	$n_{\mathrm{s},0.002}$	0.9684	$0.973 \pm 0.023$	$\sigma_8(0.38)$	0.66261	$0.6627 \pm 0.0049$
$A_{143 \times 217}^{\mathrm{PS}}$	39.3	$43 \pm 9$	$Y_{\mathrm{P}}$	0.245313	$0.24531^{+0.00011}_{-0.000085}$	$f\sigma_8(0.51)$	0.4759	$0.4757 \pm 0.0054$
$A_{217}^{\mathrm{PS}}$	115.9	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246639	$0.24664^{+0.00011}_{-0.000086}$	$\sigma_8(0.51)$	0.61979	$0.6199 \pm 0.0046$
$A^{\mathrm{kSZ}}$	0.00	$< 5.20$	$10^5 \mathrm{D}/\mathrm{H}$	2.6239	$2.623 \pm 0.043$	$f\sigma_8(0.61)$	0.47037	$0.4702 \pm 0.0048$
$A_{100}^{\mathrm{dust}TT}$	8.95	$9.0 \pm 1.8$	$\mathrm{Age}/\mathrm{Gyr}$	13.8221	$13.820 \pm 0.034$	$\sigma_8(0.61)$	0.58956	$0.5897 \pm 0.0044$
$A_{143}^{\mathrm{dust}TT}$	10.82	$10.7 \pm 1.8$	$z_*$	1090.197	$1090.18 \pm 0.37$	$f\sigma_8(2.33)$	0.29700	$0.2971 \pm 0.0023$
$A_{143 \times 217}^{\mathrm{dust}TT}$	18.98	$18.4 \pm 3.3$	$r_*$	144.518	$144.53 \pm 0.38$	$\sigma_8(2.33)$	0.30591	$0.3060 \pm 0.0026$
$A_{217}^{\mathrm{dust}TT}$	93.8	$93.3 \pm 7.3$	$100\theta_*$	1.041017	$1.04103 \pm 0.00045$	$f_{2000}^{143}$	31.16	$31.8 \pm 3.2$
$c_{100}$	0.99962	$0.99961 \pm 0.00062$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8824	$13.884 \pm 0.036$	$f_{2000}^{143 \times 217}$	33.71	$34.0 \pm 2.2$
$c_{217}$	0.99827	$0.99827 \pm 0.00062$	$z_{\mathrm{drag}}$	1059.47	$1059.50 \pm 0.50$	$f_{2000}^{217}$	108.15	$108.5 \pm 2.1$
$H_0$	67.06	$67.10 \pm 0.73$	$r_{\mathrm{drag}}$	147.248	$147.26 \pm 0.40$	$\chi_{\mathrm{lensing}}^2$	8.93	$9.59 \pm 0.97$
$\Omega_{\Lambda}$	0.6819	$0.682 \pm 0.010$	$k_{\mathrm{D}}$	0.140546	$0.14054 \pm 0.00050$	$\chi_{\mathrm{small}}^2$	395.89	$397.0 \pm 1.6$
$\Omega_{\mathrm{m}}$	0.3181	$0.318 \pm 0.010$	$100\theta_{\mathrm{D}}$	0.161015	$0.16101 \pm 0.00029$	$\chi_{\mathrm{lowl}}^2$	23.13	$23.2 \pm 2.1$
$\Omega_{\mathrm{m}}h^2$	0.14307	$0.1430 \pm 0.0015$	$z_{\mathrm{eq}}$	3403.6	$3402 \pm 36$	$\chi_{\mathrm{plik}}^2$	758.9	$772.1 \pm 5.5$
$\Omega_{\mathrm{m}}h^3$	0.095947	$0.09595 \pm 0.00049$	$k_{\mathrm{eq}}$	0.010388	$0.01038 \pm 0.00011$	$\chi_{\mathrm{prior}}^2$	1.60	$7.3 \pm 3.7$
$\sigma_8$	0.8105	$0.8105 \pm 0.0063$	$100\theta_{\mathrm{eq}}$	0.8124	$0.8128 \pm 0.0068$	$\chi_{\mathrm{CMB}}^2$	1186.9	$1201.9 \pm 5.6$
$S_8$	0.8347	$0.834 \pm 0.016$	$100\theta_{\mathrm{s,eq}}$	0.44907	$0.4493 \pm 0.0035$			
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4572	$0.4569 \pm 0.0090$	$H(0.15)$	72.41	$72.45 \pm 0.62$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 1188.47$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1209.27$ ;  $R - 1 = 0.01153$   
 $\chi_{\mathrm{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.93 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.89 commander\_dx12\_v3.2\_29: 23.13 plik\_rd12\_HM.v22\_TT: 758.91



## 12.4 base\_nrun\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022258	$0.02225 \pm 0.00021$	$\sigma_8/h^{0.5}$	0.9836	$0.9841 \pm 0.0089$	$D_{\mathrm{M}}(0.38)$	1529.3	$1529.8 \pm 8.7$
$\Omega_{\mathrm{c}}h^2$	0.11902	$0.1191 \pm 0.0011$	$r_{\mathrm{drag}}h$	99.74	$99.69 \pm 0.84$	$H(0.51)$	89.684	$89.67 \pm 0.28$
$100\theta_{\mathrm{MC}}$	1.041006	$1.04099 \pm 0.00042$	$\langle d^2 \rangle^{1/2}$	2.4298	$2.431 \pm 0.023$	$D_{\mathrm{M}}(0.51)$	1981.2	$1982 \pm 10$
$\tau$	0.0553	$0.0561 \pm 0.0075$	$z_{\mathrm{re}}$	7.79	$7.86 \pm 0.75$	$H(0.61)$	95.291	$95.28 \pm 0.24$
$\ln(10^{10}A_{\mathrm{s}})$	3.0442	$3.046 \pm 0.015$	$10^9 A_{\mathrm{s}}$	2.0992	$2.104 \pm 0.032$	$D_{\mathrm{M}}(0.61)$	2305.6	$2306 \pm 11$
$n_{\mathrm{s}}$	0.96720	$0.9657 \pm 0.0043$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8795	$1.880 \pm 0.011$	$H(2.33)$	235.81	$235.85 \pm 0.72$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	-0.0008	$-0.0029 \pm 0.0074$	$D_{40}$	1223.0	$1221 \pm 19$	$D_{\mathrm{M}}(2.33)$	5765.1	$5766 \pm 13$
$y_{\mathrm{cal}}$	1.00066	$1.0007 \pm 0.0025$	$D_{220}$	5722.7	$5725 \pm 40$	$f\sigma_8(0.15)$	0.4553	$0.4556 \pm 0.0061$
$A_{217}^{\mathrm{CIB}}$	48.8	$48 \pm 7$	$D_{810}$	2538.8	$2538 \pm 14$	$\sigma_8(0.15)$	0.7476	$0.7477 \pm 0.0056$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.32	—	$D_{1420}$	816.8	$815.3 \pm 5.1$	$f\sigma_8(0.38)$	0.4739	$0.4741 \pm 0.0051$
$A_{143}^{\mathrm{tSZ}}$	7.02	$5.0 \pm 2.1$	$D_{2000}$	230.43	$229.8 \pm 1.9$	$\sigma_8(0.38)$	0.66284	$0.6629 \pm 0.0049$
$A_{100}^{\mathrm{PS}}$	254.5	$264 \pm 28$	$n_{\mathrm{s},0.002}$	0.9699	$0.975 \pm 0.023$	$f\sigma_8(0.51)$	0.47261	$0.4728 \pm 0.0045$
$A_{143}^{\mathrm{PS}}$	49.0	$49 \pm 8$	$Y_{\mathrm{P}}$	0.245350	$0.245344^{+0.000094}_{-0.000080}$	$\sigma_8(0.51)$	0.62036	$0.6204 \pm 0.0046$
$A_{143 \times 217}^{\mathrm{PS}}$	46.7	$43 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246676	$0.246670^{+0.000094}_{-0.000080}$	$f\sigma_8(0.61)$	0.46774	$0.4679 \pm 0.0042$
$A_{217}^{\mathrm{PS}}$	119.1	$114 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	2.6067	$2.609 \pm 0.040$	$\sigma_8(0.61)$	0.59032	$0.5903 \pm 0.0044$
$A^{\mathrm{kSZ}}$	0.01	$< 5.08$	Age/Gyr	13.8022	$13.803 \pm 0.029$	$f\sigma_8(2.33)$	0.29769	$0.2977 \pm 0.0023$
$A_{100}^{\mathrm{dust}TT}$	8.86	$9.0 \pm 1.8$	$z_*$	1089.976	$1089.99 \pm 0.30$	$\sigma_8(2.33)$	0.30696	$0.3069 \pm 0.0024$
$A_{143}^{\mathrm{dust}TT}$	10.79	$10.7 \pm 1.8$	$r_*$	144.769	$144.76 \pm 0.30$	$f_{2000}^{143}$	30.14	$31.4 \pm 3.2$
$A_{143 \times 217}^{\mathrm{dust}TT}$	19.35	$18.4 \pm 3.3$	$100\theta_*$	1.041200	$1.04119 \pm 0.00041$	$f_{2000}^{143 \times 217}$	33.07	$33.7 \pm 2.2$
$A_{217}^{\mathrm{dust}TT}$	94.5	$93.4 \pm 7.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.9041	$13.903 \pm 0.030$	$f_{2000}^{217}$	107.56	$108.2 \pm 2.1$
$c_{100}$	0.99965	$0.99962 \pm 0.00061$	$z_{\mathrm{drag}}$	1059.589	$1059.59 \pm 0.49$	$\chi_{\mathrm{lensing}}^2$	8.883	$9.35 \pm 0.75$
$c_{217}$	0.99825	$0.99826 \pm 0.00063$	$r_{\mathrm{drag}}$	147.476	$147.47 \pm 0.34$	$\chi_{\mathrm{small}}^2$	396.19	$397.2 \pm 1.8$
$H_0$	67.632	$67.60 \pm 0.50$	$k_{\mathrm{D}}$	0.140377	$0.14038 \pm 0.00047$	$\chi_{\mathrm{lowl}}^2$	22.70	$22.8 \pm 1.9$
$\Omega_{\Lambda}$	0.6897	$0.6892 \pm 0.0066$	$100\theta_{\mathrm{D}}$	0.160958	$0.16097 \pm 0.00028$	$\chi_{\mathrm{plik}}^2$	759.9	$772.4 \pm 5.5$
$\Omega_{\mathrm{m}}$	0.3103	$0.3108 \pm 0.0066$	$z_{\mathrm{eq}}$	3376.2	$3378 \pm 26$	$\chi_{6\mathrm{DF}}^2$	0.0230	$0.056 \pm 0.069$
$\Omega_{\mathrm{m}}h^2$	0.14193	$0.1420 \pm 0.0011$	$k_{\mathrm{eq}}$	0.010305	$0.010309 \pm 0.000079$	$\chi_{\mathrm{MGS}}^2$	1.279	$1.30 \pm 0.46$
$\Omega_{\mathrm{m}}h^3$	0.095989	$0.09598 \pm 0.00049$	$100\theta_{\mathrm{eq}}$	0.81772	$0.8175 \pm 0.0047$	$\chi_{\mathrm{DR12BAO}}^2$	4.23	$4.8 \pm 1.5$
$\sigma_8$	0.8089	$0.8091 \pm 0.0062$	$100\theta_{\mathrm{s,eq}}$	0.45178	$0.4517 \pm 0.0025$	$\chi_{\mathrm{prior}}^2$	1.39	$7.4 \pm 3.7$
$S_8$	0.8227	$0.823 \pm 0.012$	$H(0.15)$	72.898	$72.87 \pm 0.43$	$\chi_{\mathrm{CMB}}^2$	1187.7	$1201.8 \pm 5.6$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4506	$0.4510 \pm 0.0065$	$D_{\mathrm{M}}(0.15)$	641.09	$641.4 \pm 4.3$	$\chi_{\mathrm{BAO}}^2$	5.53	$6.1 \pm 1.2$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6037	$0.6041 \pm 0.0062$	$H(0.38)$	82.983	$82.96 \pm 0.33$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 1194.63$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1215.34$ ;  $R - 1 = 0.01612$

$\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.28 DR12BAO: 4.23 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.88 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.19 commander\_dx12.v3.2.29: 22.70 plik\_rd12\_HM.v22\_TT: 759.95



## 12.5 base\_nrun\_plikHM\_TT\_lowl\_lowE\_post\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022390	$0.02240 \pm 0.00023$	$\sigma_8 \Omega_m^{0.25}$	0.5941	$0.595 \pm 0.010$	$D_M(0.15)$	634.5	$634.7 \pm 6.4$
$\Omega_c h^2$	0.11735	$0.1175 \pm 0.0017$	$\sigma_8/h^{0.5}$	0.9706	$0.972 \pm 0.014$	$H(0.38)$	83.47	$83.47 \pm 0.49$
$100\theta_{MC}$	1.041223	$1.04125 \pm 0.00045$	$r_{drag}h$	101.10	$101.0 \pm 1.3$	$D_M(0.38)$	1516.0	$1516 \pm 13$
$\tau$	0.0562	$0.0570 \pm 0.0085$	$\langle d^2 \rangle^{1/2}$	2.3994	$2.400 \pm 0.034$	$H(0.51)$	90.067	$90.07 \pm 0.40$
$\ln(10^{10} A_s)$	3.0418	$3.044 \pm 0.018$	$z_{re}$	7.83	$7.89^{+0.86}_{-0.78}$	$D_M(0.51)$	1965.7	$1966 \pm 15$
$n_s$	0.9709	$0.9699 \pm 0.0054$	$10^9 A_s$	2.0942	$2.100 \pm 0.037$	$H(0.61)$	95.592	$95.60 \pm 0.33$
$dn_s/d \ln k$	-0.0017	$-0.0041 \pm 0.0076$	$10^9 A_s e^{-2\tau}$	1.8716	$1.873 \pm 0.013$	$D_M(0.61)$	2288.8	$2289 \pm 16$
$y_{cal}$	1.00047	$1.0007 \pm 0.0026$	$D_{40}$	1212.2	$1209 \pm 21$	$H(2.33)$	234.86	$235.0 \pm 1.1$
$A_{217}^{CIB}$	49.2	$48 \pm 7$	$D_{220}$	5728.4	$5731 \pm 39$	$D_M(2.33)$	5752.4	$5752 \pm 15$
$\xi^{tSZ \times CIB}$	0.26	—	$D_{810}$	2536.5	$2537 \pm 14$	$f\sigma_8(0.15)$	0.4451	$0.446 \pm 0.010$
$A_{143}^{tSZ}$	7.10	$5.2^{+2.3}_{-2.1}$	$D_{1420}$	817.2	$816.6 \pm 5.3$	$\sigma_8(0.15)$	0.7430	$0.7435 \pm 0.0075$
$A_{100}^{PS}$	255.2	$262 \pm 28$	$D_{2000}$	230.61	$230.3 \pm 2.0$	$f\sigma_8(0.38)$	0.4659	$0.4664 \pm 0.0083$
$A_{143}^{PS}$	47.4	$48 \pm 8$	$n_{s,0.002}$	0.9764	$0.983 \pm 0.024$	$\sigma_8(0.38)$	0.6599	$0.6603 \pm 0.0062$
$A_{143 \times 217}^{PS}$	44.4	$43 \pm 9$	$Y_P$	0.245403	$0.245405 \pm 0.000092$	$f\sigma_8(0.51)$	0.4658	$0.4663 \pm 0.0073$
$A_{217}^{PS}$	117.6	$114 \pm 11$	$Y_P^{BBN}$	0.246730	$0.246731 \pm 0.000092$	$\sigma_8(0.51)$	0.6181	$0.6184 \pm 0.0057$
$A^{kSZ}$	0.00	$< 4.81$	$10^5 D/H$	2.5817	$2.580 \pm 0.042$	$f\sigma_8(0.61)$	0.4618	$0.4623 \pm 0.0066$
$A_{100}^{dustTT}$	8.91	$9.1 \pm 1.8$	Age/Gyr	13.7747	$13.773 \pm 0.035$	$\sigma_8(0.61)$	0.5884	$0.5888 \pm 0.0054$
$A_{143}^{dustTT}$	10.84	$10.8 \pm 1.8$	$z_*$	1089.661	$1089.66 \pm 0.36$	$f\sigma_8(2.33)$	0.29717	$0.2973 \pm 0.0027$
$A_{143 \times 217}^{dustTT}$	19.33	$18.5 \pm 3.3$	$r_*$	145.106	$145.07 \pm 0.43$	$\sigma_8(2.33)$	0.30689	$0.3070 \pm 0.0028$
$A_{217}^{dustTT}$	94.4	$93.6 \pm 7.2$	$100\theta_*$	1.041414	$1.04144 \pm 0.00045$	$f_{2000}^{143}$	29.95	$31.0 \pm 3.1$
$c_{100}$	0.99965	$0.99962 \pm 0.00059$	$D_M(z_*)/\text{Gpc}$	13.9336	$13.929 \pm 0.040$	$f_{2000}^{143 \times 217}$	32.85	$33.3 \pm 2.2$
$c_{217}$	0.99827	$0.99823 \pm 0.00064$	$z_{drag}$	1059.780	$1059.83 \pm 0.51$	$f_{2000}^{217}$	107.31	$107.9 \pm 2.1$
$H_0$	68.42	$68.40 \pm 0.77$	$r_{drag}$	147.776	$147.73 \pm 0.45$	$\chi_{small}^2$	396.20	$397.4 \pm 2.0$
$\Omega_\Lambda$	0.7001	$0.699^{+0.011}_{-0.0093}$	$k_D$	0.14016	$0.14022 \pm 0.00055$	$\chi_{lowl}^2$	21.84	$22.0 \pm 1.6$
$\Omega_m$	0.2999	$0.3006^{+0.0093}_{-0.011}$	$100\theta_D$	0.160864	$0.16085 \pm 0.00029$	$\chi_{plik}^2$	762.8	$775.9 \pm 6.3$
$\Omega_m h^2$	0.14038	$0.1405 \pm 0.0017$	$z_{eq}$	3339.2	$3343 \pm 40$	$\chi_{H073p45}^2$	9.20	$9.5 \pm 2.9$
$\Omega_m h^3$	0.096042	$0.09610 \pm 0.00052$	$k_{eq}$	0.010192	$0.01020 \pm 0.00012$	$\chi_{prior}^2$	1.43	$7.5 \pm 3.7$
$\sigma_8$	0.8028	$0.8034 \pm 0.0087$	$100\theta_{eq}$	0.8250	$0.8246 \pm 0.0075$	$\chi_{CMB}^2$	1180.9	$1195.2 \pm 6.1$
$S_8$	0.8027	$0.804 \pm 0.020$	$100\theta_{s,eq}$	0.45549	$0.4552 \pm 0.0039$			
$\sigma_8 \Omega_m^{0.5}$	0.4397	$0.440 \pm 0.011$	$H(0.15)$	73.57	$73.56 \pm 0.66$			

Best-fit  $\chi_{eff}^2 = 1191.49$ ;  $\bar{\chi}_{eff}^2 = 1212.16$ ;  $R - 1 = 0.05554$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.20 commander\_dx12\_v3.2.29: 21.84 plik\_rd12\_HM\_v22\_TT: 762.82 Hubble - H073p45: 9.20



## 12.6 base\_nrun\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02217 \pm 0.00023$	$\sigma_8 \Omega_m^{0.5}$	$0.461 \pm 0.013$	$100\theta_{s,eq}$	$0.4482 \pm 0.0046$
$\Omega_c h^2$	$0.1207 \pm 0.0021$	$\sigma_8 \Omega_m^{0.25}$	$0.612 \pm 0.012$	$H(0.15)$	$72.29 \pm 0.78$
$100\theta_{MC}$	$1.04079 \pm 0.00047$	$\sigma_8/h^{0.5}$	$0.994 \pm 0.016$	$D_M(0.15)$	$647.3 \pm 7.9$
$\tau$	$0.0549^{+0.0055}_{-0.0083}$	$r_{drag}h$	$98.5 \pm 1.6$	$H(0.38)$	$82.56 \pm 0.56$
$\ln(10^{10} A_s)$	$3.047^{+0.014}_{-0.017}$	$\langle d^2 \rangle^{1/2}$	$2.452 \pm 0.038$	$D_M(0.38)$	$1542 \pm 16$
$n_s$	$0.9621 \pm 0.0059$	$z_{re}$	$7.78^{+0.61}_{-0.81}$	$H(0.51)$	$89.36 \pm 0.44$
$dn_s/d \ln k$	$-0.0046 \pm 0.0075$	$10^9 A_s$	$2.106^{+0.028}_{-0.035}$	$D_M(0.51)$	$1996 \pm 18$
$y_{cal}$	$1.0005 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.887 \pm 0.014$	$H(0.61)$	$95.05 \pm 0.35$
$A_{217}^{CIB}$	$48 \pm 7$	$D_{40}$	$1224 \pm 21$	$D_M(0.61)$	$2321 \pm 20$
$\xi^{tSZ \times CIB}$	—	$D_{220}$	$5713 \pm 41$	$H(2.33)$	$236.8 \pm 1.3$
$A_{143}^{tSZ}$	$4.9 \pm 2.0$	$D_{810}$	$2538 \pm 14$	$D_M(2.33)$	$5775 \pm 16$
$A_{100}^{PS}$	$266 \pm 29$	$D_{1420}$	$813.9 \pm 5.3$	$f\sigma_8(0.15)$	$0.464 \pm 0.012$
$A_{143}^{PS}$	$50 \pm 8$	$D_{2000}$	$229.2 \pm 1.9$	$\sigma_8(0.15)$	$0.7507 \pm 0.0071$
$A_{143 \times 217}^{PS}$	$44 \pm 9$	$n_{s,0.002}$	$0.977 \pm 0.023$	$f\sigma_8(0.38)$	$0.4807 \pm 0.0096$
$A_{217}^{PS}$	$115 \pm 10$	$Y_P$	$0.24531^{+0.00011}_{-0.000089}$	$\sigma_8(0.38)$	$0.6645 \pm 0.0055$
$A^{kSZ}$	$< 5.29$	$Y_P^{BBN}$	$0.24663^{+0.00011}_{-0.000089}$	$f\sigma_8(0.51)$	$0.4782 \pm 0.0081$
$A_{100}^{dustTT}$	$9.0 \pm 1.8$	$10^5 D/H$	$2.624 \pm 0.044$	$\sigma_8(0.51)$	$0.6214^{+0.0046}_{-0.0052}$
$A_{143}^{dustTT}$	$10.8 \pm 1.8$	Age/Gyr	$13.824 \pm 0.037$	$f\sigma_8(0.61)$	$0.4725 \pm 0.0072$
$A_{143 \times 217}^{dustTT}$	$18.3 \pm 3.3$	$z_*$	$1090.24 \pm 0.41$	$\sigma_8(0.61)$	$0.5911^{+0.0042}_{-0.0049}$
$A_{217}^{dustTT}$	$93.3 \pm 7.3$	$r_*$	$144.41 \pm 0.50$	$f\sigma_8(2.33)$	$0.2977^{+0.0020}_{-0.0025}$
$c_{100}$	$0.99961 \pm 0.00062$	$100\theta_*$	$1.04099 \pm 0.00046$	$\sigma_8(2.33)$	$0.3065^{+0.0020}_{-0.0026}$
$c_{217}$	$0.99827 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	$13.872 \pm 0.046$	$f_{2000}^{143}$	$32.0 \pm 3.2$
$H_0$	$66.91 \pm 0.91$	$z_{drag}$	$1059.52 \pm 0.50$	$f_{2000}^{143 \times 217}$	$34.1 \pm 2.2$
$\Omega_\Lambda$	$0.679 \pm 0.013$	$r_{drag}$	$147.14 \pm 0.51$	$f_{2000}^{217}$	$108.6 \pm 2.1$
$\Omega_m$	$0.321 \pm 0.013$	$k_D$	$0.14066 \pm 0.00057$	$\chi_{simall}^2$	$397.0 \pm 1.7$
$\Omega_m h^2$	$0.1435 \pm 0.0020$	$100\theta_D$	$0.16100 \pm 0.00029$	$\chi_{lowl}^2$	$23.0 \pm 2.0$
$\Omega_m h^3$	$0.09601 \pm 0.00049$	$z_{eq}$	$3414 \pm 48$	$\chi_{plik}^2$	$772.6 \pm 5.7$
$\sigma_8$	$0.8134 \pm 0.0086$	$k_{eq}$	$0.01042 \pm 0.00015$	$\chi_{prior}^2$	$7.3 \pm 3.7$
$S_8$	$0.841 \pm 0.024$	$100\theta_{eq}$	$0.8107 \pm 0.0089$	$\chi_{CMB}^2$	$1192.6 \pm 5.5$

$\bar{\chi}_{eff}^2 = 1199.98$ ;  $R - 1 = 0.00614$



## 12.7 base\_nrun\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02226 \pm 0.00021$	$\sigma_8/h^{0.5}$	$0.983 \pm 0.011$	$D_{\mathrm{M}}(0.38)$	$1528.9 \pm 9.3$
$\Omega_{\mathrm{c}} h^2$	$0.1190 \pm 0.0012$	$r_{\mathrm{drag}} h$	$99.79 \pm 0.93$	$H(0.51)$	$89.70 \pm 0.29$
$100\theta_{\mathrm{MC}}$	$1.04101 \pm 0.00042$	$\langle d^2 \rangle^{1/2}$	$2.426 \pm 0.028$	$D_{\mathrm{M}}(0.51)$	$1981 \pm 11$
$\tau$	$0.0562^{+0.0060}_{-0.0082}$	$z_{\mathrm{re}}$	$7.86^{+0.64}_{-0.80}$	$H(0.61)$	$95.30 \pm 0.25$
$\ln(10^{10} A_{\mathrm{s}})$	$3.046^{+0.014}_{-0.017}$	$10^9 A_{\mathrm{s}}$	$2.103^{+0.029}_{-0.036}$	$D_{\mathrm{M}}(0.61)$	$2305 \pm 12$
$n_{\mathrm{s}}$	$0.9661 \pm 0.0045$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.879 \pm 0.012$	$H(2.33)$	$235.78 \pm 0.81$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	$-0.0038 \pm 0.0074$	$D_{40}$	$1218 \pm 20$	$D_{\mathrm{M}}(2.33)$	$5765 \pm 13$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{220}$	$5721 \pm 41$	$f\sigma_8(0.15)$	$0.4548 \pm 0.0075$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2537 \pm 14$	$\sigma_8(0.15)$	$0.7472^{+0.0060}_{-0.0068}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815.0 \pm 5.1$	$f\sigma_8(0.38)$	$0.4734 \pm 0.0063$
$A_{143}^{\mathrm{tSZ}}$	$5.0 \pm 2.1$	$D_{2000}$	$229.6 \pm 1.9$	$\sigma_8(0.38)$	$0.6625^{+0.0050}_{-0.0058}$
$A_{100}^{\mathrm{PS}}$	$264 \pm 29$	$n_{\mathrm{s},0.002}$	$0.978 \pm 0.023$	$f\sigma_8(0.51)$	$0.4722 \pm 0.0056$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}$	$0.245347^{+0.000094}_{-0.000080}$	$\sigma_8(0.51)$	$0.6200^{+0.0046}_{-0.0054}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246674^{+0.000095}_{-0.000080}$	$f\sigma_8(0.61)$	$0.4673 \pm 0.0052$
$A_{217}^{\mathrm{PS}}$	$114 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.607 \pm 0.040$	$\sigma_8(0.61)$	$0.5900^{+0.0043}_{-0.0051}$
$A^{\mathrm{kSZ}}$	$< 5.18$	$\mathrm{Age}/\mathrm{Gyr}$	$13.801 \pm 0.029$	$f\sigma_8(2.33)$	$0.2976^{+0.0021}_{-0.0025}$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	$z_*$	$1089.97 \pm 0.31$	$\sigma_8(2.33)$	$0.3068^{+0.0022}_{-0.0027}$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.8$	$r_*$	$144.78 \pm 0.34$	$f_{2000}^{143}$	$31.5 \pm 3.2$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.4 \pm 3.3$	$100\theta_*$	$1.04120 \pm 0.00042$	$f_{2000}^{143 \times 217}$	$33.8 \pm 2.2$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.905 \pm 0.033$	$f_{2000}^{217}$	$108.3 \pm 2.1$
$c_{100}$	$0.99961 \pm 0.00061$	$z_{\mathrm{drag}}$	$1059.61 \pm 0.49$	$\chi_{\mathrm{small}}^2$	$397.1 \pm 1.9$
$c_{217}$	$0.99827 \pm 0.00063$	$r_{\mathrm{drag}}$	$147.49 \pm 0.37$	$\chi_{\mathrm{lowl}}^2$	$22.6 \pm 1.8$
$H_0$	$67.66 \pm 0.54$	$k_{\mathrm{D}}$	$0.14036 \pm 0.00050$	$\chi_{\mathrm{plik}}^2$	$773.0 \pm 5.7$
$\Omega_{\Lambda}$	$0.6900 \pm 0.0073$	$100\theta_{\mathrm{D}}$	$0.16096 \pm 0.00028$	$\chi_{6\mathrm{DF}}^2$	$0.057 \pm 0.075$
$\Omega_{\mathrm{m}}$	$0.3100 \pm 0.0073$	$z_{\mathrm{eq}}$	$3375 \pm 29$	$\chi_{\mathrm{MGS}}^2$	$1.36 \pm 0.52$
$\Omega_{\mathrm{m}} h^2$	$0.1419 \pm 0.0012$	$k_{\mathrm{eq}}$	$0.010301 \pm 0.000089$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.6$
$\Omega_{\mathrm{m}} h^3$	$0.09598 \pm 0.00050$	$100\theta_{\mathrm{eq}}$	$0.8180 \pm 0.0053$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.7$
$\sigma_8$	$0.8084^{+0.0069}_{-0.0077}$	$100\theta_{\mathrm{s,eq}}$	$0.4519 \pm 0.0028$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.3$
$S_8$	$0.822 \pm 0.015$	$H(0.15)$	$72.92 \pm 0.47$	$\chi_{\mathrm{CMB}}^2$	$1192.6 \pm 5.5$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4501 \pm 0.0080$	$D_{\mathrm{M}}(0.15)$	$640.9 \pm 4.6$		
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.6032 \pm 0.0077$	$H(0.38)$	$83.00 \pm 0.35$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1206.22$ ;  $R - 1 = 0.01231$



## 12.8 base\_nrun\_plikHM\_TT\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00023$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6086 \pm 0.0078$	$D_{\mathrm{M}}(0.15)$	$645.1 \pm 6.1$
$\Omega_{\mathrm{c}}h^2$	$0.1200 \pm 0.0015$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.011$	$H(0.38)$	$82.70 \pm 0.45$
$100\theta_{\mathrm{MC}}$	$1.04084 \pm 0.00045$	$r_{\mathrm{drag}}h$	$98.9 \pm 1.2$	$D_{\mathrm{M}}(0.38)$	$1537 \pm 12$
$\tau$	$0.0548^{+0.0055}_{-0.0081}$	$\langle d^2 \rangle^{1/2}$	$2.444 \pm 0.027$	$H(0.51)$	$89.47 \pm 0.36$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.012}_{-0.015}$	$z_{\mathrm{re}}$	$7.76^{+0.60}_{-0.78}$	$D_{\mathrm{M}}(0.51)$	$1991 \pm 14$
$n_{\mathrm{s}}$	$0.9635 \pm 0.0050$	$10^9 A_{\mathrm{s}}$	$2.101^{+0.026}_{-0.032}$	$H(0.61)$	$95.12 \pm 0.30$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0033 \pm 0.0074$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.883 \pm 0.012$	$D_{\mathrm{M}}(0.61)$	$2316 \pm 15$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$D_{40}$	$1224 \pm 20$	$H(2.33)$	$236.41 \pm 0.96$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{220}$	$5717 \pm 41$	$D_{\mathrm{M}}(2.33)$	$5772 \pm 15$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2537 \pm 14$	$f\sigma_8(0.15)$	$0.4607 \pm 0.0082$
$A_{143}^{\mathrm{tSZ}}$	$5.0 \pm 2.1$	$D_{1420}$	$814.2 \pm 5.2$	$\sigma_8(0.15)$	$0.7491 \pm 0.0052$
$A_{100}^{\mathrm{PS}}$	$265 \pm 28$	$D_{2000}$	$229.3 \pm 1.9$	$f\sigma_8(0.38)$	$0.4779 \pm 0.0064$
$A_{143}^{\mathrm{PS}}$	$50 \pm 8$	$n_{\mathrm{s},0.002}$	$0.974 \pm 0.023$	$\sigma_8(0.38)$	$0.6634^{+0.0042}_{-0.0047}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}$	$0.24532^{+0.00011}_{-0.000085}$	$f\sigma_8(0.51)$	$0.4758 \pm 0.0054$
$A_{217}^{\mathrm{PS}}$	$114 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00011}_{-0.000085}$	$\sigma_8(0.51)$	$0.6206^{+0.0038}_{-0.0044}$
$A^{\mathrm{kSZ}}$	$< 5.19$	$10^5 \mathrm{D}/\mathrm{H}$	$2.620 \pm 0.043$	$f\sigma_8(0.61)$	$0.4704 \pm 0.0048$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	$\mathrm{Age}/\mathrm{Gyr}$	$13.818 \pm 0.033$	$\sigma_8(0.61)$	$0.5904^{+0.0036}_{-0.0042}$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$z_*$	$1090.15 \pm 0.36$	$f\sigma_8(2.33)$	$0.2975^{+0.0019}_{-0.0023}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.4 \pm 3.3$	$r_*$	$144.56 \pm 0.38$	$\sigma_8(2.33)$	$0.3065^{+0.0021}_{-0.0025}$
$A_{217}^{\mathrm{dust}TT}$	$93.3 \pm 7.3$	$100\theta_*$	$1.04104 \pm 0.00044$	$f_{2000}^{143}$	$31.7 \pm 3.2$
$c_{100}$	$0.99961 \pm 0.00061$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.886 \pm 0.035$	$f_{2000}^{143 \times 217}$	$33.9 \pm 2.2$
$c_{217}$	$0.99827 \pm 0.00063$	$z_{\mathrm{drag}}$	$1059.52 \pm 0.50$	$f_{2000}^{217}$	$108.4 \pm 2.1$
$H_0$	$67.17 \pm 0.70$	$r_{\mathrm{drag}}$	$147.28 \pm 0.40$	$\chi_{\mathrm{lensing}}^2$	$9.58 \pm 0.97$
$\Omega_{\Lambda}$	$0.6831 \pm 0.0097$	$k_{\mathrm{D}}$	$0.14053 \pm 0.00050$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.6$
$\Omega_{\mathrm{m}}$	$0.3169 \pm 0.0097$	$100\theta_{\mathrm{D}}$	$0.16100 \pm 0.00029$	$\chi_{\mathrm{lowl}}^2$	$23.1 \pm 2.0$
$\Omega_{\mathrm{m}}h^2$	$0.1429 \pm 0.0015$	$z_{\mathrm{eq}}$	$3399 \pm 35$	$\chi_{\mathrm{plik}}^2$	$772.1 \pm 5.5$
$\Omega_{\mathrm{m}}h^3$	$0.09596 \pm 0.00049$	$k_{\mathrm{eq}}$	$0.01037 \pm 0.00011$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8$	$0.8112 \pm 0.0060$	$100\theta_{\mathrm{eq}}$	$0.8134 \pm 0.0066$	$\chi_{\mathrm{CMB}}^2$	$1201.7 \pm 5.5$
$S_8$	$0.834 \pm 0.016$	$100\theta_{\mathrm{s,eq}}$	$0.4495 \pm 0.0034$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4566 \pm 0.0090$	$H(0.15)$	$72.50 \pm 0.60$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1209.03$ ;  $R - 1 = 0.01103$



## 12.9 base\_nrun\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02226 \pm 0.00021$	$\sigma_8/h^{0.5}$	$0.9844 \pm 0.0088$	$D_{\mathrm{M}}(0.38)$	$1529.5 \pm 8.6$
$\Omega_{\mathrm{c}} h^2$	$0.1191 \pm 0.0011$	$r_{\mathrm{drag}} h$	$99.72 \pm 0.83$	$H(0.51)$	$89.68 \pm 0.28$
$100\theta_{\mathrm{MC}}$	$1.04099 \pm 0.00042$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.023$	$D_{\mathrm{M}}(0.51)$	$1982 \pm 10$
$\tau$	$0.0568^{+0.0062}_{-0.0075}$	$z_{\mathrm{re}}$	$7.93 \pm 0.68$	$H(0.61)$	$95.29 \pm 0.24$
$\ln(10^{10} A_{\mathrm{s}})$	$3.047^{+0.013}_{-0.015}$	$10^9 A_{\mathrm{s}}$	$2.106^{+0.028}_{-0.032}$	$D_{\mathrm{M}}(0.61)$	$2306 \pm 11$
$n_{\mathrm{s}}$	$0.9658 \pm 0.0043$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.880 \pm 0.011$	$H(2.33)$	$235.83 \pm 0.71$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	$-0.0031 \pm 0.0073$	$D_{40}$	$1221 \pm 19$	$D_{\mathrm{M}}(2.33)$	$5765 \pm 12$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025$	$D_{220}$	$5725 \pm 40$	$f\sigma_8(0.15)$	$0.4557 \pm 0.0061$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2538 \pm 14$	$\sigma_8(0.15)$	$0.7481 \pm 0.0053$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815.3 \pm 5.1$	$f\sigma_8(0.38)$	$0.4743 \pm 0.0050$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.1$	$D_{2000}$	$229.8 \pm 1.9$	$\sigma_8(0.38)$	$0.6632^{+0.0044}_{-0.0049}$
$A_{100}^{\mathrm{PS}}$	$264 \pm 28$	$n_{\mathrm{s},0.002}$	$0.976 \pm 0.023$	$f\sigma_8(0.51)$	$0.4730 \pm 0.0045$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}$	$0.245345^{+0.000093}_{-0.000080}$	$\sigma_8(0.51)$	$0.6207^{+0.0041}_{-0.0046}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246672^{+0.000094}_{-0.000080}$	$f\sigma_8(0.61)$	$0.4681 \pm 0.0041$
$A_{217}^{\mathrm{PS}}$	$114 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.608 \pm 0.040$	$\sigma_8(0.61)$	$0.5906^{+0.0039}_{-0.0044}$
$A^{\mathrm{kSZ}}$	$< 5.08$	$\mathrm{Age}/\mathrm{Gyr}$	$13.803 \pm 0.029$	$f\sigma_8(2.33)$	$0.2979^{+0.0020}_{-0.0023}$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	$z_*$	$1089.98 \pm 0.30$	$\sigma_8(2.33)$	$0.3071^{+0.0021}_{-0.0024}$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$r_*$	$144.76 \pm 0.30$	$f_{2000}^{143}$	$31.4 \pm 3.2$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.4 \pm 3.3$	$100\theta_*$	$1.04119 \pm 0.00041$	$f_{2000}^{143 \times 217}$	$33.7 \pm 2.2$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.904 \pm 0.030$	$f_{2000}^{217}$	$108.2 \pm 2.1$
$c_{100}$	$0.99962 \pm 0.00061$	$z_{\mathrm{drag}}$	$1059.60 \pm 0.49$	$\chi_{\mathrm{lensing}}^2$	$9.32 \pm 0.71$
$c_{217}$	$0.99826 \pm 0.00063$	$r_{\mathrm{drag}}$	$147.47 \pm 0.34$	$\chi_{\mathrm{simall}}^2$	$397.2 \pm 1.8$
$H_0$	$67.62 \pm 0.49$	$k_{\mathrm{D}}$	$0.14038 \pm 0.00047$	$\chi_{\mathrm{lowl}}^2$	$22.8 \pm 1.9$
$\Omega_{\Lambda}$	$0.6894 \pm 0.0065$	$100\theta_{\mathrm{D}}$	$0.16096 \pm 0.00028$	$\chi_{\mathrm{plik}}^2$	$772.4 \pm 5.5$
$\Omega_{\mathrm{m}}$	$0.3106 \pm 0.0065$	$z_{\mathrm{eq}}$	$3377 \pm 26$	$\chi_{6\mathrm{DF}}^2$	$0.054 \pm 0.066$
$\Omega_{\mathrm{m}} h^2$	$0.1420 \pm 0.0011$	$k_{\mathrm{eq}}$	$0.010307 \pm 0.000078$	$\chi_{\mathrm{MGS}}^2$	$1.31 \pm 0.46$
$\Omega_{\mathrm{m}} h^3$	$0.09599 \pm 0.00049$	$100\theta_{\mathrm{eq}}$	$0.8176 \pm 0.0047$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.5$
$\sigma_8$	$0.8095 \pm 0.0059$	$100\theta_{\mathrm{s,eq}}$	$0.4517 \pm 0.0024$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.7$
$S_8$	$0.824 \pm 0.012$	$H(0.15)$	$72.89 \pm 0.43$	$\chi_{\mathrm{CMB}}^2$	$1201.7 \pm 5.5$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4511 \pm 0.0065$	$D_{\mathrm{M}}(0.15)$	$641.2 \pm 4.2$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.2$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.6043 \pm 0.0061$	$H(0.38)$	$82.97 \pm 0.33$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1215.17$ ;  $R - 1 = 0.01603$



## 12.10 base\_nrun\_plikHM\_TT\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02241 \pm 0.00023$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.5954^{+0.0092}_{-0.010}$	$D_{\mathrm{M}}(0.15)$	$634.6 \pm 6.4$
$\Omega_{\mathrm{c}} h^2$	$0.1175^{+0.0016}_{-0.0018}$	$\sigma_8/h^{0.5}$	$0.972 \pm 0.014$	$H(0.38)$	$83.48 \pm 0.49$
$100\theta_{\mathrm{MC}}$	$1.04126 \pm 0.00045$	$r_{\mathrm{drag}} h$	$101.1 \pm 1.3$	$D_{\mathrm{M}}(0.38)$	$1516 \pm 13$
$\tau$	$0.0580^{+0.0068}_{-0.0084}$	$\langle d^2 \rangle^{1/2}$	$2.402 \pm 0.033$	$H(0.51)$	$90.08 \pm 0.39$
$\ln(10^{10} A_{\mathrm{s}})$	$3.046^{+0.015}_{-0.017}$	$z_{\mathrm{re}}$	$7.99 \pm 0.73$	$D_{\mathrm{M}}(0.51)$	$1966 \pm 15$
$n_{\mathrm{s}}$	$0.9700 \pm 0.0054$	$10^9 A_{\mathrm{s}}$	$2.104^{+0.032}_{-0.036}$	$H(0.61)$	$95.61 \pm 0.33$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	$-0.0043 \pm 0.0076$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.874 \pm 0.013$	$D_{\mathrm{M}}(0.61)$	$2289 \pm 16$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0026$	$D_{40}$	$1209 \pm 21$	$H(2.33)$	$234.96^{+0.99}_{-1.1}$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{220}$	$5731 \pm 39$	$D_{\mathrm{M}}(2.33)$	$5751 \pm 15$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2537 \pm 14$	$f\sigma_8(0.15)$	$0.4462^{+0.0093}_{-0.011}$
$A_{143}^{\mathrm{tSZ}}$	$5.2^{+2.3}_{-2.1}$	$D_{1420}$	$816.5^{+5.6}_{-5.1}$	$\sigma_8(0.15)$	$0.7442 \pm 0.0069$
$A_{100}^{\mathrm{PS}}$	$262 \pm 28$	$D_{2000}$	$230.3^{+2.1}_{-1.9}$	$f\sigma_8(0.38)$	$0.4668^{+0.0076}_{-0.0085}$
$A_{143}^{\mathrm{PS}}$	$48 \pm 8$	$n_{\mathrm{s},0.002}$	$0.984 \pm 0.024$	$\sigma_8(0.38)$	$0.6609 \pm 0.0057$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}$	$0.245406 \pm 0.000092$	$f\sigma_8(0.51)$	$0.4668 \pm 0.0070$
$A_{217}^{\mathrm{PS}}$	$114 \pm 11$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246733 \pm 0.000092$	$\sigma_8(0.51)$	$0.6190 \pm 0.0052$
$A^{\mathrm{kSZ}}$	$< 4.82$	$10^5 \mathrm{D}/\mathrm{H}$	$2.580 \pm 0.042$	$f\sigma_8(0.61)$	$0.4627 \pm 0.0063$
$A_{100}^{\mathrm{dust}TT}$	$9.1 \pm 1.8$	$\mathrm{Age}/\mathrm{Gyr}$	$13.772 \pm 0.035$	$\sigma_8(0.61)$	$0.5893 \pm 0.0049$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.8$	$z_*$	$1089.65 \pm 0.36$	$f\sigma_8(2.33)$	$0.2976 \pm 0.0024$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.3$	$r_*$	$145.06 \pm 0.43$	$\sigma_8(2.33)$	$0.3073^{+0.0024}_{-0.0027}$
$A_{217}^{\mathrm{dust}TT}$	$93.7 \pm 7.2$	$100\theta_*$	$1.04145 \pm 0.00045$	$f_{2000}^{143}$	$31.0 \pm 3.1$
$c_{100}$	$0.99962 \pm 0.00060$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.929 \pm 0.040$	$f_{2000}^{143 \times 217}$	$33.3 \pm 2.2$
$c_{217}$	$0.99824 \pm 0.00064$	$z_{\mathrm{drag}}$	$1059.84 \pm 0.51$	$f_{2000}^{217}$	$107.9 \pm 2.1$
$H_0$	$68.40 \pm 0.76$	$r_{\mathrm{drag}}$	$147.73 \pm 0.45$	$\chi_{\mathrm{simall}}^2$	$397.4 \pm 2.1$
$\Omega_{\Lambda}$	$0.699^{+0.011}_{-0.0093}$	$k_{\mathrm{D}}$	$0.14023 \pm 0.00055$	$\chi_{\mathrm{lowl}}^2$	$21.9 \pm 1.6$
$\Omega_{\mathrm{m}}$	$0.3005^{+0.0093}_{-0.011}$	$100\theta_{\mathrm{D}}$	$0.16085^{+0.00027}_{-0.00030}$	$\chi_{\mathrm{plik}}^2$	$775.7 \pm 6.3$
$\Omega_{\mathrm{m}} h^2$	$0.1405^{+0.0015}_{-0.0017}$	$z_{\mathrm{eq}}$	$3343^{+37}_{-41}$	$\chi_{\mathrm{H073p45}}^2$	$9.5 \pm 2.8$
$\Omega_{\mathrm{m}} h^3$	$0.09611 \pm 0.00052$	$k_{\mathrm{eq}}$	$0.01020^{+0.00011}_{-0.00013}$	$\chi_{\mathrm{prior}}^2$	$7.5 \pm 3.8$
$\sigma_8$	$0.8042 \pm 0.0081$	$100\theta_{\mathrm{eq}}$	$0.8246 \pm 0.0075$	$\chi_{\mathrm{CMB}}^2$	$1195.0 \pm 6.1$
$S_8$	$0.805^{+0.018}_{-0.021}$	$100\theta_{\mathrm{s,eq}}$	$0.4552 \pm 0.0039$		
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4408^{+0.0099}_{-0.011}$	$H(0.15)$	$73.56 \pm 0.66$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1211.96$ ;  $R - 1 = 0.05098$



## 12.11 base\_nrun\_plikHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022392	$0.02239 \pm 0.00015$ (+1.0 $\sigma$ )	$\Omega_{\mathrm{m}}h^2$	0.14339	$0.1434 \pm 0.0013$ (−0.1 $\sigma$ )	$k_{\mathrm{eq}}$	0.010411	$0.010410 \pm 0.000094$ (−0.1 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.12035	$0.1203 \pm 0.0014$ (−0.2 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.096415	$0.09640 \pm 0.00031$ (+0.8 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8117	$0.8119 \pm 0.0058$ (+0.2 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.040892	$1.04090 \pm 0.00032$ (+0.3 $\sigma$ )	$\sigma_8$	0.8122	$0.8127 \pm 0.0078$ (+0.0 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.44855	$0.4486 \pm 0.0030$ (+0.1 $\sigma$ )
$\tau$	0.0548	$0.0558 \pm 0.0080$ (+0.3 $\sigma$ )	$S_8$	0.8351	$0.836 \pm 0.016$ (−0.2 $\sigma$ )	$H(0.15)$	72.58	$72.59 \pm 0.51$ (+0.4 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0469	$3.049 \pm 0.017$ (+0.3 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4574	$0.4577 \pm 0.0090$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	644.4	$644.3 \pm 5.2$ (−0.4 $\sigma$ )
$n_{\mathrm{s}}$	0.96434	$0.9635 \pm 0.0046$ (+0.3 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6095	$0.6099 \pm 0.0086$ (−0.1 $\sigma$ )	$H(0.38)$	82.806	$82.81 \pm 0.37$ (+0.5 $\sigma$ )
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	−0.0047	$−0.0055 \pm 0.0067$ (−0.2 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9905	$0.991 \pm 0.012$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1535.4	$1535 \pm 10$ (−0.4 $\sigma$ )
$y_{\mathrm{cal}}$	1.00040	$1.0007 \pm 0.0025$ (+0.1 $\sigma$ )	$r_{\mathrm{drag}}h$	98.82	$98.8 \pm 1.0$ (+0.3 $\sigma$ )	$H(0.51)$	89.588	$89.59 \pm 0.29$ (+0.6 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	48.9	$48 \pm 7$ (−0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4421	$2.445 \pm 0.029$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1988.0	$1988 \pm 12$ (−0.4 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.24	—	$z_{\mathrm{re}}$	7.73	$7.81 \pm 0.80$ (+0.2 $\sigma$ )	$H(0.61)$	95.256	$95.26 \pm 0.24$ (+0.6 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	7.28	$5.2 \pm 2.0$ (+0.1 $\sigma$ )	$10^9 A_{\mathrm{s}}$	2.1050	$2.111 \pm 0.036$ (+0.3 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2312.6	$2313 \pm 13$ (−0.5 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	253.9	$263 \pm 28$ (−0.1 $\sigma$ )	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8867	$1.887 \pm 0.012$ (+0.0 $\sigma$ )	$H(2.33)$	236.81	$236.80 \pm 0.82$ (−0.0 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	46.8	$48 \pm 8$ (−0.3 $\sigma$ )	$D_{40}$	1220.4	$1221 \pm 19$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5763.9	$5764 \pm 11$ (−0.7 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	43.9	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{220}$	5728.0	$5733 \pm 39$ (+0.5 $\sigma$ )	$f\sigma_8(0.15)$	0.4615	$0.4618 \pm 0.0084$ (−0.2 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	118.2	$115 \pm 10$ (−0.0 $\sigma$ )	$D_{810}$	2541.5	$2542 \pm 14$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7499	$0.7504 \pm 0.0068$ (+0.1 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.00	$< 4.86$ (−0.1 $\sigma$ )	$D_{1420}$	816.82	$816.3 \pm 4.9$ (+0.5 $\sigma$ )	$f\sigma_8(0.38)$	0.4786	$0.4789 \pm 0.0069$ (−0.2 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.93	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$D_{2000}$	230.48	$230.2 \pm 1.8$ (+0.5 $\sigma$ )	$\sigma_8(0.38)$	0.6642	$0.6646 \pm 0.0057$ (+0.2 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	11.07	$11.0 \pm 1.8$ (+0.1 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.9794	$0.981 \pm 0.021$ (+0.2 $\sigma$ )	$f\sigma_8(0.51)$	0.4766	$0.4768 \pm 0.0061$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.67	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}$	0.245404	$0.245400^{+0.000062}_{-0.000055}$ (+1.0 $\sigma$ )	$\sigma_8(0.51)$	0.6213	$0.6217 \pm 0.0053$ (+0.2 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	94.5	$93.4 \pm 7.3$ (+0.0 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246731	$0.246726^{+0.000062}_{-0.000055}$ (+1.0 $\sigma$ )	$f\sigma_8(0.61)$	0.4711	$0.4714 \pm 0.0056$ (−0.1 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1137	$0.115 \pm 0.038$	$10^5 \mathrm{D}/\mathrm{H}$	2.5814	$2.583 \pm 0.028$ (−1.0 $\sigma$ )	$\sigma_8(0.61)$	0.59101	$0.5914 \pm 0.0050$ (+0.2 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1350	$0.134 \pm 0.029$	Age/Gyr	13.7975	$13.798 \pm 0.024$ (−0.8 $\sigma$ )	$f\sigma_8(2.33)$	0.29777	$0.2980 \pm 0.0025$ (+0.3 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.482	$0.482 \pm 0.085$	$z_*$	1089.924	$1089.93 \pm 0.27$ (−0.8 $\sigma$ )	$\sigma_8(2.33)$	0.30674	$0.3070 \pm 0.0026$ (+0.3 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.226	$0.224 \pm 0.054$	$r_*$	144.323	$144.33 \pm 0.31$ (−0.1 $\sigma$ )	$f_{2000}^{143}$	29.94	$30.7 \pm 3.1$ (−0.4 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.667	$0.665 \pm 0.080$	$100\theta_*$	1.041072	$1.04108 \pm 0.00031$ (+0.2 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.80	$33.1 \pm 2.2$ (−0.5 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.085	$2.09 \pm 0.27$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8629	$13.864 \pm 0.028$ (−0.2 $\sigma$ )	$f_{2000}^{217}$	107.41	$107.8 \pm 2.0$ (−0.4 $\sigma$ )
$c_{100}$	0.99972	$0.99969 \pm 0.00061$ (+0.1 $\sigma$ )	$z_{\mathrm{drag}}$	1060.009	$1060.00 \pm 0.31$ (+1.0 $\sigma$ )	$\chi_{\mathrm{small}}^2$	396.07	$397.3 \pm 2.0$ (+0.1 $\sigma$ )
$c_{217}$	0.99820	$0.99822 \pm 0.00062$ (−0.1 $\sigma$ )	$r_{\mathrm{drag}}$	146.974	$146.99 \pm 0.30$ (−0.3 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	22.25	$22.6 \pm 1.6$ (−0.3 $\sigma$ )
$H_0$	67.24	$67.25 \pm 0.60$ (+0.4 $\sigma$ )	$k_{\mathrm{D}}$	0.141009	$0.14099 \pm 0.00034$ (+0.6 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2345.3	$2360.9 \pm 6.0$ (+278.8 $\sigma$ )
$\Omega_{\Lambda}$	0.6828	$0.6828 \pm 0.0084$ (+0.3 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160712	$0.16072 \pm 0.00018$ (−1.0 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.81	$11.5 \pm 4.6$ (+1.1 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3172	$0.3172 \pm 0.0084$ (−0.3 $\sigma$ )	$z_{\mathrm{eq}}$	3411.2	$3411 \pm 31$ (−0.1 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	2763.6	$2780.7 \pm 5.9$ (+282.7 $\sigma$ )

Best-fit  $\chi_{\mathrm{eff}}^2 = 2765.41$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1585.96$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2792.22$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.00$ ;  $R - 1 = 0.01212$

$\chi_{\mathrm{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.07 ( $\Delta$  0.16) commander\_dx12\_v3.2.29: 22.25 ( $\Delta$  -0.49) plik\_rd12\_HM\_v22b\_TTTEEE: 2345.28



## 12.12 base\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022465	$0.02245 \pm 0.00014$ (+0.9 $\sigma$ )	$\sigma_8$	0.8102	$0.8101 \pm 0.0075$ (+0.3 $\sigma$ )	$D_M(0.15)$	640.32	$640.8 \pm 3.8$ (−0.1 $\sigma$ )
$\Omega_c h^2$	0.11929	$0.1194 \pm 0.0010$ (+0.3 $\sigma$ )	$S_8$	0.8243	$0.825 \pm 0.013$ (+0.3 $\sigma$ )	$H(0.38)$	83.094	$83.06 \pm 0.29$ (+0.2 $\sigma$ )
$100\theta_{MC}$	1.041005	$1.04101 \pm 0.00030$ (+0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4515	$0.4520 \pm 0.0071$ (+0.3 $\sigma$ )	$D_M(0.38)$	1527.3	$1528.2 \pm 7.7$ (−0.1 $\sigma$ )
$\tau$	0.0566	$0.0568^{+0.0075}_{-0.0084}$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6048	$0.6051 \pm 0.0073$ (+0.3 $\sigma$ )	$H(0.51)$	89.808	$89.78 \pm 0.23$ (+0.3 $\sigma$ )
$\ln(10^{10} A_s)$	3.0483	$3.049 \pm 0.017$ (+0.3 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9846	$0.985 \pm 0.011$ (+0.3 $\sigma$ )	$D_M(0.51)$	1978.7	$1979.7 \pm 9.1$ (−0.1 $\sigma$ )
$n_s$	0.96736	$0.9658 \pm 0.0041$ (−0.0 $\sigma$ )	$r_{drag} h$	99.66	$99.58 \pm 0.78$ (−0.2 $\sigma$ )	$H(0.61)$	95.425	$95.41 \pm 0.19$ (+0.4 $\sigma$ )
$dn_s/d \ln k$	−0.0034	$−0.0049 \pm 0.0068$ (−0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4295	$2.431 \pm 0.026$ (+0.2 $\sigma$ )	$D_M(0.61)$	2302.6	$2303.7 \pm 9.8$ (−0.1 $\sigma$ )
$y_{cal}$	1.00057	$1.0007 \pm 0.0025$ (+0.1 $\sigma$ )	$z_{re}$	7.88	$7.88 \pm 0.81$ (+0.2 $\sigma$ )	$H(2.33)$	236.19	$236.25 \pm 0.62$ (+0.6 $\sigma$ )
$A_{217}^{CIB}$	47.4	$48 \pm 7$ (−0.1 $\sigma$ )	$10^9 A_s$	2.1080	$2.110 \pm 0.037$ (+0.3 $\sigma$ )	$D_M(2.33)$	5756.8	$5757.7 \pm 9.2$ (−0.6 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.48	—	$10^9 A_s e^{-2\tau}$	1.8824	$1.883 \pm 0.012$ (+0.3 $\sigma$ )	$f\sigma_8(0.15)$	0.4562	$0.4566 \pm 0.0068$ (+0.3 $\sigma$ )
$A_{143}^{tSZ}$	7.17	$5.2^{+2.2}_{-1.9}$ (+0.1 $\sigma$ )	$D_{40}$	1218.0	$1218 \pm 18$ (−0.0 $\sigma$ )	$\sigma_8(0.15)$	0.7487	$0.7486 \pm 0.0067$ (+0.3 $\sigma$ )
$A_{100}^{PS}$	251.3	$262 \pm 28$ (−0.1 $\sigma$ )	$D_{220}$	5734.6	$5737 \pm 38$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4747	$0.4750 \pm 0.0059$ (+0.3 $\sigma$ )
$A_{143}^{PS}$	49.3	$47 \pm 8$ (−0.3 $\sigma$ )	$D_{810}$	2541.7	$2541 \pm 13$ (+0.3 $\sigma$ )	$\sigma_8(0.38)$	0.6638	$0.6636 \pm 0.0058$ (+0.3 $\sigma$ )
$A_{143 \times 217}^{PS}$	49.4	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{1420}$	818.25	$816.9 \pm 4.8$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.4734	$0.4736 \pm 0.0054$ (+0.3 $\sigma$ )
$A_{217}^{PS}$	120.2	$114 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	231.12	$230.5 \pm 1.7$ (+0.5 $\sigma$ )	$\sigma_8(0.51)$	0.6212	$0.6210 \pm 0.0054$ (+0.3 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.74$ (−0.1 $\sigma$ )	$n_{s,0.002}$	0.9784	$0.982 \pm 0.021$ (+0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.46851	$0.4686 \pm 0.0050$ (+0.3 $\sigma$ )
$A_{100}^{dustTT}$	8.86	$8.9 \pm 1.8$ (−0.1 $\sigma$ )	$Y_P$	0.245432	$0.245423^{+0.000055}_{-0.000050}$ (+0.9 $\sigma$ )	$\sigma_8(0.61)$	0.5912	$0.5909 \pm 0.0051$ (+0.3 $\sigma$ )
$A_{143}^{dustTT}$	11.05	$11.0 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246758	$0.246750^{+0.000055}_{-0.000050}$ (+0.9 $\sigma$ )	$f\sigma_8(2.33)$	0.29810	$0.2980 \pm 0.0026$ (+0.3 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.96	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5682	$2.572 \pm 0.026$ (−0.9 $\sigma$ )	$\sigma_8(2.33)$	0.30737	$0.3072 \pm 0.0026$ (+0.3 $\sigma$ )
$A_{217}^{dustTT}$	95.0	$93.4 \pm 7.1$ (+0.0 $\sigma$ )	Age/Gyr	13.7823	$13.784 \pm 0.021$ (−0.6 $\sigma$ )	$f_{2000}^{143}$	29.26	$30.4 \pm 3.2$ (−0.4 $\sigma$ )
$A_{100}^{dustTE}$	0.1138	$0.115 \pm 0.038$	$z_*$	1089.739	$1089.77 \pm 0.23$ (−0.7 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.34	$32.8 \pm 2.1$ (−0.4 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1340	$0.134 \pm 0.030$	$r_*$	144.543	$144.53 \pm 0.24$ (−0.8 $\sigma$ )	$f_{2000}^{217}$	106.86	$107.6 \pm 2.0$ (−0.3 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.484	$0.480 \pm 0.086$	$100\theta_*$	1.041184	$1.04119 \pm 0.00029$ (−0.0 $\sigma$ )	$\chi_{small}^2$	396.37	$397.4 \pm 2.2$ (+0.1 $\sigma$ )
$A_{143}^{dustTE}$	0.225	$0.224 \pm 0.054$	$D_M(z_*)/Gpc$	13.8826	$13.881 \pm 0.023$ (−0.7 $\sigma$ )	$\chi_{lowl}^2$	22.10	$22.3 \pm 1.5$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.662	$0.661 \pm 0.080$	$z_{drag}$	1060.085	$1060.07 \pm 0.30$ (+1.0 $\sigma$ )	$\chi_{plik}^2$	2345.8	$2360.9 \pm 5.9$ (+279.9 $\sigma$ )
$A_{217}^{dustTE}$	2.081	$2.08 \pm 0.26$	$r_{drag}$	147.177	$147.17 \pm 0.25$ (−0.9 $\sigma$ )	$\chi_{6DF}^2$	0.0289	$0.060 \pm 0.069$ (+0.0 $\sigma$ )
$c_{100}$	0.99973	$0.99969 \pm 0.00061$ (+0.1 $\sigma$ )	$k_D$	0.140851	$0.14085 \pm 0.00030$ (+1.0 $\sigma$ )	$\chi_{MGS}^2$	1.217	$1.23 \pm 0.42$ (−0.2 $\sigma$ )
$c_{217}$	0.99819	$0.99822 \pm 0.00061$ (−0.1 $\sigma$ )	$100\theta_D$	0.160664	$0.16069 \pm 0.00018$ (−1.0 $\sigma$ )	$\chi_{DR12BAO}^2$	4.42	$5.0 \pm 1.5$ (+0.1 $\sigma$ )
$H_0$	67.712	$67.66 \pm 0.45$ (+0.0 $\sigma$ )	$z_{eq}$	3387.4	$3390 \pm 23$ (+0.5 $\sigma$ )	$\chi_{prior}^2$	1.70	$11.6 \pm 4.6$ (+1.1 $\sigma$ )
$\Omega_\Lambda$	0.6894	$0.6887 \pm 0.0061$ (−0.2 $\sigma$ )	$k_{eq}$	0.010339	$0.010345 \pm 0.000070$ (+0.5 $\sigma$ )	$\chi_{BAO}^2$	5.67	$6.3 \pm 1.2$ (+0.1 $\sigma$ )
$\Omega_m$	0.3106	$0.3113 \pm 0.0061$ (+0.2 $\sigma$ )	$100\theta_{eq}$	0.81628	$0.8159 \pm 0.0043$ (−0.4 $\sigma$ )	$\chi_{CMB}^2$	2764.3	$2780.6 \pm 5.8$ (+285.1 $\sigma$ )
$\Omega_m h^2$	0.14240	$0.14249 \pm 0.00096$ (+0.5 $\sigma$ )	$100\theta_{s,eq}$	0.45087	$0.4507 \pm 0.0022$ (−0.4 $\sigma$ )			
$\Omega_m h^3$	0.096420	$0.09641 \pm 0.00031$ (+0.9 $\sigma$ )	$H(0.15)$	72.988	$72.95 \pm 0.39$ (+0.1 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2771.68$ ;  $\Delta\chi_{eff}^2 = 1585.97$ ;  $\bar{\chi}_{eff}^2 = 2798.48$ ;  $\Delta\bar{\chi}_{eff}^2 = 1592.01$ ;  $R - 1 = 0.02043$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.03 ( $\Delta$  0.01) MGS: 1.22 ( $\Delta$  -0.06) DR12BAO: 4.42 ( $\Delta$  0.22) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.37 ( $\Delta$  0.29) commander\_dx12\_v3\_2\_29: 22.11 ( $\Delta$  -0.02) plik\_rd12\_HM\_v22b\_TTTEEE: 2345.83



### 12.13 base\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022396	$0.02240 \pm 0.00015$ (+1.0 $\sigma$ )	$\Omega_m h^3$	0.096378	$0.09639 \pm 0.00030$ (+0.9 $\sigma$ )	$100\theta_{s,eq}$	0.44926	$0.4492 \pm 0.0026$ (−0.0 $\sigma$ )
$\Omega_c h^2$	0.12003	$0.1200 \pm 0.0012$ (−0.1 $\sigma$ )	$\sigma_8$	0.8113	$0.8113 \pm 0.0061$ (+0.1 $\sigma$ )	$H(0.15)$	72.687	$72.69 \pm 0.45$ (+0.4 $\sigma$ )
$100\theta_{MC}$	1.040911	$1.04092 \pm 0.00031$ (+0.2 $\sigma$ )	$S_8$	0.8317	$0.832 \pm 0.013$ (−0.1 $\sigma$ )	$D_M(0.15)$	643.31	$643.3 \pm 4.5$ (−0.4 $\sigma$ )
$\tau$	0.0546	$0.0553 \pm 0.0075$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4555	$0.4557 \pm 0.0070$ (−0.1 $\sigma$ )	$H(0.38)$	82.875	$82.88 \pm 0.33$ (+0.5 $\sigma$ )
$\ln(10^{10} A_s)$	3.0457	$3.047 \pm 0.015$ (+0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6079	$0.6080 \pm 0.0064$ (−0.1 $\sigma$ )	$D_M(0.38)$	1533.3	$1533.3 \pm 9.1$ (−0.4 $\sigma$ )
$n_s$	0.96500	$0.9641 \pm 0.0044$ (+0.2 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9885	$0.9886 \pm 0.0092$ (−0.1 $\sigma$ )	$H(0.51)$	89.637	$89.64 \pm 0.27$ (+0.6 $\sigma$ )
$dn_s/d \ln k$	−0.0025	$−0.0045 \pm 0.0067$ (−0.2 $\sigma$ )	$r_{drag} h$	99.06	$99.06 \pm 0.91$ (+0.2 $\sigma$ )	$D_M(0.51)$	1985.7	$1986 \pm 11$ (−0.4 $\sigma$ )
$y_{cal}$	1.00056	$1.0007 \pm 0.0025$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4413	$2.441 \pm 0.023$ (−0.1 $\sigma$ )	$H(0.61)$	95.290	$95.30 \pm 0.22$ (+0.6 $\sigma$ )
$A_{217}^{CIB}$	48.9	$48 \pm 7$ (−0.1 $\sigma$ )	$z_{re}$	7.71	$7.76 \pm 0.74$ (+0.2 $\sigma$ )	$D_M(0.61)$	2310.1	$2310 \pm 11$ (−0.4 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.23	—	$10^9 A_s$	2.1024	$2.106 \pm 0.031$ (+0.3 $\sigma$ )	$H(2.33)$	236.61	$236.62 \pm 0.71$ (+0.1 $\sigma$ )
$A_{143}^{tSZ}$	7.27	$5.2_{-2.0}^{+2.2}$ (+0.1 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8848	$1.886 \pm 0.011$ (+0.2 $\sigma$ )	$D_M(2.33)$	5762.7	$5762 \pm 10$ (−0.7 $\sigma$ )
$A_{100}^{PS}$	253.5	$263 \pm 28$ (−0.1 $\sigma$ )	$D_{40}$	1225.1	$1222 \pm 18$ (−0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4598	$0.4599 \pm 0.0065$ (−0.1 $\sigma$ )
$A_{143}^{PS}$	45.9	$47 \pm 8$ (−0.3 $\sigma$ )	$D_{220}$	5733.4	$5735 \pm 39$ (+0.4 $\sigma$ )	$\sigma_8(0.15)$	0.7493	$0.7493 \pm 0.0054$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{PS}$	42.9	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{810}$	2541.0	$2541 \pm 13$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4773	$0.4774 \pm 0.0053$ (−0.1 $\sigma$ )
$A_{217}^{PS}$	117.7	$115 \pm 10$ (−0.0 $\sigma$ )	$D_{1420}$	817.32	$816.4 \pm 4.9$ (+0.4 $\sigma$ )	$\sigma_8(0.38)$	0.66376	$0.6638 \pm 0.0048$ (+0.2 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.86$ (−0.1 $\sigma$ )	$D_{2000}$	230.77	$230.3 \pm 1.8$ (+0.5 $\sigma$ )	$f\sigma_8(0.51)$	0.47547	$0.4755 \pm 0.0046$ (−0.0 $\sigma$ )
$A_{100}^{dustTT}$	8.90	$8.9 \pm 1.8$ (−0.1 $\sigma$ )	$n_{s,0.002}$	0.9729	$0.979 \pm 0.021$ (+0.3 $\sigma$ )	$\sigma_8(0.51)$	0.62100	$0.6210 \pm 0.0045$ (+0.2 $\sigma$ )
$A_{143}^{dustTT}$	11.01	$11.0 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P$	0.245406	$0.245405_{-0.000053}^{+0.000060}$ (+0.9 $\sigma$ )	$f\sigma_8(0.61)$	0.47019	$0.4702 \pm 0.0042$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.55	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246732	$0.246731_{-0.000053}^{+0.000060}$ (+0.9 $\sigma$ )	$\sigma_8(0.61)$	0.59079	$0.5908 \pm 0.0043$ (+0.3 $\sigma$ )
$A_{217}^{dustTT}$	94.5	$93.5 \pm 7.3$ (+0.0 $\sigma$ )	$10^5 D/H$	2.5806	$2.581 \pm 0.027$ (−1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.29773	$0.2977 \pm 0.0022$ (+0.3 $\sigma$ )
$A_{100}^{dustTE}$	0.1156	$0.115 \pm 0.038$	Age/Gyr	13.7951	$13.795 \pm 0.023$ (−0.8 $\sigma$ )	$\sigma_8(2.33)$	0.30678	$0.3068 \pm 0.0024$ (+0.3 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1344	$0.134 \pm 0.029$	$z_*$	1089.890	$1089.89 \pm 0.25$ (−0.8 $\sigma$ )	$f_{2000}^{143}$	29.67	$30.6 \pm 3.2$ (−0.4 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.481	$0.481 \pm 0.085$	$r_*$	144.402	$144.40 \pm 0.26$ (−0.4 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.55	$33.0 \pm 2.2$ (−0.4 $\sigma$ )
$A_{143}^{dustTE}$	0.225	$0.224 \pm 0.054$	$100\theta_*$	1.041095	$1.04110 \pm 0.00031$ (+0.2 $\sigma$ )	$f_{2000}^{217}$	107.20	$107.7 \pm 2.0$ (−0.4 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.665	$0.663 \pm 0.080$	$D_M(z_*)/\text{Gpc}$	13.8702	$13.870 \pm 0.025$ (−0.4 $\sigma$ )	$\chi_{lensing}^2$	8.89	$9.43 \pm 0.79$ (−0.2 $\sigma$ )
$A_{217}^{dustTE}$	2.083	$2.08 \pm 0.27$	$z_{drag}$	1060.009	$1060.00 \pm 0.31$ (+1.0 $\sigma$ )	$\chi_{simall}^2$	396.06	$397.1 \pm 1.7$ (+0.1 $\sigma$ )
$c_{100}$	0.99971	$0.99968 \pm 0.00061$ (+0.1 $\sigma$ )	$r_{drag}$	147.052	$147.05 \pm 0.27$ (−0.5 $\sigma$ )	$\chi_{lowl}^2$	22.71	$22.7 \pm 1.7$ (−0.3 $\sigma$ )
$c_{217}$	0.99821	$0.99823 \pm 0.00061$ (−0.1 $\sigma$ )	$k_D$	0.140928	$0.14093 \pm 0.00031$ (+0.8 $\sigma$ )	$\chi_{plik}^2$	2345.0	$2360.5 \pm 5.8$ (+287.9 $\sigma$ )
$H_0$	67.36	$67.36 \pm 0.53$ (+0.4 $\sigma$ )	$100\theta_D$	0.160720	$0.16072 \pm 0.00018$ (−1.0 $\sigma$ )	$\chi_{prior}^2$	1.79	$11.6 \pm 4.6$ (+1.1 $\sigma$ )
$\Omega_\Lambda$	0.6847	$0.6846 \pm 0.0073$ (+0.2 $\sigma$ )	$z_{eq}$	3403.7	$3404 \pm 27$ (+0.1 $\sigma$ )	$\chi_{CMB}^2$	2772.6	$2789.7 \pm 5.9$ (+283.5 $\sigma$ )
$\Omega_m$	0.3153	$0.3154 \pm 0.0073$ (−0.2 $\sigma$ )	$k_{eq}$	0.010388	$0.010390 \pm 0.000081$ (+0.1 $\sigma$ )			
$\Omega_m h^2$	0.14308	$0.1431 \pm 0.0011$ (+0.1 $\sigma$ )	$100\theta_{eq}$	0.8131	$0.8131 \pm 0.0050$ (+0.0 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2774.42$ ;  $\Delta\chi_{eff}^2 = 1585.95$ ;  $\bar{\chi}_{eff}^2 = 2801.27$ ;  $\Delta\bar{\chi}_{eff}^2 = 1592.00$ ;  $R - 1 = 0.02010$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8: 8.89 ( $\Delta$  -0.04) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.06 ( $\Delta$  0.18) commander\_dx12\_v3.2.29: 22.71 ( $\Delta$  -0.42) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.96



## 12.14 base\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022447	$0.02245 \pm 0.00014$ (+0.9 $\sigma$ )	$\sigma_8$	0.8101	$0.8104 \pm 0.0060$ (+0.2 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	640.44	$640.7 \pm 3.6$ (−0.2 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11930	$0.11937 \pm 0.00092$ (+0.3 $\sigma$ )	$S_8$	0.8245	$0.825 \pm 0.011$ (+0.2 $\sigma$ )	$H(0.38)$	83.082	$83.07 \pm 0.27$ (+0.3 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.041029	$1.04101 \pm 0.00030$ (+0.0 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4516	$0.4520 \pm 0.0058$ (+0.2 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1527.6	$1528.1 \pm 7.2$ (−0.2 $\sigma$ )
$\tau$	0.0565	$0.0570^{+0.0068}_{-0.0076}$ (+0.1 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6048	$0.6052 \pm 0.0058$ (+0.2 $\sigma$ )	$H(0.51)$	89.798	$89.79 \pm 0.22$ (+0.4 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0482	$3.049 \pm 0.015$ (+0.2 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9846	$0.9851 \pm 0.0085$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1979.0	$1979.6 \pm 8.5$ (−0.2 $\sigma$ )
$n_{\mathrm{s}}$	0.96692	$0.9659 \pm 0.0040$ (+0.0 $\sigma$ )	$r_{\mathrm{drag}}h$	99.65	$99.59 \pm 0.71$ (−0.1 $\sigma$ )	$H(0.61)$	95.415	$95.41 \pm 0.18$ (+0.5 $\sigma$ )
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	−0.0033	$−0.0041 \pm 0.0067$ (−0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4307	$2.433 \pm 0.022$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2302.9	$2303.6 \pm 9.1$ (−0.2 $\sigma$ )
$y_{\mathrm{cal}}$	1.00058	$1.0008 \pm 0.0025$ (+0.0 $\sigma$ )	$z_{\mathrm{re}}$	7.88	$7.91 \pm 0.72$ (+0.1 $\sigma$ )	$H(2.33)$	236.19	$236.23 \pm 0.56$ (+0.5 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	48.6	$47 \pm 7$ (−0.1 $\sigma$ )	$10^9 A_{\mathrm{s}}$	2.1077	$2.111 \pm 0.032$ (+0.2 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5757.3	$5757.7 \pm 8.9$ (−0.6 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.31	—	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8823	$1.883 \pm 0.011$ (+0.3 $\sigma$ )	$f\sigma_8(0.15)$	0.4562	$0.4566 \pm 0.0055$ (+0.2 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	7.22	$5.3^{+2.3}_{-1.9}$ (+0.1 $\sigma$ )	$D_{40}$	1219.2	$1220 \pm 18$ (−0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7487	$0.7489 \pm 0.0055$ (+0.2 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	252.7	$262 \pm 29$ (−0.1 $\sigma$ )	$D_{220}$	5735.2	$5739 \pm 38$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.47474	$0.4751 \pm 0.0047$ (+0.2 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	46.9	$47 \pm 8$ (−0.3 $\sigma$ )	$D_{810}$	2541.3	$2541 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.66374	$0.6639 \pm 0.0048$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	44.8	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{1420}$	817.87	$817.1 \pm 4.8$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.47343	$0.4737 \pm 0.0042$ (+0.2 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	118.2	$114 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	230.96	$230.6 \pm 1.7$ (+0.5 $\sigma$ )	$\sigma_8(0.51)$	0.62119	$0.6213 \pm 0.0045$ (+0.2 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.01	$< 4.69$ (−0.1 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.9776	$0.979 \pm 0.021$ (+0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.46852	$0.4687 \pm 0.0040$ (+0.2 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.93	$8.9 \pm 1.8$ (−0.1 $\sigma$ )	$Y_{\mathrm{P}}$	0.245425	$0.245423^{+0.000055}_{-0.000049}$ (+0.9 $\sigma$ )	$\sigma_8(0.61)$	0.59110	$0.5912 \pm 0.0043$ (+0.2 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	11.07	$11.0 \pm 1.8$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246752	$0.246750^{+0.000055}_{-0.000049}$ (+0.9 $\sigma$ )	$f\sigma_8(2.33)$	0.29807	$0.2981 \pm 0.0022$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.70	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 \mathrm{D}/\mathrm{H}$	2.5712	$2.572 \pm 0.025$ (−0.9 $\sigma$ )	$\sigma_8(2.33)$	0.30733	$0.3073 \pm 0.0023$ (+0.2 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	94.6	$93.5 \pm 7.2$ (+0.0 $\sigma$ )	Age/Gyr	13.7835	$13.784 \pm 0.020$ (−0.7 $\sigma$ )	$f_{2000}^{143}$	29.48	$30.3 \pm 3.2$ (−0.4 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1152	$0.115 \pm 0.039$	$z_*$	1089.762	$1089.77 \pm 0.22$ (−0.7 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.45	$32.7 \pm 2.1$ (−0.4 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1352	$0.134 \pm 0.030$	$r_*$	144.552	$144.54 \pm 0.22$ (−0.7 $\sigma$ )	$f_{2000}^{217}$	107.07	$107.5 \pm 2.0$ (−0.3 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.483	$0.481 \pm 0.085$	$100\theta_*$	1.041204	$1.04118 \pm 0.00029$ (−0.0 $\sigma$ )	$\chi_{\mathrm{lensing}}^2$	8.839	$9.25 \pm 0.63$ (−0.1 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.224	$0.223 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8832	$13.882 \pm 0.021$ (−0.7 $\sigma$ )	$\chi_{\mathrm{simall}}^2$	396.36	$397.3 \pm 1.9$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.663	$0.661 \pm 0.080$	$z_{\mathrm{drag}}$	1060.047	$1060.07 \pm 0.30$ (+1.0 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	22.20	$22.5 \pm 1.6$ (−0.2 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.076	$2.08 \pm 0.26$	$r_{\mathrm{drag}}$	147.191	$147.17 \pm 0.23$ (−0.9 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2345.6	$2360.5 \pm 5.7$ (+288.0 $\sigma$ )
$c_{100}$	0.99970	$0.99968 \pm 0.00061$ (+0.1 $\sigma$ )	$k_{\mathrm{D}}$	0.140822	$0.14084 \pm 0.00029$ (+1.0 $\sigma$ )	$\chi_{6\mathrm{DF}}^2$	0.0296	$0.055 \pm 0.061$ (−0.0 $\sigma$ )
$c_{217}$	0.99821	$0.99822 \pm 0.00061$ (−0.1 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160691	$0.16069 \pm 0.00017$ (−1.0 $\sigma$ )	$\chi_{\mathrm{MGS}}^2$	1.217	$1.24 \pm 0.39$ (−0.1 $\sigma$ )
$H_0$	67.698	$67.67 \pm 0.42$ (+0.1 $\sigma$ )	$z_{\mathrm{eq}}$	3387.4	$3389 \pm 21$ (+0.4 $\sigma$ )	$\chi_{\mathrm{DR12BAO}}^2$	4.44	$4.9 \pm 1.3$ (+0.1 $\sigma$ )
$\Omega_{\Lambda}$	0.6893	$0.6888 \pm 0.0056$ (−0.1 $\sigma$ )	$k_{\mathrm{eq}}$	0.010339	$0.010343 \pm 0.000064$ (+0.4 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.81	$11.6 \pm 4.6$ (+1.1 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3107	$0.3112 \pm 0.0056$ (+0.1 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.81625	$0.8160 \pm 0.0039$ (−0.3 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	2773.0	$2789.6 \pm 5.8$ (+285.4 $\sigma$ )
$\Omega_{\mathrm{m}}h^2$	0.14240	$0.14246 \pm 0.00087$ (+0.4 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.45087	$0.4507 \pm 0.0020$ (−0.4 $\sigma$ )	$\chi_{\mathrm{BAO}}^2$	5.68	$6.2 \pm 1.1$ (+0.0 $\sigma$ )
$\Omega_{\mathrm{m}}h^3$	0.096400	$0.09640 \pm 0.00030$ (+0.9 $\sigma$ )	$H(0.15)$	72.975	$72.95 \pm 0.36$ (+0.2 $\sigma$ )			

Best-fit  $\chi_{\mathrm{eff}}^2 = 2780.51$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1585.88$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2807.32$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.98$ ;  $R - 1 = 0.02542$

$\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.03 ( $\Delta$  0.01) MGS: 1.22 ( $\Delta$  -0.06) DR12BAO: 4.43 ( $\Delta$  0.21) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.84 ( $\Delta$  -0.04) simall\_100x143\_offlike5\_EE\_Aplanck 396.36 ( $\Delta$  0.18) commander\_dx12.v3.2.29: 22.20 ( $\Delta$  -0.50) plik\_rd12\_HM.v22b.TTTEEE: 2345.61



12.15 base\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022521	$0.02252 \pm 0.00015$ (+0.5 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.096457	$0.09647 \pm 0.00031$ (+0.7 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.45223	$0.4522 \pm 0.0029$ (−0.8 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11866	$0.1187 \pm 0.0013$ (+0.7 $\sigma$ )	$\sigma_8$	0.8083	$0.8082 \pm 0.0080$ (+0.5 $\sigma$ )	$H(0.15)$	73.24	$73.24^{+0.48}_{-0.54}$ (−0.5 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.041104	$1.04112 \pm 0.00032$ (−0.3 $\sigma$ )	$S_8$	0.8172	$0.817 \pm 0.016$ (+0.7 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	637.79	$637.9 \pm 5.1$ (+0.5 $\sigma$ )
$\tau$	0.0574	$0.0577^{+0.0072}_{-0.0086}$ (+0.1 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4476	$0.4477 \pm 0.0089$ (+0.7 $\sigma$ )	$H(0.38)$	83.281	$83.28^{+0.35}_{-0.40}$ (−0.4 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0487	$3.049^{+0.016}_{-0.018}$ (+0.3 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6015	$0.6015 \pm 0.0086$ (+0.7 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1522.3	$1522^{+11}_{-9.6}$ (+0.5 $\sigma$ )
$n_{\mathrm{s}}$	0.96853	$0.9675 \pm 0.0046$ (−0.4 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9802	$0.980 \pm 0.012$ (+0.6 $\sigma$ )	$H(0.51)$	89.956	$89.96^{+0.27}_{-0.33}$ (−0.3 $\sigma$ )
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	−0.0037	$−0.0050 \pm 0.0068$ (−0.1 $\sigma$ )	$r_{\mathrm{drag}}h$	100.16	$100.2 \pm 1.0$ (−0.7 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1972.7	$1973^{+12}_{-11}$ (+0.4 $\sigma$ )
$y_{\mathrm{cal}}$	1.00065	$1.0007 \pm 0.0024$ (−0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4201	$2.420 \pm 0.029$ (+0.6 $\sigma$ )	$H(0.61)$	95.543	$95.55^{+0.22}_{-0.27}$ (−0.2 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	48.0	$47 \pm 7$ (−0.1 $\sigma$ )	$z_{\mathrm{re}}$	7.94	$7.95^{+0.74}_{-0.82}$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2296.2	$2296^{+14}_{-12}$ (+0.4 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.34	—	$10^9 A_{\mathrm{s}}$	2.1089	$2.111^{+0.033}_{-0.039}$ (+0.3 $\sigma$ )	$H(2.33)$	235.85	$235.88 \pm 0.79$ (+0.9 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	7.24	$5.3 \pm 2.0$ (+0.0 $\sigma$ )	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8800	$1.880 \pm 0.012$ (+0.5 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5751.7	$5752^{+12}_{-10}$ (−0.0 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	251.4	$261 \pm 28$ (−0.0 $\sigma$ )	$D_{40}$	1215.3	$1215 \pm 19$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4526	$0.4526 \pm 0.0084$ (+0.7 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	46.8	$46 \pm 8$ (−0.3 $\sigma$ )	$D_{220}$	5740.6	$5742 \pm 38$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7474	$0.7473 \pm 0.0071$ (+0.5 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	45.2	$41 \pm 9$ (−0.2 $\sigma$ )	$D_{810}$	2541.6	$2541 \pm 13$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.4720	$0.4719 \pm 0.0070$ (+0.7 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	118.4	$114 \pm 10$ (−0.0 $\sigma$ )	$D_{1420}$	818.56	$817.5 \pm 4.7$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6631	$0.6629^{+0.0056}_{-0.0063}$ (+0.4 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.00	$< 4.80$ (+0.0 $\sigma$ )	$D_{2000}$	231.23	$230.8 \pm 1.7$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.4711	$0.4711 \pm 0.0063$ (+0.7 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.90	$9.0 \pm 1.8$ (−0.1 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.9805	$0.984 \pm 0.021$ (+0.0 $\sigma$ )	$\sigma_8(0.51)$	0.6208	$0.6206 \pm 0.0055$ (+0.4 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	11.09	$11.0 \pm 1.8$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}$	0.245452	$0.245451 \pm 0.000057$ (+0.5 $\sigma$ )	$f\sigma_8(0.61)$	0.4666	$0.4665 \pm 0.0057$ (+0.6 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.84	$18.6 \pm 3.3$ (+0.0 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246779	$0.246778 \pm 0.000057$ (+0.5 $\sigma$ )	$\sigma_8(0.61)$	0.5908	$0.5906^{+0.0048}_{-0.0055}$ (+0.4 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	95.0	$93.6 \pm 7.2$ (−0.0 $\sigma$ )	$10^5 \mathrm{D}/\mathrm{H}$	2.5582	$2.559 \pm 0.027$ (−0.5 $\sigma$ )	$f\sigma_8(2.33)$	0.29808	$0.2980^{+0.0023}_{-0.0027}$ (+0.3 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1135	$0.115 \pm 0.039$	Age/Gyr	13.7712	$13.771^{+0.027}_{-0.023}$ (−0.1 $\sigma$ )	$\sigma_8(2.33)$	0.30752	$0.3074^{+0.0024}_{-0.0028}$ (+0.1 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1355	$0.134 \pm 0.030$	$z_*$	1089.614	$1089.62 \pm 0.27$ (−0.1 $\sigma$ )	$f_{2000}^{143}$	29.21	$30.0 \pm 3.1$ (−0.3 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.480	$0.480 \pm 0.086$	$r_*$	144.662	$144.65 \pm 0.30$ (−1.0 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.18	$32.5 \pm 2.1$ (−0.4 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.224	$0.223 \pm 0.054$	$100\theta_*$	1.041268	$1.04129 \pm 0.00031$ (−0.3 $\sigma$ )	$f_{2000}^{217}$	106.82	$107.4 \pm 2.0$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.663	$0.656 \pm 0.081$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8929	$13.892 \pm 0.028$ (−0.9 $\sigma$ )	$\chi_{\mathrm{simall}}^2$	396.48	$397.5 \pm 2.4$ (+0.1 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.065	$2.07 \pm 0.26$	$z_{\mathrm{drag}}$	1060.200	$1060.19 \pm 0.31$ (+0.7 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	21.87	$22.1 \pm 1.5$ (+0.1 $\sigma$ )
$c_{100}$	0.99972	$0.99971 \pm 0.00061$ (+0.2 $\sigma$ )	$r_{\mathrm{drag}}$	147.277	$147.27 \pm 0.30$ (−1.0 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2346.8	$2362.4 \pm 6.5$ (+251.7 $\sigma$ )
$c_{217}$	0.99821	$0.99824 \pm 0.00062$ (+0.0 $\sigma$ )	$k_{\mathrm{D}}$	0.140785	$0.14079 \pm 0.00033$ (+1.1 $\sigma$ )	$\chi_{\mathrm{H073p45}}^2$	10.74	$10.9 \pm 2.4$ (+0.5 $\sigma$ )
$H_0$	68.01	$68.00 \pm 0.60$ (−0.5 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160621	$0.16063 \pm 0.00018$ (−0.8 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.81	$11.7 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_{\Lambda}$	0.6934	$0.6931 \pm 0.0080$ (−0.6 $\sigma$ )	$z_{\mathrm{eq}}$	3373.8	$3375 \pm 30$ (+0.8 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	2765.2	$2782.1 \pm 6.4$ (+259.0 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3066	$0.3069 \pm 0.0080$ (+0.6 $\sigma$ )	$k_{\mathrm{eq}}$	0.010297	$0.010300 \pm 0.000091$ (+0.8 $\sigma$ )			
$\Omega_{\mathrm{m}}h^2$	0.14183	$0.1419 \pm 0.0012$ (+0.8 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8190	$0.8188 \pm 0.0057$ (−0.8 $\sigma$ )			

Best-fit  $\chi_{\mathrm{eff}}^2 = 2777.71$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1586.22$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2804.64$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.48$ ;  $R - 1 = 0.04323$   
 $\chi_{\mathrm{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck.B: 396.48 ( $\Delta$  0.28) commander\_dx12\_v3.2.29: 21.87 ( $\Delta$  0.03) plik\_rd12\_HM\_v22b\_TTTEEE: 2346.81 Hubble - H073p45: 10.74 ( $\Delta$  1.54)



## 12.16 base\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02239 \pm 0.00015 \quad (+1.0\sigma)$	$\Omega_{\text{m}}h^2$	$0.1434 \pm 0.0013 \quad (-0.1\sigma)$	$k_{\text{eq}}$	$0.010408 \pm 0.000094 \quad (-0.1\sigma)$
$\Omega_{\text{c}}h^2$	$0.1203 \pm 0.0014 \quad (-0.2\sigma)$	$\Omega_{\text{m}}h^3$	$0.09641 \pm 0.00031 \quad (+0.8\sigma)$	$100\theta_{\text{eq}}$	$0.8120 \pm 0.0057 \quad (+0.1\sigma)$
$100\theta_{\text{MC}}$	$1.04090 \pm 0.00032 \quad (+0.2\sigma)$	$\sigma_8$	$0.8133 \pm 0.0074 \quad (-0.0\sigma)$	$100\theta_{\text{s,eq}}$	$0.4487 \pm 0.0029 \quad (+0.1\sigma)$
$\tau$	$0.0567^{+0.0058}_{-0.0084} \quad (+0.3\sigma)$	$S_8$	$0.836 \pm 0.016 \quad (-0.2\sigma)$	$H(0.15)$	$72.60 \pm 0.51 \quad (+0.4\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.051^{+0.014}_{-0.017} \quad (+0.3\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4579 \pm 0.0090 \quad (-0.2\sigma)$	$D_{\text{M}}(0.15)$	$644.2 \pm 5.2 \quad (-0.4\sigma)$
$n_{\text{s}}$	$0.9636 \pm 0.0046 \quad (+0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6103 \pm 0.0084 \quad (-0.2\sigma)$	$H(0.38)$	$82.82 \pm 0.37 \quad (+0.5\sigma)$
$\text{d}n_{\text{s}}/\text{d} \ln k$	$-0.0056 \pm 0.0067 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.992 \pm 0.012 \quad (-0.2\sigma)$	$D_{\text{M}}(0.38)$	$1535 \pm 10 \quad (-0.4\sigma)$
$y_{\text{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$r_{\text{drag}}h$	$98.9 \pm 1.0 \quad (+0.2\sigma)$	$H(0.51)$	$89.60 \pm 0.29 \quad (+0.5\sigma)$
$A_{217}^{\text{CIB}}$	$48 \pm 7 \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.446 \pm 0.029 \quad (-0.2\sigma)$	$D_{\text{M}}(0.51)$	$1988 \pm 12 \quad (-0.4\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$z_{\text{re}}$	$7.91^{+0.63}_{-0.82} \quad (+0.2\sigma)$	$H(0.61)$	$95.26 \pm 0.24 \quad (+0.6\sigma)$
$A_{143}^{\text{tSZ}}$	$5.2 \pm 2.0 \quad (+0.1\sigma)$	$10^9 A_{\text{s}}$	$2.114^{+0.028}_{-0.036} \quad (+0.3\sigma)$	$D_{\text{M}}(0.61)$	$2312 \pm 13 \quad (-0.4\sigma)$
$A_{100}^{\text{PS}}$	$263 \pm 28 \quad (-0.1\sigma)$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.887 \pm 0.012 \quad (+0.1\sigma)$	$H(2.33)$	$236.79 \pm 0.82 \quad (-0.0\sigma)$
$A_{143}^{\text{PS}}$	$48 \pm 8 \quad (-0.3\sigma)$	$D_{40}$	$1221 \pm 19 \quad (-0.1\sigma)$	$D_{\text{M}}(2.33)$	$5764 \pm 11 \quad (-0.7\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{220}$	$5733 \pm 39 \quad (+0.5\sigma)$	$f\sigma_8(0.15)$	$0.4621 \pm 0.0084 \quad (-0.2\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (-0.0\sigma)$	$D_{810}$	$2542 \pm 14 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7510 \pm 0.0064 \quad (+0.0\sigma)$
$A^{\text{kSZ}}$	$< 4.84 \quad (-0.1\sigma)$	$D_{1420}$	$816.2 \pm 4.9 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4792 \pm 0.0068 \quad (-0.2\sigma)$
$A_{100}^{\text{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$D_{2000}$	$230.2 \pm 1.8 \quad (+0.5\sigma)$	$\sigma_8(0.38)$	$0.6651^{+0.0050}_{-0.0056} \quad (+0.1\sigma)$
$A_{143}^{\text{dust}TT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$n_{\text{s},0.002}$	$0.982 \pm 0.021 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4772 \pm 0.0060 \quad (-0.1\sigma)$
$A_{143 \times 217}^{\text{dust}TT}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.245401^{+0.000062}_{-0.000055} \quad (+0.9\sigma)$	$\sigma_8(0.51)$	$0.6222^{+0.0045}_{-0.0052} \quad (+0.2\sigma)$
$A_{217}^{\text{dust}TT}$	$93.5 \pm 7.3 \quad (+0.0\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246727^{+0.000062}_{-0.000055} \quad (+0.9\sigma)$	$f\sigma_8(0.61)$	$0.4717 \pm 0.0054 \quad (-0.1\sigma)$
$A_{100}^{\text{dust}TE}$	$0.115 \pm 0.038$	$10^5 \text{D}/\text{H}$	$2.583 \pm 0.028 \quad (-0.9\sigma)$	$\sigma_8(0.61)$	$0.5919^{+0.0042}_{-0.0049} \quad (+0.2\sigma)$
$A_{100 \times 143}^{\text{dust}TE}$	$0.134 \pm 0.029$	Age/Gyr	$13.797 \pm 0.024 \quad (-0.7\sigma)$	$f\sigma_8(2.33)$	$0.2982^{+0.0020}_{-0.0025} \quad (+0.2\sigma)$
$A_{100 \times 217}^{\text{dust}TE}$	$0.482 \pm 0.085$	$z_*$	$1089.93 \pm 0.27 \quad (-0.8\sigma)$	$\sigma_8(2.33)$	$0.3072^{+0.0020}_{-0.0026} \quad (+0.3\sigma)$
$A_{143}^{\text{dust}TE}$	$0.224 \pm 0.053$	$r_*$	$144.34 \pm 0.30 \quad (-0.2\sigma)$	$f_{2000}^{143}$	$30.7 \pm 3.1 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\text{dust}TE}$	$0.665 \pm 0.080$	$100\theta_*$	$1.04108 \pm 0.00031 \quad (+0.2\sigma)$	$f_{2000}^{143 \times 217}$	$33.1 \pm 2.2 \quad (-0.5\sigma)$
$A_{217}^{\text{dust}TE}$	$2.09 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.864 \pm 0.028 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$107.8 \pm 2.0 \quad (-0.4\sigma)$
$c_{100}$	$0.99969 \pm 0.00061 \quad (+0.1\sigma)$	$z_{\text{drag}}$	$1060.00 \pm 0.31 \quad (+1.0\sigma)$	$\chi_{\text{small}}^2$	$397.3 \pm 2.0 \quad (+0.2\sigma)$
$c_{217}$	$0.99822 \pm 0.00062 \quad (-0.1\sigma)$	$r_{\text{drag}}$	$146.99 \pm 0.30 \quad (-0.3\sigma)$	$\chi_{\text{lowl}}^2$	$22.6 \pm 1.6 \quad (-0.2\sigma)$
$H_0$	$67.26 \pm 0.60 \quad (+0.4\sigma)$	$k_{\text{D}}$	$0.14099 \pm 0.00033 \quad (+0.6\sigma)$	$\chi_{\text{plik}}^2$	$2360.7 \pm 5.9 \quad (+278.6\sigma)$
$\Omega_{\Lambda}$	$0.6830 \pm 0.0084 \quad (+0.3\sigma)$	$100\theta_{\text{D}}$	$0.16072 \pm 0.00018 \quad (-1.0\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.5 \quad (+1.1\sigma)$
$\Omega_{\text{m}}$	$0.3170 \pm 0.0084 \quad (-0.3\sigma)$	$z_{\text{eq}}$	$3410 \pm 31 \quad (-0.1\sigma)$	$\chi_{\text{CMB}}^2$	$2780.5 \pm 5.9 \quad (+286.2\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 2792.02; \Delta\bar{\chi}_{\text{eff}}^2 = 1592.05; R - 1 = 0.01357$$



# 12.17 base\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02245 \pm 0.00014 \quad (+0.9\sigma)$	$\sigma_8$	$0.8107 \pm 0.0071 \quad (+0.3\sigma)$	$D_{\mathrm{M}}(0.15)$	$640.7 \pm 3.8 \quad (-0.0\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1194 \pm 0.0010 \quad (+0.3\sigma)$	$S_8$	$0.826 \pm 0.013 \quad (+0.3\sigma)$	$H(0.38)$	$83.07 \pm 0.29 \quad (+0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04101 \pm 0.00030 \quad (+0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4522 \pm 0.0071 \quad (+0.3\sigma)$	$D_{\mathrm{M}}(0.38)$	$1528.1 \pm 7.7 \quad (-0.1\sigma)$
$\tau$	$0.0575^{+0.0060}_{-0.0086} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6055 \pm 0.0071 \quad (+0.3\sigma)$	$H(0.51)$	$89.79 \pm 0.23 \quad (+0.3\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.050^{+0.014}_{-0.018} \quad (+0.3\sigma)$	$\sigma_8/h^{0.5}$	$0.986 \pm 0.010 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1979.6 \pm 9.1 \quad (-0.1\sigma)$
$n_{\mathrm{s}}$	$0.9659 \pm 0.0041 \quad (-0.0\sigma)$	$r_{\mathrm{drag}}h$	$99.59 \pm 0.78 \quad (-0.2\sigma)$	$H(0.61)$	$95.41 \pm 0.19 \quad (+0.4\sigma)$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0050 \pm 0.0068 \quad (-0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.433 \pm 0.026 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.61)$	$2303.6 \pm 9.8 \quad (-0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$z_{\mathrm{re}}$	$7.96^{+0.65}_{-0.84} \quad (+0.1\sigma)$	$H(2.33)$	$236.24 \pm 0.62 \quad (+0.6\sigma)$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}}$	$2.113^{+0.029}_{-0.038} \quad (+0.3\sigma)$	$D_{\mathrm{M}}(2.33)$	$5757.6 \pm 9.2 \quad (-0.6\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.883 \pm 0.011 \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4568 \pm 0.0067 \quad (+0.3\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.2^{+2.2}_{-1.9} \quad (+0.1\sigma)$	$D_{40}$	$1218 \pm 18 \quad (+0.0\sigma)$	$\sigma_8(0.15)$	$0.7491 \pm 0.0064 \quad (+0.3\sigma)$
$A_{100}^{\mathrm{PS}}$	$262 \pm 28 \quad (-0.1\sigma)$	$D_{220}$	$5737 \pm 38 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4752 \pm 0.0057 \quad (+0.3\sigma)$
$A_{143}^{\mathrm{PS}}$	$47 \pm 8 \quad (-0.3\sigma)$	$D_{810}$	$2541 \pm 13 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6641^{+0.0050}_{-0.0058} \quad (+0.3\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$816.9 \pm 4.8 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4739 \pm 0.0052 \quad (+0.3\sigma)$
$A_{217}^{\mathrm{PS}}$	$114 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$230.5 \pm 1.7 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.6215^{+0.0046}_{-0.0054} \quad (+0.3\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.72 \quad (-0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.982 \pm 0.021 \quad (+0.2\sigma)$	$f\sigma_8(0.61)$	$0.4689 \pm 0.0048 \quad (+0.3\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245424^{+0.000055}_{-0.000049} \quad (+0.9\sigma)$	$\sigma_8(0.61)$	$0.5914^{+0.0043}_{-0.0051} \quad (+0.3\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$11.0 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246751^{+0.000056}_{-0.000050} \quad (+0.9\sigma)$	$f\sigma_8(2.33)$	$0.2982^{+0.0021}_{-0.0026} \quad (+0.3\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.571 \pm 0.026 \quad (-0.9\sigma)$	$\sigma_8(2.33)$	$0.3074^{+0.0022}_{-0.0027} \quad (+0.2\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.4 \pm 7.1 \quad (+0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.784 \pm 0.021 \quad (-0.6\sigma)$	$f_{2000}^{143}$	$30.4 \pm 3.2 \quad (-0.4\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.115 \pm 0.038$	$z_*$	$1089.77 \pm 0.23 \quad (-0.7\sigma)$	$f_{2000}^{143 \times 217}$	$32.8 \pm 2.1 \quad (-0.4\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.134 \pm 0.030$	$r_*$	$144.53 \pm 0.24 \quad (-0.8\sigma)$	$f_{2000}^{217}$	$107.6 \pm 2.0 \quad (-0.3\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.480 \pm 0.086$	$100\theta_*$	$1.04119 \pm 0.00029 \quad (-0.0\sigma)$	$\chi_{\mathrm{small}}^2$	$397.4 \pm 2.2 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.224 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.881 \pm 0.023 \quad (-0.7\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.3 \pm 1.5 \quad (-0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.662 \pm 0.080$	$z_{\mathrm{drag}}$	$1060.07 \pm 0.30 \quad (+1.0\sigma)$	$\chi_{\mathrm{plik}}^2$	$2360.8 \pm 5.9 \quad (+280.7\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.26$	$r_{\mathrm{drag}}$	$147.17 \pm 0.25 \quad (-0.9\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.059 \pm 0.068 \quad (+0.0\sigma)$
$c_{100}$	$0.99968 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.14085 \pm 0.00030 \quad (+1.0\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.24 \pm 0.42 \quad (-0.2\sigma)$
$c_{217}$	$0.99823 \pm 0.00061 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16068 \pm 0.00018 \quad (-1.0\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 \pm 1.5 \quad (+0.1\sigma)$
$H_0$	$67.67 \pm 0.45 \quad (+0.0\sigma)$	$z_{\mathrm{eq}}$	$3389 \pm 23 \quad (+0.5\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.6 \pm 4.6 \quad (+1.1\sigma)$
$\Omega_{\Lambda}$	$0.6888 \pm 0.0061 \quad (-0.2\sigma)$	$k_{\mathrm{eq}}$	$0.010345 \pm 0.000070 \quad (+0.5\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.2 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3112 \pm 0.0061 \quad (+0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8159 \pm 0.0043 \quad (-0.4\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2780.5 \pm 5.7 \quad (+288.9\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14248 \pm 0.00096 \quad (+0.5\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4507 \pm 0.0022 \quad (-0.4\sigma)$		
$\Omega_{\mathrm{m}}h^3$	$0.09641 \pm 0.00031 \quad (+0.8\sigma)$	$H(0.15)$	$72.95 \pm 0.39 \quad (+0.1\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2798.32; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.10; R - 1 = 0.02163$$



# 12.18 base\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02240 \pm 0.00015 \quad (+0.9\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09639 \pm 0.00030 \quad (+0.9\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4493 \pm 0.0025 \quad (-0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1200 \pm 0.0012 \quad (-0.0\sigma)$	$\sigma_8$	$0.8118 \pm 0.0058 \quad (+0.1\sigma)$	$H(0.15)$	$72.71 \pm 0.45 \quad (+0.3\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04093 \pm 0.00031 \quad (+0.2\sigma)$	$S_8$	$0.832 \pm 0.013 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$643.2 \pm 4.5 \quad (-0.3\sigma)$
$\tau$	$0.0561^{+0.0055}_{-0.0078} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4557 \pm 0.0070 \quad (-0.1\sigma)$	$H(0.38)$	$82.89 \pm 0.33 \quad (+0.4\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.049^{+0.012}_{-0.015} \quad (+0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6082 \pm 0.0064 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1533.0 \pm 9.0 \quad (-0.4\sigma)$
$n_{\mathrm{s}}$	$0.9643 \pm 0.0043 \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.9890 \pm 0.0090 \quad (-0.1\sigma)$	$H(0.51)$	$89.65 \pm 0.26 \quad (+0.5\sigma)$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0045 \pm 0.0067 \quad (-0.2\sigma)$	$r_{\mathrm{drag}}h$	$99.09 \pm 0.90 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1985 \pm 11 \quad (-0.4\sigma)$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.441 \pm 0.023 \quad (-0.1\sigma)$	$H(0.61)$	$95.30 \pm 0.22 \quad (+0.6\sigma)$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7 \quad (-0.1\sigma)$	$z_{\mathrm{re}}$	$7.84^{+0.59}_{-0.76} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2310 \pm 11 \quad (-0.4\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}}$	$2.109^{+0.025}_{-0.032} \quad (+0.3\sigma)$	$H(2.33)$	$236.60 \pm 0.70 \quad (+0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.2^{+2.2}_{-2.0} \quad (+0.1\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.885 \pm 0.011 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5762 \pm 10 \quad (-0.7\sigma)$
$A_{100}^{\mathrm{PS}}$	$263 \pm 29 \quad (-0.1\sigma)$	$D_{40}$	$1222 \pm 18 \quad (-0.1\sigma)$	$f\sigma_8(0.15)$	$0.4600 \pm 0.0065 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$47 \pm 8 \quad (-0.3\sigma)$	$D_{220}$	$5734 \pm 39 \quad (+0.4\sigma)$	$\sigma_8(0.15)$	$0.7498 \pm 0.0051 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{810}$	$2541 \pm 13 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4775 \pm 0.0052 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$114 \pm 10 \quad (+0.0\sigma)$	$D_{1420}$	$816.4 \pm 4.9 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6642 \pm 0.0045 \quad (+0.2\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.84 \quad (-0.1\sigma)$	$D_{2000}$	$230.3 \pm 1.8 \quad (+0.5\sigma)$	$f\sigma_8(0.51)$	$0.4757 \pm 0.0046 \quad (-0.0\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.979 \pm 0.021 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6214^{+0.0039}_{-0.0044} \quad (+0.2\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$11.0 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245406^{+0.000060}_{-0.000053} \quad (+0.9\sigma)$	$f\sigma_8(0.61)$	$0.4704 \pm 0.0041 \quad (-0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246732^{+0.000060}_{-0.000053} \quad (+0.9\sigma)$	$\sigma_8(0.61)$	$0.5912^{+0.0037}_{-0.0042} \quad (+0.2\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.5 \pm 7.3 \quad (+0.0\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.580 \pm 0.027 \quad (-0.9\sigma)$	$f\sigma_8(2.33)$	$0.2980^{+0.0018}_{-0.0022} \quad (+0.2\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.115 \pm 0.038$	$\mathrm{Age}/\mathrm{Gyr}$	$13.794 \pm 0.023 \quad (-0.7\sigma)$	$\sigma_8(2.33)$	$0.3070^{+0.0020}_{-0.0024} \quad (+0.3\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.134 \pm 0.029$	$z_*$	$1089.88 \pm 0.25 \quad (-0.8\sigma)$	$f_{2000}^{143}$	$30.6 \pm 3.2 \quad (-0.4\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.481 \pm 0.085$	$r_*$	$144.41 \pm 0.26 \quad (-0.4\sigma)$	$f_{2000}^{143 \times 217}$	$33.0 \pm 2.2 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.224 \pm 0.054$	$100\theta_*$	$1.04111 \pm 0.00031 \quad (+0.1\sigma)$	$f_{2000}^{217}$	$107.7 \pm 2.0 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.663 \pm 0.080$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.871 \pm 0.025 \quad (-0.4\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.42 \pm 0.79 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.27$	$z_{\mathrm{drag}}$	$1060.01 \pm 0.31 \quad (+1.0\sigma)$	$\chi_{\mathrm{small}}^2$	$397.0 \pm 1.8 \quad (+0.1\sigma)$
$c_{100}$	$0.99968 \pm 0.00061 \quad (+0.1\sigma)$	$r_{\mathrm{drag}}$	$147.06 \pm 0.27 \quad (-0.6\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.7 \pm 1.7 \quad (-0.2\sigma)$
$c_{217}$	$0.99823 \pm 0.00061 \quad (-0.1\sigma)$	$k_{\mathrm{D}}$	$0.14093 \pm 0.00031 \quad (+0.8\sigma)$	$\chi_{\mathrm{plik}}^2$	$2360.4 \pm 5.8 \quad (+287.3\sigma)$
$H_0$	$67.38 \pm 0.52 \quad (+0.3\sigma)$	$100\theta_{\mathrm{D}}$	$0.16072 \pm 0.00018 \quad (-1.0\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.6 \pm 4.6 \quad (+1.1\sigma)$
$\Omega_{\Lambda}$	$0.6849 \pm 0.0072 \quad (+0.2\sigma)$	$z_{\mathrm{eq}}$	$3403 \pm 26 \quad (+0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2789.5 \pm 5.9 \quad (+286.8\sigma)$
$\Omega_{\mathrm{m}}$	$0.3151 \pm 0.0072 \quad (-0.2\sigma)$	$k_{\mathrm{eq}}$	$0.010386 \pm 0.000080 \quad (+0.1\sigma)$		
$\Omega_{\mathrm{m}}h^2$	$0.1431 \pm 0.0011 \quad (+0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8133 \pm 0.0049 \quad (-0.0\sigma)$		

$\bar{\chi}_{\mathrm{eff}}^2 = 2801.11$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.07$ ;  $R - 1 = 0.02119$



12.19 base\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02245 \pm 0.00014 \quad (+0.9\sigma)$	$\sigma_8$	$0.8107 \pm 0.0058 \quad (+0.2\sigma)$	$D_M(0.15)$	$640.6 \pm 3.5 \quad (-0.1\sigma)$
$\Omega_c h^2$	$0.11935 \pm 0.00092 \quad (+0.3\sigma)$	$S_8$	$0.825 \pm 0.011 \quad (+0.2\sigma)$	$H(0.38)$	$83.07 \pm 0.27 \quad (+0.3\sigma)$
$100\theta_{MC}$	$1.04101 \pm 0.00030 \quad (+0.0\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4521 \pm 0.0058 \quad (+0.2\sigma)$	$D_M(0.38)$	$1528.0 \pm 7.1 \quad (-0.2\sigma)$
$\tau$	$0.0575^{+0.0059}_{-0.0078} \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6054 \pm 0.0057 \quad (+0.2\sigma)$	$H(0.51)$	$89.79 \pm 0.22 \quad (+0.4\sigma)$
$\ln(10^{10} A_s)$	$3.050^{+0.013}_{-0.015} \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.9854 \pm 0.0083 \quad (+0.1\sigma)$	$D_M(0.51)$	$1979.4 \pm 8.4 \quad (-0.2\sigma)$
$n_s$	$0.9659 \pm 0.0040 \quad (+0.0\sigma)$	$r_{drag} h$	$99.61 \pm 0.71 \quad (-0.1\sigma)$	$H(0.61)$	$95.41 \pm 0.18 \quad (+0.5\sigma)$
$dn_s/d \ln k$	$-0.0042 \pm 0.0067 \quad (-0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.434 \pm 0.022 \quad (+0.1\sigma)$	$D_M(0.61)$	$2303.4 \pm 9.1 \quad (-0.2\sigma)$
$y_{cal}$	$1.0008 \pm 0.0024 \quad (+0.0\sigma)$	$z_{re}$	$7.96^{+0.62}_{-0.75} \quad (+0.0\sigma)$	$H(2.33)$	$236.22 \pm 0.56 \quad (+0.5\sigma)$
$A_{217}^{CIB}$	$47 \pm 7 \quad (-0.1\sigma)$	$10^9 A_s$	$2.112^{+0.027}_{-0.033} \quad (+0.2\sigma)$	$D_M(2.33)$	$5757.6 \pm 8.9 \quad (-0.6\sigma)$
$\xi^{tSZ \times CIB}$	—	$10^9 A_s e^{-2\tau}$	$1.883 \pm 0.011 \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4567 \pm 0.0054 \quad (+0.2\sigma)$
$A_{143}^{tSZ}$	$5.3^{+2.3}_{-1.9} \quad (+0.1\sigma)$	$D_{40}$	$1220 \pm 18 \quad (-0.0\sigma)$	$\sigma_8(0.15)$	$0.7491 \pm 0.0053 \quad (+0.2\sigma)$
$A_{100}^{PS}$	$262 \pm 29 \quad (-0.1\sigma)$	$D_{220}$	$5739 \pm 38 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4752 \pm 0.0046 \quad (+0.2\sigma)$
$A_{143}^{PS}$	$47 \pm 8 \quad (-0.3\sigma)$	$D_{810}$	$2541 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6641 \pm 0.0046 \quad (+0.2\sigma)$
$A_{143 \times 217}^{PS}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$817.1 \pm 4.8 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4738 \pm 0.0042 \quad (+0.2\sigma)$
$A_{217}^{PS}$	$114 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$230.6 \pm 1.7 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.6215^{+0.0041}_{-0.0045} \quad (+0.2\sigma)$
$A^{kSZ}$	$< 4.68 \quad (-0.1\sigma)$	$n_{s,0.002}$	$0.979 \pm 0.021 \quad (+0.2\sigma)$	$f\sigma_8(0.61)$	$0.4689 \pm 0.0039 \quad (+0.2\sigma)$
$A_{100}^{dustTT}$	$8.9 \pm 1.8 \quad (-0.1\sigma)$	$Y_P$	$0.245424^{+0.000055}_{-0.000049} \quad (+0.9\sigma)$	$\sigma_8(0.61)$	$0.5914^{+0.0039}_{-0.0043} \quad (+0.2\sigma)$
$A_{143}^{dustTT}$	$11.0 \pm 1.8 \quad (+0.1\sigma)$	$Y_P^{BBN}$	$0.246750^{+0.000055}_{-0.000049} \quad (+0.9\sigma)$	$f\sigma_8(2.33)$	$0.2982^{+0.0020}_{-0.0022} \quad (+0.2\sigma)$
$A_{143 \times 217}^{dustTT}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$10^5 D/H$	$2.572 \pm 0.025 \quad (-0.9\sigma)$	$\sigma_8(2.33)$	$0.3075^{+0.0020}_{-0.0024} \quad (+0.2\sigma)$
$A_{217}^{dustTT}$	$93.5 \pm 7.1 \quad (+0.0\sigma)$	Age/Gyr	$13.784 \pm 0.020 \quad (-0.6\sigma)$	$f_{2000}^{143}$	$30.2 \pm 3.2 \quad (-0.4\sigma)$
$A_{100}^{dustTE}$	$0.115 \pm 0.039$	$z_*$	$1089.77 \pm 0.22 \quad (-0.7\sigma)$	$f_{2000}^{143 \times 217}$	$32.7 \pm 2.1 \quad (-0.4\sigma)$
$A_{100 \times 143}^{dustTE}$	$0.134 \pm 0.030$	$r_*$	$144.54 \pm 0.22 \quad (-0.7\sigma)$	$f_{2000}^{217}$	$107.5 \pm 2.0 \quad (-0.3\sigma)$
$A_{100 \times 217}^{dustTE}$	$0.481 \pm 0.085$	$100\theta_*$	$1.04118 \pm 0.00029 \quad (-0.0\sigma)$	$\chi_{lensing}^2$	$9.23 \pm 0.61 \quad (-0.1\sigma)$
$A_{143}^{dustTE}$	$0.223 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	$13.882 \pm 0.021 \quad (-0.7\sigma)$	$\chi_{small}^2$	$397.3 \pm 1.9 \quad (+0.0\sigma)$
$A_{143 \times 217}^{dustTE}$	$0.662 \pm 0.080$	$z_{drag}$	$1060.07 \pm 0.30 \quad (+1.0\sigma)$	$\chi_{lowl}^2$	$22.5 \pm 1.6 \quad (-0.1\sigma)$
$A_{217}^{dustTE}$	$2.08 \pm 0.26$	$r_{drag}$	$147.18 \pm 0.23 \quad (-0.9\sigma)$	$\chi_{plik}^2$	$2360.4 \pm 5.7 \quad (+288.4\sigma)$
$c_{100}$	$0.99968 \pm 0.00060 \quad (+0.1\sigma)$	$k_D$	$0.14084 \pm 0.00029 \quad (+1.0\sigma)$	$\chi_{6DF}^2$	$0.054 \pm 0.060 \quad (-0.0\sigma)$
$c_{217}$	$0.99823 \pm 0.00061 \quad (-0.1\sigma)$	$100\theta_D$	$0.16069 \pm 0.00017 \quad (-1.0\sigma)$	$\chi_{MGS}^2$	$1.24 \pm 0.38 \quad (-0.2\sigma)$
$H_0$	$67.68 \pm 0.42 \quad (+0.1\sigma)$	$z_{eq}$	$3389 \pm 21 \quad (+0.5\sigma)$	$\chi_{DR12BAO}^2$	$4.8 \pm 1.3 \quad (+0.1\sigma)$
$\Omega_\Lambda$	$0.6889 \pm 0.0056 \quad (-0.1\sigma)$	$k_{eq}$	$0.010342 \pm 0.000063 \quad (+0.5\sigma)$	$\chi_{prior}^2$	$11.6 \pm 4.6 \quad (+1.1\sigma)$
$\Omega_m$	$0.3111 \pm 0.0056 \quad (+0.1\sigma)$	$100\theta_{eq}$	$0.8160 \pm 0.0039 \quad (-0.3\sigma)$	$\chi_{CMB}^2$	$2789.5 \pm 5.7 \quad (+288.1\sigma)$
$\Omega_m h^2$	$0.14245 \pm 0.00087 \quad (+0.5\sigma)$	$100\theta_{s,eq}$	$0.4508 \pm 0.0020 \quad (-0.4\sigma)$	$\chi_{BAO}^2$	$6.1 \pm 1.1 \quad (+0.0\sigma)$
$\Omega_m h^3$	$0.09640 \pm 0.00030 \quad (+0.8\sigma)$	$H(0.15)$	$72.96 \pm 0.36 \quad (+0.2\sigma)$		

$\bar{\chi}_{eff}^2 = 2807.20$ ;  $\Delta\bar{\chi}_{eff}^2 = 1592.03$ ;  $R - 1 = 0.02657$



## 12.20 base\_nrun\_plikHM\_TTTEEE\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02252 \pm 0.00015 \quad (+0.5\sigma)$	$\Omega_{\text{m}}h^3$	$0.09647 \pm 0.00031 \quad (+0.7\sigma)$	$100\theta_{\text{s,eq}}$	$0.4522 \pm 0.0029 \quad (-0.8\sigma)$
$\Omega_{\text{c}}h^2$	$0.1187 \pm 0.0013 \quad (+0.7\sigma)$	$\sigma_8$	$0.8086 \pm 0.0078 \quad (+0.5\sigma)$	$H(0.15)$	$73.25^{+0.48}_{-0.54} \quad (-0.5\sigma)$
$100\theta_{\text{MC}}$	$1.04112 \pm 0.00032 \quad (-0.3\sigma)$	$S_8$	$0.818 \pm 0.016 \quad (+0.7\sigma)$	$D_{\text{M}}(0.15)$	$637.8 \pm 5.1 \quad (+0.5\sigma)$
$\tau$	$0.0583^{+0.0061}_{-0.0086} \quad (+0.0\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4478 \pm 0.0089 \quad (+0.7\sigma)$	$H(0.38)$	$83.29^{+0.35}_{-0.40} \quad (-0.4\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.051^{+0.014}_{-0.018} \quad (+0.3\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6017 \pm 0.0086 \quad (+0.6\sigma)$	$D_{\text{M}}(0.38)$	$1522 \pm 10 \quad (+0.5\sigma)$
$n_{\text{s}}$	$0.9676 \pm 0.0046 \quad (-0.5\sigma)$	$\sigma_8/h^{0.5}$	$0.980 \pm 0.012 \quad (+0.6\sigma)$	$H(0.51)$	$89.96^{+0.27}_{-0.33} \quad (-0.3\sigma)$
$\text{d}n_{\text{s}}/\text{d} \ln k$	$-0.0050 \pm 0.0068 \quad (-0.1\sigma)$	$r_{\text{drag}}h$	$100.2 \pm 1.0 \quad (-0.7\sigma)$	$D_{\text{M}}(0.51)$	$1973^{+12}_{-11} \quad (+0.5\sigma)$
$y_{\text{cal}}$	$1.0007 \pm 0.0024 \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.421 \pm 0.029 \quad (+0.6\sigma)$	$H(0.61)$	$95.55^{+0.22}_{-0.27} \quad (-0.2\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.1\sigma)$	$z_{\text{re}}$	$8.01^{+0.63}_{-0.86} \quad (+0.0\sigma)$	$D_{\text{M}}(0.61)$	$2296^{+14}_{-12} \quad (+0.4\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_{\text{s}}$	$2.113^{+0.029}_{-0.039} \quad (+0.3\sigma)$	$H(2.33)$	$235.87 \pm 0.79 \quad (+0.9\sigma)$
$A_{143}^{\text{tSZ}}$	$5.3 \pm 2.0 \quad (+0.0\sigma)$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.880 \pm 0.012 \quad (+0.5\sigma)$	$D_{\text{M}}(2.33)$	$5751^{+12}_{-10} \quad (-0.0\sigma)$
$A_{100}^{\text{PS}}$	$261 \pm 28 \quad (-0.0\sigma)$	$D_{40}$	$1214 \pm 19 \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4528 \pm 0.0084 \quad (+0.7\sigma)$
$A_{143}^{\text{PS}}$	$46 \pm 8 \quad (-0.3\sigma)$	$D_{220}$	$5742 \pm 38 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7476^{+0.0064}_{-0.0073} \quad (+0.5\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$41 \pm 9 \quad (-0.1\sigma)$	$D_{810}$	$2541 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4721 \pm 0.0070 \quad (+0.7\sigma)$
$A_{217}^{\text{PS}}$	$114 \pm 10 \quad (-0.0\sigma)$	$D_{1420}$	$817.5 \pm 4.7 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6633^{+0.0052}_{-0.0062} \quad (+0.4\sigma)$
$A^{\text{kSZ}}$	$< 4.79 \quad (-0.0\sigma)$	$D_{2000}$	$230.8 \pm 1.7 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4713 \pm 0.0062 \quad (+0.6\sigma)$
$A_{100}^{\text{dustTT}}$	$9.0 \pm 1.8 \quad (-0.1\sigma)$	$n_{\text{s},0.002}$	$0.984 \pm 0.021 \quad (+0.0\sigma)$	$\sigma_8(0.51)$	$0.6209^{+0.0047}_{-0.0057} \quad (+0.4\sigma)$
$A_{143}^{\text{dustTT}}$	$11.0 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.245452 \pm 0.000057 \quad (+0.5\sigma)$	$f\sigma_8(0.61)$	$0.4667 \pm 0.0057 \quad (+0.6\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.0\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246778 \pm 0.000057 \quad (+0.5\sigma)$	$\sigma_8(0.61)$	$0.5909^{+0.0043}_{-0.0054} \quad (+0.3\sigma)$
$A_{217}^{\text{dustTT}}$	$93.6 \pm 7.2 \quad (-0.0\sigma)$	$10^5 \text{D}/\text{H}$	$2.558 \pm 0.027 \quad (-0.5\sigma)$	$f\sigma_8(2.33)$	$0.2982^{+0.0021}_{-0.0027} \quad (+0.2\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.039$	$\text{Age}/\text{Gyr}$	$13.770^{+0.026}_{-0.023} \quad (-0.1\sigma)$	$\sigma_8(2.33)$	$0.3076^{+0.0021}_{-0.0028} \quad (+0.1\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134 \pm 0.030$	$z_*$	$1089.62 \pm 0.27 \quad (-0.1\sigma)$	$f_{2000}^{143}$	$30.0 \pm 3.1 \quad (-0.3\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.480 \pm 0.087$	$r_*$	$144.66 \pm 0.30 \quad (-1.0\sigma)$	$f_{2000}^{143 \times 217}$	$32.5 \pm 2.1 \quad (-0.4\sigma)$
$A_{143}^{\text{dustTE}}$	$0.223 \pm 0.054$	$100\theta_*$	$1.04129 \pm 0.00031 \quad (-0.3\sigma)$	$f_{2000}^{217}$	$107.4 \pm 2.0 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.657 \pm 0.081$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.892 \pm 0.028 \quad (-0.9\sigma)$	$\chi_{\text{small}}^2$	$397.5 \pm 2.5 \quad (+0.1\sigma)$
$A_{217}^{\text{dustTE}}$	$2.07 \pm 0.27$	$z_{\text{drag}}$	$1060.19 \pm 0.31 \quad (+0.7\sigma)$	$\chi_{\text{lowl}}^2$	$22.1 \pm 1.5 \quad (+0.1\sigma)$
$c_{100}$	$0.99971 \pm 0.00061 \quad (+0.1\sigma)$	$r_{\text{drag}}$	$147.27 \pm 0.30 \quad (-1.0\sigma)$	$\chi_{\text{plik}}^2$	$2362.4 \pm 6.5 \quad (+253.1\sigma)$
$c_{217}$	$0.99824 \pm 0.00062 \quad (+0.0\sigma)$	$k_{\text{D}}$	$0.14079 \pm 0.00033 \quad (+1.0\sigma)$	$\chi_{\text{H073p45}}^2$	$10.9 \pm 2.4 \quad (+0.5\sigma)$
$H_0$	$68.01 \pm 0.60 \quad (-0.5\sigma)$	$100\theta_{\text{D}}$	$0.16062 \pm 0.00018 \quad (-0.8\sigma)$	$\chi_{\text{prior}}^2$	$11.7 \pm 4.5 \quad (+1.1\sigma)$
$\Omega_{\Lambda}$	$0.6932 \pm 0.0080 \quad (-0.6\sigma)$	$z_{\text{eq}}$	$3374 \pm 30 \quad (+0.8\sigma)$	$\chi_{\text{CMB}}^2$	$2782.0 \pm 6.4 \quad (+260.7\sigma)$
$\Omega_{\text{m}}$	$0.3068 \pm 0.0080 \quad (+0.6\sigma)$	$k_{\text{eq}}$	$0.010299 \pm 0.000091 \quad (+0.8\sigma)$		
$\Omega_{\text{m}}h^2$	$0.1419 \pm 0.0012 \quad (+0.8\sigma)$	$100\theta_{\text{eq}}$	$0.8189 \pm 0.0057 \quad (-0.8\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2804.52; \Delta\bar{\chi}_{\text{eff}}^2 = 1592.56; R - 1 = 0.04836$$



## 12.21 base\_nrun\_CamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022152	$0.02216 \pm 0.00023$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4596	$0.459 \pm 0.013$	$H(0.15)$	72.28	$72.34 \pm 0.79$
$\Omega_{\mathrm{c}}h^2$	0.12068	$0.1206 \pm 0.0021$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6108	$0.610 \pm 0.012$	$D_{\mathrm{M}}(0.15)$	647.3	$646.8 \pm 8.0$
$100\theta_{\mathrm{MC}}$	1.040822	$1.04084 \pm 0.00048$	$\sigma_8/h^{0.5}$	0.9925	$0.991 \pm 0.016$	$H(0.38)$	82.55	$82.59 \pm 0.57$
$\tau$	0.0529	$0.0530 \pm 0.0085$	$r_{\mathrm{drag}}h$	98.46	$98.6 \pm 1.6$	$D_{\mathrm{M}}(0.38)$	1541.6	$1541 \pm 16$
$\ln(10^{10}A_{\mathrm{s}})$	3.0419	$3.041 \pm 0.018$	$\langle d^2 \rangle^{1/2}$	2.4481	$2.445 \pm 0.038$	$H(0.51)$	89.350	$89.39 \pm 0.45$
$n_{\mathrm{s}}$	0.9624	$0.9630 \pm 0.0061$	$z_{\mathrm{re}}$	7.59	$7.57 \pm 0.86$	$D_{\mathrm{M}}(0.51)$	1995.6	$1994 \pm 19$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	-0.0033	$-0.0033 \pm 0.0076$	$10^9 A_{\mathrm{s}}$	2.0944	$2.094 \pm 0.037$	$H(0.61)$	95.036	$95.07 \pm 0.36$
$y_{\mathrm{cal}}$	1.00058	$1.0004 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8842	$1.883 \pm 0.015$	$D_{\mathrm{M}}(0.61)$	2321.0	$2320 \pm 20$
$A_{100}^{\mathrm{PS}}$	245.0	$244 \pm 25$	$D_{40}$	1224.5	$1223 \pm 21$	$H(2.33)$	236.78	$236.7 \pm 1.3$
$A_{143}^{\mathrm{PS}}$	39.9	$42 \pm 9$	$D_{220}$	5706.5	$5704 \pm 41$	$D_{\mathrm{M}}(2.33)$	5775.7	$5775 \pm 17$
$A_{217}^{\mathrm{PS}}$	98.4	$100 \pm 10$	$D_{810}$	2535.5	$2535 \pm 14$	$f\sigma_8(0.15)$	0.4634	$0.463 \pm 0.012$
$A_{217}^{\mathrm{CIB}}$	45.4	$42 \pm 8$	$D_{1420}$	813.5	$813.5 \pm 5.4$	$\sigma_8(0.15)$	0.7493	$0.7488 \pm 0.0077$
$A_{143}^{\mathrm{tSZ}}$	5.16	$3.7_{-2.6}^{+1.7}$	$D_{2000}$	229.09	$229.1 \pm 2.0$	$f\sigma_8(0.38)$	0.4798	$0.4791 \pm 0.0097$
$r_{143 \times 217}^{\mathrm{PS}}$	0.549	$0.64 \pm 0.13$	$n_{\mathrm{s},0.002}$	0.9730	$0.974 \pm 0.023$	$\sigma_8(0.38)$	0.6632	$0.6629 \pm 0.0062$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.736	$> 0.475$	$Y_{\mathrm{P}}$	0.245306	$0.24530_{-0.000087}^{+0.00011}$	$f\sigma_8(0.51)$	0.4773	$0.4767 \pm 0.0083$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.00	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246632	$0.24663_{-0.000087}^{+0.00011}$	$\sigma_8(0.51)$	0.6202	$0.6200 \pm 0.0056$
$A^{\mathrm{kSZ}}$	2.6	—	$10^5 \mathrm{D}/\mathrm{H}$	2.6271	$2.626 \pm 0.045$	$f\sigma_8(0.61)$	0.4716	$0.4711 \pm 0.0073$
$A_{100}^{\mathrm{dust}}$	1.017	$1.02 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	13.8250	$13.823 \pm 0.038$	$\sigma_8(0.61)$	0.5899	$0.5897 \pm 0.0053$
$A_{143}^{\mathrm{dust}}$	0.986	$0.98 \pm 0.17$	$z_*$	1090.257	$1090.24 \pm 0.42$	$f\sigma_8(2.33)$	0.29709	$0.2970 \pm 0.0026$
$A_{217}^{\mathrm{dust}}$	0.961	$0.97 \pm 0.10$	$r_*$	144.423	$144.45 \pm 0.49$	$\sigma_8(2.33)$	0.30591	$0.3059 \pm 0.0027$
$A_{143 \times 217}^{\mathrm{dust}}$	1.002	$1.03 \pm 0.16$	$100\theta_*$	1.041032	$1.04105 \pm 0.00047$	$f_{2000}^{143}$	32.02	$31.5 \pm 3.4$
$c_{100}$	0.99751	$0.9975 \pm 0.0010$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8730	$13.876 \pm 0.045$	$f_{2000}^{217}$	108.26	$108.0 \pm 2.2$
$c_{217}$	1.00149	$1.0013 \pm 0.0016$	$z_{\mathrm{drag}}$	1059.475	$1059.49 \pm 0.50$	$f_{2000}^{143 \times 217}$	33.66	$33.5 \pm 2.4$
$H_0$	66.91	$66.97 \pm 0.93$	$r_{\mathrm{drag}}$	147.16	$147.18 \pm 0.50$	$\chi_{\mathrm{small}}^2$	395.90	$397.0 \pm 1.8$
$\Omega_{\Lambda}$	0.6795	$0.680_{-0.012}^{+0.014}$	$k_{\mathrm{D}}$	0.14063	$0.14061 \pm 0.00056$	$\chi_{\mathrm{lowl}}^2$	22.73	$23.1 \pm 2.1$
$\Omega_{\mathrm{m}}$	0.3205	$0.320_{-0.014}^{+0.012}$	$100\theta_{\mathrm{D}}$	0.161027	$0.16103 \pm 0.00029$	$\chi_{\mathrm{CamSpec}}^2$	7050.5	$7064.2 \pm 5.7$
$\Omega_{\mathrm{m}}h^2$	0.14347	$0.1434 \pm 0.0020$	$z_{\mathrm{eq}}$	3413.2	$3410 \pm 48$	$\chi_{\mathrm{prior}}^2$	2.39	$7.7 \pm 3.5$
$\Omega_{\mathrm{m}}h^3$	0.095994	$0.09599 \pm 0.00049$	$k_{\mathrm{eq}}$	0.010417	$0.01041 \pm 0.00015$	$\chi_{\mathrm{CMB}}^2$	7469.1	$7484.4 \pm 5.6$
$\sigma_8$	0.8118	$0.8113 \pm 0.0091$	$100\theta_{\mathrm{eq}}$	0.8107	$0.8113 \pm 0.0090$			
$S_8$	0.8391	$0.838 \pm 0.024$	$100\theta_{\mathrm{s,eq}}$	0.44817	$0.4485 \pm 0.0046$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 7471.52$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 7492.14$ ;  $R - 1 = 0.00818$

$\chi_{\mathrm{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.90 commander\_dx12\_v3.2\_29: 22.73 CamSpec like\_10.7HM: 7050.50



## 12.22 base\_nrun\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02225 \pm 0.00021$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6020 \pm 0.0080$	$H(0.38)$	$83.01 \pm 0.36$
$\Omega_{\mathrm{c}}h^2$	$0.1189 \pm 0.0012$	$\sigma_8/h^{0.5}$	$0.981 \pm 0.012$	$D_{\mathrm{M}}(0.38)$	$1528.5 \pm 9.4$
$100\theta_{\mathrm{MC}}$	$1.04106 \pm 0.00042$	$r_{\mathrm{drag}}h$	$99.84 \pm 0.94$	$H(0.51)$	$89.71 \pm 0.30$
$\tau$	$0.0547^{+0.0077}_{-0.0086}$	$\langle d^2 \rangle^{1/2}$	$2.422 \pm 0.028$	$D_{\mathrm{M}}(0.51)$	$1980 \pm 11$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.017}_{-0.019}$	$z_{\mathrm{re}}$	$7.71 \pm 0.84$	$H(0.61)$	$95.31 \pm 0.25$
$n_{\mathrm{s}}$	$0.9668 \pm 0.0046$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.034}_{-0.040}$	$D_{\mathrm{M}}(0.61)$	$2305 \pm 12$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0027 \pm 0.0076$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.876 \pm 0.012$	$H(2.33)$	$235.75 \pm 0.78$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$D_{40}$	$1217 \pm 20$	$D_{\mathrm{M}}(2.33)$	$5764 \pm 13$
$A_{100}^{\mathrm{PS}}$	$243 \pm 25$	$D_{220}$	$5710 \pm 40$	$f\sigma_8(0.15)$	$0.4538 \pm 0.0077$
$A_{143}^{\mathrm{PS}}$	$41 \pm 9$	$D_{810}$	$2534 \pm 14$	$\sigma_8(0.15)$	$0.7458 \pm 0.0070$
$A_{217}^{\mathrm{PS}}$	$100 \pm 10$	$D_{1420}$	$814.4 \pm 5.2$	$f\sigma_8(0.38)$	$0.4724 \pm 0.0065$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{2000}$	$229.5 \pm 2.0$	$\sigma_8(0.38)$	$0.6613^{+0.0056}_{-0.0062}$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.8}_{-2.6}$	$n_{\mathrm{s},0.002}$	$0.975 \pm 0.023$	$f\sigma_8(0.51)$	$0.4712 \pm 0.0059$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.64 \pm 0.13$	$Y_{\mathrm{P}}$	$0.245344^{+0.000094}_{-0.000078}$	$\sigma_8(0.51)$	$0.6190^{+0.0051}_{-0.0058}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.473$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246671^{+0.000094}_{-0.000079}$	$f\sigma_8(0.61)$	$0.4664 \pm 0.0054$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.608 \pm 0.040$	$\sigma_8(0.61)$	$0.5890^{+0.0048}_{-0.0055}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.801 \pm 0.029$	$f\sigma_8(2.33)$	$0.2971^{+0.0024}_{-0.0028}$
$A_{100}^{\mathrm{dust}}$	$1.02 \pm 0.20$	$z_*$	$1089.98 \pm 0.31$	$\sigma_8(2.33)$	$0.3063^{+0.0025}_{-0.0029}$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.17$	$r_*$	$144.80 \pm 0.32$	$f_{2000}^{143}$	$31.0 \pm 3.4$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04126 \pm 0.00042$	$f_{2000}^{217}$	$107.7 \pm 2.2$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.17$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.906 \pm 0.031$	$f_{2000}^{143 \times 217}$	$33.2 \pm 2.4$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.58 \pm 0.48$	$\chi_{\mathrm{simall}}^2$	$397.2 \pm 1.9$
$c_{217}$	$1.0013 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.51 \pm 0.36$	$\chi_{\mathrm{lowl}}^2$	$22.6 \pm 1.8$
$H_0$	$67.68 \pm 0.55$	$k_{\mathrm{D}}$	$0.14034 \pm 0.00047$	$\chi_{\mathrm{CamSpec}}^2$	$7064.6 \pm 5.5$
$\Omega_{\Lambda}$	$0.6903 \pm 0.0073$	$100\theta_{\mathrm{D}}$	$0.16098 \pm 0.00028$	$\chi_{6\mathrm{DF}}^2$	$0.054 \pm 0.073$
$\Omega_{\mathrm{m}}$	$0.3097 \pm 0.0073$	$z_{\mathrm{eq}}$	$3374 \pm 28$	$\chi_{\mathrm{MGS}}^2$	$1.39 \pm 0.52$
$\Omega_{\mathrm{m}}h^2$	$0.1418 \pm 0.0012$	$k_{\mathrm{eq}}$	$0.010297 \pm 0.000087$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.6$
$\Omega_{\mathrm{m}}h^3$	$0.09599 \pm 0.00048$	$100\theta_{\mathrm{eq}}$	$0.8182 \pm 0.0052$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.5$
$\sigma_8$	$0.8069 \pm 0.0079$	$100\theta_{\mathrm{s,eq}}$	$0.4520 \pm 0.0027$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.3$
$S_8$	$0.820 \pm 0.015$	$H(0.15)$	$72.94 \pm 0.47$	$\chi_{\mathrm{CMB}}^2$	$7484.3 \pm 5.5$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4491 \pm 0.0082$	$D_{\mathrm{M}}(0.15)$	$640.7 \pm 4.7$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7498.15$ ;  $R - 1 = 0.01937$



### 12.23 base\_nrun\_CamSpecHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02217 \pm 0.00022$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4570 \pm 0.0090$	$H(0.15)$	$72.44 \pm 0.63$
$\Omega_{\mathrm{c}}h^2$	$0.1202 \pm 0.0016$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6086 \pm 0.0078$	$D_{\mathrm{M}}(0.15)$	$645.8 \pm 6.3$
$100\theta_{\mathrm{MC}}$	$1.04087 \pm 0.00045$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.011$	$H(0.38)$	$82.65 \pm 0.46$
$\tau$	$0.0532 \pm 0.0083$	$r_{\mathrm{drag}}h$	$98.8 \pm 1.2$	$D_{\mathrm{M}}(0.38)$	$1539 \pm 13$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041 \pm 0.016$	$\langle d^2 \rangle^{1/2}$	$2.443 \pm 0.027$	$H(0.51)$	$89.43 \pm 0.37$
$n_{\mathrm{s}}$	$0.9636 \pm 0.0052$	$z_{\mathrm{re}}$	$7.59 \pm 0.84$	$D_{\mathrm{M}}(0.51)$	$1992 \pm 15$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0024 \pm 0.0074$	$10^9 A_{\mathrm{s}}$	$2.093 \pm 0.034$	$H(0.61)$	$95.10 \pm 0.31$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.881 \pm 0.012$	$D_{\mathrm{M}}(0.61)$	$2317 \pm 16$
$A_{100}^{\mathrm{PS}}$	$244 \pm 25$	$D_{40}$	$1224 \pm 20$	$H(2.33)$	$236.52 \pm 0.98$
$A_{143}^{\mathrm{PS}}$	$42 \pm 9$	$D_{220}$	$5707 \pm 41$	$D_{\mathrm{M}}(2.33)$	$5773 \pm 15$
$A_{217}^{\mathrm{PS}}$	$100 \pm 10$	$D_{810}$	$2534 \pm 14$	$f\sigma_8(0.15)$	$0.4611 \pm 0.0082$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{1420}$	$813.7 \pm 5.3$	$\sigma_8(0.15)$	$0.7483 \pm 0.0057$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.7}$	$D_{2000}$	$229.2 \pm 2.0$	$f\sigma_8(0.38)$	$0.4779 \pm 0.0064$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.971 \pm 0.023$	$\sigma_8(0.38)$	$0.6626 \pm 0.0050$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.475$	$Y_{\mathrm{P}}$	$0.24531^{+0.00011}_{-0.000085}$	$f\sigma_8(0.51)$	$0.4758 \pm 0.0054$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00011}_{-0.000085}$	$\sigma_8(0.51)$	$0.6198 \pm 0.0047$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.624 \pm 0.043$	$f\sigma_8(0.61)$	$0.4703 \pm 0.0048$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$\mathrm{Age}/\mathrm{Gyr}$	$13.820 \pm 0.034$	$\sigma_8(0.61)$	$0.5896 \pm 0.0045$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.17$	$z_*$	$1090.20 \pm 0.37$	$f\sigma_8(2.33)$	$0.2970 \pm 0.0024$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$r_*$	$144.52 \pm 0.38$	$\sigma_8(2.33)$	$0.3060 \pm 0.0027$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.17$	$100\theta_*$	$1.04107 \pm 0.00044$	$f_{2000}^{143}$	$31.3 \pm 3.3$
$c_{100}$	$0.9975 \pm 0.0010$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.882 \pm 0.036$	$f_{2000}^{217}$	$107.9 \pm 2.2$
$c_{217}$	$1.0013 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.48 \pm 0.49$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.4$
$H_0$	$67.09 \pm 0.73$	$r_{\mathrm{drag}}$	$147.25 \pm 0.40$	$\chi_{\mathrm{lensing}}^2$	$9.61 \pm 0.91$
$\Omega_{\Lambda}$	$0.682 \pm 0.010$	$k_{\mathrm{D}}$	$0.14054 \pm 0.00048$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.7$
$\Omega_{\mathrm{m}}$	$0.318 \pm 0.010$	$100\theta_{\mathrm{D}}$	$0.16103 \pm 0.00028$	$\chi_{\mathrm{lowl}}^2$	$23.2 \pm 2.1$
$\Omega_{\mathrm{m}}h^2$	$0.1431 \pm 0.0015$	$z_{\mathrm{eq}}$	$3403 \pm 36$	$\chi_{\mathrm{CamSpec}}^2$	$7063.5 \pm 5.4$
$\Omega_{\mathrm{m}}h^3$	$0.09597 \pm 0.00048$	$k_{\mathrm{eq}}$	$0.01039 \pm 0.00011$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.5$
$\sigma_8$	$0.8105 \pm 0.0064$	$100\theta_{\mathrm{eq}}$	$0.8126 \pm 0.0068$	$\chi_{\mathrm{CMB}}^2$	$7493.4 \pm 5.6$
$S_8$	$0.834 \pm 0.016$	$100\theta_{\mathrm{s,eq}}$	$0.4492 \pm 0.0035$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7501.08; R - 1 = 0.01225$$



## 12.24 base\_nrun\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02225 \pm 0.00021$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6041 \pm 0.0063$	$H(0.38)$	$82.97 \pm 0.34$
$\Omega_{\mathrm{c}}h^2$	$0.1191 \pm 0.0011$	$\sigma_8/h^{0.5}$	$0.9841 \pm 0.0091$	$D_{\mathrm{M}}(0.38)$	$1529.8 \pm 8.8$
$100\theta_{\mathrm{MC}}$	$1.04104 \pm 0.00042$	$r_{\mathrm{drag}}h$	$99.69 \pm 0.85$	$H(0.51)$	$89.67 \pm 0.28$
$\tau$	$0.0562^{+0.0072}_{-0.0081}$	$\langle d^2 \rangle^{1/2}$	$2.430 \pm 0.023$	$D_{\mathrm{M}}(0.51)$	$1982 \pm 10$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045 \pm 0.016$	$z_{\mathrm{re}}$	$7.87 \pm 0.77$	$H(0.61)$	$95.28 \pm 0.25$
$n_{\mathrm{s}}$	$0.9663 \pm 0.0045$	$10^9 A_{\mathrm{s}}$	$2.101^{+0.031}_{-0.035}$	$D_{\mathrm{M}}(0.61)$	$2306 \pm 11$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0023 \pm 0.0075$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878 \pm 0.011$	$H(2.33)$	$235.87 \pm 0.70$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0024$	$D_{40}$	$1220 \pm 19$	$D_{\mathrm{M}}(2.33)$	$5765 \pm 13$
$A_{100}^{\mathrm{PS}}$	$243 \pm 25$	$D_{220}$	$5714 \pm 39$	$f\sigma_8(0.15)$	$0.4557 \pm 0.0061$
$A_{143}^{\mathrm{PS}}$	$41 \pm 9$	$D_{810}$	$2535 \pm 14$	$\sigma_8(0.15)$	$0.7477 \pm 0.0057$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{1420}$	$814.8 \pm 5.2$	$f\sigma_8(0.38)$	$0.4742 \pm 0.0051$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{2000}$	$229.7 \pm 1.9$	$\sigma_8(0.38)$	$0.6629 \pm 0.0050$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.6}$	$n_{\mathrm{s},0.002}$	$0.974 \pm 0.023$	$f\sigma_8(0.51)$	$0.4729 \pm 0.0046$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	$0.245341^{+0.000094}_{-0.000078}$	$\sigma_8(0.51)$	$0.6204 \pm 0.0047$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.467$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246668^{+0.000094}_{-0.000078}$	$f\sigma_8(0.61)$	$0.4679 \pm 0.0042$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.610 \pm 0.039$	$\sigma_8(0.61)$	$0.5903 \pm 0.0045$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.803 \pm 0.029$	$f\sigma_8(2.33)$	$0.2977^{+0.0022}_{-0.0024}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$z_*$	$1090.00 \pm 0.30$	$\sigma_8(2.33)$	$0.3069^{+0.0023}_{-0.0026}$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.17$	$r_*$	$144.75 \pm 0.29$	$f_{2000}^{143}$	$30.9 \pm 3.3$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04123 \pm 0.00041$	$f_{2000}^{217}$	$107.6 \pm 2.2$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.17$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.902 \pm 0.029$	$f_{2000}^{143 \times 217}$	$33.1 \pm 2.4$
$c_{100}$	$0.9975 \pm 0.0010$	$z_{\mathrm{drag}}$	$1059.58 \pm 0.48$	$\chi_{\mathrm{lensing}}^2$	$9.47 \pm 0.82$
$c_{217}$	$1.0012 \pm 0.0015$	$r_{\mathrm{drag}}$	$147.46 \pm 0.33$	$\chi_{\mathrm{simall}}^2$	$397.3 \pm 2.0$
$H_0$	$67.60 \pm 0.50$	$k_{\mathrm{D}}$	$0.14038 \pm 0.00045$	$\chi_{\mathrm{lowl}}^2$	$22.8 \pm 1.9$
$\Omega_{\Lambda}$	$0.6891 \pm 0.0066$	$100\theta_{\mathrm{D}}$	$0.16098 \pm 0.00028$	$\chi_{\mathrm{CamSpec}}^2$	$7063.8 \pm 5.3$
$\Omega_{\mathrm{m}}$	$0.3109 \pm 0.0066$	$z_{\mathrm{eq}}$	$3378 \pm 25$	$\chi_{6\mathrm{DF}}^2$	$0.057 \pm 0.070$
$\Omega_{\mathrm{m}}h^2$	$0.1420 \pm 0.0011$	$k_{\mathrm{eq}}$	$0.010311 \pm 0.000077$	$\chi_{\mathrm{MGS}}^2$	$1.30 \pm 0.46$
$\Omega_{\mathrm{m}}h^3$	$0.09600 \pm 0.00048$	$100\theta_{\mathrm{eq}}$	$0.8174 \pm 0.0047$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.5$
$\sigma_8$	$0.8091 \pm 0.0063$	$100\theta_{\mathrm{s,eq}}$	$0.4516 \pm 0.0024$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.5$
$S_8$	$0.824 \pm 0.012$	$H(0.15)$	$72.87 \pm 0.44$	$\chi_{\mathrm{CMB}}^2$	$7493.4 \pm 5.5$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4511 \pm 0.0065$	$D_{\mathrm{M}}(0.15)$	$641.4 \pm 4.3$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.2$

$\bar{\chi}_{\mathrm{eff}}^2 = 7507.23$ ;  $R - 1 = 0.02103$



## 12.25 base\_nrun\_CamSpecHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02217 \pm 0.00023$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.459 \pm 0.013$	$H(0.15)$	$72.37 \pm 0.79$
$\Omega_{\mathrm{c}}h^2$	$0.1205 \pm 0.0021$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.611 \pm 0.012$	$D_{\mathrm{M}}(0.15)$	$646.5 \pm 8.0$
$100\theta_{\mathrm{MC}}$	$1.04086 \pm 0.00048$	$\sigma_8/h^{0.5}$	$0.992 \pm 0.016$	$H(0.38)$	$82.62 \pm 0.57$
$\tau$	$0.0546^{+0.0049}_{-0.0088}$	$r_{\mathrm{drag}}h$	$98.6 \pm 1.6$	$D_{\mathrm{M}}(0.38)$	$1540 \pm 16$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.013}_{-0.018}$	$\langle d^2 \rangle^{1/2}$	$2.447 \pm 0.038$	$H(0.51)$	$89.41 \pm 0.45$
$n_{\mathrm{s}}$	$0.9632 \pm 0.0061$	$z_{\mathrm{re}}$	$7.75^{+0.55}_{-0.87}$	$D_{\mathrm{M}}(0.51)$	$1994 \pm 19$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0036 \pm 0.0076$	$10^9 A_{\mathrm{s}}$	$2.100^{+0.026}_{-0.037}$	$H(0.61)$	$95.08 \pm 0.36$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.883 \pm 0.014$	$D_{\mathrm{M}}(0.61)$	$2319 \pm 20$
$A_{100}^{\mathrm{PS}}$	$244 \pm 25$	$D_{40}$	$1222 \pm 21$	$H(2.33)$	$236.7 \pm 1.3$
$A_{143}^{\mathrm{PS}}$	$42 \pm 9$	$D_{220}$	$5704 \pm 41$	$D_{\mathrm{M}}(2.33)$	$5774 \pm 17$
$A_{217}^{\mathrm{PS}}$	$100 \pm 10$	$D_{810}$	$2535 \pm 14$	$f\sigma_8(0.15)$	$0.463 \pm 0.012$
$A_{217}^{\mathrm{CIB}}$	$42 \pm 8$	$D_{1420}$	$813.5 \pm 5.4$	$\sigma_8(0.15)$	$0.7498 \pm 0.0071$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.6}$	$D_{2000}$	$229.2 \pm 2.0$	$f\sigma_8(0.38)$	$0.4795 \pm 0.0096$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.64 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.975 \pm 0.023$	$\sigma_8(0.38)$	$0.6638^{+0.0052}_{-0.0059}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.473$	$Y_{\mathrm{P}}$	$0.24531^{+0.00011}_{-0.000087}$	$f\sigma_8(0.51)$	$0.4772 \pm 0.0082$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00011}_{-0.000087}$	$\sigma_8(0.51)$	$0.6209^{+0.0045}_{-0.0054}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.624 \pm 0.044$	$f\sigma_8(0.61)$	$0.4716 \pm 0.0072$
$A_{100}^{\mathrm{dust}}$	$1.02 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.821 \pm 0.037$	$\sigma_8(0.61)$	$0.5906^{+0.0041}_{-0.0050}$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.17$	$z_*$	$1090.22 \pm 0.41$	$f\sigma_8(2.33)$	$0.2975^{+0.0019}_{-0.0026}$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$r_*$	$144.46 \pm 0.49$	$\sigma_8(2.33)$	$0.3064^{+0.0019}_{-0.0027}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04106 \pm 0.00047$	$f_{2000}^{143}$	$31.5 \pm 3.4$
$c_{100}$	$0.9975 \pm 0.0010$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.876 \pm 0.045$	$f_{2000}^{217}$	$108.0 \pm 2.2$
$c_{217}$	$1.0013 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.51 \pm 0.49$	$f_{2000}^{143 \times 217}$	$33.5 \pm 2.4$
$H_0$	$67.01 \pm 0.92$	$r_{\mathrm{drag}}$	$147.19 \pm 0.50$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.8$
$\Omega_{\Lambda}$	$0.681^{+0.014}_{-0.012}$	$k_{\mathrm{D}}$	$0.14061 \pm 0.00056$	$\chi_{\mathrm{lowl}}^2$	$23.0 \pm 2.0$
$\Omega_{\mathrm{m}}$	$0.319^{+0.012}_{-0.014}$	$100\theta_{\mathrm{D}}$	$0.16101 \pm 0.00029$	$\chi_{\mathrm{CamSpec}}^2$	$7064.2 \pm 5.6$
$\Omega_{\mathrm{m}}h^2$	$0.1433 \pm 0.0020$	$z_{\mathrm{eq}}$	$3409 \pm 48$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.5$
$\Omega_{\mathrm{m}}h^3$	$0.09601 \pm 0.00049$	$k_{\mathrm{eq}}$	$0.01040 \pm 0.00015$	$\chi_{\mathrm{CMB}}^2$	$7484.1 \pm 5.6$
$\sigma_8$	$0.8123 \pm 0.0086$	$100\theta_{\mathrm{eq}}$	$0.8116 \pm 0.0089$		
$S_8$	$0.838 \pm 0.024$	$100\theta_{\mathrm{s,eq}}$	$0.4487 \pm 0.0046$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7491.87; R - 1 = 0.00915$$



## 12.26 base\_nrun\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02226 \pm 0.00021$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6026 \pm 0.0078$	$H(0.38)$	$83.02 \pm 0.36$
$\Omega_{\mathrm{c}}h^2$	$0.1189 \pm 0.0012$	$\sigma_8/h^{0.5}$	$0.982 \pm 0.011$	$D_{\mathrm{M}}(0.38)$	$1528.3 \pm 9.4$
$100\theta_{\mathrm{MC}}$	$1.04107 \pm 0.00042$	$r_{\mathrm{drag}}h$	$99.85 \pm 0.93$	$H(0.51)$	$89.72 \pm 0.30$
$\tau$	$0.0559^{+0.0056}_{-0.0088}$	$\langle d^2 \rangle^{1/2}$	$2.424 \pm 0.028$	$D_{\mathrm{M}}(0.51)$	$1980 \pm 11$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.013}_{-0.019}$	$z_{\mathrm{re}}$	$7.84^{+0.60}_{-0.88}$	$H(0.61)$	$95.32 \pm 0.25$
$n_{\mathrm{s}}$	$0.9669 \pm 0.0046$	$10^9 A_{\mathrm{s}}$	$2.098^{+0.027}_{-0.039}$	$D_{\mathrm{M}}(0.61)$	$2304 \pm 12$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0030 \pm 0.0075$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.876 \pm 0.012$	$H(2.33)$	$235.75 \pm 0.78$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$D_{40}$	$1216 \pm 20$	$D_{\mathrm{M}}(2.33)$	$5764 \pm 13$
$A_{100}^{\mathrm{PS}}$	$243 \pm 25$	$D_{220}$	$5710 \pm 40$	$f\sigma_8(0.15)$	$0.4542 \pm 0.0076$
$A_{143}^{\mathrm{PS}}$	$41 \pm 9$	$D_{810}$	$2533 \pm 14$	$\sigma_8(0.15)$	$0.7467^{+0.0057}_{-0.0070}$
$A_{217}^{\mathrm{PS}}$	$100 \pm 10$	$D_{1420}$	$814.4 \pm 5.2$	$f\sigma_8(0.38)$	$0.4729 \pm 0.0063$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{2000}$	$229.5 \pm 1.9$	$\sigma_8(0.38)$	$0.6621^{+0.0047}_{-0.0061}$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.6}$	$n_{\mathrm{s},0.002}$	$0.976 \pm 0.023$	$f\sigma_8(0.51)$	$0.4717 \pm 0.0057$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.64 \pm 0.13$	$Y_{\mathrm{P}}$	$0.245346^{+0.000094}_{-0.000079}$	$\sigma_8(0.51)$	$0.6197^{+0.0042}_{-0.0057}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.469$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246672^{+0.000094}_{-0.000079}$	$f\sigma_8(0.61)$	$0.4669 \pm 0.0052$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.607 \pm 0.040$	$\sigma_8(0.61)$	$0.5897^{+0.0040}_{-0.0054}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.800 \pm 0.029$	$f\sigma_8(2.33)$	$0.2974^{+0.0019}_{-0.0027}$
$A_{100}^{\mathrm{dust}}$	$1.02 \pm 0.20$	$z_*$	$1089.97 \pm 0.31$	$\sigma_8(2.33)$	$0.3067^{+0.0020}_{-0.0028}$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.18$	$r_*$	$144.80 \pm 0.32$	$f_{2000}^{143}$	$31.1 \pm 3.3$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04126 \pm 0.00041$	$f_{2000}^{217}$	$107.7 \pm 2.2$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.17$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.906 \pm 0.031$	$f_{2000}^{143 \times 217}$	$33.2 \pm 2.4$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.59 \pm 0.48$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 2.0$
$c_{217}$	$1.0013 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.51 \pm 0.36$	$\chi_{\mathrm{lowl}}^2$	$22.5 \pm 1.8$
$H_0$	$67.69 \pm 0.54$	$k_{\mathrm{D}}$	$0.14034 \pm 0.00047$	$\chi_{\mathrm{CamSpec}}^2$	$7064.5 \pm 5.5$
$\Omega_{\Lambda}$	$0.6904 \pm 0.0072$	$100\theta_{\mathrm{D}}$	$0.16097 \pm 0.00028$	$\chi_{6\mathrm{DF}}^2$	$0.053 \pm 0.072$
$\Omega_{\mathrm{m}}$	$0.3096 \pm 0.0072$	$z_{\mathrm{eq}}$	$3374 \pm 28$	$\chi_{\mathrm{MGS}}^2$	$1.40 \pm 0.52$
$\Omega_{\mathrm{m}}h^2$	$0.1418 \pm 0.0012$	$k_{\mathrm{eq}}$	$0.010297 \pm 0.000086$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.5$
$\Omega_{\mathrm{m}}h^3$	$0.09600 \pm 0.00048$	$100\theta_{\mathrm{eq}}$	$0.8183 \pm 0.0052$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.5$
$\sigma_8$	$0.8078^{+0.0066}_{-0.0079}$	$100\theta_{\mathrm{s,eq}}$	$0.4521 \pm 0.0027$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.3$
$S_8$	$0.821 \pm 0.015$	$H(0.15)$	$72.95 \pm 0.47$	$\chi_{\mathrm{CMB}}^2$	$7484.1 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4495 \pm 0.0080$	$D_{\mathrm{M}}(0.15)$	$640.6 \pm 4.6$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7497.95$ ;  $R - 1 = 0.02138$



## 12.27 base\_nrun\_CamSpecHM\_TT\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02218 \pm 0.00022$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4568 \pm 0.0089$	$H(0.15)$	$72.49 \pm 0.61$
$\Omega_{\mathrm{c}} h^2$	$0.1201 \pm 0.0015$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.6087 \pm 0.0077$	$D_{\mathrm{M}}(0.15)$	$645.2 \pm 6.1$
$100\theta_{\mathrm{MC}}$	$1.04088 \pm 0.00045$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.011$	$H(0.38)$	$82.69 \pm 0.45$
$\tau$	$0.0547^{+0.0052}_{-0.0086}$	$r_{\mathrm{drag}} h$	$98.9 \pm 1.2$	$D_{\mathrm{M}}(0.38)$	$1537 \pm 12$
$\ln(10^{10} A_{\mathrm{s}})$	$3.044^{+0.011}_{-0.016}$	$\langle d^2 \rangle^{1/2}$	$2.443 \pm 0.027$	$H(0.51)$	$89.46 \pm 0.36$
$n_{\mathrm{s}}$	$0.9639 \pm 0.0051$	$z_{\mathrm{re}}$	$7.75^{+0.58}_{-0.84}$	$D_{\mathrm{M}}(0.51)$	$1991 \pm 14$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	$-0.0026 \pm 0.0074$	$10^9 A_{\mathrm{s}}$	$2.099^{+0.023}_{-0.034}$	$H(0.61)$	$95.12 \pm 0.30$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.881 \pm 0.012$	$D_{\mathrm{M}}(0.61)$	$2316 \pm 15$
$A_{100}^{\mathrm{PS}}$	$244 \pm 25$	$D_{40}$	$1223 \pm 20$	$H(2.33)$	$236.44 \pm 0.95$
$A_{143}^{\mathrm{PS}}$	$42 \pm 9$	$D_{220}$	$5707 \pm 41$	$D_{\mathrm{M}}(2.33)$	$5772 \pm 15$
$A_{217}^{\mathrm{PS}}$	$100 \pm 10$	$D_{810}$	$2534 \pm 14$	$f\sigma_8(0.15)$	$0.4609 \pm 0.0082$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{1420}$	$813.7 \pm 5.3$	$\sigma_8(0.15)$	$0.7490^{+0.0050}_{-0.0055}$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.7}$	$D_{2000}$	$229.3 \pm 2.0$	$f\sigma_8(0.38)$	$0.4780 \pm 0.0064$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.972 \pm 0.023$	$\sigma_8(0.38)$	$0.6634^{+0.0040}_{-0.0049}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.472$	$Y_{\mathrm{P}}$	$0.24531^{+0.00010}_{-0.000085}$	$f\sigma_8(0.51)$	$0.4759 \pm 0.0054$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00010}_{-0.000085}$	$\sigma_8(0.51)$	$0.6206^{+0.0037}_{-0.0047}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.622 \pm 0.042$	$f\sigma_8(0.61)$	$0.4705 \pm 0.0048$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$\mathrm{Age}/\mathrm{Gyr}$	$13.818 \pm 0.033$	$\sigma_8(0.61)$	$0.5903^{+0.0034}_{-0.0045}$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.17$	$z_*$	$1090.17 \pm 0.36$	$f\sigma_8(2.33)$	$0.2974^{+0.0017}_{-0.0024}$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.11$	$r_*$	$144.55 \pm 0.37$	$\sigma_8(2.33)$	$0.3064^{+0.0019}_{-0.0027}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.17$	$100\theta_*$	$1.04109 \pm 0.00044$	$f_{2000}^{143}$	$31.3 \pm 3.3$
$c_{100}$	$0.9975 \pm 0.0010$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.884 \pm 0.035$	$f_{2000}^{217}$	$107.9 \pm 2.2$
$c_{217}$	$1.0013 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.50 \pm 0.49$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.4$
$H_0$	$67.15 \pm 0.70$	$r_{\mathrm{drag}}$	$147.28 \pm 0.39$	$\chi_{\mathrm{lensing}}^2$	$9.59 \pm 0.91$
$\Omega_{\Lambda}$	$0.6829 \pm 0.0097$	$k_{\mathrm{D}}$	$0.14053 \pm 0.00048$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.7$
$\Omega_{\mathrm{m}}$	$0.3171 \pm 0.0097$	$100\theta_{\mathrm{D}}$	$0.16102 \pm 0.00028$	$\chi_{\mathrm{lowl}}^2$	$23.1 \pm 2.0$
$\Omega_{\mathrm{m}} h^2$	$0.1429 \pm 0.0015$	$z_{\mathrm{eq}}$	$3400 \pm 35$	$\chi_{\mathrm{CamSpec}}^2$	$7063.5 \pm 5.4$
$\Omega_{\mathrm{m}} h^3$	$0.09598 \pm 0.00048$	$k_{\mathrm{eq}}$	$0.01038 \pm 0.00011$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.5$
$\sigma_8$	$0.8112 \pm 0.0061$	$100\theta_{\mathrm{eq}}$	$0.8132 \pm 0.0066$	$\chi_{\mathrm{CMB}}^2$	$7493.1 \pm 5.6$
$S_8$	$0.834 \pm 0.016$	$100\theta_{\mathrm{s,eq}}$	$0.4495 \pm 0.0034$		
$\bar{\chi}_{\mathrm{eff}}^2 = 7500.82; R - 1 = 0.01490$					



## 12.28 base\_nrun\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02225 \pm 0.00021$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6043 \pm 0.0062$	$H(0.38)$	$82.98 \pm 0.33$
$\Omega_{\mathrm{c}}h^2$	$0.1191 \pm 0.0011$	$\sigma_8/h^{0.5}$	$0.9845 \pm 0.0089$	$D_{\mathrm{M}}(0.38)$	$1529.6 \pm 8.7$
$100\theta_{\mathrm{MC}}$	$1.04104 \pm 0.00041$	$r_{\mathrm{drag}}h$	$99.71 \pm 0.84$	$H(0.51)$	$89.68 \pm 0.28$
$\tau$	$0.0569^{+0.0060}_{-0.0083}$	$\langle d^2 \rangle^{1/2}$	$2.431 \pm 0.023$	$D_{\mathrm{M}}(0.51)$	$1982 \pm 10$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046^{+0.013}_{-0.017}$	$z_{\mathrm{re}}$	$7.94^{+0.65}_{-0.79}$	$H(0.61)$	$95.29 \pm 0.25$
$n_{\mathrm{s}}$	$0.9664 \pm 0.0044$	$10^9 A_{\mathrm{s}}$	$2.104^{+0.026}_{-0.035}$	$D_{\mathrm{M}}(0.61)$	$2306 \pm 11$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0025 \pm 0.0075$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878 \pm 0.011$	$H(2.33)$	$235.86 \pm 0.70$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0024$	$D_{40}$	$1220 \pm 19$	$D_{\mathrm{M}}(2.33)$	$5765 \pm 13$
$A_{100}^{\mathrm{PS}}$	$243 \pm 25$	$D_{220}$	$5714 \pm 40$	$f\sigma_8(0.15)$	$0.4558 \pm 0.0061$
$A_{143}^{\mathrm{PS}}$	$41 \pm 9$	$D_{810}$	$2535 \pm 14$	$\sigma_8(0.15)$	$0.7481^{+0.0050}_{-0.0059}$
$A_{217}^{\mathrm{PS}}$	$100 \pm 10$	$D_{1420}$	$814.7 \pm 5.2$	$f\sigma_8(0.38)$	$0.4743 \pm 0.0050$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{2000}$	$229.7 \pm 1.9$	$\sigma_8(0.38)$	$0.6632^{+0.0043}_{-0.0052}$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.6}$	$n_{\mathrm{s},0.002}$	$0.974 \pm 0.023$	$f\sigma_8(0.51)$	$0.4730 \pm 0.0045$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	$0.245343^{+0.000094}_{-0.000078}$	$\sigma_8(0.51)$	$0.6207^{+0.0040}_{-0.0049}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.466$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246669^{+0.000094}_{-0.000078}$	$f\sigma_8(0.61)$	$0.4681 \pm 0.0041$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.609 \pm 0.039$	$\sigma_8(0.61)$	$0.5906^{+0.0038}_{-0.0047}$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.802 \pm 0.029$	$f\sigma_8(2.33)$	$0.2978^{+0.0019}_{-0.0025}$
$A_{100}^{\mathrm{dust}}$	$1.02 \pm 0.20$	$z_*$	$1090.00 \pm 0.30$	$\sigma_8(2.33)$	$0.3071^{+0.0020}_{-0.0026}$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.17$	$r_*$	$144.76 \pm 0.29$	$f_{2000}^{143}$	$30.9 \pm 3.3$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.11$	$100\theta_*$	$1.04124 \pm 0.00041$	$f_{2000}^{217}$	$107.7 \pm 2.2$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.17$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.902 \pm 0.029$	$f_{2000}^{143 \times 217}$	$33.1 \pm 2.4$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.59 \pm 0.48$	$\chi_{\mathrm{lensing}}^2$	$9.43 \pm 0.77$
$c_{217}$	$1.0012 \pm 0.0015$	$r_{\mathrm{drag}}$	$147.47 \pm 0.33$	$\chi_{\mathrm{simall}}^2$	$397.3 \pm 2.0$
$H_0$	$67.61 \pm 0.50$	$k_{\mathrm{D}}$	$0.14038 \pm 0.00045$	$\chi_{\mathrm{lowl}}^2$	$22.8 \pm 1.9$
$\Omega_{\Lambda}$	$0.6893 \pm 0.0065$	$100\theta_{\mathrm{D}}$	$0.16098 \pm 0.00028$	$\chi_{\mathrm{CamSpec}}^2$	$7063.8 \pm 5.4$
$\Omega_{\mathrm{m}}$	$0.3107 \pm 0.0065$	$z_{\mathrm{eq}}$	$3378 \pm 25$	$\chi_{6\mathrm{DF}}^2$	$0.054 \pm 0.068$
$\Omega_{\mathrm{m}}h^2$	$0.1420 \pm 0.0011$	$k_{\mathrm{eq}}$	$0.010309 \pm 0.000077$	$\chi_{\mathrm{MGS}}^2$	$1.31 \pm 0.46$
$\Omega_{\mathrm{m}}h^3$	$0.09600 \pm 0.00048$	$100\theta_{\mathrm{eq}}$	$0.8175 \pm 0.0046$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.5$
$\sigma_8$	$0.8095^{+0.0056}_{-0.0064}$	$100\theta_{\mathrm{s,eq}}$	$0.4517 \pm 0.0024$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.5$
$S_8$	$0.824 \pm 0.012$	$H(0.15)$	$72.88 \pm 0.43$	$\chi_{\mathrm{CMB}}^2$	$7493.3 \pm 5.5$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4512 \pm 0.0065$	$D_{\mathrm{M}}(0.15)$	$641.3 \pm 4.3$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.2$

$\bar{\chi}_{\mathrm{eff}}^2 = 7507.10$ ;  $R - 1 = 0.02288$



## 12.29 base\_nrun\_CamSpecHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}} h^2$	0.022296	$0.02229 \pm 0.00016$ (+0.6 $\sigma$ )	$\sigma_8$	0.8086	$0.8080 \pm 0.0076$ (−0.4 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8148	$0.8150 \pm 0.0059$ (+0.4 $\sigma$ )
$\Omega_{\mathrm{c}} h^2$	0.11967	$0.1196 \pm 0.0014$ (−0.4 $\sigma$ )	$S_8$	0.8272	$0.826 \pm 0.016$ (−0.5 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.45022	$0.4503 \pm 0.0030$ (+0.4 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.040874	$1.04087 \pm 0.00031$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	0.4531	$0.4526 \pm 0.0089$ (−0.5 $\sigma$ )	$H(0.15)$	72.70	$72.71 \pm 0.52$ (+0.5 $\sigma$ )
$\tau$	0.0532	$0.0528 \pm 0.0082$ (−0.0 $\sigma$ )	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	0.6053	$0.6047 \pm 0.0084$ (−0.5 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	643.1	$643.0 \pm 5.2$ (−0.5 $\sigma$ )
$\ln(10^{10} A_{\mathrm{s}})$	3.0394	$3.039 \pm 0.017$ (−0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9849	$0.984 \pm 0.012$ (−0.5 $\sigma$ )	$H(0.38)$	82.856	$82.86 \pm 0.37$ (+0.5 $\sigma$ )
$n_{\mathrm{s}}$	0.96599	$0.9657 \pm 0.0048$ (+0.4 $\sigma$ )	$r_{\mathrm{drag}} h$	99.25	$99.3 \pm 1.1$ (+0.4 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1533.1	$1533 \pm 10$ (−0.5 $\sigma$ )
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	−0.0007	$−0.0011 \pm 0.0068$ (+0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4333	$2.432 \pm 0.028$ (−0.4 $\sigma$ )	$H(0.51)$	89.598	$89.60 \pm 0.30$ (+0.5 $\sigma$ )
$y_{\mathrm{cal}}$	1.00030	$1.0004 \pm 0.0025$ (−0.0 $\sigma$ )	$z_{\mathrm{re}}$	7.57	$7.52 \pm 0.84$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1985.6	$1985 \pm 12$ (−0.5 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	236.5	$241 \pm 25$ (−0.1 $\sigma$ )	$10^9 A_{\mathrm{s}}$	2.0894	$2.088 \pm 0.036$ (−0.1 $\sigma$ )	$H(0.61)$	95.236	$95.24 \pm 0.24$ (+0.5 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	42.4	$40 \pm 9$ (−0.2 $\sigma$ )	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8786	$1.879 \pm 0.012$ (−0.3 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2310.2	$2310 \pm 13$ (−0.5 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	102.5	$102 \pm 10$ (+0.1 $\sigma$ )	$D_{40}$	1223.7	$1224 \pm 18$ (+0.0 $\sigma$ )	$H(2.33)$	236.26	$236.23 \pm 0.84$ (−0.4 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	42.9	$40 \pm 7$ (−0.2 $\sigma$ )	$D_{220}$	5714.7	$5716 \pm 38$ (+0.3 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5766.6	$5767 \pm 11$ (−0.5 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	5.59	$3.8_{-2.6}^{+1.9}$ (+0.1 $\sigma$ )	$D_{810}$	2534.9	$2535 \pm 14$ (−0.0 $\sigma$ )	$f\sigma_8(0.15)$	0.4574	$0.4570 \pm 0.0083$ (−0.5 $\sigma$ )
$r_{143 \times 217}^{\mathrm{PS}}$	0.627	$0.65 \pm 0.13$ (+0.1 $\sigma$ )	$D_{1420}$	815.6	$815.3 \pm 5.0$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7469	$0.7464 \pm 0.0067$ (−0.3 $\sigma$ )
$r_{143 \times 217}^{\mathrm{CIB}}$	0.775	$0.57_{-0.16}^{+0.40}$ (−0.1 $\sigma$ )	$D_{2000}$	230.18	$230.0 \pm 1.9$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4752	$0.4747 \pm 0.0068$ (−0.5 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.33	—	$n_{\mathrm{s},0.002}$	0.9681	$0.969 \pm 0.021$ (−0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6618	$0.6614 \pm 0.0057$ (−0.3 $\sigma$ )
$A^{\mathrm{kSZ}}$	1.54	$4.8_{-3.8}^{+2.5}$ (−0.2 $\sigma$ )	$Y_{\mathrm{P}}$	0.245366	$0.245362_{-0.000063}^{+0.000069}$ (+0.6 $\sigma$ )	$f\sigma_8(0.51)$	0.4735	$0.4731 \pm 0.0060$ (−0.4 $\sigma$ )
$A_{100}^{\mathrm{dust}}$	1.015	$1.01 \pm 0.20$ (−0.0 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246692	$0.246689_{-0.000063}^{+0.000069}$ (+0.6 $\sigma$ )	$\sigma_8(0.51)$	0.6192	$0.6188 \pm 0.0053$ (−0.2 $\sigma$ )
$A_{143}^{\mathrm{dust}}$	0.978	$0.97 \pm 0.18$ (−0.1 $\sigma$ )	$10^5 \mathrm{D}/\mathrm{H}$	2.5994	$2.601 \pm 0.031$ (−0.6 $\sigma$ )	$f\sigma_8(0.61)$	0.4683	$0.4679 \pm 0.0055$ (−0.4 $\sigma$ )
$A_{217}^{\mathrm{dust}}$	0.971	$0.97 \pm 0.10$ (+0.1 $\sigma$ )	Age/Gyr	13.8048	$13.805 \pm 0.025$ (−0.5 $\sigma$ )	$\sigma_8(0.61)$	0.58915	$0.5888 \pm 0.0050$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dust}}$	0.992	$1.03 \pm 0.16$ (−0.0 $\sigma$ )	$z_*$	1089.986	$1089.99 \pm 0.28$ (−0.6 $\sigma$ )	$f\sigma_8(2.33)$	0.29695	$0.2968 \pm 0.0025$ (−0.1 $\sigma$ )
$c_{100}$	0.99763	$0.9975 \pm 0.0011$ (+0.1 $\sigma$ )	$r_*$	144.573	$144.59 \pm 0.32$ (+0.3 $\sigma$ )	$\sigma_8(2.33)$	0.30604	$0.3059 \pm 0.0026$ (−0.0 $\sigma$ )
$c_{217}$	1.00129	$1.0011 \pm 0.0016$ (−0.1 $\sigma$ )	$100\theta_*$	1.041067	$1.04106 \pm 0.00031$ (+0.0 $\sigma$ )	$f_{2000}^{143}$	30.18	$30.1 \pm 3.2$ (−0.4 $\sigma$ )
$c_{TE}$	0.99655	$0.9967 \pm 0.0050$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8870	$13.889 \pm 0.030$ (+0.3 $\sigma$ )	$f_{2000}^{217}$	106.90	$107.1 \pm 2.2$ (−0.4 $\sigma$ )
$c_{EE}$	0.99209	$0.9922 \pm 0.0050$	$z_{\mathrm{drag}}$	1059.742	$1059.73 \pm 0.35$ (+0.5 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.19	$32.4 \pm 2.3$ (−0.5 $\sigma$ )
$H_0$	67.40	$67.41 \pm 0.60$ (+0.5 $\sigma$ )	$r_{\mathrm{drag}}$	147.261	$147.28 \pm 0.33$ (+0.2 $\sigma$ )	$\chi_{\mathrm{simall}}^2$	395.88	$396.9 \pm 1.7$ (−0.1 $\sigma$ )
$\Omega_{\Lambda}$	0.6860	$0.6861 \pm 0.0084$ (+0.5 $\sigma$ )	$k_{\mathrm{D}}$	0.140632	$0.14061 \pm 0.00038$ (+0.0 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	22.85	$23.1 \pm 1.9$ (+0.0 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3140	$0.3139 \pm 0.0084$ (−0.5 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160863	$0.16087 \pm 0.00020$ (−0.5 $\sigma$ )	$\chi_{\mathrm{CamSpec}}^2$	11499.9	$11515.5 \pm 5.9$ (+787.8 $\sigma$ )
$\Omega_{\mathrm{m}} h^2$	0.14261	$0.1426 \pm 0.0013$ (−0.4 $\sigma$ )	$z_{\mathrm{eq}}$	3392.5	$3391 \pm 31$ (−0.4 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	2.17	$7.8 \pm 3.5$ (+0.0 $\sigma$ )
$\Omega_{\mathrm{m}} h^3$	0.096111	$0.09609 \pm 0.00034$ (+0.2 $\sigma$ )	$k_{\mathrm{eq}}$	0.010354	$0.010351 \pm 0.000096$ (−0.4 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	11918.6	$11935.6 \pm 5.9$ (+789.2 $\sigma$ )

Best-fit  $\chi_{\mathrm{eff}}^2 = 11920.76$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 4449.24$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 11943.38$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 4451.24$ ;  $R - 1 = 0.00835$

$\chi_{\mathrm{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.88 ( $\Delta$  -0.02) commander\_dx12\_v3.2.29: 22.85 ( $\Delta$  0.12) CamSpec like\_10.7HM\_1400\_unified: 11499.86



### 12.30 base\_nrun\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02233 \pm 0.00015 \quad (+0.4\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4486 \pm 0.0070 \quad (-0.1\sigma)$	$H(0.38)$	$83.04 \pm 0.29 \quad (+0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1189 \pm 0.0010 \quad (+0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6014 \pm 0.0071 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1527.9 \pm 7.7 \quad (-0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04095 \pm 0.00030 \quad (-0.3\sigma)$	$\sigma_8/h^{0.5}$	$0.980 \pm 0.010 \quad (-0.1\sigma)$	$H(0.51)$	$89.74 \pm 0.23 \quad (+0.1\sigma)$
$\tau$	$0.0536 \pm 0.0081 \quad (-0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.81 \pm 0.78 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1979.5 \pm 9.1 \quad (-0.1\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.039 \pm 0.017 \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.423 \pm 0.026 \quad (+0.0\sigma)$	$H(0.61)$	$95.34 \pm 0.20 \quad (+0.1\sigma)$
$n_{\mathrm{s}}$	$0.9674 \pm 0.0042 \quad (+0.1\sigma)$	$z_{\mathrm{re}}$	$7.58 \pm 0.82 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.61)$	$2303.7 \pm 9.8 \quad (-0.1\sigma)$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0005 \pm 0.0067 \quad (+0.3\sigma)$	$10^9 A_{\mathrm{s}}$	$2.088^{+0.033}_{-0.036} \quad (-0.1\sigma)$	$H(2.33)$	$235.83 \pm 0.64 \quad (+0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.876 \pm 0.012 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	$5762.3 \pm 9.5 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$240 \pm 25 \quad (-0.1\sigma)$	$D_{40}$	$1222 \pm 18 \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4533 \pm 0.0066 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 9 \quad (-0.2\sigma)$	$D_{220}$	$5720 \pm 38 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.7452 \pm 0.0065 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2534 \pm 14 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4720 \pm 0.0057 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40^{+7}_{-8} \quad (-0.2\sigma)$	$D_{1420}$	$815.9 \pm 5.0 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6608 \pm 0.0056 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5} \quad (+0.1\sigma)$	$D_{2000}$	$230.3 \pm 1.8 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4708 \pm 0.0052 \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.969 \pm 0.020 \quad (-0.3\sigma)$	$\sigma_8(0.51)$	$0.6185 \pm 0.0052 \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.41}_{-0.16} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245379^{+0.000065}_{-0.000058} \quad (+0.4\sigma)$	$f\sigma_8(0.61)$	$0.4660 \pm 0.0049 \quad (-0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246705^{+0.000065}_{-0.000059} \quad (+0.4\sigma)$	$\sigma_8(0.61)$	$0.5885 \pm 0.0049 \quad (-0.1\sigma)$
$A^{\mathrm{kSZ}}$	$4.7^{+2.2}_{-4.0} \quad (-0.2\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.593 \pm 0.029 \quad (-0.4\sigma)$	$f\sigma_8(2.33)$	$0.2968 \pm 0.0025 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19 \quad (-0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.796 \pm 0.022 \quad (-0.2\sigma)$	$\sigma_8(2.33)$	$0.3061 \pm 0.0026 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$z_*$	$1089.88 \pm 0.24 \quad (-0.3\sigma)$	$f_{2000}^{143}$	$29.7 \pm 3.2 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10 \quad (+0.0\sigma)$	$r_*$	$144.73 \pm 0.26 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$106.9 \pm 2.2 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_*$	$1.04114 \pm 0.00029 \quad (-0.3\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 2.3 \quad (-0.4\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.901 \pm 0.024 \quad (-0.1\sigma)$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.7 \quad (-0.1\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$z_{\mathrm{drag}}$	$1059.77 \pm 0.34 \quad (+0.4\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.0 \pm 1.8 \quad (+0.2\sigma)$
$c_{TE}$	$0.9969 \pm 0.0050$	$r_{\mathrm{drag}}$	$147.41 \pm 0.27 \quad (-0.3\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11515.4 \pm 6.0 \quad (+804.9\sigma)$
$c_{EE}$	$0.9925 \pm 0.0049$	$k_{\mathrm{D}}$	$0.14050 \pm 0.00035 \quad (+0.3\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.045 \pm 0.056 \quad (-0.1\sigma)$
$H_0$	$67.71 \pm 0.45 \quad (+0.0\sigma)$	$100\theta_{\mathrm{D}}$	$0.16085 \pm 0.00020 \quad (-0.5\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.36 \pm 0.44 \quad (-0.1\sigma)$
$\Omega_{\Lambda}$	$0.6904 \pm 0.0061 \quad (+0.0\sigma)$	$z_{\mathrm{eq}}$	$3376 \pm 24 \quad (+0.1\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.3 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3096 \pm 0.0061 \quad (-0.0\sigma)$	$k_{\mathrm{eq}}$	$0.010304 \pm 0.000072 \quad (+0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.5 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14192 \pm 0.00098 \quad (+0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8179 \pm 0.0044 \quad (-0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$5.97 \pm 0.97 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09609 \pm 0.00034 \quad (+0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4518 \pm 0.0023 \quad (-0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11935.4 \pm 5.9 \quad (+810.1\sigma)$
$\sigma_8$	$0.8062 \pm 0.0073 \quad (-0.1\sigma)$	$H(0.15)$	$72.97 \pm 0.39 \quad (+0.1\sigma)$		
$S_8$	$0.819 \pm 0.013 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$640.4 \pm 3.8 \quad (-0.1\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11949.15; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.99; R - 1 = 0.01377$$



### 12.31 base\_nrun\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02229 \pm 0.00016 \quad (+0.5\sigma)$	$S_8$	$0.828 \pm 0.013 \quad (-0.4\sigma)$	$H(0.15)$	$72.69 \pm 0.46 \quad (+0.4\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1197 \pm 0.0012 \quad (-0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4535 \pm 0.0069 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.15)$	$643.2 \pm 4.6 \quad (-0.4\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04086 \pm 0.00031 \quad (-0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6057 \pm 0.0063 \quad (-0.4\sigma)$	$H(0.38)$	$82.85 \pm 0.34 \quad (+0.4\sigma)$
$\tau$	$0.0537 \pm 0.0077 \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9857 \pm 0.0090 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.38)$	$1533.4 \pm 9.2 \quad (-0.4\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041 \pm 0.015 \quad (-0.0\sigma)$	$r_{\mathrm{drag}}h$	$99.23 \pm 0.93 \quad (+0.3\sigma)$	$H(0.51)$	$89.59 \pm 0.27 \quad (+0.4\sigma)$
$n_{\mathrm{s}}$	$0.9655 \pm 0.0045 \quad (+0.4\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.437 \pm 0.023 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1986 \pm 11 \quad (-0.4\sigma)$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0006 \pm 0.0066 \quad (+0.2\sigma)$	$z_{\mathrm{re}}$	$7.61 \pm 0.77 \quad (+0.0\sigma)$	$H(0.61)$	$95.23 \pm 0.22 \quad (+0.4\sigma)$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.093 \pm 0.032 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2311 \pm 12 \quad (-0.4\sigma)$
$A_{100}^{\mathrm{PS}}$	$240 \pm 25 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879 \pm 0.011 \quad (-0.2\sigma)$	$H(2.33)$	$236.27 \pm 0.73 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{PS}}$	$40 \pm 9 \quad (-0.2\sigma)$	$D_{40}$	$1226 \pm 18 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5767 \pm 11 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.2\sigma)$	$D_{220}$	$5719 \pm 39 \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4579 \pm 0.0064 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40_{-8}^{+7} \quad (-0.2\sigma)$	$D_{810}$	$2535 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7473 \pm 0.0054 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9_{-2.5}^{+1.9} \quad (+0.1\sigma)$	$D_{1420}$	$815.5 \pm 5.0 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4755 \pm 0.0052 \quad (-0.4\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$D_{2000}$	$230.1 \pm 1.8 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6622 \pm 0.0048 \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56_{-0.17}^{+0.40} \quad (-0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.967 \pm 0.020 \quad (-0.2\sigma)$	$f\sigma_8(0.51)$	$0.4738 \pm 0.0045 \quad (-0.4\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.245361_{-0.000062}^{+0.000069} \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.6196 \pm 0.0045 \quad (-0.1\sigma)$
$A^{\mathrm{kSZ}}$	$4.7_{-4.1}^{+2.1} \quad (-0.2\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246688_{-0.000062}^{+0.000069} \quad (+0.5\sigma)$	$f\sigma_8(0.61)$	$0.4686 \pm 0.0041 \quad (-0.3\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19 \quad (-0.0\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.601 \pm 0.030 \quad (-0.5\sigma)$	$\sigma_8(0.61)$	$0.5895 \pm 0.0043 \quad (-0.0\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.806 \pm 0.024 \quad (-0.4\sigma)$	$f\sigma_8(2.33)$	$0.2971 \pm 0.0022 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10 \quad (+0.1\sigma)$	$z_*$	$1089.99 \pm 0.26 \quad (-0.6\sigma)$	$\sigma_8(2.33)$	$0.3062 \pm 0.0024 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$r_*$	$144.57 \pm 0.28 \quad (+0.1\sigma)$	$f_{2000}^{143}$	$29.9 \pm 3.2 \quad (-0.4\sigma)$
$c_{100}$	$0.9976 \pm 0.0011 \quad (+0.1\sigma)$	$100\theta_*$	$1.04105 \pm 0.00030 \quad (-0.0\sigma)$	$f_{2000}^{217}$	$107.0 \pm 2.2 \quad (-0.4\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.887 \pm 0.026 \quad (+0.1\sigma)$	$f_{2000}^{143 \times 217}$	$32.3 \pm 2.3 \quad (-0.5\sigma)$
$c_{TE}$	$0.9967 \pm 0.0050$	$z_{\mathrm{drag}}$	$1059.73 \pm 0.35 \quad (+0.5\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.33 \pm 0.73 \quad (-0.3\sigma)$
$c_{EE}$	$0.9922 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.26 \pm 0.29 \quad (+0.0\sigma)$	$\chi_{\mathrm{small}}^2$	$396.9 \pm 1.6 \quad (-0.0\sigma)$
$H_0$	$67.38 \pm 0.53 \quad (+0.4\sigma)$	$k_{\mathrm{D}}$	$0.14062 \pm 0.00035 \quad (+0.2\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.4 \pm 1.9 \quad (+0.1\sigma)$
$\Omega_{\Lambda}$	$0.6858 \pm 0.0073 \quad (+0.4\sigma)$	$100\theta_{\mathrm{D}}$	$0.16087 \pm 0.00020 \quad (-0.5\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11514.9 \pm 5.8 \quad (+824.7\sigma)$
$\Omega_{\mathrm{m}}$	$0.3142 \pm 0.0073 \quad (-0.4\sigma)$	$z_{\mathrm{eq}}$	$3393 \pm 27 \quad (-0.3\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.4 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1426 \pm 0.0011 \quad (-0.3\sigma)$	$k_{\mathrm{eq}}$	$0.010355 \pm 0.000083 \quad (-0.3\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11944.5 \pm 6.0 \quad (+790.5\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09610 \pm 0.00033 \quad (+0.3\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8147 \pm 0.0051 \quad (+0.3\sigma)$		
$\sigma_8$	$0.8091 \pm 0.0060 \quad (-0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4502 \pm 0.0026 \quad (+0.3\sigma)$		

$\bar{\chi}_{\mathrm{eff}}^2 = 11952.22$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 4451.15$ ;  $R - 1 = 0.01144$



### 12.32 base\_nrun\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02233 \pm 0.00015 \quad (+0.4\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4504 \pm 0.0058 \quad (-0.1\sigma)$	$H(0.38)$	$83.01 \pm 0.27 \quad (+0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.11910 \pm 0.00094 \quad (-0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6034 \pm 0.0057 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1528.9 \pm 7.3 \quad (-0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04094 \pm 0.00029 \quad (-0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.9828 \pm 0.0083 \quad (-0.1\sigma)$	$H(0.51)$	$89.71 \pm 0.22 \quad (+0.1\sigma)$
$\tau$	$0.0552_{-0.0076}^{+0.0068} \quad (-0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.70 \pm 0.72 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1980.7 \pm 8.5 \quad (-0.1\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043_{-0.015}^{+0.014} \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.431 \pm 0.021 \quad (+0.0\sigma)$	$H(0.61)$	$95.33 \pm 0.19 \quad (+0.2\sigma)$
$n_{\mathrm{s}}$	$0.9669 \pm 0.0040 \quad (+0.1\sigma)$	$z_{\mathrm{re}}$	$7.75 \pm 0.74 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.61)$	$2304.9 \pm 9.2 \quad (-0.1\sigma)$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0002 \pm 0.0066 \quad (+0.3\sigma)$	$10^9 A_{\mathrm{s}}$	$2.097_{-0.033}^{+0.029} \quad (-0.1\sigma)$	$H(2.33)$	$235.93 \pm 0.59 \quad (+0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.011 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	$5763.0 \pm 9.3 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$240 \pm 25 \quad (-0.1\sigma)$	$D_{40}$	$1225 \pm 18 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4551 \pm 0.0054 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 9 \quad (-0.2\sigma)$	$D_{220}$	$5724 \pm 38 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.7470_{-0.0056}^{+0.0050} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10 \quad (+0.2\sigma)$	$D_{810}$	$2535 \pm 13 \quad (+0.0\sigma)$	$f\sigma_8(0.38)$	$0.4736 \pm 0.0046 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40_{-8}^{+7} \quad (-0.2\sigma)$	$D_{1420}$	$816.1 \pm 4.9 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6623_{-0.0049}^{+0.0044} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9_{-2.4}^{+1.9} \quad (+0.1\sigma)$	$D_{2000}$	$230.4 \pm 1.8 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4723 \pm 0.0042 \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.968 \pm 0.020 \quad (-0.3\sigma)$	$\sigma_8(0.51)$	$0.6198_{-0.0046}^{+0.0041} \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56_{-0.18}^{+0.39} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245377_{-0.000057}^{+0.000065} \quad (+0.4\sigma)$	$f\sigma_8(0.61)$	$0.4674 \pm 0.0039 \quad (-0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246704_{-0.000058}^{+0.000066} \quad (+0.4\sigma)$	$\sigma_8(0.61)$	$0.5898_{-0.0044}^{+0.0039} \quad (-0.1\sigma)$
$A^{\mathrm{kSZ}}$	$4.6_{-4.2}^{+2.0} \quad (-0.2\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.594 \pm 0.029 \quad (-0.4\sigma)$	$f\sigma_8(2.33)$	$0.2974_{-0.0022}^{+0.0020} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19 \quad (-0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.797 \pm 0.021 \quad (-0.2\sigma)$	$\sigma_8(2.33)$	$0.3067_{-0.0024}^{+0.0021} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$z_*$	$1089.89 \pm 0.23 \quad (-0.4\sigma)$	$f_{2000}^{143}$	$29.6 \pm 3.2 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10 \quad (+0.0\sigma)$	$r_*$	$144.70_{-0.25}^{+0.22} \quad (-0.2\sigma)$	$f_{2000}^{217}$	$106.9 \pm 2.1 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_*$	$1.04113 \pm 0.00029 \quad (-0.3\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.3 \quad (-0.4\sigma)$
$c_{100}$	$0.9976 \pm 0.0011 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.898_{-0.024}^{+0.021} \quad (-0.1\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.32 \pm 0.77 \quad (-0.2\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$z_{\mathrm{drag}}$	$1059.78 \pm 0.34 \quad (+0.4\sigma)$	$\chi_{\mathrm{small}}^2$	$397.1 \pm 1.8 \quad (-0.1\sigma)$
$c_{TE}$	$0.9968 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.38_{-0.27}^{+0.24} \quad (-0.3\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.2 \pm 1.9 \quad (+0.2\sigma)$
$c_{EE}$	$0.9925 \pm 0.0049$	$k_{\mathrm{D}}$	$0.14053 \pm 0.00033 \quad (+0.3\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11514.8 \pm 5.8 \quad (+832.0\sigma)$
$H_0$	$67.65 \pm 0.42 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16085 \pm 0.00020 \quad (-0.5\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.048 \pm 0.056 \quad (-0.1\sigma)$
$\Omega_{\Lambda}$	$0.6895 \pm 0.0056 \quad (+0.1\sigma)$	$z_{\mathrm{eq}}$	$3380 \pm 22 \quad (+0.0\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.29 \pm 0.40 \quad (-0.0\sigma)$
$\Omega_{\mathrm{m}}$	$0.3105 \pm 0.0056 \quad (-0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010315 \pm 0.000066 \quad (+0.0\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.2 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14207 \pm 0.00090 \quad (+0.0\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8173 \pm 0.0040 \quad (-0.0\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.4 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09610_{-0.00032}^{+0.00035} \quad (+0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4515 \pm 0.0021 \quad (-0.0\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11944.4 \pm 5.9 \quad (+805.0\sigma)$
$\sigma_8$	$0.8083 \pm 0.0059 \quad (-0.1\sigma)$	$H(0.15)$	$72.92 \pm 0.36 \quad (+0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.02 \pm 0.97 \quad (-0.1\sigma)$
$S_8$	$0.822 \pm 0.011 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$641.0 \pm 3.6 \quad (-0.1\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11958.12; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.89; R - 1 = 0.01586$$



### 12.33 base\_nrun\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Riess18

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02242 \pm 0.00016$	$S_8$	$0.810 \pm 0.015$	$H(0.15)$	$73.33 \pm 0.49$
$\Omega_{\mathrm{c}}h^2$	$0.1181 \pm 0.0013$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4435 \pm 0.0083$	$D_{\mathrm{M}}(0.15)$	$636.9 \pm 4.8$
$100\theta_{\mathrm{MC}}$	$1.04107 \pm 0.00030$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5971 \pm 0.0081$	$H(0.38)$	$83.31 \pm 0.36$
$\tau$	$0.0550^{+0.0074}_{-0.0087}$	$\sigma_8/h^{0.5}$	$0.974 \pm 0.012$	$D_{\mathrm{M}}(0.38)$	$1520.8 \pm 9.6$
$\ln(10^{10}A_{\mathrm{s}})$	$3.040^{+0.016}_{-0.018}$	$r_{\mathrm{drag}}h$	$100.5 \pm 1.0$	$H(0.51)$	$89.95 \pm 0.29$
$n_{\mathrm{s}}$	$0.9696 \pm 0.0046$	$\langle d^2 \rangle^{1/2}$	$2.410 \pm 0.028$	$D_{\mathrm{M}}(0.51)$	$1971 \pm 11$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0004 \pm 0.0068$	$z_{\mathrm{re}}$	$7.69 \pm 0.84$	$H(0.61)$	$95.51 \pm 0.23$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$10^9 A_{\mathrm{s}}$	$2.090^{+0.033}_{-0.038}$	$D_{\mathrm{M}}(0.61)$	$2295 \pm 12$
$A_{100}^{\mathrm{PS}}$	$239 \pm 25$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.872 \pm 0.012$	$H(2.33)$	$235.35 \pm 0.79$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8$	$D_{40}$	$1218 \pm 18$	$D_{\mathrm{M}}(2.33)$	$5755 \pm 11$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{220}$	$5725 \pm 39$	$f\sigma_8(0.15)$	$0.4486 \pm 0.0078$
$A_{217}^{\mathrm{CIB}}$	$40^{+7}_{-8}$	$D_{810}$	$2534 \pm 14$	$\sigma_8(0.15)$	$0.7437 \pm 0.0068$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+1.9}_{-2.5}$	$D_{1420}$	$816.6 \pm 4.9$	$f\sigma_8(0.38)$	$0.4684 \pm 0.0066$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66^{+0.14}_{-0.12}$	$D_{2000}$	$230.6 \pm 1.8$	$\sigma_8(0.38)$	$0.6600 \pm 0.0058$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.42}_{-0.15}$	$n_{\mathrm{s},0.002}$	$0.971 \pm 0.021$	$f\sigma_8(0.51)$	$0.4678 \pm 0.0059$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.245411^{+0.000066}_{-0.000056}$	$\sigma_8(0.51)$	$0.6180 \pm 0.0054$
$A^{\mathrm{kSZ}}$	$< 6.11$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246738^{+0.000066}_{-0.000057}$	$f\sigma_8(0.61)$	$0.4635 \pm 0.0054$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$10^5 \mathrm{D}/\mathrm{H}$	$2.578^{+0.028}_{-0.031}$	$\sigma_8(0.61)$	$0.5883 \pm 0.0051$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$\mathrm{Age}/\mathrm{Gyr}$	$13.780 \pm 0.024$	$f\sigma_8(2.33)$	$0.2969 \pm 0.0026$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.11$	$z_*$	$1089.69 \pm 0.27$	$\sigma_8(2.33)$	$0.3064 \pm 0.0027$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$r_*$	$144.90 \pm 0.31$	$f_{2000}^{143}$	$29.3 \pm 3.2$
$c_{100}$	$0.9976 \pm 0.0010$	$100\theta_*$	$1.04125 \pm 0.00030$	$f_{2000}^{217}$	$106.6 \pm 2.1$
$c_{217}$	$1.0011 \pm 0.0016$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.916 \pm 0.029$	$f_{2000}^{143 \times 217}$	$31.8 \pm 2.3$
$c_{TE}$	$0.9969 \pm 0.0050$	$z_{\mathrm{drag}}$	$1059.90 \pm 0.35$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 2.0$
$c_{EE}$	$0.9923 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.55 \pm 0.32$	$\chi_{\mathrm{lowl}}^2$	$22.7 \pm 1.7$
$H_0$	$68.13 \pm 0.57$	$k_{\mathrm{D}}$	$0.14042 \pm 0.00037$	$\chi_{\mathrm{CamSpec}}^2$	$11517.0 \pm 6.4$
$\Omega_{\Lambda}$	$0.6958 \pm 0.0076$	$100\theta_{\mathrm{D}}$	$0.16078 \pm 0.00020$	$\chi_{\mathrm{H073p45}}^2$	$10.4 \pm 2.2$
$\Omega_{\mathrm{m}}$	$0.3042 \pm 0.0076$	$z_{\mathrm{eq}}$	$3357 \pm 29$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.5$
$\Omega_{\mathrm{m}}h^2$	$0.1411 \pm 0.0012$	$k_{\mathrm{eq}}$	$0.010247 \pm 0.000089$	$\chi_{\mathrm{CMB}}^2$	$11936.8 \pm 6.3$
$\Omega_{\mathrm{m}}h^3$	$0.09614 \pm 0.00034$	$100\theta_{\mathrm{eq}}$	$0.8217 \pm 0.0056$		
$\sigma_8$	$0.8040 \pm 0.0077$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4537 \pm 0.0029$		

$\bar{\chi}_{\mathrm{eff}}^2 = 11955.07$ ;  $R - 1 = 0.04651$



### 12.34 base\_nrun\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02230 \pm 0.00016 \quad (+0.5\sigma)$	$\sigma_8$	$0.8091^{+0.0064}_{-0.0074} \quad (-0.4\sigma)$	$100\theta_{\text{eq}}$	$0.8152 \pm 0.0059 \quad (+0.4\sigma)$
$\Omega_c h^2$	$0.1196 \pm 0.0014 \quad (-0.4\sigma)$	$S_8$	$0.827 \pm 0.016 \quad (-0.5\sigma)$	$100\theta_{\text{s,eq}}$	$0.4504 \pm 0.0030 \quad (+0.4\sigma)$
$100\theta_{\text{MC}}$	$1.04088 \pm 0.00031 \quad (+0.0\sigma)$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4530 \pm 0.0088 \quad (-0.5\sigma)$	$H(0.15)$	$72.73 \pm 0.51 \quad (+0.5\sigma)$
$\tau$	$0.0544^{+0.0047}_{-0.0084} \quad (-0.0\sigma)$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.6054 \pm 0.0082 \quad (-0.4\sigma)$	$D_{\text{M}}(0.15)$	$642.8 \pm 5.1 \quad (-0.5\sigma)$
$\ln(10^{10} A_{\text{s}})$	$3.042^{+0.012}_{-0.017} \quad (-0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.985 \pm 0.011 \quad (-0.4\sigma)$	$H(0.38)$	$82.88 \pm 0.37 \quad (+0.5\sigma)$
$n_{\text{s}}$	$0.9658 \pm 0.0048 \quad (+0.4\sigma)$	$r_{\text{drag}} h$	$99.3 \pm 1.1 \quad (+0.4\sigma)$	$D_{\text{M}}(0.38)$	$1533 \pm 10 \quad (-0.5\sigma)$
$\text{d}n_{\text{s}}/\text{d} \ln k$	$-0.0013 \pm 0.0068 \quad (+0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.435 \pm 0.028 \quad (-0.3\sigma)$	$H(0.51)$	$89.62 \pm 0.29 \quad (+0.5\sigma)$
$y_{\text{cal}}$	$1.0004 \pm 0.0025 \quad (-0.0\sigma)$	$z_{\text{re}}$	$7.69^{+0.52}_{-0.84} \quad (-0.1\sigma)$	$D_{\text{M}}(0.51)$	$1985 \pm 12 \quad (-0.5\sigma)$
$A_{100}^{\text{PS}}$	$241 \pm 25 \quad (-0.2\sigma)$	$10^9 A_{\text{s}}$	$2.095^{+0.024}_{-0.036} \quad (-0.2\sigma)$	$H(0.61)$	$95.25 \pm 0.24 \quad (+0.5\sigma)$
$A_{143}^{\text{PS}}$	$40 \pm 9 \quad (-0.2\sigma)$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.879 \pm 0.012 \quad (-0.3\sigma)$	$D_{\text{M}}(0.61)$	$2310 \pm 13 \quad (-0.5\sigma)$
$A_{217}^{\text{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{40}$	$1223 \pm 18 \quad (+0.0\sigma)$	$H(2.33)$	$236.21 \pm 0.84 \quad (-0.4\sigma)$
$A_{217}^{\text{CIB}}$	$40 \pm 7 \quad (-0.2\sigma)$	$D_{220}$	$5716 \pm 38 \quad (+0.3\sigma)$	$D_{\text{M}}(2.33)$	$5766 \pm 11 \quad (-0.5\sigma)$
$A_{143}^{\text{tSZ}}$	$3.8^{+1.9}_{-2.6} \quad (+0.1\sigma)$	$D_{810}$	$2535 \pm 14 \quad (-0.0\sigma)$	$f\sigma_8(0.15)$	$0.4574 \pm 0.0082 \quad (-0.5\sigma)$
$r_{143 \times 217}^{\text{PS}}$	$0.65 \pm 0.13 \quad (+0.1\sigma)$	$D_{1420}$	$815.2 \pm 5.0 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7474^{+0.0054}_{-0.0065} \quad (-0.3\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	$0.56^{+0.40}_{-0.16} \quad (-0.1\sigma)$	$D_{2000}$	$230.0 \pm 1.8 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4753 \pm 0.0067 \quad (-0.4\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$n_{\text{s},0.002}$	$0.970 \pm 0.020 \quad (-0.2\sigma)$	$\sigma_8(0.38)$	$0.6623^{+0.0043}_{-0.0055} \quad (-0.3\sigma)$
$A^{\text{kSZ}}$	$4.8^{+2.4}_{-3.8} \quad (-0.2\sigma)$	$Y_{\text{P}}$	$0.245365^{+0.000069}_{-0.000062} \quad (+0.6\sigma)$	$f\sigma_8(0.51)$	$0.4736 \pm 0.0058 \quad (-0.4\sigma)$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246692^{+0.000069}_{-0.000062} \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.6197^{+0.0039}_{-0.0051} \quad (-0.2\sigma)$
$A_{143}^{\text{dust}}$	$0.97 \pm 0.18 \quad (-0.1\sigma)$	$10^5 \text{D}/\text{H}$	$2.599 \pm 0.030 \quad (-0.6\sigma)$	$f\sigma_8(0.61)$	$0.4685 \pm 0.0053 \quad (-0.4\sigma)$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10 \quad (+0.1\sigma)$	$\text{Age}/\text{Gyr}$	$13.804 \pm 0.025 \quad (-0.5\sigma)$	$\sigma_8(0.61)$	$0.5896^{+0.0036}_{-0.0048} \quad (-0.2\sigma)$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$z_*$	$1089.97 \pm 0.28 \quad (-0.6\sigma)$	$f\sigma_8(2.33)$	$0.2972^{+0.0018}_{-0.0024} \quad (-0.1\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.1\sigma)$	$r_*$	$144.59 \pm 0.32 \quad (+0.3\sigma)$	$\sigma_8(2.33)$	$0.3063^{+0.0018}_{-0.0025} \quad (-0.0\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$100\theta_*$	$1.04107 \pm 0.00030 \quad (+0.0\sigma)$	$f_{2000}^{143}$	$30.0 \pm 3.2 \quad (-0.4\sigma)$
$c_{TE}$	$0.9966 \pm 0.0050$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.889 \pm 0.030 \quad (+0.3\sigma)$	$f_{2000}^{217}$	$107.0 \pm 2.2 \quad (-0.4\sigma)$
$c_{EE}$	$0.9921 \pm 0.0050$	$z_{\text{drag}}$	$1059.74 \pm 0.35 \quad (+0.5\sigma)$	$f_{2000}^{143 \times 217}$	$32.3 \pm 2.3 \quad (-0.5\sigma)$
$H_0$	$67.43 \pm 0.60 \quad (+0.5\sigma)$	$r_{\text{drag}}$	$147.28 \pm 0.33 \quad (+0.2\sigma)$	$\chi_{\text{small}}^2$	$396.8 \pm 1.7 \quad (-0.1\sigma)$
$\Omega_{\Lambda}$	$0.6864 \pm 0.0083 \quad (+0.4\sigma)$	$k_{\text{D}}$	$0.14061 \pm 0.00038 \quad (+0.0\sigma)$	$\chi_{\text{lowl}}^2$	$23.1 \pm 1.9 \quad (+0.0\sigma)$
$\Omega_{\text{m}}$	$0.3136 \pm 0.0083 \quad (-0.4\sigma)$	$100\theta_{\text{D}}$	$0.16086 \pm 0.00020 \quad (-0.5\sigma)$	$\chi_{\text{CamSpec}}^2$	$11515.3 \pm 5.9 \quad (+787.8\sigma)$
$\Omega_{\text{m}} h^2$	$0.1425 \pm 0.0013 \quad (-0.4\sigma)$	$z_{\text{eq}}$	$3391 \pm 31 \quad (-0.4\sigma)$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.4 \quad (+0.0\sigma)$
$\Omega_{\text{m}} h^3$	$0.09610 \pm 0.00033 \quad (+0.2\sigma)$	$k_{\text{eq}}$	$0.010348 \pm 0.000095 \quad (-0.4\sigma)$	$\chi_{\text{CMB}}^2$	$11935.2 \pm 5.8 \quad (+800.2\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 11943.05; \Delta\bar{\chi}_{\text{eff}}^2 = 4451.18; R - 1 = 0.00888$$



### 12.35 base\_nrun\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02234 \pm 0.00015 \quad (+0.4\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4491 \pm 0.0068 \quad (-0.0\sigma)$	$H(0.38)$	$83.05 \pm 0.29 \quad (+0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1189 \pm 0.0010 \quad (+0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6021 \pm 0.0067 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1527.7 \pm 7.7 \quad (-0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04095 \pm 0.00029 \quad (-0.3\sigma)$	$\sigma_8/h^{0.5}$	$0.9810 \pm 0.0097 \quad (-0.1\sigma)$	$H(0.51)$	$89.75 \pm 0.23 \quad (+0.1\sigma)$
$\tau$	$0.0550^{+0.0049}_{-0.0083} \quad (-0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.82 \pm 0.78 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1979.3 \pm 9.0 \quad (-0.1\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.042^{+0.012}_{-0.017} \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.425 \pm 0.024 \quad (+0.1\sigma)$	$H(0.61)$	$95.35 \pm 0.19 \quad (+0.1\sigma)$
$n_{\mathrm{s}}$	$0.9674 \pm 0.0042 \quad (+0.1\sigma)$	$z_{\mathrm{re}}$	$7.73^{+0.54}_{-0.84} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2303.4 \pm 9.8 \quad (-0.1\sigma)$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0007 \pm 0.0067 \quad (+0.3\sigma)$	$10^9 A_{\mathrm{s}}$	$2.094^{+0.024}_{-0.036} \quad (-0.1\sigma)$	$H(2.33)$	$235.83 \pm 0.64 \quad (+0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.876 \pm 0.012 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	$5762.0 \pm 9.4 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$240 \pm 25 \quad (-0.1\sigma)$	$D_{40}$	$1221 \pm 18 \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4538 \pm 0.0064 \quad (-0.0\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 9 \quad (-0.2\sigma)$	$D_{220}$	$5719 \pm 38 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.7462^{+0.0050}_{-0.0064} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.2\sigma)$	$D_{810}$	$2534 \pm 14 \quad (+0.0\sigma)$	$f\sigma_8(0.38)$	$0.4725 \pm 0.0055 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40^{+7}_{-8} \quad (-0.2\sigma)$	$D_{1420}$	$815.8 \pm 4.9 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6616^{+0.0042}_{-0.0055} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5} \quad (+0.1\sigma)$	$D_{2000}$	$230.3 \pm 1.8 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4714 \pm 0.0049 \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.970 \pm 0.020 \quad (-0.3\sigma)$	$\sigma_8(0.51)$	$0.6193^{+0.0039}_{-0.0051} \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.40}_{-0.17} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245381^{+0.000065}_{-0.000058} \quad (+0.4\sigma)$	$f\sigma_8(0.61)$	$0.4666 \pm 0.0046 \quad (-0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246707^{+0.000065}_{-0.000058} \quad (+0.4\sigma)$	$\sigma_8(0.61)$	$0.5893^{+0.0036}_{-0.0049} \quad (-0.1\sigma)$
$A^{\mathrm{kSZ}}$	$4.7^{+2.2}_{-4.0} \quad (-0.2\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.592 \pm 0.029 \quad (-0.4\sigma)$	$f\sigma_8(2.33)$	$0.2972^{+0.0018}_{-0.0025} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19 \quad (-0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.795 \pm 0.021 \quad (-0.2\sigma)$	$\sigma_8(2.33)$	$0.3065^{+0.0018}_{-0.0025} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$z_*$	$1089.87 \pm 0.24 \quad (-0.3\sigma)$	$f_{2000}^{143}$	$29.7 \pm 3.2 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10 \quad (+0.0\sigma)$	$r_*$	$144.73 \pm 0.25 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$106.9 \pm 2.1 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_*$	$1.04114 \pm 0.00029 \quad (-0.3\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 2.3 \quad (-0.4\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.901 \pm 0.024 \quad (-0.1\sigma)$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.7 \quad (-0.1\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$z_{\mathrm{drag}}$	$1059.78 \pm 0.34 \quad (+0.4\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.0 \pm 1.8 \quad (+0.2\sigma)$
$c_{TE}$	$0.9968 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.41 \pm 0.27 \quad (-0.3\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11515.3 \pm 6.0 \quad (+806.1\sigma)$
$c_{EE}$	$0.9924 \pm 0.0049$	$k_{\mathrm{D}}$	$0.14050 \pm 0.00034 \quad (+0.3\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.044 \pm 0.055 \quad (-0.1\sigma)$
$H_0$	$67.72 \pm 0.45 \quad (+0.0\sigma)$	$100\theta_{\mathrm{D}}$	$0.16084 \pm 0.00020 \quad (-0.5\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.37 \pm 0.44 \quad (-0.1\sigma)$
$\Omega_{\Lambda}$	$0.6905 \pm 0.0061 \quad (+0.0\sigma)$	$z_{\mathrm{eq}}$	$3376 \pm 23 \quad (+0.1\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.5 \pm 1.2 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3095 \pm 0.0061 \quad (-0.0\sigma)$	$k_{\mathrm{eq}}$	$0.010303 \pm 0.000071 \quad (+0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.5 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14191 \pm 0.00098 \quad (+0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8180 \pm 0.0044 \quad (-0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$5.96 \pm 0.95 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09610 \pm 0.00033 \quad (+0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4519 \pm 0.0023 \quad (-0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11935.1 \pm 5.9 \quad (+817.9\sigma)$
$\sigma_8$	$0.8073^{+0.0058}_{-0.0071} \quad (-0.1\sigma)$	$H(0.15)$	$72.98 \pm 0.39 \quad (+0.1\sigma)$		
$S_8$	$0.820 \pm 0.012 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.15)$	$640.4 \pm 3.8 \quad (-0.1\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11948.86; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.91; R - 1 = 0.01438$$



### 12.36 base\_nrun\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02230 \pm 0.00016 \quad (+0.5\sigma)$	$S_8$	$0.828 \pm 0.013 \quad (-0.4\sigma)$	$H(0.15)$	$72.72 \pm 0.45 \quad (+0.4\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1196 \pm 0.0012 \quad (-0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4535 \pm 0.0069 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.15)$	$643.0 \pm 4.5 \quad (-0.4\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04087 \pm 0.00030 \quad (-0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6060 \pm 0.0063 \quad (-0.3\sigma)$	$H(0.38)$	$82.87 \pm 0.33 \quad (+0.4\sigma)$
$\tau$	$0.0548^{+0.0050}_{-0.0079} \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.9862 \pm 0.0088 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.38)$	$1532.9 \pm 9.0 \quad (-0.4\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.011}_{-0.015} \quad (-0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.28 \pm 0.90 \quad (+0.3\sigma)$	$H(0.51)$	$89.61 \pm 0.26 \quad (+0.4\sigma)$
$n_{\mathrm{s}}$	$0.9656 \pm 0.0044 \quad (+0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.438 \pm 0.022 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1985 \pm 11 \quad (-0.4\sigma)$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0007 \pm 0.0066 \quad (+0.3\sigma)$	$z_{\mathrm{re}}$	$7.73^{+0.54}_{-0.79} \quad (-0.0\sigma)$	$H(0.61)$	$95.24 \pm 0.22 \quad (+0.4\sigma)$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0024 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.023}_{-0.032} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2310 \pm 11 \quad (-0.4\sigma)$
$A_{100}^{\mathrm{PS}}$	$240 \pm 25 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879 \pm 0.011 \quad (-0.2\sigma)$	$H(2.33)$	$236.23 \pm 0.71 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$40 \pm 9 \quad (-0.2\sigma)$	$D_{40}$	$1226 \pm 18 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5766 \pm 10 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.2\sigma)$	$D_{220}$	$5719 \pm 38 \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4579 \pm 0.0064 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7 \quad (-0.2\sigma)$	$D_{810}$	$2535 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7480^{+0.0045}_{-0.0054} \quad (-0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5} \quad (+0.1\sigma)$	$D_{1420}$	$815.4 \pm 5.0 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4757 \pm 0.0051 \quad (-0.4\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$D_{2000}$	$230.1 \pm 1.8 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6628^{+0.0038}_{-0.0047} \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.39}_{-0.17} \quad (-0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.968 \pm 0.020 \quad (-0.2\sigma)$	$f\sigma_8(0.51)$	$0.4741 \pm 0.0045 \quad (-0.3\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.245364^{+0.000068}_{-0.000061} \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.6201^{+0.0035}_{-0.0044} \quad (-0.1\sigma)$
$A^{\mathrm{kSZ}}$	$4.7^{+2.2}_{-4.0} \quad (-0.2\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246691^{+0.000068}_{-0.000061} \quad (+0.5\sigma)$	$f\sigma_8(0.61)$	$0.4689 \pm 0.0040 \quad (-0.3\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19 \quad (-0.0\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.600 \pm 0.030 \quad (-0.5\sigma)$	$\sigma_8(0.61)$	$0.5900^{+0.0033}_{-0.0043} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.805 \pm 0.023 \quad (-0.4\sigma)$	$f\sigma_8(2.33)$	$0.2974^{+0.0017}_{-0.0022} \quad (-0.0\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10 \quad (+0.1\sigma)$	$z_*$	$1089.98 \pm 0.26 \quad (-0.5\sigma)$	$\sigma_8(2.33)$	$0.3065^{+0.0018}_{-0.0024} \quad (+0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$r_*$	$144.59 \pm 0.28 \quad (+0.1\sigma)$	$f_{2000}^{143}$	$29.9 \pm 3.2 \quad (-0.4\sigma)$
$c_{100}$	$0.9976 \pm 0.0011 \quad (+0.1\sigma)$	$100\theta_*$	$1.04106 \pm 0.00030 \quad (-0.1\sigma)$	$f_{2000}^{217}$	$107.0 \pm 2.2 \quad (-0.4\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.888 \pm 0.026 \quad (+0.1\sigma)$	$f_{2000}^{143 \times 217}$	$32.3 \pm 2.3 \quad (-0.5\sigma)$
$c_{TE}$	$0.9966 \pm 0.0050$	$z_{\mathrm{drag}}$	$1059.74 \pm 0.34 \quad (+0.5\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.28 \pm 0.68 \quad (-0.3\sigma)$
$c_{EE}$	$0.9922 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.27 \pm 0.29 \quad (-0.0\sigma)$	$\chi_{\mathrm{small}}^2$	$396.9 \pm 1.7 \quad (-0.0\sigma)$
$H_0$	$67.41 \pm 0.52 \quad (+0.4\sigma)$	$k_{\mathrm{D}}$	$0.14062 \pm 0.00035 \quad (+0.2\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.3 \pm 1.9 \quad (+0.1\sigma)$
$\Omega_{\Lambda}$	$0.6862 \pm 0.0071 \quad (+0.3\sigma)$	$100\theta_{\mathrm{D}}$	$0.16087 \pm 0.00020 \quad (-0.5\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11514.7 \pm 5.8 \quad (+821.4\sigma)$
$\Omega_{\mathrm{m}}$	$0.3138 \pm 0.0071 \quad (-0.3\sigma)$	$z_{\mathrm{eq}}$	$3391 \pm 27 \quad (-0.3\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.4 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1426 \pm 0.0011 \quad (-0.3\sigma)$	$k_{\mathrm{eq}}$	$0.010351 \pm 0.000081 \quad (-0.3\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11944.2 \pm 5.9 \quad (+799.6\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09610 \pm 0.00033 \quad (+0.3\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8150 \pm 0.0050 \quad (+0.3\sigma)$		
$\sigma_8$	$0.8097^{+0.0052}_{-0.0059} \quad (-0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4503 \pm 0.0026 \quad (+0.3\sigma)$		

$\bar{\chi}_{\mathrm{eff}}^2 = 11951.93$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 4451.11$ ;  $R - 1 = 0.01119$



### 12.37 base\_nrun\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02233 \pm 0.00015 \quad (+0.4\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4505 \pm 0.0058 \quad (-0.1\sigma)$	$H(0.38)$	$83.02 \pm 0.27 \quad (+0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.11907 \pm 0.00093 \quad (-0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6036 \pm 0.0056 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1528.7 \pm 7.2 \quad (-0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04094 \pm 0.00029 \quad (-0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.9832 \pm 0.0081 \quad (-0.1\sigma)$	$H(0.51)$	$89.72 \pm 0.22 \quad (+0.1\sigma)$
$\tau$	$0.0559^{+0.0055}_{-0.0078} \quad (-0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.71 \pm 0.72 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1980.5 \pm 8.5 \quad (-0.1\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044^{+0.012}_{-0.016} \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.021 \quad (+0.0\sigma)$	$H(0.61)$	$95.33 \pm 0.19 \quad (+0.2\sigma)$
$n_{\mathrm{s}}$	$0.9670 \pm 0.0040 \quad (+0.1\sigma)$	$z_{\mathrm{re}}$	$7.83^{+0.58}_{-0.76} \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.61)$	$2304.7 \pm 9.2 \quad (-0.1\sigma)$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0003 \pm 0.0066 \quad (+0.3\sigma)$	$10^9 A_{\mathrm{s}}$	$2.099^{+0.024}_{-0.033} \quad (-0.1\sigma)$	$H(2.33)$	$235.91^{+0.61}_{-0.55} \quad (+0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.011 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	$5762.7 \pm 9.2 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$240 \pm 25 \quad (-0.1\sigma)$	$D_{40}$	$1225 \pm 18 \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4552 \pm 0.0054 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 9 \quad (-0.2\sigma)$	$D_{220}$	$5723 \pm 38 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.7474^{+0.0045}_{-0.0056} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10 \quad (+0.2\sigma)$	$D_{810}$	$2535 \pm 13 \quad (+0.0\sigma)$	$f\sigma_8(0.38)$	$0.4738 \pm 0.0045 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40^{+7}_{-8} \quad (-0.2\sigma)$	$D_{1420}$	$816.0 \pm 4.9 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6627^{+0.0039}_{-0.0049} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5} \quad (+0.1\sigma)$	$D_{2000}$	$230.4 \pm 1.8 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4725 \pm 0.0041 \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.968 \pm 0.020 \quad (-0.3\sigma)$	$\sigma_8(0.51)$	$0.6202^{+0.0036}_{-0.0046} \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.39}_{-0.18} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245379^{+0.000065}_{-0.000057} \quad (+0.4\sigma)$	$f\sigma_8(0.61)$	$0.4676 \pm 0.0038 \quad (-0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246705^{+0.000065}_{-0.000057} \quad (+0.4\sigma)$	$\sigma_8(0.61)$	$0.5902^{+0.0034}_{-0.0044} \quad (-0.1\sigma)$
$A^{\mathrm{kSZ}}$	$4.6^{+2.0}_{-4.2} \quad (-0.2\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.593 \pm 0.028 \quad (-0.4\sigma)$	$f\sigma_8(2.33)$	$0.2976^{+0.0017}_{-0.0022} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19 \quad (-0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.797 \pm 0.021 \quad (-0.2\sigma)$	$\sigma_8(2.33)$	$0.3069^{+0.0018}_{-0.0024} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$z_*$	$1089.89 \pm 0.23 \quad (-0.4\sigma)$	$f_{2000}^{143}$	$29.6 \pm 3.2 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10 \quad (+0.0\sigma)$	$r_*$	$144.70^{+0.22}_{-0.25} \quad (-0.2\sigma)$	$f_{2000}^{217}$	$106.9 \pm 2.1 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_*$	$1.04113 \pm 0.00029 \quad (-0.3\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.2 \quad (-0.4\sigma)$
$c_{100}$	$0.9976 \pm 0.0011 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.898^{+0.021}_{-0.024} \quad (-0.1\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.27 \pm 0.70 \quad (-0.2\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$z_{\mathrm{drag}}$	$1059.78 \pm 0.34 \quad (+0.4\sigma)$	$\chi_{\mathrm{small}}^2$	$397.1 \pm 1.8 \quad (-0.1\sigma)$
$c_{TE}$	$0.9967 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.38^{+0.24}_{-0.27} \quad (-0.3\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.2 \pm 1.9 \quad (+0.2\sigma)$
$c_{EE}$	$0.9925 \pm 0.0049$	$k_{\mathrm{D}}$	$0.14053 \pm 0.00033 \quad (+0.3\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11514.7 \pm 5.8 \quad (+830.3\sigma)$
$H_0$	$67.66 \pm 0.42 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16084 \pm 0.00020 \quad (-0.5\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.046 \pm 0.054 \quad (-0.1\sigma)$
$\Omega_{\Lambda}$	$0.6896 \pm 0.0056 \quad (+0.0\sigma)$	$z_{\mathrm{eq}}$	$3379 \pm 21 \quad (+0.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.30 \pm 0.40 \quad (-0.0\sigma)$
$\Omega_{\mathrm{m}}$	$0.3104 \pm 0.0056 \quad (-0.0\sigma)$	$k_{\mathrm{eq}}$	$0.010314 \pm 0.000065 \quad (+0.1\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.2 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14205 \pm 0.00090 \quad (+0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8174 \pm 0.0040 \quad (-0.0\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.4 \quad (-0.0\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09611 \pm 0.00033 \quad (+0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4515^{+0.0019}_{-0.0022} \quad (-0.0\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11944.2 \pm 5.9 \quad (+809.0\sigma)$
$\sigma_8$	$0.8087^{+0.0051}_{-0.0061} \quad (-0.1\sigma)$	$H(0.15)$	$72.93 \pm 0.36 \quad (+0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.00 \pm 0.93 \quad (-0.1\sigma)$
$S_8$	$0.823 \pm 0.011 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$640.9 \pm 3.6 \quad (-0.1\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11957.93; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.83; R - 1 = 0.01735$$



**12.38 base\_nrun\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Riess18\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02242 \pm 0.00016$	$S_8$	$0.810 \pm 0.015$	$H(0.15)$	$73.34 \pm 0.49$
$\Omega_{\mathrm{c}}h^2$	$0.1181 \pm 0.0013$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4438 \pm 0.0082$	$D_{\mathrm{M}}(0.15)$	$636.8 \pm 4.8$
$100\theta_{\mathrm{MC}}$	$1.04107 \pm 0.00030$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5977 \pm 0.0078$	$H(0.38)$	$83.32 \pm 0.36$
$\tau$	$0.0562^{+0.0053}_{-0.0088}$	$\sigma_8/h^{0.5}$	$0.975 \pm 0.011$	$D_{\mathrm{M}}(0.38)$	$1520.6 \pm 9.6$
$\ln(10^{10}A_{\mathrm{s}})$	$3.042^{+0.013}_{-0.018}$	$r_{\mathrm{drag}}h$	$100.5 \pm 1.0$	$H(0.51)$	$89.96 \pm 0.28$
$n_{\mathrm{s}}$	$0.9697 \pm 0.0046$	$\langle d^2 \rangle^{1/2}$	$2.412 \pm 0.027$	$D_{\mathrm{M}}(0.51)$	$1971 \pm 11$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0005 \pm 0.0068$	$z_{\mathrm{re}}$	$7.81^{+0.56}_{-0.89}$	$H(0.61)$	$95.52 \pm 0.23$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$10^9 A_{\mathrm{s}}$	$2.095^{+0.026}_{-0.038}$	$D_{\mathrm{M}}(0.61)$	$2294 \pm 12$
$A_{100}^{\mathrm{PS}}$	$239 \pm 25$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.872 \pm 0.012$	$H(2.33)$	$235.34 \pm 0.79$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8$	$D_{40}$	$1217 \pm 18$	$D_{\mathrm{M}}(2.33)$	$5755 \pm 11$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{220}$	$5725 \pm 39$	$f\sigma_8(0.15)$	$0.4490 \pm 0.0077$
$A_{217}^{\mathrm{CIB}}$	$39^{+7}_{-8}$	$D_{810}$	$2534 \pm 14$	$\sigma_8(0.15)$	$0.7445^{+0.0056}_{-0.0068}$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+1.9}_{-2.5}$	$D_{1420}$	$816.6 \pm 4.9$	$f\sigma_8(0.38)$	$0.4688 \pm 0.0064$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65^{+0.14}_{-0.12}$	$D_{2000}$	$230.7 \pm 1.8$	$\sigma_8(0.38)$	$0.6608^{+0.0045}_{-0.0058}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.43}_{-0.15}$	$n_{\mathrm{s},0.002}$	$0.971 \pm 0.021$	$f\sigma_8(0.51)$	$0.4683 \pm 0.0057$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.245413^{+0.000065}_{-0.000056}$	$\sigma_8(0.51)$	$0.6187^{+0.0041}_{-0.0054}$
$A^{\mathrm{kSZ}}$	$< 6.11$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246740^{+0.000066}_{-0.000056}$	$f\sigma_8(0.61)$	$0.4640 \pm 0.0052$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$10^5 \mathrm{D}/\mathrm{H}$	$2.577^{+0.028}_{-0.031}$	$\sigma_8(0.61)$	$0.5889^{+0.0038}_{-0.0051}$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$\mathrm{Age}/\mathrm{Gyr}$	$13.779 \pm 0.024$	$f\sigma_8(2.33)$	$0.2972^{+0.0018}_{-0.0026}$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.11$	$z_*$	$1089.69 \pm 0.27$	$\sigma_8(2.33)$	$0.3068^{+0.0019}_{-0.0027}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$r_*$	$144.90 \pm 0.31$	$f_{2000}^{143}$	$29.3 \pm 3.2$
$c_{100}$	$0.9976 \pm 0.0010$	$100\theta_*$	$1.04125 \pm 0.00030$	$f_{2000}^{217}$	$106.6 \pm 2.1$
$c_{217}$	$1.0011 \pm 0.0016$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.916 \pm 0.029$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.2$
$c_{TE}$	$0.9968 \pm 0.0050$	$z_{\mathrm{drag}}$	$1059.91 \pm 0.34$	$\chi_{\mathrm{small}}^2$	$397.1 \pm 2.0$
$c_{EE}$	$0.9922 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.55 \pm 0.32$	$\chi_{\mathrm{lowl}}^2$	$22.7 \pm 1.7$
$H_0$	$68.14 \pm 0.57$	$k_{\mathrm{D}}$	$0.14042 \pm 0.00037$	$\chi_{\mathrm{CamSpec}}^2$	$11516.9 \pm 6.4$
$\Omega_{\Lambda}$	$0.6959 \pm 0.0076$	$100\theta_{\mathrm{D}}$	$0.16077 \pm 0.00020$	$\chi_{\mathrm{H073p45}}^2$	$10.4 \pm 2.2$
$\Omega_{\mathrm{m}}$	$0.3041 \pm 0.0076$	$z_{\mathrm{eq}}$	$3357 \pm 29$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.5$
$\Omega_{\mathrm{m}}h^2$	$0.1411 \pm 0.0012$	$k_{\mathrm{eq}}$	$0.010246 \pm 0.000089$	$\chi_{\mathrm{CMB}}^2$	$11936.7 \pm 6.3$
$\Omega_{\mathrm{m}}h^3$	$0.09615 \pm 0.00033$	$100\theta_{\mathrm{eq}}$	$0.8218 \pm 0.0056$		
$\sigma_8$	$0.8049^{+0.0066}_{-0.0077}$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4538 \pm 0.0029$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11954.85; R - 1 = 0.05101$$



### 12.39 base\_nrun\_plikHM\_TE\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}} h^2$	0.022504	$0.02253 \pm 0.00026$	$r_{\mathrm{drag}} h$	101.34	$101.5 \pm 1.7$	$100\theta_{\mathrm{s,eq}}$	0.45565	$0.4561 \pm 0.0049$
$\Omega_{\mathrm{c}} h^2$	0.11724	$0.1170 \pm 0.0022$	$\langle d^2 \rangle^{1/2}$	2.3973	$2.395 \pm 0.048$	$H(0.15)$	73.76	$73.85 \pm 0.85$
$100\theta_{\mathrm{MC}}$	1.04145	$1.04142 \pm 0.00051$	$z_{\mathrm{re}}$	7.07	$6.87^{+0.95}_{-0.78}$	$D_{\mathrm{M}}(0.15)$	632.7	$632.0 \pm 8.2$
$\tau$	0.0491	$0.0475 \pm 0.0086$	$10^9 A_{\mathrm{s}}$	2.0347	$2.027 \pm 0.045$	$H(0.38)$	83.64	$83.70 \pm 0.63$
$\ln(10^{10} A_{\mathrm{s}})$	3.0129	$3.009 \pm 0.022$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8444	$1.843 \pm 0.021$	$D_{\mathrm{M}}(0.38)$	1512.2	$1511 \pm 16$
$n_{\mathrm{s}}$	0.9733	$0.975 \pm 0.016$	$D_{40}$	1236.3	$1240 \pm 50$	$H(0.51)$	90.22	$90.28^{+0.47}_{-0.53}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	0.0145	$0.017 \pm 0.025$	$D_{220}$	5690	$5691 \pm 57$	$D_{\mathrm{M}}(0.51)$	1961.0	$1959 \pm 19$
$A_{100}^{\mathrm{dustTE}}$	0.1141	$0.114 \pm 0.038$	$D_{810}$	2505.6	$2507 \pm 25$	$H(0.61)$	95.740	$95.78^{+0.38}_{-0.43}$
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1358	$0.136 \pm 0.030$	$D_{1420}$	812.7	$815 \pm 16$	$D_{\mathrm{M}}(0.61)$	2283.6	$2282 \pm 21$
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.477	$0.479 \pm 0.085$	$D_{2000}$	230.7	$231.6 \pm 7.2$	$H(2.33)$	234.92	$234.8 \pm 1.3$
$A_{143}^{\mathrm{dustTE}}$	0.221	$0.222 \pm 0.054$	$n_{\mathrm{s},0.002}$	0.927	$0.920 \pm 0.070$	$D_{\mathrm{M}}(2.33)$	5744.5	$5743^{+19}_{-17}$
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.657	$0.659 \pm 0.080$	$Y_{\mathrm{P}}$	0.245446	$0.24545 \pm 0.00010$	$f\sigma_8(0.15)$	0.4394	$0.438 \pm 0.013$
$A_{217}^{\mathrm{dustTE}}$	2.039	$2.04 \pm 0.27$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246773	$0.24678 \pm 0.00010$	$\sigma_8(0.15)$	0.7356	$0.7345 \pm 0.0099$
$c_{100}$	1.00016	$1.00018 \pm 0.00070$	$10^5 \mathrm{D}/\mathrm{H}$	2.5612	$2.558 \pm 0.047$	$f\sigma_8(0.38)$	0.4603	$0.459 \pm 0.010$
$c_{217}$	0.99800	$0.99798 \pm 0.00065$	$\mathrm{Age}/\mathrm{Gyr}$	13.7564	$13.754 \pm 0.040$	$\sigma_8(0.38)$	0.6535	$0.6527 \pm 0.0084$
$y_{\mathrm{cal}}$	0.99985	$1.0000 \pm 0.0025$	$z_*$	1089.513	$1089.47 \pm 0.44$	$f\sigma_8(0.51)$	0.4605	$0.4594 \pm 0.0092$
$H_0$	68.62	$68.72 \pm 0.99$	$r_*$	145.05	$145.09 \pm 0.51$	$\sigma_8(0.51)$	0.6122	$0.6115 \pm 0.0077$
$\Omega_{\Lambda}$	0.7019	$0.703 \pm 0.013$	$100\theta_*$	1.04161	$1.04159 \pm 0.00050$	$f\sigma_8(0.61)$	0.4567	$0.4557 \pm 0.0084$
$\Omega_{\mathrm{m}}$	0.2981	$0.297 \pm 0.013$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.9251	$13.929 \pm 0.048$	$\sigma_8(0.61)$	0.5829	$0.5822 \pm 0.0073$
$\Omega_{\mathrm{m}} h^2$	0.14039	$0.1402 \pm 0.0021$	$z_{\mathrm{drag}}$	1060.05	$1060.08 \pm 0.54$	$f\sigma_8(2.33)$	0.29442	$0.2942 \pm 0.0037$
$\Omega_{\mathrm{m}} h^3$	0.09633	$0.09632 \pm 0.00052$	$r_{\mathrm{drag}}$	147.68	$147.71 \pm 0.52$	$\sigma_8(2.33)$	0.30414	$0.3039 \pm 0.0039$
$\sigma_8$	0.7946	$0.793 \pm 0.011$	$k_{\mathrm{D}}$	0.14035	$0.14033 \pm 0.00058$	$\chi_{\mathrm{small}}^2$	395.53	$396.7 \pm 1.6$
$S_8$	0.7921	$0.790 \pm 0.024$	$100\theta_{\mathrm{D}}$	0.160743	$0.16072 \pm 0.00031$	$\chi_{\mathrm{plikTE}}^2$	852.47	$860.4 \pm 4.0$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	0.4339	$0.432 \pm 0.013$	$z_{\mathrm{eq}}$	3339.4	$3335 \pm 50$	$\chi_{\mathrm{prior}}^2$	0.43	$7.4 \pm 3.7$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	0.5872	$0.586 \pm 0.013$	$k_{\mathrm{eq}}$	0.010192	$0.01018 \pm 0.00015$	$\chi_{\mathrm{CMB}}^2$	1248.00	$1257.2 \pm 4.3$
$\sigma_8/h^{0.5}$	0.9592	$0.957 \pm 0.018$	$100\theta_{\mathrm{eq}}$	0.8255	$0.8265 \pm 0.0096$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 1248.43$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1264.57$ ;  $R - 1 = 0.00548$   
 $\chi_{\mathrm{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.53 plik\_rd12\_HM\_v22\_TE: 852.47



## 12.40 base\_nrun\_plikHM\_TE\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022477	$0.02246 \pm 0.00023$	$\langle d^2 \rangle^{1/2}$	2.4102	$2.406 \pm 0.042$	$D_M(0.15)$	635.23	$635.5 \pm 4.7$
$\Omega_c h^2$	0.11793	$0.1180 \pm 0.0013$	$z_{\text{re}}$	6.83	$6.89^{+0.96}_{-0.79}$	$H(0.38)$	83.457	$83.44 \pm 0.37$
$100\theta_{\text{MC}}$	1.041347	$1.04131 \pm 0.00046$	$10^9 A_s$	2.0289	$2.033 \pm 0.044$	$D_M(0.38)$	1517.2	$1517.8 \pm 9.6$
$\tau$	0.0466	$0.0474^{+0.0087}_{-0.0079}$	$10^9 A_s e^{-2\tau}$	1.8482	$1.849 \pm 0.019$	$H(0.51)$	90.084	$90.06 \pm 0.31$
$\ln(10^{10} A_s)$	3.0101	$3.012 \pm 0.022$	$D_{40}$	1247.0	$1239 \pm 49$	$D_M(0.51)$	1966.9	$1968 \pm 11$
$n_s$	0.9727	$0.971 \pm 0.014$	$D_{220}$	5695	$5690 \pm 58$	$H(0.61)$	95.634	$95.62 \pm 0.27$
$dn_s/d \ln k$	0.0177	$0.013 \pm 0.024$	$D_{810}$	2508.6	$2507 \pm 25$	$D_M(0.61)$	2289.9	$2291 \pm 12$
$y_{\text{cal}}$	1.00007	$0.99999 \pm 0.0025$	$D_{1420}$	814.5	$812 \pm 16$	$H(2.33)$	235.35	$235.34 \pm 0.81$
$A_{100}^{\text{dustTE}}$	0.1139	$0.115 \pm 0.039$	$D_{2000}$	231.5	$230.4 \pm 6.8$	$D_M(2.33)$	5748.6	$5750 \pm 13$
$A_{100 \times 143}^{\text{dustTE}}$	0.1363	$0.137 \pm 0.030$	$n_{s,0.002}$	0.916	$0.929 \pm 0.068$	$f\sigma_8(0.15)$	0.4430	$0.4429 \pm 0.0084$
$A_{100 \times 217}^{\text{dustTE}}$	0.478	$0.480 \pm 0.084$	$Y_P$	0.245436	$0.245429 \pm 0.000092$	$\sigma_8(0.15)$	0.7368	$0.7363 \pm 0.0094$
$A_{143}^{\text{dustTE}}$	0.223	$0.222 \pm 0.054$	$Y_P^{\text{BBN}}$	0.246763	$0.246755 \pm 0.000093$	$f\sigma_8(0.38)$	0.4631	$0.4629 \pm 0.0075$
$A_{143 \times 217}^{\text{dustTE}}$	0.661	$0.663 \pm 0.080$	$10^5 D/H$	2.5660	$2.569 \pm 0.043$	$\sigma_8(0.38)$	0.6541	$0.6536 \pm 0.0082$
$A_{217}^{\text{dustTE}}$	2.049	$2.05 \pm 0.27$	Age/Gyr	13.7650	$13.767 \pm 0.031$	$f\sigma_8(0.51)$	0.4628	$0.4626 \pm 0.0070$
$c_{100}$	1.00017	$1.00018 \pm 0.00070$	$z_*$	1089.605	$1089.63 \pm 0.33$	$\sigma_8(0.51)$	0.6126	$0.6121 \pm 0.0077$
$c_{217}$	0.99799	$0.99798 \pm 0.00065$	$r_*$	144.886	$144.89 \pm 0.34$	$f\sigma_8(0.61)$	0.4586	$0.4584 \pm 0.0066$
$H_0$	68.32	$68.29 \pm 0.56$	$100\theta_*$	1.041528	$1.04149 \pm 0.00045$	$\sigma_8(0.61)$	0.5831	$0.5826 \pm 0.0073$
$\Omega_\Lambda$	0.6978	$0.6974 \pm 0.0073$	$D_M(z_*)/\text{Gpc}$	13.9109	$13.912 \pm 0.033$	$f\sigma_8(2.33)$	0.29438	$0.2941 \pm 0.0037$
$\Omega_m$	0.3022	$0.3026 \pm 0.0073$	$z_{\text{drag}}$	1060.05	$1060.00 \pm 0.53$	$\sigma_8(2.33)$	0.30391	$0.3036 \pm 0.0038$
$\Omega_m h^2$	0.14105	$0.1411 \pm 0.0012$	$r_{\text{drag}}$	147.520	$147.53 \pm 0.38$	$\chi_{\text{small}}^2$	395.58	$396.8 \pm 1.5$
$\Omega_m h^3$	0.09637	$0.09633 \pm 0.00052$	$k_D$	0.14049	$0.14047 \pm 0.00051$	$\chi_{\text{plikTE}}^2$	852.58	$859.9 \pm 3.7$
$\sigma_8$	0.7963	$0.796 \pm 0.010$	$100\theta_D$	0.160745	$0.16076 \pm 0.00031$	$\chi_{6\text{DF}}^2$	0.0037	$0.042 \pm 0.060$
$S_8$	0.7993	$0.799 \pm 0.016$	$z_{\text{eq}}$	3355.3	$3356 \pm 29$	$\chi_{\text{MGS}}^2$	1.89	$1.93 \pm 0.61$
$\sigma_8 \Omega_m^{0.5}$	0.4378	$0.4378 \pm 0.0088$	$k_{\text{eq}}$	0.010241	$0.010242 \pm 0.000090$	$\chi_{\text{DR12BAO}}^2$	3.374	$3.99 \pm 0.87$
$\sigma_8 \Omega_m^{0.25}$	0.5904	$0.5902 \pm 0.0093$	$100\theta_{\text{eq}}$	0.8224	$0.8223 \pm 0.0055$	$\chi_{\text{prior}}^2$	0.42	$7.4 \pm 3.7$
$\sigma_8/h^{0.5}$	0.9635	$0.963 \pm 0.014$	$100\theta_{s,\text{eq}}$	0.45406	$0.4540 \pm 0.0028$	$\chi_{\text{BAO}}^2$	5.27	$6.0 \pm 1.1$
$r_{\text{drag}} h$	100.78	$100.75 \pm 0.96$	$H(0.15)$	73.503	$73.48 \pm 0.49$	$\chi_{\text{CMB}}^2$	1248.15	$1256.6 \pm 4.0$

Best-fit  $\chi_{\text{eff}}^2 = 1253.85$ ;  $\bar{\chi}_{\text{eff}}^2 = 1270.03$ ;  $R - 1 = 0.00960$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.89 DR12BAO: 3.37 CMB - small\_100x143.offlike5\_EE\_Aplanck\_B: 395.58 plik\_rd12\_HM\_v22\_TE: 852.58



## 12.41 base\_nrun\_plikHM\_TE\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02253 \pm 0.00026$	$r_{\mathrm{drag}} h$	$101.5 \pm 1.7$	$100\theta_{\mathrm{s,eq}}$	$0.4560 \pm 0.0050$
$\Omega_{\mathrm{c}} h^2$	$0.1171 \pm 0.0022$	$\langle d^2 \rangle^{1/2}$	$2.399 \pm 0.046$	$H(0.15)$	$73.83 \pm 0.85$
$100\theta_{\mathrm{MC}}$	$1.04142 \pm 0.00051$	$z_{\mathrm{re}}$	$< 7.57$	$D_{\mathrm{M}}(0.15)$	$632.1 \pm 8.2$
$\tau$	$0.0519^{+0.0031}_{-0.0074}$	$10^9 A_{\mathrm{s}}$	$2.048^{+0.030}_{-0.039}$	$H(0.38)$	$83.70 \pm 0.63$
$\ln(10^{10} A_{\mathrm{s}})$	$3.019^{+0.015}_{-0.019}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.846 \pm 0.021$	$D_{\mathrm{M}}(0.38)$	$1511 \pm 17$
$n_{\mathrm{s}}$	$0.975 \pm 0.016$	$D_{40}$	$1233 \pm 48$	$H(0.51)$	$90.27 \pm 0.50$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	$0.013 \pm 0.024$	$D_{220}$	$5690 \pm 57$	$D_{\mathrm{M}}(0.51)$	$1959 \pm 19$
$A_{100}^{\mathrm{dustTE}}$	$0.114 \pm 0.038$	$D_{810}$	$2508 \pm 25$	$H(0.61)$	$95.78^{+0.38}_{-0.43}$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.136 \pm 0.030$	$D_{1420}$	$814 \pm 16$	$D_{\mathrm{M}}(0.61)$	$2282 \pm 21$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.478 \pm 0.085$	$D_{2000}$	$231.2 \pm 7.1$	$H(2.33)$	$234.9 \pm 1.3$
$A_{143}^{\mathrm{dustTE}}$	$0.222 \pm 0.054$	$n_{\mathrm{s},0.002}$	$0.932 \pm 0.068$	$D_{\mathrm{M}}(2.33)$	$5743 \pm 18$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.660 \pm 0.080$	$Y_{\mathrm{P}}$	$0.24546 \pm 0.00010$	$f\sigma_8(0.15)$	$0.440 \pm 0.012$
$A_{217}^{\mathrm{dustTE}}$	$2.04 \pm 0.27$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24678 \pm 0.00010$	$\sigma_8(0.15)$	$0.7375 \pm 0.0089$
$c_{100}$	$1.00019 \pm 0.00070$	$10^5 \mathrm{D}/\mathrm{H}$	$2.557 \pm 0.047$	$f\sigma_8(0.38)$	$0.461 \pm 0.010$
$c_{217}$	$0.99798 \pm 0.00065$	$\mathrm{Age}/\mathrm{Gyr}$	$13.753 \pm 0.040$	$\sigma_8(0.38)$	$0.6553 \pm 0.0074$
$y_{\mathrm{cal}}$	$1.0000 \pm 0.0025$	$z_{*}$	$1089.47 \pm 0.44$	$f\sigma_8(0.51)$	$0.4613 \pm 0.0088$
$H_0$	$68.70 \pm 0.99$	$r_{*}$	$145.07 \pm 0.51$	$\sigma_8(0.51)$	$0.6139 \pm 0.0068$
$\Omega_{\Lambda}$	$0.703 \pm 0.013$	$100\theta_{*}$	$1.04159 \pm 0.00050$	$f\sigma_8(0.61)$	$0.4576 \pm 0.0079$
$\Omega_{\mathrm{m}}$	$0.297 \pm 0.013$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.927 \pm 0.048$	$\sigma_8(0.61)$	$0.5846 \pm 0.0064$
$\Omega_{\mathrm{m}} h^2$	$0.1403 \pm 0.0021$	$z_{\mathrm{drag}}$	$1060.10 \pm 0.54$	$f\sigma_8(2.33)$	$0.2953 \pm 0.0032$
$\Omega_{\mathrm{m}} h^3$	$0.09635 \pm 0.00051$	$r_{\mathrm{drag}}$	$147.69 \pm 0.52$	$\sigma_8(2.33)$	$0.3051 \pm 0.0034$
$\sigma_8$	$0.797 \pm 0.010$	$k_{\mathrm{D}}$	$0.14036 \pm 0.00058$	$\chi_{\mathrm{simall}}^2$	$396.4 \pm 1.1$
$S_8$	$0.793 \pm 0.024$	$100\theta_{\mathrm{D}}$	$0.16071 \pm 0.00031$	$\chi_{\mathrm{plikTE}}^2$	$860.5 \pm 4.0$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.434 \pm 0.013$	$z_{\mathrm{eq}}$	$3336 \pm 50$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.7$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.588 \pm 0.012$	$k_{\mathrm{eq}}$	$0.01018 \pm 0.00015$	$\chi_{\mathrm{CMB}}^2$	$1256.8 \pm 4.2$
$\sigma_8/h^{0.5}$	$0.961 \pm 0.017$	$100\theta_{\mathrm{eq}}$	$0.8262 \pm 0.0097$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1264.22$ ;  $R - 1 = 0.00681$



## 12.42 base\_nrun\_plikHM\_TE\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02247 \pm 0.00023$	$\langle d^2 \rangle^{1/2}$	$2.410 \pm 0.040$	$D_{\mathrm{M}}(0.15)$	$635.5 \pm 4.7$
$\Omega_{\mathrm{c}} h^2$	$0.1180 \pm 0.0013$	$z_{\mathrm{re}}$	$< 7.60$	$H(0.38)$	$83.44 \pm 0.37$
$100\theta_{\mathrm{MC}}$	$1.04132 \pm 0.00046$	$10^9 A_{\mathrm{s}}$	$2.053^{+0.029}_{-0.038}$	$D_{\mathrm{M}}(0.38)$	$1517.8 \pm 9.6$
$\tau$	$0.0518^{+0.0033}_{-0.0073}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.851 \pm 0.019$	$H(0.51)$	$90.07 \pm 0.31$
$\ln(10^{10} A_{\mathrm{s}})$	$3.022^{+0.014}_{-0.018}$	$D_{40}$	$1231 \pm 47$	$D_{\mathrm{M}}(0.51)$	$1968 \pm 11$
$n_{\mathrm{s}}$	$0.971 \pm 0.014$	$D_{220}$	$5689 \pm 58$	$H(0.61)$	$95.62 \pm 0.27$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	$0.009 \pm 0.023$	$D_{810}$	$2509 \pm 25$	$D_{\mathrm{M}}(0.61)$	$2291 \pm 12$
$y_{\mathrm{cal}}$	$0.99996 \pm 0.0025$	$D_{1420}$	$812 \pm 15$	$H(2.33)$	$235.37 \pm 0.80$
$A_{100}^{\mathrm{dustTE}}$	$0.114 \pm 0.039$	$D_{2000}$	$230.0 \pm 6.8$	$D_{\mathrm{M}}(2.33)$	$5749 \pm 13$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.136 \pm 0.030$	$n_{\mathrm{s},0.002}$	$0.940 \pm 0.066$	$f\sigma_8(0.15)$	$0.4448 \pm 0.0079$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.479 \pm 0.084$	$Y_{\mathrm{P}}$	$0.245432 \pm 0.000092$	$\sigma_8(0.15)$	$0.7392 \pm 0.0082$
$A_{143}^{\mathrm{dustTE}}$	$0.221 \pm 0.054$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246759 \pm 0.000092$	$f\sigma_8(0.38)$	$0.4648 \pm 0.0069$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.663 \pm 0.080$	$10^5 \mathrm{D}/\mathrm{H}$	$2.568 \pm 0.042$	$\sigma_8(0.38)$	$0.6562 \pm 0.0072$
$A_{217}^{\mathrm{dustTE}}$	$2.04 \pm 0.27$	$\mathrm{Age}/\mathrm{Gyr}$	$13.766 \pm 0.030$	$f\sigma_8(0.51)$	$0.4644 \pm 0.0064$
$c_{100}$	$1.00019 \pm 0.00068$	$z_*$	$1089.62 \pm 0.33$	$\sigma_8(0.51)$	$0.6145 \pm 0.0067$
$c_{217}$	$0.99798 \pm 0.00065$	$r_*$	$144.88 \pm 0.33$	$f\sigma_8(0.61)$	$0.4602 \pm 0.0060$
$H_0$	$68.29 \pm 0.56$	$100\theta_*$	$1.04150 \pm 0.00045$	$\sigma_8(0.61)$	$0.5849 \pm 0.0063$
$\Omega_{\Lambda}$	$0.6973 \pm 0.0073$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.910 \pm 0.033$	$f\sigma_8(2.33)$	$0.2953 \pm 0.0032$
$\Omega_{\mathrm{m}}$	$0.3027 \pm 0.0073$	$z_{\mathrm{drag}}$	$1060.02 \pm 0.52$	$\sigma_8(2.33)$	$0.3048 \pm 0.0033$
$\Omega_{\mathrm{m}} h^2$	$0.1411 \pm 0.0012$	$r_{\mathrm{drag}}$	$147.51 \pm 0.37$	$\chi_{\mathrm{simall}}^2$	$396.4 \pm 1.1$
$\Omega_{\mathrm{m}} h^3$	$0.09635 \pm 0.00051$	$k_{\mathrm{D}}$	$0.14050 \pm 0.00050$	$\chi_{\mathrm{plikTE}}^2$	$860.0 \pm 3.7$
$\sigma_8$	$0.7990 \pm 0.0091$	$100\theta_{\mathrm{D}}$	$0.16075 \pm 0.00031$	$\chi_{6\mathrm{DF}}^2$	$0.041 \pm 0.060$
$S_8$	$0.803 \pm 0.015$	$z_{\mathrm{eq}}$	$3357 \pm 29$	$\chi_{\mathrm{MGS}}^2$	$1.92 \pm 0.61$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4396 \pm 0.0083$	$k_{\mathrm{eq}}$	$0.010245 \pm 0.000089$	$\chi_{\mathrm{DR12BAO}}^2$	$3.99 \pm 0.88$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.5926 \pm 0.0085$	$100\theta_{\mathrm{eq}}$	$0.8222 \pm 0.0054$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.7$
$\sigma_8/h^{0.5}$	$0.967 \pm 0.013$	$100\theta_{\mathrm{s,eq}}$	$0.4540 \pm 0.0028$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.1$
$r_{\mathrm{drag}} h$	$100.73 \pm 0.96$	$H(0.15)$	$73.48 \pm 0.49$	$\chi_{\mathrm{CMB}}^2$	$1256.3 \pm 3.9$

$\bar{\chi}_{\mathrm{eff}}^2 = 1269.67$ ;  $R - 1 = 0.01461$



### 12.43 base\_nrun\_plikHM\_EE\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.02363	$0.0235 \pm 0.0014$	$D_{40}$	1268	$1266 \pm 55$	$D_{\mathrm{M}}(0.15)$	620.5	$624 \pm 23$
$\Omega_{\mathrm{c}}h^2$	0.11455	$0.1152 \pm 0.0049$	$D_{220}$	5901	$5867 \pm 220$	$H(0.38)$	84.70	$84.5^{+1.9}_{-2.1}$
$100\theta_{\mathrm{MC}}$	1.04011	$1.04009 \pm 0.00088$	$D_{810}$	2579.7	$2574 \pm 43$	$D_{\mathrm{M}}(0.38)$	1486.8	$1494 \pm 48$
$\tau$	0.0493	$0.0491 \pm 0.0096$	$D_{1420}$	851.8	$849 \pm 21$	$H(0.51)$	91.14	$91.0^{+1.6}_{-1.9}$
$\ln(10^{10}A_{\mathrm{s}})$	3.0331	$3.032 \pm 0.032$	$D_{2000}$	245.9	$245.1 \pm 9.3$	$D_{\mathrm{M}}(0.51)$	1931	$1939 \pm 57$
$n_{\mathrm{s}}$	0.9929	$0.993 \pm 0.022$	$n_{\mathrm{s},0.002}$	0.902	$0.900 \pm 0.099$	$H(0.61)$	96.54	$96.4^{+1.4}_{-1.6}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	0.0283	$0.029 \pm 0.036$	$Y_{\mathrm{P}}$	0.24592	$0.24582 \pm 0.00055$	$D_{\mathrm{M}}(0.61)$	2250	$2259 \pm 63$
$y_{\mathrm{cal}}$	1.00007	$1.0001 \pm 0.0025$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24725	$0.24714 \pm 0.00055$	$H(2.33)$	234.16	$234.4 \pm 2.4$
$H_0$	70.09	$69.8 \pm 2.8$	$10^5\mathrm{D}/\mathrm{H}$	2.366	$2.41^{+0.20}_{-0.25}$	$D_{\mathrm{M}}(2.33)$	5706	$5715 \pm 72$
$\Omega_{\Lambda}$	0.7174	$0.712^{+0.034}_{-0.027}$	Age/Gyr	13.670	$13.69 \pm 0.16$	$f\sigma_8(0.15)$	0.4297	$0.434 \pm 0.030$
$\Omega_{\mathrm{m}}$	0.2826	$0.288^{+0.027}_{-0.034}$	$z_*$	1087.95	$1088.3^{+1.7}_{-2.0}$	$\sigma_8(0.15)$	0.7383	$0.740^{+0.016}_{-0.014}$
$\Omega_{\mathrm{m}}h^2$	0.13883	$0.1393 \pm 0.0041$	$r_*$	144.88	$144.85 \pm 0.94$	$f\sigma_8(0.38)$	0.4540	$0.457 \pm 0.024$
$\Omega_{\mathrm{m}}h^3$	0.09730	$0.0971 \pm 0.0021$	$100\theta_*$	1.04016	$1.04017 \pm 0.00087$	$\sigma_8(0.38)$	0.6577	$0.658^{+0.011}_{-0.0099}$
$\sigma_8$	0.7958	$0.798 \pm 0.019$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.929	$13.926 \pm 0.088$	$f\sigma_8(0.51)$	0.4561	$0.459 \pm 0.020$
$S_8$	0.772	$0.782^{+0.054}_{-0.062}$	$z_{\mathrm{drag}}$	1062.41	$1062.0 \pm 2.8$	$\sigma_8(0.51)$	0.6168	$0.6173^{+0.0095}_{-0.0085}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4231	$0.428^{+0.030}_{-0.034}$	$r_{\mathrm{drag}}$	147.15	$147.2 \pm 1.1$	$f\sigma_8(0.61)$	0.4535	$0.456 \pm 0.018$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.5803	$0.584 \pm 0.028$	$k_{\mathrm{D}}$	0.14170	$0.1415 \pm 0.0018$	$\sigma_8(0.61)$	0.5878	$0.5881^{+0.0085}_{-0.0077}$
$\sigma_8/h^{0.5}$	0.9506	$0.956 \pm 0.040$	$100\theta_{\mathrm{D}}$	0.15918	$0.1595^{+0.0014}_{-0.0017}$	$f\sigma_8(2.33)$	0.29757	$0.2975 \pm 0.0037$
$r_{\mathrm{drag}}h$	103.13	$102.7 \pm 4.2$	$z_{\mathrm{eq}}$	3302	$3314 \pm 97$	$\sigma_8(2.33)$	0.30817	$0.3080 \pm 0.0039$
$\langle d^2 \rangle^{1/2}$	2.387	$2.397 \pm 0.081$	$k_{\mathrm{eq}}$	0.010078	$0.01011 \pm 0.00030$	$\chi_{\mathrm{small}}^2$	395.42	$396.7 \pm 1.6$
$z_{\mathrm{re}}$	6.83	$6.82^{+0.91}_{-0.81}$	$100\theta_{\mathrm{eq}}$	0.8346	$0.832 \pm 0.021$	$\chi_{\mathrm{plikEE}}^2$	738.36	$744.2 \pm 3.4$
$10^9A_{\mathrm{s}}$	2.076	$2.075^{+0.061}_{-0.070}$	$100\theta_{\mathrm{s,eq}}$	0.4595	$0.458 \pm 0.010$	$\chi_{\mathrm{prior}}^2$	0.001	$0.98 \pm 1.4$
$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8814	$1.880 \pm 0.037$	$H(0.15)$	75.08	$74.8 \pm 2.5$	$\chi_{\mathrm{CMB}}^2$	1133.78	$1140.9 \pm 3.8$

Best-fit  $\chi_{\mathrm{eff}}^2 = 1133.78$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1141.92$ ;  $R - 1 = 0.00923$   
 $\chi_{\mathrm{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.42 plik\_rd12\_HM\_v22\_EE: 738.36



## 12.44 base\_nrun\_plikHM\_EE\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02278	$0.02290 \pm 0.00095$	$D_{810}$	2562.5	$2564 \pm 39$	$D_{\text{M}}(0.51)$	1968.4	$1966 \pm 22$
$\Omega_{\text{c}}h^2$	0.11736	$0.1174 \pm 0.0015$	$D_{1420}$	843.7	$843 \pm 16$	$H(0.61)$	95.55	$95.66 \pm 0.73$
$100\theta_{\text{MC}}$	1.03984	$1.03991 \pm 0.00080$	$D_{2000}$	242.8	$242.3 \pm 7.1$	$D_{\text{M}}(0.61)$	2291.7	$2289 \pm 24$
$\tau$	0.0476	$0.0479 \pm 0.0094$	$n_{\text{s},0.002}$	0.883	$0.896 \pm 0.099$	$H(2.33)$	235.12	$235.3 \pm 1.3$
$\ln(10^{10}A_{\text{s}})$	3.0274	$3.029 \pm 0.032$	$Y_{\text{P}}$	0.245548	$0.24560^{+0.00042}_{-0.00035}$	$D_{\text{M}}(2.33)$	5753.5	$5748 \pm 40$
$n_{\text{s}}$	0.9889	$0.988 \pm 0.018$	$Y_{\text{P}}^{\text{BBN}}$	0.246875	$0.24693^{+0.00042}_{-0.00035}$	$f\sigma_8(0.15)$	0.4487	$0.448 \pm 0.010$
$\text{d}n_{\text{s}}/\text{d} \ln k$	0.0329	$0.029 \pm 0.035$	$10^5\text{D}/\text{H}$	2.512	$2.50^{+0.15}_{-0.18}$	$\sigma_8(0.15)$	0.7464	$0.7458 \pm 0.0096$
$y_{\text{cal}}$	1.00034	$1.0001 \pm 0.0024$	Age/Gyr	13.777	$13.763 \pm 0.095$	$f\sigma_8(0.38)$	0.4691	$0.4684 \pm 0.0088$
$H_0$	68.27	$68.38 \pm 0.96$	$z_*$	1089.18	$1089.1^{+1.1}_{-1.2}$	$\sigma_8(0.38)$	0.6627	$0.6622 \pm 0.0082$
$\Omega_{\Lambda}$	0.6979	$0.6983 \pm 0.0094$	$r_*$	144.80	$144.70 \pm 0.80$	$f\sigma_8(0.51)$	0.4688	$0.4682 \pm 0.0080$
$\Omega_{\text{m}}$	0.3021	$0.3017 \pm 0.0094$	$100\theta_*$	1.04000	$1.04005 \pm 0.00083$	$\sigma_8(0.51)$	0.6206	$0.6202 \pm 0.0076$
$\Omega_{\text{m}}h^2$	0.14078	$0.1410 \pm 0.0017$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.923	$13.913 \pm 0.076$	$f\sigma_8(0.61)$	0.4646	$0.4641 \pm 0.0074$
$\Omega_{\text{m}}h^3$	0.09611	$0.0964 \pm 0.0017$	$z_{\text{drag}}$	1060.70	$1060.9 \pm 2.2$	$\sigma_8(0.61)$	0.5908	$0.5904 \pm 0.0072$
$\sigma_8$	0.8067	$0.806 \pm 0.011$	$r_{\text{drag}}$	147.34	$147.2 \pm 1.1$	$f\sigma_8(2.33)$	0.29825	$0.2981 \pm 0.0036$
$S_8$	0.8095	$0.808 \pm 0.020$	$k_{\text{D}}$	0.14091	$0.1411 \pm 0.0018$	$\sigma_8(2.33)$	0.30791	$0.3078 \pm 0.0037$
$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4434	$0.443 \pm 0.011$	$100\theta_{\text{D}}$	0.16012	$0.1600^{+0.0012}_{-0.0013}$	$\chi_{\text{small}}^2$	395.50	$396.8 \pm 1.6$
$\sigma_8\Omega_{\text{m}}^{0.25}$	0.5981	$0.597 \pm 0.011$	$z_{\text{eq}}$	3348.9	$3353 \pm 41$	$\chi_{\text{plikEE}}^2$	738.55	$743.5 \pm 3.1$
$\sigma_8/h^{0.5}$	0.9764	$0.975 \pm 0.017$	$k_{\text{eq}}$	0.010221	$0.01023 \pm 0.00013$	$\chi_{6\text{DF}}^2$	0.0003	$0.057 \pm 0.079$
$r_{\text{drag}}h$	100.59	$100.6 \pm 1.2$	$100\theta_{\text{eq}}$	0.8233	$0.8229 \pm 0.0066$	$\chi_{\text{MGS}}^2$	1.75	$1.86 \pm 0.72$
$\langle d^2 \rangle^{1/2}$	2.4336	$2.429 \pm 0.048$	$100\theta_{\text{s,eq}}$	0.45424	$0.4540 \pm 0.0036$	$\chi_{\text{DR12BAO}}^2$	3.59	$4.4 \pm 1.2$
$z_{\text{re}}$	6.86	$6.83^{+0.96}_{-0.84}$	$H(0.15)$	73.45	$73.56 \pm 0.89$	$\chi_{\text{prior}}^2$	0.018	$0.9 \pm 1.3$
$10^9 A_{\text{s}}$	2.064	$2.069^{+0.062}_{-0.071}$	$D_{\text{M}}(0.15)$	635.7	$634.8 \pm 8.3$	$\chi_{\text{BAO}}^2$	5.33	$6.3 \pm 1.3$
$10^9 A_{\text{s}}e^{-2\tau}$	1.8767	$1.879 \pm 0.037$	$H(0.38)$	83.39	$83.50 \pm 0.80$	$\chi_{\text{CMB}}^2$	1134.04	$1140.3 \pm 3.5$
$D_{40}$	1273	$1267 \pm 55$	$D_{\text{M}}(0.38)$	1518.4	$1516 \pm 18$			
$D_{220}$	5778	$5789 \pm 180$	$H(0.51)$	90.01	$90.12 \pm 0.75$			

Best-fit  $\chi_{\text{eff}}^2 = 1139.39$ ;  $\bar{\chi}_{\text{eff}}^2 = 1147.51$ ;  $R - 1 = 0.01371$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.59 CMB - small\_100x143.offlike5\_EE\_Aplanck\_B: 395.50 plik\_rd12\_HM\_v22\_EE: 738.54



## 12.45 base\_nrun\_plikHM\_EE\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.0235 \pm 0.0014$	$D_{40}$	$1255 \pm 53$	$D_{\mathrm{M}}(0.15)$	$625^{+22}_{-24}$
$\Omega_{\mathrm{c}}h^2$	$0.1155 \pm 0.0048$	$D_{220}$	$5877 \pm 220$	$H(0.38)$	$84.5 \pm 2.0$
$100\theta_{\mathrm{MC}}$	$1.04007 \pm 0.00088$	$D_{810}$	$2576 \pm 43$	$D_{\mathrm{M}}(0.38)$	$1495 \pm 48$
$\tau$	$0.0540^{+0.0046}_{-0.0083}$	$D_{1420}$	$847 \pm 21$	$H(0.51)$	$91.0^{+1.6}_{-1.8}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044^{+0.026}_{-0.030}$	$D_{2000}$	$243.8 \pm 8.9$	$D_{\mathrm{M}}(0.51)$	$1939 \pm 57$
$n_{\mathrm{s}}$	$0.990 \pm 0.021$	$n_{\mathrm{s},0.002}$	$0.922 \pm 0.095$	$H(0.61)$	$96.4^{+1.4}_{-1.6}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$0.021 \pm 0.034$	$Y_{\mathrm{P}}$	$0.24584 \pm 0.00055$	$D_{\mathrm{M}}(0.61)$	$2260 \pm 62$
$y_{\mathrm{cal}}$	$1.0000 \pm 0.0025$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24717 \pm 0.00055$	$H(2.33)$	$234.7 \pm 2.4$
$H_0$	$69.7 \pm 2.8$	$10^5\mathrm{D}/\mathrm{H}$	$2.40^{+0.20}_{-0.25}$	$D_{\mathrm{M}}(2.33)$	$5713 \pm 71$
$\Omega_{\Lambda}$	$0.711^{+0.034}_{-0.026}$	Age/Gyr	$13.69 \pm 0.16$	$f\sigma_8(0.15)$	$0.437^{+0.028}_{-0.031}$
$\Omega_{\mathrm{m}}$	$0.289^{+0.026}_{-0.034}$	$z_*$	$1088.3^{+1.7}_{-2.0}$	$\sigma_8(0.15)$	$0.742 \pm 0.014$
$\Omega_{\mathrm{m}}h^2$	$0.1397 \pm 0.0040$	$r_*$	$144.73 \pm 0.92$	$f\sigma_8(0.38)$	$0.460 \pm 0.024$
$\Omega_{\mathrm{m}}h^3$	$0.0972 \pm 0.0021$	$100\theta_*$	$1.04014 \pm 0.00086$	$\sigma_8(0.38)$	$0.661 \pm 0.010$
$\sigma_8$	$0.801 \pm 0.018$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.914 \pm 0.087$	$f\sigma_8(0.51)$	$0.461 \pm 0.020$
$S_8$	$0.787^{+0.053}_{-0.062}$	$z_{\mathrm{drag}}$	$1062.2 \pm 2.8$	$\sigma_8(0.51)$	$0.6194 \pm 0.0084$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.431^{+0.029}_{-0.034}$	$r_{\mathrm{drag}}$	$147.0 \pm 1.1$	$f\sigma_8(0.61)$	$0.458 \pm 0.018$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.587 \pm 0.028$	$k_{\mathrm{D}}$	$0.1417 \pm 0.0018$	$\sigma_8(0.61)$	$0.5900 \pm 0.0075$
$\sigma_8/h^{0.5}$	$0.960 \pm 0.040$	$100\theta_{\mathrm{D}}$	$0.1594^{+0.0013}_{-0.0017}$	$f\sigma_8(2.33)$	$0.2985 \pm 0.0034$
$r_{\mathrm{drag}}h$	$102.5 \pm 4.1$	$z_{\mathrm{eq}}$	$3322 \pm 96$	$\sigma_8(2.33)$	$0.3089 \pm 0.0035$
$\langle d^2 \rangle^{1/2}$	$2.401 \pm 0.080$	$k_{\mathrm{eq}}$	$0.01014 \pm 0.00029$	$\chi_{\mathrm{simall}}^2$	$396.5 \pm 1.5$
$z_{\mathrm{re}}$	$< 7.52$	$100\theta_{\mathrm{eq}}$	$0.831 \pm 0.020$	$\chi_{\mathrm{plikEE}}^2$	$744.1 \pm 3.4$
$10^9 A_{\mathrm{s}}$	$2.100^{+0.052}_{-0.064}$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.458 \pm 0.010$	$\chi_{\mathrm{prior}}^2$	$0.98 \pm 1.4$
$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.885 \pm 0.037$	$H(0.15)$	$74.7 \pm 2.5$	$\chi_{\mathrm{CMB}}^2$	$1140.7 \pm 3.7$

$\bar{\chi}_{\mathrm{eff}}^2 = 1141.65$ ;  $R - 1 = 0.00996$



12.46    base\_nrun\_plikHM\_EE\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02302 \pm 0.00093$	$D_{810}$	$2567 \pm 39$	$D_{\text{M}}(0.51)$	$1964 \pm 21$
$\Omega_{\text{c}}h^2$	$0.1175 \pm 0.0015$	$D_{1420}$	$841 \pm 16$	$H(0.61)$	$95.75 \pm 0.72$
$100\theta_{\text{MC}}$	$1.03991 \pm 0.00081$	$D_{2000}$	$241.3 \pm 6.9$	$D_{\text{M}}(0.61)$	$2286 \pm 24$
$\tau$	$0.0530^{+0.0043}_{-0.0080}$	$n_{\text{s},0.002}$	$0.919 \pm 0.095$	$H(2.33)$	$235.5 \pm 1.3$
$\ln(10^{10}A_{\text{s}})$	$3.042^{+0.026}_{-0.029}$	$Y_{\text{P}}$	$0.24565^{+0.00041}_{-0.00033}$	$D_{\text{M}}(2.33)$	$5742 \pm 40$
$n_{\text{s}}$	$0.985 \pm 0.018$	$Y_{\text{P}}^{\text{BBN}}$	$0.24698^{+0.00041}_{-0.00033}$	$f\sigma_8(0.15)$	$0.449 \pm 0.010$
$\text{d}n_{\text{s}}/\text{d} \ln k$	$0.020 \pm 0.034$	$10^5\text{D}/\text{H}$	$2.48^{+0.15}_{-0.17}$	$\sigma_8(0.15)$	$0.7480 \pm 0.0090$
$y_{\text{cal}}$	$1.0001 \pm 0.0024$	Age/Gyr	$13.751 \pm 0.093$	$f\sigma_8(0.38)$	$0.4696 \pm 0.0087$
$H_0$	$68.46 \pm 0.95$	$z_*$	$1088.9^{+1.0}_{-1.2}$	$\sigma_8(0.38)$	$0.6642 \pm 0.0076$
$\Omega_{\Lambda}$	$0.6987 \pm 0.0094$	$r_*$	$144.59 \pm 0.79$	$f\sigma_8(0.51)$	$0.4695 \pm 0.0078$
$\Omega_{\text{m}}$	$0.3013 \pm 0.0094$	$100\theta_*$	$1.04003 \pm 0.00083$	$\sigma_8(0.51)$	$0.6221 \pm 0.0070$
$\Omega_{\text{m}}h^2$	$0.1411 \pm 0.0017$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.902 \pm 0.075$	$f\sigma_8(0.61)$	$0.4653 \pm 0.0072$
$\Omega_{\text{m}}h^3$	$0.0966 \pm 0.0017$	$z_{\text{drag}}$	$1061.2 \pm 2.1$	$\sigma_8(0.61)$	$0.5922 \pm 0.0066$
$\sigma_8$	$0.808 \pm 0.010$	$r_{\text{drag}}$	$147.0 \pm 1.1$	$f\sigma_8(2.33)$	$0.2990 \pm 0.0033$
$S_8$	$0.810 \pm 0.020$	$k_{\text{D}}$	$0.1414 \pm 0.0018$	$\sigma_8(2.33)$	$0.3087 \pm 0.0034$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.444 \pm 0.011$	$100\theta_{\text{D}}$	$0.1599^{+0.0011}_{-0.0013}$	$\chi_{\text{simall}}^2$	$396.6 \pm 1.4$
$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.599 \pm 0.011$	$z_{\text{eq}}$	$3357 \pm 41$	$\chi_{\text{plikEE}}^2$	$743.5 \pm 3.2$
$\sigma_8/h^{0.5}$	$0.977 \pm 0.016$	$k_{\text{eq}}$	$0.01025 \pm 0.00013$	$\chi_{6\text{DF}}^2$	$0.057 \pm 0.080$
$r_{\text{drag}}h$	$100.7 \pm 1.2$	$100\theta_{\text{eq}}$	$0.8225 \pm 0.0067$	$\chi_{\text{MGS}}^2$	$1.88 \pm 0.72$
$\langle d^2 \rangle^{1/2}$	$2.430 \pm 0.046$	$100\theta_{\text{s,eq}}$	$0.4537 \pm 0.0036$	$\chi_{\text{DR12BAO}}^2$	$4.4 \pm 1.3$
$z_{\text{re}}$	$< 7.57$	$H(0.15)$	$73.64 \pm 0.88$	$\chi_{\text{prior}}^2$	$0.9 \pm 1.4$
$10^9A_{\text{s}}$	$2.096^{+0.053}_{-0.063}$	$D_{\text{M}}(0.15)$	$634.1 \pm 8.2$	$\chi_{\text{BAO}}^2$	$6.4 \pm 1.3$
$10^9A_{\text{s}}e^{-2\tau}$	$1.885 \pm 0.036$	$H(0.38)$	$83.59 \pm 0.79$	$\chi_{\text{CMB}}^2$	$1140.0 \pm 3.5$
$D_{40}$	$1256 \pm 53$	$D_{\text{M}}(0.38)$	$1515 \pm 18$		
$D_{220}$	$5810 \pm 180$	$H(0.51)$	$90.21 \pm 0.74$		

$\bar{\chi}_{\text{eff}}^2 = 1147.29; R - 1 = 0.01768$



## 12.47 base\_nrun\_CleanedCamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022136	$0.02215 \pm 0.00023$	$\sigma_8/h^{0.5}$	0.9912	$0.991 \pm 0.016$	$D_M(0.15)$	647.6	$647.0 \pm 7.9$
$\Omega_c h^2$	0.12068	$0.1205 \pm 0.0021$	$r_{\text{drag}} h$	98.42	$98.6 \pm 1.6$	$H(0.38)$	82.52	$82.57 \pm 0.56$
$100\theta_{\text{MC}}$	1.040777	$1.04079 \pm 0.00047$	$\langle d^2 \rangle^{1/2}$	2.4450	$2.445 \pm 0.038$	$D_M(0.38)$	1542.3	$1541 \pm 16$
$\tau$	0.0532	$0.0532 \pm 0.0082$	$z_{\text{re}}$	7.63	$7.60 \pm 0.84$	$H(0.51)$	89.323	$89.37 \pm 0.44$
$\ln(10^{10} A_s)$	3.0419	$3.041 \pm 0.018$	$10^9 A_s$	2.0946	$2.094 \pm 0.037$	$D_M(0.51)$	1996.4	$1995 \pm 18$
$n_s$	0.9603	$0.9614 \pm 0.0061$	$10^9 A_s e^{-2\tau}$	1.8831	$1.883 \pm 0.014$	$H(0.61)$	95.010	$95.05 \pm 0.35$
$dn_s/d \ln k$	-0.0065	$-0.0047 \pm 0.0077$	$D_{40}$	1219.7	$1222 \pm 21$	$D_M(0.61)$	2321.9	$2320 \pm 20$
$y_{\text{cal}}$	1.00018	$1.0003 \pm 0.0025$	$D_{220}$	5704.2	$5707 \pm 41$	$H(2.33)$	236.76	$236.7 \pm 1.3$
$A_{100}^{\text{PS}}$	265.5	$259 \pm 27$	$D_{810}$	2531.9	$2533 \pm 14$	$D_M(2.33)$	5777.1	$5776 \pm 16$
$A_{143}^{\text{tSZ}}$	4.49	$3.6^{+1.6}_{-2.7}$	$D_{1420}$	810.6	$811.7 \pm 5.5$	$f\sigma_8(0.15)$	0.4629	$0.462 \pm 0.012$
$A^{\text{kSZ}}$	3.08	$> 4.00$	$D_{2000}$	227.85	$228.4 \pm 2.1$	$\sigma_8(0.15)$	0.7481	$0.7480 \pm 0.0077$
$A_{100}^{\text{dust}}$	1.004	$1.01 \pm 0.19$	$n_{\text{s},0.002}$	0.9812	$0.977 \pm 0.023$	$f\sigma_8(0.38)$	0.4792	$0.4787 \pm 0.0097$
$A_{143}^{\text{power}}$	12.99	$11.0^{+2.3}_{-2.8}$	$Y_{\text{P}}$	0.245299	$0.24530^{+0.00011}_{-0.000085}$	$\sigma_8(0.38)$	0.6622	$0.6622 \pm 0.0062$
$A_{217}^{\text{power}}$	11.20	$8.7^{+1.8}_{-3.3}$	$Y_{\text{P}}^{\text{BBN}}$	0.246625	$0.24663^{+0.00011}_{-0.000086}$	$f\sigma_8(0.51)$	0.4767	$0.4763 \pm 0.0083$
$A_{143 \times 217}^{\text{power}}$	7.41	$4.8^{+1.8}_{-3.2}$	$10^5 D/H$	2.6302	$2.627 \pm 0.044$	$\sigma_8(0.51)$	0.6192	$0.6193 \pm 0.0056$
$\gamma_{143}^{\text{power}}$	1.201	$1.32^{+0.39}_{-0.52}$	Age/Gyr	13.8284	$13.825 \pm 0.036$	$f\sigma_8(0.61)$	0.4710	$0.4706 \pm 0.0074$
$\gamma_{217}^{\text{power}}$	1.08	$1.31 \pm 0.61$	$z_*$	1090.279	$1090.24 \pm 0.41$	$\sigma_8(0.61)$	0.5890	$0.5891 \pm 0.0052$
$\gamma_{143 \times 217}^{\text{power}}$	1.03	$1.28^{+0.58}_{-0.70}$	$r_*$	144.434	$144.46 \pm 0.50$	$f\sigma_8(2.33)$	0.29660	$0.2967 \pm 0.0026$
$c_{100}$	0.99777	$0.9978 \pm 0.0011$	$100\theta_*$	1.040975	$1.04099 \pm 0.00046$	$\sigma_8(2.33)$	0.30539	$0.3055 \pm 0.0027$
$c_{217}$	0.99938	$0.9995^{+0.0013}_{-0.0017}$	$D_M(z_*)/\text{Gpc}$	13.8748	$13.877 \pm 0.046$	$f_{2000}^{143}$	25.14	$24 \pm 3$
$H_0$	66.87	$66.95 \pm 0.91$	$z_{\text{drag}}$	1059.437	$1059.47 \pm 0.49$	$f_{2000}^{217}$	18.11	$17.5 \pm 2.2$
$\Omega_\Lambda$	0.6792	$0.680 \pm 0.013$	$r_{\text{drag}}$	147.17	$147.20 \pm 0.50$	$f_{2000}^{143 \times 217}$	12.82	$11.9^{+2.4}_{-2.6}$
$\Omega_{\text{m}}$	0.3208	$0.320 \pm 0.013$	$k_{\text{D}}$	0.14060	$0.14059 \pm 0.00057$	$\chi_{\text{small}}^2$	395.93	$397.0 \pm 1.7$
$\Omega_{\text{m}} h^2$	0.14346	$0.1433 \pm 0.0020$	$100\theta_{\text{D}}$	0.161040	$0.16103 \pm 0.00029$	$\chi_{\text{lowl}}^2$	22.24	$23.0 \pm 2.0$
$\Omega_{\text{m}} h^3$	0.095938	$0.09595 \pm 0.00048$	$z_{\text{eq}}$	3412.9	$3410 \pm 48$	$\chi_{\text{CamSpec}}^2$	6705.0	$6717.4 \pm 5.4$
$\sigma_8$	0.8106	$0.8104 \pm 0.0092$	$k_{\text{eq}}$	0.010417	$0.01041 \pm 0.00015$	$\chi_{\text{prior}}^2$	1.41	$5.3 \pm 2.9$
$S_8$	0.8382	$0.837 \pm 0.024$	$100\theta_{\text{eq}}$	0.8106	$0.8114 \pm 0.0090$	$\chi_{\text{CMB}}^2$	7123.1	$7137.4 \pm 5.4$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4591	$0.458 \pm 0.013$	$100\theta_{\text{s,eq}}$	0.44816	$0.4485 \pm 0.0046$			
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6101	$0.610 \pm 0.012$	$H(0.15)$	72.25	$72.32 \pm 0.78$			

Best-fit  $\chi_{\text{eff}}^2 = 7124.55$ ;  $\bar{\chi}_{\text{eff}}^2 = 7142.72$ ;  $R - 1 = 0.00730$

$\chi_{\text{eff}}^2$ : CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.93 commander\_dx12\_v3.2\_29: 22.24 CamSpec like\_10.7cleaned: 6704.97



## 13 nrun+nnu+w+mnu

### 13.1 base\_nrun\_nnu\_w\_mnu\_plikHM\_TTTEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022447	$0.02248 \pm 0.00019$	$\Omega_\nu h^2$	0.000023	$< 0.000816$	$D_M(0.15)$	626.7	$626.4 \pm 9.1$
$\Omega_c h^2$	0.12002	$0.1205 \pm 0.0030$	$\Omega_m h^3$	0.09903	$0.1000 \pm 0.0034$	$H(0.38)$	83.78	$83.7 \pm 1.2$
$100\theta_{MC}$	1.040983	$1.04088 \pm 0.00044$	$\sigma_8$	0.8346	$0.829 \pm 0.012$	$D_M(0.38)$	1502.7	$1503 \pm 21$
$\tau$	0.0537	$0.0555 \pm 0.0078$	$S_8$	0.8276	$0.824 \pm 0.012$	$H(0.51)$	90.24	$90.2 \pm 1.3$
$\Sigma m_\nu$ [eV]	0.0022	$< 0.0768$	$\sigma_8 \Omega_m^{0.5}$	0.4533	$0.4513 \pm 0.0063$	$D_M(0.51)$	1951.2	$1952 \pm 28$
$w_0$	-1.0413	$-1.053 \pm 0.036$	$\sigma_8 \Omega_m^{0.25}$	0.6151	$0.6115 \pm 0.0082$	$H(0.61)$	95.70	$95.7 \pm 1.4$
$N_{\text{eff}}$	3.071	$3.11 \pm 0.19$	$\sigma_8/h^{0.5}$	1.0011	$0.993^{+0.013}_{-0.011}$	$D_M(0.61)$	2273.8	$2274 \pm 32$
$\ln(10^{10} A_s)$	3.0431	$3.049 \pm 0.017$	$r_{\text{drag}} h$	102.09	$102.0 \pm 1.1$	$H(2.33)$	235.78	$236.5 \pm 2.9$
$n_s$	0.9667	$0.9674 \pm 0.0085$	$\langle d^2 \rangle^{1/2}$	2.4448	$2.440 \pm 0.024$	$D_M(2.33)$	5732	$5728 \pm 77$
$dn_s/d \ln k$	-0.0028	$-0.0036 \pm 0.0075$	$z_{\text{re}}$	7.59	$7.77 \pm 0.78$	$f\sigma_8(0.15)$	0.4616	$0.4612 \pm 0.0067$
$y_{\text{cal}}$	1.00025	$1.0006 \pm 0.0024$	$10^9 A_s$	2.0971	$2.109 \pm 0.036$	$\sigma_8(0.15)$	0.7726	$0.767 \pm 0.012$
$A_{217}^{\text{CIB}}$	49.7	$47 \pm 7$	$10^9 A_s e^{-2\tau}$	1.8837	$1.887 \pm 0.016$	$f\sigma_8(0.38)$	0.4858	$0.4854 \pm 0.0078$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.13	—	$D_{40}$	1220.1	$1219 \pm 18$	$\sigma_8(0.38)$	0.6857	$0.681 \pm 0.011$
$A_{143}^{\text{tSZ}}$	7.40	$5.3^{+2.2}_{-2.0}$	$D_{220}$	5730.2	$5737 \pm 38$	$f\sigma_8(0.51)$	0.4863	$0.4857 \pm 0.0080$
$A_{100}^{\text{PS}}$	254.5	$262 \pm 28$	$D_{810}$	2538.5	$2541 \pm 13$	$\sigma_8(0.51)$	0.6419	$0.637 \pm 0.010$
$A_{143}^{\text{PS}}$	44.5	$47 \pm 8$	$D_{1420}$	816.30	$816.4 \pm 4.9$	$f\sigma_8(0.61)$	0.4823	$0.4816 \pm 0.0080$
$A_{143 \times 217}^{\text{PS}}$	40.3	$42 \pm 9$	$D_{2000}$	230.51	$230.3 \pm 1.9$	$\sigma_8(0.61)$	0.6109	$0.6060 \pm 0.0095$
$A_{217}^{\text{PS}}$	116.2	$114 \pm 10$	$n_{s,0.002}$	0.9757	$0.979 \pm 0.021$	$f\sigma_8(2.33)$	0.30740	$0.3058 \pm 0.0046$
$A^{\text{kSZ}}$	0.00	$< 4.86$	$Y_P$	0.24576	$0.2462 \pm 0.0026$	$\sigma_8(2.33)$	0.31667	$0.3141 \pm 0.0049$
$A_{100}^{\text{dustTT}}$	8.93	$9.0 \pm 1.8$	$Y_P^{\text{BBN}}$	0.24709	$0.2475 \pm 0.0026$	$f_{2000}^{143}$	29.89	$30.6 \pm 3.2$
$A_{143}^{\text{dustTT}}$	11.05	$11.0 \pm 1.8$	$10^5 D/H$	2.580	$2.586 \pm 0.050$	$f_{2000}^{143 \times 217}$	32.65	$33.0 \pm 2.2$
$A_{143 \times 217}^{\text{dustTT}}$	19.47	$18.7 \pm 3.3$	Age/Gyr	13.708	$13.70 \pm 0.18$	$f_{2000}^{217}$	107.26	$107.7 \pm 2.0$
$A_{217}^{\text{dustTT}}$	94.2	$93.6 \pm 7.3$	$z_*$	1089.844	$1089.88 \pm 0.36$	$\chi_{\text{lensing}}^2$	9.11	$9.47 \pm 0.83$
$A_{100}^{\text{dustTE}}$	0.1141	$0.114 \pm 0.038$	$r_*$	144.25	$143.9 \pm 1.8$	$\chi_{\text{small}}^2$	395.88	$397.1 \pm 1.8$
$A_{100 \times 143}^{\text{dustTE}}$	0.1351	$0.135 \pm 0.029$	$100\theta_*$	1.04111	$1.04102 \pm 0.00054$	$\chi_{\text{lowl}}^2$	22.38	$22.5 \pm 1.6$
$A_{100 \times 217}^{\text{dustTE}}$	0.479	$0.480 \pm 0.085$	$D_M(z_*)/\text{Gpc}$	13.856	$13.83 \pm 0.16$	$\chi_{\text{plik}}^2$	2344.3	$2361.5 \pm 6.5$
$A_{143}^{\text{dustTE}}$	0.225	$0.224 \pm 0.054$	$z_{\text{drag}}$	1060.12	$1060.28 \pm 0.70$	$\chi_{\text{H073p45}}^2$	5.65	$5.8 \pm 3.0$
$A_{143 \times 217}^{\text{dustTE}}$	0.664	$0.663 \pm 0.080$	$r_{\text{drag}}$	146.88	$146.6 \pm 1.8$	$\chi_{\text{JLA}}^2$	1035.46	$1036.3 \pm 1.8$
$A_{217}^{\text{dustTE}}$	2.076	$2.08 \pm 0.27$	$k_D$	0.14104	$0.1413 \pm 0.0013$	$\chi_{6\text{DF}}^2$	0.075	$0.09 \pm 0.11$
$c_{100}$	0.99970	$0.99967 \pm 0.00061$	$100\theta_D$	0.160757	$0.16081 \pm 0.00045$	$\chi_{\text{MGS}}^2$	2.51	$2.42 \pm 0.63$
$c_{217}$	0.99820	$0.99821 \pm 0.00062$	$z_{\text{eq}}$	3393.1	$3390 \pm 29$	$\chi_{\text{DR12BAO}}^2$	3.95	$4.56 \pm 0.85$
$H_0$	69.50	$69.6 \pm 1.1$	$k_{\text{eq}}$	0.010373	$0.01039 \pm 0.00011$	$\chi_{\text{prior}}^2$	1.92	$11.6 \pm 4.5$
$\Omega_\Lambda$	0.7050	$0.7033 \pm 0.0068$	$100\theta_{\text{eq}}$	0.8151	$0.8158 \pm 0.0054$	$\chi_{\text{CMB}}^2$	2771.7	$2790.6 \pm 6.7$
$\Omega_m$	0.2950	$0.2967 \pm 0.0068$	$100\theta_{s,\text{eq}}$	0.45029	$0.4506 \pm 0.0027$	$\chi_{\text{BAO}}^2$	6.54	$7.1 \pm 1.2$
$\Omega_m h^2$	0.14249	$0.1437 \pm 0.0032$	$H(0.15)$	74.26	$74.3 \pm 1.1$			

Best-fit  $\chi_{\text{eff}}^2 = 3821.27$ ;  $\bar{\chi}_{\text{eff}}^2 = 3851.33$ ;  $R - 1 = 0.00441$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.07 MGS: 2.51 DR12BAO: 3.95 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 9.11 small\_100x143.offlike5\_EE\_Aplanck\_B: 395.88 commander\_dx12\_v3\_2\_29: 22.38 plik\_rd12\_HM\_v22b\_TTTEEE: 2344.32 Hubble - H073p45: 5.65 SN - JLA Pantheon18: 1035.46



### 13.2 base\_nrun\_nnu\_w\_mnu\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02249 \pm 0.00019$	$\Omega_{\nu}h^2$	$< 0.000826$	$D_{\mathrm{M}}(0.15)$	$626.3 \pm 9.1$
$\Omega_{\mathrm{c}}h^2$	$0.1205 \pm 0.0030$	$\Omega_{\mathrm{m}}h^3$	$0.1000 \pm 0.0034$	$H(0.38)$	$83.8 \pm 1.2$
$100\theta_{\mathrm{MC}}$	$1.04088 \pm 0.00044$	$\sigma_8$	$0.829 \pm 0.012$	$D_{\mathrm{M}}(0.38)$	$1503 \pm 21$
$\tau$	$0.0563^{+0.0057}_{-0.0082}$	$S_8$	$0.824 \pm 0.012$	$H(0.51)$	$90.2 \pm 1.3$
$\Sigma m_{\nu} [\mathrm{eV}]$	$< 0.0778$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4514 \pm 0.0063$	$D_{\mathrm{M}}(0.51)$	$1951 \pm 28$
$w_0$	$-1.052 \pm 0.036$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6117 \pm 0.0081$	$H(0.61)$	$95.7 \pm 1.4$
$N_{\mathrm{eff}}$	$3.11 \pm 0.19$	$\sigma_8/h^{0.5}$	$0.994^{+0.013}_{-0.011}$	$D_{\mathrm{M}}(0.61)$	$2274 \pm 32$
$\ln(10^{10}A_{\mathrm{s}})$	$3.050^{+0.014}_{-0.017}$	$r_{\mathrm{drag}}h$	$102.0 \pm 1.1$	$H(2.33)$	$236.5 \pm 2.9$
$n_{\mathrm{s}}$	$0.9676 \pm 0.0085$	$\langle d^2 \rangle^{1/2}$	$2.440 \pm 0.024$	$D_{\mathrm{M}}(2.33)$	$5727 \pm 77$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0036 \pm 0.0075$	$z_{\mathrm{re}}$	$7.85^{+0.62}_{-0.80}$	$f\sigma_8(0.15)$	$0.4612 \pm 0.0067$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0024$	$10^9 A_{\mathrm{s}}$	$2.112^{+0.029}_{-0.037}$	$\sigma_8(0.15)$	$0.767 \pm 0.012$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.887 \pm 0.016$	$f\sigma_8(0.38)$	$0.4854 \pm 0.0078$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{40}$	$1219 \pm 18$	$\sigma_8(0.38)$	$0.681 \pm 0.011$
$A_{143}^{\mathrm{tSZ}}$	$5.3^{+2.2}_{-2.0}$	$D_{220}$	$5736 \pm 38$	$f\sigma_8(0.51)$	$0.4858 \pm 0.0080$
$A_{100}^{\mathrm{PS}}$	$262 \pm 28$	$D_{810}$	$2541 \pm 13$	$\sigma_8(0.51)$	$0.637 \pm 0.010$
$A_{143}^{\mathrm{PS}}$	$47 \pm 8$	$D_{1420}$	$816.4 \pm 4.9$	$f\sigma_8(0.61)$	$0.4816 \pm 0.0080$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9$	$D_{2000}$	$230.3 \pm 1.9$	$\sigma_8(0.61)$	$0.6062 \pm 0.0095$
$A_{217}^{\mathrm{PS}}$	$114 \pm 10$	$n_{\mathrm{s},0.002}$	$0.979 \pm 0.021$	$f\sigma_8(2.33)$	$0.3059 \pm 0.0046$
$A^{\mathrm{kSZ}}$	$< 4.86$	$Y_{\mathrm{P}}$	$0.2463 \pm 0.0026$	$\sigma_8(2.33)$	$0.3143 \pm 0.0049$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2476 \pm 0.0026$	$f_{2000}^{143}$	$30.6 \pm 3.1$
$A_{143}^{\mathrm{dust}TT}$	$11.0 \pm 1.8$	$10^5 \mathrm{D}/\mathrm{H}$	$2.586 \pm 0.050$	$f_{2000}^{143 \times 217}$	$33.0 \pm 2.2$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.7 \pm 3.3$	$\mathrm{Age}/\mathrm{Gyr}$	$13.69 \pm 0.18$	$f_{2000}^{217}$	$107.7 \pm 2.0$
$A_{217}^{\mathrm{dust}TT}$	$93.6 \pm 7.3$	$z_*$	$1089.88 \pm 0.36$	$\chi_{\mathrm{lensing}}^2$	$9.46 \pm 0.83$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.038$	$r_*$	$143.9 \pm 1.8$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.9$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.029$	$100\theta_*$	$1.04102 \pm 0.00054$	$\chi_{\mathrm{lowl}}^2$	$22.5 \pm 1.6$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.479 \pm 0.085$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.83 \pm 0.16$	$\chi_{\mathrm{plik}}^2$	$2361.5 \pm 6.5$
$A_{143}^{\mathrm{dust}TE}$	$0.224 \pm 0.054$	$z_{\mathrm{drag}}$	$1060.29 \pm 0.70$	$\chi_{\mathrm{H073p45}}^2$	$5.8 \pm 3.0$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.664 \pm 0.080$	$r_{\mathrm{drag}}$	$146.5 \pm 1.8$	$\chi_{\mathrm{JLA}}^2$	$1036.3 \pm 1.8$
$A_{217}^{\mathrm{dust}TE}$	$2.08 \pm 0.27$	$k_{\mathrm{D}}$	$0.1413 \pm 0.0013$	$\chi_{6\mathrm{DF}}^2$	$0.09 \pm 0.11$
$c_{100}$	$0.99967 \pm 0.00061$	$100\theta_{\mathrm{D}}$	$0.16081 \pm 0.00045$	$\chi_{\mathrm{MGS}}^2$	$2.42 \pm 0.63$
$c_{217}$	$0.99821 \pm 0.00062$	$z_{\mathrm{eq}}$	$3389 \pm 28$	$\chi_{\mathrm{DR12BAO}}^2$	$4.54 \pm 0.85$
$H_0$	$69.6 \pm 1.1$	$k_{\mathrm{eq}}$	$0.01039 \pm 0.00011$	$\chi_{\mathrm{prior}}^2$	$11.6 \pm 4.5$
$\Omega_{\Lambda}$	$0.7033 \pm 0.0068$	$100\theta_{\mathrm{eq}}$	$0.8160 \pm 0.0054$	$\chi_{\mathrm{CMB}}^2$	$2790.4 \pm 6.7$
$\Omega_{\mathrm{m}}$	$0.2967 \pm 0.0068$	$100\theta_{\mathrm{s,eq}}$	$0.4507 \pm 0.0027$	$\chi_{\mathrm{BAO}}^2$	$7.1 \pm 1.2$
$\Omega_{\mathrm{m}}h^2$	$0.1437 \pm 0.0032$	$H(0.15)$	$74.3 \pm 1.1$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 3851.17; R - 1 = 0.00442$$



## 14 nrun+nrnunrun

### 14.1 base\_nrun\_nrunrun\_plikHM\_TTTEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022332	$0.02234 \pm 0.00017$	$\Omega_m h^2$	0.14367	$0.1436 \pm 0.0014$	$100\theta_{\text{eq}}$	0.8103	$0.8106 \pm 0.0061$
$\Omega_c h^2$	0.12070	$0.1206 \pm 0.0015$	$\Omega_m h^3$	0.096331	$0.09636 \pm 0.00031$	$100\theta_{\text{s,eq}}$	0.44786	$0.4480 \pm 0.0031$
$100\theta_{\text{MC}}$	1.040823	$1.04086 \pm 0.00031$	$\sigma_8$	0.8178	$0.8169 \pm 0.0087$	$H(0.15)$	72.42	$72.46 \pm 0.56$
$\tau$	0.0570	$0.0577 \pm 0.0086$	$S_8$	0.8441	$0.843 \pm 0.018$	$D_{\text{M}}(0.15)$	646.0	$645.7 \pm 5.6$
$\ln(10^{10} A_s)$	3.0513	$3.053^{+0.016}_{-0.018}$	$\sigma_8 \Omega_m^{0.5}$	0.4623	$0.4615 \pm 0.0099$	$H(0.38)$	82.680	$82.71 \pm 0.40$
$n_s$	0.9624	$0.9612 \pm 0.0053$	$\sigma_8 \Omega_m^{0.25}$	0.6149	$0.6140 \pm 0.0094$	$D_{\text{M}}(0.38)$	1538.7	$1538 \pm 11$
$dn_s/d \ln k$	0.0053	$0.001 \pm 0.010$	$\sigma_8/h^{0.5}$	0.9987	$0.997 \pm 0.014$	$H(0.51)$	89.483	$89.51 \pm 0.32$
$d^2 n_s/d \ln k^2$	0.0139	$0.012 \pm 0.013$	$r_{\text{drag}} h$	98.53	$98.6 \pm 1.1$	$D_{\text{M}}(0.51)$	1992.0	$1991 \pm 13$
$y_{\text{cal}}$	1.00047	$1.0006 \pm 0.0024$	$\langle d^2 \rangle^{1/2}$	2.4477	$2.446 \pm 0.029$	$H(0.61)$	95.169	$95.20 \pm 0.26$
$A_{217}^{\text{CIB}}$	45.2	$47 \pm 7$	$z_{\text{re}}$	7.98	$8.02 \pm 0.85$	$D_{\text{M}}(0.61)$	2316.9	$2316 \pm 14$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.70	—	$10^9 A_s$	2.1142	$2.118^{+0.034}_{-0.039}$	$H(2.33)$	236.97	$236.95 \pm 0.86$
$A_{143}^{\text{tSZ}}$	7.08	$5.4 \pm 2.0$	$10^9 A_s e^{-2\tau}$	1.8864	$1.887 \pm 0.012$	$D_{\text{M}}(2.33)$	5768.0	$5767 \pm 12$
$A_{100}^{\text{PS}}$	246.6	$259 \pm 29$	$D_{40}$	1221.4	$1218 \pm 19$	$f\sigma_8(0.15)$	0.4663	$0.4655 \pm 0.0092$
$A_{143}^{\text{PS}}$	49.0	$45 \pm 9$	$D_{220}$	5738.6	$5740 \pm 39$	$\sigma_8(0.15)$	0.7549	$0.7541 \pm 0.0077$
$A_{143 \times 217}^{\text{PS}}$	52.6	$41 \pm 9$	$D_{810}$	2540.2	$2539 \pm 13$	$f\sigma_8(0.38)$	0.4829	$0.4822 \pm 0.0076$
$A_{217}^{\text{PS}}$	121.3	$114 \pm 10$	$D_{1420}$	818.87	$817.0 \pm 4.9$	$\sigma_8(0.38)$	0.6683	$0.6676 \pm 0.0065$
$A^{\text{kSZ}}$	0.00	$< 4.36$	$D_{2000}$	232.19	$231.2 \pm 2.1$	$f\sigma_8(0.51)$	0.4806	$0.4799 \pm 0.0068$
$A_{100}^{\text{dustTT}}$	8.80	$8.9 \pm 1.8$	$n_{\text{s},0.002}$	1.0171	$1.019 \pm 0.045$	$\sigma_8(0.51)$	0.6250	$0.6244 \pm 0.0060$
$A_{143}^{\text{dustTT}}$	11.05	$10.9 \pm 1.8$	$Y_{\text{P}}$	0.245380	$0.245383 \pm 0.000066$	$f\sigma_8(0.61)$	0.4749	$0.4742 \pm 0.0062$
$A_{143 \times 217}^{\text{dustTT}}$	20.09	$18.5 \pm 3.3$	$Y_{\text{P}}^{\text{BBN}}$	0.246707	$0.246709 \pm 0.000066$	$\sigma_8(0.61)$	0.5945	$0.5940^{+0.0053}_{-0.0058}$
$A_{217}^{\text{dustTT}}$	95.6	$93.6 \pm 7.4$	$10^5 \text{D}/\text{H}$	2.5926	$2.591 \pm 0.031$	$f\sigma_8(2.33)$	0.29943	$0.2992^{+0.0026}_{-0.0029}$
$A_{100}^{\text{dustTE}}$	0.1145	$0.115 \pm 0.038$	Age/Gyr	13.8069	$13.804 \pm 0.026$	$\sigma_8(2.33)$	0.30835	$0.3081^{+0.0027}_{-0.0031}$
$A_{100 \times 143}^{\text{dustTE}}$	0.1341	$0.135 \pm 0.029$	$z_*$	1090.028	$1090.01 \pm 0.30$	$f_{2000}^{143}$	27.49	$29 \pm 3$
$A_{100 \times 217}^{\text{dustTE}}$	0.480	$0.483 \pm 0.085$	$r_*$	144.281	$144.29 \pm 0.32$	$f_{2000}^{143 \times 217}$	30.98	$31.9 \pm 2.5$
$A_{143}^{\text{dustTE}}$	0.225	$0.226 \pm 0.054$	$100\theta_*$	1.041014	$1.04104 \pm 0.00031$	$f_{2000}^{217}$	105.57	$106.7 \pm 2.3$
$A_{143 \times 217}^{\text{dustTE}}$	0.668	$0.667 \pm 0.079$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8597	$13.860 \pm 0.029$	$\chi_{\text{simall}}^2$	396.42	$397.5 \pm 2.1$
$A_{217}^{\text{dustTE}}$	2.090	$2.10 \pm 0.27$	$z_{\text{drag}}$	1059.895	$1059.92 \pm 0.33$	$\chi_{\text{lowl}}^2$	21.69	$22.4 \pm 1.5$
$c_{100}$	0.99975	$0.99969 \pm 0.00061$	$r_{\text{drag}}$	146.951	$146.95 \pm 0.31$	$\chi_{\text{plik}}^2$	2344.6	$2360.7 \pm 5.9$
$c_{217}$	0.99815	$0.99819 \pm 0.00062$	$k_{\text{D}}$	0.140987	$0.14099 \pm 0.00034$	$\chi_{\text{prior}}^2$	1.49	$11.5 \pm 4.6$
$H_0$	67.05	$67.09 \pm 0.65$	$100\theta_{\text{D}}$	0.160775	$0.16077 \pm 0.00019$	$\chi_{\text{CMB}}^2$	2762.7	$2780.6 \pm 6.1$
$\Omega_{\Lambda}$	0.6804	$0.6808 \pm 0.0091$	$z_{\text{eq}}$	3418.0	$3417 \pm 33$			
$\Omega_{\text{m}}$	0.3196	$0.3192 \pm 0.0091$	$k_{\text{eq}}$	0.010432	$0.01043 \pm 0.00010$			

Best-fit  $\chi_{\text{eff}}^2 = 2764.20$ ;  $\bar{\chi}_{\text{eff}}^2 = 2792.05$ ;  $R - 1 = 0.02103$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.42 commander\_dx12\_v3.2.29: 21.69 plik\_rd12\_HM\_v22b\_TTTEE: 2344.61



## 14.2 base\_nrun\_nrunrun\_plikHM\_TTTEE\_lowl\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022418	$0.02243 \pm 0.00015$	$\Omega_m h^3$	0.096385	$0.09638 \pm 0.00031$	$H(0.15)$	72.866	$72.90 \pm 0.40$
$\Omega_c h^2$	0.11958	$0.1195 \pm 0.0010$	$\sigma_8$	0.8146	$0.8137^{+0.0076}_{-0.0086}$	$D_M(0.15)$	641.53	$641.2 \pm 4.0$
$100\theta_{MC}$	1.041014	$1.04100 \pm 0.00029$	$S_8$	0.8313	$0.830 \pm 0.014$	$H(0.38)$	83.003	$83.03 \pm 0.30$
$\tau$	0.0586	$0.0592^{+0.0076}_{-0.0090}$	$\sigma_8 \Omega_m^{0.5}$	0.4553	$0.4545 \pm 0.0076$	$D_M(0.38)$	1529.8	$1529.1 \pm 8.0$
$\ln(10^{10} A_s)$	3.0524	$3.053^{+0.016}_{-0.019}$	$\sigma_8 \Omega_m^{0.25}$	0.6090	$0.6081 \pm 0.0078$	$H(0.51)$	89.735	$89.75 \pm 0.24$
$n_s$	0.96518	$0.9644 \pm 0.0045$	$\sigma_8/h^{0.5}$	0.9910	$0.990 \pm 0.012$	$D_M(0.51)$	1981.5	$1980.8 \pm 9.4$
$dn_s/d \ln k$	0.0033	$0.000 \pm 0.010$	$r_{drag} h$	99.43	$99.50 \pm 0.80$	$H(0.61)$	95.366	$95.38 \pm 0.20$
$d^2 n_s/d \ln k^2$	0.0112	$0.009 \pm 0.013$	$\langle d^2 \rangle^{1/2}$	2.4325	$2.432 \pm 0.025$	$D_M(0.61)$	2305.7	$2305 \pm 10$
$y_{cal}$	1.00062	$1.0007 \pm 0.0025$	$z_{re}$	8.09	$8.13 \pm 0.84$	$H(2.33)$	236.34	$236.29 \pm 0.63$
$A_{217}^{CIB}$	45.9	$47 \pm 7$	$10^9 A_s$	2.1167	$2.119^{+0.032}_{-0.040}$	$D_M(2.33)$	5759.5	$5758.9 \pm 9.6$
$\xi^{tSZ \times CIB}$	0.58	—	$10^9 A_s e^{-2\tau}$	1.8826	$1.882 \pm 0.011$	$f\sigma_8(0.15)$	0.4599	$0.4590 \pm 0.0072$
$A_{143}^{tSZ}$	7.19	$5.5^{+2.1}_{-1.9}$	$D_{40}$	1216.6	$1215 \pm 18$	$\sigma_8(0.15)$	0.7527	$0.7519^{+0.0068}_{-0.0077}$
$A_{100}^{PS}$	247.6	$259 \pm 29$	$D_{220}$	5743.7	$5744 \pm 39$	$f\sigma_8(0.38)$	0.4781	$0.4773 \pm 0.0063$
$A_{143}^{PS}$	47.3	$45 \pm 9$	$D_{810}$	2540.6	$2540 \pm 14$	$\sigma_8(0.38)$	0.6671	$0.6664^{+0.0058}_{-0.0067}$
$A_{143 \times 217}^{PS}$	49.7	$41 \pm 9$	$D_{1420}$	819.29	$817.8 \pm 5.0$	$f\sigma_8(0.51)$	0.4766	$0.4759 \pm 0.0058$
$A_{217}^{PS}$	120.5	$114 \pm 10$	$D_{2000}$	232.19	$231.4 \pm 2.1$	$\sigma_8(0.51)$	0.6242	$0.6236^{+0.0054}_{-0.0063}$
$A^{kSZ}$	0.01	$< 4.31$	$n_{s,0.002}$	1.0127	$1.012 \pm 0.045$	$f\sigma_8(0.61)$	0.4715	$0.4708 \pm 0.0055$
$A_{100}^{dustTT}$	8.83	$8.9 \pm 1.8$	$Y_P$	0.245414	$0.245416^{+0.000061}_{-0.000054}$	$\sigma_8(0.61)$	0.5939	$0.5934^{+0.0051}_{-0.0060}$
$A_{143}^{dustTT}$	11.06	$10.9 \pm 1.8$	$Y_P^{BBN}$	0.246741	$0.246743^{+0.000061}_{-0.000054}$	$f\sigma_8(2.33)$	0.29943	$0.2992^{+0.0026}_{-0.0030}$
$A_{143 \times 217}^{dustTT}$	19.94	$18.5 \pm 3.3$	$10^5 D/H$	2.5765	$2.575 \pm 0.027$	$\sigma_8(2.33)$	0.30866	$0.3084^{+0.0026}_{-0.0031}$
$A_{217}^{dustTT}$	95.4	$93.5 \pm 7.3$	Age/Gyr	13.7882	$13.787 \pm 0.022$	$f_{2000}^{143}$	27.72	$29 \pm 4$
$A_{100}^{dustTE}$	0.1138	$0.114 \pm 0.038$	$z_*$	1089.821	$1089.80 \pm 0.24$	$f_{2000}^{143 \times 217}$	31.16	$31.8 \pm 2.5$
$A_{100 \times 143}^{dustTE}$	0.1340	$0.135 \pm 0.030$	$r_*$	144.503	$144.52 \pm 0.24$	$f_{2000}^{217}$	105.88	$106.7 \pm 2.3$
$A_{100 \times 217}^{dustTE}$	0.481	$0.481 \pm 0.085$	$100\theta_*$	1.041189	$1.04118 \pm 0.00028$	$\chi_{simall}^2$	396.62	$397.7 \pm 2.3$
$A_{143}^{dustTE}$	0.222	$0.224 \pm 0.055$	$D_M(z_*)/\text{Gpc}$	13.8787	$13.880 \pm 0.023$	$\chi_{lowl}^2$	21.44	$22.2 \pm 1.6$
$A_{143 \times 217}^{dustTE}$	0.666	$0.665 \pm 0.080$	$z_{drag}$	1060.009	$1060.03 \pm 0.32$	$\chi_{plik}^2$	2345.1	$2360.9 \pm 6.0$
$A_{217}^{dustTE}$	2.081	$2.08 \pm 0.26$	$r_{drag}$	147.150	$147.16 \pm 0.25$	$\chi_{6DF}^2$	0.0468	$0.068 \pm 0.076$
$c_{100}$	0.99974	$0.99969 \pm 0.00061$	$k_D$	0.140842	$0.14084 \pm 0.00031$	$\chi_{MGS}^2$	1.097	$1.19 \pm 0.43$
$c_{217}$	0.99817	$0.99818 \pm 0.00061$	$100\theta_D$	0.160720	$0.16071 \pm 0.00019$	$\chi_{DR12BAO}^2$	4.82	$5.1 \pm 1.6$
$H_0$	67.571	$67.61 \pm 0.47$	$z_{eq}$	3393.3	$3391 \pm 23$	$\chi_{prior}^2$	1.64	$11.5 \pm 4.5$
$\Omega_\Lambda$	0.6876	$0.6881 \pm 0.0063$	$k_{eq}$	0.010357	$0.010351 \pm 0.000071$	$\chi_{BAO}^2$	5.97	$6.4 \pm 1.3$
$\Omega_m$	0.3124	$0.3119 \pm 0.0063$	$100\theta_{eq}$	0.81509	$0.8155 \pm 0.0044$	$\chi_{CMB}^2$	2763.2	$2780.9 \pm 6.1$
$\Omega_m h^2$	0.14264	$0.14256 \pm 0.00098$	$100\theta_{s,eq}$	0.45028	$0.4505 \pm 0.0023$			

Best-fit  $\chi_{\text{eff}}^2 = 2770.78$ ;  $\bar{\chi}_{\text{eff}}^2 = 2798.78$ ;  $R - 1 = 0.02726$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.05 MGS: 1.10 DR12BAO: 4.83 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.62 commander\_dx12\_v3\_2\_29: 21.44 plik\_rd12\_HM\_v22b\_TTTEE: 2345.10



### 14.3 base\_nrun\_nrunrun\_plikHM\_TTTEE\_lowl\_lowE\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022365	$0.02237 \pm 0.00016$	$\Omega_{\text{m}}h^2$	0.14319	$0.1432 \pm 0.0012$	$100\theta_{\text{eq}}$	0.8125	$0.8125 \pm 0.0052$
$\Omega_{\text{c}}h^2$	0.12018	$0.1202 \pm 0.0012$	$\Omega_{\text{m}}h^3$	0.096342	$0.09634 \pm 0.00031$	$100\theta_{\text{s,eq}}$	0.44899	$0.4490 \pm 0.0027$
$100\theta_{\text{MC}}$	1.040911	$1.04090 \pm 0.00030$	$\sigma_8$	0.8152	$0.8141 \pm 0.0066$	$H(0.15)$	72.620	$72.62 \pm 0.48$
$\tau$	0.0564	$0.0565 \pm 0.0079$	$S_8$	0.8371	$0.836 \pm 0.014$	$D_{\text{M}}(0.15)$	643.98	$644.0 \pm 4.8$
$\ln(10^{10}A_{\text{s}})$	3.0482	$3.049 \pm 0.015$	$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4585	$0.4579 \pm 0.0075$	$H(0.38)$	82.823	$82.83 \pm 0.35$
$n_{\text{s}}$	0.96387	$0.9625 \pm 0.0048$	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6114	$0.6106 \pm 0.0069$	$D_{\text{M}}(0.38)$	1534.7	$1534.7 \pm 9.7$
$\text{d}n_{\text{s}}/\text{d}\ln k$	0.0057	$0.002 \pm 0.010$	$\sigma_8/h^{0.5}$	0.9939	$0.993 \pm 0.010$	$H(0.51)$	89.594	$89.60 \pm 0.28$
$\text{d}^2n_{\text{s}}/\text{d}\ln k^2$	0.0129	$0.010 \pm 0.013$	$r_{\text{drag}}h$	98.94	$98.94 \pm 0.96$	$D_{\text{M}}(0.51)$	1987.3	$1987 \pm 11$
$y_{\text{cal}}$	1.00025	$1.0005 \pm 0.0025$	$\langle d^2 \rangle^{1/2}$	2.4386	$2.439 \pm 0.022$	$H(0.61)$	95.254	$95.26 \pm 0.23$
$A_{217}^{\text{CIB}}$	45.3	$47 \pm 7$	$z_{\text{re}}$	7.90	$7.89 \pm 0.78$	$D_{\text{M}}(0.61)$	2311.9	$2312 \pm 12$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.70	—	$10^9 A_{\text{s}}$	2.1078	$2.110^{+0.030}_{-0.033}$	$H(2.33)$	236.67	$236.68 \pm 0.73$
$A_{143}^{\text{tSZ}}$	7.09	$5.5^{+2.2}_{-1.9}$	$10^9 A_{\text{s}}e^{-2\tau}$	1.8830	$1.884 \pm 0.011$	$D_{\text{M}}(2.33)$	5764.4	$5764 \pm 11$
$A_{100}^{\text{PS}}$	246.3	$259 \pm 29$	$D_{40}$	1220.7	$1219 \pm 18$	$f\sigma_8(0.15)$	0.4627	$0.4621 \pm 0.0069$
$A_{143}^{\text{PS}}$	48.6	$45 \pm 9$	$D_{220}$	5738.0	$5740 \pm 39$	$\sigma_8(0.15)$	0.7528	$0.7518 \pm 0.0060$
$A_{143 \times 217}^{\text{PS}}$	52.4	$41 \pm 9$	$D_{810}$	2538.6	$2538 \pm 14$	$f\sigma_8(0.38)$	0.4801	$0.4794 \pm 0.0056$
$A_{217}^{\text{PS}}$	121.0	$114 \pm 10$	$D_{1420}$	818.92	$817.2 \pm 5.0$	$\sigma_8(0.38)$	0.6668	$0.6659 \pm 0.0053$
$A^{\text{kSZ}}$	0.00	$< 4.41$	$D_{2000}$	232.23	$231.2 \pm 2.1$	$f\sigma_8(0.51)$	0.47808	$0.4774 \pm 0.0050$
$A_{100}^{\text{dust}TT}$	8.81	$8.9 \pm 1.8$	$n_{\text{s},0.002}$	1.0122	$1.011 \pm 0.044$	$\sigma_8(0.51)$	0.62381	$0.6230 \pm 0.0049$
$A_{143}^{\text{dust}TT}$	10.97	$10.9 \pm 1.8$	$Y_{\text{P}}$	0.245394	$0.245392^{+0.000067}_{-0.000060}$	$f\sigma_8(0.61)$	0.47270	$0.4720 \pm 0.0046$
$A_{143 \times 217}^{\text{dust}TT}$	20.00	$18.5 \pm 3.3$	$Y_{\text{P}}^{\text{BBN}}$	0.246720	$0.246719^{+0.000067}_{-0.000060}$	$\sigma_8(0.61)$	0.59344	$0.5926 \pm 0.0047$
$A_{217}^{\text{dust}TT}$	95.4	$93.6 \pm 7.3$	$10^5 \text{D}/\text{H}$	2.5864	$2.587 \pm 0.030$	$f\sigma_8(2.33)$	0.29902	$0.2986 \pm 0.0024$
$A_{100}^{\text{dust}TE}$	0.1146	$0.114 \pm 0.038$	Age/Gyr	13.7990	$13.799 \pm 0.024$	$\sigma_8(2.33)$	0.30807	$0.3077 \pm 0.0026$
$A_{100 \times 143}^{\text{dust}TE}$	0.1352	$0.135 \pm 0.029$	$z_*$	1089.943	$1089.94 \pm 0.27$	$f_{2000}^{143}$	27.35	$29 \pm 3$
$A_{100 \times 217}^{\text{dust}TE}$	0.484	$0.483 \pm 0.085$	$r_*$	144.389	$144.39 \pm 0.27$	$f_{2000}^{143 \times 217}$	30.88	$31.8 \pm 2.5$
$A_{143}^{\text{dust}TE}$	0.224	$0.226 \pm 0.054$	$100\theta_*$	1.041091	$1.04108 \pm 0.00029$	$f_{2000}^{217}$	105.45	$106.6 \pm 2.3$
$A_{143 \times 217}^{\text{dust}TE}$	0.668	$0.666 \pm 0.079$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8691	$13.869 \pm 0.026$	$\chi_{\text{lensing}}^2$	8.98	$9.47 \pm 0.89$
$A_{217}^{\text{dust}TE}$	2.092	$2.09 \pm 0.26$	$z_{\text{drag}}$	1059.933	$1059.94 \pm 0.33$	$\chi_{\text{small}}^2$	396.28	$397.2 \pm 1.7$
$c_{100}$	0.99975	$0.99969 \pm 0.00061$	$r_{\text{drag}}$	147.051	$147.05 \pm 0.27$	$\chi_{\text{lowl}}^2$	21.70	$22.5 \pm 1.6$
$c_{217}$	0.99817	$0.99819 \pm 0.00062$	$k_{\text{D}}$	0.140907	$0.14091 \pm 0.00032$	$\chi_{\text{plik}}^2$	2344.9	$2360.5 \pm 5.7$
$H_0$	67.28	$67.28 \pm 0.56$	$100\theta_{\text{D}}$	0.160757	$0.16075 \pm 0.00019$	$\chi_{\text{prior}}^2$	1.51	$11.5 \pm 4.5$
$\Omega_{\Lambda}$	0.6837	$0.6836 \pm 0.0077$	$z_{\text{eq}}$	3406.3	$3407 \pm 28$	$\chi_{\text{CMB}}^2$	2771.8	$2789.6 \pm 6.1$
$\Omega_{\text{m}}$	0.3163	$0.3164 \pm 0.0077$	$k_{\text{eq}}$	0.010396	$0.010397 \pm 0.000084$			

Best-fit  $\chi_{\text{eff}}^2 = 2773.34$ ;  $\bar{\chi}_{\text{eff}}^2 = 2801.12$ ;  $R - 1 = 0.02893$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.98 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.28 commander\_dx12\_v3.2\_29: 21.70 plik\_rd12\_HM\_v22b\_TTTEE: 2344.88



#### 14.4 base\_nrun\_nrunrun\_plikHM\_TTTEE\_lowl\_lowE\_post\_BAO\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02243 \pm 0.00015$	$\Omega_m h^3$	$0.09637 \pm 0.00031$	$H(0.15)$	$72.93 \pm 0.38$
$\Omega_c h^2$	$0.11939 \pm 0.00096$	$\sigma_8$	$0.8131 \pm 0.0066$	$D_M(0.15)$	$640.9 \pm 3.7$
$100\theta_{MC}$	$1.04100 \pm 0.00028$	$S_8$	$0.828 \pm 0.011$	$H(0.38)$	$83.05 \pm 0.28$
$\tau$	$0.0587^{+0.0071}_{-0.0080}$	$\sigma_8 \Omega_m^{0.5}$	$0.4537 \pm 0.0061$	$D_M(0.38)$	$1528.6 \pm 7.5$
$\ln(10^{10} A_s)$	$3.052^{+0.014}_{-0.016}$	$\sigma_8 \Omega_m^{0.25}$	$0.6074 \pm 0.0062$	$H(0.51)$	$89.77 \pm 0.23$
$n_s$	$0.9647 \pm 0.0043$	$\sigma_8/h^{0.5}$	$0.9886 \pm 0.0092$	$D_M(0.51)$	$1980.2 \pm 8.8$
$dn_s/d \ln k$	$0.0011 \pm 0.0099$	$r_{drag} h$	$99.56 \pm 0.74$	$H(0.61)$	$95.39 \pm 0.19$
$d^2 n_s/d \ln k^2$	$0.009 \pm 0.012$	$\langle d^2 \rangle^{1/2}$	$2.431 \pm 0.021$	$D_M(0.61)$	$2304.2 \pm 9.5$
$y_{cal}$	$1.0007 \pm 0.0025$	$z_{re}$	$8.09 \pm 0.76$	$H(2.33)$	$236.23 \pm 0.58$
$A_{217}^{CIB}$	$47 \pm 7$	$10^9 A_s$	$2.117^{+0.029}_{-0.033}$	$D_M(2.33)$	$5758.6 \pm 9.3$
$\xi^{tSZ \times CIB}$	—	$10^9 A_s e^{-2\tau}$	$1.882 \pm 0.011$	$f\sigma_8(0.15)$	$0.4583 \pm 0.0058$
$A_{143}^{tSZ}$	$5.5^{+2.1}_{-1.9}$	$D_{40}$	$1217 \pm 18$	$\sigma_8(0.15)$	$0.7513 \pm 0.0061$
$A_{100}^{PS}$	$258 \pm 29$	$D_{220}$	$5745 \pm 38$	$f\sigma_8(0.38)$	$0.4767 \pm 0.0050$
$A_{143}^{PS}$	$45 \pm 9$	$D_{810}$	$2539 \pm 14$	$\sigma_8(0.38)$	$0.6660 \pm 0.0053$
$A_{143 \times 217}^{PS}$	$41 \pm 9$	$D_{1420}$	$817.9 \pm 5.0$	$f\sigma_8(0.51)$	$0.4753 \pm 0.0046$
$A_{217}^{PS}$	$114 \pm 10$	$D_{2000}$	$231.5 \pm 2.1$	$\sigma_8(0.51)$	$0.6233 \pm 0.0050$
$A^{kSZ}$	$< 4.27$	$n_{s,0.002}$	$1.008 \pm 0.044$	$f\sigma_8(0.61)$	$0.4704 \pm 0.0043$
$A_{100}^{dustTT}$	$8.9 \pm 1.8$	$Y_P$	$0.245417^{+0.000060}_{-0.000053}$	$\sigma_8(0.61)$	$0.5931 \pm 0.0048$
$A_{143}^{dustTT}$	$10.9 \pm 1.8$	$Y_P^{BBN}$	$0.246743^{+0.000060}_{-0.000053}$	$f\sigma_8(2.33)$	$0.2990^{+0.0023}_{-0.0026}$
$A_{143 \times 217}^{dustTT}$	$18.5 \pm 3.3$	$10^5 D/H$	$2.575 \pm 0.027$	$\sigma_8(2.33)$	$0.3083^{+0.0024}_{-0.0027}$
$A_{217}^{dustTT}$	$93.4 \pm 7.3$	Age/Gyr	$13.786 \pm 0.021$	$f_{2000}^{143}$	$29 \pm 4$
$A_{100}^{dustTE}$	$0.114 \pm 0.038$	$z_*$	$1089.79 \pm 0.23$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.5$
$A_{100 \times 143}^{dustTE}$	$0.135 \pm 0.029$	$r_*$	$144.54 \pm 0.23$	$f_{2000}^{217}$	$106.6 \pm 2.3$
$A_{100 \times 217}^{dustTE}$	$0.481 \pm 0.085$	$100\theta_*$	$1.04118 \pm 0.00028$	$\chi_{lensing}^2$	$9.21 \pm 0.63$
$A_{143}^{dustTE}$	$0.224 \pm 0.055$	$D_M(z_*)/\text{Gpc}$	$13.883 \pm 0.022$	$\chi_{small}^2$	$397.5 \pm 2.0$
$A_{143 \times 217}^{dustTE}$	$0.665 \pm 0.080$	$z_{drag}$	$1060.03 \pm 0.32$	$\chi_{lowl}^2$	$22.3 \pm 1.6$
$A_{217}^{dustTE}$	$2.08 \pm 0.26$	$r_{drag}$	$147.19 \pm 0.24$	$\chi_{plik}^2$	$2360.7 \pm 5.8$
$c_{100}$	$0.99968 \pm 0.00061$	$k_D$	$0.14081 \pm 0.00030$	$\chi_{6DF}^2$	$0.059 \pm 0.066$
$c_{217}$	$0.99818 \pm 0.00062$	$100\theta_D$	$0.16071 \pm 0.00018$	$\chi_{MGS}^2$	$1.22 \pm 0.40$
$H_0$	$67.64 \pm 0.44$	$z_{eq}$	$3389 \pm 22$	$\chi_{DR12BAO}^2$	$5.0 \pm 1.4$
$\Omega_\Lambda$	$0.6886 \pm 0.0058$	$k_{eq}$	$0.010344 \pm 0.000066$	$\chi_{prior}^2$	$11.5 \pm 4.4$
$\Omega_m$	$0.3114 \pm 0.0058$	$100\theta_{eq}$	$0.8159 \pm 0.0041$	$\chi_{CMB}^2$	$2789.8 \pm 6.1$
$\Omega_m h^2$	$0.14247 \pm 0.00091$	$100\theta_{s,eq}$	$0.4507 \pm 0.0021$	$\chi_{BAO}^2$	$6.2 \pm 1.2$

$$\bar{\chi}_{eff}^2 = 2807.58; R - 1 = 0.02956$$



### 14.5 base\_nrun\_nrunrun\_plikHM\_TTTEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02235 \pm 0.00017$	$\Omega_{\mathrm{m}}h^2$	$0.1436 \pm 0.0014$	$100\theta_{\mathrm{eq}}$	$0.8107 \pm 0.0061$
$\Omega_{\mathrm{c}}h^2$	$0.1206 \pm 0.0015$	$\Omega_{\mathrm{m}}h^3$	$0.09636 \pm 0.00031$	$100\theta_{\mathrm{s,eq}}$	$0.4480 \pm 0.0031$
$100\theta_{\mathrm{MC}}$	$1.04086 \pm 0.00031$	$\sigma_8$	$0.8174^{+0.0079}_{-0.0088}$	$H(0.15)$	$72.47 \pm 0.56$
$\tau$	$0.0584^{+0.0065}_{-0.0089}$	$S_8$	$0.843 \pm 0.018$	$D_{\mathrm{M}}(0.15)$	$645.6 \pm 5.6$
$\ln(10^{10}A_{\mathrm{s}})$	$3.054^{+0.014}_{-0.018}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4617 \pm 0.0099$	$H(0.38)$	$82.72 \pm 0.40$
$n_{\mathrm{s}}$	$0.9612 \pm 0.0053$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6143 \pm 0.0093$	$D_{\mathrm{M}}(0.38)$	$1538 \pm 11$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$0.001 \pm 0.010$	$\sigma_8/h^{0.5}$	$0.998 \pm 0.013$	$H(0.51)$	$89.52 \pm 0.32$
$\mathrm{d}^2n_{\mathrm{s}}/\mathrm{d}\ln k^2$	$0.012 \pm 0.013$	$r_{\mathrm{drag}}h$	$98.6 \pm 1.1$	$D_{\mathrm{M}}(0.51)$	$1991 \pm 13$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0024$	$\langle d^2 \rangle^{1/2}$	$2.447 \pm 0.028$	$H(0.61)$	$95.20 \pm 0.26$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$z_{\mathrm{re}}$	$8.09^{+0.70}_{-0.86}$	$D_{\mathrm{M}}(0.61)$	$2316 \pm 14$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}}$	$2.121^{+0.029}_{-0.039}$	$H(2.33)$	$236.94 \pm 0.86$
$A_{143}^{\mathrm{tSZ}}$	$5.4 \pm 2.0$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.887 \pm 0.012$	$D_{\mathrm{M}}(2.33)$	$5767 \pm 12$
$A_{100}^{\mathrm{PS}}$	$259 \pm 29$	$D_{40}$	$1218 \pm 18$	$f\sigma_8(0.15)$	$0.4657 \pm 0.0092$
$A_{143}^{\mathrm{PS}}$	$45 \pm 9$	$D_{220}$	$5740 \pm 39$	$\sigma_8(0.15)$	$0.7546^{+0.0067}_{-0.0078}$
$A_{143 \times 217}^{\mathrm{PS}}$	$41 \pm 9$	$D_{810}$	$2539 \pm 13$	$f\sigma_8(0.38)$	$0.4825 \pm 0.0076$
$A_{217}^{\mathrm{PS}}$	$114 \pm 10$	$D_{1420}$	$817.0 \pm 4.9$	$\sigma_8(0.38)$	$0.6681^{+0.0055}_{-0.0066}$
$A^{\mathrm{kSZ}}$	$< 4.33$	$D_{2000}$	$231.2 \pm 2.1$	$f\sigma_8(0.51)$	$0.4801 \pm 0.0067$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$n_{\mathrm{s},0.002}$	$1.020 \pm 0.044$	$\sigma_8(0.51)$	$0.6248^{+0.0050}_{-0.0062}$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8$	$Y_{\mathrm{P}}$	$0.245384 \pm 0.000066$	$f\sigma_8(0.61)$	$0.4745 \pm 0.0061$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.3$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246710 \pm 0.000066$	$\sigma_8(0.61)$	$0.5943^{+0.0047}_{-0.0058}$
$A_{217}^{\mathrm{dust}TT}$	$93.7 \pm 7.3$	$10^5 \mathrm{D}/\mathrm{H}$	$2.591 \pm 0.031$	$f\sigma_8(2.33)$	$0.2994^{+0.0023}_{-0.0029}$
$A_{100}^{\mathrm{dust}TE}$	$0.115 \pm 0.038$	$\mathrm{Age}/\mathrm{Gyr}$	$13.804 \pm 0.026$	$\sigma_8(2.33)$	$0.3083^{+0.0023}_{-0.0031}$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.029$	$z_*$	$1090.01 \pm 0.30$	$f_{2000}^{143}$	$29 \pm 3$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.483 \pm 0.085$	$r_*$	$144.29 \pm 0.32$	$f_{2000}^{143 \times 217}$	$31.9 \pm 2.5$
$A_{143}^{\mathrm{dust}TE}$	$0.226 \pm 0.054$	$100\theta_*$	$1.04105 \pm 0.00031$	$f_{2000}^{217}$	$106.7 \pm 2.3$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.667 \pm 0.079$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.860 \pm 0.029$	$\chi_{\mathrm{simall}}^2$	$397.5 \pm 2.1$
$A_{217}^{\mathrm{dust}TE}$	$2.10 \pm 0.27$	$z_{\mathrm{drag}}$	$1059.93 \pm 0.33$	$\chi_{\mathrm{lowl}}^2$	$22.4 \pm 1.4$
$c_{100}$	$0.99969 \pm 0.00061$	$r_{\mathrm{drag}}$	$146.96 \pm 0.31$	$\chi_{\mathrm{plik}}^2$	$2360.5 \pm 5.9$
$c_{217}$	$0.99819 \pm 0.00062$	$k_{\mathrm{D}}$	$0.14099 \pm 0.00034$	$\chi_{\mathrm{prior}}^2$	$11.4 \pm 4.5$
$H_0$	$67.10 \pm 0.65$	$100\theta_{\mathrm{D}}$	$0.16076 \pm 0.00019$	$\chi_{\mathrm{CMB}}^2$	$2780.4 \pm 6.1$
$\Omega_{\Lambda}$	$0.6809 \pm 0.0091$	$z_{\mathrm{eq}}$	$3417 \pm 33$		
$\Omega_{\mathrm{m}}$	$0.3191 \pm 0.0091$	$k_{\mathrm{eq}}$	$0.01043 \pm 0.00010$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2791.89; R - 1 = 0.02012$$



# 14.6 base\_nrun\_nrunrun\_plikHM\_TTTEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02243 \pm 0.00015$	$\Omega_{\mathrm{m}}h^3$	$0.09638 \pm 0.00031$	$H(0.15)$	$72.90 \pm 0.40$
$\Omega_{\mathrm{c}}h^2$	$0.1195 \pm 0.0010$	$\sigma_8$	$0.8141^{+0.0071}_{-0.0085}$	$D_{\mathrm{M}}(0.15)$	$641.2 \pm 4.0$
$100\theta_{\mathrm{MC}}$	$1.04100 \pm 0.00029$	$S_8$	$0.830 \pm 0.014$	$H(0.38)$	$83.03 \pm 0.30$
$\tau$	$0.0597^{+0.0067}_{-0.0091}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4546 \pm 0.0075$	$D_{\mathrm{M}}(0.38)$	$1529.1 \pm 8.0$
$\ln(10^{10}A_{\mathrm{s}})$	$3.054^{+0.014}_{-0.019}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6084^{+0.0071}_{-0.0080}$	$H(0.51)$	$89.76 \pm 0.24$
$n_{\mathrm{s}}$	$0.9644 \pm 0.0045$	$\sigma_8/h^{0.5}$	$0.990^{+0.010}_{-0.012}$	$D_{\mathrm{M}}(0.51)$	$1980.7 \pm 9.4$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$0.000 \pm 0.010$	$r_{\mathrm{drag}}h$	$99.50 \pm 0.80$	$H(0.61)$	$95.38 \pm 0.20$
$\mathrm{d}^2n_{\mathrm{s}}/\mathrm{d}\ln k^2$	$0.0095 \pm 0.013$	$\langle d^2 \rangle^{1/2}$	$2.433 \pm 0.025$	$D_{\mathrm{M}}(0.61)$	$2305 \pm 10$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025$	$z_{\mathrm{re}}$	$8.18^{+0.70}_{-0.88}$	$H(2.33)$	$236.29 \pm 0.63$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$10^9 A_{\mathrm{s}}$	$2.121^{+0.029}_{-0.040}$	$D_{\mathrm{M}}(2.33)$	$5758.8 \pm 9.5$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.882 \pm 0.011$	$f\sigma_8(0.15)$	$0.4592 \pm 0.0071$
$A_{143}^{\mathrm{tSZ}}$	$5.5 \pm 2.0$	$D_{40}$	$1215 \pm 18$	$\sigma_8(0.15)$	$0.7522^{+0.0063}_{-0.0077}$
$A_{100}^{\mathrm{PS}}$	$258 \pm 29$	$D_{220}$	$5744 \pm 39$	$f\sigma_8(0.38)$	$0.4775 \pm 0.0062$
$A_{143}^{\mathrm{PS}}$	$45 \pm 9$	$D_{810}$	$2539 \pm 14$	$\sigma_8(0.38)$	$0.6667^{+0.0054}_{-0.0067}$
$A_{143 \times 217}^{\mathrm{PS}}$	$41 \pm 9$	$D_{1420}$	$817.7 \pm 4.9$	$f\sigma_8(0.51)$	$0.4761^{+0.0052}_{-0.0059}$
$A_{217}^{\mathrm{PS}}$	$114 \pm 10$	$D_{2000}$	$231.4 \pm 2.1$	$\sigma_8(0.51)$	$0.6239^{+0.0050}_{-0.0063}$
$A^{\mathrm{kSZ}}$	$< 4.28$	$n_{\mathrm{s},0.002}$	$1.013 \pm 0.045$	$f\sigma_8(0.61)$	$0.4710^{+0.0049}_{-0.0056}$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$Y_{\mathrm{P}}$	$0.245416^{+0.000060}_{-0.000053}$	$\sigma_8(0.61)$	$0.5937^{+0.0047}_{-0.0060}$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246743^{+0.000060}_{-0.000053}$	$f\sigma_8(2.33)$	$0.2993^{+0.0023}_{-0.0030}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.3$	$10^5 \mathrm{D}/\mathrm{H}$	$2.575 \pm 0.027$	$\sigma_8(2.33)$	$0.3086^{+0.0024}_{-0.0031}$
$A_{217}^{\mathrm{dust}TT}$	$93.5 \pm 7.3$	$\mathrm{Age}/\mathrm{Gyr}$	$13.787 \pm 0.022$	$f_{2000}^{143}$	$29 \pm 4$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.038$	$z_*$	$1089.80 \pm 0.24$	$f_{2000}^{143 \times 217}$	$31.8 \pm 2.5$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.030$	$r_*$	$144.52 \pm 0.24$	$f_{2000}^{217}$	$106.6 \pm 2.3$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.481 \pm 0.085$	$100\theta_*$	$1.04118 \pm 0.00028$	$\chi_{\mathrm{small}}^2$	$397.7 \pm 2.3$
$A_{143}^{\mathrm{dust}TE}$	$0.224 \pm 0.055$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.880 \pm 0.023$	$\chi_{\mathrm{lowl}}^2$	$22.2 \pm 1.5$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.665 \pm 0.080$	$z_{\mathrm{drag}}$	$1060.03 \pm 0.32$	$\chi_{\mathrm{plik}}^2$	$2360.8 \pm 6.0$
$A_{217}^{\mathrm{dust}TE}$	$2.09 \pm 0.26$	$r_{\mathrm{drag}}$	$147.16 \pm 0.25$	$\chi_{6\mathrm{DF}}^2$	$0.067 \pm 0.076$
$c_{100}$	$0.99969 \pm 0.00061$	$k_{\mathrm{D}}$	$0.14084 \pm 0.00031$	$\chi_{\mathrm{MGS}}^2$	$1.19 \pm 0.42$
$c_{217}$	$0.99818 \pm 0.00061$	$100\theta_{\mathrm{D}}$	$0.16071 \pm 0.00018$	$\chi_{\mathrm{DR12BAO}}^2$	$5.1 \pm 1.6$
$H_0$	$67.61 \pm 0.47$	$z_{\mathrm{eq}}$	$3391 \pm 23$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.4$
$\Omega_{\Lambda}$	$0.6881 \pm 0.0063$	$k_{\mathrm{eq}}$	$0.010350 \pm 0.000071$	$\chi_{\mathrm{BAO}}^2$	$6.4 \pm 1.3$
$\Omega_{\mathrm{m}}$	$0.3119 \pm 0.0063$	$100\theta_{\mathrm{eq}}$	$0.8155 \pm 0.0044$	$\chi_{\mathrm{CMB}}^2$	$2780.8 \pm 6.1$
$\Omega_{\mathrm{m}}h^2$	$0.14256 \pm 0.00098$	$100\theta_{\mathrm{s,eq}}$	$0.4505 \pm 0.0022$		

$\bar{\chi}_{\mathrm{eff}}^2 = 2798.65$ ;  $R - 1 = 0.02773$



## 14.7 base\_nrun\_nrunrun\_plikHM\_TTTEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02237 \pm 0.00016$	$\Omega_{\mathrm{m}}h^2$	$0.1432 \pm 0.0011$	$100\theta_{\mathrm{eq}}$	$0.8127 \pm 0.0052$
$\Omega_{\mathrm{c}}h^2$	$0.1201 \pm 0.0012$	$\Omega_{\mathrm{m}}h^3$	$0.09634 \pm 0.00031$	$100\theta_{\mathrm{s,eq}}$	$0.4491 \pm 0.0026$
$100\theta_{\mathrm{MC}}$	$1.04090 \pm 0.00030$	$\sigma_8$	$0.8145 \pm 0.0064$	$H(0.15)$	$72.64 \pm 0.48$
$\tau$	$0.0572^{+0.0062}_{-0.0081}$	$S_8$	$0.836 \pm 0.014$	$D_{\mathrm{M}}(0.15)$	$643.9 \pm 4.8$
$\ln(10^{10}A_{\mathrm{s}})$	$3.050^{+0.012}_{-0.016}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4580 \pm 0.0075$	$H(0.38)$	$82.84 \pm 0.35$
$n_{\mathrm{s}}$	$0.9626 \pm 0.0048$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6107 \pm 0.0069$	$D_{\mathrm{M}}(0.38)$	$1534.4 \pm 9.6$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$0.002 \pm 0.010$	$\sigma_8/h^{0.5}$	$0.9929 \pm 0.0099$	$H(0.51)$	$89.61 \pm 0.28$
$\mathrm{d}^2n_{\mathrm{s}}/\mathrm{d}\ln k^2$	$0.011 \pm 0.013$	$r_{\mathrm{drag}}h$	$98.97 \pm 0.95$	$D_{\mathrm{M}}(0.51)$	$1987 \pm 11$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$\langle d^2 \rangle^{1/2}$	$2.439 \pm 0.022$	$H(0.61)$	$95.26 \pm 0.23$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$z_{\mathrm{re}}$	$7.96^{+0.65}_{-0.78}$	$D_{\mathrm{M}}(0.61)$	$2312 \pm 12$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}}$	$2.112^{+0.026}_{-0.033}$	$H(2.33)$	$236.65 \pm 0.73$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.2}_{-1.9}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.884 \pm 0.011$	$D_{\mathrm{M}}(2.33)$	$5764 \pm 11$
$A_{100}^{\mathrm{PS}}$	$259 \pm 29$	$D_{40}$	$1219 \pm 18$	$f\sigma_8(0.15)$	$0.4622 \pm 0.0069$
$A_{143}^{\mathrm{PS}}$	$45 \pm 9$	$D_{220}$	$5740 \pm 39$	$\sigma_8(0.15)$	$0.7522^{+0.0053}_{-0.0060}$
$A_{143 \times 217}^{\mathrm{PS}}$	$41 \pm 9$	$D_{810}$	$2538 \pm 13$	$f\sigma_8(0.38)$	$0.4795 \pm 0.0056$
$A_{217}^{\mathrm{PS}}$	$114 \pm 10$	$D_{1420}$	$817.1 \pm 5.0$	$\sigma_8(0.38)$	$0.6663^{+0.0045}_{-0.0053}$
$A^{\mathrm{kSZ}}$	$< 4.41$	$D_{2000}$	$231.3 \pm 2.1$	$f\sigma_8(0.51)$	$0.4776 \pm 0.0049$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$n_{\mathrm{s},0.002}$	$1.012 \pm 0.044$	$\sigma_8(0.51)$	$0.6233^{+0.0042}_{-0.0050}$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8$	$Y_{\mathrm{P}}$	$0.245394^{+0.000066}_{-0.000059}$	$f\sigma_8(0.61)$	$0.4722 \pm 0.0045$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.6 \pm 3.3$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246720^{+0.000066}_{-0.000060}$	$\sigma_8(0.61)$	$0.5930^{+0.0040}_{-0.0048}$
$A_{217}^{\mathrm{dust}TT}$	$93.6 \pm 7.3$	$10^5 \mathrm{D}/\mathrm{H}$	$2.586 \pm 0.029$	$f\sigma_8(2.33)$	$0.2988^{+0.0020}_{-0.0025}$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.038$	Age/Gyr	$13.798 \pm 0.024$	$\sigma_8(2.33)$	$0.3079^{+0.0021}_{-0.0027}$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.029$	$z_*$	$1089.93 \pm 0.27$	$f_{2000}^{143}$	$29 \pm 3$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.483 \pm 0.085$	$r_*$	$144.39 \pm 0.27$	$f_{2000}^{143 \times 217}$	$31.8 \pm 2.5$
$A_{143}^{\mathrm{dust}TE}$	$0.226 \pm 0.054$	$100\theta_*$	$1.04109 \pm 0.00029$	$f_{2000}^{217}$	$106.6 \pm 2.3$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.666 \pm 0.079$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.870 \pm 0.025$	$\chi_{\mathrm{lensing}}^2$	$9.47 \pm 0.90$
$A_{217}^{\mathrm{dust}TE}$	$2.09 \pm 0.26$	$z_{\mathrm{drag}}$	$1059.95 \pm 0.33$	$\chi_{\mathrm{simall}}^2$	$397.2 \pm 1.7$
$c_{100}$	$0.99969 \pm 0.00062$	$r_{\mathrm{drag}}$	$147.05 \pm 0.27$	$\chi_{\mathrm{lowl}}^2$	$22.4 \pm 1.6$
$c_{217}$	$0.99819 \pm 0.00062$	$k_{\mathrm{D}}$	$0.14091 \pm 0.00032$	$\chi_{\mathrm{plik}}^2$	$2360.4 \pm 5.7$
$H_0$	$67.30 \pm 0.55$	$100\theta_{\mathrm{D}}$	$0.16075 \pm 0.00019$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.5$
$\Omega_{\Lambda}$	$0.6839 \pm 0.0076$	$z_{\mathrm{eq}}$	$3406 \pm 27$	$\chi_{\mathrm{CMB}}^2$	$2789.5 \pm 6.0$
$\Omega_{\mathrm{m}}$	$0.3161 \pm 0.0076$	$k_{\mathrm{eq}}$	$0.010394 \pm 0.000084$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2800.94; R - 1 = 0.02757$$



14.8 base\_nrun\_nrunrun\_plikHM\_TTTEE\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02243 \pm 0.00015$	$\Omega_m h^3$	$0.09637 \pm 0.00031$	$H(0.15)$	$72.93 \pm 0.37$
$\Omega_c h^2$	$0.11938 \pm 0.00095$	$\sigma_8$	$0.8133 \pm 0.0065$	$D_M(0.15)$	$640.9 \pm 3.7$
$100\theta_{MC}$	$1.04100 \pm 0.00028$	$S_8$	$0.828 \pm 0.011$	$H(0.38)$	$83.05 \pm 0.28$
$\tau$	$0.0591^{+0.0065}_{-0.0081}$	$\sigma_8 \Omega_m^{0.5}$	$0.4538 \pm 0.0061$	$D_M(0.38)$	$1528.5 \pm 7.5$
$\ln(10^{10} A_s)$	$3.053^{+0.013}_{-0.016}$	$\sigma_8 \Omega_m^{0.25}$	$0.6075 \pm 0.0061$	$H(0.51)$	$89.77 \pm 0.23$
$n_s$	$0.9647 \pm 0.0043$	$\sigma_8/h^{0.5}$	$0.9888 \pm 0.0091$	$D_M(0.51)$	$1980.0 \pm 8.8$
$dn_s/d \ln k$	$0.0011 \pm 0.0099$	$r_{drag} h$	$99.58 \pm 0.74$	$H(0.61)$	$95.39 \pm 0.19$
$d^2 n_s/d \ln k^2$	$0.009 \pm 0.012$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.021$	$D_M(0.61)$	$2304.0 \pm 9.5$
$y_{cal}$	$1.0007 \pm 0.0025$	$z_{re}$	$8.12^{+0.67}_{-0.78}$	$H(2.33)$	$236.22 \pm 0.58$
$A_{217}^{CIB}$	$47 \pm 7$	$10^9 A_s$	$2.118^{+0.027}_{-0.034}$	$D_M(2.33)$	$5758.5 \pm 9.2$
$\xi^{tSZ \times CIB}$	—	$10^9 A_s e^{-2\tau}$	$1.882 \pm 0.011$	$f\sigma_8(0.15)$	$0.4584 \pm 0.0058$
$A_{143}^{tSZ}$	$5.5^{+2.1}_{-1.9}$	$D_{40}$	$1217 \pm 18$	$\sigma_8(0.15)$	$0.7515^{+0.0055}_{-0.0061}$
$A_{100}^{PS}$	$258 \pm 29$	$D_{220}$	$5745 \pm 39$	$f\sigma_8(0.38)$	$0.4768 \pm 0.0049$
$A_{143}^{PS}$	$44 \pm 9$	$D_{810}$	$2539 \pm 14$	$\sigma_8(0.38)$	$0.6662^{+0.0048}_{-0.0055}$
$A_{143 \times 217}^{PS}$	$41 \pm 9$	$D_{1420}$	$817.8 \pm 5.0$	$f\sigma_8(0.51)$	$0.4754 \pm 0.0045$
$A_{217}^{PS}$	$114 \pm 10$	$D_{2000}$	$231.5 \pm 2.1$	$\sigma_8(0.51)$	$0.6235^{+0.0044}_{-0.0052}$
$A^{kSZ}$	$< 4.26$	$n_{s,0.002}$	$1.009 \pm 0.044$	$f\sigma_8(0.61)$	$0.4705 \pm 0.0042$
$A_{100}^{dustTT}$	$8.9 \pm 1.8$	$Y_P$	$0.245417^{+0.000060}_{-0.000053}$	$\sigma_8(0.61)$	$0.5933^{+0.0042}_{-0.0050}$
$A_{143}^{dustTT}$	$10.9 \pm 1.8$	$Y_P^{BBN}$	$0.246744^{+0.000060}_{-0.000053}$	$f\sigma_8(2.33)$	$0.2991^{+0.0021}_{-0.0026}$
$A_{143 \times 217}^{dustTT}$	$18.5 \pm 3.3$	$10^5 D/H$	$2.575 \pm 0.027$	$\sigma_8(2.33)$	$0.3084^{+0.0022}_{-0.0027}$
$A_{217}^{dustTT}$	$93.4 \pm 7.3$	Age/Gyr	$13.786 \pm 0.021$	$f_{2000}^{143}$	$29 \pm 4$
$A_{100}^{dustTE}$	$0.114 \pm 0.038$	$z_*$	$1089.79 \pm 0.23$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.5$
$A_{100 \times 143}^{dustTE}$	$0.135 \pm 0.029$	$r_*$	$144.55 \pm 0.23$	$f_{2000}^{217}$	$106.5 \pm 2.3$
$A_{100 \times 217}^{dustTE}$	$0.481 \pm 0.085$	$100\theta_*$	$1.04118 \pm 0.00028$	$\chi_{lensing}^2$	$9.20 \pm 0.62$
$A_{143}^{dustTE}$	$0.224 \pm 0.055$	$D_M(z_*)/\text{Gpc}$	$13.883 \pm 0.022$	$\chi_{small}^2$	$397.5 \pm 2.0$
$A_{143 \times 217}^{dustTE}$	$0.665 \pm 0.080$	$z_{drag}$	$1060.03 \pm 0.32$	$\chi_{lowl}^2$	$22.3 \pm 1.6$
$A_{217}^{dustTE}$	$2.09 \pm 0.26$	$r_{drag}$	$147.19 \pm 0.24$	$\chi_{plik}^2$	$2360.7 \pm 5.8$
$c_{100}$	$0.99968 \pm 0.00061$	$k_D$	$0.14081 \pm 0.00030$	$\chi_{6DF}^2$	$0.058 \pm 0.065$
$c_{217}$	$0.99818 \pm 0.00062$	$100\theta_D$	$0.16071 \pm 0.00018$	$\chi_{MGS}^2$	$1.23 \pm 0.40$
$H_0$	$67.65 \pm 0.43$	$z_{eq}$	$3389 \pm 22$	$\chi_{DR12BAO}^2$	$4.9 \pm 1.4$
$\Omega_\Lambda$	$0.6887 \pm 0.0058$	$k_{eq}$	$0.010343 \pm 0.000066$	$\chi_{prior}^2$	$11.5 \pm 4.4$
$\Omega_m$	$0.3113 \pm 0.0058$	$100\theta_{eq}$	$0.8160 \pm 0.0041$	$\chi_{CMB}^2$	$2789.7 \pm 6.0$
$\Omega_m h^2$	$0.14245 \pm 0.00090$	$100\theta_{s,eq}$	$0.4507 \pm 0.0021$	$\chi_{BAO}^2$	$6.2 \pm 1.1$

$\bar{\chi}_{eff}^2 = 2807.47$ ;  $R - 1 = 0.02999$



## 15 nrun+r

### 15.1 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022169	$0.02221 \pm 0.00024$	$\sigma_8/h^{0.5}$	0.9939	$0.991 \pm 0.016$	$H(0.51)$	89.332	$89.43 \pm 0.45$
$\Omega_c h^2$	0.12080	$0.1205 \pm 0.0021$	$r_{\text{drag}} h$	98.35	$98.6 \pm 1.6$	$D_M(0.51)$	1996.5	$1993 \pm 19$
$100\theta_{\text{MC}}$	1.040762	$1.04082 \pm 0.00048$	$\langle d^2 \rangle^{1/2}$	2.4503	$2.438 \pm 0.039$	$H(0.61)$	95.025	$95.10 \pm 0.36$
$\tau$	0.0529	$0.0537 \pm 0.0085$	$z_{\text{re}}$	7.60	$7.64 \pm 0.86$	$D_M(0.61)$	2322.0	$2318 \pm 20$
$\ln(10^{10} A_s)$	3.0434	$3.045 \pm 0.018$	$10^9 A_s$	2.0977	$2.101 \pm 0.037$	$H(2.33)$	236.87	$236.7 \pm 1.3$
$n_s$	0.9625	$0.9627 \pm 0.0060$	$10^9 A_s e^{-2\tau}$	1.8870	$1.887 \pm 0.014$	$D_M(2.33)$	5776.0	$5773 \pm 17$
$dn_s/d \ln k$	-0.0036	$-0.0078 \pm 0.0082$	$D_{40}$	1224.8	$1233 \pm 23$	$f\sigma_8(0.15)$	0.4644	$0.462 \pm 0.012$
$r$	0.0001	$< 0.0654$	$D_{220}$	5711.8	$5711 \pm 41$	$\sigma_8(0.15)$	0.7500	$0.7488 \pm 0.0076$
$y_{\text{cal}}$	1.00039	$1.0005 \pm 0.0025$	$D_{810}$	2538.8	$2539 \pm 14$	$f\sigma_8(0.38)$	0.4806	$0.4788 \pm 0.0096$
$A_{217}^{\text{CIB}}$	50.9	$49 \pm 7$	$D_{1420}$	814.7	$813.8 \pm 5.2$	$\sigma_8(0.38)$	0.6638	$0.6629 \pm 0.0061$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.07	—	$D_{2000}$	229.49	$229.0 \pm 1.9$	$f\sigma_8(0.51)$	0.4781	$0.4765 \pm 0.0082$
$A_{143}^{\text{tSZ}}$	7.15	$4.9 \pm 2.0$	$n_{s,0.002}$	0.9741	$0.988 \pm 0.026$	$\sigma_8(0.51)$	0.6207	$0.6201 \pm 0.0056$
$A_{100}^{\text{PS}}$	257.8	$267 \pm 29$	$Y_{\text{P}}$	0.245313	$0.24533^{+0.00011}_{-0.000087}$	$f\sigma_8(0.61)$	0.4723	$0.4709 \pm 0.0073$
$A_{143}^{\text{PS}}$	46.9	$51 \pm 8$	$Y_{\text{P}}^{\text{BBN}}$	0.246639	$0.24665^{+0.00011}_{-0.000087}$	$\sigma_8(0.61)$	0.5904	$0.5898 \pm 0.0052$
$A_{143 \times 217}^{\text{PS}}$	41.0	$44 \pm 9$	$10^5 D/H$	2.6238	$2.616 \pm 0.045$	$f\sigma_8(2.33)$	0.29729	$0.2971 \pm 0.0026$
$A_{217}^{\text{PS}}$	116.7	$115 \pm 10$	Age/Gyr	13.8256	$13.818 \pm 0.038$	$\sigma_8(2.33)$	0.30608	$0.3060 \pm 0.0027$
$A^{\text{kSZ}}$	0.01	$< 5.47$	$z_*$	1090.246	$1090.16 \pm 0.42$	$r_{0.002}$	0.0001	$< 0.0622$
$A_{100}^{\text{dustTT}}$	8.90	$9.0 \pm 1.8$	$r_*$	144.378	$144.43 \pm 0.49$	$r_{0.01}$	0.0001	$< 0.0630$
$A_{143}^{\text{dustTT}}$	10.82	$10.8 \pm 1.8$	$100\theta_*$	1.040968	$1.04102 \pm 0.00047$	$\ln(10^{10} A_t)$	-6.50	$-0.37^{+1.4}_{-0.64}$
$A_{143 \times 217}^{\text{dustTT}}$	19.02	$18.4 \pm 3.3$	$D_M(z_*)/\text{Gpc}$	13.8696	$13.874 \pm 0.046$	$r_{10}$	0.0000	$< 0.0323$
$A_{217}^{\text{dustTT}}$	93.8	$93.2 \pm 7.4$	$z_{\text{drag}}$	1059.513	$1059.60 \pm 0.50$	$10^9 A_t$	0.000	$< 0.137$
$c_{100}$	0.99964	$0.99961 \pm 0.00062$	$r_{\text{drag}}$	147.11	$147.14 \pm 0.50$	$10^9 A_t e^{-2\tau}$	0.000	$< 0.123$
$c_{217}$	0.99828	$0.99828 \pm 0.00062$	$k_{\text{D}}$	0.14070	$0.14069 \pm 0.00057$	$f_{2000}^{143}$	31.19	$32.3 \pm 3.2$
$H_0$	66.86	$67.03 \pm 0.93$	$100\theta_{\text{D}}$	0.160989	$0.16095 \pm 0.00029$	$f_{2000}^{143 \times 217}$	33.81	$34.4 \pm 2.2$
$\Omega_{\Lambda}$	0.6787	$0.681 \pm 0.013$	$z_{\text{eq}}$	3416.5	$3410 \pm 48$	$f_{2000}^{217}$	108.28	$108.9 \pm 2.1$
$\Omega_{\text{m}}$	0.3213	$0.319 \pm 0.013$	$k_{\text{eq}}$	0.010428	$0.01041 \pm 0.00015$	$\chi_{\text{simall}}^2$	395.91	$397.3 \pm 1.8$
$\Omega_{\text{m}} h^2$	0.14361	$0.1433 \pm 0.0020$	$100\theta_{\text{eq}}$	0.8101	$0.8115 \pm 0.0090$	$\chi_{\text{lowl}}^2$	22.73	$23.7 \pm 2.3$
$\Omega_{\text{m}} h^3$	0.096017	$0.09606 \pm 0.00050$	$100\theta_{s,\text{eq}}$	0.44785	$0.4486 \pm 0.0046$	$\chi_{\text{plik}}^2$	759.2	$773.6 \pm 5.8$
$\sigma_8$	0.8127	$0.8112 \pm 0.0090$	$H(0.15)$	72.24	$72.39 \pm 0.79$	$\chi_{\text{prior}}^2$	1.53	$7.3 \pm 3.7$
$S_8$	0.8410	$0.837 \pm 0.024$	$D_M(0.15)$	647.7	$646.3 \pm 8.0$	$\chi_{\text{CMB}}^2$	1177.9	$1194.6 \pm 5.9$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4607	$0.458 \pm 0.013$	$H(0.38)$	82.52	$82.64 \pm 0.57$			
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6119	$0.610 \pm 0.012$	$D_M(0.38)$	1542.4	$1540 \pm 16$			

Best-fit  $\chi_{\text{eff}}^2 = 1179.41$ ;  $\bar{\chi}_{\text{eff}}^2 = 1201.96$ ;  $R - 1 = 0.00730$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.91 commander\_dx12\_v3.2.29: 22.73 plik\_rd12\_HM\_v22\_TT: 759.25



## 15.2 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022267	$0.02230 \pm 0.00022$	$r_{\text{drag}} h$	99.84	$99.83 \pm 0.94$	$H(0.61)$	95.319	$95.34 \pm 0.26$
$\Omega_c h^2$	0.11893	$0.1189 \pm 0.0012$	$\langle d^2 \rangle^{1/2}$	2.4201	$2.415 \pm 0.030$	$D_M(0.61)$	2304.2	$2304 \pm 12$
$100\theta_{\text{MC}}$	1.041065	$1.04102 \pm 0.00042$	$z_{\text{re}}$	7.64	$7.76 \pm 0.84$	$H(2.33)$	235.76	$235.80 \pm 0.80$
$\tau$	0.0539	$0.0553 \pm 0.0084$	$10^9 A_s$	2.0907	$2.100 \pm 0.038$	$D_M(2.33)$	5763.8	$5763 \pm 13$
$\ln(10^{10} A_s)$	3.0401	$3.045 \pm 0.018$	$10^9 A_s e^{-2\tau}$	1.8772	$1.880 \pm 0.012$	$f\sigma_8(0.15)$	0.4535	$0.4538 \pm 0.0077$
$n_s$	0.96707	$0.9662 \pm 0.0045$	$D_{40}$	1217.0	$1228^{+21}_{-23}$	$\sigma_8(0.15)$	0.7455	$0.7459 \pm 0.0070$
$dn_s/d \ln k$	-0.0024	$-0.0077 \pm 0.0082$	$D_{220}$	5715.1	$5717 \pm 41$	$f\sigma_8(0.38)$	0.4722	$0.4724 \pm 0.0065$
$r$	0.0000	$< 0.0722$	$D_{810}$	2535.9	$2538 \pm 14$	$\sigma_8(0.38)$	0.6611	$0.6614 \pm 0.0059$
$y_{\text{cal}}$	1.00017	$1.0006 \pm 0.0025$	$D_{1420}$	815.4	$814.7 \pm 5.0$	$f\sigma_8(0.51)$	0.4710	$0.4713 \pm 0.0059$
$A_{217}^{\text{CIB}}$	50.7	$49 \pm 7$	$D_{2000}$	229.88	$229.3 \pm 1.8$	$\sigma_8(0.51)$	0.6188	$0.6190 \pm 0.0055$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.04	—	$n_{s,0.002}$	0.9750	$0.991 \pm 0.026$	$f\sigma_8(0.61)$	0.4662	$0.4664 \pm 0.0054$
$A_{143}^{\text{tSZ}}$	7.24	$4.9 \pm 2.0$	$Y_{\text{P}}$	0.245354	$0.245363^{+0.000092}_{-0.000081}$	$\sigma_8(0.61)$	0.5888	$0.5891 \pm 0.0052$
$A_{100}^{\text{PS}}$	256.6	$266 \pm 28$	$Y_{\text{P}}^{\text{BBN}}$	0.246680	$0.246690^{+0.000093}_{-0.000081}$	$f\sigma_8(2.33)$	0.29696	$0.2971 \pm 0.0026$
$A_{143}^{\text{PS}}$	45.3	$50 \pm 8$	$10^5 D/H$	2.6050	$2.600 \pm 0.041$	$\sigma_8(2.33)$	0.30624	$0.3064 \pm 0.0027$
$A_{143 \times 217}^{\text{PS}}$	39.4	$43^{+9}_{-10}$	Age/Gyr	13.7992	$13.797 \pm 0.030$	$r_{0.002}$	0.0000	$< 0.0695$
$A_{217}^{\text{PS}}$	115.9	$114 \pm 10$	$z_*$	1089.955	$1089.92 \pm 0.31$	$r_{0.01}$	0.0000	$< 0.0701$
$A^{\text{kSZ}}$	0.00	$< 5.43$	$r_*$	144.788	$144.76 \pm 0.33$	$\ln(10^{10} A_t)$	-7.24	$-0.27^{+1.4}_{-0.64}$
$A_{100}^{\text{dustTT}}$	8.96	$9.0 \pm 1.8$	$100\theta_*$	1.041254	$1.04121 \pm 0.00042$	$r_{10}$	0.0000	$< 0.0361$
$A_{143}^{\text{dustTT}}$	10.79	$10.8 \pm 1.8$	$D_M(z_*)/\text{Gpc}$	13.9051	$13.903 \pm 0.032$	$10^9 A_t$	0.000	$< 0.151$
$A_{143 \times 217}^{\text{dustTT}}$	19.00	$18.4 \pm 3.3$	$z_{\text{drag}}$	1059.628	$1059.69 \pm 0.49$	$10^9 A_t e^{-2\tau}$	0.000	$< 0.136$
$A_{217}^{\text{dustTT}}$	93.8	$93.2 \pm 7.3$	$r_{\text{drag}}$	147.490	$147.45 \pm 0.37$	$f_{2000}^{143}$	30.71	$32.0 \pm 3.2$
$c_{100}$	0.99965	$0.99960 \pm 0.00061$	$k_{\text{D}}$	0.140367	$0.14043 \pm 0.00049$	$f_{2000}^{143 \times 217}$	33.34	$34.2 \pm 2.2$
$c_{217}$	0.99827	$0.99828 \pm 0.00062$	$100\theta_{\text{D}}$	0.160957	$0.16091 \pm 0.00029$	$f_{2000}^{217}$	107.84	$108.6 \pm 2.1$
$H_0$	67.69	$67.70 \pm 0.55$	$z_{\text{eq}}$	3374.1	$3375 \pm 29$	$\chi_{\text{small}}^2$	395.94	$397.4 \pm 1.9$
$\Omega_{\Lambda}$	0.6905	$0.6903 \pm 0.0073$	$k_{\text{eq}}$	0.010298	$0.010302 \pm 0.000088$	$\chi_{\text{lowl}}^2$	22.22	$23.2 \pm 2.1$
$\Omega_{\text{m}}$	0.3095	$0.3097 \pm 0.0073$	$100\theta_{\text{eq}}$	0.8182	$0.8181 \pm 0.0053$	$\chi_{\text{plik}}^2$	760.6	$774.0 \pm 5.7$
$\Omega_{\text{m}} h^2$	0.14184	$0.1419 \pm 0.0012$	$100\theta_{\text{s,eq}}$	0.45201	$0.4519 \pm 0.0028$	$\chi_{6\text{DF}}^2$	0.0173	$0.055 \pm 0.072$
$\Omega_{\text{m}} h^3$	0.096015	$0.09606 \pm 0.00050$	$H(0.15)$	72.950	$72.96 \pm 0.48$	$\chi_{\text{MGS}}^2$	1.34	$1.38 \pm 0.53$
$\sigma_8$	0.8066	$0.8070 \pm 0.0078$	$D_M(0.15)$	640.57	$640.5 \pm 4.7$	$\chi_{\text{DR12BAO}}^2$	4.08	$4.7 \pm 1.6$
$S_8$	0.8193	$0.820 \pm 0.015$	$H(0.38)$	83.023	$83.04 \pm 0.36$	$\chi_{\text{prior}}^2$	1.54	$7.4 \pm 3.7$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4488	$0.4491 \pm 0.0082$	$D_M(0.38)$	1528.2	$1528.0 \pm 9.5$	$\chi_{\text{BAO}}^2$	5.44	$6.2 \pm 1.3$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6016	$0.6020 \pm 0.0080$	$H(0.51)$	89.718	$89.73 \pm 0.30$	$\chi_{\text{CMB}}^2$	1178.8	$1194.6 \pm 5.8$
$\sigma_8/h^{0.5}$	0.9804	$0.981 \pm 0.012$	$D_M(0.51)$	1980.0	$1980 \pm 11$			

Best-fit  $\chi_{\text{eff}}^2 = 1185.74$ ;  $\bar{\chi}_{\text{eff}}^2 = 1208.12$ ;  $R - 1 = 0.01047$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.34 DR12BAO: 4.08 CMB - simall\_100x143.offlike5\_EE\_Aplanck\_B: 395.94 commander\_dx12\_v3.2.29: 22.22 plik\_rd12\_HM\_v22\_TT: 760.60



### 15.3 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE\_post\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022399	$0.02247 \pm 0.00023$	$\sigma_8/h^{0.5}$	0.9706	$0.968 \pm 0.015$	$H(0.51)$	90.075	$90.20 \pm 0.42$
$\Omega_c h^2$	0.11731	$0.1170 \pm 0.0018$	$r_{\text{drag}} h$	101.12	$101.4 \pm 1.5$	$D_M(0.51)$	1965.4	$1961 \pm 16$
$100\theta_{\text{MC}}$	1.041211	$1.04133 \pm 0.00046$	$\langle d^2 \rangle^{1/2}$	2.4002	$2.385^{+0.034}_{-0.038}$	$H(0.61)$	95.599	$95.71 \pm 0.35$
$\tau$	0.0566	$0.0582^{+0.0082}_{-0.0093}$	$z_{\text{re}}$	7.86	$7.98 \pm 0.86$	$D_M(0.61)$	2288.5	$2284 \pm 18$
$\ln(10^{10} A_s)$	3.0428	$3.046 \pm 0.019$	$10^9 A_s$	2.0964	$2.104 \pm 0.039$	$H(2.33)$	234.85	$234.7 \pm 1.2$
$n_s$	0.9706	$0.9709 \pm 0.0055$	$10^9 A_s e^{-2\tau}$	1.8722	$1.872 \pm 0.014$	$D_M(2.33)$	5752.0	$5747 \pm 16$
$dn_s/d \ln k$	-0.0020	$-0.0086 \pm 0.0083$	$D_{40}$	1212.9	$1220^{+19}_{-24}$	$f\sigma_8(0.15)$	0.4450	$0.443 \pm 0.011$
$r$	0.0001	$< 0.0852$	$D_{220}$	5732.8	$5727 \pm 40$	$\sigma_8(0.15)$	0.7431	$0.7422 \pm 0.0077$
$y_{\text{cal}}$	1.00062	$1.0005 \pm 0.0025$	$D_{810}$	2537.0	$2537 \pm 14$	$f\sigma_8(0.38)$	0.4658	$0.4642 \pm 0.0088$
$A_{217}^{\text{CIB}}$	49.8	$48 \pm 7$	$D_{1420}$	817.14	$816.0 \pm 4.9$	$\sigma_8(0.38)$	0.6600	$0.6595 \pm 0.0063$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.14	—	$D_{2000}$	230.57	$229.8 \pm 1.8$	$f\sigma_8(0.51)$	0.4658	$0.4645 \pm 0.0077$
$A_{143}^{\text{tSZ}}$	7.23	$5.0 \pm 2.1$	$n_{s,0.002}$	0.9771	$0.999^{+0.024}_{-0.027}$	$\sigma_8(0.51)$	0.6182	$0.6178 \pm 0.0058$
$A_{100}^{\text{PS}}$	255.3	$264 \pm 29$	$Y_{\text{P}}$	0.245407	$0.245430 \pm 0.000090$	$f\sigma_8(0.61)$	0.4618	$0.4606 \pm 0.0070$
$A_{143}^{\text{PS}}$	45.8	$49 \pm 8$	$Y_{\text{P}}^{\text{BBN}}$	0.246734	$0.246757 \pm 0.000091$	$\sigma_8(0.61)$	0.5885	$0.5882 \pm 0.0054$
$A_{143 \times 217}^{\text{PS}}$	41.3	$42 \pm 9$	$10^5 D/H$	2.5800	$2.569 \pm 0.042$	$f\sigma_8(2.33)$	0.29723	$0.2972 \pm 0.0027$
$A_{217}^{\text{PS}}$	116.5	$114 \pm 10$	Age/Gyr	13.7740	$13.762 \pm 0.035$	$\sigma_8(2.33)$	0.30696	$0.3070 \pm 0.0028$
$A^{\text{kSZ}}$	0.01	$< 5.30$	$z_*$	1089.647	$1089.54 \pm 0.37$	$r_{0.002}$	0.0001	$< 0.0844$
$A_{100}^{\text{dustTT}}$	8.93	$9.0 \pm 1.8$	$r_*$	145.107	$145.13 \pm 0.46$	$r_{0.01}$	0.0001	$< 0.0837$
$A_{143}^{\text{dustTT}}$	10.81	$10.8 \pm 1.8$	$100\theta_*$	1.041401	$1.04150 \pm 0.00046$	$\ln(10^{10} A_t)$	-6.44	$-0.11^{+1.4}_{-0.71}$
$A_{143 \times 217}^{\text{dustTT}}$	19.20	$18.4 \pm 3.3$	$D_M(z_*)/\text{Gpc}$	13.9338	$13.935 \pm 0.043$	$r_{10}$	0.0000	$< 0.0434$
$A_{217}^{\text{dustTT}}$	94.3	$93.3 \pm 7.2$	$z_{\text{drag}}$	1059.818	$1059.94 \pm 0.50$	$10^9 A_t$	0.000	$< 0.179$
$c_{100}$	0.99966	$0.99960 \pm 0.00059$	$r_{\text{drag}}$	147.773	$147.77 \pm 0.48$	$10^9 A_t e^{-2\tau}$	0.000	$< 0.160$
$c_{217}$	0.99826	$0.99829 \pm 0.00064$	$k_{\text{D}}$	0.14017	$0.14022 \pm 0.00057$	$f_{2000}^{143}$	30.17	$31.4 \pm 3.2$
$H_0$	68.43	$68.63 \pm 0.83$	$100\theta_{\text{D}}$	0.160851	$0.16079 \pm 0.00028$	$f_{2000}^{143 \times 217}$	32.92	$33.7 \pm 2.2$
$\Omega_{\Lambda}$	0.7003	$0.702^{+0.012}_{-0.010}$	$z_{\text{eq}}$	3338.7	$3334 \pm 43$	$f_{2000}^{217}$	107.45	$108.2 \pm 2.1$
$\Omega_{\text{m}}$	0.2997	$0.298^{+0.010}_{-0.012}$	$k_{\text{eq}}$	0.010190	$0.01018 \pm 0.00013$	$\chi_{\text{small}}^2$	396.27	$397.9 \pm 2.3$
$\Omega_{\text{m}} h^2$	0.14036	$0.1402 \pm 0.0018$	$100\theta_{\text{eq}}$	0.8251	$0.8264 \pm 0.0082$	$\chi_{\text{lowl}}^2$	21.83	$22.6 \pm 1.8$
$\Omega_{\text{m}} h^3$	0.09605	$0.09617 \pm 0.00051$	$100\theta_{s,\text{eq}}$	0.45554	$0.4562 \pm 0.0042$	$\chi_{\text{plik}}^2$	762.7	$777.2 \pm 6.5$
$\sigma_8$	0.8029	$0.8018 \pm 0.0089$	$H(0.15)$	73.58	$73.76 \pm 0.72$	$\chi_{\text{H073p45}}^2$	9.14	$8.7 \pm 3.0$
$S_8$	0.8026	$0.799 \pm 0.021$	$D_M(0.15)$	634.4	$632.8 \pm 6.9$	$\chi_{\text{prior}}^2$	1.55	$7.5 \pm 3.8$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4396	$0.438 \pm 0.011$	$H(0.38)$	83.48	$83.63 \pm 0.53$	$\chi_{\text{CMB}}^2$	1180.8	$1197.6 \pm 6.7$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5941	$0.592 \pm 0.011$	$D_M(0.38)$	1515.7	$1512 \pm 14$			

Best-fit  $\chi_{\text{eff}}^2 = 1191.50$ ;  $\bar{\chi}_{\text{eff}}^2 = 1213.73$ ;  $R - 1 = 0.05584$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.27 commander\_dx12.v3.2.29: 21.83 plik\_rd12\_HM.v22\_TT: 762.71 Hubble - H073p45: 9.14



## 15.4 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02222 \pm 0.00023$	$\sigma_8/h^{0.5}$	$0.992 \pm 0.016$	$H(0.51)$	$89.45 \pm 0.45$
$\Omega_{\text{c}}h^2$	$0.1204 \pm 0.0021$	$r_{\text{drag}}h$	$98.7 \pm 1.6$	$D_{\text{M}}(0.51)$	$1992 \pm 19$
$100\theta_{\text{MC}}$	$1.04083 \pm 0.00048$	$\langle d^2 \rangle^{1/2}$	$2.440 \pm 0.039$	$H(0.61)$	$95.12 \pm 0.36$
$\tau$	$0.0552^{+0.0054}_{-0.0088}$	$z_{\text{re}}$	$7.80^{+0.60}_{-0.85}$	$D_{\text{M}}(0.61)$	$2317 \pm 20$
$\ln(10^{10}A_{\text{s}})$	$3.048^{+0.013}_{-0.017}$	$10^9 A_{\text{s}}$	$2.107^{+0.027}_{-0.037}$	$H(2.33)$	$236.7 \pm 1.3$
$n_{\text{s}}$	$0.9628 \pm 0.0060$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.887 \pm 0.014$	$D_{\text{M}}(2.33)$	$5772 \pm 17$
$\text{d}n_{\text{s}}/\text{d} \ln k$	$-0.0081 \pm 0.0082$	$D_{40}$	$1233 \pm 23$	$f\sigma_8(0.15)$	$0.462 \pm 0.012$
$r$	$< 0.0660$	$D_{220}$	$5711 \pm 41$	$\sigma_8(0.15)$	$0.7497 \pm 0.0071$
$y_{\text{cal}}$	$1.0005 \pm 0.0025$	$D_{810}$	$2539 \pm 14$	$f\sigma_8(0.38)$	$0.4791 \pm 0.0096$
$A_{217}^{\text{CIB}}$	$49 \pm 7$	$D_{1420}$	$813.8 \pm 5.1$	$\sigma_8(0.38)$	$0.6638 \pm 0.0056$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{2000}$	$229.0 \pm 1.9$	$f\sigma_8(0.51)$	$0.4769 \pm 0.0082$
$A_{143}^{\text{tSZ}}$	$4.9 \pm 2.0$	$n_{\text{s},0.002}$	$0.989 \pm 0.026$	$\sigma_8(0.51)$	$0.6209^{+0.0046}_{-0.0053}$
$A_{100}^{\text{PS}}$	$267 \pm 29$	$Y_{\text{P}}$	$0.24533^{+0.00011}_{-0.000087}$	$f\sigma_8(0.61)$	$0.4713 \pm 0.0072$
$A_{143}^{\text{PS}}$	$51 \pm 8$	$Y_{\text{P}}^{\text{BBN}}$	$0.24666^{+0.00011}_{-0.000087}$	$\sigma_8(0.61)$	$0.5906^{+0.0042}_{-0.0050}$
$A_{143 \times 217}^{\text{PS}}$	$44 \pm 9$	$10^5 \text{D}/\text{H}$	$2.614 \pm 0.044$	$f\sigma_8(2.33)$	$0.2975^{+0.0020}_{-0.0025}$
$A_{217}^{\text{PS}}$	$115 \pm 10$	Age/Gyr	$13.816 \pm 0.037$	$\sigma_8(2.33)$	$0.3064^{+0.0020}_{-0.0027}$
$A^{\text{kSZ}}$	$< 5.47$	$z_*$	$1090.14 \pm 0.41$	$r_{0.002}$	$< 0.0630$
$A_{100}^{\text{dust}TT}$	$9.0 \pm 1.8$	$r_*$	$144.44 \pm 0.49$	$r_{0.01}$	$< 0.0638$
$A_{143}^{\text{dust}TT}$	$10.8 \pm 1.8$	$100\theta_*$	$1.04103 \pm 0.00047$	$\ln(10^{10}A_{\text{t}})$	$-0.35^{+1.4}_{-0.64}$
$A_{143 \times 217}^{\text{dust}TT}$	$18.4 \pm 3.3$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.875 \pm 0.046$	$r_{10}$	$< 0.0327$
$A_{217}^{\text{dust}TT}$	$93.2 \pm 7.4$	$z_{\text{drag}}$	$1059.62 \pm 0.50$	$10^9 A_{\text{t}}$	$< 0.139$
$c_{100}$	$0.99961 \pm 0.00062$	$r_{\text{drag}}$	$147.15 \pm 0.50$	$10^9 A_{\text{t}}e^{-2\tau}$	$< 0.125$
$c_{217}$	$0.99828 \pm 0.00062$	$k_{\text{D}}$	$0.14069 \pm 0.00056$	$f_{2000}^{143}$	$32.3 \pm 3.2$
$H_0$	$67.07 \pm 0.92$	$100\theta_{\text{D}}$	$0.16094 \pm 0.00029$	$f_{2000}^{143 \times 217}$	$34.4 \pm 2.2$
$\Omega_{\Lambda}$	$0.681 \pm 0.013$	$z_{\text{eq}}$	$3409 \pm 48$	$f_{2000}^{217}$	$108.8 \pm 2.1$
$\Omega_{\text{m}}$	$0.319 \pm 0.013$	$k_{\text{eq}}$	$0.01040 \pm 0.00015$	$\chi_{\text{simall}}^2$	$397.2 \pm 1.8$
$\Omega_{\text{m}}h^2$	$0.1433 \pm 0.0020$	$100\theta_{\text{eq}}$	$0.8118 \pm 0.0090$	$\chi_{\text{lowl}}^2$	$23.6 \pm 2.2$
$\Omega_{\text{m}}h^3$	$0.09608 \pm 0.00050$	$100\theta_{\text{s,eq}}$	$0.4487 \pm 0.0046$	$\chi_{\text{plik}}^2$	$773.6 \pm 5.8$
$\sigma_8$	$0.8121 \pm 0.0086$	$H(0.15)$	$72.42 \pm 0.79$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.7$
$S_8$	$0.837 \pm 0.024$	$D_{\text{M}}(0.15)$	$646.0 \pm 8.0$	$\chi_{\text{CMB}}^2$	$1194.4 \pm 5.9$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.459 \pm 0.013$	$H(0.38)$	$82.66 \pm 0.57$		
$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.610 \pm 0.012$	$D_{\text{M}}(0.38)$	$1539 \pm 16$		

$$\bar{\chi}_{\text{eff}}^2 = 1201.72; R - 1 = 0.00869$$



### 15.5 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02231 \pm 0.00022$	$r_{\mathrm{drag}}h$	$99.85 \pm 0.94$	$H(0.61)$	$95.34 \pm 0.26$
$\Omega_{\mathrm{c}}h^2$	$0.1189 \pm 0.0012$	$\langle d^2 \rangle^{1/2}$	$2.417 \pm 0.029$	$D_{\mathrm{M}}(0.61)$	$2304 \pm 12$
$100\theta_{\mathrm{MC}}$	$1.04102 \pm 0.00042$	$z_{\mathrm{re}}$	$7.87^{+0.64}_{-0.84}$	$H(2.33)$	$235.80 \pm 0.80$
$\tau$	$0.0564^{+0.0059}_{-0.0086}$	$10^9 A_{\mathrm{s}}$	$2.105^{+0.029}_{-0.038}$	$D_{\mathrm{M}}(2.33)$	$5763 \pm 13$
$\ln(10^{10} A_{\mathrm{s}})$	$3.047^{+0.014}_{-0.018}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.880 \pm 0.012$	$f\sigma_8(0.15)$	$0.4541 \pm 0.0076$
$n_{\mathrm{s}}$	$0.9663 \pm 0.0045$	$D_{40}$	$1228^{+20}_{-23}$	$\sigma_8(0.15)$	$0.7466^{+0.0060}_{-0.0068}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0079 \pm 0.0082$	$D_{220}$	$5717 \pm 41$	$f\sigma_8(0.38)$	$0.4728 \pm 0.0064$
$r$	$< 0.0726$	$D_{810}$	$2538 \pm 14$	$\sigma_8(0.38)$	$0.6621^{+0.0049}_{-0.0058}$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{1420}$	$814.7 \pm 5.0$	$f\sigma_8(0.51)$	$0.4717 \pm 0.0057$
$A_{217}^{\mathrm{CIB}}$	$49 \pm 7$	$D_{2000}$	$229.3 \pm 1.8$	$\sigma_8(0.51)$	$0.6197^{+0.0045}_{-0.0054}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.992 \pm 0.026$	$f\sigma_8(0.61)$	$0.4669 \pm 0.0052$
$A_{143}^{\mathrm{tSZ}}$	$4.9 \pm 2.0$	$Y_{\mathrm{P}}$	$0.245366^{+0.000091}_{-0.000080}$	$\sigma_8(0.61)$	$0.5897^{+0.0042}_{-0.0051}$
$A_{100}^{\mathrm{PS}}$	$266 \pm 28$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246692^{+0.000092}_{-0.000080}$	$f\sigma_8(2.33)$	$0.2974^{+0.0021}_{-0.0026}$
$A_{143}^{\mathrm{PS}}$	$50 \pm 8$	$10^5 \mathrm{D}/\mathrm{H}$	$2.598 \pm 0.040$	$\sigma_8(2.33)$	$0.3067^{+0.0021}_{-0.0027}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43^{+9}_{-10}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.796 \pm 0.030$	$r_{0.002}$	$< 0.0699$
$A_{217}^{\mathrm{PS}}$	$114 \pm 10$	$z_{*}$	$1089.91 \pm 0.31$	$r_{0.01}$	$< 0.0706$
$A^{\mathrm{kSZ}}$	$< 5.44$	$r_{*}$	$144.76 \pm 0.33$	$\ln(10^{10} A_{\mathrm{t}})$	$-0.26^{+1.4}_{-0.63}$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	$100\theta_{*}$	$1.04121 \pm 0.00042$	$r_{10}$	$< 0.0363$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.8$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.903 \pm 0.032$	$10^9 A_{\mathrm{t}}$	$< 0.153$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.4 \pm 3.3$	$z_{\mathrm{drag}}$	$1059.71 \pm 0.49$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	$< 0.137$
$A_{217}^{\mathrm{dust}TT}$	$93.2 \pm 7.3$	$r_{\mathrm{drag}}$	$147.45 \pm 0.37$	$f_{2000}^{143}$	$32.0 \pm 3.2$
$c_{100}$	$0.99960 \pm 0.00061$	$k_{\mathrm{D}}$	$0.14044 \pm 0.00049$	$f_{2000}^{143 \times 217}$	$34.2 \pm 2.2$
$c_{217}$	$0.99828 \pm 0.00063$	$100\theta_{\mathrm{D}}$	$0.16090 \pm 0.00028$	$f_{2000}^{217}$	$108.6 \pm 2.1$
$H_0$	$67.71 \pm 0.55$	$z_{\mathrm{eq}}$	$3375 \pm 29$	$\chi_{\mathrm{simall}}^2$	$397.4 \pm 1.9$
$\Omega_{\Lambda}$	$0.6905 \pm 0.0073$	$k_{\mathrm{eq}}$	$0.010301 \pm 0.000088$	$\chi_{\mathrm{lowl}}^2$	$23.2 \pm 2.0$
$\Omega_{\mathrm{m}}$	$0.3095 \pm 0.0073$	$100\theta_{\mathrm{eq}}$	$0.8181 \pm 0.0053$	$\chi_{\mathrm{plik}}^2$	$773.9 \pm 5.7$
$\Omega_{\mathrm{m}}h^2$	$0.1419 \pm 0.0012$	$100\theta_{\mathrm{s,eq}}$	$0.4519 \pm 0.0028$	$\chi_{6\mathrm{DF}}^2$	$0.054 \pm 0.071$
$\Omega_{\mathrm{m}}h^3$	$0.09607 \pm 0.00050$	$H(0.15)$	$72.97 \pm 0.47$	$\chi_{\mathrm{MGS}}^2$	$1.39 \pm 0.53$
$\sigma_8$	$0.8078^{+0.0069}_{-0.0076}$	$D_{\mathrm{M}}(0.15)$	$640.4 \pm 4.7$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.5$
$S_8$	$0.820 \pm 0.015$	$H(0.38)$	$83.05 \pm 0.36$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.7$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4494 \pm 0.0081$	$D_{\mathrm{M}}(0.38)$	$1527.8 \pm 9.4$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.3$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.6025 \pm 0.0078$	$H(0.51)$	$89.74 \pm 0.30$	$\chi_{\mathrm{CMB}}^2$	$1194.4 \pm 5.8$
$\sigma_8/h^{0.5}$	$0.982 \pm 0.011$	$D_{\mathrm{M}}(0.51)$	$1979 \pm 11$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1207.94; R - 1 = 0.01172$$



## 15.6 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02247 \pm 0.00023$	$\sigma_8/h^{0.5}$	$0.968 \pm 0.015$	$H(0.51)$	$90.21 \pm 0.42$
$\Omega_{\mathrm{c}}h^2$	$0.1170 \pm 0.0018$	$r_{\mathrm{drag}}h$	$101.4 \pm 1.5$	$D_{\mathrm{M}}(0.51)$	$1961 \pm 16$
$100\theta_{\mathrm{MC}}$	$1.04133 \pm 0.00046$	$\langle d^2 \rangle^{1/2}$	$2.386^{+0.033}_{-0.038}$	$H(0.61)$	$95.72 \pm 0.35$
$\tau$	$0.0590^{+0.0068}_{-0.0093}$	$z_{\mathrm{re}}$	$8.06^{+0.70}_{-0.91}$	$D_{\mathrm{M}}(0.61)$	$2284 \pm 18$
$\ln(10^{10}A_{\mathrm{s}})$	$3.048^{+0.016}_{-0.018}$	$10^9 A_{\mathrm{s}}$	$2.107^{+0.034}_{-0.039}$	$H(2.33)$	$234.7 \pm 1.1$
$n_{\mathrm{s}}$	$0.9709 \pm 0.0055$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.872 \pm 0.014$	$D_{\mathrm{M}}(2.33)$	$5746 \pm 16$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0088 \pm 0.0083$	$D_{40}$	$1220^{+19}_{-24}$	$f\sigma_8(0.15)$	$0.443 \pm 0.011$
$r$	$< 0.0856$	$D_{220}$	$5727 \pm 40$	$\sigma_8(0.15)$	$0.7427 \pm 0.0074$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{810}$	$2537 \pm 14$	$f\sigma_8(0.38)$	$0.4645 \pm 0.0088$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{1420}$	$816.0 \pm 4.9$	$\sigma_8(0.38)$	$0.6599 \pm 0.0060$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{2000}$	$229.9 \pm 1.8$	$f\sigma_8(0.51)$	$0.4647 \pm 0.0077$
$A_{143}^{\mathrm{tSZ}}$	$5.0 \pm 2.1$	$n_{\mathrm{s},0.002}$	$0.999^{+0.024}_{-0.027}$	$\sigma_8(0.51)$	$0.6182 \pm 0.0055$
$A_{100}^{\mathrm{PS}}$	$263 \pm 29$	$Y_{\mathrm{P}}$	$0.245432 \pm 0.000090$	$f\sigma_8(0.61)$	$0.4609 \pm 0.0069$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246759 \pm 0.000090$	$\sigma_8(0.61)$	$0.5887^{+0.0048}_{-0.0053}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$10^5 \mathrm{D}/\mathrm{H}$	$2.568 \pm 0.042$	$f\sigma_8(2.33)$	$0.2974^{+0.0023}_{-0.0027}$
$A_{217}^{\mathrm{PS}}$	$114 \pm 10$	$\mathrm{Age}/\mathrm{Gyr}$	$13.762 \pm 0.035$	$\sigma_8(2.33)$	$0.3072^{+0.0023}_{-0.0028}$
$A^{\mathrm{kSZ}}$	$< 5.30$	$z_*$	$1089.53 \pm 0.37$	$r_{0.002}$	$< 0.0846$
$A_{100}^{\mathrm{dust}TT}$	$9.1 \pm 1.9$	$r_*$	$145.13 \pm 0.46$	$r_{0.01}$	$< 0.0841$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.8$	$100\theta_*$	$1.04151 \pm 0.00046$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.1^{+1.4}_{-0.71}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.4 \pm 3.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.935 \pm 0.043$	$r_{10}$	$< 0.0439$
$A_{217}^{\mathrm{dust}TT}$	$93.3 \pm 7.2$	$z_{\mathrm{drag}}$	$1059.95 \pm 0.50$	$10^9 A_{\mathrm{t}}$	$< 0.182$
$c_{100}$	$0.99960 \pm 0.00059$	$r_{\mathrm{drag}}$	$147.77 \pm 0.48$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.161$
$c_{217}$	$0.99829 \pm 0.00064$	$k_{\mathrm{D}}$	$0.14022 \pm 0.00056$	$f_{2000}^{143}$	$31.4 \pm 3.2$
$H_0$	$68.64 \pm 0.83$	$100\theta_{\mathrm{D}}$	$0.16078 \pm 0.00028$	$f_{2000}^{143 \times 217}$	$33.7 \pm 2.2$
$\Omega_{\Lambda}$	$0.702^{+0.012}_{-0.010}$	$z_{\mathrm{eq}}$	$3333 \pm 43$	$f_{2000}^{217}$	$108.2 \pm 2.1$
$\Omega_{\mathrm{m}}$	$0.298^{+0.010}_{-0.012}$	$k_{\mathrm{eq}}$	$0.01017 \pm 0.00013$	$\chi_{\mathrm{simall}}^2$	$397.8 \pm 2.4$
$\Omega_{\mathrm{m}}h^2$	$0.1401 \pm 0.0018$	$100\theta_{\mathrm{eq}}$	$0.8265 \pm 0.0082$	$\chi_{\mathrm{lowl}}^2$	$22.5 \pm 1.8$
$\Omega_{\mathrm{m}}h^3$	$0.09618 \pm 0.00051$	$100\theta_{\mathrm{s,eq}}$	$0.4562 \pm 0.0042$	$\chi_{\mathrm{plik}}^2$	$777.1 \pm 6.5$
$\sigma_8$	$0.8023 \pm 0.0087$	$H(0.15)$	$73.77 \pm 0.72$	$\chi_{\mathrm{H073p45}}^2$	$8.6 \pm 2.9$
$S_8$	$0.799 \pm 0.021$	$D_{\mathrm{M}}(0.15)$	$632.6 \pm 6.9$	$\chi_{\mathrm{prior}}^2$	$7.5 \pm 3.8$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.438 \pm 0.011$	$H(0.38)$	$83.64 \pm 0.53$	$\chi_{\mathrm{CMB}}^2$	$1197.5 \pm 6.7$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.593 \pm 0.011$	$D_{\mathrm{M}}(0.38)$	$1512 \pm 14$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1213.56; R - 1 = 0.05904$$



## 15.7 base\_nrun\_r\_plikHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022399	$0.02241 \pm 0.00016$ (+0.9 $\sigma$ )	$\sigma_8$	0.8129	$0.8119 \pm 0.0077$ (+0.1 $\sigma$ )	$H(0.38)$	82.837	$82.87 \pm 0.39$ (+0.4 $\sigma$ )
$\Omega_c h^2$	0.12022	$0.1202 \pm 0.0014$ (−0.2 $\sigma$ )	$S_8$	0.8348	$0.833 \pm 0.017$ (−0.1 $\sigma$ )	$D_M(0.38)$	1534.5	$1534 \pm 11$ (−0.4 $\sigma$ )
$100\theta_{MC}$	1.040896	$1.04091 \pm 0.00032$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4572	$0.4564 \pm 0.0091$ (−0.1 $\sigma$ )	$H(0.51)$	89.610	$89.64 \pm 0.30$ (+0.5 $\sigma$ )
$\tau$	0.0561	$0.0563 \pm 0.0082$ (+0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6097	$0.6087 \pm 0.0085$ (−0.1 $\sigma$ )	$D_M(0.51)$	1987.0	$1986 \pm 12$ (−0.4 $\sigma$ )
$\ln(10^{10} A_s)$	3.0495	$3.050 \pm 0.017$ (+0.3 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9910	$0.989 \pm 0.012$ (−0.1 $\sigma$ )	$H(0.61)$	95.272	$95.30 \pm 0.24$ (+0.5 $\sigma$ )
$n_s$	0.96469	$0.9643 \pm 0.0047$ (+0.3 $\sigma$ )	$r_{drag} h$	98.92	$99.0 \pm 1.1$ (+0.2 $\sigma$ )	$D_M(0.61)$	2311.5	$2311 \pm 13$ (−0.4 $\sigma$ )
$dn_s/d \ln k$	−0.0044	$−0.0094 \pm 0.0074$ (−0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4438	$2.433 \pm 0.030$ (−0.1 $\sigma$ )	$H(2.33)$	236.73	$236.71 \pm 0.84$ (−0.0 $\sigma$ )
$r$	0.0001	$< 0.0810$ (+0.2 $\sigma$ )	$z_{re}$	7.86	$7.85 \pm 0.82$ (+0.3 $\sigma$ )	$D_M(2.33)$	5763.3	$5762 \pm 11$ (−0.6 $\sigma$ )
$y_{cal}$	1.00053	$1.0007 \pm 0.0025$ (+0.1 $\sigma$ )	$10^9 A_s$	2.1105	$2.113 \pm 0.036$ (+0.3 $\sigma$ )	$f\sigma_8(0.15)$	0.4614	$0.4606 \pm 0.0085$ (−0.1 $\sigma$ )
$A_{217}^{CIB}$	48.9	$48 \pm 7$ (−0.1 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8865	$1.888 \pm 0.012$ (+0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7507	$0.7498 \pm 0.0068$ (+0.1 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.26	—	$D_{40}$	1221.1	$1232 \pm 21$ (−0.0 $\sigma$ )	$f\sigma_8(0.38)$	0.4787	$0.4779 \pm 0.0069$ (−0.1 $\sigma$ )
$A_{143}^{tSZ}$	7.29	$5.1 \pm 2.0$ (+0.1 $\sigma$ )	$D_{220}$	5730.3	$5726 \pm 39$ (+0.4 $\sigma$ )	$\sigma_8(0.38)$	0.6649	$0.6642 \pm 0.0057$ (+0.2 $\sigma$ )
$A_{100}^{PS}$	253.1	$264 \pm 28$ (−0.1 $\sigma$ )	$D_{810}$	2541.9	$2543 \pm 13$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.4768	$0.4760 \pm 0.0061$ (−0.1 $\sigma$ )
$A_{143}^{PS}$	46.8	$49 \pm 8$ (−0.3 $\sigma$ )	$D_{1420}$	817.10	$816.0 \pm 4.9$ (+0.4 $\sigma$ )	$\sigma_8(0.51)$	0.6220	$0.6213 \pm 0.0053$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{PS}$	44.0	$43_{-10}^{+9}$ (−0.1 $\sigma$ )	$D_{2000}$	230.61	$229.9 \pm 1.8$ (+0.5 $\sigma$ )	$f\sigma_8(0.61)$	0.4714	$0.4707 \pm 0.0056$ (−0.0 $\sigma$ )
$A_{217}^{PS}$	118.0	$115 \pm 10$ (+0.0 $\sigma$ )	$n_{s,0.002}$	0.9789	$0.995_{-0.024}^{+0.022}$ (+0.3 $\sigma$ )	$\sigma_8(0.61)$	0.59173	$0.5911 \pm 0.0050$ (+0.3 $\sigma$ )
$A^{kSZ}$	0.01	$< 5.05$ (−0.1 $\sigma$ )	$Y_P$	0.245407	$0.245410_{-0.000056}^{+0.000062}$ (+0.8 $\sigma$ )	$f\sigma_8(2.33)$	0.29816	$0.2979 \pm 0.0025$ (+0.3 $\sigma$ )
$A_{100}^{dustTT}$	8.90	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P^{BBN}$	0.246733	$0.246737_{-0.000056}^{+0.000062}$ (+0.8 $\sigma$ )	$\sigma_8(2.33)$	0.30718	$0.3069 \pm 0.0026$ (+0.3 $\sigma$ )
$A_{143}^{dustTT}$	11.06	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5802	$2.578 \pm 0.029$ (−0.9 $\sigma$ )	$r_{0.002}$	0.0001	$< 0.0787$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.72	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	Age/Gyr	13.7963	$13.794 \pm 0.025$ (−0.6 $\sigma$ )	$r_{0.01}$	0.0001	$< 0.0789$ (+0.2 $\sigma$ )
$A_{217}^{dustTT}$	94.6	$93.4 \pm 7.3$ (+0.0 $\sigma$ )	$z_*$	1089.904	$1089.88 \pm 0.28$ (−0.7 $\sigma$ )	$\ln(10^{10} A_t)$	−6.53	$−0.12_{-0.54}^{+1.3}$ (+0.2 $\sigma$ )
$A_{100}^{dustTE}$	0.1138	$0.116 \pm 0.038$	$r_*$	144.353	$144.36 \pm 0.31$ (−0.1 $\sigma$ )	$r_{10}$	0.0000	$< 0.0410$ (+0.2 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1349	$0.136 \pm 0.029$	$100\theta_*$	1.041074	$1.04109 \pm 0.00031$ (+0.2 $\sigma$ )	$10^9 A_t$	0.000	$< 0.171$ (+0.2 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.484	$0.481 \pm 0.084$	$D_M(z_*)/\text{Gpc}$	13.8658	$13.866 \pm 0.029$ (−0.2 $\sigma$ )	$10^9 A_t e^{-2\tau}$	0.000	$< 0.153$ (+0.2 $\sigma$ )
$A_{143}^{dustTE}$	0.226	$0.227 \pm 0.054$	$z_{drag}$	1060.009	$1060.05 \pm 0.32$ (+0.9 $\sigma$ )	$f_{2000}^{143}$	29.85	$31.2 \pm 3.1$ (−0.3 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.666	$0.664 \pm 0.080$	$r_{drag}$	147.003	$147.00 \pm 0.31$ (−0.3 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.71	$33.5 \pm 2.2$ (−0.4 $\sigma$ )
$A_{217}^{dustTE}$	2.089	$2.08 \pm 0.27$	$k_D$	0.140983	$0.14099 \pm 0.00034$ (+0.5 $\sigma$ )	$f_{2000}^{217}$	107.32	$108.1 \pm 2.0$ (−0.4 $\sigma$ )
$c_{100}$	0.99971	$0.99967 \pm 0.00062$ (+0.1 $\sigma$ )	$100\theta_D$	0.160708	$0.16069 \pm 0.00018$ (−0.9 $\sigma$ )	$\chi_{simall}^2$	396.34	$397.6 \pm 2.0$ (+0.2 $\sigma$ )
$c_{217}$	0.99821	$0.99823 \pm 0.00063$ (−0.1 $\sigma$ )	$z_{eq}$	3408.1	$3407 \pm 32$ (−0.1 $\sigma$ )	$\chi_{lowl}^2$	22.29	$23.3 \pm 1.9$ (−0.2 $\sigma$ )
$H_0$	67.29	$67.34 \pm 0.62$ (+0.3 $\sigma$ )	$k_{eq}$	0.010402	$0.010399 \pm 0.000097$ (−0.1 $\sigma$ )	$\chi_{plik}^2$	2344.9	$2361.1 \pm 6.1$ (+272.2 $\sigma$ )
$\Omega_\Lambda$	0.6836	$0.6840 \pm 0.0086$ (+0.3 $\sigma$ )	$100\theta_{eq}$	0.8123	$0.8126 \pm 0.0059$ (+0.1 $\sigma$ )	$\chi_{prior}^2$	1.85	$11.6 \pm 4.6$ (+1.2 $\sigma$ )
$\Omega_m$	0.3164	$0.3160 \pm 0.0086$ (−0.3 $\sigma$ )	$100\theta_{s,eq}$	0.44884	$0.4490 \pm 0.0030$ (+0.1 $\sigma$ )	$\chi_{CMB}^2$	2763.6	$2782.0 \pm 6.2$ (+268.9 $\sigma$ )
$\Omega_m h^2$	0.14326	$0.1432 \pm 0.0013$ (−0.1 $\sigma$ )	$H(0.15)$	72.63	$72.67 \pm 0.53$ (+0.4 $\sigma$ )			
$\Omega_m h^3$	0.096404	$0.09643 \pm 0.00031$ (+0.7 $\sigma$ )	$D_M(0.15)$	643.9	$643.6 \pm 5.3$ (−0.3 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2765.44$ ;  $\Delta\chi_{eff}^2 = 1586.03$ ;  $\bar{\chi}_{eff}^2 = 2793.62$ ;  $\Delta\bar{\chi}_{eff}^2 = 1591.66$ ;  $R - 1 = 0.01370$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.35 ( $\Delta$  0.44) commander\_dx12\_v3.2.29: 22.29 ( $\Delta$  -0.44) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.95



## 15.8 base\_nrun\_r\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022443	$0.02247 \pm 0.00014$ (+0.8 $\sigma$ )	$S_8$	0.8261	$0.824 \pm 0.013$ (+0.2 $\sigma$ )	$H(0.51)$	89.770	$89.82 \pm 0.23$ (+0.3 $\sigma$ )
$\Omega_c h^2$	0.11944	$0.1193 \pm 0.0010$ (+0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4525	$0.4511 \pm 0.0071$ (+0.2 $\sigma$ )	$D_M(0.51)$	1980.2	$1978.3 \pm 9.1$ (−0.1 $\sigma$ )
$100\theta_{MC}$	1.041007	$1.04102 \pm 0.00030$ (−0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6057	$0.6043 \pm 0.0071$ (+0.3 $\sigma$ )	$H(0.61)$	95.395	$95.44 \pm 0.19$ (+0.4 $\sigma$ )
$\tau$	0.0568	$0.0574 \pm 0.0082$ (+0.3 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9858	$0.984 \pm 0.010$ (+0.3 $\sigma$ )	$D_M(0.61)$	2304.2	$2302.2 \pm 9.9$ (−0.1 $\sigma$ )
$\ln(10^{10} A_s)$	3.0489	$3.051 \pm 0.017$ (+0.3 $\sigma$ )	$r_{drag} h$	99.54	$99.68 \pm 0.79$ (−0.2 $\sigma$ )	$H(2.33)$	236.27	$236.19 \pm 0.63$ (+0.5 $\sigma$ )
$n_s$	0.96669	$0.9665 \pm 0.0040$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4324	$2.420 \pm 0.027$ (+0.2 $\sigma$ )	$D_M(2.33)$	5758.2	$5756.2 \pm 9.2$ (−0.5 $\sigma$ )
$dn_s/d \ln k$	−0.0038	$−0.0092^{+0.0078}_{-0.0070}$ (−0.2 $\sigma$ )	$z_{re}$	7.91	$7.94 \pm 0.81$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4571	$0.4558 \pm 0.0067$ (+0.3 $\sigma$ )
$r$	0.0009	$< 0.0865$ (+0.2 $\sigma$ )	$10^9 A_s$	2.1093	$2.113 \pm 0.036$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7491	$0.7482 \pm 0.0065$ (+0.3 $\sigma$ )
$y_{cal}$	1.00054	$1.0008 \pm 0.0025$ (+0.1 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8827	$1.884 \pm 0.011$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4754	$0.4743 \pm 0.0057$ (+0.3 $\sigma$ )
$A_{217}^{CIB}$	48.8	$48 \pm 7$ (−0.1 $\sigma$ )	$D_{40}$	1218.7	$1230^{+19}_{-21}$ (+0.1 $\sigma$ )	$\sigma_8(0.38)$	0.6641	$0.6634 \pm 0.0056$ (+0.3 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.25	—	$D_{220}$	5732.8	$5729 \pm 39$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.4740	$0.4730 \pm 0.0052$ (+0.3 $\sigma$ )
$A_{143}^{tSZ}$	7.28	$5.2 \pm 2.0$ (+0.1 $\sigma$ )	$D_{810}$	2541.1	$2542 \pm 14$ (+0.3 $\sigma$ )	$\sigma_8(0.51)$	0.6214	$0.6209 \pm 0.0052$ (+0.3 $\sigma$ )
$A_{100}^{PS}$	253.5	$263 \pm 28$ (−0.1 $\sigma$ )	$D_{1420}$	817.65	$816.6 \pm 4.9$ (+0.4 $\sigma$ )	$f\sigma_8(0.61)$	0.46904	$0.4682 \pm 0.0049$ (+0.3 $\sigma$ )
$A_{143}^{PS}$	45.9	$48 \pm 8$ (−0.3 $\sigma$ )	$D_{2000}$	230.87	$230.2 \pm 1.8$ (+0.5 $\sigma$ )	$\sigma_8(0.61)$	0.59132	$0.5908 \pm 0.0050$ (+0.3 $\sigma$ )
$A_{143 \times 217}^{PS}$	43.2	$42 \pm 9$ (−0.1 $\sigma$ )	$n_{s,0.002}$	0.9788	$0.996^{+0.022}_{-0.025}$ (+0.2 $\sigma$ )	$f\sigma_8(2.33)$	0.29815	$0.2979 \pm 0.0025$ (+0.3 $\sigma$ )
$A_{217}^{PS}$	117.6	$114 \pm 10$ (+0.0 $\sigma$ )	$Y_P$	0.245424	$0.245433 \pm 0.000053$ (+0.8 $\sigma$ )	$\sigma_8(2.33)$	0.30737	$0.3072 \pm 0.0026$ (+0.3 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.99$ (−0.1 $\sigma$ )	$Y_P^{BBN}$	0.246750	$0.246760 \pm 0.000054$ (+0.8 $\sigma$ )	$r_{0.002}$	0.0008	$< 0.0848$ (+0.2 $\sigma$ )
$A_{100}^{dustTT}$	8.89	$8.9 \pm 1.9$ (−0.0 $\sigma$ )	$10^5 D/H$	2.5720	$2.567 \pm 0.026$ (−0.8 $\sigma$ )	$r_{0.01}$	0.0009	$< 0.0846$ (+0.2 $\sigma$ )
$A_{143}^{dustTT}$	11.01	$11.0 \pm 1.8$ (+0.1 $\sigma$ )	Age/Gyr	13.7853	$13.781 \pm 0.021$ (−0.5 $\sigma$ )	$\ln(10^{10} A_t)$	−3.97	$−0.05^{+1.3}_{-0.53}$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.58	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$z_*$	1089.778	$1089.73 \pm 0.23$ (−0.6 $\sigma$ )	$r_{10}$	0.0004	$< 0.0441$ (+0.2 $\sigma$ )
$A_{217}^{dustTT}$	94.5	$93.4 \pm 7.3$ (+0.0 $\sigma$ )	$r_*$	144.521	$144.54 \pm 0.24$ (−0.7 $\sigma$ )	$10^9 A_t$	0.002	$< 0.183$ (+0.2 $\sigma$ )
$A_{100}^{dustTE}$	0.1151	$0.116 \pm 0.038$	$100\theta_*$	1.041178	$1.04119 \pm 0.00029$ (−0.0 $\sigma$ )	$10^9 A_t e^{-2\tau}$	0.002	$< 0.163$ (+0.2 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1353	$0.135 \pm 0.029$	$D_M(z_*)/\text{Gpc}$	13.8806	$13.882 \pm 0.024$ (−0.6 $\sigma$ )	$f_{2000}^{143}$	29.52	$30.9 \pm 3.1$ (−0.4 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.478	$0.481 \pm 0.083$	$z_{drag}$	1060.047	$1060.12 \pm 0.31$ (+0.9 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.42	$33.2 \pm 2.1$ (−0.4 $\sigma$ )
$A_{143}^{dustTE}$	0.225	$0.225 \pm 0.053$	$r_{drag}$	147.161	$147.17 \pm 0.26$ (−0.8 $\sigma$ )	$f_{2000}^{217}$	107.07	$107.9 \pm 2.0$ (−0.3 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.664	$0.662 \pm 0.079$	$k_D$	0.140850	$0.14086 \pm 0.00031$ (+0.9 $\sigma$ )	$\chi_{simall}^2$	396.43	$397.8 \pm 2.1$ (+0.2 $\sigma$ )
$A_{217}^{dustTE}$	2.074	$2.07 \pm 0.27$	$100\theta_D$	0.160689	$0.16066 \pm 0.00018$ (−0.9 $\sigma$ )	$\chi_{lowl}^2$	22.15	$23.1 \pm 1.8$ (−0.0 $\sigma$ )
$c_{100}$	0.99972	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$z_{eq}$	3390.5	$3387 \pm 23$ (+0.4 $\sigma$ )	$\chi_{plik}^2$	2345.5	$2361.2 \pm 6.2$ (+279.5 $\sigma$ )
$c_{217}$	0.99821	$0.99823 \pm 0.00062$ (−0.1 $\sigma$ )	$k_{eq}$	0.010348	$0.010338 \pm 0.000072$ (+0.4 $\sigma$ )	$\chi_{6DF}^2$	0.0377	$0.053 \pm 0.065$ (−0.0 $\sigma$ )
$H_0$	67.639	$67.73 \pm 0.46$ (+0.1 $\sigma$ )	$100\theta_{eq}$	0.81567	$0.8164 \pm 0.0044$ (−0.3 $\sigma$ )	$\chi_{MGS}^2$	1.156	$1.29 \pm 0.43$ (−0.2 $\sigma$ )
$\Omega_\Lambda$	0.6885	$0.6896 \pm 0.0062$ (−0.1 $\sigma$ )	$100\theta_{s,eq}$	0.45057	$0.4509 \pm 0.0023$ (−0.4 $\sigma$ )	$\chi_{DR12BAO}^2$	4.63	$4.8 \pm 1.4$ (+0.1 $\sigma$ )
$\Omega_m$	0.3115	$0.3104 \pm 0.0062$ (+0.1 $\sigma$ )	$H(0.15)$	72.925	$73.01 \pm 0.39$ (+0.1 $\sigma$ )	$\chi_{prior}^2$	1.79	$11.6 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_m h^2$	0.14252	$0.14239 \pm 0.00098$ (+0.4 $\sigma$ )	$D_M(0.15)$	640.94	$640.2 \pm 3.9$ (−0.1 $\sigma$ )	$\chi_{BAO}^2$	5.82	$6.1 \pm 1.1$ (−0.0 $\sigma$ )
$\Omega_m h^3$	0.096402	$0.09643 \pm 0.00031$ (+0.8 $\sigma$ )	$H(0.38)$	83.047	$83.11 \pm 0.29$ (+0.2 $\sigma$ )	$\chi_{CMB}^2$	2764.1	$2782.0 \pm 6.2$ (+274.0 $\sigma$ )
$\sigma_8$	0.8107	$0.8096 \pm 0.0073$ (+0.3 $\sigma$ )	$D_M(0.38)$	1528.6	$1527.0 \pm 7.8$ (−0.1 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2771.67$ ;  $\Delta\chi_{eff}^2 = 1585.93$ ;  $\bar{\chi}_{eff}^2 = 2799.74$ ;  $\Delta\bar{\chi}_{eff}^2 = 1591.62$ ;  $R - 1 = 0.01808$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.04 ( $\Delta$  0.02) MGS: 1.16 ( $\Delta$  -0.19) DR12BAO: 4.63 ( $\Delta$  0.55) CMB - simall\_100x143.offlike5\_EE\_Aplanck\_B: 396.43 ( $\Delta$  0.48) commander\_dx12.v3.2.29: 22.15 ( $\Delta$  -0.07) plik\_rd12\_HM.v22b\_TTTEEE: 2345.48



## 15.9 base\_nrun\_r\_plikHM\_TTTEEE\_lowl\_lowE\_post\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022512	$0.02255 \pm 0.00015$ (+0.4 $\sigma$ )	$\Omega_m h^3$	0.096443	$0.09648 \pm 0.00031$ (+0.6 $\sigma$ )	$H(0.15)$	73.22	$73.32 \pm 0.51$ (−0.6 $\sigma$ )
$\Omega_c h^2$	0.11871	$0.1185 \pm 0.0013$ (+0.8 $\sigma$ )	$\sigma_8$	0.8089	$0.8075 \pm 0.0080$ (+0.6 $\sigma$ )	$D_M(0.15)$	638.04	$637.1 \pm 5.0$ (+0.6 $\sigma$ )
$100\theta_{MC}$	1.041082	$1.04112 \pm 0.00031$ (−0.4 $\sigma$ )	$S_8$	0.8183	$0.815 \pm 0.016$ (+0.8 $\sigma$ )	$H(0.38)$	83.261	$83.34 \pm 0.37$ (−0.5 $\sigma$ )
$\tau$	0.0578	$0.0585^{+0.0079}_{-0.0087}$ (+0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4482	$0.4465 \pm 0.0087$ (+0.8 $\sigma$ )	$D_M(0.38)$	1522.8	$1520.8 \pm 9.9$ (+0.6 $\sigma$ )
$\ln(10^{10} A_s)$	3.0493	$3.051 \pm 0.018$ (+0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6021	$0.6004 \pm 0.0085$ (+0.8 $\sigma$ )	$H(0.51)$	89.939	$90.01 \pm 0.29$ (−0.5 $\sigma$ )
$n_s$	0.96879	$0.9684 \pm 0.0046$ (−0.4 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9811	$0.979 \pm 0.012$ (+0.7 $\sigma$ )	$D_M(0.51)$	1973.3	$1971 \pm 12$ (+0.6 $\sigma$ )
$dn_s/d \ln k$	−0.0033	$−0.0094^{+0.0080}_{-0.0070}$ (−0.1 $\sigma$ )	$r_{drag} h$	100.12	$100.3 \pm 1.0$ (−0.8 $\sigma$ )	$H(0.61)$	95.529	$95.58 \pm 0.24$ (−0.4 $\sigma$ )
$r$	0.0005	$< 0.0929$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4219	$2.408 \pm 0.031$ (+0.7 $\sigma$ )	$D_M(0.61)$	2296.8	$2294 \pm 13$ (+0.6 $\sigma$ )
$y_{cal}$	1.00059	$1.0008 \pm 0.0024$ (+0.1 $\sigma$ )	$z_{re}$	7.98	$8.02 \pm 0.83$ (+0.1 $\sigma$ )	$H(2.33)$	235.87	$235.77 \pm 0.80$ (+0.9 $\sigma$ )
$A_{217}^{CIB}$	47.3	$48 \pm 7$ (−0.1 $\sigma$ )	$10^9 A_s$	2.1101	$2.115 \pm 0.038$ (+0.3 $\sigma$ )	$D_M(2.33)$	5752.4	$5750 \pm 11$ (+0.2 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.45	—	$10^9 A_s e^{-2\tau}$	1.8798	$1.881 \pm 0.012$ (+0.6 $\sigma$ )	$f\sigma_8(0.15)$	0.4531	$0.4515 \pm 0.0082$ (+0.8 $\sigma$ )
$A_{143}^{tSZ}$	7.22	$5.2 \pm 2.0$ (+0.1 $\sigma$ )	$D_{40}$	1215.8	$1227 \pm 20$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7480	$0.7468 \pm 0.0071$ (+0.6 $\sigma$ )
$A_{100}^{PS}$	249.8	$263 \pm 28$ (−0.0 $\sigma$ )	$D_{220}$	5737.7	$5734 \pm 38$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.4725	$0.4710^{+0.0071}_{-0.0065}$ (+0.8 $\sigma$ )
$A_{143}^{PS}$	48.1	$47 \pm 8$ (−0.2 $\sigma$ )	$D_{810}$	2541.3	$2542 \pm 13$ (+0.3 $\sigma$ )	$\sigma_8(0.38)$	0.6635	$0.6626 \pm 0.0060$ (+0.5 $\sigma$ )
$A_{143 \times 217}^{PS}$	48.3	$42 \pm 9$ (−0.0 $\sigma$ )	$D_{1420}$	818.68	$817.3 \pm 5.0$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.4716	$0.4703^{+0.0064}_{-0.0058}$ (+0.8 $\sigma$ )
$A_{217}^{PS}$	119.7	$114 \pm 10$ (+0.1 $\sigma$ )	$D_{2000}$	231.32	$230.5 \pm 1.8$ (+0.3 $\sigma$ )	$\sigma_8(0.51)$	0.6211	$0.6204 \pm 0.0055$ (+0.4 $\sigma$ )
$A^{kSZ}$	0.01	$< 4.94$ (−0.1 $\sigma$ )	$n_{s,0.002}$	0.9793	$0.999^{+0.021}_{-0.025}$ (+0.0 $\sigma$ )	$f\sigma_8(0.61)$	0.4670	$0.4659^{+0.0059}_{-0.0053}$ (+0.7 $\sigma$ )
$A_{100}^{dustTT}$	8.90	$9.0 \pm 1.9$ (−0.0 $\sigma$ )	$Y_P$	0.245449	$0.245461 \pm 0.000057$ (+0.3 $\sigma$ )	$\sigma_8(0.61)$	0.5911	$0.5905 \pm 0.0052$ (+0.4 $\sigma$ )
$A_{143}^{dustTT}$	11.05	$11.0 \pm 1.7$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246775	$0.246788 \pm 0.000057$ (+0.3 $\sigma$ )	$f\sigma_8(2.33)$	0.29824	$0.2980 \pm 0.0026$ (+0.3 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.91	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5598	$2.554 \pm 0.027$ (−0.4 $\sigma$ )	$\sigma_8(2.33)$	0.30767	$0.3074 \pm 0.0027$ (+0.2 $\sigma$ )
$A_{217}^{dustTT}$	95.1	$93.3 \pm 7.4$ (+0.0 $\sigma$ )	Age/Gyr	13.7727	$13.767 \pm 0.024$ (+0.1 $\sigma$ )	$r_{0.002}$	0.0005	$< 0.0917$ (+0.1 $\sigma$ )
$A_{100}^{dustTE}$	0.1137	$0.114 \pm 0.038$	$z_*$	1089.631	$1089.57 \pm 0.26$ (+0.1 $\sigma$ )	$r_{0.01}$	0.0005	$< 0.0914$ (+0.1 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1352	$0.136 \pm 0.030$	$r_*$	144.656	$144.69 \pm 0.30$ (−1.0 $\sigma$ )	$\ln(10^{10} A_t)$	−4.52	$0.02^{+1.3}_{-0.51}$ (+0.1 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.482	$0.482 \pm 0.082$	$100\theta_*$	1.041258	$1.04129 \pm 0.00031$ (−0.5 $\sigma$ )	$r_{10}$	0.0002	$< 0.0477$ (+0.1 $\sigma$ )
$A_{143}^{dustTE}$	0.224	$0.225 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	13.8924	$13.895 \pm 0.028$ (−0.9 $\sigma$ )	$10^9 A_t$	0.001	$< 0.196$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.662	$0.661 \pm 0.078$	$z_{drag}$	1060.162	$1060.24 \pm 0.31$ (+0.6 $\sigma$ )	$10^9 A_t e^{-2\tau}$	0.001	$< 0.174$ (+0.1 $\sigma$ )
$A_{217}^{dustTE}$	2.065	$2.06 \pm 0.27$	$r_{drag}$	147.276	$147.29 \pm 0.30$ (−1.0 $\sigma$ )	$\chi_{simall}^2$	396.57	$398.0 \pm 2.4$ (+0.1 $\sigma$ )
$c_{100}$	0.99974	$0.99969 \pm 0.00061$ (+0.1 $\sigma$ )	$k_D$	0.140781	$0.14079 \pm 0.00034$ (+1.0 $\sigma$ )	$\chi_{lowl}^2$	21.95	$22.9 \pm 1.7$ (+0.2 $\sigma$ )
$c_{217}$	0.99819	$0.99822 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_D$	0.160631	$0.16060 \pm 0.00018$ (−0.7 $\sigma$ )	$\chi_{plik}^2$	2346.6	$2362.7 \pm 6.6$ (+243.2 $\sigma$ )
$H_0$	67.98	$68.10 \pm 0.59$ (−0.6 $\sigma$ )	$z_{eq}$	3374.8	$3371 \pm 30$ (+0.9 $\sigma$ )	$\chi_{H073p45}^2$	10.85	$10.5 \pm 2.3$ (+0.6 $\sigma$ )
$\Omega_\Lambda$	0.6930	$0.6943 \pm 0.0079$ (−0.7 $\sigma$ )	$k_{eq}$	0.010300	$0.010287 \pm 0.000091$ (+0.9 $\sigma$ )	$\chi_{prior}^2$	1.72	$11.5 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_m$	0.3070	$0.3057 \pm 0.0079$ (+0.7 $\sigma$ )	$100\theta_{eq}$	0.8187	$0.8197 \pm 0.0057$ (−0.8 $\sigma$ )	$\chi_{CMB}^2$	2765.1	$2783.5 \pm 6.6$ (+236.5 $\sigma$ )
$\Omega_m h^2$	0.14187	$0.1417 \pm 0.0013$ (+0.9 $\sigma$ )	$100\theta_{s,eq}$	0.45213	$0.4526 \pm 0.0029$ (−0.8 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2777.70$ ;  $\Delta\chi_{eff}^2 = 1586.20$ ;  $\bar{\chi}_{eff}^2 = 2805.57$ ;  $\Delta\bar{\chi}_{eff}^2 = 1591.84$ ;  $R - 1 = 0.02989$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.57 ( $\Delta$  0.30) commander\_dx12\_v3\_2\_29: 21.95 ( $\Delta$  0.12) plik\_rd12\_HM\_v22b\_TTTEEE: 2346.61 Hubble - H073p45: 10.85 ( $\Delta$  1.71)



15.10 base\_nrun\_r\_plikHM\_TTTEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02242 \pm 0.00015 \quad (+0.8\sigma)$	$\sigma_8$	$0.8125 \pm 0.0073 \quad (+0.0\sigma)$	$H(0.38)$	$82.88 \pm 0.38 \quad (+0.4\sigma)$
$\Omega_c h^2$	$0.1201 \pm 0.0014 \quad (-0.1\sigma)$	$S_8$	$0.834 \pm 0.016 \quad (-0.1\sigma)$	$D_M(0.38)$	$1534 \pm 11 \quad (-0.3\sigma)$
$100\theta_{MC}$	$1.04091 \pm 0.00032 \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4566 \pm 0.0090 \quad (-0.1\sigma)$	$H(0.51)$	$89.64 \pm 0.30 \quad (+0.4\sigma)$
$\tau$	$0.0571^{+0.0062}_{-0.0086} \quad (+0.3\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6091 \pm 0.0084 \quad (-0.1\sigma)$	$D_M(0.51)$	$1986 \pm 12 \quad (-0.3\sigma)$
$\ln(10^{10} A_s)$	$3.052^{+0.014}_{-0.017} \quad (+0.3\sigma)$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.012 \quad (-0.1\sigma)$	$H(0.61)$	$95.30 \pm 0.24 \quad (+0.5\sigma)$
$n_s$	$0.9643 \pm 0.0047 \quad (+0.3\sigma)$	$r_{\text{drag}} h$	$99.0 \pm 1.1 \quad (+0.2\sigma)$	$D_M(0.61)$	$2310 \pm 13 \quad (-0.4\sigma)$
$dn_s/d \ln k$	$-0.0095^{+0.0077}_{-0.0069} \quad (-0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.435 \pm 0.030 \quad (-0.1\sigma)$	$H(2.33)$	$236.70 \pm 0.84 \quad (+0.0\sigma)$
$r$	$< 0.0810 \quad (+0.2\sigma)$	$z_{\text{re}}$	$7.94^{+0.67}_{-0.83} \quad (+0.2\sigma)$	$D_M(2.33)$	$5762 \pm 11 \quad (-0.6\sigma)$
$y_{\text{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$10^9 A_s$	$2.116^{+0.029}_{-0.037} \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4608 \pm 0.0084 \quad (-0.1\sigma)$
$A_{217}^{\text{CIB}}$	$48 \pm 7 \quad (-0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.888 \pm 0.012 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7504^{+0.0059}_{-0.0067} \quad (+0.1\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{40}$	$1232^{+19}_{-22} \quad (-0.0\sigma)$	$f\sigma_8(0.38)$	$0.4782 \pm 0.0068 \quad (-0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$5.1 \pm 2.0 \quad (+0.1\sigma)$	$D_{220}$	$5726 \pm 39 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6647^{+0.0048}_{-0.0057} \quad (+0.2\sigma)$
$A_{100}^{\text{PS}}$	$264 \pm 28 \quad (-0.1\sigma)$	$D_{810}$	$2543 \pm 13 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4763 \pm 0.0060 \quad (-0.1\sigma)$
$A_{143}^{\text{PS}}$	$49 \pm 8 \quad (-0.3\sigma)$	$D_{1420}$	$816.0 \pm 4.9 \quad (+0.4\sigma)$	$\sigma_8(0.51)$	$0.6218^{+0.0044}_{-0.0053} \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9 \quad (-0.1\sigma)$	$D_{2000}$	$229.9 \pm 1.8 \quad (+0.5\sigma)$	$f\sigma_8(0.61)$	$0.4710 \pm 0.0054 \quad (-0.0\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$n_{s,0.002}$	$0.995^{+0.021}_{-0.024} \quad (+0.2\sigma)$	$\sigma_8(0.61)$	$0.5916^{+0.0041}_{-0.0050} \quad (+0.2\sigma)$
$A^{\text{kSZ}}$	$< 5.04 \quad (-0.1\sigma)$	$Y_P$	$0.245412^{+0.000061}_{-0.000056} \quad (+0.8\sigma)$	$f\sigma_8(2.33)$	$0.2981^{+0.0020}_{-0.0025} \quad (+0.3\sigma)$
$A_{100}^{\text{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_P^{\text{BBN}}$	$0.246738^{+0.000062}_{-0.000056} \quad (+0.8\sigma)$	$\sigma_8(2.33)$	$0.3072^{+0.0021}_{-0.0026} \quad (+0.3\sigma)$
$A_{143}^{\text{dust}TT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$10^5 \text{D/H}$	$2.577 \pm 0.028 \quad (-0.8\sigma)$	$r_{0.002}$	$< 0.0789 \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{dust}TT}$	$18.7 \pm 3.3 \quad (+0.1\sigma)$	$\text{Age/Gyr}$	$13.793 \pm 0.025 \quad (-0.6\sigma)$	$r_{0.01}$	$< 0.0790 \quad (+0.2\sigma)$
$A_{217}^{\text{dust}TT}$	$93.4 \pm 7.3 \quad (+0.0\sigma)$	$z_*$	$1089.87 \pm 0.28 \quad (-0.7\sigma)$	$\ln(10^{10} A_t)$	$-0.12^{+1.3}_{-0.54} \quad (+0.2\sigma)$
$A_{100}^{\text{dust}TE}$	$0.116 \pm 0.038$	$r_*$	$144.36 \pm 0.31 \quad (-0.2\sigma)$	$r_{10}$	$< 0.0411 \quad (+0.2\sigma)$
$A_{100 \times 143}^{\text{dust}TE}$	$0.136 \pm 0.029$	$100\theta_*$	$1.04109 \pm 0.00031 \quad (+0.1\sigma)$	$10^9 A_t$	$< 0.172 \quad (+0.2\sigma)$
$A_{100 \times 217}^{\text{dust}TE}$	$0.481 \pm 0.084$	$D_M(z_*)/\text{Gpc}$	$13.866 \pm 0.029 \quad (-0.2\sigma)$	$10^9 A_t e^{-2\tau}$	$< 0.153 \quad (+0.2\sigma)$
$A_{143}^{\text{dust}TE}$	$0.226 \pm 0.054$	$z_{\text{drag}}$	$1060.06 \pm 0.31 \quad (+0.9\sigma)$	$f_{2000}^{143}$	$31.2 \pm 3.1 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\text{dust}TE}$	$0.664 \pm 0.080$	$r_{\text{drag}}$	$147.00 \pm 0.31 \quad (-0.3\sigma)$	$f_{2000}^{143 \times 217}$	$33.5 \pm 2.2 \quad (-0.4\sigma)$
$A_{217}^{\text{dust}TE}$	$2.08 \pm 0.27$	$k_D$	$0.14099 \pm 0.00034 \quad (+0.5\sigma)$	$f_{2000}^{217}$	$108.1 \pm 2.0 \quad (-0.4\sigma)$
$c_{100}$	$0.99967 \pm 0.00062 \quad (+0.1\sigma)$	$100\theta_D$	$0.16069 \pm 0.00018 \quad (-0.9\sigma)$	$\chi_{\text{small}}^2$	$397.6 \pm 2.0 \quad (+0.2\sigma)$
$c_{217}$	$0.99823 \pm 0.00063 \quad (-0.1\sigma)$	$z_{\text{eq}}$	$3407 \pm 32 \quad (-0.0\sigma)$	$\chi_{\text{lowl}}^2$	$23.3 \pm 1.9 \quad (-0.2\sigma)$
$H_0$	$67.35 \pm 0.62 \quad (+0.3\sigma)$	$k_{\text{eq}}$	$0.010397 \pm 0.000096 \quad (-0.0\sigma)$	$\chi_{\text{plik}}^2$	$2360.9 \pm 6.1 \quad (+271.9\sigma)$
$\Omega_\Lambda$	$0.6842 \pm 0.0086 \quad (+0.2\sigma)$	$100\theta_{\text{eq}}$	$0.8127 \pm 0.0059 \quad (+0.1\sigma)$	$\chi_{\text{prior}}^2$	$11.6 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_m$	$0.3158 \pm 0.0086 \quad (-0.2\sigma)$	$100\theta_{s,\text{eq}}$	$0.4490 \pm 0.0030 \quad (+0.1\sigma)$	$\chi_{\text{CMB}}^2$	$2781.8 \pm 6.1 \quad (+270.9\sigma)$
$\Omega_m h^2$	$0.1432 \pm 0.0013 \quad (-0.0\sigma)$	$H(0.15)$	$72.68 \pm 0.53 \quad (+0.3\sigma)$		
$\Omega_m h^3$	$0.09643 \pm 0.00031 \quad (+0.7\sigma)$	$D_M(0.15)$	$643.5 \pm 5.3 \quad (-0.3\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2793.42; \Delta \bar{\chi}_{\text{eff}}^2 = 1591.70; R - 1 = 0.01323$$



### 15.11 base\_nrun\_r\_plikHM\_TTTEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02248 \pm 0.00014 \quad (+0.8\sigma)$	$S_8$	$0.824 \pm 0.013 \quad (+0.2\sigma)$	$H(0.51)$	$89.82 \pm 0.23 \quad (+0.3\sigma)$
$\Omega_c h^2$	$0.1193 \pm 0.0010 \quad (+0.3\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4513 \pm 0.0069 \quad (+0.2\sigma)$	$D_M(0.51)$	$1978.2 \pm 9.1 \quad (-0.1\sigma)$
$100\theta_{MC}$	$1.04102 \pm 0.00030 \quad (-0.0\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6047 \pm 0.0069 \quad (+0.3\sigma)$	$H(0.61)$	$95.44 \pm 0.19 \quad (+0.4\sigma)$
$\tau$	$0.0581^{+0.0064}_{-0.0086} \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.984 \pm 0.010 \quad (+0.2\sigma)$	$D_M(0.61)$	$2302.0 \pm 9.8 \quad (-0.1\sigma)$
$\ln(10^{10} A_s)$	$3.052^{+0.014}_{-0.018} \quad (+0.3\sigma)$	$r_{\text{drag}} h$	$99.69 \pm 0.78 \quad (-0.2\sigma)$	$H(2.33)$	$236.19 \pm 0.63 \quad (+0.5\sigma)$
$n_s$	$0.9665 \pm 0.0040 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.422 \pm 0.026 \quad (+0.2\sigma)$	$D_M(2.33)$	$5756.1 \pm 9.2 \quad (-0.5\sigma)$
$dn_s/d \ln k$	$-0.0093^{+0.0078}_{-0.0069} \quad (-0.2\sigma)$	$z_{\text{re}}$	$8.01^{+0.68}_{-0.83} \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4560 \pm 0.0065 \quad (+0.2\sigma)$
$r$	$< 0.0867 \quad (+0.2\sigma)$	$10^9 A_s$	$2.116^{+0.030}_{-0.038} \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7487^{+0.0057}_{-0.0065} \quad (+0.3\sigma)$
$y_{\text{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.884 \pm 0.011 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4746 \pm 0.0056 \quad (+0.3\sigma)$
$A_{217}^{\text{CIB}}$	$48 \pm 7 \quad (-0.1\sigma)$	$D_{40}$	$1230 \pm 20 \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.6638^{+0.0048}_{-0.0057} \quad (+0.3\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{220}$	$5729 \pm 39 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4733 \pm 0.0051 \quad (+0.3\sigma)$
$A_{143}^{\text{tSZ}}$	$5.2 \pm 2.0 \quad (+0.1\sigma)$	$D_{810}$	$2542 \pm 14 \quad (+0.3\sigma)$	$\sigma_8(0.51)$	$0.6213^{+0.0045}_{-0.0053} \quad (+0.3\sigma)$
$A_{100}^{\text{PS}}$	$263 \pm 28 \quad (-0.1\sigma)$	$D_{1420}$	$816.6 \pm 4.9 \quad (+0.4\sigma)$	$f\sigma_8(0.61)$	$0.4684 \pm 0.0047 \quad (+0.3\sigma)$
$A_{143}^{\text{PS}}$	$48 \pm 8 \quad (-0.3\sigma)$	$D_{2000}$	$230.2 \pm 1.8 \quad (+0.5\sigma)$	$\sigma_8(0.61)$	$0.5912^{+0.0042}_{-0.0050} \quad (+0.3\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$n_{s,0.002}$	$0.997^{+0.021}_{-0.025} \quad (+0.2\sigma)$	$f\sigma_8(2.33)$	$0.2981^{+0.0021}_{-0.0025} \quad (+0.3\sigma)$
$A_{217}^{\text{PS}}$	$114 \pm 10 \quad (+0.0\sigma)$	$Y_{\text{P}}$	$0.245434 \pm 0.000053 \quad (+0.8\sigma)$	$\sigma_8(2.33)$	$0.3074^{+0.0022}_{-0.0026} \quad (+0.3\sigma)$
$A^{\text{kSZ}}$	$< 4.99 \quad (-0.1\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246761 \pm 0.000053 \quad (+0.8\sigma)$	$r_{0.002}$	$< 0.0849 \quad (+0.2\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.9 \quad (-0.0\sigma)$	$10^5 \text{D/H}$	$2.567 \pm 0.025 \quad (-0.8\sigma)$	$r_{0.01}$	$< 0.0848 \quad (+0.2\sigma)$
$A_{143}^{\text{dustTT}}$	$11.0 \pm 1.8 \quad (+0.1\sigma)$	$\text{Age/Gyr}$	$13.781 \pm 0.021 \quad (-0.5\sigma)$	$\ln(10^{10} A_t)$	$-0.05^{+1.3}_{-0.54} \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$z_*$	$1089.72 \pm 0.23 \quad (-0.6\sigma)$	$r_{10}$	$< 0.0442 \quad (+0.2\sigma)$
$A_{217}^{\text{dustTT}}$	$93.3 \pm 7.3 \quad (+0.0\sigma)$	$r_*$	$144.54 \pm 0.24 \quad (-0.7\sigma)$	$10^9 A_t$	$< 0.184 \quad (+0.2\sigma)$
$A_{100}^{\text{dustTE}}$	$0.116 \pm 0.038$	$100\theta_*$	$1.04119 \pm 0.00029 \quad (-0.1\sigma)$	$10^9 A_t e^{-2\tau}$	$< 0.163 \quad (+0.2\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.029$	$D_M(z_*)/\text{Gpc}$	$13.882 \pm 0.023 \quad (-0.6\sigma)$	$f_{2000}^{143}$	$30.9 \pm 3.1 \quad (-0.4\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.481 \pm 0.083$	$z_{\text{drag}}$	$1060.13 \pm 0.30 \quad (+0.9\sigma)$	$f_{2000}^{143 \times 217}$	$33.2 \pm 2.1 \quad (-0.4\sigma)$
$A_{143}^{\text{dustTE}}$	$0.225 \pm 0.054$	$r_{\text{drag}}$	$147.17 \pm 0.26 \quad (-0.8\sigma)$	$f_{2000}^{217}$	$107.9 \pm 2.0 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.662 \pm 0.079$	$k_{\text{D}}$	$0.14086 \pm 0.00031 \quad (+0.9\sigma)$	$\chi_{\text{simall}}^2$	$397.7 \pm 2.2 \quad (+0.2\sigma)$
$A_{217}^{\text{dustTE}}$	$2.07 \pm 0.27$	$100\theta_{\text{D}}$	$0.16065 \pm 0.00018 \quad (-0.9\sigma)$	$\chi_{\text{lowl}}^2$	$23.1 \pm 1.8 \quad (-0.0\sigma)$
$c_{100}$	$0.99968 \pm 0.00061 \quad (+0.1\sigma)$	$z_{\text{eq}}$	$3387 \pm 23 \quad (+0.4\sigma)$	$\chi_{\text{plik}}^2$	$2361.0 \pm 6.1 \quad (+279.7\sigma)$
$c_{217}$	$0.99823 \pm 0.00062 \quad (-0.1\sigma)$	$k_{\text{eq}}$	$0.010337 \pm 0.000071 \quad (+0.4\sigma)$	$\chi_{6\text{DF}}^2$	$0.053 \pm 0.064 \quad (-0.0\sigma)$
$H_0$	$67.74 \pm 0.45 \quad (+0.0\sigma)$	$100\theta_{\text{eq}}$	$0.8164 \pm 0.0044 \quad (-0.3\sigma)$	$\chi_{\text{MGS}}^2$	$1.29 \pm 0.43 \quad (-0.2\sigma)$
$\Omega_{\Lambda}$	$0.6896 \pm 0.0061 \quad (-0.1\sigma)$	$100\theta_{s,\text{eq}}$	$0.4509 \pm 0.0022 \quad (-0.4\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.8 \pm 1.4 \quad (+0.1\sigma)$
$\Omega_{\text{m}}$	$0.3104 \pm 0.0061 \quad (+0.1\sigma)$	$H(0.15)$	$73.01 \pm 0.39 \quad (+0.1\sigma)$	$\chi_{\text{prior}}^2$	$11.6 \pm 4.5 \quad (+1.1\sigma)$
$\Omega_{\text{m}} h^2$	$0.14238 \pm 0.00098 \quad (+0.4\sigma)$	$D_M(0.15)$	$640.1 \pm 3.9 \quad (-0.1\sigma)$	$\chi_{\text{BAO}}^2$	$6.1 \pm 1.1 \quad (+0.0\sigma)$
$\Omega_{\text{m}} h^3$	$0.09644 \pm 0.00031 \quad (+0.7\sigma)$	$H(0.38)$	$83.11 \pm 0.29 \quad (+0.2\sigma)$	$\chi_{\text{CMB}}^2$	$2781.9 \pm 6.1 \quad (+275.3\sigma)$
$\sigma_8$	$0.8101^{+0.0065}_{-0.0072} \quad (+0.3\sigma)$	$D_M(0.38)$	$1526.9 \pm 7.7 \quad (-0.1\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2799.55; \Delta \bar{\chi}_{\text{eff}}^2 = 1591.61; R - 1 = 0.01821$$



15.12 base\_nrun\_r\_plikHM\_TTTEE\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02255 \pm 0.00015 \quad (+0.3\sigma)$	$\sigma_8$	$0.8081 \pm 0.0075 \quad (+0.7\sigma)$	$H(0.38)$	$83.34 \pm 0.37 \quad (-0.6\sigma)$
$\Omega_c h^2$	$0.1185 \pm 0.0013 \quad (+0.8\sigma)$	$S_8$	$0.816 \pm 0.016 \quad (+0.8\sigma)$	$D_M(0.38)$	$1520.8 \pm 9.9 \quad (+0.6\sigma)$
$100\theta_{MC}$	$1.04112 \pm 0.00031 \quad (-0.5\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4467 \pm 0.0086 \quad (+0.8\sigma)$	$H(0.51)$	$90.01 \pm 0.29 \quad (-0.5\sigma)$
$\tau$	$0.0592^{+0.0066}_{-0.0089} \quad (+0.0\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6008 \pm 0.0082 \quad (+0.8\sigma)$	$D_M(0.51)$	$1971 \pm 12 \quad (+0.6\sigma)$
$\ln(10^{10} A_s)$	$3.053^{+0.015}_{-0.018} \quad (+0.3\sigma)$	$\sigma_8/h^{0.5}$	$0.979 \pm 0.012 \quad (+0.7\sigma)$	$H(0.61)$	$95.59 \pm 0.24 \quad (-0.4\sigma)$
$n_s$	$0.9684 \pm 0.0046 \quad (-0.5\sigma)$	$r_{\text{drag}} h$	$100.3 \pm 1.0 \quad (-0.8\sigma)$	$D_M(0.61)$	$2294 \pm 12 \quad (+0.6\sigma)$
$dn_s/d \ln k$	$-0.0095^{+0.0080}_{-0.0070} \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.410 \pm 0.030 \quad (+0.7\sigma)$	$H(2.33)$	$235.77 \pm 0.80 \quad (+0.9\sigma)$
$r$	$< 0.0930 \quad (+0.1\sigma)$	$z_{\text{re}}$	$8.09^{+0.69}_{-0.86} \quad (+0.0\sigma)$	$D_M(2.33)$	$5750 \pm 11 \quad (+0.2\sigma)$
$y_{\text{cal}}$	$1.0008 \pm 0.0024 \quad (+0.1\sigma)$	$10^9 A_s$	$2.117^{+0.030}_{-0.039} \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4518 \pm 0.0081 \quad (+0.8\sigma)$
$A_{217}^{\text{CIB}}$	$48 \pm 7 \quad (-0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.881 \pm 0.012 \quad (+0.6\sigma)$	$\sigma_8(0.15)$	$0.7473 \pm 0.0066 \quad (+0.6\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{40}$	$1227 \pm 20 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4713 \pm 0.0067 \quad (+0.8\sigma)$
$A_{143}^{\text{tSZ}}$	$5.2 \pm 2.0 \quad (+0.1\sigma)$	$D_{220}$	$5734 \pm 38 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6631^{+0.0052}_{-0.0059} \quad (+0.5\sigma)$
$A_{100}^{\text{PS}}$	$263 \pm 28 \quad (-0.0\sigma)$	$D_{810}$	$2542 \pm 13 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4706 \pm 0.0060 \quad (+0.8\sigma)$
$A_{143}^{\text{PS}}$	$47 \pm 8 \quad (-0.2\sigma)$	$D_{1420}$	$817.3 \pm 5.0 \quad (+0.3\sigma)$	$\sigma_8(0.51)$	$0.6208^{+0.0047}_{-0.0055} \quad (+0.5\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42^{+9}_{-10} \quad (-0.0\sigma)$	$D_{2000}$	$230.5 \pm 1.8 \quad (+0.3\sigma)$	$f\sigma_8(0.61)$	$0.4661 \pm 0.0055 \quad (+0.8\sigma)$
$A_{217}^{\text{PS}}$	$114 \pm 10 \quad (+0.0\sigma)$	$n_{s,0.002}$	$0.999^{+0.021}_{-0.026} \quad (-0.0\sigma)$	$\sigma_8(0.61)$	$0.5909^{+0.0044}_{-0.0052} \quad (+0.4\sigma)$
$A^{\text{kSZ}}$	$< 4.91 \quad (-0.1\sigma)$	$Y_P$	$0.245462 \pm 0.000056 \quad (+0.3\sigma)$	$f\sigma_8(2.33)$	$0.2982^{+0.0021}_{-0.0026} \quad (+0.3\sigma)$
$A_{100}^{\text{dust}TT}$	$9.0 \pm 1.9 \quad (-0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.246788 \pm 0.000056 \quad (+0.3\sigma)$	$\sigma_8(2.33)$	$0.3077^{+0.0022}_{-0.0027} \quad (+0.2\sigma)$
$A_{143}^{\text{dust}TT}$	$11.0 \pm 1.7 \quad (+0.1\sigma)$	$10^5 \text{D}/\text{H}$	$2.554 \pm 0.027 \quad (-0.3\sigma)$	$r_{0.002}$	$< 0.0921 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\text{dust}TT}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$\text{Age}/\text{Gyr}$	$13.767 \pm 0.024 \quad (+0.2\sigma)$	$r_{0.01}$	$< 0.0915 \quad (+0.1\sigma)$
$A_{217}^{\text{dust}TT}$	$93.3 \pm 7.4 \quad (-0.0\sigma)$	$z_*$	$1089.57 \pm 0.26 \quad (+0.1\sigma)$	$\ln(10^{10} A_t)$	$0.02^{+1.3}_{-0.52} \quad (+0.1\sigma)$
$A_{100}^{\text{dust}TE}$	$0.114 \pm 0.038$	$r_*$	$144.68 \pm 0.30 \quad (-1.0\sigma)$	$r_{10}$	$< 0.0479 \quad (+0.1\sigma)$
$A_{100 \times 143}^{\text{dust}TE}$	$0.135 \pm 0.030$	$100\theta_*$	$1.04128 \pm 0.00031 \quad (-0.5\sigma)$	$10^9 A_t$	$< 0.196 \quad (+0.1\sigma)$
$A_{100 \times 217}^{\text{dust}TE}$	$0.482 \pm 0.082$	$D_M(z_*)/\text{Gpc}$	$13.895 \pm 0.028 \quad (-0.9\sigma)$	$10^9 A_t e^{-2\tau}$	$< 0.175 \quad (+0.1\sigma)$
$A_{143}^{\text{dust}TE}$	$0.225 \pm 0.054$	$z_{\text{drag}}$	$1060.24 \pm 0.31 \quad (+0.6\sigma)$	$f_{2000}^{143}$	$30.5 \pm 3.1 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\text{dust}TE}$	$0.660 \pm 0.078$	$r_{\text{drag}}$	$147.29 \pm 0.30 \quad (-1.0\sigma)$	$f_{2000}^{143 \times 217}$	$32.9 \pm 2.2 \quad (-0.3\sigma)$
$A_{217}^{\text{dust}TE}$	$2.06 \pm 0.27$	$k_D$	$0.14079 \pm 0.00034 \quad (+1.0\sigma)$	$f_{2000}^{217}$	$107.7 \pm 2.0 \quad (-0.2\sigma)$
$c_{100}$	$0.99969 \pm 0.00061 \quad (+0.2\sigma)$	$100\theta_D$	$0.16059 \pm 0.00018 \quad (-0.7\sigma)$	$\chi_{\text{small}}^2$	$398.0 \pm 2.4 \quad (+0.1\sigma)$
$c_{217}$	$0.99822 \pm 0.00062 \quad (-0.1\sigma)$	$z_{\text{eq}}$	$3371 \pm 30 \quad (+0.9\sigma)$	$\chi_{\text{lowl}}^2$	$22.9 \pm 1.7 \quad (+0.2\sigma)$
$H_0$	$68.10 \pm 0.59 \quad (-0.7\sigma)$	$k_{\text{eq}}$	$0.010287 \pm 0.000091 \quad (+0.9\sigma)$	$\chi_{\text{plik}}^2$	$2362.5 \pm 6.5 \quad (+244.3\sigma)$
$\Omega_\Lambda$	$0.6944 \pm 0.0078 \quad (-0.7\sigma)$	$100\theta_{\text{eq}}$	$0.8197 \pm 0.0057 \quad (-0.8\sigma)$	$\chi_{\text{H073p45}}^2$	$10.5 \pm 2.3 \quad (+0.6\sigma)$
$\Omega_m$	$0.3056 \pm 0.0078 \quad (+0.7\sigma)$	$100\theta_{s,\text{eq}}$	$0.4526 \pm 0.0029 \quad (-0.9\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.5 \quad (+1.1\sigma)$
$\Omega_m h^2$	$0.1417 \pm 0.0012 \quad (+0.9\sigma)$	$H(0.15)$	$73.32 \pm 0.50 \quad (-0.6\sigma)$	$\chi_{\text{CMB}}^2$	$2783.4 \pm 6.5 \quad (+237.2\sigma)$
$\Omega_m h^3$	$0.09649 \pm 0.00031 \quad (+0.6\sigma)$	$D_M(0.15)$	$637.1 \pm 4.9 \quad (+0.6\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2805.37; \Delta \bar{\chi}_{\text{eff}}^2 = 1591.81; R - 1 = 0.03153$$



### 15.13 base\_nrun\_r\_CamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022137	$0.02222 \pm 0.00024$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6117	$0.608 \pm 0.012$	$D_{\mathrm{M}}(0.38)$	1543.1	$1537 \pm 16$
$\Omega_{\mathrm{c}}h^2$	0.12088	$0.1202 \pm 0.0021$	$\sigma_8/h^{0.5}$	0.9937	$0.988 \pm 0.016$	$H(0.51)$	89.309	$89.49 \pm 0.45$
$100\theta_{\mathrm{MC}}$	1.040808	$1.04089 \pm 0.00047$	$r_{\mathrm{drag}}h$	98.30	$98.9 \pm 1.6$	$D_{\mathrm{M}}(0.51)$	1997.4	$1990 \pm 19$
$\tau$	0.0529	$0.0535 \pm 0.0084$	$\langle d^2 \rangle^{1/2}$	2.4507	$2.432 \pm 0.039$	$H(0.61)$	95.005	$95.15 \pm 0.37$
$\ln(10^{10}A_{\mathrm{s}})$	3.0421	$3.042 \pm 0.018$	$z_{\mathrm{re}}$	7.60	$7.61 \pm 0.85$	$D_{\mathrm{M}}(0.61)$	2322.9	$2315 \pm 20$
$n_{\mathrm{s}}$	0.9616	$0.9642 \pm 0.0060$	$10^9 A_{\mathrm{s}}$	2.0950	$2.095 \pm 0.037$	$H(2.33)$	236.90	$236.5 \pm 1.3$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	-0.0039	$-0.0067 \pm 0.0084$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8847	$1.883 \pm 0.014$	$D_{\mathrm{M}}(2.33)$	5777.0	$5771 \pm 17$
$r$	0.0001	$< 0.0695$	$D_{40}$	1224.4	$1232 \pm 23$	$f\sigma_8(0.15)$	0.4645	$0.460 \pm 0.012$
$y_{\mathrm{cal}}$	1.00043	$1.0005 \pm 0.0025$	$D_{220}$	5704.4	$5701 \pm 42$	$\sigma_8(0.15)$	0.7495	$0.7478 \pm 0.0076$
$A_{100}^{\mathrm{PS}}$	247.5	$246 \pm 25$	$D_{810}$	2534.8	$2536 \pm 14$	$f\sigma_8(0.38)$	0.4805	$0.4772 \pm 0.0096$
$A_{143}^{\mathrm{PS}}$	39.7	$43 \pm 9$	$D_{1420}$	812.8	$813.7 \pm 5.3$	$\sigma_8(0.38)$	0.6633	$0.6622 \pm 0.0061$
$A_{217}^{\mathrm{PS}}$	98.2	$100 \pm 10$	$D_{2000}$	228.81	$229.0 \pm 2.0$	$f\sigma_8(0.51)$	0.4779	$0.4751 \pm 0.0083$
$A_{217}^{\mathrm{CIB}}$	44.6	$42_{-8}^{+7}$	$n_{\mathrm{s},0.002}$	0.9742	$0.986 \pm 0.027$	$\sigma_8(0.51)$	0.6203	$0.6195 \pm 0.0056$
$A_{143}^{\mathrm{tSZ}}$	4.35	$3.6_{-2.6}^{+1.7}$	$Y_{\mathrm{P}}$	0.245300	$0.24533_{-0.000089}^{+0.00011}$	$f\sigma_8(0.61)$	0.4721	$0.4697 \pm 0.0073$
$r_{143 \times 217}^{\mathrm{PS}}$	0.548	$0.64 \pm 0.13$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246626	$0.24666_{-0.000089}^{+0.00011}$	$\sigma_8(0.61)$	0.5899	$0.5893 \pm 0.0052$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.683	$> 0.484$	$10^5 \mathrm{D}/\mathrm{H}$	2.6300	$2.614 \pm 0.045$	$f\sigma_8(2.33)$	0.29705	$0.2969 \pm 0.0026$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.00	—	$\mathrm{Age}/\mathrm{Gyr}$	13.8279	$13.814 \pm 0.038$	$\sigma_8(2.33)$	0.30581	$0.3059 \pm 0.0027$
$A^{\mathrm{kSZ}}$	3.81	$5.2_{-2.2}^{+4.0}$	$z_{*}$	1090.295	$1090.12 \pm 0.42$	$r_{0.002}$	0.0001	$< 0.0660$
$A_{100}^{\mathrm{dust}}$	1.019	$1.01 \pm 0.20$	$r_{*}$	144.383	$144.50 \pm 0.49$	$r_{0.01}$	0.0001	$< 0.0671$
$A_{143}^{\mathrm{dust}}$	0.984	$0.98 \pm 0.18$	$100\theta_{*}$	1.041014	$1.04109 \pm 0.00046$	$\ln(10^{10}A_{\mathrm{t}})$	-6.04	$-0.32_{-0.61}^{+1.4}$
$A_{217}^{\mathrm{dust}}$	0.959	$0.97 \pm 0.10$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	13.8694	$13.880 \pm 0.045$	$r_{10}$	0.0001	$< 0.0343$
$A_{143 \times 217}^{\mathrm{dust}}$	1.006	$1.03 \pm 0.16$	$z_{\mathrm{drag}}$	1059.47	$1059.61 \pm 0.51$	$10^9 A_{\mathrm{t}}$	0.000	$< 0.146$
$c_{100}$	0.99743	$0.9975 \pm 0.0011$	$r_{\mathrm{drag}}$	147.118	$147.21 \pm 0.50$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	0.000	$< 0.131$
$c_{217}$	1.00143	$1.0013 \pm 0.0016$	$k_{\mathrm{D}}$	0.14066	$0.14063 \pm 0.00056$	$f_{2000}^{143}$	32.28	$31.8 \pm 3.4$
$H_0$	66.82	$67.17 \pm 0.93$	$100\theta_{\mathrm{D}}$	0.161038	$0.16096 \pm 0.00029$	$f_{2000}^{217}$	108.47	$108.2 \pm 2.2$
$\Omega_{\Lambda}$	0.6782	$0.683 \pm 0.013$	$z_{\mathrm{eq}}$	3417.6	$3403 \pm 48$	$f_{2000}^{143 \times 217}$	33.88	$33.7 \pm 2.4$
$\Omega_{\mathrm{m}}$	0.3218	$0.317 \pm 0.013$	$k_{\mathrm{eq}}$	0.010431	$0.01039 \pm 0.00015$	$\chi_{\mathrm{small}}^2$	395.90	$397.3 \pm 1.7$
$\Omega_{\mathrm{m}}h^2$	0.14366	$0.1430 \pm 0.0020$	$100\theta_{\mathrm{eq}}$	0.8098	$0.8128 \pm 0.0090$	$\chi_{\mathrm{lowl}}^2$	22.71	$23.7 \pm 2.3$
$\Omega_{\mathrm{m}}h^3$	0.095992	$0.09606 \pm 0.00050$	$100\theta_{\mathrm{s,eq}}$	0.44774	$0.4493 \pm 0.0046$	$\chi_{\mathrm{CamSpec}}^2$	7050.5	$7065.1 \pm 5.7$
$\sigma_8$	0.8122	$0.8098 \pm 0.0091$	$H(0.15)$	72.21	$72.51 \pm 0.79$	$\chi_{\mathrm{prior}}^2$	2.42	$7.7 \pm 3.5$
$S_8$	0.8412	$0.833 \pm 0.024$	$D_{\mathrm{M}}(0.15)$	648.1	$645.1 \pm 8.0$	$\chi_{\mathrm{CMB}}^2$	7469.1	$7486.1 \pm 5.9$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4607	$0.456 \pm 0.013$	$H(0.38)$	82.49	$82.72 \pm 0.57$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 7471.53$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 7493.80$ ;  $R - 1 = 0.00512$

$\chi_{\mathrm{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.90 commander\_dx12.v3.2.29: 22.71 CamSpec like\_10.7HM: 7050.49



### 15.14 base\_nrun\_r\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02230 \pm 0.00022$	$\sigma_8/h^{0.5}$	$0.979 \pm 0.012$	$D_{\mathrm{M}}(0.51)$	$1979 \pm 11$
$\Omega_{\mathrm{c}}h^2$	$0.1189 \pm 0.0012$	$r_{\mathrm{drag}}h$	$99.91 \pm 0.95$	$H(0.61)$	$95.35 \pm 0.26$
$100\theta_{\mathrm{MC}}$	$1.04106 \pm 0.00041$	$\langle d^2 \rangle^{1/2}$	$2.412 \pm 0.030$	$D_{\mathrm{M}}(0.61)$	$2303 \pm 12$
$\tau$	$0.0548 \pm 0.0083$	$z_{\mathrm{re}}$	$7.70 \pm 0.83$	$H(2.33)$	$235.75 \pm 0.81$
$\ln(10^{10}A_{\mathrm{s}})$	$3.042 \pm 0.018$	$10^9 A_{\mathrm{s}}$	$2.094 \pm 0.037$	$D_{\mathrm{M}}(2.33)$	$5762 \pm 13$
$n_{\mathrm{s}}$	$0.9673 \pm 0.0045$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.012$	$f\sigma_8(0.15)$	$0.4529 \pm 0.0077$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0065 \pm 0.0086$	$D_{40}$	$1228 \pm 22$	$\sigma_8(0.15)$	$0.7452 \pm 0.0069$
$r$	$< 0.0752$	$D_{220}$	$5707 \pm 41$	$f\sigma_8(0.38)$	$0.4717 \pm 0.0065$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{810}$	$2535 \pm 14$	$\sigma_8(0.38)$	$0.6608 \pm 0.0059$
$A_{100}^{\mathrm{PS}}$	$245 \pm 25$	$D_{1420}$	$814.4 \pm 5.2$	$f\sigma_8(0.51)$	$0.4706 \pm 0.0059$
$A_{143}^{\mathrm{PS}}$	$42 \pm 9$	$D_{2000}$	$229.3 \pm 1.9$	$\sigma_8(0.51)$	$0.6185 \pm 0.0054$
$A_{217}^{\mathrm{PS}}$	$100 \pm 10$	$n_{\mathrm{s},0.002}$	$0.988 \pm 0.027$	$f\sigma_8(0.61)$	$0.4658 \pm 0.0054$
$A_{217}^{\mathrm{CIB}}$	$42 \pm 8$	$Y_{\mathrm{P}}$	$0.245362^{+0.000093}_{-0.000080}$	$\sigma_8(0.61)$	$0.5886 \pm 0.0051$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.7}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246689^{+0.000094}_{-0.000080}$	$f\sigma_8(2.33)$	$0.2969 \pm 0.0026$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.64 \pm 0.13$	$10^5 \mathrm{D}/\mathrm{H}$	$2.600 \pm 0.041$	$\sigma_8(2.33)$	$0.3062 \pm 0.0027$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.482$	Age/Gyr	$13.796 \pm 0.029$	$r_{0.002}$	$< 0.0726$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	$< 0.637$	$z_*$	$1089.91 \pm 0.31$	$r_{0.01}$	$< 0.0733$
$A^{\mathrm{kSZ}}$	$5.2^{+4.0}_{-2.2}$	$r_*$	$144.78 \pm 0.34$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.24^{+1.4}_{-0.61}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$100\theta_*$	$1.04125 \pm 0.00040$	$r_{10}$	$< 0.0377$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.18$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.905 \pm 0.033$	$10^9 A_{\mathrm{t}}$	$< 0.158$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$z_{\mathrm{drag}}$	$1059.68 \pm 0.50$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.142$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$r_{\mathrm{drag}}$	$147.48 \pm 0.37$	$f_{2000}^{143}$	$31.5 \pm 3.4$
$c_{100}$	$0.9975 \pm 0.0011$	$k_{\mathrm{D}}$	$0.14040 \pm 0.00050$	$f_{2000}^{217}$	$108.0 \pm 2.2$
$c_{217}$	$1.0013 \pm 0.0016$	$100\theta_{\mathrm{D}}$	$0.16092 \pm 0.00029$	$f_{2000}^{143 \times 217}$	$33.5 \pm 2.4$
$H_0$	$67.75 \pm 0.55$	$z_{\mathrm{eq}}$	$3373 \pm 29$	$\chi_{\mathrm{small}}^2$	$397.4 \pm 1.8$
$\Omega_{\Lambda}$	$0.6909 \pm 0.0073$	$k_{\mathrm{eq}}$	$0.010295 \pm 0.000089$	$\chi_{\mathrm{lowl}}^2$	$23.3 \pm 2.1$
$\Omega_{\mathrm{m}}$	$0.3091 \pm 0.0073$	$100\theta_{\mathrm{eq}}$	$0.8185 \pm 0.0054$	$\chi_{\mathrm{CamSpec}}^2$	$7065.3 \pm 5.6$
$\Omega_{\mathrm{m}}h^2$	$0.1418 \pm 0.0012$	$100\theta_{\mathrm{s,eq}}$	$0.4521 \pm 0.0028$	$\chi_{6\mathrm{DF}}^2$	$0.052 \pm 0.069$
$\Omega_{\mathrm{m}}h^3$	$0.09606 \pm 0.00050$	$H(0.15)$	$73.00 \pm 0.48$	$\chi_{\mathrm{MGS}}^2$	$1.43 \pm 0.54$
$\sigma_8$	$0.8061 \pm 0.0078$	$D_{\mathrm{M}}(0.15)$	$640.2 \pm 4.7$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.5$
$S_8$	$0.818 \pm 0.015$	$H(0.38)$	$83.06 \pm 0.36$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.5$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4482 \pm 0.0082$	$D_{\mathrm{M}}(0.38)$	$1527.3 \pm 9.5$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.2$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6011 \pm 0.0080$	$H(0.51)$	$89.75 \pm 0.30$	$\chi_{\mathrm{CMB}}^2$	$7486.0 \pm 5.7$

$$\bar{\chi}_{\mathrm{eff}}^2 = 7499.85; R - 1 = 0.00974$$



### 15.15 base\_nrun\_r\_CamSpecHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02223 \pm 0.00024$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.608 \pm 0.012$	$D_{\mathrm{M}}(0.38)$	$1537 \pm 16$
$\Omega_{\mathrm{c}}h^2$	$0.1201 \pm 0.0021$	$\sigma_8/h^{0.5}$	$0.989 \pm 0.016$	$H(0.51)$	$89.51 \pm 0.45$
$100\theta_{\mathrm{MC}}$	$1.04090 \pm 0.00047$	$r_{\mathrm{drag}}h$	$98.9 \pm 1.6$	$D_{\mathrm{M}}(0.51)$	$1990 \pm 18$
$\tau$	$0.0550^{+0.0051}_{-0.0089}$	$\langle d^2 \rangle^{1/2}$	$2.433 \pm 0.039$	$H(0.61)$	$95.17^{+0.34}_{-0.38}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.013}_{-0.018}$	$z_{\mathrm{re}}$	$7.77^{+0.57}_{-0.86}$	$D_{\mathrm{M}}(0.61)$	$2314 \pm 20$
$n_{\mathrm{s}}$	$0.9644 \pm 0.0060$	$10^9 A_{\mathrm{s}}$	$2.102^{+0.027}_{-0.038}$	$H(2.33)$	$236.5 \pm 1.3$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0070 \pm 0.0084$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.882 \pm 0.014$	$D_{\mathrm{M}}(2.33)$	$5770 \pm 17$
$r$	$< 0.0704$	$D_{40}$	$1231 \pm 23$	$f\sigma_8(0.15)$	$0.460 \pm 0.012$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{220}$	$5702 \pm 42$	$\sigma_8(0.15)$	$0.7487 \pm 0.0072$
$A_{100}^{\mathrm{PS}}$	$245 \pm 25$	$D_{810}$	$2536 \pm 14$	$f\sigma_8(0.38)$	$0.4776 \pm 0.0096$
$A_{143}^{\mathrm{PS}}$	$42 \pm 9$	$D_{1420}$	$813.7 \pm 5.3$	$\sigma_8(0.38)$	$0.6631^{+0.0052}_{-0.0059}$
$A_{217}^{\mathrm{PS}}$	$100 \pm 10$	$D_{2000}$	$229.1 \pm 2.0$	$f\sigma_8(0.51)$	$0.4755 \pm 0.0082$
$A_{217}^{\mathrm{CIB}}$	$42^{+7}_{-8}$	$n_{\mathrm{s},0.002}$	$0.987 \pm 0.027$	$\sigma_8(0.51)$	$0.6203^{+0.0046}_{-0.0053}$
$A_{143}^{\mathrm{tSZ}}$	$3.6^{+1.7}_{-2.6}$	$Y_{\mathrm{P}}$	$0.24534^{+0.00011}_{-0.000088}$	$f\sigma_8(0.61)$	$0.4701 \pm 0.0072$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.64 \pm 0.13$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24666^{+0.00011}_{-0.000088}$	$\sigma_8(0.61)$	$0.5901^{+0.0042}_{-0.0050}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.482$	$10^5 \mathrm{D}/\mathrm{H}$	$2.612 \pm 0.045$	$f\sigma_8(2.33)$	$0.2973^{+0.0020}_{-0.0025}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.812 \pm 0.038$	$\sigma_8(2.33)$	$0.3063^{+0.0020}_{-0.0027}$
$A^{\mathrm{kSZ}}$	$5.2^{+4.0}_{-2.2}$	$z_{*}$	$1090.11 \pm 0.42$	$r_{0.002}$	$< 0.0671$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$r_{*}$	$144.51 \pm 0.49$	$r_{0.01}$	$< 0.0681$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.18$	$100\theta_{*}$	$1.04109 \pm 0.00046$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.30^{+1.4}_{-0.61}$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.881 \pm 0.045$	$r_{10}$	$< 0.0348$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$z_{\mathrm{drag}}$	$1059.62 \pm 0.51$	$10^9 A_{\mathrm{t}}$	$< 0.148$
$c_{100}$	$0.9975 \pm 0.0011$	$r_{\mathrm{drag}}$	$147.22 \pm 0.50$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.132$
$c_{217}$	$1.0013 \pm 0.0016$	$k_{\mathrm{D}}$	$0.14062 \pm 0.00057$	$f_{2000}^{143}$	$31.7 \pm 3.4$
$H_0$	$67.21 \pm 0.92$	$100\theta_{\mathrm{D}}$	$0.16095 \pm 0.00029$	$f_{2000}^{217}$	$108.1 \pm 2.2$
$\Omega_{\Lambda}$	$0.683 \pm 0.013$	$z_{\mathrm{eq}}$	$3401 \pm 48$	$f_{2000}^{143 \times 217}$	$33.7 \pm 2.4$
$\Omega_{\mathrm{m}}$	$0.317 \pm 0.013$	$k_{\mathrm{eq}}$	$0.01038 \pm 0.00015$	$\chi_{\mathrm{small}}^2$	$397.2 \pm 1.7$
$\Omega_{\mathrm{m}}h^2$	$0.1430 \pm 0.0020$	$100\theta_{\mathrm{eq}}$	$0.8132 \pm 0.0089$	$\chi_{\mathrm{lowl}}^2$	$23.6 \pm 2.2$
$\Omega_{\mathrm{m}}h^3$	$0.09607 \pm 0.00050$	$100\theta_{\mathrm{s,eq}}$	$0.4494 \pm 0.0046$	$\chi_{\mathrm{CamSpec}}^2$	$7065.0 \pm 5.7$
$\sigma_8$	$0.8108 \pm 0.0087$	$H(0.15)$	$72.54 \pm 0.79$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.5$
$S_8$	$0.833 \pm 0.024$	$D_{\mathrm{M}}(0.15)$	$644.8 \pm 7.9$	$\chi_{\mathrm{CMB}}^2$	$7485.8 \pm 5.8$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.456 \pm 0.013$	$H(0.38)$	$82.74 \pm 0.57$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7493.58$ ;  $R - 1 = 0.00549$



15.16 base\_nrun\_r\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02230 \pm 0.00022$	$\sigma_8/h^{0.5}$	$0.980 \pm 0.011$	$D_{\mathrm{M}}(0.51)$	$1979 \pm 11$
$\Omega_{\mathrm{c}}h^2$	$0.1188 \pm 0.0012$	$r_{\mathrm{drag}}h$	$99.92 \pm 0.95$	$H(0.61)$	$95.36 \pm 0.26$
$100\theta_{\mathrm{MC}}$	$1.04106 \pm 0.00041$	$\langle d^2 \rangle^{1/2}$	$2.414 \pm 0.029$	$D_{\mathrm{M}}(0.61)$	$2303 \pm 12$
$\tau$	$0.0560^{+0.0055}_{-0.0088}$	$z_{\mathrm{re}}$	$7.83^{+0.61}_{-0.85}$	$H(2.33)$	$235.74 \pm 0.81$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044^{+0.013}_{-0.018}$	$10^9 A_{\mathrm{s}}$	$2.099^{+0.027}_{-0.038}$	$D_{\mathrm{M}}(2.33)$	$5762 \pm 13$
$n_{\mathrm{s}}$	$0.9673 \pm 0.0045$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.012$	$f\sigma_8(0.15)$	$0.4533 \pm 0.0076$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0067 \pm 0.0086$	$D_{40}$	$1227 \pm 22$	$\sigma_8(0.15)$	$0.7460^{+0.0059}_{-0.0067}$
$r$	$< 0.0760$	$D_{220}$	$5706 \pm 41$	$f\sigma_8(0.38)$	$0.4721 \pm 0.0064$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{810}$	$2535 \pm 14$	$\sigma_8(0.38)$	$0.6615^{+0.0048}_{-0.0058}$
$A_{100}^{\mathrm{PS}}$	$245 \pm 25$	$D_{1420}$	$814.4 \pm 5.2$	$f\sigma_8(0.51)$	$0.4710 \pm 0.0057$
$A_{143}^{\mathrm{PS}}$	$42 \pm 9$	$D_{2000}$	$229.3 \pm 1.9$	$\sigma_8(0.51)$	$0.6192^{+0.0044}_{-0.0054}$
$A_{217}^{\mathrm{PS}}$	$100 \pm 10$	$n_{\mathrm{s},0.002}$	$0.989 \pm 0.027$	$f\sigma_8(0.61)$	$0.4663 \pm 0.0052$
$A_{217}^{\mathrm{CIB}}$	$42 \pm 8$	$Y_{\mathrm{P}}$	$0.245364^{+0.000093}_{-0.000079}$	$\sigma_8(0.61)$	$0.5893^{+0.0041}_{-0.0051}$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.7}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246691^{+0.000094}_{-0.000080}$	$f\sigma_8(2.33)$	$0.2972^{+0.0020}_{-0.0025}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.64 \pm 0.13$	$10^5 \mathrm{D}/\mathrm{H}$	$2.599 \pm 0.041$	$\sigma_8(2.33)$	$0.3065^{+0.0021}_{-0.0026}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.479$	Age/Gyr	$13.795 \pm 0.029$	$r_{0.002}$	$< 0.0733$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	$< 0.637$	$z_*$	$1089.91 \pm 0.31$	$r_{0.01}$	$< 0.0740$
$A^{\mathrm{kSZ}}$	$5.2^{+3.9}_{-2.3}$	$r_*$	$144.78 \pm 0.34$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.23^{+1.4}_{-0.60}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$100\theta_*$	$1.04125 \pm 0.00040$	$r_{10}$	$< 0.0380$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.18$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.905 \pm 0.033$	$10^9 A_{\mathrm{t}}$	$< 0.160$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$z_{\mathrm{drag}}$	$1059.69 \pm 0.50$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.143$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$r_{\mathrm{drag}}$	$147.48 \pm 0.38$	$f_{2000}^{143}$	$31.5 \pm 3.4$
$c_{100}$	$0.9975 \pm 0.0011$	$k_{\mathrm{D}}$	$0.14041 \pm 0.00050$	$f_{2000}^{217}$	$107.9 \pm 2.2$
$c_{217}$	$1.0013 \pm 0.0016$	$100\theta_{\mathrm{D}}$	$0.16091 \pm 0.00029$	$f_{2000}^{143 \times 217}$	$33.5 \pm 2.4$
$H_0$	$67.76 \pm 0.55$	$z_{\mathrm{eq}}$	$3373 \pm 29$	$\chi_{\mathrm{small}}^2$	$397.3 \pm 1.8$
$\Omega_{\Lambda}$	$0.6911 \pm 0.0073$	$k_{\mathrm{eq}}$	$0.010294 \pm 0.000089$	$\chi_{\mathrm{lowl}}^2$	$23.3 \pm 2.1$
$\Omega_{\mathrm{m}}$	$0.3089 \pm 0.0073$	$100\theta_{\mathrm{eq}}$	$0.8185 \pm 0.0054$	$\chi_{\mathrm{CamSpec}}^2$	$7065.3 \pm 5.6$
$\Omega_{\mathrm{m}}h^2$	$0.1418 \pm 0.0012$	$100\theta_{\mathrm{s,eq}}$	$0.4522 \pm 0.0028$	$\chi_{6\mathrm{DF}}^2$	$0.051 \pm 0.068$
$\Omega_{\mathrm{m}}h^3$	$0.09606 \pm 0.00050$	$H(0.15)$	$73.01 \pm 0.48$	$\chi_{\mathrm{MGS}}^2$	$1.44 \pm 0.54$
$\sigma_8$	$0.8070^{+0.0068}_{-0.0076}$	$D_{\mathrm{M}}(0.15)$	$640.1 \pm 4.7$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.5$
$S_8$	$0.819 \pm 0.015$	$H(0.38)$	$83.07 \pm 0.36$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.5$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4485 \pm 0.0081$	$D_{\mathrm{M}}(0.38)$	$1527.1 \pm 9.5$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.2$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6016 \pm 0.0078$	$H(0.51)$	$89.76 \pm 0.30$	$\chi_{\mathrm{CMB}}^2$	$7485.8 \pm 5.7$

$$\bar{\chi}_{\mathrm{eff}}^2 = 7499.67; R - 1 = 0.00851$$



### 15.17 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022185	$0.02223 \pm 0.00023$	$\sigma_8/h^{0.5}$	0.9883	$0.988 \pm 0.011$	$H(0.51)$	89.464	$89.49 \pm 0.37$
$\Omega_c h^2$	0.11999	$0.1201 \pm 0.0016$	$r_{\text{drag}} h$	98.95	$98.9 \pm 1.2$	$D_M(0.51)$	1990.3	$1990 \pm 15$
$100\theta_{\text{MC}}$	1.040839	$1.04084 \pm 0.00044$	$\langle d^2 \rangle^{1/2}$	2.4408	$2.435 \pm 0.028$	$H(0.61)$	95.118	$95.15 \pm 0.31$
$\tau$	0.0528	$0.0538 \pm 0.0081$	$z_{\text{re}}$	7.56	$7.64 \pm 0.80$	$D_M(0.61)$	2315.4	$2315 \pm 16$
$\ln(10^{10} A_s)$	3.0406	$3.044 \pm 0.016$	$10^9 A_s$	2.0917	$2.099 \pm 0.033$	$H(2.33)$	236.36	$236.47 \pm 0.97$
$n_s$	0.9646	$0.9635 \pm 0.0051$	$10^9 A_s e^{-2\tau}$	1.8821	$1.885 \pm 0.012$	$D_M(2.33)$	5772.5	$5771 \pm 15$
$dn_s/d \ln k$	-0.0010	$-0.0062 \pm 0.0080$	$D_{40}$	1226.7	$1235^{+20}_{-22}$	$f\sigma_8(0.15)$	0.4599	$0.4601 \pm 0.0082$
$r$	0.0000	$< 0.0626$	$D_{220}$	5714.7	$5716 \pm 41$	$\sigma_8(0.15)$	0.7480	$0.7481 \pm 0.0056$
$y_{\text{cal}}$	1.00026	$1.0006 \pm 0.0024$	$D_{810}$	2537.2	$2539 \pm 13$	$f\sigma_8(0.38)$	0.4771	$0.4773 \pm 0.0063$
$A_{217}^{\text{CIB}}$	49.7	$49 \pm 7$	$D_{1420}$	815.3	$814.4 \pm 5.2$	$\sigma_8(0.38)$	0.66252	$0.6626 \pm 0.0048$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.22	—	$D_{2000}$	229.84	$229.2 \pm 1.9$	$f\sigma_8(0.51)$	0.4751	$0.4752 \pm 0.0054$
$A_{143}^{\text{tSZ}}$	6.99	$4.9 \pm 2.0$	$n_{s,0.002}$	0.9678	$0.983 \pm 0.025$	$\sigma_8(0.51)$	0.61979	$0.6198 \pm 0.0045$
$A_{100}^{\text{PS}}$	255.9	$266 \pm 29$	$Y_{\text{P}}$	0.245320	$0.24533^{+0.00010}_{-0.000088}$	$f\sigma_8(0.61)$	0.46972	$0.4698 \pm 0.0048$
$A_{143}^{\text{PS}}$	48.4	$50 \pm 8$	$Y_{\text{P}}^{\text{BBN}}$	0.246646	$0.24666^{+0.00010}_{-0.000088}$	$\sigma_8(0.61)$	0.58960	$0.5896 \pm 0.0044$
$A_{143 \times 217}^{\text{PS}}$	44.4	$43^{+9}_{-10}$	$10^5 D/H$	2.6207	$2.613 \pm 0.044$	$f\sigma_8(2.33)$	0.29709	$0.2971 \pm 0.0023$
$A_{217}^{\text{PS}}$	117.9	$114 \pm 10$	Age/Gyr	13.8184	$13.815 \pm 0.034$	$\sigma_8(2.33)$	0.30607	$0.3061 \pm 0.0025$
$A^{\text{kSZ}}$	0.02	$< 5.31$	$z_*$	1090.152	$1090.11 \pm 0.37$	$r_{0.002}$	0.0000	$< 0.0592$
$A_{100}^{\text{dustTT}}$	9.07	$9.0 \pm 1.8$	$r_*$	144.575	$144.52 \pm 0.38$	$r_{0.01}$	0.0000	$< 0.0603$
$A_{143}^{\text{dustTT}}$	10.88	$10.8 \pm 1.8$	$100\theta_*$	1.041046	$1.04104 \pm 0.00043$	$\ln(10^{10} A_t)$	-8.76	$-0.41^{+1.4}_{-0.62}$
$A_{143 \times 217}^{\text{dustTT}}$	19.29	$18.3 \pm 3.3$	$D_M(z_*)/\text{Gpc}$	13.8874	$13.882 \pm 0.036$	$r_{10}$	0.0000	$< 0.0307$
$A_{217}^{\text{dustTT}}$	94.3	$93.2 \pm 7.4$	$z_{\text{drag}}$	1059.51	$1059.61 \pm 0.51$	$10^9 A_t$	0.000	$< 0.131$
$c_{100}$	0.99966	$0.99961 \pm 0.00061$	$r_{\text{drag}}$	147.299	$147.23 \pm 0.40$	$10^9 A_t e^{-2\tau}$	0.000	$< 0.118$
$c_{217}$	0.99830	$0.99828 \pm 0.00062$	$k_D$	0.14050	$0.14061 \pm 0.00050$	$f_{2000}^{143}$	30.59	$32.0 \pm 3.2$
$H_0$	67.18	$67.18 \pm 0.72$	$100\theta_D$	0.161005	$0.16095 \pm 0.00030$	$f_{2000}^{143 \times 217}$	33.38	$34.1 \pm 2.2$
$\Omega_\Lambda$	0.6835	$0.6831 \pm 0.0098$	$z_{\text{eq}}$	3397.6	$3401 \pm 36$	$f_{2000}^{217}$	107.82	$108.6 \pm 2.1$
$\Omega_m$	0.3165	$0.3169 \pm 0.0098$	$k_{\text{eq}}$	0.010370	$0.01038 \pm 0.00011$	$\chi^2_{\text{lensing}}$	8.89	$9.69 \pm 0.95$
$\Omega_m h^2$	0.14282	$0.1430 \pm 0.0015$	$100\theta_{\text{eq}}$	0.8136	$0.8131 \pm 0.0067$	$\chi^2_{\text{small}}$	395.90	$397.2 \pm 1.7$
$\Omega_m h^3$	0.095945	$0.09604 \pm 0.00049$	$100\theta_{s,\text{eq}}$	0.44965	$0.4494 \pm 0.0035$	$\chi^2_{\text{lowl}}$	23.09	$23.9 \pm 2.3$
$\sigma_8$	0.8100	$0.8101 \pm 0.0063$	$H(0.15)$	72.51	$72.52 \pm 0.62$	$\chi^2_{\text{plik}}$	759.3	$772.8 \pm 5.5$
$S_8$	0.8320	$0.833 \pm 0.016$	$D_M(0.15)$	645.0	$645.0 \pm 6.2$	$\chi^2_{\text{prior}}$	1.40	$7.3 \pm 3.7$
$\sigma_8 \Omega_m^{0.5}$	0.4557	$0.4560 \pm 0.0089$	$H(0.38)$	82.701	$82.72 \pm 0.46$	$\chi^2_{\text{CMB}}$	1187.1	$1203.5 \pm 5.9$
$\sigma_8 \Omega_m^{0.25}$	0.6076	$0.6078 \pm 0.0077$	$D_M(0.38)$	1537.0	$1537 \pm 12$			

Best-fit  $\chi^2_{\text{eff}} = 1188.53$ ;  $\bar{\chi}^2_{\text{eff}} = 1210.83$ ;  $R - 1 = 0.00920$   
 $\chi^2_{\text{eff}}$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8: 8.88 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.90 commander\_dx12\_v3.2.29: 23.09 plik\_rd12\_HM.v22\_TT: 759.26



# 15.18 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}} h^2$	0.022206	$0.02230 \pm 0.00022$	$r_{\mathrm{drag}} h$	99.62	$99.73 \pm 0.84$	$H(0.61)$	95.235	$95.32 \pm 0.25$
$\Omega_{\mathrm{c}} h^2$	0.11914	$0.1191 \pm 0.0011$	$\langle d^2 \rangle^{1/2}$	2.4294	$2.424 \pm 0.024$	$D_{\mathrm{M}}(0.61)$	2307.9	$2305 \pm 11$
$100\theta_{\mathrm{MC}}$	1.040977	$1.04099 \pm 0.00041$	$z_{\mathrm{re}}$	7.73	$7.88 \pm 0.75$	$H(2.33)$	235.84	$235.88 \pm 0.72$
$\tau$	0.0545	$0.0564^{+0.0071}_{-0.0080}$	$10^9 A_{\mathrm{s}}$	2.0946	$2.107 \pm 0.033$	$D_{\mathrm{M}}(2.33)$	5768.0	$5764 \pm 13$
$\ln(10^{10} A_{\mathrm{s}})$	3.0420	$3.048 \pm 0.016$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8782	$1.882 \pm 0.011$	$f\sigma_8(0.15)$	0.4557	$0.4552 \pm 0.0062$
$n_{\mathrm{s}}$	0.96672	$0.9660 \pm 0.0042$	$D_{40}$	1222.0	$1232 \pm 21$	$\sigma_8(0.15)$	0.7471	$0.7475 \pm 0.0056$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	-0.00099	$-0.0064 \pm 0.0082$	$D_{220}$	5713.6	$5723 \pm 40$	$f\sigma_8(0.38)$	0.4740	$0.4738 \pm 0.0051$
$r$	0.0001	$< 0.0672$	$D_{810}$	2536.3	$2540 \pm 13$	$\sigma_8(0.38)$	0.66226	$0.6627 \pm 0.0049$
$y_{\mathrm{cal}}$	1.00043	$1.0008 \pm 0.0024$	$D_{1420}$	815.6	$815.4 \pm 5.0$	$f\sigma_8(0.51)$	0.47264	$0.4725 \pm 0.0046$
$A_{217}^{\mathrm{CIB}}$	50.1	$48 \pm 7$	$D_{2000}$	229.95	$229.6 \pm 1.9$	$\sigma_8(0.51)$	0.61977	$0.6202 \pm 0.0046$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.14	—	$n_{\mathrm{s},0.002}$	0.9699	$0.986 \pm 0.026$	$f\sigma_8(0.61)$	0.46770	$0.4676 \pm 0.0042$
$A_{143}^{\mathrm{tSZ}}$	7.13	$4.9 \pm 2.0$	$Y_{\mathrm{P}}$	0.245328	$0.245362^{+0.000093}_{-0.000084}$	$\sigma_8(0.61)$	0.58973	$0.5902 \pm 0.0044$
$A_{100}^{\mathrm{PS}}$	256.2	$265 \pm 28$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246655	$0.246689^{+0.000093}_{-0.000084}$	$f\sigma_8(2.33)$	0.29736	$0.2976 \pm 0.0022$
$A_{143}^{\mathrm{PS}}$	47.0	$50 \pm 8$	$10^5 \mathrm{D}/\mathrm{H}$	2.6168	$2.600 \pm 0.041$	$\sigma_8(2.33)$	0.30657	$0.3069 \pm 0.0024$
$A_{143 \times 217}^{\mathrm{PS}}$	42.2	$43 \pm 9$	Age/Gyr	13.8088	$13.799 \pm 0.030$	$r_{0.002}$	0.0001	$< 0.0644$
$A_{217}^{\mathrm{PS}}$	117.2	$115 \pm 10$	$z_*$	1090.055	$1089.93 \pm 0.31$	$r_{0.01}$	0.0001	$< 0.0652$
$A^{\mathrm{kSZ}}$	0.00	$< 5.21$	$r_*$	144.778	$144.73 \pm 0.30$	$\ln(10^{10} A_{\mathrm{t}})$	-6.05	$-0.34^{+1.4}_{-0.61}$
$A_{100}^{\mathrm{dustTT}}$	8.96	$8.9 \pm 1.9$	$100\theta_*$	1.041174	$1.04118 \pm 0.00040$	$r_{10}$	0.0001	$< 0.0333$
$A_{143}^{\mathrm{dustTT}}$	10.87	$10.7 \pm 1.8$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.9053	$13.901 \pm 0.030$	$10^9 A_{\mathrm{t}}$	0.000	$< 0.142$
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.18	$18.3 \pm 3.3$	$z_{\mathrm{drag}}$	1059.475	$1059.70 \pm 0.50$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	0.000	$< 0.127$
$A_{217}^{\mathrm{dustTT}}$	94.1	$93.2 \pm 7.4$	$r_{\mathrm{drag}}$	147.503	$147.42 \pm 0.34$	$f_{2000}^{143}$	30.69	$31.6 \pm 3.2$
$c_{100}$	0.99962	$0.99962 \pm 0.00061$	$k_{\mathrm{D}}$	0.140310	$0.14046 \pm 0.00047$	$f_{2000}^{143 \times 217}$	33.40	$33.9 \pm 2.2$
$c_{217}$	0.99827	$0.99828 \pm 0.00062$	$100\theta_{\mathrm{D}}$	0.161021	$0.16090 \pm 0.00029$	$f_{2000}^{217}$	107.88	$108.4 \pm 2.1$
$H_0$	67.54	$67.65 \pm 0.50$	$z_{\mathrm{eq}}$	3377.8	$3378 \pm 26$	$\chi_{\mathrm{lensing}}^2$	8.96	$9.49 \pm 0.78$
$\Omega_{\Lambda}$	0.6887	$0.6896 \pm 0.0066$	$k_{\mathrm{eq}}$	0.010309	$0.010310 \pm 0.000078$	$\chi_{\mathrm{small}}^2$	396.06	$397.5 \pm 1.9$
$\Omega_{\mathrm{m}}$	0.3113	$0.3104 \pm 0.0066$	$100\theta_{\mathrm{eq}}$	0.81726	$0.8175 \pm 0.0047$	$\chi_{\mathrm{lowl}}^2$	22.68	$23.5 \pm 2.2$
$\Omega_{\mathrm{m}} h^2$	0.14200	$0.1420 \pm 0.0011$	$100\theta_{\mathrm{s,eq}}$	0.45158	$0.4516 \pm 0.0024$	$\chi_{\mathrm{plik}}^2$	759.8	$773.1 \pm 5.5$
$\Omega_{\mathrm{m}} h^3$	0.095900	$0.09606 \pm 0.00050$	$H(0.15)$	72.812	$72.91 \pm 0.44$	$\chi_{6\mathrm{DF}}^2$	0.0312	$0.054 \pm 0.068$
$\sigma_8$	0.8085	$0.8088 \pm 0.0062$	$D_{\mathrm{M}}(0.15)$	641.92	$641.0 \pm 4.3$	$\chi_{\mathrm{MGS}}^2$	1.217	$1.32 \pm 0.47$
$S_8$	0.8236	$0.823 \pm 0.012$	$H(0.38)$	82.912	$83.00 \pm 0.34$	$\chi_{\mathrm{DR12BAO}}^2$	4.41	$4.7 \pm 1.5$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	0.4511	$0.4506 \pm 0.0066$	$D_{\mathrm{M}}(0.38)$	1531.0	$1528.9 \pm 8.8$	$\chi_{\mathrm{prior}}^2$	1.57	$7.3 \pm 3.7$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	0.6039	$0.6037 \pm 0.0063$	$H(0.51)$	89.622	$89.71 \pm 0.28$	$\chi_{\mathrm{CMB}}^2$	1187.5	$1203.5 \pm 5.7$
$\sigma_8/h^{0.5}$	0.9838	$0.9834 \pm 0.0090$	$D_{\mathrm{M}}(0.51)$	1983.3	$1981 \pm 10$	$\chi_{\mathrm{BAO}}^2$	5.66	$6.1 \pm 1.2$

Best-fit  $\chi_{\mathrm{eff}}^2 = 1194.69$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1216.99$ ;  $R - 1 = 0.01565$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.03 MGS: 1.22 DR12BAO: 4.41 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.96 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.06 comman-  
der\_dx12.v3.2.29: 22.68 plik\_rd12\_HM\_v22\_TT: 759.76



### 15.19 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02224 \pm 0.00023$	$\sigma_8/h^{0.5}$	$0.989 \pm 0.011$	$H(0.51)$	$89.51 \pm 0.36$
$\Omega_{\mathrm{c}}h^2$	$0.1200 \pm 0.0015$	$r_{\mathrm{drag}}h$	$99.0 \pm 1.2$	$D_{\mathrm{M}}(0.51)$	$1989 \pm 14$
$100\theta_{\mathrm{MC}}$	$1.04085 \pm 0.00044$	$\langle d^2 \rangle^{1/2}$	$2.436 \pm 0.028$	$H(0.61)$	$95.17 \pm 0.30$
$\tau$	$0.0550^{+0.0052}_{-0.0086}$	$z_{\mathrm{re}}$	$7.77^{+0.57}_{-0.83}$	$D_{\mathrm{M}}(0.61)$	$2314 \pm 15$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046^{+0.012}_{-0.016}$	$10^9 A_{\mathrm{s}}$	$2.104^{+0.025}_{-0.034}$	$H(2.33)$	$236.41 \pm 0.95$
$n_{\mathrm{s}}$	$0.9638 \pm 0.0050$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.884 \pm 0.012$	$D_{\mathrm{M}}(2.33)$	$5770 \pm 15$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0064 \pm 0.0080$	$D_{40}$	$1234 \pm 21$	$f\sigma_8(0.15)$	$0.4600 \pm 0.0082$
$r$	$< 0.0632$	$D_{220}$	$5716 \pm 41$	$\sigma_8(0.15)$	$0.7487 \pm 0.0052$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{810}$	$2539 \pm 13$	$f\sigma_8(0.38)$	$0.4773 \pm 0.0063$
$A_{217}^{\mathrm{CIB}}$	$49 \pm 7$	$D_{1420}$	$814.4 \pm 5.2$	$\sigma_8(0.38)$	$0.6632^{+0.0041}_{-0.0047}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{2000}$	$229.3 \pm 1.9$	$f\sigma_8(0.51)$	$0.4754 \pm 0.0054$
$A_{143}^{\mathrm{tSZ}}$	$4.9 \pm 2.0$	$n_{\mathrm{s},0.002}$	$0.984 \pm 0.025$	$\sigma_8(0.51)$	$0.6204^{+0.0038}_{-0.0045}$
$A_{100}^{\mathrm{PS}}$	$266 \pm 29$	$Y_{\mathrm{P}}$	$0.24534^{+0.00010}_{-0.000087}$	$f\sigma_8(0.61)$	$0.4700 \pm 0.0048$
$A_{143}^{\mathrm{PS}}$	$50 \pm 8$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24666^{+0.00010}_{-0.000088}$	$\sigma_8(0.61)$	$0.5902^{+0.0035}_{-0.0043}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43^{+9}_{-10}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.611 \pm 0.044$	$f\sigma_8(2.33)$	$0.2974^{+0.0018}_{-0.0023}$
$A_{217}^{\mathrm{PS}}$	$114 \pm 10$	$\mathrm{Age}/\mathrm{Gyr}$	$13.813 \pm 0.034$	$\sigma_8(2.33)$	$0.3064^{+0.0020}_{-0.0025}$
$A^{\mathrm{kSZ}}$	$< 5.30$	$z_*$	$1090.09 \pm 0.36$	$r_{0.002}$	$< 0.0599$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	$r_*$	$144.54 \pm 0.37$	$r_{0.01}$	$< 0.0610$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.8$	$100\theta_*$	$1.04105 \pm 0.00043$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.40^{+1.4}_{-0.63}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.884 \pm 0.035$	$r_{10}$	$< 0.0311$
$A_{217}^{\mathrm{dust}TT}$	$93.2 \pm 7.4$	$z_{\mathrm{drag}}$	$1059.62 \pm 0.51$	$10^9 A_{\mathrm{t}}$	$< 0.133$
$c_{100}$	$0.99961 \pm 0.00061$	$r_{\mathrm{drag}}$	$147.25 \pm 0.40$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.119$
$c_{217}$	$0.99828 \pm 0.00062$	$k_{\mathrm{D}}$	$0.14060 \pm 0.00050$	$f_{2000}^{143}$	$32.0 \pm 3.2$
$H_0$	$67.23 \pm 0.70$	$100\theta_{\mathrm{D}}$	$0.16094 \pm 0.00030$	$f_{2000}^{143 \times 217}$	$34.1 \pm 2.2$
$\Omega_{\Lambda}$	$0.6838 \pm 0.0095$	$z_{\mathrm{eq}}$	$3399 \pm 35$	$f_{2000}^{217}$	$108.6 \pm 2.0$
$\Omega_{\mathrm{m}}$	$0.3162 \pm 0.0095$	$k_{\mathrm{eq}}$	$0.01037 \pm 0.00011$	$\chi_{\mathrm{lensing}}^2$	$9.67 \pm 0.95$
$\Omega_{\mathrm{m}}h^2$	$0.1429 \pm 0.0015$	$100\theta_{\mathrm{eq}}$	$0.8136 \pm 0.0066$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.7$
$\Omega_{\mathrm{m}}h^3$	$0.09604 \pm 0.00049$	$100\theta_{\mathrm{s,eq}}$	$0.4496 \pm 0.0034$	$\chi_{\mathrm{lowl}}^2$	$23.8 \pm 2.3$
$\sigma_8$	$0.8107 \pm 0.0060$	$H(0.15)$	$72.56 \pm 0.60$	$\chi_{\mathrm{plik}}^2$	$772.7 \pm 5.5$
$S_8$	$0.832 \pm 0.016$	$D_{\mathrm{M}}(0.15)$	$644.5 \pm 6.0$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4559 \pm 0.0089$	$H(0.38)$	$82.75 \pm 0.45$	$\chi_{\mathrm{CMB}}^2$	$1203.3 \pm 5.8$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6079 \pm 0.0077$	$D_{\mathrm{M}}(0.38)$	$1536 \pm 12$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1210.63; R - 1 = 0.00844$$



## 15.20 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02230 \pm 0.00022$	$r_{\mathrm{drag}} h$	$99.75 \pm 0.84$	$H(0.61)$	$95.32 \pm 0.25$
$\Omega_{\mathrm{c}} h^2$	$0.1190 \pm 0.0011$	$\langle d^2 \rangle^{1/2}$	$2.424 \pm 0.024$	$D_{\mathrm{M}}(0.61)$	$2305 \pm 11$
$100\theta_{\mathrm{MC}}$	$1.04099 \pm 0.00041$	$z_{\mathrm{re}}$	$7.94^{+0.64}_{-0.78}$	$H(2.33)$	$235.86 \pm 0.71$
$\tau$	$0.0570^{+0.0060}_{-0.0082}$	$10^9 A_{\mathrm{s}}$	$2.109^{+0.027}_{-0.034}$	$D_{\mathrm{M}}(2.33)$	$5763 \pm 13$
$\ln(10^{10} A_{\mathrm{s}})$	$3.049^{+0.013}_{-0.016}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.882 \pm 0.011$	$f\sigma_8(0.15)$	$0.4553 \pm 0.0061$
$n_{\mathrm{s}}$	$0.9660 \pm 0.0042$	$D_{40}$	$1232 \pm 21$	$\sigma_8(0.15)$	$0.7478 \pm 0.0053$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0065 \pm 0.0082$	$D_{220}$	$5723 \pm 40$	$f\sigma_8(0.38)$	$0.4739 \pm 0.0051$
$r$	$< 0.0676$	$D_{810}$	$2540 \pm 13$	$\sigma_8(0.38)$	$0.6630^{+0.0043}_{-0.0049}$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0024$	$D_{1420}$	$815.4 \pm 5.0$	$f\sigma_8(0.51)$	$0.4727 \pm 0.0045$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{2000}$	$229.6 \pm 1.9$	$\sigma_8(0.51)$	$0.6205^{+0.0040}_{-0.0046}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.987 \pm 0.026$	$f\sigma_8(0.61)$	$0.4678 \pm 0.0041$
$A_{143}^{\mathrm{tSZ}}$	$5.0 \pm 2.0$	$Y_{\mathrm{P}}$	$0.245363^{+0.000093}_{-0.000083}$	$\sigma_8(0.61)$	$0.5905^{+0.0038}_{-0.0044}$
$A_{100}^{\mathrm{PS}}$	$265 \pm 28$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246690^{+0.000093}_{-0.000084}$	$f\sigma_8(2.33)$	$0.2978^{+0.0019}_{-0.0023}$
$A_{143}^{\mathrm{PS}}$	$50 \pm 8$	$10^5 \mathrm{D}/\mathrm{H}$	$2.600 \pm 0.041$	$\sigma_8(2.33)$	$0.3071^{+0.0020}_{-0.0025}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$\mathrm{Age}/\mathrm{Gyr}$	$13.798 \pm 0.029$	$r_{0.002}$	$< 0.0648$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$z_*$	$1089.93 \pm 0.31$	$r_{0.01}$	$< 0.0657$
$A^{\mathrm{kSZ}}$	$< 5.22$	$r_*$	$144.73 \pm 0.30$	$\ln(10^{10} A_{\mathrm{t}})$	$-0.33^{+1.4}_{-0.61}$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.9$	$100\theta_*$	$1.04118 \pm 0.00040$	$r_{10}$	$< 0.0335$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.901 \pm 0.030$	$10^9 A_{\mathrm{t}}$	$< 0.143$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$z_{\mathrm{drag}}$	$1059.70 \pm 0.50$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	$< 0.127$
$A_{217}^{\mathrm{dust}TT}$	$93.2 \pm 7.4$	$r_{\mathrm{drag}}$	$147.43 \pm 0.34$	$f_{2000}^{143}$	$31.7 \pm 3.2$
$c_{100}$	$0.99962 \pm 0.00062$	$k_{\mathrm{D}}$	$0.14046 \pm 0.00047$	$f_{2000}^{143 \times 217}$	$33.9 \pm 2.2$
$c_{217}$	$0.99828 \pm 0.00062$	$100\theta_{\mathrm{D}}$	$0.16090 \pm 0.00029$	$f_{2000}^{217}$	$108.4 \pm 2.1$
$H_0$	$67.66 \pm 0.50$	$z_{\mathrm{eq}}$	$3378 \pm 26$	$\chi_{\mathrm{lensing}}^2$	$9.46 \pm 0.74$
$\Omega_{\Lambda}$	$0.6898 \pm 0.0065$	$k_{\mathrm{eq}}$	$0.010309 \pm 0.000078$	$\chi_{\mathrm{small}}^2$	$397.4 \pm 1.9$
$\Omega_{\mathrm{m}}$	$0.3102 \pm 0.0065$	$100\theta_{\mathrm{eq}}$	$0.8176 \pm 0.0047$	$\chi_{\mathrm{lowl}}^2$	$23.5 \pm 2.1$
$\Omega_{\mathrm{m}} h^2$	$0.1420 \pm 0.0011$	$100\theta_{\mathrm{s,eq}}$	$0.4517 \pm 0.0024$	$\chi_{\mathrm{plik}}^2$	$773.0 \pm 5.5$
$\Omega_{\mathrm{m}} h^3$	$0.09606 \pm 0.00050$	$H(0.15)$	$72.93 \pm 0.44$	$\chi_{6\mathrm{DF}}^2$	$0.052 \pm 0.066$
$\sigma_8$	$0.8091 \pm 0.0059$	$D_{\mathrm{M}}(0.15)$	$640.9 \pm 4.3$	$\chi_{\mathrm{MGS}}^2$	$1.33 \pm 0.47$
$S_8$	$0.823 \pm 0.012$	$H(0.38)$	$83.01 \pm 0.33$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.4$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4507 \pm 0.0066$	$D_{\mathrm{M}}(0.38)$	$1528.7 \pm 8.7$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.6039 \pm 0.0062$	$H(0.51)$	$89.71 \pm 0.28$	$\chi_{\mathrm{CMB}}^2$	$1203.4 \pm 5.7$
$\sigma_8/h^{0.5}$	$0.9837 \pm 0.0089$	$D_{\mathrm{M}}(0.51)$	$1981 \pm 10$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.1$

$$\bar{\chi}_{\mathrm{eff}}^2 = 1216.87; R - 1 = 0.01475$$



## 15.21 base\_nrun\_r\_plikHM\_TTTEE\_lowl\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022398	$0.02243 \pm 0.00015$ (+0.9 $\sigma$ )	$\sigma_8$	0.8121	$0.8109 \pm 0.0060$ (+0.1 $\sigma$ )	$H(0.38)$	82.860	$82.93 \pm 0.34$ (+0.5 $\sigma$ )
$\Omega_c h^2$	0.12015	$0.1199 \pm 0.0012$ (−0.1 $\sigma$ )	$S_8$	0.8333	$0.830 \pm 0.013$ (−0.2 $\sigma$ )	$D_M(0.38)$	1533.9	$1531.9 \pm 9.3$ (−0.4 $\sigma$ )
$100\theta_{MC}$	1.040936	$1.04093 \pm 0.00030$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4564	$0.4547 \pm 0.0069$ (−0.2 $\sigma$ )	$H(0.51)$	89.628	$89.69 \pm 0.27$ (+0.5 $\sigma$ )
$\tau$	0.0546	$0.0561 \pm 0.0077$ (+0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6088	$0.6072 \pm 0.0064$ (−0.1 $\sigma$ )	$D_M(0.51)$	1986.3	$1984 \pm 11$ (−0.4 $\sigma$ )
$\ln(10^{10} A_s)$	3.0464	$3.049 \pm 0.015$ (+0.3 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9897	$0.9874 \pm 0.0090$ (−0.1 $\sigma$ )	$H(0.61)$	95.286	$95.33 \pm 0.22$ (+0.6 $\sigma$ )
$n_s$	0.96542	$0.9647 \pm 0.0044$ (+0.2 $\sigma$ )	$r_{drag} h$	98.99	$99.18 \pm 0.93$ (+0.2 $\sigma$ )	$D_M(0.61)$	2310.7	$2308 \pm 12$ (−0.4 $\sigma$ )
$dn_s/d \ln k$	−0.0025	$−0.0085 \pm 0.0073$ (−0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4423	$2.431 \pm 0.024$ (−0.2 $\sigma$ )	$H(2.33)$	236.69	$236.55 \pm 0.72$ (+0.1 $\sigma$ )
$r$	0.0007	$< 0.0778$ (+0.2 $\sigma$ )	$z_{re}$	7.71	$7.83 \pm 0.76$ (+0.2 $\sigma$ )	$D_M(2.33)$	5762.6	$5761 \pm 10$ (−0.7 $\sigma$ )
$y_{cal}$	1.00064	$1.0007 \pm 0.0025$ (+0.1 $\sigma$ )	$10^9 A_s$	2.1039	$2.110^{+0.030}_{-0.033}$ (+0.3 $\sigma$ )	$f\sigma_8(0.15)$	0.4606	$0.4590 \pm 0.0064$ (−0.1 $\sigma$ )
$A_{217}^{CIB}$	47.4	$48 \pm 7$ (−0.1 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8862	$1.886 \pm 0.011$ (+0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7500	$0.7490 \pm 0.0054$ (+0.2 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.47	—	$D_{40}$	1224.7	$1233^{+19}_{-21}$ (−0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.4780	$0.4767 \pm 0.0052$ (−0.1 $\sigma$ )
$A_{143}^{tSZ}$	7.12	$5.2 \pm 2.0$ (+0.1 $\sigma$ )	$D_{220}$	5732.5	$5729 \pm 39$ (+0.3 $\sigma$ )	$\sigma_8(0.38)$	0.66430	$0.6636 \pm 0.0048$ (+0.2 $\sigma$ )
$A_{100}^{PS}$	251.3	$264 \pm 28$ (−0.1 $\sigma$ )	$D_{810}$	2542.8	$2542 \pm 13$ (+0.2 $\sigma$ )	$f\sigma_8(0.51)$	0.47611	$0.4749 \pm 0.0046$ (−0.1 $\sigma$ )
$A_{143}^{PS}$	49.3	$48 \pm 8$ (−0.2 $\sigma$ )	$D_{1420}$	818.14	$816.2 \pm 5.0$ (+0.4 $\sigma$ )	$\sigma_8(0.51)$	0.62148	$0.6209 \pm 0.0045$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{PS}$	49.2	$43 \pm 9$ (−0.1 $\sigma$ )	$D_{2000}$	231.06	$230.0 \pm 1.8$ (+0.4 $\sigma$ )	$f\sigma_8(0.61)$	0.47077	$0.4697 \pm 0.0042$ (−0.0 $\sigma$ )
$A_{217}^{PS}$	120.2	$115 \pm 10$ (+0.0 $\sigma$ )	$n_{s,0.002}$	0.9735	$0.992 \pm 0.023$ (+0.3 $\sigma$ )	$\sigma_8(0.61)$	0.59123	$0.5907 \pm 0.0043$ (+0.3 $\sigma$ )
$A^{kSZ}$	0.00	$< 5.03$ (−0.1 $\sigma$ )	$Y_P$	0.245407	$0.245416 \pm 0.000059$ (+0.8 $\sigma$ )	$f\sigma_8(2.33)$	0.29793	$0.2977 \pm 0.0022$ (+0.3 $\sigma$ )
$A_{100}^{dustTT}$	8.87	$9.0 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P^{BBN}$	0.246733	$0.246743 \pm 0.000059$ (+0.8 $\sigma$ )	$\sigma_8(2.33)$	0.30696	$0.3068 \pm 0.0024$ (+0.3 $\sigma$ )
$A_{143}^{dustTT}$	11.05	$11.0 \pm 1.8$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5802	$2.575 \pm 0.028$ (−0.9 $\sigma$ )	$r_{0.002}$	0.0006	$< 0.0752$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.92	$18.7 \pm 3.3$ (+0.1 $\sigma$ )	Age/Gyr	13.7949	$13.791 \pm 0.023$ (−0.7 $\sigma$ )	$r_{0.01}$	0.0006	$< 0.0756$ (+0.2 $\sigma$ )
$A_{217}^{dustTT}$	95.0	$93.5 \pm 7.4$ (+0.0 $\sigma$ )	$z_*$	1089.898	$1089.84 \pm 0.26$ (−0.7 $\sigma$ )	$\ln(10^{10} A_t)$	−4.27	$−0.17^{+1.3}_{-0.52}$ (+0.2 $\sigma$ )
$A_{100}^{dustTE}$	0.1141	$0.115 \pm 0.038$	$r_*$	144.371	$144.41 \pm 0.27$ (−0.3 $\sigma$ )	$r_{10}$	0.0003	$< 0.0391$ (+0.2 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1348	$0.136 \pm 0.029$	$100\theta_*$	1.041112	$1.04111 \pm 0.00030$ (+0.2 $\sigma$ )	$10^9 A_t$	0.001	$< 0.164$ (+0.2 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.481	$0.479 \pm 0.085$	$D_M(z_*)/\text{Gpc}$	13.8670	$13.871 \pm 0.025$ (−0.3 $\sigma$ )	$10^9 A_t e^{-2\tau}$	0.001	$< 0.147$ (+0.2 $\sigma$ )
$A_{143}^{dustTE}$	0.224	$0.226 \pm 0.054$	$z_{drag}$	1060.009	$1060.06 \pm 0.32$ (+0.9 $\sigma$ )	$f_{2000}^{143}$	29.32	$31.1 \pm 3.1$ (−0.3 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.666	$0.664 \pm 0.080$	$r_{drag}$	147.021	$147.05 \pm 0.27$ (−0.4 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.38	$33.4 \pm 2.2$ (−0.3 $\sigma$ )
$A_{217}^{dustTE}$	2.085	$2.08 \pm 0.27$	$k_D$	0.140963	$0.14095 \pm 0.00032$ (+0.7 $\sigma$ )	$f_{2000}^{217}$	106.91	$108.0 \pm 2.0$ (−0.3 $\sigma$ )
$c_{100}$	0.99973	$0.99968 \pm 0.00061$ (+0.1 $\sigma$ )	$100\theta_D$	0.160717	$0.16068 \pm 0.00019$ (−0.9 $\sigma$ )	$\chi_{lensing}^2$	8.96	$9.56 \pm 0.76$ (−0.1 $\sigma$ )
$c_{217}$	0.99820	$0.99822 \pm 0.00062$ (−0.1 $\sigma$ )	$z_{eq}$	3406.4	$3401 \pm 27$ (+0.0 $\sigma$ )	$\chi_{small}^2$	396.06	$397.4 \pm 1.8$ (+0.1 $\sigma$ )
$H_0$	67.33	$67.44 \pm 0.54$ (+0.4 $\sigma$ )	$k_{eq}$	0.010397	$0.010381 \pm 0.000082$ (+0.0 $\sigma$ )	$\chi_{lowl}^2$	22.66	$23.4 \pm 1.9$ (−0.2 $\sigma$ )
$\Omega_\Lambda$	0.6841	$0.6856 \pm 0.0074$ (+0.3 $\sigma$ )	$100\theta_{eq}$	0.8126	$0.8137 \pm 0.0051$ (+0.1 $\sigma$ )	$\chi_{plik}^2$	2345.1	$2360.6 \pm 5.9$ (+287.9 $\sigma$ )
$\Omega_m$	0.3159	$0.3144 \pm 0.0074$ (−0.3 $\sigma$ )	$100\theta_{s,eq}$	0.44901	$0.4495 \pm 0.0026$ (+0.0 $\sigma$ )	$\chi_{prior}^2$	1.66	$11.6 \pm 4.6$ (+1.2 $\sigma$ )
$\Omega_m h^2$	0.14319	$0.1430 \pm 0.0011$ (+0.0 $\sigma$ )	$H(0.15)$	72.661	$72.76 \pm 0.46$ (+0.4 $\sigma$ )	$\chi_{CMB}^2$	2772.8	$2791.0 \pm 6.2$ (+270.6 $\sigma$ )
$\Omega_m h^3$	0.096409	$0.09642 \pm 0.00031$ (+0.8 $\sigma$ )	$D_M(0.15)$	643.59	$642.6 \pm 4.6$ (−0.4 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2774.45$ ;  $\Delta\chi_{eff}^2 = 1585.92$ ;  $\bar{\chi}_{eff}^2 = 2802.59$ ;  $\Delta\bar{\chi}_{eff}^2 = 1591.76$ ;  $R - 1 = 0.00905$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp.p\_teb\_consext8: 8.96 ( $\Delta$  0.08) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.06 ( $\Delta$  0.16) commander\_dx12\_v3.2\_29: 22.66 ( $\Delta$  -0.42) plik\_rd12\_HM\_v22b\_TTTEE: 2345.10



## 15.22 base\_nrun\_r\_plikHM\_TTTEE\_lowl\_lowE\_lensing\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022442	$0.02248 \pm 0.00014$ (+0.8 $\sigma$ )	$S_8$	0.8260	$0.824 \pm 0.011$ (+0.1 $\sigma$ )	$H(0.51)$	89.767	$89.82 \pm 0.22$ (+0.4 $\sigma$ )
$\Omega_c h^2$	0.11941	$0.11925 \pm 0.00094$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4524	$0.4513 \pm 0.0058$ (+0.1 $\sigma$ )	$D_M(0.51)$	1980.2	$1978.2 \pm 8.6$ (−0.2 $\sigma$ )
$100\theta_{MC}$	1.040977	$1.04101 \pm 0.00029$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6056	$0.6046 \pm 0.0057$ (+0.2 $\sigma$ )	$H(0.61)$	95.390	$95.44 \pm 0.19$ (+0.5 $\sigma$ )
$\tau$	0.0569	$0.0579^{+0.0067}_{-0.0076}$ (+0.2 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9857	$0.9843 \pm 0.0083$ (+0.1 $\sigma$ )	$D_M(0.61)$	2304.2	$2302.1 \pm 9.3$ (−0.3 $\sigma$ )
$\ln(10^{10} A_s)$	3.0493	$3.052^{+0.014}_{-0.016}$ (+0.3 $\sigma$ )	$r_{drag} h$	99.54	$99.69 \pm 0.73$ (−0.0 $\sigma$ )	$H(2.33)$	236.25	$236.18 \pm 0.58$ (+0.4 $\sigma$ )
$n_s$	0.96642	$0.9664 \pm 0.0040$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4332	$2.424 \pm 0.023$ (−0.0 $\sigma$ )	$D_M(2.33)$	5758.5	$5756.2 \pm 9.1$ (−0.6 $\sigma$ )
$dn_s/d \ln k$	−0.0037	$−0.0084 \pm 0.0074$ (−0.2 $\sigma$ )	$z_{re}$	7.92	$7.99 \pm 0.73$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4570	$0.4560 \pm 0.0054$ (+0.1 $\sigma$ )
$r$	0.0004	$< 0.0813$ (+0.2 $\sigma$ )	$10^9 A_s$	2.1101	$2.115^{+0.029}_{-0.034}$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7491	$0.7487 \pm 0.0054$ (+0.2 $\sigma$ )
$y_{cal}$	1.00069	$1.0008 \pm 0.0025$ (+0.0 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8831	$1.884 \pm 0.011$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.47538	$0.4746 \pm 0.0046$ (+0.2 $\sigma$ )
$A_{217}^{CIB}$	49.0	$48 \pm 7$ (−0.1 $\sigma$ )	$D_{40}$	1219.6	$1231^{+19}_{-22}$ (−0.0 $\sigma$ )	$\sigma_8(0.38)$	0.66405	$0.6638 \pm 0.0048$ (+0.2 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.19	—	$D_{220}$	5736.1	$5733 \pm 39$ (+0.2 $\sigma$ )	$f\sigma_8(0.51)$	0.47399	$0.4733 \pm 0.0042$ (+0.2 $\sigma$ )
$A_{143}^{tSZ}$	7.30	$5.2 \pm 2.0$ (+0.1 $\sigma$ )	$D_{810}$	2541.5	$2542 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.51)$	0.62144	$0.6212 \pm 0.0045$ (+0.2 $\sigma$ )
$A_{100}^{PS}$	253.3	$263 \pm 28$ (−0.1 $\sigma$ )	$D_{1420}$	817.64	$816.8 \pm 4.9$ (+0.3 $\sigma$ )	$f\sigma_8(0.61)$	0.46901	$0.4684 \pm 0.0039$ (+0.2 $\sigma$ )
$A_{143}^{PS}$	45.1	$48 \pm 8$ (−0.2 $\sigma$ )	$D_{2000}$	230.85	$230.3 \pm 1.8$ (+0.4 $\sigma$ )	$\sigma_8(0.61)$	0.59132	$0.5912 \pm 0.0043$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{PS}$	41.9	$42 \pm 9$ (−0.1 $\sigma$ )	$n_{s,0.002}$	0.9785	$0.993 \pm 0.023$ (+0.3 $\sigma$ )	$f\sigma_8(2.33)$	0.29815	$0.2981 \pm 0.0022$ (+0.2 $\sigma$ )
$A_{217}^{PS}$	117.4	$114 \pm 10$ (−0.0 $\sigma$ )	$Y_P$	0.245423	$0.245434 \pm 0.000054$ (+0.8 $\sigma$ )	$\sigma_8(2.33)$	0.30738	$0.3074^{+0.0022}_{-0.0024}$ (+0.2 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.92$ (−0.1 $\sigma$ )	$Y_P^{BBN}$	0.246750	$0.246761 \pm 0.000054$ (+0.8 $\sigma$ )	$r_{0.002}$	0.0004	$< 0.0793$ (+0.2 $\sigma$ )
$A_{100}^{dustTT}$	8.93	$9.0 \pm 1.8$ (+0.0 $\sigma$ )	$10^5 D/H$	2.5722	$2.567 \pm 0.026$ (−0.8 $\sigma$ )	$r_{0.01}$	0.0004	$< 0.0793$ (+0.2 $\sigma$ )
$A_{143}^{dustTT}$	11.01	$11.0 \pm 1.8$ (+0.1 $\sigma$ )	Age/Gyr	13.7860	$13.781 \pm 0.021$ (−0.6 $\sigma$ )	$\ln(10^{10} A_t)$	−4.68	$−0.13^{+1.3}_{-0.51}$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.41	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$z_*$	1089.777	$1089.72 \pm 0.22$ (−0.7 $\sigma$ )	$r_{10}$	0.0002	$< 0.0411$ (+0.2 $\sigma$ )
$A_{217}^{dustTT}$	94.4	$93.4 \pm 7.4$ (+0.0 $\sigma$ )	$r_*$	144.529	$144.54 \pm 0.22$ (−0.6 $\sigma$ )	$10^9 A_t$	0.001	$< 0.172$ (+0.2 $\sigma$ )
$A_{100}^{dustTE}$	0.1144	$0.115 \pm 0.039$	$100\theta_*$	1.041153	$1.04118 \pm 0.00028$ (+0.0 $\sigma$ )	$10^9 A_t e^{-2\tau}$	0.001	$< 0.153$ (+0.2 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1358	$0.136 \pm 0.030$	$D_M(z_*)/\text{Gpc}$	13.8817	$13.883 \pm 0.022$ (−0.6 $\sigma$ )	$f_{2000}^{143}$	29.62	$30.8 \pm 3.1$ (−0.3 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.481	$0.478 \pm 0.084$	$z_{drag}$	1060.047	$1060.12 \pm 0.31$ (+0.8 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.52	$33.1 \pm 2.1$ (−0.3 $\sigma$ )
$A_{143}^{dustTE}$	0.225	$0.225 \pm 0.054$	$r_{drag}$	147.169	$147.17 \pm 0.24$ (−0.7 $\sigma$ )	$f_{2000}^{217}$	107.22	$107.9 \pm 2.0$ (−0.3 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.663	$0.664 \pm 0.079$	$k_D$	0.140841	$0.14086 \pm 0.00030$ (+0.8 $\sigma$ )	$\chi_{lensing}^2$	8.840	$9.42 \pm 0.64$ (−0.1 $\sigma$ )
$A_{217}^{dustTE}$	2.072	$2.07 \pm 0.27$	$100\theta_D$	0.160687	$0.16065 \pm 0.00018$ (−0.9 $\sigma$ )	$\chi_{small}^2$	396.45	$397.7 \pm 2.0$ (+0.1 $\sigma$ )
$c_{100}$	0.99971	$0.99968 \pm 0.00062$ (+0.1 $\sigma$ )	$z_{eq}$	3389.8	$3387 \pm 21$ (+0.3 $\sigma$ )	$\chi_{lowl}^2$	22.19	$23.2 \pm 1.9$ (−0.1 $\sigma$ )
$c_{217}$	0.99820	$0.99822 \pm 0.00062$ (−0.1 $\sigma$ )	$k_{eq}$	0.010346	$0.010337 \pm 0.000065$ (+0.3 $\sigma$ )	$\chi_{plik}^2$	2345.4	$2360.6 \pm 5.9$ (+291.0 $\sigma$ )
$H_0$	67.640	$67.73 \pm 0.43$ (+0.2 $\sigma$ )	$100\theta_{eq}$	0.81577	$0.8164 \pm 0.0040$ (−0.2 $\sigma$ )	$\chi_{6DF}^2$	0.0373	$0.049 \pm 0.058$ (−0.1 $\sigma$ )
$\Omega_\Lambda$	0.6885	$0.6896 \pm 0.0057$ (+0.0 $\sigma$ )	$100\theta_{s,eq}$	0.45062	$0.4509 \pm 0.0021$ (−0.3 $\sigma$ )	$\chi_{MGS}^2$	1.156	$1.29 \pm 0.40$ (−0.1 $\sigma$ )
$\Omega_m$	0.3115	$0.3104 \pm 0.0057$ (−0.0 $\sigma$ )	$H(0.15)$	72.925	$73.01 \pm 0.37$ (+0.2 $\sigma$ )	$\chi_{DR12BAO}^2$	4.62	$4.7 \pm 1.3$ (−0.0 $\sigma$ )
$\Omega_m h^2$	0.14250	$0.14237 \pm 0.00090$ (+0.3 $\sigma$ )	$D_M(0.15)$	640.94	$640.1 \pm 3.6$ (−0.2 $\sigma$ )	$\chi_{prior}^2$	1.89	$11.7 \pm 4.6$ (+1.2 $\sigma$ )
$\Omega_m h^3$	0.096383	$0.09643 \pm 0.00031$ (+0.8 $\sigma$ )	$H(0.38)$	83.044	$83.11 \pm 0.27$ (+0.3 $\sigma$ )	$\chi_{CMB}^2$	2772.8	$2790.9 \pm 6.2$ (+277.1 $\sigma$ )
$\sigma_8$	0.8107	$0.8101 \pm 0.0059$ (+0.2 $\sigma$ )	$D_M(0.38)$	1528.6	$1527.0 \pm 7.3$ (−0.2 $\sigma$ )	$\chi_{BAO}^2$	5.81	$6.1 \pm 1.0$ (−0.0 $\sigma$ )

Best-fit  $\chi_{eff}^2 = 2780.54$ ;  $\Delta\chi_{eff}^2 = 1585.85$ ;  $\bar{\chi}_{eff}^2 = 2808.64$ ;  $\Delta\bar{\chi}_{eff}^2 = 1591.65$ ;  $R - 1 = 0.01143$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.04 ( $\Delta$  0.01) MGS: 1.16 ( $\Delta$  -0.06) DR12BAO: 4.62 ( $\Delta$  0.21) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.84 ( $\Delta$  -0.12) simall\_100x143\_offlike5\_EE\_Aplanck 396.45 ( $\Delta$  0.39) commander\_dx12\_v3\_2.29: 22.19 ( $\Delta$  -0.49) plik\_rd12\_HM\_v22b.TTTEE: 2345.36



### 15.23 base\_nrun\_r\_plikHM\_TTTEE\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02243 \pm 0.00015 \quad (+0.8\sigma)$	$\sigma_8$	$0.8113^{+0.0054}_{-0.0060} \quad (+0.1\sigma)$	$H(0.38)$	$82.95 \pm 0.34 \quad (+0.4\sigma)$
$\Omega_c h^2$	$0.1199 \pm 0.0012 \quad (-0.1\sigma)$	$S_8$	$0.830 \pm 0.013 \quad (-0.1\sigma)$	$D_M(0.38)$	$1531.6 \pm 9.2 \quad (-0.4\sigma)$
$100\theta_{MC}$	$1.04094 \pm 0.00030 \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4547 \pm 0.0070 \quad (-0.1\sigma)$	$H(0.51)$	$89.70 \pm 0.27 \quad (+0.5\sigma)$
$\tau$	$0.0568^{+0.0058}_{-0.0080} \quad (+0.3\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6073 \pm 0.0063 \quad (-0.1\sigma)$	$D_M(0.51)$	$1984 \pm 11 \quad (-0.4\sigma)$
$\ln(10^{10} A_s)$	$3.051^{+0.012}_{-0.016} \quad (+0.3\sigma)$	$\sigma_8/h^{0.5}$	$0.9877 \pm 0.0089 \quad (-0.1\sigma)$	$H(0.61)$	$95.34 \pm 0.22 \quad (+0.6\sigma)$
$n_s$	$0.9649 \pm 0.0044 \quad (+0.2\sigma)$	$r_{\text{drag}} h$	$99.21 \pm 0.92 \quad (+0.2\sigma)$	$D_M(0.61)$	$2308 \pm 12 \quad (-0.4\sigma)$
$dn_s/d \ln k$	$-0.0086 \pm 0.0073 \quad (-0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.431 \pm 0.024 \quad (-0.2\sigma)$	$H(2.33)$	$236.53 \pm 0.71 \quad (+0.1\sigma)$
$r$	$< 0.0784 \quad (+0.2\sigma)$	$z_{\text{re}}$	$7.90^{+0.61}_{-0.76} \quad (+0.2\sigma)$	$D_M(2.33)$	$5760 \pm 10 \quad (-0.7\sigma)$
$y_{\text{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$10^9 A_s$	$2.113^{+0.025}_{-0.034} \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4590 \pm 0.0065 \quad (-0.1\sigma)$
$A_{217}^{\text{CIB}}$	$48 \pm 7 \quad (-0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.886 \pm 0.011 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7494^{+0.0047}_{-0.0055} \quad (+0.1\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{40}$	$1233^{+19}_{-21} \quad (-0.1\sigma)$	$f\sigma_8(0.38)$	$0.4768 \pm 0.0052 \quad (-0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$5.2 \pm 2.0 \quad (+0.1\sigma)$	$D_{220}$	$5729 \pm 39 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6640^{+0.0040}_{-0.0048} \quad (+0.2\sigma)$
$A_{100}^{\text{PS}}$	$264 \pm 28 \quad (-0.1\sigma)$	$D_{810}$	$2542 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4751 \pm 0.0045 \quad (-0.1\sigma)$
$A_{143}^{\text{PS}}$	$48 \pm 8 \quad (-0.2\sigma)$	$D_{1420}$	$816.2 \pm 5.0 \quad (+0.3\sigma)$	$\sigma_8(0.51)$	$0.6213^{+0.0038}_{-0.0046} \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9 \quad (-0.1\sigma)$	$D_{2000}$	$230.0 \pm 1.8 \quad (+0.4\sigma)$	$f\sigma_8(0.61)$	$0.4699 \pm 0.0041 \quad (-0.0\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$n_{s,0.002}$	$0.992 \pm 0.023 \quad (+0.3\sigma)$	$\sigma_8(0.61)$	$0.5911^{+0.0036}_{-0.0044} \quad (+0.2\sigma)$
$A^{\text{kSZ}}$	$< 5.03 \quad (-0.1\sigma)$	$Y_P$	$0.245418 \pm 0.000059 \quad (+0.8\sigma)$	$f\sigma_8(2.33)$	$0.2979^{+0.0018}_{-0.0023} \quad (+0.3\sigma)$
$A_{100}^{\text{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_P^{\text{BBN}}$	$0.246744 \pm 0.000059 \quad (+0.8\sigma)$	$\sigma_8(2.33)$	$0.3070^{+0.0019}_{-0.0025} \quad (+0.3\sigma)$
$A_{143}^{\text{dust}TT}$	$11.0 \pm 1.8 \quad (+0.1\sigma)$	$10^5 D/H$	$2.574 \pm 0.028 \quad (-0.8\sigma)$	$r_{0.002}$	$< 0.0758 \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{dust}TT}$	$18.7 \pm 3.3 \quad (+0.1\sigma)$	$\text{Age}/\text{Gyr}$	$13.790 \pm 0.023 \quad (-0.7\sigma)$	$r_{0.01}$	$< 0.0763 \quad (+0.2\sigma)$
$A_{217}^{\text{dust}TT}$	$93.5 \pm 7.4 \quad (+0.0\sigma)$	$z_*$	$1089.83 \pm 0.26 \quad (-0.7\sigma)$	$\ln(10^{10} A_t)$	$-0.16^{+1.3}_{-0.52} \quad (+0.2\sigma)$
$A_{100}^{\text{dust}TE}$	$0.115 \pm 0.038$	$r_*$	$144.42 \pm 0.27 \quad (-0.3\sigma)$	$r_{10}$	$< 0.0395 \quad (+0.2\sigma)$
$A_{100 \times 143}^{\text{dust}TE}$	$0.136 \pm 0.029$	$100\theta_*$	$1.04111 \pm 0.00030 \quad (+0.1\sigma)$	$10^9 A_t$	$< 0.166 \quad (+0.2\sigma)$
$A_{100 \times 217}^{\text{dust}TE}$	$0.479 \pm 0.085$	$D_M(z_*)/\text{Gpc}$	$13.872 \pm 0.025 \quad (-0.3\sigma)$	$10^9 A_t e^{-2\tau}$	$< 0.148 \quad (+0.2\sigma)$
$A_{143}^{\text{dust}TE}$	$0.226 \pm 0.054$	$z_{\text{drag}}$	$1060.07 \pm 0.32 \quad (+0.9\sigma)$	$f_{2000}^{143}$	$31.1 \pm 3.1 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\text{dust}TE}$	$0.664 \pm 0.080$	$r_{\text{drag}}$	$147.06 \pm 0.27 \quad (-0.5\sigma)$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.2 \quad (-0.3\sigma)$
$A_{217}^{\text{dust}TE}$	$2.08 \pm 0.27$	$k_D$	$0.14095 \pm 0.00031 \quad (+0.7\sigma)$	$f_{2000}^{217}$	$108.0 \pm 2.0 \quad (-0.3\sigma)$
$c_{100}$	$0.99968 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_D$	$0.16068 \pm 0.00019 \quad (-0.9\sigma)$	$\chi_{\text{lensing}}^2$	$9.55 \pm 0.76 \quad (-0.1\sigma)$
$c_{217}$	$0.99822 \pm 0.00062 \quad (-0.1\sigma)$	$z_{\text{eq}}$	$3400 \pm 27 \quad (+0.0\sigma)$	$\chi_{\text{small}}^2$	$397.4 \pm 1.9 \quad (+0.2\sigma)$
$H_0$	$67.46 \pm 0.53 \quad (+0.3\sigma)$	$k_{\text{eq}}$	$0.010378 \pm 0.000081 \quad (+0.0\sigma)$	$\chi_{\text{lowl}}^2$	$23.3 \pm 1.9 \quad (-0.2\sigma)$
$\Omega_\Lambda$	$0.6859 \pm 0.0073 \quad (+0.2\sigma)$	$100\theta_{\text{eq}}$	$0.8139 \pm 0.0050 \quad (+0.0\sigma)$	$\chi_{\text{plik}}^2$	$2360.5 \pm 5.9 \quad (+288.2\sigma)$
$\Omega_m$	$0.3141 \pm 0.0073 \quad (-0.2\sigma)$	$100\theta_{s,\text{eq}}$	$0.4496 \pm 0.0026 \quad (+0.0\sigma)$	$\chi_{\text{prior}}^2$	$11.6 \pm 4.6 \quad (+1.2\sigma)$
$\Omega_m h^2$	$0.1429 \pm 0.0011 \quad (+0.0\sigma)$	$H(0.15)$	$72.78 \pm 0.46 \quad (+0.4\sigma)$	$\chi_{\text{CMB}}^2$	$2790.8 \pm 6.2 \quad (+273.1\sigma)$
$\Omega_m h^3$	$0.09642 \pm 0.00031 \quad (+0.8\sigma)$	$D_M(0.15)$	$642.5 \pm 4.6 \quad (-0.3\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2802.46; \Delta \bar{\chi}_{\text{eff}}^2 = 1591.82; R - 1 = 0.01057$$



## 15.24 base\_nrun\_r\_plikHM\_TTTEE\_lowl\_lowE\_lensing\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02248 \pm 0.00014 \quad (+0.8\sigma)$	$S_8$	$0.824 \pm 0.011 \quad (+0.1\sigma)$	$H(0.51)$	$89.83 \pm 0.22 \quad (+0.4\sigma)$
$\Omega_c h^2$	$0.11924 \pm 0.00094 \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4513 \pm 0.0058 \quad (+0.1\sigma)$	$D_M(0.51)$	$1978.0 \pm 8.6 \quad (-0.2\sigma)$
$100\theta_{MC}$	$1.04101 \pm 0.00029 \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6048 \pm 0.0056 \quad (+0.1\sigma)$	$H(0.61)$	$95.44 \pm 0.19 \quad (+0.5\sigma)$
$\tau$	$0.0583^{+0.0060}_{-0.0077} \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.9845 \pm 0.0082 \quad (+0.1\sigma)$	$D_M(0.61)$	$2301.9 \pm 9.3 \quad (-0.3\sigma)$
$\ln(10^{10} A_s)$	$3.052^{+0.013}_{-0.016} \quad (+0.3\sigma)$	$r_{\text{drag}} h$	$99.70 \pm 0.72 \quad (-0.1\sigma)$	$H(2.33)$	$236.17 \pm 0.57 \quad (+0.4\sigma)$
$n_s$	$0.9664 \pm 0.0040 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.424 \pm 0.023 \quad (-0.0\sigma)$	$D_M(2.33)$	$5756.0 \pm 9.0 \quad (-0.6\sigma)$
$dn_s/d \ln k$	$-0.0084 \pm 0.0074 \quad (-0.2\sigma)$	$z_{\text{re}}$	$8.03^{+0.63}_{-0.74} \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4560 \pm 0.0054 \quad (+0.1\sigma)$
$r$	$< 0.0819 \quad (+0.2\sigma)$	$10^9 A_s$	$2.117^{+0.027}_{-0.034} \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7489^{+0.0048}_{-0.0056} \quad (+0.2\sigma)$
$y_{\text{cal}}$	$1.0008 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_s e^{-2\tau}$	$1.884 \pm 0.011 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4746 \pm 0.0046 \quad (+0.1\sigma)$
$A_{217}^{\text{CIB}}$	$48 \pm 7 \quad (-0.1\sigma)$	$D_{40}$	$1231^{+19}_{-22} \quad (-0.0\sigma)$	$\sigma_8(0.38)$	$0.6640^{+0.0042}_{-0.0049} \quad (+0.2\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{220}$	$5733 \pm 39 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4734 \pm 0.0041 \quad (+0.2\sigma)$
$A_{143}^{\text{tSZ}}$	$5.2 \pm 2.0 \quad (+0.1\sigma)$	$D_{810}$	$2542 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6214^{+0.0039}_{-0.0047} \quad (+0.2\sigma)$
$A_{100}^{\text{PS}}$	$263 \pm 28 \quad (-0.1\sigma)$	$D_{1420}$	$816.8 \pm 4.9 \quad (+0.3\sigma)$	$f\sigma_8(0.61)$	$0.4685 \pm 0.0038 \quad (+0.2\sigma)$
$A_{143}^{\text{PS}}$	$48 \pm 8 \quad (-0.2\sigma)$	$D_{2000}$	$230.3 \pm 1.8 \quad (+0.4\sigma)$	$\sigma_8(0.61)$	$0.5913^{+0.0037}_{-0.0045} \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$n_{s,0.002}$	$0.994 \pm 0.023 \quad (+0.3\sigma)$	$f\sigma_8(2.33)$	$0.2982^{+0.0019}_{-0.0023} \quad (+0.2\sigma)$
$A_{217}^{\text{PS}}$	$114 \pm 10 \quad (-0.0\sigma)$	$Y_{\text{P}}$	$0.245435 \pm 0.000054 \quad (+0.8\sigma)$	$\sigma_8(2.33)$	$0.3075^{+0.0020}_{-0.0024} \quad (+0.2\sigma)$
$A^{\text{kSZ}}$	$< 4.92 \quad (-0.1\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246761 \pm 0.000054 \quad (+0.8\sigma)$	$r_{0.002}$	$< 0.0797 \quad (+0.2\sigma)$
$A_{100}^{\text{dustTT}}$	$9.0 \pm 1.8 \quad (+0.0\sigma)$	$10^5 \text{D/H}$	$2.566 \pm 0.026 \quad (-0.8\sigma)$	$r_{0.01}$	$< 0.0798 \quad (+0.2\sigma)$
$A_{143}^{\text{dustTT}}$	$11.0 \pm 1.8 \quad (+0.1\sigma)$	$\text{Age/Gyr}$	$13.781 \pm 0.020 \quad (-0.6\sigma)$	$\ln(10^{10} A_t)$	$-0.12^{+1.3}_{-0.51} \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$z_*$	$1089.72 \pm 0.22 \quad (-0.7\sigma)$	$r_{10}$	$< 0.0413 \quad (+0.2\sigma)$
$A_{217}^{\text{dustTT}}$	$93.4 \pm 7.4 \quad (+0.0\sigma)$	$r_*$	$144.55 \pm 0.22 \quad (-0.6\sigma)$	$10^9 A_t$	$< 0.173 \quad (+0.2\sigma)$
$A_{100}^{\text{dustTE}}$	$0.115 \pm 0.039$	$100\theta_*$	$1.04119 \pm 0.00028 \quad (+0.0\sigma)$	$10^9 A_t e^{-2\tau}$	$< 0.154 \quad (+0.2\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.136 \pm 0.030$	$D_M(z_*)/\text{Gpc}$	$13.883 \pm 0.022 \quad (-0.6\sigma)$	$f_{2000}^{143}$	$30.8 \pm 3.1 \quad (-0.3\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.478 \pm 0.084$	$z_{\text{drag}}$	$1060.13 \pm 0.31 \quad (+0.8\sigma)$	$f_{2000}^{143 \times 217}$	$33.1 \pm 2.1 \quad (-0.3\sigma)$
$A_{143}^{\text{dustTE}}$	$0.225 \pm 0.054$	$r_{\text{drag}}$	$147.17 \pm 0.24 \quad (-0.7\sigma)$	$f_{2000}^{217}$	$107.8 \pm 2.0 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.664 \pm 0.080$	$k_{\text{D}}$	$0.14086 \pm 0.00030 \quad (+0.8\sigma)$	$\chi_{\text{lensing}}^2$	$9.40 \pm 0.63 \quad (-0.1\sigma)$
$A_{217}^{\text{dustTE}}$	$2.07 \pm 0.27$	$100\theta_{\text{D}}$	$0.16065 \pm 0.00018 \quad (-0.9\sigma)$	$\chi_{\text{simall}}^2$	$397.7 \pm 2.1 \quad (+0.1\sigma)$
$c_{100}$	$0.99968 \pm 0.00062 \quad (+0.1\sigma)$	$z_{\text{eq}}$	$3387 \pm 21 \quad (+0.4\sigma)$	$\chi_{\text{lowl}}^2$	$23.2 \pm 1.9 \quad (-0.1\sigma)$
$c_{217}$	$0.99822 \pm 0.00062 \quad (-0.1\sigma)$	$k_{\text{eq}}$	$0.010336 \pm 0.000065 \quad (+0.4\sigma)$	$\chi_{\text{plik}}^2$	$2360.5 \pm 5.9 \quad (+291.2\sigma)$
$H_0$	$67.74 \pm 0.42 \quad (+0.2\sigma)$	$100\theta_{\text{eq}}$	$0.8165 \pm 0.0040 \quad (-0.2\sigma)$	$\chi_{6\text{DF}}^2$	$0.048 \pm 0.057 \quad (-0.1\sigma)$
$\Omega_{\Lambda}$	$0.6897 \pm 0.0057 \quad (-0.0\sigma)$	$100\theta_{s,\text{eq}}$	$0.4510 \pm 0.0021 \quad (-0.3\sigma)$	$\chi_{\text{MGS}}^2$	$1.30 \pm 0.40 \quad (-0.1\sigma)$
$\Omega_{\text{m}}$	$0.3103 \pm 0.0057 \quad (+0.0\sigma)$	$H(0.15)$	$73.02 \pm 0.37 \quad (+0.2\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.7 \pm 1.3 \quad (+0.0\sigma)$
$\Omega_{\text{m}} h^2$	$0.14236 \pm 0.00089 \quad (+0.4\sigma)$	$D_M(0.15)$	$640.1 \pm 3.6 \quad (-0.2\sigma)$	$\chi_{\text{prior}}^2$	$11.7 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\text{m}} h^3$	$0.09644 \pm 0.00031 \quad (+0.8\sigma)$	$H(0.38)$	$83.12 \pm 0.27 \quad (+0.3\sigma)$	$\chi_{\text{CMB}}^2$	$2790.8 \pm 6.2 \quad (+278.4\sigma)$
$\sigma_8$	$0.8103^{+0.0054}_{-0.0061} \quad (+0.2\sigma)$	$D_M(0.38)$	$1526.8 \pm 7.3 \quad (-0.2\sigma)$	$\chi_{\text{BAO}}^2$	$6.1 \pm 1.0 \quad (-0.0\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 2808.56; \Delta\bar{\chi}_{\text{eff}}^2 = 1591.69; R - 1 = 0.01181$$



### 15.25 base\_nrun\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}} h^2$	0.022298	$0.02234 \pm 0.00016$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	0.4534	$0.4525 \pm 0.0071$	$D_{\mathrm{M}}(0.38)$	1533.3	$1531.6 \pm 9.6$
$\Omega_{\mathrm{c}} h^2$	0.11968	$0.1195 \pm 0.0012$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	0.6056	$0.6050 \pm 0.0065$	$H(0.51)$	89.592	$89.65 \pm 0.28$
$100\theta_{\mathrm{MC}}$	1.040850	$1.04088 \pm 0.00031$	$\sigma_8/h^{0.5}$	0.9855	$0.9847 \pm 0.0092$	$D_{\mathrm{M}}(0.51)$	1985.9	$1984 \pm 11$
$\tau$	0.0534	$0.0549 \pm 0.0078$	$r_{\mathrm{drag}} h$	99.23	$99.38 \pm 0.96$	$H(0.61)$	95.231	$95.28 \pm 0.23$
$\ln(10^{10} A_{\mathrm{s}})$	3.0405	$3.044 \pm 0.016$	$\langle d^2 \rangle^{1/2}$	2.4347	$2.425 \pm 0.024$	$D_{\mathrm{M}}(0.61)$	2310.5	$2308 \pm 12$
$n_{\mathrm{s}}$	0.96587	$0.9663 \pm 0.0046$	$z_{\mathrm{re}}$	7.60	$7.72 \pm 0.78$	$H(2.33)$	236.27	$236.21 \pm 0.75$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	-0.0008	$-0.0055 \pm 0.0076$	$10^9 A_{\mathrm{s}}$	2.0916	$2.099^{+0.031}_{-0.034}$	$D_{\mathrm{M}}(2.33)$	5766.9	$5764 \pm 11$
$r$	0.0203	$< 0.0970$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8798	$1.881 \pm 0.011$	$f\sigma_8(0.15)$	0.4578	$0.4569 \pm 0.0066$
$y_{\mathrm{cal}}$	1.00052	$1.0006 \pm 0.0025$	$D_{40}$	1231.4	$1239^{+20}_{-22}$	$\sigma_8(0.15)$	0.7473	$0.7473 \pm 0.0055$
$A_{100}^{\mathrm{PS}}$	235.5	$242 \pm 25$	$D_{220}$	5718.3	$5714 \pm 39$	$f\sigma_8(0.38)$	0.4755	$0.4749 \pm 0.0053$
$A_{143}^{\mathrm{PS}}$	39.5	$41 \pm 9$	$D_{810}$	2536.2	$2537 \pm 14$	$\sigma_8(0.38)$	0.66211	$0.6623 \pm 0.0048$
$A_{217}^{\mathrm{PS}}$	101.9	$102 \pm 10$	$D_{1420}$	816.0	$815.5 \pm 5.1$	$f\sigma_8(0.51)$	0.47377	$0.4733 \pm 0.0046$
$A_{217}^{\mathrm{CIB}}$	44.6	$40 \pm 7$	$D_{2000}$	230.28	$229.9 \pm 1.9$	$\sigma_8(0.51)$	0.61950	$0.6197 \pm 0.0046$
$A_{143}^{\mathrm{tSZ}}$	6.54	$3.8^{+1.8}_{-2.6}$	$n_{\mathrm{s},0.002}$	0.9685	$0.984 \pm 0.024$	$f\sigma_8(0.61)$	0.46859	$0.4683 \pm 0.0042$
$r_{143 \times 217}^{\mathrm{PS}}$	0.586	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	0.245367	$0.245379^{+0.000069}_{-0.000059}$	$\sigma_8(0.61)$	0.58940	$0.5896 \pm 0.0044$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.778	$0.57^{+0.40}_{-0.15}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246693	$0.246706^{+0.000069}_{-0.000059}$	$f\sigma_8(2.33)$	0.29708	$0.2972 \pm 0.0023$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.07	—	$10^5 \mathrm{D}/\mathrm{H}$	2.5990	$2.593 \pm 0.030$	$\sigma_8(2.33)$	0.30616	$0.3064 \pm 0.0025$
$A^{\mathrm{kSZ}}$	0.00	$4.9^{+2.8}_{-3.5}$	$\mathrm{Age}/\mathrm{Gyr}$	13.8054	$13.800 \pm 0.025$	$r_{0.002}$	0.0184	$< 0.0938$
$A_{100}^{\mathrm{dust}}$	1.009	$1.01 \pm 0.19$	$z_*$	1089.985	$1089.92 \pm 0.27$	$r_{0.01}$	0.0193	$< 0.0946$
$A_{143}^{\mathrm{dust}}$	0.969	$0.96 \pm 0.18$	$r_*$	144.568	$144.58 \pm 0.28$	$\ln(10^{10} A_{\mathrm{t}})$	-0.86	$0.09^{+1.2}_{-0.43}$
$A_{217}^{\mathrm{dust}}$	0.969	$0.97 \pm 0.10$	$100\theta_*$	1.041042	$1.04107 \pm 0.00031$	$r_{10}$	0.0094	$< 0.0487$
$A_{143 \times 217}^{\mathrm{dust}}$	1.003	$1.02 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8869	$13.888 \pm 0.027$	$10^9 A_{\mathrm{t}}$	0.042	$< 0.204$
$c_{100}$	0.99769	$0.9975 \pm 0.0010$	$z_{\mathrm{drag}}$	1059.742	$1059.82 \pm 0.35$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	0.038	$< 0.182$
$c_{217}$	1.00132	$1.0012 \pm 0.0016$	$r_{\mathrm{drag}}$	147.256	$147.26 \pm 0.29$	$f_{2000}^{143}$	30.09	$30.4 \pm 3.3$
$c_{TE}$	0.99656	$0.9963 \pm 0.0049$	$k_{\mathrm{D}}$	0.140640	$0.14066 \pm 0.00034$	$f_{2000}^{217}$	106.89	$107.4 \pm 2.2$
$c_{EE}$	0.99224	$0.9921 \pm 0.0050$	$100\theta_{\mathrm{D}}$	0.160856	$0.16082 \pm 0.00020$	$f_{2000}^{143 \times 217}$	32.12	$32.7 \pm 2.4$
$H_0$	67.38	$67.48 \pm 0.56$	$z_{\mathrm{eq}}$	3392.9	$3390 \pm 28$	$\chi_{\mathrm{lensing}}^2$	8.89	$9.56 \pm 0.78$
$\Omega_{\Lambda}$	0.6859	$0.6870 \pm 0.0076$	$k_{\mathrm{eq}}$	0.010355	$0.010346 \pm 0.000085$	$\chi_{\mathrm{small}}^2$	396.00	$397.4 \pm 1.7$
$\Omega_{\mathrm{m}}$	0.3141	$0.3130 \pm 0.0076$	$100\theta_{\mathrm{eq}}$	0.8147	$0.8154 \pm 0.0053$	$\chi_{\mathrm{lowl}}^2$	23.48	$24.3 \pm 2.2$
$\Omega_{\mathrm{m}} h^2$	0.14263	$0.1425 \pm 0.0012$	$100\theta_{\mathrm{s,eq}}$	0.45017	$0.4505 \pm 0.0027$	$\chi_{\mathrm{CamSpec}}^2$	11499.1	$11514.1 \pm 5.8$
$\Omega_{\mathrm{m}} h^3$	0.096106	$0.09616 \pm 0.00033$	$H(0.15)$	72.692	$72.78 \pm 0.48$	$\chi_{\mathrm{prior}}^2$	2.15	$7.8 \pm 3.4$
$\sigma_8$	0.8090	$0.8089 \pm 0.0061$	$D_{\mathrm{M}}(0.15)$	643.19	$642.3 \pm 4.8$	$\chi_{\mathrm{CMB}}^2$	11927.5	$11945.3 \pm 6.0$
$S_8$	0.8278	$0.826 \pm 0.013$	$H(0.38)$	82.849	$82.92 \pm 0.35$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 11929.59$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 11953.15$ ;  $R - 1 = 0.01351$   
 $\chi_{\mathrm{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.89 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.00 commander\_dx12\_v3.2\_29: 23.48 CamSpec like\_10.7HM\_1400\_unified: 11499.08



## 15.26 base\_nrun\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02237 \pm 0.00015$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6028 \pm 0.0057$	$D_{\mathrm{M}}(0.51)$	$1978.9 \pm 8.7$
$\Omega_{\mathrm{c}}h^2$	$0.11897 \pm 0.00095$	$\sigma_8/h^{0.5}$	$0.9821 \pm 0.0084$	$H(0.61)$	$95.37 \pm 0.19$
$100\theta_{\mathrm{MC}}$	$1.04095 \pm 0.00030$	$r_{\mathrm{drag}}h$	$99.81 \pm 0.74$	$D_{\mathrm{M}}(0.61)$	$2302.9 \pm 9.4$
$\tau$	$0.0564 \pm 0.0076$	$\langle d^2 \rangle^{1/2}$	$2.419 \pm 0.023$	$H(2.33)$	$235.89 \pm 0.59$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046 \pm 0.016$	$z_{\mathrm{re}}$	$7.86 \pm 0.75$	$D_{\mathrm{M}}(2.33)$	$5760.6 \pm 9.4$
$n_{\mathrm{s}}$	$0.9676 \pm 0.0042$	$10^9 A_{\mathrm{s}}$	$2.104^{+0.030}_{-0.034}$	$f\sigma_8(0.15)$	$0.4544 \pm 0.0054$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0054^{+0.0080}_{-0.0072}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879 \pm 0.011$	$\sigma_8(0.15)$	$0.7470 \pm 0.0055$
$r$	$< 0.101$	$D_{40}$	$1238^{+20}_{-22}$	$f\sigma_8(0.38)$	$0.4731 \pm 0.0046$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0025$	$D_{220}$	$5718 \pm 39$	$\sigma_8(0.38)$	$0.6624 \pm 0.0049$
$A_{100}^{\mathrm{PS}}$	$241 \pm 25$	$D_{810}$	$2538 \pm 14$	$f\sigma_8(0.51)$	$0.4719 \pm 0.0042$
$A_{143}^{\mathrm{PS}}$	$40 \pm 9$	$D_{1420}$	$816.1 \pm 5.1$	$\sigma_8(0.51)$	$0.6200 \pm 0.0046$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{2000}$	$230.1 \pm 1.9$	$f\sigma_8(0.61)$	$0.4671 \pm 0.0039$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7$	$n_{\mathrm{s},0.002}$	$0.985^{+0.022}_{-0.025}$	$\sigma_8(0.61)$	$0.5900 \pm 0.0044$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$Y_{\mathrm{P}}$	$0.245394^{+0.000063}_{-0.000056}$	$f\sigma_8(2.33)$	$0.2976 \pm 0.0023$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246721^{+0.000063}_{-0.000057}$	$\sigma_8(2.33)$	$0.3069 \pm 0.0024$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.57^{+0.40}_{-0.16}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.586 \pm 0.028$	$r_{0.002}$	$< 0.0979$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.792 \pm 0.021$	$r_{0.01}$	$< 0.0985$
$A^{\mathrm{kSZ}}$	$4.8^{+2.4}_{-3.8}$	$z_{*}$	$1089.83 \pm 0.23$	$\ln(10^{10}A_{\mathrm{t}})$	$0.14^{+1.2}_{-0.43}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$r_{*}$	$144.70 \pm 0.24$	$r_{10}$	$< 0.0508$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$100\theta_{*}$	$1.04114 \pm 0.00030$	$10^9 A_{\mathrm{t}}$	$< 0.211$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.898 \pm 0.023$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.189$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$z_{\mathrm{drag}}$	$1059.87 \pm 0.34$	$f_{2000}^{143}$	$30.2 \pm 3.3$
$c_{100}$	$0.9976 \pm 0.0010$	$r_{\mathrm{drag}}$	$147.36 \pm 0.25$	$f_{2000}^{217}$	$107.3 \pm 2.2$
$c_{217}$	$1.0012 \pm 0.0016$	$k_{\mathrm{D}}$	$0.14058 \pm 0.00033$	$f_{2000}^{143 \times 217}$	$32.5 \pm 2.4$
$c_{TE}$	$0.9964 \pm 0.0050$	$100\theta_{\mathrm{D}}$	$0.16079 \pm 0.00020$	$\chi_{\mathrm{lensing}}^2$	$9.56 \pm 0.82$
$c_{EE}$	$0.9923 \pm 0.0050$	$z_{\mathrm{eq}}$	$3378 \pm 22$	$\chi_{\mathrm{simall}}^2$	$397.6 \pm 1.9$
$H_0$	$67.73 \pm 0.43$	$k_{\mathrm{eq}}$	$0.010309 \pm 0.000066$	$\chi_{\mathrm{lowl}}^2$	$24.1 \pm 2.2$
$\Omega_{\Lambda}$	$0.6904 \pm 0.0057$	$100\theta_{\mathrm{eq}}$	$0.8178 \pm 0.0041$	$\chi_{\mathrm{CamSpec}}^2$	$11514.0 \pm 5.7$
$\Omega_{\mathrm{m}}$	$0.3096 \pm 0.0057$	$100\theta_{\mathrm{s,eq}}$	$0.4517 \pm 0.0021$	$\chi_{6\mathrm{DF}}^2$	$0.042 \pm 0.052$
$\Omega_{\mathrm{m}}h^2$	$0.14199 \pm 0.00091$	$H(0.15)$	$72.99 \pm 0.37$	$\chi_{\mathrm{MGS}}^2$	$1.36 \pm 0.41$
$\Omega_{\mathrm{m}}h^3$	$0.09617 \pm 0.00033$	$D_{\mathrm{M}}(0.15)$	$640.2 \pm 3.7$	$\chi_{\mathrm{DR12BAO}}^2$	$4.5 \pm 1.2$
$\sigma_8$	$0.8082 \pm 0.0060$	$H(0.38)$	$83.07 \pm 0.28$	$\chi_{\mathrm{prior}}^2$	$7.9 \pm 3.4$
$S_8$	$0.821 \pm 0.011$	$D_{\mathrm{M}}(0.38)$	$1527.4 \pm 7.4$	$\chi_{\mathrm{CMB}}^2$	$11945.2 \pm 5.9$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4497 \pm 0.0058$	$H(0.51)$	$89.77 \pm 0.23$	$\chi_{\mathrm{BAO}}^2$	$5.93 \pm 0.90$

$$\bar{\chi}_{\mathrm{eff}}^2 = 11958.98; R - 1 = 0.01470$$



15.27 base\_nrun\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02234 \pm 0.00016$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4525 \pm 0.0071$	$D_{\mathrm{M}}(0.38)$	$1531.1 \pm 9.4$
$\Omega_{\mathrm{c}}h^2$	$0.1195 \pm 0.0012$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6052 \pm 0.0064$	$H(0.51)$	$89.66 \pm 0.28$
$100\theta_{\mathrm{MC}}$	$1.04089 \pm 0.00031$	$\sigma_8/h^{0.5}$	$0.9850 \pm 0.0090$	$D_{\mathrm{M}}(0.51)$	$1983 \pm 11$
$\tau$	$0.0558^{+0.0056}_{-0.0083}$	$r_{\mathrm{drag}}h$	$99.42 \pm 0.95$	$H(0.61)$	$95.29 \pm 0.23$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046^{+0.012}_{-0.016}$	$\langle d^2 \rangle^{1/2}$	$2.426 \pm 0.024$	$D_{\mathrm{M}}(0.61)$	$2308 \pm 12$
$n_{\mathrm{s}}$	$0.9664 \pm 0.0046$	$z_{\mathrm{re}}$	$7.81^{+0.61}_{-0.80}$	$H(2.33)$	$236.17 \pm 0.74$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0056 \pm 0.0076$	$10^9 A_{\mathrm{s}}$	$2.103^{+0.025}_{-0.034}$	$D_{\mathrm{M}}(2.33)$	$5764 \pm 11$
$r$	$< 0.0979$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.880 \pm 0.011$	$f\sigma_8(0.15)$	$0.4570 \pm 0.0066$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{40}$	$1239^{+20}_{-22}$	$\sigma_8(0.15)$	$0.7478^{+0.0048}_{-0.0055}$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25$	$D_{220}$	$5714 \pm 39$	$f\sigma_8(0.38)$	$0.4750 \pm 0.0053$
$A_{143}^{\mathrm{PS}}$	$41 \pm 9$	$D_{810}$	$2537 \pm 14$	$\sigma_8(0.38)$	$0.6627^{+0.0041}_{-0.0049}$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{1420}$	$815.5 \pm 5.1$	$f\sigma_8(0.51)$	$0.4735 \pm 0.0046$
$A_{217}^{\mathrm{CIB}}$	$40^{+7}_{-8}$	$D_{2000}$	$229.9 \pm 1.9$	$\sigma_8(0.51)$	$0.6201^{+0.0038}_{-0.0046}$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.8}_{-2.6}$	$n_{\mathrm{s},0.002}$	$0.985 \pm 0.024$	$f\sigma_8(0.61)$	$0.4685 \pm 0.0042$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	$0.245382^{+0.000068}_{-0.000059}$	$\sigma_8(0.61)$	$0.5901^{+0.0036}_{-0.0045}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.57^{+0.40}_{-0.16}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246708^{+0.000068}_{-0.000059}$	$f\sigma_8(2.33)$	$0.2975^{+0.0018}_{-0.0023}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.592 \pm 0.030$	$\sigma_8(2.33)$	$0.3066^{+0.0019}_{-0.0025}$
$A^{\mathrm{kSZ}}$	$4.9^{+2.8}_{-3.5}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.799 \pm 0.024$	$r_{0.002}$	$< 0.0947$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$z_*$	$1089.91 \pm 0.27$	$r_{0.01}$	$< 0.0954$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$r_*$	$144.59 \pm 0.28$	$\ln(10^{10}A_{\mathrm{t}})$	$0.10^{+1.2}_{-0.42}$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04108 \pm 0.00031$	$r_{10}$	$< 0.0491$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.889 \pm 0.027$	$10^9 A_{\mathrm{t}}$	$< 0.205$
$c_{100}$	$0.9975 \pm 0.0010$	$z_{\mathrm{drag}}$	$1059.83 \pm 0.35$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.184$
$c_{217}$	$1.0012 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.27 \pm 0.29$	$f_{2000}^{143}$	$30.4 \pm 3.3$
$c_{TE}$	$0.9962 \pm 0.0049$	$k_{\mathrm{D}}$	$0.14066 \pm 0.00035$	$f_{2000}^{217}$	$107.4 \pm 2.2$
$c_{EE}$	$0.9920 \pm 0.0050$	$100\theta_{\mathrm{D}}$	$0.16081 \pm 0.00020$	$f_{2000}^{143 \times 217}$	$32.7 \pm 2.4$
$H_0$	$67.51 \pm 0.55$	$z_{\mathrm{eq}}$	$3389 \pm 28$	$\chi_{\mathrm{lensing}}^2$	$9.53 \pm 0.75$
$\Omega_{\Lambda}$	$0.6874 \pm 0.0075$	$k_{\mathrm{eq}}$	$0.010343 \pm 0.000084$	$\chi_{\mathrm{small}}^2$	$397.4 \pm 1.8$
$\Omega_{\mathrm{m}}$	$0.3126 \pm 0.0075$	$100\theta_{\mathrm{eq}}$	$0.8157 \pm 0.0052$	$\chi_{\mathrm{lowl}}^2$	$24.2 \pm 2.2$
$\Omega_{\mathrm{m}}h^2$	$0.1424 \pm 0.0012$	$100\theta_{\mathrm{s,eq}}$	$0.4506 \pm 0.0027$	$\chi_{\mathrm{CamSpec}}^2$	$11514.0 \pm 5.8$
$\Omega_{\mathrm{m}}h^3$	$0.09616 \pm 0.00033$	$H(0.15)$	$72.80 \pm 0.47$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4$
$\sigma_8$	$0.8093 \pm 0.0058$	$D_{\mathrm{M}}(0.15)$	$642.1 \pm 4.7$	$\chi_{\mathrm{CMB}}^2$	$11945.1 \pm 6.0$
$S_8$	$0.826 \pm 0.013$	$H(0.38)$	$82.94 \pm 0.35$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11953.00; R - 1 = 0.01489$$



15.28 base\_nrun\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02238 \pm 0.00015$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6030 \pm 0.0056$	$D_{\mathrm{M}}(0.51)$	$1978.7 \pm 8.7$
$\Omega_{\mathrm{c}}h^2$	$0.11895 \pm 0.00095$	$\sigma_8/h^{0.5}$	$0.9824 \pm 0.0082$	$H(0.61)$	$95.38 \pm 0.19$
$100\theta_{\mathrm{MC}}$	$1.04096 \pm 0.00030$	$r_{\mathrm{drag}}h$	$99.83 \pm 0.73$	$D_{\mathrm{M}}(0.61)$	$2302.7 \pm 9.4$
$\tau$	$0.0570^{+0.0060}_{-0.0079}$	$\langle d^2 \rangle^{1/2}$	$2.420 \pm 0.023$	$H(2.33)$	$235.87 \pm 0.59$
$\ln(10^{10}A_{\mathrm{s}})$	$3.047^{+0.013}_{-0.016}$	$z_{\mathrm{re}}$	$7.92^{+0.64}_{-0.76}$	$D_{\mathrm{M}}(2.33)$	$5760.4 \pm 9.4$
$n_{\mathrm{s}}$	$0.9677 \pm 0.0041$	$10^9 A_{\mathrm{s}}$	$2.106^{+0.027}_{-0.034}$	$f\sigma_8(0.15)$	$0.4545 \pm 0.0054$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0055^{+0.0079}_{-0.0072}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879 \pm 0.011$	$\sigma_8(0.15)$	$0.7474^{+0.0048}_{-0.0056}$
$r$	$< 0.101$	$D_{40}$	$1238^{+20}_{-22}$	$f\sigma_8(0.38)$	$0.4733 \pm 0.0046$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0025$	$D_{220}$	$5718 \pm 39$	$\sigma_8(0.38)$	$0.6627^{+0.0042}_{-0.0050}$
$A_{100}^{\mathrm{PS}}$	$241 \pm 25$	$D_{810}$	$2538 \pm 14$	$f\sigma_8(0.51)$	$0.4721 \pm 0.0041$
$A_{143}^{\mathrm{PS}}$	$40 \pm 9$	$D_{1420}$	$816.1 \pm 5.0$	$\sigma_8(0.51)$	$0.6203^{+0.0039}_{-0.0047}$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{2000}$	$230.1 \pm 1.9$	$f\sigma_8(0.61)$	$0.4673 \pm 0.0038$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7$	$n_{\mathrm{s},0.002}$	$0.985^{+0.022}_{-0.025}$	$\sigma_8(0.61)$	$0.5903^{+0.0037}_{-0.0045}$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$Y_{\mathrm{P}}$	$0.245395 \pm 0.000060$	$f\sigma_8(2.33)$	$0.2977^{+0.0019}_{-0.0023}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246722 \pm 0.000060$	$\sigma_8(2.33)$	$0.3070^{+0.0020}_{-0.0025}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.57^{+0.40}_{-0.16}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.585 \pm 0.028$	$r_{0.002}$	$< 0.0984$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.791 \pm 0.021$	$r_{0.01}$	$< 0.0990$
$A^{\mathrm{kSZ}}$	$4.8^{+2.5}_{-3.8}$	$z_{*}$	$1089.82 \pm 0.23$	$\ln(10^{10}A_{\mathrm{t}})$	$0.14^{+1.2}_{-0.43}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$r_{*}$	$144.70 \pm 0.23$	$r_{10}$	$< 0.0509$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$100\theta_{*}$	$1.04114 \pm 0.00030$	$10^9 A_{\mathrm{t}}$	$< 0.212$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.898 \pm 0.023$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.190$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$z_{\mathrm{drag}}$	$1059.87 \pm 0.34$	$f_{2000}^{143}$	$30.2 \pm 3.3$
$c_{100}$	$0.9976 \pm 0.0010$	$r_{\mathrm{drag}}$	$147.37 \pm 0.25$	$f_{2000}^{217}$	$107.3 \pm 2.2$
$c_{217}$	$1.0012 \pm 0.0016$	$k_{\mathrm{D}}$	$0.14058 \pm 0.00033$	$f_{2000}^{143 \times 217}$	$32.5 \pm 2.3$
$c_{\mathrm{TE}}$	$0.9964 \pm 0.0050$	$100\theta_{\mathrm{D}}$	$0.16079 \pm 0.00020$	$\chi_{\mathrm{lensing}}^2$	$9.52 \pm 0.77$
$c_{\mathrm{EE}}$	$0.9923 \pm 0.0050$	$z_{\mathrm{eq}}$	$3377 \pm 22$	$\chi_{\mathrm{simall}}^2$	$397.6 \pm 1.9$
$H_0$	$67.74 \pm 0.43$	$k_{\mathrm{eq}}$	$0.010307 \pm 0.000066$	$\chi_{\mathrm{lowl}}^2$	$24.1 \pm 2.2$
$\Omega_{\Lambda}$	$0.6906 \pm 0.0057$	$100\theta_{\mathrm{eq}}$	$0.8179 \pm 0.0041$	$\chi_{\mathrm{CamSpec}}^2$	$11513.9 \pm 5.7$
$\Omega_{\mathrm{m}}$	$0.3094 \pm 0.0057$	$100\theta_{\mathrm{s,eq}}$	$0.4518 \pm 0.0021$	$\chi_{6\mathrm{DF}}^2$	$0.040 \pm 0.051$
$\Omega_{\mathrm{m}}h^2$	$0.14197 \pm 0.00091$	$H(0.15)$	$73.00 \pm 0.37$	$\chi_{\mathrm{MGS}}^2$	$1.37 \pm 0.41$
$\Omega_{\mathrm{m}}h^3$	$0.09617 \pm 0.00033$	$D_{\mathrm{M}}(0.15)$	$640.1 \pm 3.6$	$\chi_{\mathrm{DR12BAO}}^2$	$4.5 \pm 1.2$
$\sigma_8$	$0.8086^{+0.0054}_{-0.0061}$	$H(0.38)$	$83.08 \pm 0.28$	$\chi_{\mathrm{prior}}^2$	$7.9 \pm 3.4$
$S_8$	$0.821 \pm 0.011$	$D_{\mathrm{M}}(0.38)$	$1527.2 \pm 7.4$	$\chi_{\mathrm{CMB}}^2$	$11945.1 \pm 5.9$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4497 \pm 0.0058$	$H(0.51)$	$89.77 \pm 0.23$	$\chi_{\mathrm{BAO}}^2$	$5.90 \pm 0.88$

$$\bar{\chi}_{\mathrm{eff}}^2 = 11958.86; R - 1 = 0.01525$$



## 15.29 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE\_BK15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022119	$0.02215 \pm 0.00023$	$\Omega_m h^3$	0.096015	$0.09605 \pm 0.00050$	$D_M(0.15)$	651.0	$649.6 \pm 7.8$
$\Omega_c h^2$	0.12167	$0.1213 \pm 0.0021$	$\sigma_8$	0.8159	$0.8150 \pm 0.0088$	$H(0.38)$	82.29	$82.41 \pm 0.55$
$100\theta_{MC}$	1.040644	$1.04072 \pm 0.00047$	$S_8$	0.8516	$0.848 \pm 0.024$	$D_M(0.38)$	1549.0	$1546 \pm 15$
$\tau$	0.0531	$0.0541 \pm 0.0084$	$\sigma_8 \Omega_m^{0.5}$	0.4665	$0.464 \pm 0.013$	$H(0.51)$	89.160	$89.25 \pm 0.43$
$\ln(10^{10} A_s)$	3.0459	$3.048 \pm 0.018$	$\sigma_8 \Omega_m^{0.25}$	0.6169	$0.615 \pm 0.011$	$D_M(0.51)$	2004.1	$2001 \pm 18$
$n_s$	0.9607	$0.9607 \pm 0.0058$	$\sigma_8/h^{0.5}$	1.0007	$0.998 \pm 0.016$	$H(0.61)$	94.894	$94.97 \pm 0.34$
$dn_s/d \ln k$	-0.0042	$-0.0063 \pm 0.0076$	$r_{drag} h$	97.68	$98.0 \pm 1.6$	$D_M(0.61)$	2330.1	$2326 \pm 19$
$r$	0.0135	$< 0.0332$	$\langle d^2 \rangle^{1/2}$	2.4648	$2.459 \pm 0.038$	$H(2.33)$	237.39	$237.2 \pm 1.3$
$y_{cal}$	1.00039	$1.0006 \pm 0.0025$	$z_{re}$	7.64	$7.71 \pm 0.85$	$D_M(2.33)$	5781.6	$5778 \pm 16$
$A_{B,dust}$	4.64	$4.85^{+0.81}_{-1.2}$	$10^9 A_s$	2.1029	$2.107^{+0.034}_{-0.038}$	$f\sigma_8(0.15)$	0.4698	$0.468 \pm 0.012$
$A_{B,sync}$	1.47	$1.63^{+0.53}_{-1.4}$	$10^9 A_s e^{-2\tau}$	1.8909	$1.891 \pm 0.014$	$\sigma_8(0.15)$	0.7525	$0.7518 \pm 0.0075$
$\alpha_{B,dust}$	-0.538	$-0.57^{+0.21}_{-0.33}$	$D_{40}$	1232.0	$1232 \pm 21$	$f\sigma_8(0.38)$	0.4848	$0.4833 \pm 0.0093$
$\beta_{B,dust}$	1.578	$1.600 \pm 0.096$	$D_{220}$	5706.8	$5712 \pm 41$	$\sigma_8(0.38)$	0.6653	$0.6651 \pm 0.0060$
$\alpha_{B,sync}$	-0.33	—	$D_{810}$	2539.7	$2540 \pm 14$	$f\sigma_8(0.51)$	0.4815	$0.4803 \pm 0.0080$
$\beta_{B,sync}$	-3.031	$-3.10 \pm 0.27$	$D_{1420}$	814.2	$813.8 \pm 5.2$	$\sigma_8(0.51)$	0.6220	$0.6218 \pm 0.0055$
$\epsilon_{dust,sync}$	-0.347	$-0.35 \pm 0.28$	$D_{2000}$	229.30	$229.0 \pm 1.9$	$f\sigma_8(0.61)$	0.4753	$0.4743 \pm 0.0071$
$A_{217}^{CIB}$	50.7	$49 \pm 7$	$n_{s,0.002}$	0.9741	$0.981 \pm 0.024$	$\sigma_8(0.61)$	0.5914	$0.5913 \pm 0.0052$
$\xi^{tSZ \times CIB}$	0.09	—	$Y_P$	0.245292	$0.24530^{+0.00011}_{-0.000088}$	$f\sigma_8(2.33)$	0.29760	$0.2976 \pm 0.0026$
$A_{143}^{tSZ}$	7.06	$4.9 \pm 2.0$	$Y_P^{BBN}$	0.246618	$0.24663^{+0.00011}_{-0.000088}$	$\sigma_8(2.33)$	0.30617	$0.3063 \pm 0.0027$
$A_{100}^{PS}$	258.0	$267 \pm 28$	$10^5 D/H$	2.6334	$2.628 \pm 0.044$	$r_{0.002}$	0.0122	$< 0.0308$
$A_{143}^{PS}$	47.8	$51 \pm 8$	Age/Gyr	13.8377	$13.831 \pm 0.037$	$r_{0.01}$	0.0128	$< 0.0317$
$A_{143 \times 217}^{PS}$	41.8	$44^{+9}_{-10}$	$z_*$	1090.385	$1090.32 \pm 0.41$	$\ln(10^{10} A_t)$	-1.26	$-0.92^{+1.1}_{-0.42}$
$A_{217}^{PS}$	117.3	$115 \pm 10$	$r_*$	144.194	$144.26 \pm 0.48$	$r_{10}$	0.0063	$< 0.0159$
$A^{kSZ}$	0.01	$< 5.36$	$100\theta_*$	1.040855	$1.04093 \pm 0.00046$	$10^9 A_t$	0.0284	$< 0.0701$
$A_{100}^{dustTT}$	8.89	$9.0 \pm 1.8$	$D_M(z_*)/Gpc$	13.8534	$13.859 \pm 0.045$	$10^9 A_t e^{-2\tau}$	0.0255	$< 0.0629$
$A_{143}^{dustTT}$	10.80	$10.7 \pm 1.8$	$z_{drag}$	1059.475	$1059.52 \pm 0.50$	$f_{2000}^{143}$	31.36	$32.3 \pm 3.2$
$A_{143 \times 217}^{dustTT}$	19.12	$18.4 \pm 3.3$	$r_{drag}$	146.932	$146.99 \pm 0.49$	$f_{2000}^{143 \times 217}$	33.96	$34.4 \pm 2.2$
$A_{217}^{dustTT}$	94.0	$93.2 \pm 7.4$	$k_D$	0.14084	$0.14080 \pm 0.00056$	$f_{2000}^{217}$	108.43	$108.9 \pm 2.1$
$c_{100}$	0.99963	$0.99961 \pm 0.00061$	$100\theta_D$	0.161017	$0.16100 \pm 0.00029$	$\chi_{BKPLANCK}^2$	734.70	$739.1 \pm 2.7$
$c_{217}$	0.99827	$0.99827 \pm 0.00063$	$z_{eq}$	3436.1	$3429 \pm 47$	$\chi_{small}^2$	396.03	$397.3 \pm 1.9$
$H_0$	66.48	$66.65 \pm 0.90$	$k_{eq}$	0.010487	$0.01046 \pm 0.00014$	$\chi_{lowl}^2$	23.33	$23.6 \pm 2.2$
$\Omega_\Lambda$	0.6732	$0.675 \pm 0.013$	$100\theta_{eq}$	0.8064	$0.8080 \pm 0.0087$	$\chi_{plik}^2$	759.2	$772.8 \pm 5.7$
$\Omega_m$	0.3268	$0.325 \pm 0.013$	$100\theta_{s,eq}$	0.44596	$0.4468 \pm 0.0045$	$\chi_{prior}^2$	1.54	$8.9 \pm 4.0$
$\Omega_m h^2$	0.14443	$0.1441 \pm 0.0020$	$H(0.15)$	71.92	$72.07 \pm 0.76$	$\chi_{CMB}^2$	1913.3	$1932.8 \pm 6.3$

Best-fit  $\chi_{eff}^2 = 1914.80$ ;  $\bar{\chi}_{eff}^2 = 1941.72$ ;  $R - 1 = 0.00186$

$\chi_{eff}^2$ : CMB - BK15\_dust: 734.70 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.03 commander\_dx12\_v3\_2\_29: 23.33 plik\_rd12\_HM\_v22\_TT: 759.19



15.30 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE\_BK15\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022241	$0.02227 \pm 0.00022$	$S_8$	0.8255	$0.825 \pm 0.015$	$D_M(0.51)$	1983.5	$1983 \pm 11$
$\Omega_c h^2$	0.11928	$0.1192 \pm 0.0012$	$\sigma_8 \Omega_m^{0.5}$	0.4522	$0.4518 \pm 0.0081$	$H(0.61)$	95.249	$95.28 \pm 0.25$
$100\theta_{MC}$	1.040970	$1.04100 \pm 0.00042$	$\sigma_8 \Omega_m^{0.25}$	0.6051	$0.6048 \pm 0.0080$	$D_M(0.61)$	2308.0	$2307 \pm 12$
$\tau$	0.0559	$0.0564^{+0.0076}_{-0.0085}$	$\sigma_8/h^{0.5}$	0.9854	$0.985 \pm 0.012$	$H(2.33)$	235.96	$235.97 \pm 0.80$
$\ln(10^{10} A_s)$	3.0462	$3.048^{+0.017}_{-0.018}$	$r_{\text{drag}} h$	99.54	$99.59 \pm 0.93$	$D_M(2.33)$	5766.8	$5765 \pm 13$
$n_s$	0.96596	$0.9655 \pm 0.0044$	$\langle d^2 \rangle^{1/2}$	2.4296	$2.428 \pm 0.029$	$f\sigma_8(0.15)$	0.4567	$0.4564 \pm 0.0077$
$dn_s/d \ln k$	-0.0041	$-0.0058 \pm 0.0077$	$z_{\text{re}}$	7.86	$7.89 \pm 0.83$	$\sigma_8(0.15)$	0.7481	$0.7481 \pm 0.0070$
$r$	0.0146	$0.0295^{+0.0087}_{-0.028}$	$10^9 A_s$	2.1036	$2.107^{+0.034}_{-0.039}$	$f\sigma_8(0.38)$	0.4750	$0.4747 \pm 0.0065$
$y_{\text{cal}}$	1.00057	$1.0008 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8810	$1.882 \pm 0.012$	$\sigma_8(0.38)$	0.6631	$0.6631^{+0.0055}_{-0.0062}$
$A_{B,\text{dust}}$	4.66	$4.85^{+0.82}_{-1.2}$	$D_{40}$	1221.6	$1225 \pm 20$	$f\sigma_8(0.51)$	0.4735	$0.4733 \pm 0.0058$
$A_{B,\text{sync}}$	1.51	$1.62^{+0.53}_{-1.4}$	$D_{220}$	5716.9	$5721 \pm 40$	$\sigma_8(0.51)$	0.6206	$0.6206^{+0.0051}_{-0.0057}$
$\alpha_{B,\text{dust}}$	-0.502	$-0.55^{+0.23}_{-0.31}$	$D_{810}$	2538.4	$2539 \pm 14$	$f\sigma_8(0.61)$	0.4685	$0.4683 \pm 0.0054$
$\beta_{B,\text{dust}}$	1.577	$1.597 \pm 0.096$	$D_{1420}$	815.4	$815.0 \pm 5.1$	$\sigma_8(0.61)$	0.5905	$0.5905^{+0.0048}_{-0.0054}$
$\alpha_{B,\text{sync}}$	-0.16	—	$D_{2000}$	229.73	$229.5 \pm 1.9$	$f\sigma_8(2.33)$	0.29770	$0.2977^{+0.0024}_{-0.0027}$
$\beta_{B,\text{sync}}$	-3.027	$-3.10 \pm 0.27$	$n_{s,0.002}$	0.9793	$0.984 \pm 0.024$	$\sigma_8(2.33)$	0.30690	$0.3069^{+0.0025}_{-0.0028}$
$\epsilon_{\text{dust,sync}}$	-0.328	$-0.35 \pm 0.28$	$Y_P$	0.245343	$0.245349^{+0.000096}_{-0.000079}$	$r_{0.002}$	0.0134	$0.0278^{+0.0073}_{-0.027}$
$A_{217}^{\text{CIB}}$	50.8	$48 \pm 7$	$Y_P^{\text{BBN}}$	0.246669	$0.246676^{+0.000096}_{-0.000079}$	$r_{0.01}$	0.0139	$0.0284^{+0.0080}_{-0.027}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.05	—	$10^5 \text{D}/\text{H}$	2.6101	$2.606 \pm 0.041$	$\ln(10^{10} A_t)$	-1.18	$-0.79^{+1.0}_{-0.41}$
$A_{143}^{\text{tSZ}}$	7.11	$4.9 \pm 2.0$	$\text{Age}/\text{Gyr}$	13.8059	$13.803 \pm 0.030$	$r_{10}$	0.0069	$0.0143^{+0.0037}_{-0.014}$
$A_{100}^{\text{PS}}$	258.8	$266 \pm 28$	$z_*$	1090.022	$1089.99 \pm 0.31$	$10^9 A_t$	0.0307	$0.062^{+0.018}_{-0.058}$
$A_{143}^{\text{PS}}$	46.8	$50 \pm 8$	$r_*$	144.715	$144.71 \pm 0.33$	$10^9 A_t e^{-2\tau}$	0.0274	$0.055^{+0.016}_{-0.052}$
$A_{143 \times 217}^{\text{PS}}$	40.4	$43^{+9}_{-10}$	$100\theta_*$	1.041173	$1.04119 \pm 0.00042$	$f_{2000}^{143}$	31.25	$31.8 \pm 3.2$
$A_{217}^{\text{PS}}$	116.5	$114 \pm 10$	$D_M(z_*)/\text{Gpc}$	13.8993	$13.898 \pm 0.032$	$f_{2000}^{143 \times 217}$	33.76	$34.0 \pm 2.2$
$A^{\text{kSZ}}$	0.02	$< 5.28$	$z_{\text{drag}}$	1059.589	$1059.64 \pm 0.49$	$f_{2000}^{217}$	108.25	$108.5 \pm 2.1$
$A_{100}^{\text{dustTT}}$	8.86	$8.9 \pm 1.8$	$r_{\text{drag}}$	147.425	$147.41 \pm 0.37$	$\chi_{\text{BKPLANCK}}^2$	735.55	$739.8 \pm 2.6$
$A_{143}^{\text{dustTT}}$	10.80	$10.8 \pm 1.8$	$k_D$	0.140416	$0.14045 \pm 0.00050$	$\chi_{\text{small}}^2$	396.34	$397.5 \pm 2.2$
$A_{143 \times 217}^{\text{dustTT}}$	19.08	$18.3 \pm 3.4$	$100\theta_D$	0.160969	$0.16094 \pm 0.00029$	$\chi_{\text{lowl}}^2$	22.42	$23.0 \pm 1.9$
$A_{217}^{\text{dustTT}}$	94.0	$93.2 \pm 7.5$	$z_{\text{eq}}$	3382.0	$3382 \pm 29$	$\chi_{\text{plik}}^2$	760.1	$773.1 \pm 5.7$
$c_{100}$	0.99963	$0.99962 \pm 0.00062$	$k_{\text{eq}}$	0.010322	$0.010321 \pm 0.000088$	$\chi_{6\text{DF}}^2$	0.0375	$0.070 \pm 0.086$
$c_{217}$	0.99827	$0.99827 \pm 0.00063$	$100\theta_{\text{eq}}$	0.8166	$0.8168 \pm 0.0053$	$\chi_{\text{MGS}}^2$	1.156	$1.25 \pm 0.50$
$H_0$	67.52	$67.56 \pm 0.54$	$100\theta_{s,\text{eq}}$	0.45121	$0.4513 \pm 0.0027$	$\chi_{\text{DR12BAO}}^2$	4.57	$5.1 \pm 1.8$
$\Omega_\Lambda$	0.6881	$0.6885 \pm 0.0073$	$H(0.15)$	72.799	$72.84 \pm 0.47$	$\chi_{\text{prior}}^2$	1.60	$9.0 \pm 4.0$
$\Omega_m$	0.3119	$0.3115 \pm 0.0073$	$D_M(0.15)$	642.08	$641.7 \pm 4.6$	$\chi_{\text{BAO}}^2$	5.76	$6.4 \pm 1.5$
$\Omega_m h^2$	0.14217	$0.1422 \pm 0.0012$	$H(0.38)$	82.913	$82.95 \pm 0.35$	$\chi_{\text{CMB}}^2$	1914.4	$1933.4 \pm 6.3$
$\Omega_m h^3$	0.09599	$0.09604 \pm 0.00050$	$D_M(0.38)$	1531.2	$1530.5 \pm 9.3$			
$\sigma_8$	0.8097	$0.8095 \pm 0.0078$	$H(0.51)$	89.630	$89.66 \pm 0.29$			

Best-fit  $\chi_{\text{eff}}^2 = 1921.76$ ;  $\bar{\chi}_{\text{eff}}^2 = 1948.77$ ;  $R - 1 = 0.00528$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.04 MGS: 1.16 DR12BAO: 4.57 CMB - BK15\_dust: 735.55 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.34 commander\_dx12\_v3\_2\_29: 22.42 plik\_rd12\_HM\_v22\_TT: 760.08



### 15.31 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE\_BK15\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022183	$0.02218 \pm 0.00023$	$\sigma_8$	0.8121	$0.8116 \pm 0.0063$	$D_M(0.38)$	1540.3	$1540 \pm 12$
$\Omega_c h^2$	0.12050	$0.1205 \pm 0.0016$	$S_8$	0.8380	$0.837 \pm 0.016$	$H(0.51)$	89.388	$89.39 \pm 0.36$
$100\theta_{MC}$	1.040798	$1.04079 \pm 0.00045$	$\sigma_8 \Omega_m^{0.5}$	0.4590	$0.4587 \pm 0.0088$	$D_M(0.51)$	1994.0	$1994 \pm 14$
$\tau$	0.0534	$0.0536 \pm 0.0081$	$\sigma_8 \Omega_m^{0.25}$	0.6105	$0.6101 \pm 0.0076$	$H(0.61)$	95.066	$95.07 \pm 0.30$
$\ln(10^{10} A_s)$	3.0435	$3.044 \pm 0.016$	$\sigma_8/h^{0.5}$	0.9922	$0.992 \pm 0.010$	$D_M(0.61)$	2319.3	$2319 \pm 16$
$n_s$	0.96315	$0.9625 \pm 0.0049$	$r_{\text{drag}} h$	98.58	$98.6 \pm 1.2$	$H(2.33)$	236.69	$236.67 \pm 0.96$
$dn_s/d \ln k$	-0.0029	$-0.0049 \pm 0.0075$	$\langle d^2 \rangle^{1/2}$	2.4478	$2.445 \pm 0.027$	$D_M(2.33)$	5774.4	$5774 \pm 15$
$r$	0.0134	$< 0.0341$	$z_{\text{re}}$	7.64	$7.64 \pm 0.81$	$f\sigma_8(0.15)$	0.4629	$0.4626 \pm 0.0080$
$y_{\text{cal}}$	1.00048	$1.0006 \pm 0.0025$	$10^9 A_s$	2.0979	$2.100 \pm 0.033$	$\sigma_8(0.15)$	0.7496	$0.7492 \pm 0.0055$
$A_{B,\text{dust}}$	4.66	$4.85^{+0.82}_{-1.2}$	$10^9 A_s e^{-2\tau}$	1.8854	$1.886 \pm 0.012$	$f\sigma_8(0.38)$	0.4795	$0.4792 \pm 0.0062$
$A_{B,\text{sync}}$	1.44	$1.63^{+0.53}_{-1.4}$	$D_{40}$	1230.1	$1232 \pm 21$	$\sigma_8(0.38)$	0.66362	$0.6633 \pm 0.0049$
$\alpha_{B,\text{dust}}$	-0.517	$-0.56^{+0.22}_{-0.32}$	$D_{220}$	5714.2	$5715 \pm 41$	$f\sigma_8(0.51)$	0.4772	$0.4768 \pm 0.0053$
$\beta_{B,\text{dust}}$	1.575	$1.598 \pm 0.097$	$D_{810}$	2538.4	$2538 \pm 14$	$\sigma_8(0.51)$	0.62068	$0.6204 \pm 0.0046$
$\alpha_{B,\text{sync}}$	-0.44	—	$D_{1420}$	814.9	$814.1 \pm 5.2$	$f\sigma_8(0.61)$	0.47154	$0.4712 \pm 0.0047$
$\beta_{B,\text{sync}}$	-3.037	$-3.10 \pm 0.27$	$D_{2000}$	229.60	$229.2 \pm 1.9$	$\sigma_8(0.61)$	0.59037	$0.5901 \pm 0.0044$
$\epsilon_{\text{dust,sync}}$	-0.339	$-0.35 \pm 0.29$	$n_{s,0.002}$	0.9725	$0.978 \pm 0.024$	$f\sigma_8(2.33)$	0.29736	$0.2972 \pm 0.0023$
$A_{217}^{\text{CIB}}$	50.8	$48 \pm 7$	$Y_P$	0.245319	$0.24531^{+0.00011}_{-0.000086}$	$\sigma_8(2.33)$	0.30623	$0.3061 \pm 0.0026$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.06	—	$Y_P^{\text{BBN}}$	0.246645	$0.24664^{+0.00011}_{-0.000086}$	$r_{0.002}$	0.0121	$< 0.0315$
$A_{143}^{\text{tSZ}}$	7.17	$4.9 \pm 2.0$	$10^5 D/H$	2.6213	$2.623 \pm 0.043$	$r_{0.01}$	0.0127	$< 0.0326$
$A_{100}^{\text{PS}}$	258.8	$266 \pm 28$	Age/Gyr	13.8221	$13.822 \pm 0.034$	$\ln(10^{10} A_t)$	-1.27	$-0.88^{+1.1}_{-0.41}$
$A_{143}^{\text{PS}}$	46.8	$50 \pm 8$	$z_*$	1090.201	$1090.21 \pm 0.36$	$r_{10}$	0.0062	$< 0.0162$
$A_{143 \times 217}^{\text{PS}}$	40.7	$44^{+9}_{-10}$	$r_*$	144.445	$144.46 \pm 0.37$	$10^9 A_t$	0.0281	$< 0.0717$
$A_{217}^{\text{PS}}$	116.5	$115 \pm 10$	$100\theta_*$	1.041003	$1.04100 \pm 0.00044$	$10^9 A_t e^{-2\tau}$	0.0252	$< 0.0643$
$A^{\text{kSZ}}$	0.00	$< 5.32$	$D_M(z_*)/\text{Gpc}$	13.8756	$13.877 \pm 0.035$	$f_{2000}^{143}$	31.22	$32.1 \pm 3.2$
$A_{100}^{\text{dustTT}}$	8.93	$8.9 \pm 1.8$	$z_{\text{drag}}$	1059.551	$1059.52 \pm 0.50$	$f_{2000}^{143 \times 217}$	33.77	$34.2 \pm 2.2$
$A_{143}^{\text{dustTT}}$	10.86	$10.8 \pm 1.8$	$r_{\text{drag}}$	147.167	$147.18 \pm 0.39$	$f_{2000}^{217}$	108.24	$108.7 \pm 2.1$
$A_{143 \times 217}^{\text{dustTT}}$	19.09	$18.4 \pm 3.3$	$k_D$	0.140641	$0.14062 \pm 0.00049$	$\chi_{\text{lensing}}^2$	9.08	$9.7 \pm 1.0$
$A_{217}^{\text{dustTT}}$	93.9	$93.3 \pm 7.4$	$100\theta_D$	0.160986	$0.16100 \pm 0.00029$	$\chi_{\text{BKPLANCK}}^2$	735.20	$739.4 \pm 2.6$
$c_{100}$	0.99962	$0.99961 \pm 0.00062$	$z_{\text{eq}}$	3409.7	$3409 \pm 36$	$\chi_{\text{small}}^2$	396.02	$397.1 \pm 1.7$
$c_{217}$	0.99827	$0.99827 \pm 0.00062$	$k_{\text{eq}}$	0.010407	$0.01040 \pm 0.00011$	$\chi_{\text{lowl}}^2$	23.21	$23.6 \pm 2.2$
$H_0$	66.98	$66.99 \pm 0.71$	$100\theta_{\text{eq}}$	0.8114	$0.8116 \pm 0.0066$	$\chi_{\text{plik}}^2$	759.0	$772.3 \pm 5.5$
$\Omega_\Lambda$	0.6806	$0.6806 \pm 0.0098$	$100\theta_{s,\text{eq}}$	0.44850	$0.4486 \pm 0.0034$	$\chi_{\text{prior}}^2$	1.66	$8.9 \pm 4.0$
$\Omega_m$	0.3194	$0.3194 \pm 0.0098$	$H(0.15)$	72.35	$72.36 \pm 0.61$	$\chi_{\text{CMB}}^2$	1922.5	$1942.2 \pm 6.3$
$\Omega_m h^2$	0.14333	$0.1433 \pm 0.0015$	$D_M(0.15)$	646.6	$646.6 \pm 6.1$			
$\Omega_m h^3$	0.096008	$0.09599 \pm 0.00049$	$H(0.38)$	82.594	$82.60 \pm 0.45$			

Best-fit  $\chi_{\text{eff}}^2 = 1924.17$ ;  $\bar{\chi}_{\text{eff}}^2 = 1951.15$ ;  $R - 1 = 0.00356$

$\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb\_consext8: 9.09 BK15\_dust: 735.20 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.02 commander\_dx12\_v3\_2.29: 23.21 plik\_rd12\_HM\_v22\_TT: 758.99



### 15.32 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE\_BK15\_post\_BAO\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022250	$0.02226 \pm 0.00021$	$S_8$	0.8257	$0.826 \pm 0.012$	$D_M(0.51)$	1983.3	$1983 \pm 10$
$\Omega_c h^2$	0.11929	$0.1193 \pm 0.0011$	$\sigma_8 \Omega_m^{0.5}$	0.4523	$0.4522 \pm 0.0065$	$H(0.61)$	95.256	$95.27 \pm 0.25$
$100\theta_{MC}$	1.040982	$1.04098 \pm 0.00042$	$\sigma_8 \Omega_m^{0.25}$	0.6052	$0.6053 \pm 0.0062$	$D_M(0.61)$	2307.8	$2307 \pm 11$
$\tau$	0.0558	$0.0568 \pm 0.0077$	$\sigma_8/h^{0.5}$	0.9856	$0.9857 \pm 0.0090$	$H(2.33)$	235.98	$235.97 \pm 0.71$
$\ln(10^{10} A_s)$	3.0466	$3.049 \pm 0.016$	$r_{\text{drag}} h$	99.54	$99.57 \pm 0.84$	$D_M(2.33)$	5766.4	$5766 \pm 13$
$n_s$	0.96557	$0.9653 \pm 0.0042$	$\langle d^2 \rangle^{1/2}$	2.4331	$2.432 \pm 0.024$	$f\sigma_8(0.15)$	0.4568	$0.4568 \pm 0.0061$
$dn_s/d \ln k$	-0.0032	$-0.0050 \pm 0.0076$	$z_{\text{re}}$	7.84	$7.93 \pm 0.76$	$\sigma_8(0.15)$	0.7483	$0.7486 \pm 0.0056$
$r$	0.0155	$0.0289^{+0.0085}_{-0.027}$	$10^9 A_s$	2.1044	$2.109^{+0.030}_{-0.034}$	$f\sigma_8(0.38)$	0.4751	$0.4751 \pm 0.0050$
$y_{\text{cal}}$	1.00083	$1.0008 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8823	$1.882 \pm 0.011$	$\sigma_8(0.38)$	0.66330	$0.6635 \pm 0.0050$
$A_{B,\text{dust}}$	4.62	$4.86^{+0.82}_{-1.2}$	$D_{40}$	1226.6	$1227 \pm 20$	$f\sigma_8(0.51)$	0.47363	$0.4737 \pm 0.0045$
$A_{B,\text{sync}}$	1.46	$1.62^{+0.52}_{-1.4}$	$D_{220}$	5726.2	$5724 \pm 40$	$\sigma_8(0.51)$	0.62072	$0.6210^{+0.0043}_{-0.0048}$
$\alpha_{B,\text{dust}}$	-0.499	$-0.56^{+0.23}_{-0.31}$	$D_{810}$	2539.9	$2539 \pm 14$	$f\sigma_8(0.61)$	0.46863	$0.4687 \pm 0.0042$
$\beta_{B,\text{dust}}$	1.577	$1.598 \pm 0.096$	$D_{1420}$	816.0	$815.2 \pm 5.1$	$\sigma_8(0.61)$	0.59062	$0.5908^{+0.0041}_{-0.0046}$
$\alpha_{B,\text{sync}}$	-0.24	—	$D_{2000}$	229.97	$229.6 \pm 1.9$	$f\sigma_8(2.33)$	0.29778	$0.2979^{+0.0021}_{-0.0024}$
$\beta_{B,\text{sync}}$	-3.036	$-3.10 \pm 0.27$	$n_{s,0.002}$	0.9759	$0.981 \pm 0.024$	$\sigma_8(2.33)$	0.30698	$0.3071 \pm 0.0024$
$\epsilon_{\text{dust,sync}}$	-0.337	$-0.35 \pm 0.28$	$Y_P$	0.245346	$0.245347^{+0.000096}_{-0.000078}$	$r_{0.002}$	0.0142	$0.0272^{+0.0071}_{-0.026}$
$A_{217}^{\text{CIB}}$	50.9	$48 \pm 7$	$Y_P^{\text{BBN}}$	0.246673	$0.246673^{+0.000096}_{-0.000079}$	$r_{0.01}$	0.0148	$0.0278^{+0.0078}_{-0.027}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.06	—	$10^5 \text{D}/\text{H}$	2.6084	$2.607 \pm 0.040$	$\ln(10^{10} A_t)$	-1.12	$-0.81^{+1.0}_{-0.41}$
$A_{143}^{\text{tSZ}}$	7.12	$5.0 \pm 2.0$	$\text{Age}/\text{Gyr}$	13.8049	$13.804 \pm 0.029$	$r_{10}$	0.0073	$0.0140^{+0.0036}_{-0.014}$
$A_{100}^{\text{PS}}$	258.9	$265 \pm 28$	$z_*$	1090.011	$1090.00 \pm 0.30$	$10^9 A_t$	0.0326	$0.061^{+0.018}_{-0.058}$
$A_{143}^{\text{PS}}$	46.6	$50 \pm 8$	$r_*$	144.706	$144.71 \pm 0.30$	$10^9 A_t e^{-2\tau}$	0.0291	$0.054^{+0.016}_{-0.052}$
$A_{143 \times 217}^{\text{PS}}$	40.3	$43^{+9}_{-10}$	$100\theta_*$	1.041174	$1.04118 \pm 0.00042$	$f_{2000}^{143}$	31.06	$31.7 \pm 3.2$
$A_{217}^{\text{PS}}$	116.3	$115 \pm 10$	$D_M(z_*)/\text{Gpc}$	13.8984	$13.898 \pm 0.030$	$f_{2000}^{143 \times 217}$	33.60	$33.9 \pm 2.2$
$A^{\text{kSZ}}$	0.00	$< 5.21$	$z_{\text{drag}}$	1059.589	$1059.63 \pm 0.49$	$f_{2000}^{217}$	108.13	$108.5 \pm 2.1$
$A_{100}^{\text{dustTT}}$	8.86	$8.9 \pm 1.8$	$r_{\text{drag}}$	147.415	$147.41 \pm 0.34$	$\chi^2_{\text{lensing}}$	8.873	$9.38 \pm 0.70$
$A_{143}^{\text{dustTT}}$	10.72	$10.7 \pm 1.8$	$k_D$	0.140436	$0.14044 \pm 0.00047$	$\chi^2_{\text{BKPLANCK}}$	735.50	$739.8 \pm 2.6$
$A_{143 \times 217}^{\text{dustTT}}$	18.98	$18.3 \pm 3.4$	$100\theta_D$	0.160956	$0.16095 \pm 0.00028$	$\chi^2_{\text{small}}$	396.35	$397.5 \pm 2.0$
$A_{217}^{\text{dustTT}}$	93.8	$93.3 \pm 7.5$	$z_{\text{eq}}$	3382.4	$3382 \pm 26$	$\chi^2_{\text{lowl}}$	22.81	$23.2 \pm 2.0$
$c_{100}$	0.99968	$0.99962 \pm 0.00062$	$k_{\text{eq}}$	0.010323	$0.010322 \pm 0.000078$	$\chi^2_{\text{plik}}$	759.8	$772.6 \pm 5.6$
$c_{217}$	0.99828	$0.99827 \pm 0.00063$	$100\theta_{\text{eq}}$	0.81656	$0.8167 \pm 0.0047$	$\chi^2_{6\text{DF}}$	0.0374	$0.064 \pm 0.076$
$H_0$	67.523	$67.55 \pm 0.50$	$100\theta_{s,\text{eq}}$	0.45118	$0.4513 \pm 0.0024$	$\chi^2_{\text{MGS}}$	1.156	$1.24 \pm 0.45$
$\Omega_\Lambda$	0.6881	$0.6883 \pm 0.0065$	$H(0.15)$	72.805	$72.83 \pm 0.43$	$\chi^2_{\text{DR12BAO}}$	4.57	$5.0 \pm 1.6$
$\Omega_m$	0.3119	$0.3117 \pm 0.0065$	$D_M(0.15)$	642.02	$641.8 \pm 4.3$	$\chi^2_{\text{prior}}$	1.56	$9.0 \pm 4.0$
$\Omega_m h^2$	0.14219	$0.1422 \pm 0.0011$	$H(0.38)$	82.919	$82.94 \pm 0.33$	$\chi^2_{\text{CMB}}$	1923.3	$1942.4 \pm 6.3$
$\Omega_m h^3$	0.096008	$0.09602 \pm 0.00049$	$D_M(0.38)$	1531.1	$1530.7 \pm 8.7$	$\chi^2_{\text{BAO}}$	5.76	$6.3 \pm 1.3$
$\sigma_8$	0.8099	$0.8101 \pm 0.0062$	$H(0.51)$	89.637	$89.65 \pm 0.28$			

Best-fit  $\chi^2_{\text{eff}} = 1930.66$ ;  $\bar{\chi}^2_{\text{eff}} = 1957.70$ ;  $R - 1 = 0.00643$   
 $\chi^2_{\text{eff}}$ : BAO - 6DF: 0.04 MGS: 1.16 DR12BAO: 4.57 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.87 BK15\_dust: 735.50 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.35 commander\_dx12\_v3.2.29: 22.81 plik\_rd12\_HM\_v22.TT: 759.81



### 15.33 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE\_BK15\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02216 \pm 0.00023$	$\Omega_{\mathrm{m}}h^3$	$0.09606 \pm 0.00049$	$D_{\mathrm{M}}(0.15)$	$649.3 \pm 7.8$
$\Omega_{\mathrm{c}}h^2$	$0.1213 \pm 0.0021$	$\sigma_8$	$0.8158 \pm 0.0085$	$H(0.38)$	$82.43 \pm 0.54$
$100\theta_{\mathrm{MC}}$	$1.04073 \pm 0.00047$	$S_8$	$0.848 \pm 0.024$	$D_{\mathrm{M}}(0.38)$	$1545 \pm 15$
$\tau$	$0.0554^{+0.0055}_{-0.0089}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.465 \pm 0.013$	$H(0.51)$	$89.27 \pm 0.43$
$\ln(10^{10}A_{\mathrm{s}})$	$3.050^{+0.013}_{-0.018}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.616 \pm 0.011$	$D_{\mathrm{M}}(0.51)$	$2000 \pm 18$
$n_{\mathrm{s}}$	$0.9608 \pm 0.0057$	$\sigma_8/h^{0.5}$	$0.999 \pm 0.016$	$H(0.61)$	$94.98^{+0.32}_{-0.36}$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0066 \pm 0.0076$	$r_{\mathrm{drag}}h$	$98.0 \pm 1.6$	$D_{\mathrm{M}}(0.61)$	$2326 \pm 19$
$r$	$< 0.0334$	$\langle d^2 \rangle^{1/2}$	$2.460 \pm 0.037$	$H(2.33)$	$237.2 \pm 1.3$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$z_{\mathrm{re}}$	$7.84^{+0.60}_{-0.86}$	$D_{\mathrm{M}}(2.33)$	$5778 \pm 16$
$A_{B,\mathrm{dust}}$	$4.85^{+0.81}_{-1.2}$	$10^9 A_{\mathrm{s}}$	$2.112^{+0.027}_{-0.038}$	$f\sigma_8(0.15)$	$0.468 \pm 0.012$
$A_{B,\mathrm{sync}}$	$1.63^{+0.53}_{-1.4}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.891 \pm 0.014$	$\sigma_8(0.15)$	$0.7526 \pm 0.0071$
$\alpha_{B,\mathrm{dust}}$	$-0.57^{+0.21}_{-0.33}$	$D_{40}$	$1232 \pm 21$	$f\sigma_8(0.38)$	$0.4835 \pm 0.0093$
$\beta_{B,\mathrm{dust}}$	$1.600 \pm 0.097$	$D_{220}$	$5712 \pm 41$	$\sigma_8(0.38)$	$0.6657^{+0.0051}_{-0.0059}$
$\alpha_{B,\mathrm{sync}}$	—	$D_{810}$	$2540 \pm 14$	$f\sigma_8(0.51)$	$0.4806 \pm 0.0079$
$\beta_{B,\mathrm{sync}}$	$-3.10 \pm 0.27$	$D_{1420}$	$813.8 \pm 5.2$	$\sigma_8(0.51)$	$0.6225^{+0.0045}_{-0.0055}$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$-0.35 \pm 0.28$	$D_{2000}$	$229.0 \pm 1.9$	$f\sigma_8(0.61)$	$0.4746 \pm 0.0070$
$A_{217}^{\mathrm{CIB}}$	$49 \pm 7$	$n_{\mathrm{s},0.002}$	$0.982 \pm 0.024$	$\sigma_8(0.61)$	$0.5920^{+0.0041}_{-0.0051}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24530^{+0.00011}_{-0.000087}$	$f\sigma_8(2.33)$	$0.2980^{+0.0019}_{-0.0026}$
$A_{143}^{\mathrm{tSZ}}$	$4.9 \pm 2.0$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00011}_{-0.000088}$	$\sigma_8(2.33)$	$0.3067^{+0.0020}_{-0.0028}$
$A_{100}^{\mathrm{PS}}$	$267 \pm 28$	$10^5 \mathrm{D}/\mathrm{H}$	$2.626 \pm 0.044$	$r_{0.002}$	$< 0.0309$
$A_{143}^{\mathrm{PS}}$	$51 \pm 8$	$\mathrm{Age}/\mathrm{Gyr}$	$13.829 \pm 0.036$	$r_{0.01}$	$< 0.0318$
$A_{143 \times 217}^{\mathrm{PS}}$	$44^{+9}_{-10}$	$z_*$	$1090.30 \pm 0.40$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.91^{+1.1}_{-0.42}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$r_*$	$144.27 \pm 0.48$	$r_{10}$	$< 0.0160$
$A^{\mathrm{kSZ}}$	$< 5.35$	$100\theta_*$	$1.04094 \pm 0.00046$	$10^9 A_{\mathrm{t}}$	$< 0.0705$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.860 \pm 0.045$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.0631$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.8$	$z_{\mathrm{drag}}$	$1059.54 \pm 0.49$	$f_{2000}^{143}$	$32.3 \pm 3.2$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.4 \pm 3.3$	$r_{\mathrm{drag}}$	$147.00 \pm 0.49$	$f_{2000}^{143 \times 217}$	$34.4 \pm 2.2$
$A_{217}^{\mathrm{dust}TT}$	$93.3 \pm 7.4$	$k_{\mathrm{D}}$	$0.14080 \pm 0.00056$	$f_{2000}^{217}$	$108.9 \pm 2.1$
$c_{100}$	$0.99961 \pm 0.00061$	$100\theta_{\mathrm{D}}$	$0.16099 \pm 0.00029$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.1 \pm 2.7$
$c_{217}$	$0.99827 \pm 0.00063$	$z_{\mathrm{eq}}$	$3427 \pm 47$	$\chi_{\mathrm{simall}}^2$	$397.2 \pm 2.0$
$H_0$	$66.69 \pm 0.89$	$k_{\mathrm{eq}}$	$0.01046 \pm 0.00014$	$\chi_{\mathrm{lowl}}^2$	$23.5 \pm 2.2$
$\Omega_{\Lambda}$	$0.676 \pm 0.013$	$100\theta_{\mathrm{eq}}$	$0.8082 \pm 0.0087$	$\chi_{\mathrm{plik}}^2$	$772.7 \pm 5.7$
$\Omega_{\mathrm{m}}$	$0.324 \pm 0.013$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4469 \pm 0.0045$	$\chi_{\mathrm{prior}}^2$	$8.9 \pm 4.0$
$\Omega_{\mathrm{m}}h^2$	$0.1441 \pm 0.0020$	$H(0.15)$	$72.10 \pm 0.76$	$\chi_{\mathrm{CMB}}^2$	$1932.6 \pm 6.2$

$$\bar{\chi}_{\mathrm{eff}}^2 = 1941.52; R - 1 = 0.00204$$



### 15.34 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE\_BK15\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02227 \pm 0.00021$	$S_8$	$0.825 \pm 0.015$	$D_M(0.51)$	$1982 \pm 11$
$\Omega_c h^2$	$0.1192 \pm 0.0012$	$\sigma_8 \Omega_m^{0.5}$	$0.4521 \pm 0.0081$	$H(0.61)$	$95.28 \pm 0.25$
$100\theta_{MC}$	$1.04100 \pm 0.00042$	$\sigma_8 \Omega_m^{0.25}$	$0.6052 \pm 0.0078$	$D_M(0.61)$	$2307 \pm 12$
$\tau$	$0.0573^{+0.0060}_{-0.0088}$	$\sigma_8/h^{0.5}$	$0.986 \pm 0.011$	$H(2.33)$	$235.96 \pm 0.80$
$\ln(10^{10} A_s)$	$3.049^{+0.014}_{-0.019}$	$r_{\text{drag}} h$	$99.60 \pm 0.93$	$D_M(2.33)$	$5765 \pm 13$
$n_s$	$0.9655 \pm 0.0044$	$\langle d^2 \rangle^{1/2}$	$2.429 \pm 0.028$	$f\sigma_8(0.15)$	$0.4567 \pm 0.0076$
$dn_s/d \ln k$	$-0.0060 \pm 0.0077$	$z_{\text{re}}$	$7.97^{+0.65}_{-0.85}$	$\sigma_8(0.15)$	$0.7486^{+0.0059}_{-0.0071}$
$r$	$0.0295^{+0.0088}_{-0.028}$	$10^9 A_s$	$2.110^{+0.029}_{-0.040}$	$f\sigma_8(0.38)$	$0.4750 \pm 0.0064$
$y_{\text{cal}}$	$1.0007 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.882 \pm 0.012$	$\sigma_8(0.38)$	$0.6636^{+0.0048}_{-0.0061}$
$A_{B,\text{dust}}$	$4.85^{+0.82}_{-1.2}$	$D_{40}$	$1224 \pm 20$	$f\sigma_8(0.51)$	$0.4736 \pm 0.0057$
$A_{B,\text{sync}}$	$1.62^{+0.52}_{-1.4}$	$D_{220}$	$5721 \pm 40$	$\sigma_8(0.51)$	$0.6210^{+0.0044}_{-0.0057}$
$\alpha_{B,\text{dust}}$	$-0.55^{+0.23}_{-0.31}$	$D_{810}$	$2539 \pm 14$	$f\sigma_8(0.61)$	$0.4687 \pm 0.0053$
$\beta_{B,\text{dust}}$	$1.598 \pm 0.097$	$D_{1420}$	$815.0 \pm 5.1$	$\sigma_8(0.61)$	$0.5909^{+0.0041}_{-0.0054}$
$\alpha_{B,\text{sync}}$	—	$D_{2000}$	$229.5 \pm 1.9$	$f\sigma_8(2.33)$	$0.2980^{+0.0021}_{-0.0027}$
$\beta_{B,\text{sync}}$	$-3.10 \pm 0.27$	$n_{s,0.002}$	$0.985 \pm 0.024$	$\sigma_8(2.33)$	$0.3072^{+0.0021}_{-0.0028}$
$\epsilon_{\text{dust,sync}}$	$-0.35 \pm 0.28$	$Y_P$	$0.245351^{+0.000095}_{-0.000079}$	$r_{0.002}$	$0.0278^{+0.0074}_{-0.027}$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$Y_P^{\text{BBN}}$	$0.246677^{+0.000096}_{-0.000079}$	$r_{0.01}$	$0.0284^{+0.0081}_{-0.027}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^5 D/H$	$2.605 \pm 0.040$	$\ln(10^{10} A_t)$	$-0.79^{+1.0}_{-0.41}$
$A_{143}^{\text{tSZ}}$	$4.9 \pm 2.0$	$\text{Age/Gyr}$	$13.802 \pm 0.029$	$r_{10}$	$0.0144^{+0.0037}_{-0.014}$
$A_{100}^{\text{PS}}$	$266 \pm 28$	$z_*$	$1089.98 \pm 0.31$	$10^9 A_t$	$0.062^{+0.019}_{-0.058}$
$A_{143}^{\text{PS}}$	$50 \pm 8$	$r_*$	$144.71 \pm 0.33$	$10^9 A_t e^{-2\tau}$	$0.055^{+0.017}_{-0.052}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+9}_{-10}$	$100\theta_*$	$1.04119 \pm 0.00042$	$f_{2000}^{143}$	$31.8 \pm 3.2$
$A_{217}^{\text{PS}}$	$114 \pm 10$	$D_M(z_*)/\text{Gpc}$	$13.898 \pm 0.033$	$f_{2000}^{143 \times 217}$	$34.0 \pm 2.2$
$A^{\text{kSZ}}$	$< 5.27$	$z_{\text{drag}}$	$1059.65 \pm 0.49$	$f_{2000}^{217}$	$108.5 \pm 2.1$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$r_{\text{drag}}$	$147.41 \pm 0.37$	$\chi_{\text{BKPLANCK}}^2$	$739.8 \pm 2.6$
$A_{143}^{\text{dustTT}}$	$10.8 \pm 1.8$	$k_D$	$0.14046 \pm 0.00050$	$\chi_{\text{simall}}^2$	$397.5 \pm 2.2$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3 \pm 3.4$	$100\theta_D$	$0.16094 \pm 0.00029$	$\chi_{\text{lowl}}^2$	$22.9 \pm 1.9$
$A_{217}^{\text{dustTT}}$	$93.3 \pm 7.5$	$z_{\text{eq}}$	$3382 \pm 29$	$\chi_{\text{plik}}^2$	$773.0 \pm 5.7$
$c_{100}$	$0.99962 \pm 0.00062$	$k_{\text{eq}}$	$0.010321 \pm 0.000088$	$\chi_{6\text{DF}}^2$	$0.069 \pm 0.085$
$c_{217}$	$0.99827 \pm 0.00063$	$100\theta_{\text{eq}}$	$0.8168 \pm 0.0053$	$\chi_{\text{MGS}}^2$	$1.26 \pm 0.50$
$H_0$	$67.57 \pm 0.54$	$100\theta_{s,\text{eq}}$	$0.4513 \pm 0.0027$	$\chi_{\text{DR12BAO}}^2$	$5.0 \pm 1.8$
$\Omega_\Lambda$	$0.6886 \pm 0.0073$	$H(0.15)$	$72.85 \pm 0.47$	$\chi_{\text{prior}}^2$	$9.0 \pm 4.0$
$\Omega_m$	$0.3114 \pm 0.0073$	$D_M(0.15)$	$641.6 \pm 4.6$	$\chi_{\text{BAO}}^2$	$6.4 \pm 1.5$
$\Omega_m h^2$	$0.1421 \pm 0.0012$	$H(0.38)$	$82.95 \pm 0.35$	$\chi_{\text{CMB}}^2$	$1933.2 \pm 6.3$
$\Omega_m h^3$	$0.09604 \pm 0.00050$	$D_M(0.38)$	$1530.3 \pm 9.3$		
$\sigma_8$	$0.8101^{+0.0068}_{-0.0080}$	$H(0.51)$	$89.67 \pm 0.29$		

$$\bar{\chi}_{\text{eff}}^2 = 1948.61; R - 1 = 0.00617$$



### 15.35 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE\_BK15\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02219 \pm 0.00022$	$\sigma_8$	$0.8122 \pm 0.0060$	$D_M(0.38)$	$1539 \pm 12$
$\Omega_c h^2$	$0.1204 \pm 0.0015$	$S_8$	$0.837 \pm 0.016$	$H(0.51)$	$89.42 \pm 0.36$
$100\theta_{MC}$	$1.04081 \pm 0.00045$	$\sigma_8 \Omega_m^{0.5}$	$0.4585 \pm 0.0088$	$D_M(0.51)$	$1993 \pm 14$
$\tau$	$0.0549^{+0.0052}_{-0.0086}$	$\sigma_8 \Omega_m^{0.25}$	$0.6102 \pm 0.0076$	$H(0.61)$	$95.09 \pm 0.30$
$\ln(10^{10} A_s)$	$3.047^{+0.012}_{-0.016}$	$\sigma_8/h^{0.5}$	$0.992 \pm 0.010$	$D_M(0.61)$	$2318 \pm 15$
$n_s$	$0.9628 \pm 0.0049$	$r_{\text{drag}} h$	$98.7 \pm 1.2$	$H(2.33)$	$236.61 \pm 0.94$
$dn_s/d \ln k$	$-0.0051 \pm 0.0075$	$\langle d^2 \rangle^{1/2}$	$2.446 \pm 0.027$	$D_M(2.33)$	$5774 \pm 15$
$r$	$< 0.0344$	$z_{\text{re}}$	$7.77^{+0.58}_{-0.82}$	$f\sigma_8(0.15)$	$0.4625 \pm 0.0080$
$y_{\text{cal}}$	$1.0006 \pm 0.0025$	$10^9 A_s$	$2.105^{+0.024}_{-0.034}$	$\sigma_8(0.15)$	$0.7498 \pm 0.0052$
$A_{B,\text{dust}}$	$4.86^{+0.82}_{-1.2}$	$10^9 A_s e^{-2\tau}$	$1.886 \pm 0.012$	$f\sigma_8(0.38)$	$0.4792 \pm 0.0062$
$A_{B,\text{sync}}$	$1.63^{+0.53}_{-1.4}$	$D_{40}$	$1231 \pm 20$	$\sigma_8(0.38)$	$0.6639^{+0.0040}_{-0.0048}$
$\alpha_{B,\text{dust}}$	$-0.56^{+0.22}_{-0.32}$	$D_{220}$	$5715 \pm 41$	$f\sigma_8(0.51)$	$0.4770 \pm 0.0053$
$\beta_{B,\text{dust}}$	$1.599 \pm 0.097$	$D_{810}$	$2538 \pm 14$	$\sigma_8(0.51)$	$0.6210^{+0.0036}_{-0.0046}$
$\alpha_{B,\text{sync}}$	—	$D_{1420}$	$814.1 \pm 5.2$	$f\sigma_8(0.61)$	$0.4714 \pm 0.0047$
$\beta_{B,\text{sync}}$	$-3.10 \pm 0.27$	$D_{2000}$	$229.2 \pm 1.9$	$\sigma_8(0.61)$	$0.5907^{+0.0034}_{-0.0044}$
$\epsilon_{\text{dust,sync}}$	$-0.35 \pm 0.29$	$n_{s,0.002}$	$0.979 \pm 0.024$	$f\sigma_8(2.33)$	$0.2976^{+0.0018}_{-0.0023}$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$Y_P$	$0.24532^{+0.00010}_{-0.000085}$	$\sigma_8(2.33)$	$0.3065^{+0.0019}_{-0.0026}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24664^{+0.00010}_{-0.000085}$	$r_{0.002}$	$< 0.0318$
$A_{143}^{\text{tSZ}}$	$4.9 \pm 2.0$	$10^5 \text{D/H}$	$2.620 \pm 0.042$	$r_{0.01}$	$< 0.0328$
$A_{100}^{\text{PS}}$	$266 \pm 28$	Age/Gyr	$13.820 \pm 0.033$	$\ln(10^{10} A_t)$	$-0.87^{+1.1}_{-0.41}$
$A_{143}^{\text{PS}}$	$50 \pm 8$	$z_*$	$1090.18 \pm 0.35$	$r_{10}$	$< 0.0164$
$A_{143 \times 217}^{\text{PS}}$	$44^{+9}_{-10}$	$r_*$	$144.48 \pm 0.37$	$10^9 A_t$	$< 0.0722$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$100\theta_*$	$1.04101 \pm 0.00044$	$10^9 A_t e^{-2\tau}$	$< 0.0648$
$A^{\text{kSZ}}$	$< 5.33$	$D_M(z_*)/\text{Gpc}$	$13.879 \pm 0.035$	$f_{2000}^{143}$	$32.0 \pm 3.2$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$z_{\text{drag}}$	$1059.54 \pm 0.49$	$f_{2000}^{143 \times 217}$	$34.2 \pm 2.2$
$A_{143}^{\text{dustTT}}$	$10.8 \pm 1.8$	$r_{\text{drag}}$	$147.20 \pm 0.39$	$f_{2000}^{217}$	$108.7 \pm 2.1$
$A_{143 \times 217}^{\text{dustTT}}$	$18.4 \pm 3.3$	$k_D$	$0.14061 \pm 0.00049$	$\chi_{\text{lensing}}^2$	$9.7 \pm 1.1$
$A_{217}^{\text{dustTT}}$	$93.3 \pm 7.4$	$100\theta_D$	$0.16099 \pm 0.00029$	$\chi_{\text{BKPLANCK}}^2$	$739.4 \pm 2.6$
$c_{100}$	$0.99961 \pm 0.00061$	$z_{\text{eq}}$	$3406 \pm 35$	$\chi_{\text{small}}^2$	$397.1 \pm 1.7$
$c_{217}$	$0.99827 \pm 0.00063$	$k_{\text{eq}}$	$0.01040 \pm 0.00011$	$\chi_{\text{lowl}}^2$	$23.6 \pm 2.2$
$H_0$	$67.05 \pm 0.69$	$100\theta_{\text{eq}}$	$0.8120 \pm 0.0064$	$\chi_{\text{plik}}^2$	$772.2 \pm 5.5$
$\Omega_\Lambda$	$0.6813 \pm 0.0095$	$100\theta_{s,\text{eq}}$	$0.4488 \pm 0.0033$	$\chi_{\text{prior}}^2$	$8.9 \pm 4.0$
$\Omega_m$	$0.3187 \pm 0.0095$	$H(0.15)$	$72.40 \pm 0.59$	$\chi_{\text{CMB}}^2$	$1942.0 \pm 6.2$
$\Omega_m h^2$	$0.1432 \pm 0.0015$	$D_M(0.15)$	$646.1 \pm 6.0$		
$\Omega_m h^3$	$0.09600 \pm 0.00049$	$H(0.38)$	$82.63 \pm 0.44$		

$\bar{\chi}_{\text{eff}}^2 = 1950.93$ ;  $R - 1 = 0.00327$



### 15.36 base\_nrun\_r\_plikHM\_TT\_lowl\_lowE\_BK15\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02226 \pm 0.00021$	$S_8$	$0.826 \pm 0.012$	$D_M(0.51)$	$1983 \pm 10$
$\Omega_c h^2$	$0.1192 \pm 0.0011$	$\sigma_8 \Omega_m^{0.5}$	$0.4523 \pm 0.0065$	$H(0.61)$	$95.28 \pm 0.24$
$100\theta_{MC}$	$1.04099 \pm 0.00042$	$\sigma_8 \Omega_m^{0.25}$	$0.6054 \pm 0.0062$	$D_M(0.61)$	$2307 \pm 11$
$\tau$	$0.0574^{+0.0061}_{-0.0080}$	$\sigma_8/h^{0.5}$	$0.9860 \pm 0.0088$	$H(2.33)$	$235.96 \pm 0.71$
$\ln(10^{10} A_s)$	$3.050^{+0.013}_{-0.016}$	$r_{\text{drag}} h$	$99.59 \pm 0.83$	$D_M(2.33)$	$5766 \pm 13$
$n_s$	$0.9654 \pm 0.0042$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.024$	$f\sigma_8(0.15)$	$0.4569 \pm 0.0061$
$dn_s/d \ln k$	$-0.0051 \pm 0.0076$	$z_{\text{re}}$	$7.99^{+0.65}_{-0.77}$	$\sigma_8(0.15)$	$0.7489^{+0.0050}_{-0.0058}$
$r$	$0.0290^{+0.0085}_{-0.027}$	$10^9 A_s$	$2.111^{+0.027}_{-0.035}$	$f\sigma_8(0.38)$	$0.4752 \pm 0.0050$
$y_{\text{cal}}$	$1.0008 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.882 \pm 0.011$	$\sigma_8(0.38)$	$0.6638^{+0.0042}_{-0.0051}$
$A_{B,\text{dust}}$	$4.85^{+0.82}_{-1.2}$	$D_{40}$	$1227 \pm 20$	$f\sigma_8(0.51)$	$0.4738 \pm 0.0045$
$A_{B,\text{sync}}$	$1.62^{+0.52}_{-1.4}$	$D_{220}$	$5724 \pm 40$	$\sigma_8(0.51)$	$0.6212^{+0.0039}_{-0.0048}$
$\alpha_{B,\text{dust}}$	$-0.56^{+0.23}_{-0.31}$	$D_{810}$	$2539 \pm 14$	$f\sigma_8(0.61)$	$0.4688 \pm 0.0041$
$\beta_{B,\text{dust}}$	$1.598 \pm 0.097$	$D_{1420}$	$815.2 \pm 5.1$	$\sigma_8(0.61)$	$0.5911^{+0.0037}_{-0.0046}$
$\alpha_{B,\text{sync}}$	—	$D_{2000}$	$229.6 \pm 1.9$	$f\sigma_8(2.33)$	$0.2980^{+0.0019}_{-0.0024}$
$\beta_{B,\text{sync}}$	$-3.10 \pm 0.27$	$n_{s,0.002}$	$0.982 \pm 0.024$	$\sigma_8(2.33)$	$0.3073^{+0.0020}_{-0.0025}$
$\epsilon_{\text{dust,sync}}$	$-0.35 \pm 0.28$	$Y_P$	$0.245348^{+0.000095}_{-0.000078}$	$r_{0.002}$	$0.0272^{+0.0071}_{-0.026}$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$Y_P^{\text{BBN}}$	$0.246675^{+0.000096}_{-0.000079}$	$r_{0.01}$	$0.0279^{+0.0078}_{-0.027}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^5 D/H$	$2.606 \pm 0.040$	$\ln(10^{10} A_t)$	$-0.81^{+1.0}_{-0.41}$
$A_{143}^{\text{tSZ}}$	$5.0 \pm 2.0$	$\text{Age/Gyr}$	$13.803 \pm 0.029$	$r_{10}$	$0.0140^{+0.0036}_{-0.014}$
$A_{100}^{\text{PS}}$	$265 \pm 28$	$z_*$	$1089.99 \pm 0.30$	$10^9 A_t$	$0.061^{+0.018}_{-0.058}$
$A_{143}^{\text{PS}}$	$50 \pm 8$	$r_*$	$144.71 \pm 0.30$	$10^9 A_t e^{-2\tau}$	$0.055^{+0.016}_{-0.052}$
$A_{143 \times 217}^{\text{PS}}$	$43^{+9}_{-10}$	$100\theta_*$	$1.04118 \pm 0.00042$	$f_{2000}^{143}$	$31.7 \pm 3.2$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$D_M(z_*)/\text{Gpc}$	$13.899 \pm 0.030$	$f_{2000}^{143 \times 217}$	$33.9 \pm 2.2$
$A^{\text{kSZ}}$	$< 5.21$	$z_{\text{drag}}$	$1059.63 \pm 0.49$	$f_{2000}^{217}$	$108.5 \pm 2.1$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$r_{\text{drag}}$	$147.41 \pm 0.34$	$\chi_{\text{lensing}}^2$	$9.36 \pm 0.67$
$A_{143}^{\text{dustTT}}$	$10.7 \pm 1.8$	$k_D$	$0.14044 \pm 0.00047$	$\chi_{\text{BKPLANCK}}^2$	$739.7 \pm 2.6$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3 \pm 3.4$	$100\theta_D$	$0.16094 \pm 0.00028$	$\chi_{\text{simall}}^2$	$397.5 \pm 2.0$
$A_{217}^{\text{dustTT}}$	$93.3 \pm 7.5$	$z_{\text{eq}}$	$3381 \pm 25$	$\chi_{\text{lowl}}^2$	$23.2 \pm 2.0$
$c_{100}$	$0.99962 \pm 0.00062$	$k_{\text{eq}}$	$0.010320 \pm 0.000078$	$\chi_{\text{plik}}^2$	$772.6 \pm 5.6$
$c_{217}$	$0.99827 \pm 0.00063$	$100\theta_{\text{eq}}$	$0.8168 \pm 0.0046$	$\chi_{6\text{DF}}^2$	$0.062 \pm 0.074$
$H_0$	$67.56 \pm 0.49$	$100\theta_{s,\text{eq}}$	$0.4513 \pm 0.0024$	$\chi_{\text{MGS}}^2$	$1.25 \pm 0.45$
$\Omega_\Lambda$	$0.6885 \pm 0.0065$	$H(0.15)$	$72.84 \pm 0.43$	$\chi_{\text{DR12BAO}}^2$	$4.9 \pm 1.6$
$\Omega_m$	$0.3115 \pm 0.0065$	$D_M(0.15)$	$641.7 \pm 4.2$	$\chi_{\text{prior}}^2$	$9.0 \pm 4.0$
$\Omega_m h^2$	$0.1421 \pm 0.0011$	$H(0.38)$	$82.94 \pm 0.33$	$\chi_{\text{CMB}}^2$	$1942.4 \pm 6.3$
$\Omega_m h^3$	$0.09603 \pm 0.00049$	$D_M(0.38)$	$1530.5 \pm 8.6$	$\chi_{\text{BAO}}^2$	$6.3 \pm 1.3$
$\sigma_8$	$0.8104^{+0.0056}_{-0.0063}$	$H(0.51)$	$89.66 \pm 0.28$		

$\bar{\chi}_{\text{eff}}^2 = 1957.58$ ;  $R - 1 = 0.00713$



### 15.37 base\_nrun\_r\_plikHM\_TTTEE\_lowl\_lowE\_BK15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022384	$0.02238 \pm 0.00015$ (+1.0 $\sigma$ )	$H_0$	67.14	$67.14 \pm 0.61$ (+0.5 $\sigma$ )	$100\theta_{s,eq}$	0.44798	$0.4480 \pm 0.0030$ (+0.3 $\sigma$ )
$\Omega_c h^2$	0.12062	$0.1206 \pm 0.0014$ (−0.4 $\sigma$ )	$\Omega_\Lambda$	0.6813	$0.6813 \pm 0.0086$ (+0.5 $\sigma$ )	$H(0.15)$	72.50	$72.51 \pm 0.52$ (+0.6 $\sigma$ )
$100\theta_{MC}$	1.040876	$1.04087 \pm 0.00031$ (+0.3 $\sigma$ )	$\Omega_m$	0.3187	$0.3187 \pm 0.0086$ (−0.5 $\sigma$ )	$D_M(0.15)$	645.2	$645.2 \pm 5.3$ (−0.6 $\sigma$ )
$\tau$	0.0559	$0.0569^{+0.0076}_{-0.0085}$ (+0.3 $\sigma$ )	$\Omega_m h^2$	0.14365	$0.1436 \pm 0.0013$ (−0.3 $\sigma$ )	$H(0.38)$	82.748	$82.75 \pm 0.38$ (+0.6 $\sigma$ )
$\ln(10^{10} A_s)$	3.0504	$3.053 \pm 0.017$ (+0.3 $\sigma$ )	$\Omega_m h^3$	0.096438	$0.09643 \pm 0.00031$ (+0.8 $\sigma$ )	$D_M(0.38)$	1537.1	$1537 \pm 11$ (−0.6 $\sigma$ )
$n_s$	0.96367	$0.9629 \pm 0.0046$ (+0.4 $\sigma$ )	$\sigma_8$	0.8139	$0.8143 \pm 0.0076$ (−0.1 $\sigma$ )	$H(0.51)$	89.545	$89.55 \pm 0.30$ (+0.7 $\sigma$ )
$dn_s/d \ln k$	−0.0063	$−0.0079 \pm 0.0070$ (−0.2 $\sigma$ )	$S_8$	0.8389	$0.839 \pm 0.016$ (−0.4 $\sigma$ )	$D_M(0.51)$	1990.0	$1990 \pm 12$ (−0.6 $\sigma$ )
$r$	0.0167	$0.0297^{+0.0091}_{-0.028}$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4595	$0.4597 \pm 0.0089$ (−0.4 $\sigma$ )	$H(0.61)$	95.226	$95.23 \pm 0.24$ (+0.8 $\sigma$ )
$y_{cal}$	1.00052	$1.0008 \pm 0.0025$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6116	$0.6118 \pm 0.0084$ (−0.3 $\sigma$ )	$D_M(0.61)$	2314.7	$2315 \pm 13$ (−0.6 $\sigma$ )
$A_{B,dust}$	4.62	$4.86^{+0.81}_{-1.2}$ (+0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9934	$0.994 \pm 0.012$ (−0.3 $\sigma$ )	$H(2.33)$	236.98	$236.96 \pm 0.84$ (−0.2 $\sigma$ )
$A_{B,sync}$	1.49	$1.62^{+0.52}_{-1.3}$ (−0.0 $\sigma$ )	$r_{drag} h$	98.63	$98.7 \pm 1.1$ (+0.4 $\sigma$ )	$D_M(2.33)$	5765.0	$5765 \pm 11$ (−0.8 $\sigma$ )
$\alpha_{B,dust}$	−0.515	$−0.57^{+0.21}_{-0.32}$ (+0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4463	$2.447 \pm 0.029$ (−0.3 $\sigma$ )	$f\sigma_8(0.15)$	0.4635	$0.4637 \pm 0.0083$ (−0.3 $\sigma$ )
$\beta_{B,dust}$	1.579	$1.601 \pm 0.096$ (+0.0 $\sigma$ )	$z_{re}$	7.85	$7.93 \pm 0.82$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7514	$0.7518 \pm 0.0067$ (−0.0 $\sigma$ )
$\alpha_{B,sync}$	−0.32	—	$10^9 A_s$	2.1124	$2.118^{+0.033}_{-0.038}$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4803	$0.4805 \pm 0.0068$ (−0.3 $\sigma$ )
$\beta_{B,sync}$	−3.039	$−3.10^{+0.29}_{-0.26}$ (−0.0 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8888	$1.890 \pm 0.012$ (−0.1 $\sigma$ )	$\sigma_8(0.38)$	0.6653	$0.6656 \pm 0.0057$ (+0.1 $\sigma$ )
$\epsilon_{dust,sync}$	−0.348	$−0.36 \pm 0.28$ (−0.0 $\sigma$ )	$D_{40}$	1224.0	$1227 \pm 19$ (−0.2 $\sigma$ )	$f\sigma_8(0.51)$	0.4780	$0.4782 \pm 0.0060$ (−0.3 $\sigma$ )
$A_{217}^{CIB}$	49.5	$48 \pm 7$ (−0.1 $\sigma$ )	$D_{220}$	5726.9	$5730 \pm 39$ (+0.4 $\sigma$ )	$\sigma_8(0.51)$	0.6223	$0.6226 \pm 0.0053$ (+0.1 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.17	—	$D_{810}$	2542.7	$2543 \pm 14$ (+0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.4725	$0.4726 \pm 0.0055$ (−0.2 $\sigma$ )
$A_{143}^{tSZ}$	7.27	$5.1 \pm 2.0$ (+0.1 $\sigma$ )	$D_{1420}$	816.61	$816.0 \pm 5.0$ (+0.4 $\sigma$ )	$\sigma_8(0.61)$	0.59192	$0.5922 \pm 0.0050$ (+0.2 $\sigma$ )
$A_{100}^{PS}$	254.9	$264 \pm 28$ (−0.1 $\sigma$ )	$D_{2000}$	230.31	$230.0 \pm 1.8$ (+0.5 $\sigma$ )	$f\sigma_8(2.33)$	0.29816	$0.2983 \pm 0.0025$ (+0.3 $\sigma$ )
$A_{143}^{PS}$	46.6	$49 \pm 8$ (−0.3 $\sigma$ )	$n_{s,0.002}$	0.9840	$0.989 \pm 0.021$ (+0.3 $\sigma$ )	$\sigma_8(2.33)$	0.30708	$0.3073 \pm 0.0027$ (+0.3 $\sigma$ )
$A_{143 \times 217}^{PS}$	42.4	$43 \pm 9$ (−0.1 $\sigma$ )	$Y_P$	0.245401	$0.245398^{+0.000063}_{-0.000056}$ (+1.0 $\sigma$ )	$r_{0.002}$	0.0155	$0.0281^{+0.0075}_{-0.027}$ (+0.2 $\sigma$ )
$A_{217}^{PS}$	117.6	$115 \pm 10$ (−0.0 $\sigma$ )	$Y_P^{BBN}$	0.246728	$0.246725^{+0.000063}_{-0.000056}$ (+1.0 $\sigma$ )	$r_{0.01}$	0.0160	$0.0285^{+0.0083}_{-0.027}$ (+0.2 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.97$ (−0.1 $\sigma$ )	$10^5 D/H$	2.5828	$2.584 \pm 0.029$ (−1.0 $\sigma$ )	$\ln(10^{10} A_t)$	−1.04	$−0.78^{+1.0}_{-0.39}$ (+0.1 $\sigma$ )
$A_{100}^{dustTT}$	8.88	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	Age/Gyr	13.7998	$13.800 \pm 0.025$ (−0.8 $\sigma$ )	$r_{10}$	0.0080	$0.0146^{+0.0038}_{-0.014}$ (+0.2 $\sigma$ )
$A_{143}^{dustTT}$	11.02	$11.0 \pm 1.8$ (+0.1 $\sigma$ )	$z_*$	1089.957	$1089.96 \pm 0.28$ (−0.9 $\sigma$ )	$10^9 A_t$	0.0353	$0.063^{+0.019}_{-0.058}$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.57	$18.7 \pm 3.3$ (+0.1 $\sigma$ )	$r_*$	144.262	$144.27 \pm 0.31$ (+0.0 $\sigma$ )	$10^9 A_t e^{-2\tau}$	0.0316	$0.056^{+0.017}_{-0.052}$ (+0.2 $\sigma$ )
$A_{217}^{dustTT}$	94.5	$93.5 \pm 7.3$ (+0.0 $\sigma$ )	$100\theta_*$	1.041057	$1.04105 \pm 0.00031$ (+0.3 $\sigma$ )	$f_{2000}^{143}$	30.36	$31.2 \pm 3.1$ (−0.4 $\sigma$ )
$A_{100}^{dustTE}$	0.1150	$0.115 \pm 0.038$	$D_M(z_*)/\text{Gpc}$	13.8572	$13.858 \pm 0.029$ (−0.0 $\sigma$ )	$f_{2000}^{143 \times 217}$	33.07	$33.4 \pm 2.2$ (−0.4 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1349	$0.135 \pm 0.030$	$z_{drag}$	1060.009	$1060.01 \pm 0.32$ (+1.0 $\sigma$ )	$f_{2000}^{217}$	107.65	$108.1 \pm 2.0$ (−0.4 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.482	$0.481 \pm 0.085$	$r_{drag}$	146.914	$146.92 \pm 0.31$ (−0.1 $\sigma$ )	$\chi_{BKPLANCK}^2$	735.07	$739.4 \pm 2.7$ (+0.1 $\sigma$ )
$A_{143}^{dustTE}$	0.226	$0.226 \pm 0.054$	$k_D$	0.141067	$0.14106 \pm 0.00034$ (+0.5 $\sigma$ )	$\chi_{simall}^2$	396.36	$397.6 \pm 2.2$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.665	$0.665 \pm 0.080$	$100\theta_D$	0.160712	$0.16072 \pm 0.00018$ (−1.0 $\sigma$ )	$\chi_{lowl}^2$	22.43	$22.9 \pm 1.7$ (−0.3 $\sigma$ )
$A_{217}^{dustTE}$	2.080	$2.08 \pm 0.27$	$z_{eq}$	3417.3	$3417 \pm 31$ (−0.3 $\sigma$ )	$\chi_{plik}^2$	2345.1	$2360.7 \pm 6.1$ (+278.9 $\sigma$ )
$c_{100}$	0.99971	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$k_{eq}$	0.010430	$0.010428 \pm 0.000096$ (−0.3 $\sigma$ )	$\chi_{prior}^2$	1.85	$13.2 \pm 4.8$ (+1.1 $\sigma$ )
$c_{217}$	0.99820	$0.99822 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_{eq}$	0.8106	$0.8108 \pm 0.0059$ (+0.3 $\sigma$ )	$\chi_{CMB}^2$	3499.0	$3520.6 \pm 6.6$ (+252.8 $\sigma$ )

Best-fit  $\chi_{eff}^2 = 3500.83$ ;  $\Delta\chi_{eff}^2 = 1586.03$ ;  $\bar{\chi}_{eff}^2 = 3533.84$ ;  $\Delta\bar{\chi}_{eff}^2 = 1592.12$ ;  $R - 1 = 0.00338$   
 $\chi_{eff}^2$ : CMB - BK15\_dust: 735.07 ( $\Delta$  0.37) simall.100x143\_offlike5\_EE\_Aplanck\_B: 396.36 ( $\Delta$  0.32) commander\_dx12.v3.2.29: 22.43 ( $\Delta$  -0.90) plik\_rd12\_HM\_v22b\_TTTEE: 2345.11



### 15.38 base\_nrun\_r\_plikHM\_TTTEE\_lowl\_lowE\_BK15\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022446	$0.02245 \pm 0.00014$ (+0.9 $\sigma$ )	$\Omega_m$	0.3125	$0.3120 \pm 0.0061$ (+0.1 $\sigma$ )	$D_M(0.38)$	1529.6	$1529.0 \pm 7.7$ (-0.2 $\sigma$ )
$\Omega_c h^2$	0.11961	$0.1195 \pm 0.0010$ (+0.2 $\sigma$ )	$\Omega_m h^2$	0.14270	$0.14262 \pm 0.00098$ (+0.4 $\sigma$ )	$H(0.51)$	89.747	$89.77 \pm 0.23$ (+0.4 $\sigma$ )
$100\theta_{MC}$	1.040982	$1.04099 \pm 0.00029$ (-0.0 $\sigma$ )	$\Omega_m h^3$	0.096432	$0.09643 \pm 0.00031$ (+0.8 $\sigma$ )	$D_M(0.51)$	1981.3	$1980.6 \pm 9.0$ (-0.2 $\sigma$ )
$\tau$	0.0580	$0.0585^{+0.0075}_{-0.0087}$ (+0.2 $\sigma$ )	$\sigma_8$	0.8126	$0.8118 \pm 0.0074$ (+0.3 $\sigma$ )	$H(0.61)$	95.379	$95.40 \pm 0.19$ (+0.5 $\sigma$ )
$\ln(10^{10} A_s)$	3.0531	$3.054^{+0.016}_{-0.018}$ (+0.3 $\sigma$ )	$S_8$	0.8293	$0.828 \pm 0.013$ (+0.2 $\sigma$ )	$D_M(0.61)$	2305.4	$2304.6 \pm 9.7$ (-0.2 $\sigma$ )
$n_s$	0.96641	$0.9656 \pm 0.0040$ (+0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4542	$0.4534 \pm 0.0070$ (+0.2 $\sigma$ )	$H(2.33)$	236.39	$236.33 \pm 0.63$ (+0.5 $\sigma$ )
$dn_s/d \ln k$	-0.0053	$-0.0074 \pm 0.0070$ (-0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6075	$0.6067 \pm 0.0071$ (+0.2 $\sigma$ )	$D_M(2.33)$	5758.6	$5758.0 \pm 9.1$ (-0.6 $\sigma$ )
$r$	0.0218	$0.031^{+0.010}_{-0.028}$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9885	$0.987 \pm 0.010$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4588	$0.4580 \pm 0.0066$ (+0.2 $\sigma$ )
$y_{cal}$	1.00101	$1.0009 \pm 0.0025$ (+0.1 $\sigma$ )	$r_{drag} h$	99.41	$99.48 \pm 0.78$ (-0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7508	$0.7501 \pm 0.0067$ (+0.3 $\sigma$ )
$A_{B,dust}$	4.61	$4.85^{+0.82}_{-1.2}$ (-0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4360	$2.433 \pm 0.026$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.4769	$0.4762 \pm 0.0057$ (+0.2 $\sigma$ )
$A_{B,sync}$	1.40	$1.63^{+0.53}_{-1.3}$ (+0.0 $\sigma$ )	$z_{re}$	8.03	$8.06 \pm 0.82$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6654	$0.6648 \pm 0.0058$ (+0.3 $\sigma$ )
$\alpha_{B,dust}$	-0.510	$-0.56^{+0.22}_{-0.31}$ (-0.0 $\sigma$ )	$10^9 A_s$	2.1180	$2.119^{+0.034}_{-0.039}$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.4754	$0.4748 \pm 0.0052$ (+0.2 $\sigma$ )
$\beta_{B,dust}$	1.580	$1.599 \pm 0.096$ (+0.0 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8862	$1.885 \pm 0.012$ (+0.3 $\sigma$ )	$\sigma_8(0.51)$	0.6226	$0.6222 \pm 0.0054$ (+0.3 $\sigma$ )
$\alpha_{B,sync}$	-0.37	—	$D_{40}$	1224.1	$1224 \pm 19$ (-0.1 $\sigma$ )	$f\sigma_8(0.61)$	0.47034	$0.4697 \pm 0.0049$ (+0.3 $\sigma$ )
$\beta_{B,sync}$	-3.042	$-3.11 \pm 0.27$ (-0.0 $\sigma$ )	$D_{220}$	5736.4	$5735 \pm 38$ (+0.4 $\sigma$ )	$\sigma_8(0.61)$	0.5924	$0.5920 \pm 0.0051$ (+0.3 $\sigma$ )
$\epsilon_{dust,sync}$	-0.367	$-0.35 \pm 0.28$ (-0.0 $\sigma$ )	$D_{810}$	2544.5	$2543 \pm 14$ (+0.3 $\sigma$ )	$f\sigma_8(2.33)$	0.29867	$0.2985 \pm 0.0026$ (+0.3 $\sigma$ )
$A_{217}^{CIB}$	48.6	$48 \pm 7$ (-0.1 $\sigma$ )	$D_{1420}$	818.3	$816.8 \pm 5.0$ (+0.4 $\sigma$ )	$\sigma_8(2.33)$	0.30787	$0.3077 \pm 0.0027$ (+0.3 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.31	—	$D_{2000}$	231.01	$230.4 \pm 1.8$ (+0.4 $\sigma$ )	$r_{0.002}$	0.0203	$0.0295^{+0.0087}_{-0.028}$ (+0.1 $\sigma$ )
$A_{143}^{tSZ}$	7.22	$5.2 \pm 2.0$ (+0.1 $\sigma$ )	$n_{s,0.002}$	0.9835	$0.989 \pm 0.022$ (+0.2 $\sigma$ )	$r_{0.01}$	0.0209	$0.0299^{+0.0095}_{-0.027}$ (+0.1 $\sigma$ )
$A_{100}^{PS}$	253.1	$263 \pm 28$ (-0.1 $\sigma$ )	$Y_P$	0.245425	$0.245425^{+0.000056}_{-0.000050}$ (+0.9 $\sigma$ )	$\ln(10^{10} A_t)$	-0.77	$-0.73^{+1.0}_{-0.39}$ (+0.1 $\sigma$ )
$A_{143}^{PS}$	47.4	$48 \pm 8$ (-0.3 $\sigma$ )	$Y_P^{BBN}$	0.246752	$0.246752^{+0.000056}_{-0.000050}$ (+0.9 $\sigma$ )	$r_{10}$	0.0104	$0.0152^{+0.0044}_{-0.014}$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{PS}$	45.4	$43 \pm 9$ (-0.1 $\sigma$ )	$10^5 D/H$	2.5715	$2.571 \pm 0.026$ (-0.9 $\sigma$ )	$10^9 A_t$	0.0461	$0.066^{+0.022}_{-0.059}$ (+0.1 $\sigma$ )
$A_{217}^{PS}$	118.7	$115 \pm 10$ (+0.0 $\sigma$ )	Age/Gyr	13.7861	$13.785 \pm 0.021$ (-0.6 $\sigma$ )	$10^9 A_t e^{-2\tau}$	0.0411	$0.058^{+0.019}_{-0.053}$ (+0.1 $\sigma$ )
$A^{kSZ}$	0.01	$< 4.81$ (-0.1 $\sigma$ )	$z_*$	1089.790	$1089.78 \pm 0.23$ (-0.7 $\sigma$ )	$f_{2000}^{143}$	29.69	$30.7 \pm 3.1$ (-0.3 $\sigma$ )
$A_{100}^{dust TT}$	8.84	$9.0 \pm 1.8$ (+0.0 $\sigma$ )	$r_*$	144.474	$144.49 \pm 0.24$ (-0.6 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.63	$33.1 \pm 2.1$ (-0.4 $\sigma$ )
$A_{143}^{dust TT}$	11.02	$11.0 \pm 1.8$ (+0.1 $\sigma$ )	$100\theta_*$	1.041166	$1.04117 \pm 0.00029$ (-0.1 $\sigma$ )	$f_{2000}^{217}$	107.27	$107.8 \pm 2.0$ (-0.3 $\sigma$ )
$A_{143 \times 217}^{dust TT}$	19.64	$18.7 \pm 3.3$ (+0.1 $\sigma$ )	$D_M(z_*)/Gpc$	13.8762	$13.878 \pm 0.023$ (-0.6 $\sigma$ )	$\chi_{BKPLANCK}^2$	735.29	$739.8 \pm 2.7$ (-0.0 $\sigma$ )
$A_{217}^{dust TT}$	94.5	$93.5 \pm 7.3$ (+0.0 $\sigma$ )	$z_{drag}$	1060.085	$1060.09 \pm 0.31$ (+0.9 $\sigma$ )	$\chi_{simall}^2$	396.77	$397.9 \pm 2.5$ (+0.2 $\sigma$ )
$A_{100}^{dust TE}$	0.1144	$0.115 \pm 0.038$	$r_{drag}$	147.110	$147.13 \pm 0.26$ (-0.8 $\sigma$ )	$\chi_{lowl}^2$	22.40	$22.6 \pm 1.6$ (-0.2 $\sigma$ )
$A_{100 \times 143}^{dust TE}$	0.1344	$0.135 \pm 0.030$	$k_D$	0.140905	$0.14089 \pm 0.00031$ (+0.9 $\sigma$ )	$\chi_{plik}^2$	2345.0	$2360.4 \pm 6.0$ (+279.3 $\sigma$ )
$A_{100 \times 217}^{dust TE}$	0.482	$0.480 \pm 0.085$	$100\theta_D$	0.160677	$0.16067 \pm 0.00018$ (-0.9 $\sigma$ )	$\chi_{6DF}^2$	0.0486	$0.068 \pm 0.074$ (-0.0 $\sigma$ )
$A_{143}^{dust TE}$	0.225	$0.225 \pm 0.054$	$z_{eq}$	3394.7	$3393 \pm 23$ (+0.4 $\sigma$ )	$\chi_{MGS}^2$	1.097	$1.18 \pm 0.41$ (-0.1 $\sigma$ )
$A_{143 \times 217}^{dust TE}$	0.665	$0.663 \pm 0.080$	$k_{eq}$	0.010361	$0.010355 \pm 0.000071$ (+0.4 $\sigma$ )	$\chi_{DR12BAO}^2$	4.88	$5.1 \pm 1.6$ (+0.0 $\sigma$ )
$A_{217}^{dust TE}$	2.075	$2.07 \pm 0.27$	$100\theta_{eq}$	0.81490	$0.8153 \pm 0.0043$ (-0.3 $\sigma$ )	$\chi_{prior}^2$	1.89	$13.2 \pm 4.9$ (+1.1 $\sigma$ )
$c_{100}$	0.99973	$0.99967 \pm 0.00062$ (+0.1 $\sigma$ )	$100\theta_{s,eq}$	0.45016	$0.4504 \pm 0.0022$ (-0.3 $\sigma$ )	$\chi_{BAO}^2$	6.02	$6.4 \pm 1.3$ (+0.0 $\sigma$ )
$c_{217}$	0.99821	$0.99821 \pm 0.00061$ (-0.1 $\sigma$ )	$H(0.15)$	72.873	$72.91 \pm 0.39$ (+0.1 $\sigma$ )	$\chi_{CMB}^2$	3499.5	$3520.8 \pm 6.6$ (+251.3 $\sigma$ )
$H_0$	67.576	$67.62 \pm 0.45$ (+0.1 $\sigma$ )	$D_M(0.15)$	641.47	$641.1 \pm 3.8$ (-0.1 $\sigma$ )			
$\Omega_\Lambda$	0.6875	$0.6880 \pm 0.0061$ (-0.1 $\sigma$ )	$H(0.38)$	83.013	$83.04 \pm 0.28$ (+0.3 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 3507.39$ ;  $\Delta\chi_{eff}^2 = 1585.63$ ;  $\bar{\chi}_{eff}^2 = 3540.38$ ;  $\Delta\bar{\chi}_{eff}^2 = 1591.62$ ;  $R - 1 = 0.00677$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.05 ( $\Delta$  0.01) MGS: 1.10 ( $\Delta$  -0.06) DR12BAO: 4.88 ( $\Delta$  0.31) CMB - BK15\_dust: 735.29 ( $\Delta$  -0.26) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.77 ( $\Delta$  0.44) commander\_dx12\_v3\_2\_29: 22.40 ( $\Delta$  -0.02) plik\_rd12\_HM\_v22b\_TTTEE: 2345.00



15.39 base\_nrun\_r\_plikHM\_TTTEE\_lowl\_lowE\_BK15\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02239 \pm 0.00015 \quad (+1.0\sigma)$	$H_0$	$67.16 \pm 0.61 \quad (+0.5\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4481 \pm 0.0030 \quad (+0.3\sigma)$
$\Omega_{\mathrm{c}} h^2$	$0.1206 \pm 0.0014 \quad (-0.3\sigma)$	$\Omega_{\Lambda}$	$0.6815 \pm 0.0086 \quad (+0.4\sigma)$	$H(0.15)$	$72.52 \pm 0.52 \quad (+0.6\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04087 \pm 0.00031 \quad (+0.3\sigma)$	$\Omega_{\mathrm{m}}$	$0.3185 \pm 0.0086 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.15)$	$645.1 \pm 5.2 \quad (-0.5\sigma)$
$\tau$	$0.0576^{+0.0062}_{-0.0088} \quad (+0.3\sigma)$	$\Omega_{\mathrm{m}} h^2$	$0.1436 \pm 0.0013 \quad (-0.2\sigma)$	$H(0.38)$	$82.76 \pm 0.38 \quad (+0.6\sigma)$
$\ln(10^{10} A_{\mathrm{s}})$	$3.054^{+0.014}_{-0.018} \quad (+0.3\sigma)$	$\Omega_{\mathrm{m}} h^3$	$0.09643 \pm 0.00031 \quad (+0.7\sigma)$	$D_{\mathrm{M}}(0.38)$	$1537 \pm 10 \quad (-0.6\sigma)$
$n_{\mathrm{s}}$	$0.9630 \pm 0.0046 \quad (+0.4\sigma)$	$\sigma_8$	$0.8148 \pm 0.0073 \quad (-0.1\sigma)$	$H(0.51)$	$89.56 \pm 0.30 \quad (+0.7\sigma)$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d} \ln k$	$-0.0080 \pm 0.0069 \quad (-0.2\sigma)$	$S_8$	$0.840 \pm 0.016 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.51)$	$1990 \pm 12 \quad (-0.6\sigma)$
$r$	$0.0298^{+0.0090}_{-0.028} \quad (+0.2\sigma)$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4599 \pm 0.0089 \quad (-0.4\sigma)$	$H(0.61)$	$95.23 \pm 0.24 \quad (+0.7\sigma)$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0025 \quad (+0.1\sigma)$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.6121 \pm 0.0083 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.61)$	$2314 \pm 13 \quad (-0.6\sigma)$
$A_{B,\mathrm{dust}}$	$4.86^{+0.81}_{-1.2} \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.994 \pm 0.012 \quad (-0.3\sigma)$	$H(2.33)$	$236.95 \pm 0.84 \quad (-0.2\sigma)$
$A_{B,\mathrm{sync}}$	$1.62^{+0.52}_{-1.3} \quad (-0.0\sigma)$	$r_{\mathrm{drag}} h$	$98.7 \pm 1.1 \quad (+0.4\sigma)$	$D_{\mathrm{M}}(2.33)$	$5765 \pm 11 \quad (-0.8\sigma)$
$\alpha_{B,\mathrm{dust}}$	$-0.57^{+0.21}_{-0.32} \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.448 \pm 0.028 \quad (-0.3\sigma)$	$f\sigma_8(0.15)$	$0.4639 \pm 0.0083 \quad (-0.3\sigma)$
$\beta_{B,\mathrm{dust}}$	$1.601 \pm 0.096 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$8.01^{+0.67}_{-0.84} \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.7522^{+0.0060}_{-0.0067} \quad (-0.0\sigma)$
$\alpha_{B,\mathrm{sync}}$	—	$10^9 A_{\mathrm{s}}$	$2.121^{+0.029}_{-0.038} \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4807 \pm 0.0067 \quad (-0.3\sigma)$
$\beta_{B,\mathrm{sync}}$	$-3.10^{+0.29}_{-0.26} \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.890 \pm 0.012 \quad (-0.1\sigma)$	$\sigma_8(0.38)$	$0.6660^{+0.0049}_{-0.0058} \quad (+0.1\sigma)$
$\epsilon_{\mathrm{dust,sync}}$	$-0.36 \pm 0.28 \quad (-0.0\sigma)$	$D_{40}$	$1227 \pm 19 \quad (-0.2\sigma)$	$f\sigma_8(0.51)$	$0.4785 \pm 0.0059 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7 \quad (-0.1\sigma)$	$D_{220}$	$5730 \pm 39 \quad (+0.4\sigma)$	$\sigma_8(0.51)$	$0.6230^{+0.0045}_{-0.0054} \quad (+0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2543 \pm 14 \quad (+0.2\sigma)$	$f\sigma_8(0.61)$	$0.4729 \pm 0.0053 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0 \quad (+0.1\sigma)$	$D_{1420}$	$816.0 \pm 5.0 \quad (+0.4\sigma)$	$\sigma_8(0.61)$	$0.5926^{+0.0042}_{-0.0051} \quad (+0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$264 \pm 28 \quad (-0.1\sigma)$	$D_{2000}$	$230.0 \pm 1.8 \quad (+0.5\sigma)$	$f\sigma_8(2.33)$	$0.2985^{+0.0021}_{-0.0026} \quad (+0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8 \quad (-0.3\sigma)$	$n_{\mathrm{s},0.002}$	$0.989 \pm 0.021 \quad (+0.3\sigma)$	$\sigma_8(2.33)$	$0.3075^{+0.0022}_{-0.0027} \quad (+0.3\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9 \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245400^{+0.000063}_{-0.000056} \quad (+1.0\sigma)$	$r_{0.002}$	$0.0282^{+0.0075}_{-0.027} \quad (+0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246726^{+0.000063}_{-0.000056} \quad (+1.0\sigma)$	$r_{0.01}$	$0.0286^{+0.0083}_{-0.027} \quad (+0.2\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.96 \quad (-0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.583 \pm 0.028 \quad (-1.0\sigma)$	$\ln(10^{10} A_{\mathrm{t}})$	$-0.77^{+1.0}_{-0.39} \quad (+0.1\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.800 \pm 0.024 \quad (-0.8\sigma)$	$r_{10}$	$0.0146^{+0.0037}_{-0.014} \quad (+0.2\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$11.0 \pm 1.8 \quad (+0.1\sigma)$	$z_*$	$1089.95 \pm 0.28 \quad (-0.9\sigma)$	$10^9 A_{\mathrm{t}}$	$0.063^{+0.019}_{-0.059} \quad (+0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$r_*$	$144.27 \pm 0.31 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	$0.056^{+0.017}_{-0.052} \quad (+0.2\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.5 \pm 7.3 \quad (+0.0\sigma)$	$100\theta_*$	$1.04105 \pm 0.00031 \quad (+0.2\sigma)$	$f_{2000}^{143}$	$31.2 \pm 3.1 \quad (-0.4\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.115 \pm 0.038$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.859 \pm 0.029 \quad (-0.0\sigma)$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.1 \quad (-0.4\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.030$	$z_{\mathrm{drag}}$	$1060.01 \pm 0.31 \quad (+1.0\sigma)$	$f_{2000}^{217}$	$108.1 \pm 2.0 \quad (-0.4\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.481 \pm 0.085$	$r_{\mathrm{drag}}$	$146.93 \pm 0.31 \quad (-0.1\sigma)$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.4 \pm 2.7 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.226 \pm 0.054$	$k_{\mathrm{D}}$	$0.14105 \pm 0.00034 \quad (+0.4\sigma)$	$\chi_{\mathrm{small}}^2$	$397.6 \pm 2.3 \quad (+0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.665 \pm 0.080$	$100\theta_{\mathrm{D}}$	$0.16071 \pm 0.00018 \quad (-1.0\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.9 \pm 1.7 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.27$	$z_{\mathrm{eq}}$	$3416 \pm 31 \quad (-0.2\sigma)$	$\chi_{\mathrm{plik}}^2$	$2360.6 \pm 6.1 \quad (+279.2\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010426 \pm 0.000096 \quad (-0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$13.2 \pm 4.8 \quad (+1.1\sigma)$
$c_{217}$	$0.99822 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8109 \pm 0.0058 \quad (+0.3\sigma)$	$\chi_{\mathrm{CMB}}^2$	$3520.5 \pm 6.6 \quad (+254.8\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 3533.65; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.14; R - 1 = 0.00314$$



## 15.40 base\_nrun\_r\_plikHM\_TTTEE\_lowl\_lowE\_BK15\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02245 \pm 0.00014 \quad (+0.9\sigma)$	$\Omega_m$	$0.3119 \pm 0.0061 \quad (+0.1\sigma)$	$D_M(0.38)$	$1528.9 \pm 7.7 \quad (-0.2\sigma)$
$\Omega_c h^2$	$0.1195 \pm 0.0010 \quad (+0.2\sigma)$	$\Omega_m h^2$	$0.14261 \pm 0.00098 \quad (+0.4\sigma)$	$H(0.51)$	$89.77 \pm 0.23 \quad (+0.3\sigma)$
$100\theta_{MC}$	$1.04100 \pm 0.00029 \quad (-0.0\sigma)$	$\Omega_m h^3$	$0.09643 \pm 0.00031 \quad (+0.8\sigma)$	$D_M(0.51)$	$1980.5 \pm 9.0 \quad (-0.2\sigma)$
$\tau$	$0.0590^{+0.0065}_{-0.0090} \quad (+0.2\sigma)$	$\sigma_8$	$0.8122^{+0.0066}_{-0.0075} \quad (+0.3\sigma)$	$H(0.61)$	$95.40 \pm 0.19 \quad (+0.4\sigma)$
$\ln(10^{10} A_s)$	$3.055^{+0.014}_{-0.018} \quad (+0.3\sigma)$	$S_8$	$0.828 \pm 0.013 \quad (+0.2\sigma)$	$D_M(0.61)$	$2304.5 \pm 9.7 \quad (-0.2\sigma)$
$n_s$	$0.9656 \pm 0.0040 \quad (+0.0\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4536 \pm 0.0069 \quad (+0.2\sigma)$	$H(2.33)$	$236.33 \pm 0.63 \quad (+0.5\sigma)$
$dn_s/d \ln k$	$-0.0075 \pm 0.0070 \quad (-0.2\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6070 \pm 0.0069 \quad (+0.2\sigma)$	$D_M(2.33)$	$5757.9 \pm 9.1 \quad (-0.6\sigma)$
$r$	$0.031^{+0.010}_{-0.028} \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.988 \pm 0.010 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4582 \pm 0.0065 \quad (+0.2\sigma)$
$y_{cal}$	$1.0009 \pm 0.0025 \quad (+0.1\sigma)$	$r_{drag} h$	$99.49 \pm 0.78 \quad (-0.1\sigma)$	$\sigma_8(0.15)$	$0.7505^{+0.0058}_{-0.0067} \quad (+0.3\sigma)$
$A_{B,dust}$	$4.85^{+0.82}_{-1.2} \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.433 \pm 0.025 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4764 \pm 0.0056 \quad (+0.2\sigma)$
$A_{B,sync}$	$1.63^{+0.52}_{-1.3} \quad (+0.0\sigma)$	$z_{re}$	$8.11^{+0.69}_{-0.85} \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6652^{+0.0050}_{-0.0059} \quad (+0.3\sigma)$
$\alpha_{B,dust}$	$-0.56^{+0.22}_{-0.31} \quad (-0.0\sigma)$	$10^9 A_s$	$2.122^{+0.030}_{-0.039} \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4750 \pm 0.0051 \quad (+0.2\sigma)$
$\beta_{B,dust}$	$1.599 \pm 0.096 \quad (+0.0\sigma)$	$10^9 A_s e^{-2\tau}$	$1.885 \pm 0.012 \quad (+0.3\sigma)$	$\sigma_8(0.51)$	$0.6225^{+0.0046}_{-0.0055} \quad (+0.3\sigma)$
$\alpha_{B,sync}$	—	$D_{40}$	$1223 \pm 19 \quad (-0.0\sigma)$	$f\sigma_8(0.61)$	$0.4700 \pm 0.0047 \quad (+0.2\sigma)$
$\beta_{B,sync}$	$-3.11 \pm 0.27 \quad (-0.0\sigma)$	$D_{220}$	$5735 \pm 38 \quad (+0.4\sigma)$	$\sigma_8(0.61)$	$0.5923^{+0.0043}_{-0.0052} \quad (+0.3\sigma)$
$\epsilon_{dust,sync}$	$-0.35 \pm 0.28 \quad (-0.0\sigma)$	$D_{810}$	$2543 \pm 14 \quad (+0.3\sigma)$	$f\sigma_8(2.33)$	$0.2986^{+0.0022}_{-0.0027} \quad (+0.3\sigma)$
$A_{217}^{CIB}$	$48 \pm 7 \quad (-0.1\sigma)$	$D_{1420}$	$816.8 \pm 5.0 \quad (+0.4\sigma)$	$\sigma_8(2.33)$	$0.3078^{+0.0022}_{-0.0028} \quad (+0.3\sigma)$
$\xi^{tSZ \times CIB}$	—	$D_{2000}$	$230.4 \pm 1.8 \quad (+0.4\sigma)$	$r_{0.002}$	$0.0295^{+0.0085}_{-0.028} \quad (+0.1\sigma)$
$A_{143}^{tSZ}$	$5.2 \pm 2.0 \quad (+0.1\sigma)$	$n_{s,0.002}$	$0.990 \pm 0.021 \quad (+0.2\sigma)$	$r_{0.01}$	$0.0299^{+0.0093}_{-0.028} \quad (+0.1\sigma)$
$A_{100}^{PS}$	$263 \pm 28 \quad (-0.1\sigma)$	$Y_P$	$0.245426^{+0.000056}_{-0.000050} \quad (+0.8\sigma)$	$\ln(10^{10} A_t)$	$-0.73^{+1.0}_{-0.39} \quad (+0.1\sigma)$
$A_{143}^{PS}$	$48 \pm 8 \quad (-0.3\sigma)$	$Y_P^{BBN}$	$0.246752^{+0.000056}_{-0.000050} \quad (+0.8\sigma)$	$r_{10}$	$0.0152^{+0.0043}_{-0.015} \quad (+0.1\sigma)$
$A_{143 \times 217}^{PS}$	$43 \pm 9 \quad (-0.1\sigma)$	$10^5 D/H$	$2.571 \pm 0.026 \quad (-0.9\sigma)$	$10^9 A_t$	$0.066^{+0.021}_{-0.060} \quad (+0.1\sigma)$
$A_{217}^{PS}$	$115 \pm 10 \quad (+0.0\sigma)$	Age/Gyr	$13.785 \pm 0.021 \quad (-0.6\sigma)$	$10^9 A_t e^{-2\tau}$	$0.058^{+0.019}_{-0.053} \quad (+0.1\sigma)$
$A^{kSZ}$	$< 4.79 \quad (-0.1\sigma)$	$z_*$	$1089.77 \pm 0.22 \quad (-0.7\sigma)$	$f_{2000}^{143}$	$30.7 \pm 3.1 \quad (-0.3\sigma)$
$A_{100}^{dustTT}$	$9.0 \pm 1.8 \quad (+0.0\sigma)$	$r_*$	$144.49 \pm 0.25 \quad (-0.6\sigma)$	$f_{2000}^{143 \times 217}$	$33.1 \pm 2.1 \quad (-0.4\sigma)$
$A_{143}^{dustTT}$	$11.0 \pm 1.8 \quad (+0.1\sigma)$	$100\theta_*$	$1.04117 \pm 0.00029 \quad (-0.1\sigma)$	$f_{2000}^{217}$	$107.8 \pm 2.0 \quad (-0.3\sigma)$
$A_{143 \times 217}^{dustTT}$	$18.7 \pm 3.3 \quad (+0.1\sigma)$	$D_M(z_*)/\text{Gpc}$	$13.878 \pm 0.023 \quad (-0.6\sigma)$	$\chi_{BKPLANCK}^2$	$739.8 \pm 2.7 \quad (+0.0\sigma)$
$A_{217}^{dustTT}$	$93.5 \pm 7.3 \quad (+0.0\sigma)$	$z_{drag}$	$1060.09 \pm 0.31 \quad (+0.9\sigma)$	$\chi_{small}^2$	$397.9 \pm 2.5 \quad (+0.2\sigma)$
$A_{100}^{dustTE}$	$0.115 \pm 0.038$	$r_{drag}$	$147.13 \pm 0.26 \quad (-0.8\sigma)$	$\chi_{lowl}^2$	$22.6 \pm 1.6 \quad (-0.2\sigma)$
$A_{100 \times 143}^{dustTE}$	$0.135 \pm 0.030$	$k_D$	$0.14089 \pm 0.00031 \quad (+0.9\sigma)$	$\chi_{plik}^2$	$2360.3 \pm 6.0 \quad (+279.9\sigma)$
$A_{100 \times 217}^{dustTE}$	$0.480 \pm 0.085$	$100\theta_D$	$0.16067 \pm 0.00018 \quad (-0.9\sigma)$	$\chi_{6DF}^2$	$0.067 \pm 0.074 \quad (-0.0\sigma)$
$A_{143}^{dustTE}$	$0.225 \pm 0.054$	$z_{eq}$	$3393 \pm 23 \quad (+0.4\sigma)$	$\chi_{MGS}^2$	$1.19 \pm 0.41 \quad (-0.1\sigma)$
$A_{143 \times 217}^{dustTE}$	$0.663 \pm 0.080$	$k_{eq}$	$0.010354 \pm 0.000071 \quad (+0.4\sigma)$	$\chi_{DR12BAO}^2$	$5.1 \pm 1.6 \quad (+0.0\sigma)$
$A_{217}^{dustTE}$	$2.07 \pm 0.27$	$100\theta_{eq}$	$0.8153 \pm 0.0043 \quad (-0.3\sigma)$	$\chi_{prior}^2$	$13.2 \pm 4.9 \quad (+1.1\sigma)$
$c_{100}$	$0.99967 \pm 0.00062 \quad (+0.1\sigma)$	$100\theta_{s,eq}$	$0.4504 \pm 0.0022 \quad (-0.3\sigma)$	$\chi_{BAO}^2$	$6.4 \pm 1.3 \quad (+0.0\sigma)$
$c_{217}$	$0.99821 \pm 0.00061 \quad (-0.1\sigma)$	$H(0.15)$	$72.91 \pm 0.39 \quad (+0.1\sigma)$	$\chi_{CMB}^2$	$3520.7 \pm 6.6 \quad (+253.2\sigma)$
$H_0$	$67.62 \pm 0.45 \quad (+0.1\sigma)$	$D_M(0.15)$	$641.1 \pm 3.8 \quad (-0.1\sigma)$		
$\Omega_\Lambda$	$0.6881 \pm 0.0061 \quad (-0.1\sigma)$	$H(0.38)$	$83.04 \pm 0.28 \quad (+0.2\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 3540.25; \Delta\bar{\chi}_{\text{eff}}^2 = 1591.64; R - 1 = 0.00710$$



### 15.41 base\_nrun\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022129	$0.02215 \pm 0.00023$	$\Omega_m h^3$	0.096048	$0.09606 \pm 0.00049$	$H(0.38)$	82.39	$82.46 \pm 0.55$
$\Omega_c h^2$	0.12137	$0.1211 \pm 0.0021$	$\sigma_8$	0.8144	$0.8142 \pm 0.0089$	$D_M(0.38)$	1546.2	$1544 \pm 16$
$100\theta_{MC}$	1.040786	$1.04080 \pm 0.00048$	$S_8$	0.8472	$0.845 \pm 0.024$	$H(0.51)$	89.237	$89.30 \pm 0.44$
$\tau$	0.0534	$0.0540^{+0.0075}_{-0.0085}$	$\sigma_8 \Omega_m^{0.5}$	0.4640	$0.463 \pm 0.013$	$D_M(0.51)$	2000.9	$1999 \pm 18$
$\ln(10^{10} A_s)$	3.0451	$3.046 \pm 0.018$	$\sigma_8 \Omega_m^{0.25}$	0.6147	$0.614 \pm 0.012$	$H(0.61)$	94.955	$95.00 \pm 0.35$
$n_s$	0.9605	$0.9618 \pm 0.0059$	$\sigma_8/h^{0.5}$	0.9977	$0.997 \pm 0.016$	$D_M(0.61)$	2326.7	$2324 \pm 20$
$dn_s/d \ln k$	-0.0056	$-0.0054 \pm 0.0076$	$r_{\text{drag}} h$	97.95	$98.1 \pm 1.6$	$H(2.33)$	237.21	$237.1 \pm 1.3$
$r$	0.0137	$< 0.0340$	$\langle d^2 \rangle^{1/2}$	2.4574	$2.454 \pm 0.038$	$D_M(2.33)$	5778.8	$5777 \pm 16$
$y_{\text{cal}}$	1.00067	$1.0007 \pm 0.0025$	$z_{\text{re}}$	7.66	$7.69 \pm 0.85$	$f\sigma_8(0.15)$	0.4675	$0.467 \pm 0.012$
$A_{B,\text{dust}}$	4.62	$4.86^{+0.81}_{-1.2}$	$10^9 A_s$	2.1012	$2.103^{+0.034}_{-0.038}$	$\sigma_8(0.15)$	0.7512	$0.7512 \pm 0.0075$
$A_{B,\text{sync}}$	1.48	$1.63^{+0.51}_{-1.4}$	$10^9 A_s e^{-2\tau}$	1.8884	$1.887 \pm 0.014$	$f\sigma_8(0.38)$	0.4830	$0.4822 \pm 0.0094$
$\alpha_{B,\text{dust}}$	-0.528	$-0.57^{+0.21}_{-0.32}$	$D_{40}$	1227.8	$1231 \pm 21$	$\sigma_8(0.38)$	0.6645	$0.6646 \pm 0.0061$
$\beta_{B,\text{dust}}$	1.579	$1.600 \pm 0.096$	$D_{220}$	5704.2	$5703 \pm 41$	$f\sigma_8(0.51)$	0.4800	$0.4794 \pm 0.0080$
$\alpha_{B,\text{sync}}$	-0.25	—	$D_{810}$	2536.8	$2537 \pm 14$	$\sigma_8(0.51)$	0.6213	$0.6214 \pm 0.0056$
$\beta_{B,\text{sync}}$	-3.036	$-3.10 \pm 0.27$	$D_{1420}$	812.8	$813.5 \pm 5.3$	$f\sigma_8(0.61)$	0.4740	$0.4735 \pm 0.0071$
$\epsilon_{\text{dust,sync}}$	-0.338	$-0.35 \pm 0.28$	$D_{2000}$	228.70	$229.0 \pm 2.0$	$\sigma_8(0.61)$	0.5908	$0.5910 \pm 0.0052$
$A_{100}^{\text{PS}}$	249.5	$246 \pm 25$	$n_{s,0.002}$	0.9786	$0.979 \pm 0.024$	$f\sigma_8(2.33)$	0.29738	$0.2975 \pm 0.0026$
$A_{143}^{\text{PS}}$	39.5	$43 \pm 9$	$Y_P$	0.245296	$0.24530^{+0.00011}_{-0.000087}$	$\sigma_8(2.33)$	0.30603	$0.3063 \pm 0.0027$
$A_{217}^{\text{PS}}$	97.9	$100 \pm 10$	$Y_P^{\text{BBN}}$	0.246622	$0.24663^{+0.00011}_{-0.000088}$	$r_{0.002}$	0.0125	$< 0.0314$
$A_{217}^{\text{CIB}}$	44.0	$42 \pm 8$	$10^5 D/H$	2.6315	$2.628 \pm 0.044$	$r_{0.01}$	0.0130	$< 0.0325$
$A_{143}^{\text{tSZ}}$	3.85	$3.6^{+1.7}_{-2.7}$	Age/Gyr	13.8315	$13.827 \pm 0.037$	$\ln(10^{10} A_t)$	-1.25	$-0.89^{+1.1}_{-0.43}$
$r_{143 \times 217}^{\text{PS}}$	0.542	$0.64 \pm 0.13$	$z_*$	1090.347	$1090.30 \pm 0.41$	$r_{10}$	0.0065	$< 0.0163$
$r_{143 \times 217}^{\text{CIB}}$	0.658	$> 0.485$	$r_*$	144.262	$144.31 \pm 0.48$	$10^9 A_t$	0.0288	$< 0.0715$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.00	—	$100\theta_*$	1.040990	$1.04101 \pm 0.00047$	$10^9 A_t e^{-2\tau}$	0.0259	$< 0.0642$
$A^{\text{kSZ}}$	4.70	$5.2^{+3.9}_{-2.3}$	$D_M(z_*)/\text{Gpc}$	13.8582	$13.862 \pm 0.045$	$f_{2000}^{143}$	32.54	$31.9 \pm 3.4$
$A_{100}^{\text{dust}}$	1.015	$1.01 \pm 0.19$	$z_{\text{drag}}$	1059.475	$1059.51 \pm 0.50$	$f_{2000}^{217}$	108.75	$108.3 \pm 2.2$
$A_{143}^{\text{dust}}$	0.984	$0.98 \pm 0.18$	$r_{\text{drag}}$	146.999	$147.04 \pm 0.49$	$f_{2000}^{143 \times 217}$	34.09	$33.8 \pm 2.4$
$A_{217}^{\text{dust}}$	0.962	$0.97 \pm 0.10$	$k_D$	0.14078	$0.14075 \pm 0.00056$	$\chi_{\text{BKPLANCK}}^2$	734.86	$739.2 \pm 2.7$
$A_{143 \times 217}^{\text{dust}}$	1.007	$1.03 \pm 0.16$	$100\theta_D$	0.161032	$0.16101 \pm 0.00029$	$\chi_{\text{small}}^2$	396.03	$397.3 \pm 2.0$
$c_{100}$	0.99739	$0.9975 \pm 0.0011$	$z_{\text{eq}}$	3429.2	$3424 \pm 47$	$\chi_{\text{lowl}}^2$	22.86	$23.6 \pm 2.2$
$c_{217}$	1.00143	$1.0013 \pm 0.0016$	$k_{\text{eq}}$	0.010466	$0.01045 \pm 0.00014$	$\chi_{\text{CamSpec}}^2$	7050.6	$7064.4 \pm 5.6$
$H_0$	66.63	$66.75 \pm 0.90$	$100\theta_{\text{eq}}$	0.8078	$0.8088 \pm 0.0087$	$\chi_{\text{prior}}^2$	2.59	$9.3 \pm 3.9$
$\Omega_\Lambda$	0.6753	$0.677 \pm 0.013$	$100\theta_{s,\text{eq}}$	0.44666	$0.4472 \pm 0.0045$	$\chi_{\text{CMB}}^2$	8204.4	$8224.5 \pm 6.3$
$\Omega_m$	0.3247	$0.323 \pm 0.013$	$H(0.15)$	72.05	$72.15 \pm 0.77$			
$\Omega_m h^2$	0.14414	$0.1439 \pm 0.0020$	$D_M(0.15)$	649.7	$648.8 \pm 7.8$			

Best-fit  $\chi_{\text{eff}}^2 = 8206.96$ ;  $\bar{\chi}_{\text{eff}}^2 = 8233.85$ ;  $R - 1 = 0.00340$

$\chi_{\text{eff}}^2$ : CMB - BK15\_dust: 734.86 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.03 commander\_dx12\_v3\_2\_29: 22.86 CamSpec like\_10.7HM: 7050.61



15.42 base\_nrun\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022242	$0.02226 \pm 0.00021$	$\sigma_8$	0.8082	$0.8091 \pm 0.0078$	$H(0.51)$	89.662	$89.68 \pm 0.29$
$\Omega_{\text{c}}h^2$	0.11917	$0.1192 \pm 0.0012$	$S_8$	0.8229	$0.824 \pm 0.015$	$D_{\text{M}}(0.51)$	1982.2	$1982 \pm 11$
$100\theta_{\text{MC}}$	1.041041	$1.04106 \pm 0.00043$	$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4507	$0.4513 \pm 0.0081$	$H(0.61)$	95.275	$95.29 \pm 0.25$
$\tau$	0.0553	$0.0560^{+0.0074}_{-0.0088}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6035	$0.6042 \pm 0.0079$	$D_{\text{M}}(0.61)$	2306.6	$2306 \pm 12$
$\ln(10^{10}A_{\text{s}})$	3.0438	$3.046^{+0.017}_{-0.019}$	$\sigma_8/h^{0.5}$	0.9831	$0.984 \pm 0.011$	$H(2.33)$	235.89	$235.94 \pm 0.80$
$n_{\text{s}}$	0.96574	$0.9663 \pm 0.0045$	$r_{\text{drag}}h$	99.65	$99.65 \pm 0.94$	$D_{\text{M}}(2.33)$	5765.6	$5765 \pm 13$
$\text{d}n_{\text{s}}/\text{d} \ln k$	-0.0048	$-0.0049 \pm 0.0077$	$\langle d^2 \rangle^{1/2}$	2.4242	$2.426 \pm 0.028$	$f\sigma_8(0.15)$	0.4553	$0.4559 \pm 0.0076$
$r$	0.0170	$0.0297^{+0.0079}_{-0.029}$	$z_{\text{re}}$	7.80	$7.85 \pm 0.85$	$\sigma_8(0.15)$	0.7468	$0.7477 \pm 0.0070$
$y_{\text{cal}}$	1.00079	$1.0008 \pm 0.0025$	$10^9 A_{\text{s}}$	2.0985	$2.103^{+0.034}_{-0.040}$	$f\sigma_8(0.38)$	0.4737	$0.4743 \pm 0.0064$
$A_{B,\text{dust}}$	4.60	$4.87^{+0.81}_{-1.2}$	$10^9 A_{\text{s}}e^{-2\tau}$	1.8789	$1.879 \pm 0.012$	$\sigma_8(0.38)$	0.6621	$0.6628 \pm 0.0060$
$A_{B,\text{sync}}$	1.45	$1.64^{+0.54}_{-1.3}$	$D_{40}$	1220.0	$1224 \pm 20$	$f\sigma_8(0.51)$	0.4724	$0.4729 \pm 0.0058$
$\alpha_{B,\text{dust}}$	-0.504	$-0.56^{+0.22}_{-0.32}$	$D_{220}$	5712.7	$5712 \pm 41$	$\sigma_8(0.51)$	0.6196	$0.6203^{+0.0051}_{-0.0057}$
$\beta_{B,\text{dust}}$	1.575	$1.596 \pm 0.097$	$D_{810}$	2535.7	$2537 \pm 14$	$f\sigma_8(0.61)$	0.4675	$0.4680 \pm 0.0054$
$\alpha_{B,\text{sync}}$	-0.38	—	$D_{1420}$	814.3	$814.8 \pm 5.3$	$\sigma_8(0.61)$	0.5896	$0.5902^{+0.0049}_{-0.0054}$
$\beta_{B,\text{sync}}$	-3.053	$-3.10 \pm 0.28$	$D_{2000}$	229.30	$229.6 \pm 2.0$	$f\sigma_8(2.33)$	0.29728	$0.2976^{+0.0024}_{-0.0028}$
$\epsilon_{\text{dust,sync}}$	-0.339	$-0.35 \pm 0.29$	$n_{\text{s},0.002}$	0.9811	$0.982 \pm 0.024$	$\sigma_8(2.33)$	0.30650	$0.3068^{+0.0025}_{-0.0029}$
$A_{100}^{\text{PS}}$	249.0	$245 \pm 25$	$Y_{\text{P}}$	0.245343	$0.245347^{+0.000093}_{-0.000080}$	$r_{0.002}$	0.0157	$< 0.0345$
$A_{143}^{\text{PS}}$	41.7	$42 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	0.246670	$0.246673^{+0.000094}_{-0.000080}$	$r_{0.01}$	0.0162	$0.0286^{+0.0072}_{-0.028}$
$A_{217}^{\text{PS}}$	98.5	$100 \pm 10$	$10^5 \text{D}/\text{H}$	2.6099	$2.607 \pm 0.040$	$\ln(10^{10}A_{\text{t}})$	-1.03	$-0.79^{+1.1}_{-0.40}$
$A_{217}^{\text{CIB}}$	42.9	$42 \pm 8$	Age/Gyr	13.8033	$13.801 \pm 0.030$	$r_{10}$	0.0081	$< 0.0178$
$A_{143}^{\text{tSZ}}$	3.55	$3.6^{+1.7}_{-2.7}$	$z_*$	1090.009	$1089.99 \pm 0.31$	$10^9 A_{\text{t}}$	0.0356	$0.062^{+0.017}_{-0.061}$
$r_{143 \times 217}^{\text{PS}}$	0.583	$0.64 \pm 0.13$	$r_*$	144.744	$144.72 \pm 0.33$	$10^9 A_{\text{t}}e^{-2\tau}$	0.0319	$0.056^{+0.015}_{-0.054}$
$r_{143 \times 217}^{\text{CIB}}$	0.682	$> 0.475$	$100\theta_*$	1.041237	$1.04125 \pm 0.00042$	$f_{2000}^{143}$	32.01	$31.4 \pm 3.3$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.29	—	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9012	$13.899 \pm 0.032$	$f_{2000}^{217}$	108.26	$108.0 \pm 2.2$
$A^{\text{kSZ}}$	5.1	—	$z_{\text{drag}}$	1059.589	$1059.62 \pm 0.49$	$f_{2000}^{143 \times 217}$	33.61	$33.4 \pm 2.4$
$A_{100}^{\text{dust}}$	1.016	$1.01 \pm 0.19$	$r_{\text{drag}}$	147.454	$147.43 \pm 0.37$	$\chi_{\text{BKPLANCK}}^2$	735.64	$740.0 \pm 2.7$
$A_{143}^{\text{dust}}$	0.988	$0.97 \pm 0.18$	$k_{\text{D}}$	0.140386	$0.14043 \pm 0.00049$	$\chi_{\text{simall}}^2$	396.20	$397.5 \pm 2.2$
$A_{217}^{\text{dust}}$	0.966	$0.97 \pm 0.10$	$100\theta_{\text{D}}$	0.160981	$0.16096 \pm 0.00028$	$\chi_{\text{lowl}}^2$	22.26	$23.0 \pm 1.9$
$A_{143 \times 217}^{\text{dust}}$	0.996	$1.03 \pm 0.16$	$z_{\text{eq}}$	3379.2	$3380 \pm 29$	$\chi_{\text{CamSpec}}^2$	7051.6	$7064.6 \pm 5.5$
$c_{100}$	0.99743	$0.9975 \pm 0.0011$	$k_{\text{eq}}$	0.010314	$0.010318 \pm 0.000088$	$\chi_{6\text{DF}}^2$	0.0291	$0.066 \pm 0.083$
$c_{217}$	1.00144	$1.0013 \pm 0.0016$	$100\theta_{\text{eq}}$	0.8172	$0.8170 \pm 0.0053$	$\chi_{\text{MGS}}^2$	1.22	$1.29 \pm 0.51$
$H_0$	67.58	$67.59 \pm 0.55$	$100\theta_{\text{s,eq}}$	0.45150	$0.4514 \pm 0.0027$	$\chi_{\text{DR12BAO}}^2$	4.37	$5.0 \pm 1.8$
$\Omega_{\Lambda}$	0.6890	$0.6889 \pm 0.0073$	$H(0.15)$	72.854	$72.87 \pm 0.47$	$\chi_{\text{prior}}^2$	2.52	$9.4 \pm 3.9$
$\Omega_{\text{m}}$	0.3110	$0.3111 \pm 0.0073$	$D_{\text{M}}(0.15)$	641.53	$641.5 \pm 4.7$	$\chi_{\text{BAO}}^2$	5.61	$6.3 \pm 1.5$
$\Omega_{\text{m}}h^2$	0.14205	$0.1421 \pm 0.0012$	$H(0.38)$	82.953	$82.97 \pm 0.36$	$\chi_{\text{CMB}}^2$	8205.7	$8225.0 \pm 6.3$
$\Omega_{\text{m}}h^3$	0.09600	$0.09605 \pm 0.00050$	$D_{\text{M}}(0.38)$	1530.1	$1529.9 \pm 9.4$			

Best-fit  $\chi_{\text{eff}}^2 = 8213.81$ ;  $\bar{\chi}_{\text{eff}}^2 = 8240.71$ ;  $R - 1 = 0.00691$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.03 MGS: 1.22 DR12BAO: 4.37 CMB - BK15\_dust: 735.64 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.20 commander\_dx12\_v3\_2\_29: 22.25 CamSpec like\_10.7HM: 7051.59



### 15.43 base\_nrun\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022141	$0.02217 \pm 0.00023$	$\Omega_{\mathrm{m}}h^3$	0.095960	$0.09601 \pm 0.00049$	$H(0.38)$	82.543	$82.61 \pm 0.46$
$\Omega_{\mathrm{c}}h^2$	0.12063	$0.1205 \pm 0.0016$	$\sigma_8$	0.8119	$0.8118 \pm 0.0063$	$D_{\mathrm{M}}(0.38)$	1541.6	$1540 \pm 12$
$100\theta_{\mathrm{MC}}$	1.040822	$1.04085 \pm 0.00046$	$S_8$	0.8389	$0.838 \pm 0.016$	$H(0.51)$	89.345	$89.40 \pm 0.37$
$\tau$	0.0535	$0.0537^{+0.0073}_{-0.0082}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4595	$0.4588 \pm 0.0089$	$D_{\mathrm{M}}(0.51)$	1995.6	$1994 \pm 15$
$\ln(10^{10}A_{\mathrm{s}})$	3.0430	$3.043 \pm 0.016$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6108	$0.6102 \pm 0.0076$	$H(0.61)$	95.029	$95.08 \pm 0.31$
$n_{\mathrm{s}}$	0.9620	$0.9632 \pm 0.0051$	$\sigma_8/h^{0.5}$	0.9925	$0.992 \pm 0.010$	$D_{\mathrm{M}}(0.61)$	2321.0	$2319 \pm 16$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	-0.0041	$-0.0041 \pm 0.0076$	$r_{\mathrm{drag}}h$	98.48	$98.6 \pm 1.2$	$H(2.33)$	236.74	$236.69 \pm 0.97$
$r$	0.0130	$< 0.0343$	$\langle d^2 \rangle^{1/2}$	2.4479	$2.445 \pm 0.027$	$D_{\mathrm{M}}(2.33)$	5776.2	$5774 \pm 15$
$y_{\mathrm{cal}}$	1.00061	$1.0007 \pm 0.0025$	$z_{\mathrm{re}}$	7.66	$7.65 \pm 0.82$	$f\sigma_8(0.15)$	0.4634	$0.4627 \pm 0.0081$
$A_{B,\mathrm{dust}}$	4.63	$4.87^{+0.81}_{-1.2}$	$10^9 A_{\mathrm{s}}$	2.0969	$2.098^{+0.031}_{-0.034}$	$\sigma_8(0.15)$	0.7493	$0.7494 \pm 0.0056$
$A_{B,\mathrm{sync}}$	1.47	$1.64^{+0.53}_{-1.3}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8842	$1.884 \pm 0.012$	$f\sigma_8(0.38)$	0.4797	$0.4793 \pm 0.0062$
$\alpha_{B,\mathrm{dust}}$	-0.515	$-0.57^{+0.21}_{-0.32}$	$D_{40}$	1227.6	$1231 \pm 20$	$\sigma_8(0.38)$	0.66329	$0.6634 \pm 0.0049$
$\beta_{B,\mathrm{dust}}$	1.577	$1.598 \pm 0.096$	$D_{220}$	5706.2	$5706 \pm 41$	$f\sigma_8(0.51)$	0.4773	$0.4769 \pm 0.0053$
$\alpha_{B,\mathrm{sync}}$	-0.26	—	$D_{810}$	2535.1	$2536 \pm 14$	$\sigma_8(0.51)$	0.62033	$0.6205 \pm 0.0046$
$\beta_{B,\mathrm{sync}}$	-3.039	$-3.10 \pm 0.27$	$D_{1420}$	812.9	$813.8 \pm 5.4$	$f\sigma_8(0.61)$	0.47161	$0.4713 \pm 0.0047$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	-0.330	$-0.35 \pm 0.28$	$D_{2000}$	228.81	$229.2 \pm 2.0$	$\sigma_8(0.61)$	0.59002	$0.5902 \pm 0.0045$
$A_{100}^{\mathrm{PS}}$	248.9	$245 \pm 25$	$n_{\mathrm{s},0.002}$	0.9754	$0.976 \pm 0.024$	$f\sigma_8(2.33)$	0.29715	$0.2973 \pm 0.0024$
$A_{143}^{\mathrm{PS}}$	39.5	$42 \pm 9$	$Y_{\mathrm{P}}$	0.245301	$0.24531^{+0.00011}_{-0.000084}$	$\sigma_8(2.33)$	0.30597	$0.3062 \pm 0.0026$
$A_{217}^{\mathrm{PS}}$	97.7	$100 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246627	$0.24664^{+0.00011}_{-0.000084}$	$r_{0.002}$	0.0118	$< 0.0316$
$A_{217}^{\mathrm{CIB}}$	44.5	$42 \pm 7$	$10^5 D/H$	2.6293	$2.623 \pm 0.043$	$r_{0.01}$	0.0124	$< 0.0327$
$A_{143}^{\mathrm{tSZ}}$	4.11	$3.6^{+1.7}_{-2.7}$	Age/Gyr	13.8263	$13.821 \pm 0.034$	$\ln(10^{10}A_{\mathrm{t}})$	-1.30	$-0.88^{+1.1}_{-0.42}$
$r_{143 \times 217}^{\mathrm{PS}}$	0.544	$0.64 \pm 0.13$	$z_*$	1090.267	$1090.21 \pm 0.37$	$r_{10}$	0.0061	$< 0.0163$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.670	$> 0.483$	$r_*$	144.444	$144.45 \pm 0.38$	$10^9 A_{\mathrm{t}}$	0.0273	$< 0.0720$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.00	—	$100\theta_*$	1.041022	$1.04106 \pm 0.00045$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	0.0246	$< 0.0646$
$A^{\mathrm{kSZ}}$	4.2	—	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8752	$13.876 \pm 0.035$	$f_{2000}^{143}$	32.36	$31.6 \pm 3.3$
$A_{100}^{\mathrm{dust}}$	1.018	$1.01 \pm 0.20$	$z_{\mathrm{drag}}$	1059.437	$1059.52 \pm 0.50$	$f_{2000}^{217}$	108.53	$108.1 \pm 2.2$
$A_{143}^{\mathrm{dust}}$	0.979	$0.98 \pm 0.18$	$r_{\mathrm{drag}}$	147.183	$147.18 \pm 0.39$	$f_{2000}^{143 \times 217}$	33.93	$33.6 \pm 2.4$
$A_{217}^{\mathrm{dust}}$	0.959	$0.97 \pm 0.10$	$k_{\mathrm{D}}$	0.140594	$0.14062 \pm 0.00049$	$\chi_{\mathrm{lensing}}^2$	9.11	$9.71 \pm 0.98$
$A_{143 \times 217}^{\mathrm{dust}}$	1.005	$1.03 \pm 0.16$	$100\theta_{\mathrm{D}}$	0.161043	$0.16101 \pm 0.00029$	$\chi_{\mathrm{BKPLANCK}}^2$	735.18	$739.5 \pm 2.6$
$c_{100}$	0.99744	$0.9975 \pm 0.0011$	$z_{\mathrm{eq}}$	3411.7	$3409 \pm 36$	$\chi_{\mathrm{small}}^2$	396.02	$397.1 \pm 1.8$
$c_{217}$	1.00145	$1.0013 \pm 0.0016$	$k_{\mathrm{eq}}$	0.010413	$0.01041 \pm 0.00011$	$\chi_{\mathrm{lowl}}^2$	22.95	$23.7 \pm 2.2$
$H_0$	66.91	$67.00 \pm 0.72$	$100\theta_{\mathrm{eq}}$	0.8109	$0.8115 \pm 0.0067$	$\chi_{\mathrm{CamSpec}}^2$	7050.4	$7063.8 \pm 5.4$
$\Omega_{\Lambda}$	0.6797	$0.6806 \pm 0.0099$	$100\theta_{\mathrm{s,eq}}$	0.44829	$0.4486 \pm 0.0034$	$\chi_{\mathrm{prior}}^2$	2.53	$9.3 \pm 3.8$
$\Omega_{\mathrm{m}}$	0.3203	$0.3194 \pm 0.0099$	$H(0.15)$	72.28	$72.36 \pm 0.62$	$\chi_{\mathrm{CMB}}^2$	8213.7	$8233.8 \pm 6.3$
$\Omega_{\mathrm{m}}h^2$	0.14341	$0.1433 \pm 0.0015$	$D_{\mathrm{M}}(0.15)$	647.3	$646.5 \pm 6.2$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 8216.23$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 8243.12$ ;  $R - 1 = 0.00347$

$\chi_{\mathrm{eff}}^2$ : CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p.teb\_consext8: 9.11 BK15\_dust: 735.18 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.02 commander\_dx12\_v3\_2.29: 22.95 CamSpec like\_10.7HM: 7050.44



#### 15.44 base\_nrun\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_BAO\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022257	$0.02226 \pm 0.00021$	$\sigma_8$	0.8095	$0.8103 \pm 0.0062$	$H(0.51)$	89.651	$89.66 \pm 0.28$
$\Omega_c h^2$	0.11935	$0.1193 \pm 0.0011$	$S_8$	0.8255	$0.826 \pm 0.012$	$D_M(0.51)$	1983.1	$1983 \pm 10$
$100\theta_{MC}$	1.041046	$1.04104 \pm 0.00043$	$\sigma_8 \Omega_m^{0.5}$	0.4521	$0.4523 \pm 0.0065$	$H(0.61)$	95.272	$95.28 \pm 0.25$
$\tau$	0.0563	$0.0570^{+0.0068}_{-0.0084}$	$\sigma_8 \Omega_m^{0.25}$	0.6050	$0.6054 \pm 0.0061$	$D_M(0.61)$	2307.5	$2307 \pm 11$
$\ln(10^{10} A_s)$	3.0461	$3.048^{+0.015}_{-0.016}$	$\sigma_8/h^{0.5}$	0.9851	$0.9859 \pm 0.0088$	$H(2.33)$	236.03	$235.98 \pm 0.72$
$n_s$	0.96517	$0.9661 \pm 0.0044$	$r_{\text{drag}} h$	99.53	$99.59 \pm 0.85$	$D_M(2.33)$	5765.4	$5765 \pm 13$
$dn_s/d \ln k$	-0.0045	$-0.0042 \pm 0.0076$	$\langle d^2 \rangle^{1/2}$	2.4306	$2.431 \pm 0.023$	$f\sigma_8(0.15)$	0.4567	$0.4569 \pm 0.0060$
$r$	0.0155	$0.0288^{+0.0072}_{-0.029}$	$z_{\text{re}}$	7.89	$7.94^{+0.71}_{-0.79}$	$\sigma_8(0.15)$	0.7480	$0.7488 \pm 0.0057$
$y_{\text{cal}}$	1.00075	$1.0010 \pm 0.0025$	$10^9 A_s$	2.1034	$2.107^{+0.030}_{-0.035}$	$f\sigma_8(0.38)$	0.47490	$0.4752 \pm 0.0050$
$A_{B,\text{dust}}$	4.62	$4.87^{+0.82}_{-1.2}$	$10^9 A_s e^{-2\tau}$	1.8796	$1.880 \pm 0.011$	$\sigma_8(0.38)$	0.66300	$0.6637^{+0.0047}_{-0.0052}$
$A_{B,\text{sync}}$	1.42	$1.65^{+0.55}_{-1.3}$	$D_{40}$	1222.2	$1227 \pm 20$	$f\sigma_8(0.51)$	0.47345	$0.4738 \pm 0.0045$
$\alpha_{B,\text{dust}}$	-0.508	$-0.56^{+0.22}_{-0.32}$	$D_{220}$	5715.8	$5716 \pm 41$	$\sigma_8(0.51)$	0.62044	$0.6211^{+0.0044}_{-0.0049}$
$\beta_{B,\text{dust}}$	1.574	$1.596 \pm 0.097$	$D_{810}$	2535.7	$2537 \pm 14$	$f\sigma_8(0.61)$	0.46844	$0.4688 \pm 0.0041$
$\alpha_{B,\text{sync}}$	-0.48	—	$D_{1420}$	814.2	$815.1 \pm 5.3$	$\sigma_8(0.61)$	0.59035	$0.5910^{+0.0042}_{-0.0047}$
$\beta_{B,\text{sync}}$	-3.044	$-3.10 \pm 0.27$	$D_{2000}$	229.35	$229.7 \pm 2.0$	$f\sigma_8(2.33)$	0.29764	$0.2980^{+0.0021}_{-0.0025}$
$\epsilon_{\text{dust,sync}}$	-0.344	$-0.34 \pm 0.29$	$n_{s,0.002}$	0.9796	$0.980 \pm 0.024$	$\sigma_8(2.33)$	0.30683	$0.3072^{+0.0023}_{-0.0027}$
$A_{100}^{\text{PS}}$	248.2	$245 \pm 25$	$Y_{\text{P}}$	0.245349	$0.245346^{+0.000094}_{-0.000080}$	$r_{0.002}$	0.0143	$< 0.0333$
$A_{143}^{\text{PS}}$	39.5	$42 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	0.246676	$0.246672^{+0.000094}_{-0.000080}$	$r_{0.01}$	0.0148	$< 0.0344$
$A_{217}^{\text{PS}}$	98.1	$101 \pm 10$	$10^5 \text{D/H}$	2.6070	$2.608 \pm 0.040$	$\ln(10^{10} A_t)$	-1.12	$-0.82^{+1.1}_{-0.40}$
$A_{217}^{\text{CIB}}$	43.7	$41 \pm 7$	Age/Gyr	13.8025	$13.802 \pm 0.029$	$r_{10}$	0.0073	$< 0.0171$
$A_{143}^{\text{tSZ}}$	3.97	$3.7^{+1.7}_{-2.7}$	$z_*$	1090.007	$1090.00 \pm 0.31$	$10^9 A_t$	0.0326	$0.061^{+0.015}_{-0.060}$
$r_{143 \times 217}^{\text{PS}}$	0.561	$0.64 \pm 0.13$	$r_*$	144.686	$144.71 \pm 0.30$	$10^9 A_t e^{-2\tau}$	0.0291	$0.054^{+0.014}_{-0.054}$
$r_{143 \times 217}^{\text{CIB}}$	0.661	$> 0.471$	$100\theta_*$	1.041238	$1.04124 \pm 0.00042$	$f_{2000}^{143}$	31.91	$31.2 \pm 3.3$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.09	—	$D_M(z_*)/\text{Gpc}$	13.8956	$13.898 \pm 0.030$	$f_{2000}^{217}$	108.19	$107.9 \pm 2.2$
$A^{\text{kSZ}}$	4.5	—	$z_{\text{drag}}$	1059.628	$1059.62 \pm 0.49$	$f_{2000}^{143 \times 217}$	33.55	$33.3 \pm 2.4$
$A_{100}^{\text{dust}}$	1.017	$1.01 \pm 0.20$	$r_{\text{drag}}$	147.390	$147.41 \pm 0.34$	$\chi_{\text{lensing}}^2$	9.03	$9.45 \pm 0.74$
$A_{143}^{\text{dust}}$	0.984	$0.97 \pm 0.18$	$k_{\text{D}}$	0.140465	$0.14044 \pm 0.00046$	$\chi_{\text{BKPLANCK}}^2$	735.56	$739.8 \pm 2.6$
$A_{217}^{\text{dust}}$	0.960	$0.97 \pm 0.10$	$100\theta_{\text{D}}$	0.160955	$0.16096 \pm 0.00028$	$\chi_{\text{small}}^2$	396.42	$397.5 \pm 2.2$
$A_{143 \times 217}^{\text{dust}}$	1.006	$1.03 \pm 0.16$	$z_{\text{eq}}$	3383.9	$3382 \pm 26$	$\chi_{\text{lowl}}^2$	22.43	$23.2 \pm 2.0$
$c_{100}$	0.99745	$0.9975 \pm 0.0011$	$k_{\text{eq}}$	0.010328	$0.010323 \pm 0.000079$	$\chi_{\text{CamSpec}}^2$	7051.2	$7064.1 \pm 5.4$
$c_{217}$	1.00137	$1.0013 \pm 0.0016$	$100\theta_{\text{eq}}$	0.81636	$0.8167 \pm 0.0048$	$\chi_{6\text{DF}}^2$	0.0379	$0.064 \pm 0.076$
$H_0$	67.53	$67.56 \pm 0.51$	$100\theta_{s,\text{eq}}$	0.45107	$0.4512 \pm 0.0025$	$\chi_{\text{MGS}}^2$	1.156	$1.25 \pm 0.46$
$\Omega_{\Lambda}$	0.6881	$0.6884 \pm 0.0067$	$H(0.15)$	72.814	$72.84 \pm 0.44$	$\chi_{\text{DR12BAO}}^2$	4.57	$5.0 \pm 1.6$
$\Omega_{\text{m}}$	0.3119	$0.3116 \pm 0.0067$	$D_M(0.15)$	641.95	$641.8 \pm 4.4$	$\chi_{\text{prior}}^2$	2.49	$9.3 \pm 3.8$
$\Omega_{\text{m}} h^2$	0.14225	$0.1422 \pm 0.0011$	$H(0.38)$	82.931	$82.95 \pm 0.34$	$\chi_{\text{CMB}}^2$	8214.6	$8234.1 \pm 6.3$
$\Omega_{\text{m}} h^3$	0.096062	$0.09605 \pm 0.00049$	$D_M(0.38)$	1530.9	$1530.5 \pm 8.8$	$\chi_{\text{BAO}}^2$	5.77	$6.3 \pm 1.3$

Best-fit  $\chi_{\text{eff}}^2 = 8222.87$ ;  $\bar{\chi}_{\text{eff}}^2 = 8249.75$ ;  $R - 1 = 0.00778$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.04 MGS: 1.16 DR12BAO: 4.57 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 9.03 BK15\_dust: 735.56 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.42 commander\_dx12\_v3.2.29: 22.43 CamSpec like\_10.7HM: 7051.18



# 15.45 base\_nrun\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02216 \pm 0.00023$	$\Omega_{\mathrm{m}}h^3$	$0.09607 \pm 0.00049$	$H(0.38)$	$82.48 \pm 0.55$
$\Omega_{\mathrm{c}}h^2$	$0.1211 \pm 0.0021$	$\sigma_8$	$0.8150 \pm 0.0085$	$D_{\mathrm{M}}(0.38)$	$1544 \pm 15$
$100\theta_{\mathrm{MC}}$	$1.04081 \pm 0.00048$	$S_8$	$0.846 \pm 0.024$	$H(0.51)$	$89.31 \pm 0.43$
$\tau$	$0.0553^{+0.0052}_{-0.0090}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.463 \pm 0.013$	$D_{\mathrm{M}}(0.51)$	$1998 \pm 18$
$\ln(10^{10}A_{\mathrm{s}})$	$3.048^{+0.013}_{-0.018}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.614 \pm 0.011$	$H(0.61)$	$95.02 \pm 0.35$
$n_{\mathrm{s}}$	$0.9620 \pm 0.0059$	$\sigma_8/h^{0.5}$	$0.997 \pm 0.016$	$D_{\mathrm{M}}(0.61)$	$2324 \pm 19$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0056 \pm 0.0076$	$r_{\mathrm{drag}}h$	$98.2 \pm 1.6$	$H(2.33)$	$237.1 \pm 1.3$
$r$	$< 0.0340$	$\langle d^2 \rangle^{1/2}$	$2.455 \pm 0.037$	$D_{\mathrm{M}}(2.33)$	$5776 \pm 16$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025$	$z_{\mathrm{re}}$	$7.83^{+0.58}_{-0.87}$	$f\sigma_8(0.15)$	$0.467 \pm 0.012$
$A_{B,\mathrm{dust}}$	$4.86^{+0.81}_{-1.2}$	$10^9 A_{\mathrm{s}}$	$2.108^{+0.027}_{-0.038}$	$\sigma_8(0.15)$	$0.7519 \pm 0.0071$
$A_{B,\mathrm{sync}}$	$1.63^{+0.51}_{-1.4}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.887 \pm 0.014$	$f\sigma_8(0.38)$	$0.4825 \pm 0.0093$
$\alpha_{B,\mathrm{dust}}$	$-0.57^{+0.21}_{-0.32}$	$D_{40}$	$1230 \pm 21$	$\sigma_8(0.38)$	$0.6653^{+0.0051}_{-0.0060}$
$\beta_{B,\mathrm{dust}}$	$1.601 \pm 0.096$	$D_{220}$	$5703 \pm 41$	$f\sigma_8(0.51)$	$0.4798 \pm 0.0080$
$\alpha_{B,\mathrm{sync}}$	—	$D_{810}$	$2537 \pm 14$	$\sigma_8(0.51)$	$0.6221^{+0.0045}_{-0.0055}$
$\beta_{B,\mathrm{sync}}$	$-3.10 \pm 0.28$	$D_{1420}$	$813.5 \pm 5.3$	$f\sigma_8(0.61)$	$0.4739 \pm 0.0070$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$-0.35 \pm 0.28$	$D_{2000}$	$229.1 \pm 2.0$	$\sigma_8(0.61)$	$0.5917^{+0.0041}_{-0.0052}$
$A_{100}^{\mathrm{PS}}$	$246 \pm 25$	$n_{\mathrm{s},0.002}$	$0.980 \pm 0.024$	$f\sigma_8(2.33)$	$0.2979^{+0.0020}_{-0.0026}$
$A_{143}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}$	$0.24530^{+0.00011}_{-0.000087}$	$\sigma_8(2.33)$	$0.3066^{+0.0020}_{-0.0028}$
$A_{217}^{\mathrm{PS}}$	$100 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00011}_{-0.000087}$	$r_{0.002}$	$< 0.0315$
$A_{217}^{\mathrm{CIB}}$	$42 \pm 8$	$10^5\mathrm{D}/\mathrm{H}$	$2.626 \pm 0.044$	$r_{0.01}$	$< 0.0325$
$A_{143}^{\mathrm{tSZ}}$	$3.6^{+1.7}_{-2.7}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.826 \pm 0.037$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.88^{+1.1}_{-0.43}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.64 \pm 0.13$	$z_*$	$1090.28 \pm 0.41$	$r_{10}$	$< 0.0163$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.485$	$r_*$	$144.32 \pm 0.48$	$10^9 A_{\mathrm{t}}$	$< 0.0718$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$100\theta_*$	$1.04101 \pm 0.00047$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.0642$
$A^{\mathrm{kSZ}}$	$5.2^{+3.9}_{-2.3}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.863 \pm 0.045$	$f_{2000}^{143}$	$31.8 \pm 3.3$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$z_{\mathrm{drag}}$	$1059.52 \pm 0.50$	$f_{2000}^{217}$	$108.3 \pm 2.2$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.18$	$r_{\mathrm{drag}}$	$147.04 \pm 0.49$	$f_{2000}^{143 \times 217}$	$33.8 \pm 2.4$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$k_{\mathrm{D}}$	$0.14075 \pm 0.00056$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.2 \pm 2.7$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_{\mathrm{D}}$	$0.16101 \pm 0.00029$	$\chi_{\mathrm{simall}}^2$	$397.2 \pm 2.0$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{eq}}$	$3423 \pm 47$	$\chi_{\mathrm{lowl}}^2$	$23.5 \pm 2.2$
$c_{217}$	$1.0013 \pm 0.0016$	$k_{\mathrm{eq}}$	$0.01045 \pm 0.00014$	$\chi_{\mathrm{CamSpec}}^2$	$7064.3 \pm 5.6$
$H_0$	$66.78 \pm 0.90$	$100\theta_{\mathrm{eq}}$	$0.8090 \pm 0.0087$	$\chi_{\mathrm{prior}}^2$	$9.3 \pm 3.9$
$\Omega_{\Lambda}$	$0.677 \pm 0.013$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4473 \pm 0.0045$	$\chi_{\mathrm{CMB}}^2$	$8224.3 \pm 6.3$
$\Omega_{\mathrm{m}}$	$0.323 \pm 0.013$	$H(0.15)$	$72.18 \pm 0.76$		
$\Omega_{\mathrm{m}}h^2$	$0.1439 \pm 0.0020$	$D_{\mathrm{M}}(0.15)$	$648.5 \pm 7.8$		

$\bar{\chi}_{\mathrm{eff}}^2 = 8233.63$ ;  $R - 1 = 0.00394$



15.46 base\_nrun\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02226 \pm 0.00021$	$\sigma_8$	$0.8097^{+0.0067}_{-0.0079}$	$H(0.51)$	$89.68 \pm 0.29$
$\Omega_c h^2$	$0.1192 \pm 0.0012$	$S_8$	$0.824 \pm 0.015$	$D_M(0.51)$	$1982 \pm 11$
$100\theta_{MC}$	$1.04106 \pm 0.00043$	$\sigma_8 \Omega_m^{0.5}$	$0.4516 \pm 0.0080$	$H(0.61)$	$95.30 \pm 0.25$
$\tau$	$0.0570^{+0.0057}_{-0.0091}$	$\sigma_8 \Omega_m^{0.25}$	$0.6047 \pm 0.0077$	$D_M(0.61)$	$2306 \pm 12$
$\ln(10^{10} A_s)$	$3.047^{+0.014}_{-0.019}$	$\sigma_8/h^{0.5}$	$0.985 \pm 0.011$	$H(2.33)$	$235.93 \pm 0.80$
$n_s$	$0.9663 \pm 0.0045$	$r_{\text{drag}} h$	$99.66 \pm 0.94$	$D_M(2.33)$	$5764 \pm 13$
$dn_s/d \ln k$	$-0.0051 \pm 0.0077$	$\langle d^2 \rangle^{1/2}$	$2.427 \pm 0.028$	$f\sigma_8(0.15)$	$0.4562 \pm 0.0075$
$r$	$0.0296^{+0.0078}_{-0.029}$	$z_{\text{re}}$	$7.94^{+0.62}_{-0.88}$	$\sigma_8(0.15)$	$0.7483^{+0.0058}_{-0.0071}$
$y_{\text{cal}}$	$1.0008 \pm 0.0025$	$10^9 A_s$	$2.106^{+0.029}_{-0.040}$	$f\sigma_8(0.38)$	$0.4746 \pm 0.0063$
$A_{B,\text{dust}}$	$4.87^{+0.81}_{-1.2}$	$10^9 A_s e^{-2\tau}$	$1.879 \pm 0.012$	$\sigma_8(0.38)$	$0.6633^{+0.0049}_{-0.0061}$
$A_{B,\text{sync}}$	$1.64^{+0.54}_{-1.3}$	$D_{40}$	$1223 \pm 20$	$f\sigma_8(0.51)$	$0.4733 \pm 0.0056$
$\alpha_{B,\text{dust}}$	$-0.56^{+0.22}_{-0.32}$	$D_{220}$	$5712 \pm 41$	$\sigma_8(0.51)$	$0.6208^{+0.0044}_{-0.0057}$
$\beta_{B,\text{dust}}$	$1.596 \pm 0.097$	$D_{810}$	$2537 \pm 14$	$f\sigma_8(0.61)$	$0.4683 \pm 0.0052$
$\alpha_{B,\text{sync}}$	—	$D_{1420}$	$814.8 \pm 5.3$	$\sigma_8(0.61)$	$0.5907^{+0.0042}_{-0.0054}$
$\beta_{B,\text{sync}}$	$-3.10 \pm 0.27$	$D_{2000}$	$229.5 \pm 2.0$	$f\sigma_8(2.33)$	$0.2979^{+0.0021}_{-0.0027}$
$\epsilon_{\text{dust,sync}}$	$-0.35 \pm 0.29$	$n_{s,0.002}$	$0.983 \pm 0.024$	$\sigma_8(2.33)$	$0.3071^{+0.0021}_{-0.0029}$
$A_{100}^{\text{PS}}$	$245 \pm 25$	$Y_P$	$0.245348^{+0.000092}_{-0.000080}$	$r_{0.002}$	$< 0.0345$
$A_{143}^{\text{PS}}$	$42 \pm 9$	$Y_P^{\text{BBN}}$	$0.246675^{+0.000093}_{-0.000081}$	$r_{0.01}$	$0.0285^{+0.0070}_{-0.028}$
$A_{217}^{\text{PS}}$	$100 \pm 10$	$10^5 \text{D/H}$	$2.606 \pm 0.040$	$\ln(10^{10} A_t)$	$-0.79^{+1.1}_{-0.41}$
$A_{217}^{\text{CIB}}$	$42 \pm 7$	Age/Gyr	$13.801 \pm 0.029$	$r_{10}$	$< 0.0177$
$A_{143}^{\text{tSZ}}$	$3.6^{+1.6}_{-2.7}$	$z_*$	$1089.99 \pm 0.31$	$10^9 A_t$	$0.062^{+0.017}_{-0.061}$
$r_{143 \times 217}^{\text{PS}}$	$0.64 \pm 0.13$	$r_*$	$144.72 \pm 0.33$	$10^9 A_t e^{-2\tau}$	$0.056^{+0.015}_{-0.054}$
$r_{143 \times 217}^{\text{CIB}}$	$> 0.476$	$100\theta_*$	$1.04125 \pm 0.00042$	$f_{2000}^{143}$	$31.4 \pm 3.3$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_M(z_*)/\text{Gpc}$	$13.899 \pm 0.032$	$f_{2000}^{217}$	$108.0 \pm 2.2$
$A^{\text{kSZ}}$	—	$z_{\text{drag}}$	$1059.63 \pm 0.49$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.4$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.20$	$r_{\text{drag}}$	$147.43 \pm 0.37$	$\chi_{\text{BKPLANCK}}^2$	$739.9 \pm 2.7$
$A_{143}^{\text{dust}}$	$0.98 \pm 0.18$	$k_D$	$0.14043 \pm 0.00049$	$\chi_{\text{small}}^2$	$397.5 \pm 2.3$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$100\theta_D$	$0.16096 \pm 0.00028$	$\chi_{\text{lowl}}^2$	$22.9 \pm 1.9$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16$	$z_{\text{eq}}$	$3380 \pm 29$	$\chi_{\text{CamSpec}}^2$	$7064.5 \pm 5.5$
$c_{100}$	$0.9975 \pm 0.0011$	$k_{\text{eq}}$	$0.010317 \pm 0.000088$	$\chi_{6\text{DF}}^2$	$0.065 \pm 0.082$
$c_{217}$	$1.0013 \pm 0.0016$	$100\theta_{\text{eq}}$	$0.8171 \pm 0.0053$	$\chi_{\text{MGS}}^2$	$1.29 \pm 0.51$
$H_0$	$67.60 \pm 0.54$	$100\theta_{s,\text{eq}}$	$0.4514 \pm 0.0027$	$\chi_{\text{DR12BAO}}^2$	$4.9 \pm 1.7$
$\Omega_\Lambda$	$0.6889 \pm 0.0073$	$H(0.15)$	$72.87 \pm 0.47$	$\chi_{\text{prior}}^2$	$9.4 \pm 3.9$
$\Omega_m$	$0.3111 \pm 0.0073$	$D_M(0.15)$	$641.4 \pm 4.7$	$\chi_{\text{BAO}}^2$	$6.3 \pm 1.4$
$\Omega_m h^2$	$0.1421 \pm 0.0012$	$H(0.38)$	$82.97 \pm 0.35$	$\chi_{\text{CMB}}^2$	$8224.8 \pm 6.2$
$\Omega_m h^3$	$0.09605 \pm 0.00050$	$D_M(0.38)$	$1529.8 \pm 9.4$		

$$\bar{\chi}_{\text{eff}}^2 = 8240.52; R - 1 = 0.00672$$



15.47 base\_nrun\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02218 \pm 0.00022$	$\Omega_{\mathrm{m}}h^3$	$0.09602 \pm 0.00049$	$H(0.38)$	$82.64^{+0.42}_{-0.46}$
$\Omega_{\mathrm{c}}h^2$	$0.1204 \pm 0.0015$	$\sigma_8$	$0.8123 \pm 0.0060$	$D_{\mathrm{M}}(0.38)$	$1539 \pm 12$
$100\theta_{\mathrm{MC}}$	$1.04087 \pm 0.00046$	$S_8$	$0.837 \pm 0.016$	$H(0.51)$	$89.43^{+0.34}_{-0.37}$
$\tau$	$0.0550^{+0.0051}_{-0.0086}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4586 \pm 0.0088$	$D_{\mathrm{M}}(0.51)$	$1993 \pm 14$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046^{+0.012}_{-0.016}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6103 \pm 0.0076$	$H(0.61)$	$95.10 \pm 0.30$
$n_{\mathrm{s}}$	$0.9634 \pm 0.0050$	$\sigma_8/h^{0.5}$	$0.992 \pm 0.010$	$D_{\mathrm{M}}(0.61)$	$2318 \pm 15$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0043 \pm 0.0075$	$r_{\mathrm{drag}}h$	$98.7 \pm 1.2$	$H(2.33)$	$236.63 \pm 0.95$
$r$	$0.0277^{+0.0067}_{-0.028}$	$\langle d^2 \rangle^{1/2}$	$2.445 \pm 0.026$	$D_{\mathrm{M}}(2.33)$	$5773 \pm 15$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$z_{\mathrm{re}}$	$7.78^{+0.56}_{-0.83}$	$f\sigma_8(0.15)$	$0.4626 \pm 0.0081$
$A_{B,\mathrm{dust}}$	$4.88^{+0.81}_{-1.2}$	$10^9 A_{\mathrm{s}}$	$2.103^{+0.024}_{-0.034}$	$\sigma_8(0.15)$	$0.7499^{+0.0049}_{-0.0055}$
$A_{B,\mathrm{sync}}$	$1.64^{+0.53}_{-1.3}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.884 \pm 0.012$	$f\sigma_8(0.38)$	$0.4793 \pm 0.0062$
$\alpha_{B,\mathrm{dust}}$	$-0.57^{+0.21}_{-0.32}$	$D_{40}$	$1230 \pm 20$	$\sigma_8(0.38)$	$0.6640^{+0.0040}_{-0.0049}$
$\beta_{B,\mathrm{dust}}$	$1.599 \pm 0.097$	$D_{220}$	$5706 \pm 41$	$f\sigma_8(0.51)$	$0.4770 \pm 0.0053$
$\alpha_{B,\mathrm{sync}}$	—	$D_{810}$	$2536 \pm 14$	$\sigma_8(0.51)$	$0.6211^{+0.0037}_{-0.0046}$
$\beta_{B,\mathrm{sync}}$	$-3.10 \pm 0.27$	$D_{1420}$	$813.8 \pm 5.3$	$f\sigma_8(0.61)$	$0.4715 \pm 0.0047$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$-0.35 \pm 0.28$	$D_{2000}$	$229.2 \pm 2.0$	$\sigma_8(0.61)$	$0.5908^{+0.0035}_{-0.0045}$
$A_{100}^{\mathrm{PS}}$	$245 \pm 25$	$n_{\mathrm{s},0.002}$	$0.977 \pm 0.023$	$f\sigma_8(2.33)$	$0.2976^{+0.0018}_{-0.0024}$
$A_{143}^{\mathrm{PS}}$	$42 \pm 9$	$Y_{\mathrm{P}}$	$0.24531^{+0.00010}_{-0.000084}$	$\sigma_8(2.33)$	$0.3065^{+0.0020}_{-0.0027}$
$A_{217}^{\mathrm{PS}}$	$100 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00010}_{-0.000084}$	$r_{0.002}$	$< 0.0317$
$A_{217}^{\mathrm{CIB}}$	$42 \pm 7$	$10^5 \mathrm{D}/\mathrm{H}$	$2.621 \pm 0.043$	$r_{0.01}$	$< 0.0328$
$A_{143}^{\mathrm{tSZ}}$	$3.6^{+1.7}_{-2.7}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.819 \pm 0.033$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.87^{+1.1}_{-0.42}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.64 \pm 0.13$	$z_*$	$1090.19 \pm 0.36$	$r_{10}$	$< 0.0163$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.482$	$r_*$	$144.47 \pm 0.37$	$10^9 A_{\mathrm{t}}$	$0.058^{+0.014}_{-0.058}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$100\theta_*$	$1.04107 \pm 0.00045$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$0.052^{+0.013}_{-0.052}$
$A^{\mathrm{kSZ}}$	—	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.877 \pm 0.035$	$f_{2000}^{143}$	$31.6 \pm 3.3$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$z_{\mathrm{drag}}$	$1059.53 \pm 0.49$	$f_{2000}^{217}$	$108.1 \pm 2.2$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.18$	$r_{\mathrm{drag}}$	$147.20 \pm 0.39$	$f_{2000}^{143 \times 217}$	$33.6 \pm 2.4$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$k_{\mathrm{D}}$	$0.14061 \pm 0.00049$	$\chi_{\mathrm{lensing}}^2$	$9.70 \pm 0.99$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_{\mathrm{D}}$	$0.16100 \pm 0.00029$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.5 \pm 2.6$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{eq}}$	$3407 \pm 35$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.8$
$c_{217}$	$1.0013 \pm 0.0016$	$k_{\mathrm{eq}}$	$0.01040 \pm 0.00011$	$\chi_{\mathrm{lowl}}^2$	$23.6 \pm 2.2$
$H_0$	$67.05 \pm 0.70$	$100\theta_{\mathrm{eq}}$	$0.8119 \pm 0.0065$	$\chi_{\mathrm{CamSpec}}^2$	$7063.8 \pm 5.4$
$\Omega_{\Lambda}$	$0.6813 \pm 0.0096$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4488 \pm 0.0034$	$\chi_{\mathrm{prior}}^2$	$9.3 \pm 3.8$
$\Omega_{\mathrm{m}}$	$0.3187 \pm 0.0096$	$H(0.15)$	$72.41 \pm 0.60$	$\chi_{\mathrm{CMB}}^2$	$8233.6 \pm 6.3$
$\Omega_{\mathrm{m}}h^2$	$0.1432 \pm 0.0015$	$D_{\mathrm{M}}(0.15)$	$646.1 \pm 6.1$		

$\bar{\chi}_{\mathrm{eff}}^2 = 8242.90$ ;  $R - 1 = 0.00417$



15.48 base\_nrun\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02226 \pm 0.00021$	$\sigma_8$	$0.8106^{+0.0056}_{-0.0064}$	$H(0.51)$	$89.67 \pm 0.28$
$\Omega_c h^2$	$0.1193 \pm 0.0011$	$S_8$	$0.826 \pm 0.012$	$D_M(0.51)$	$1982 \pm 10$
$100\theta_{MC}$	$1.04104 \pm 0.00043$	$\sigma_8 \Omega_m^{0.5}$	$0.4524 \pm 0.0065$	$H(0.61)$	$95.28 \pm 0.25$
$\tau$	$0.0575^{+0.0058}_{-0.0085}$	$\sigma_8 \Omega_m^{0.25}$	$0.6055 \pm 0.0061$	$D_M(0.61)$	$2307 \pm 11$
$\ln(10^{10} A_s)$	$3.049^{+0.013}_{-0.017}$	$\sigma_8/h^{0.5}$	$0.9862 \pm 0.0087$	$H(2.33)$	$235.97 \pm 0.72$
$n_s$	$0.9661 \pm 0.0044$	$r_{\text{drag}} h$	$99.61 \pm 0.85$	$D_M(2.33)$	$5765 \pm 13$
$dn_s/d \ln k$	$-0.0043 \pm 0.0076$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.023$	$f\sigma_8(0.15)$	$0.4570 \pm 0.0060$
$r$	$0.0288^{+0.0072}_{-0.029}$	$z_{\text{re}}$	$8.00^{+0.62}_{-0.82}$	$\sigma_8(0.15)$	$0.7490^{+0.0050}_{-0.0058}$
$y_{\text{cal}}$	$1.0010 \pm 0.0025$	$10^9 A_s$	$2.109^{+0.027}_{-0.035}$	$f\sigma_8(0.38)$	$0.4753 \pm 0.0050$
$A_{B,\text{dust}}$	$4.87^{+0.82}_{-1.2}$	$10^9 A_s e^{-2\tau}$	$1.880 \pm 0.011$	$\sigma_8(0.38)$	$0.6640^{+0.0043}_{-0.0052}$
$A_{B,\text{sync}}$	$1.65^{+0.55}_{-1.3}$	$D_{40}$	$1226 \pm 20$	$f\sigma_8(0.51)$	$0.4739 \pm 0.0044$
$\alpha_{B,\text{dust}}$	$-0.56^{+0.22}_{-0.32}$	$D_{220}$	$5716 \pm 41$	$\sigma_8(0.51)$	$0.6214^{+0.0040}_{-0.0049}$
$\beta_{B,\text{dust}}$	$1.596 \pm 0.097$	$D_{810}$	$2537 \pm 14$	$f\sigma_8(0.61)$	$0.4689 \pm 0.0041$
$\alpha_{B,\text{sync}}$	—	$D_{1420}$	$815.1 \pm 5.3$	$\sigma_8(0.61)$	$0.5913^{+0.0038}_{-0.0047}$
$\beta_{B,\text{sync}}$	$-3.10 \pm 0.27$	$D_{2000}$	$229.7 \pm 2.0$	$f\sigma_8(2.33)$	$0.2981^{+0.0019}_{-0.0025}$
$\epsilon_{\text{dust,sync}}$	$-0.34 \pm 0.29$	$n_{s,0.002}$	$0.980 \pm 0.024$	$\sigma_8(2.33)$	$0.3074^{+0.0021}_{-0.0027}$
$A_{100}^{\text{PS}}$	$245 \pm 25$	$Y_P$	$0.245347^{+0.000093}_{-0.000080}$	$r_{0.002}$	$< 0.0333$
$A_{143}^{\text{PS}}$	$42 \pm 9$	$Y_P^{\text{BBN}}$	$0.246673^{+0.000093}_{-0.000080}$	$r_{0.01}$	$< 0.0344$
$A_{217}^{\text{PS}}$	$101 \pm 10$	$10^5 \text{D/H}$	$2.607 \pm 0.040$	$\ln(10^{10} A_t)$	$-0.82^{+1.1}_{-0.40}$
$A_{217}^{\text{CIB}}$	$41 \pm 7$	Age/Gyr	$13.802 \pm 0.029$	$r_{10}$	$< 0.0171$
$A_{143}^{\text{tSZ}}$	$3.7^{+1.7}_{-2.7}$	$z_*$	$1090.00 \pm 0.31$	$10^9 A_t$	$0.061^{+0.015}_{-0.060}$
$r_{143 \times 217}^{\text{PS}}$	$0.64 \pm 0.13$	$r_*$	$144.71 \pm 0.30$	$10^9 A_t e^{-2\tau}$	$0.054^{+0.014}_{-0.054}$
$r_{143 \times 217}^{\text{CIB}}$	$> 0.471$	$100\theta_*$	$1.04124 \pm 0.00042$	$f_{2000}^{143}$	$31.2 \pm 3.3$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_M(z_*)/\text{Gpc}$	$13.898 \pm 0.030$	$f_{2000}^{217}$	$107.9 \pm 2.2$
$A^{\text{kSZ}}$	—	$z_{\text{drag}}$	$1059.62 \pm 0.49$	$f_{2000}^{143 \times 217}$	$33.3 \pm 2.4$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.20$	$r_{\text{drag}}$	$147.41 \pm 0.34$	$\chi_{\text{lensing}}^2$	$9.42 \pm 0.70$
$A_{143}^{\text{dust}}$	$0.97 \pm 0.18$	$k_D$	$0.14044 \pm 0.00046$	$\chi_{\text{BKPLANCK}}^2$	$739.8 \pm 2.6$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$100\theta_D$	$0.16096 \pm 0.00028$	$\chi_{\text{simall}}^2$	$397.5 \pm 2.2$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16$	$z_{\text{eq}}$	$3382 \pm 26$	$\chi_{\text{lowl}}^2$	$23.2 \pm 2.0$
$c_{100}$	$0.9975 \pm 0.0011$	$k_{\text{eq}}$	$0.010321 \pm 0.000079$	$\chi_{\text{CamSpec}}^2$	$7064.1 \pm 5.4$
$c_{217}$	$1.0013 \pm 0.0016$	$100\theta_{\text{eq}}$	$0.8168 \pm 0.0047$	$\chi_{6\text{DF}}^2$	$0.062 \pm 0.074$
$H_0$	$67.57 \pm 0.50$	$100\theta_{s,\text{eq}}$	$0.4513 \pm 0.0025$	$\chi_{\text{MGS}}^2$	$1.26 \pm 0.46$
$\Omega_\Lambda$	$0.6885 \pm 0.0066$	$H(0.15)$	$72.85 \pm 0.44$	$\chi_{\text{DR12BAO}}^2$	$4.9 \pm 1.6$
$\Omega_m$	$0.3115 \pm 0.0066$	$D_M(0.15)$	$641.7 \pm 4.3$	$\chi_{\text{prior}}^2$	$9.3 \pm 3.8$
$\Omega_m h^2$	$0.1422 \pm 0.0011$	$H(0.38)$	$82.95 \pm 0.34$	$\chi_{\text{CMB}}^2$	$8234.0 \pm 6.3$
$\Omega_m h^3$	$0.09605 \pm 0.00049$	$D_M(0.38)$	$1530.3 \pm 8.8$	$\chi_{\text{BAO}}^2$	$6.3 \pm 1.3$

$$\bar{\chi}_{\text{eff}}^2 = 8249.63; R - 1 = 0.00812$$



# 15.49 base\_nrun\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BK15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022290	$0.02230 \pm 0.00016$ (+0.6 $\sigma$ )	$\Omega_{\mathrm{m}}$	0.3158	$0.3151 \pm 0.0085$ (−0.6 $\sigma$ )	$H(0.15)$	72.60	$72.65 \pm 0.52$ (+0.6 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11998	$0.1198 \pm 0.0014$ (−0.6 $\sigma$ )	$\Omega_{\mathrm{m}}h^2$	0.14292	$0.1428 \pm 0.0013$ (−0.6 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	644.2	$643.7 \pm 5.2$ (−0.6 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.040847	$1.04085 \pm 0.00031$ (+0.1 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.096139	$0.09613 \pm 0.00033$ (+0.2 $\sigma$ )	$H(0.38)$	82.784	$82.82 \pm 0.38$ (+0.6 $\sigma$ )
$\tau$	0.0542	$0.0543^{+0.0073}_{-0.0083}$ (+0.0 $\sigma$ )	$\sigma_8$	0.8105	$0.8098 \pm 0.0076$ (−0.5 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1535.2	$1534 \pm 10$ (−0.6 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0437	$3.043 \pm 0.017$ (−0.1 $\sigma$ )	$S_8$	0.8316	$0.830 \pm 0.016$ (−0.6 $\sigma$ )	$H(0.51)$	89.545	$89.57 \pm 0.30$ (+0.6 $\sigma$ )
$n_{\mathrm{s}}$	0.96489	$0.9652 \pm 0.0048$ (+0.6 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4555	$0.4546 \pm 0.0089$ (−0.6 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1988.1	$1987 \pm 12$ (−0.6 $\sigma$ )
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	−0.0032	$−0.0038 \pm 0.0070$ (+0.2 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6076	$0.6067 \pm 0.0084$ (−0.6 $\sigma$ )	$H(0.61)$	95.198	$95.22 \pm 0.24$ (+0.6 $\sigma$ )
$r$	0.0243	$0.034^{+0.013}_{-0.028}$ (+0.3 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9882	$0.987 \pm 0.012$ (−0.6 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2312.9	$2312 \pm 13$ (−0.6 $\sigma$ )
$y_{\mathrm{cal}}$	1.00074	$1.0007 \pm 0.0025$ (−0.0 $\sigma$ )	$r_{\mathrm{drag}}h$	99.01	$99.1 \pm 1.1$ (+0.6 $\sigma$ )	$H(2.33)$	236.46	$236.38 \pm 0.85$ (−0.6 $\sigma$ )
$A_{B,\mathrm{dust}}$	4.60	$4.86^{+0.82}_{-1.2}$ (+0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4378	$2.434 \pm 0.029$ (−0.5 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5768.0	$5767 \pm 11$ (−0.6 $\sigma$ )
$A_{B,\mathrm{sync}}$	1.38	$1.62^{+0.52}_{-1.3}$ (−0.0 $\sigma$ )	$z_{\mathrm{re}}$	7.69	$7.67 \pm 0.82$ (−0.0 $\sigma$ )	$f\sigma_8(0.15)$	0.4597	$0.4588 \pm 0.0083$ (−0.6 $\sigma$ )
$\alpha_{B,\mathrm{dust}}$	−0.515	$−0.56^{+0.22}_{-0.32}$ (+0.0 $\sigma$ )	$10^9A_{\mathrm{s}}$	2.0982	$2.098^{+0.033}_{-0.037}$ (−0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7485	$0.7479 \pm 0.0067$ (−0.4 $\sigma$ )
$\beta_{B,\mathrm{dust}}$	1.584	$1.601 \pm 0.097$ (+0.0 $\sigma$ )	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8826	$1.882 \pm 0.012$ (−0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4771	$0.4763 \pm 0.0068$ (−0.6 $\sigma$ )
$\alpha_{B,\mathrm{sync}}$	−0.42	—	$D_{40}$	1229.4	$1230 \pm 19$ (−0.0 $\sigma$ )	$\sigma_8(0.38)$	0.6630	$0.6626 \pm 0.0057$ (−0.3 $\sigma$ )
$\beta_{B,\mathrm{sync}}$	−3.036	$−3.10^{+0.29}_{-0.26}$ (−0.0 $\sigma$ )	$D_{220}$	5717.5	$5715 \pm 39$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.4752	$0.4745 \pm 0.0060$ (−0.6 $\sigma$ )
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	−0.370	$−0.36 \pm 0.28$ (−0.0 $\sigma$ )	$D_{810}$	2537.8	$2537 \pm 14$ (−0.0 $\sigma$ )	$\sigma_8(0.51)$	0.6203	$0.6199 \pm 0.0053$ (−0.3 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	237.1	$242 \pm 25$ (−0.1 $\sigma$ )	$D_{1420}$	815.6	$815.3 \pm 5.0$ (+0.3 $\sigma$ )	$f\sigma_8(0.61)$	0.4699	$0.4692 \pm 0.0055$ (−0.6 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	40.4	$41 \pm 8$ (−0.3 $\sigma$ )	$D_{2000}$	230.00	$229.9 \pm 1.9$ (+0.4 $\sigma$ )	$\sigma_8(0.61)$	0.59010	$0.5897 \pm 0.0050$ (−0.2 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	100.9	$102 \pm 10$ (+0.1 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.9751	$0.977 \pm 0.021$ (−0.1 $\sigma$ )	$f\sigma_8(2.33)$	0.29736	$0.2972 \pm 0.0025$ (−0.1 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	45.6	$40^{+7}_{-8}$ (−0.2 $\sigma$ )	$Y_{\mathrm{P}}$	0.245363	$0.245365^{+0.000068}_{-0.000062}$ (+0.6 $\sigma$ )	$\sigma_8(2.33)$	0.30638	$0.3063 \pm 0.0026$ (+0.0 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	6.54	$3.8^{+1.8}_{-2.6}$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246689	$0.246691^{+0.000069}_{-0.000062}$ (+0.6 $\sigma$ )	$r_{0.002}$	0.0222	$0.032^{+0.011}_{-0.027}$ (+0.3 $\sigma$ )
$r_{143 \times 217}^{\mathrm{PS}}$	0.578	$0.65 \pm 0.13$ (+0.1 $\sigma$ )	$10^5\mathrm{D}/\mathrm{H}$	2.6007	$2.599 \pm 0.030$ (−0.6 $\sigma$ )	$r_{0.01}$	0.0231	$0.033^{+0.012}_{-0.027}$ (+0.3 $\sigma$ )
$r_{143 \times 217}^{\mathrm{CIB}}$	0.795	$0.57^{+0.41}_{-0.15}$ (−0.1 $\sigma$ )	Age/Gyr	13.8078	$13.806 \pm 0.025$ (−0.6 $\sigma$ )	$\ln(10^{10}A_{\mathrm{t}})$	−0.68	$−0.62^{+0.97}_{-0.36}$ (+0.3 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.05	—	$z_{*}$	1090.020	$1090.00 \pm 0.28$ (−0.7 $\sigma$ )	$r_{10}$	0.0114	$0.0163^{+0.0056}_{-0.014}$ (+0.3 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.11	$4.9 \pm 2.7$ (−0.1 $\sigma$ )	$r_{*}$	144.496	$144.53 \pm 0.33$ (+0.5 $\sigma$ )	$10^9A_{\mathrm{t}}$	0.0509	$0.071^{+0.027}_{-0.059}$ (+0.3 $\sigma$ )
$A_{100}^{\mathrm{dust}}$	1.009	$1.01 \pm 0.20$ (−0.0 $\sigma$ )	$100\theta_{*}$	1.041037	$1.04104 \pm 0.00030$ (+0.1 $\sigma$ )	$10^9A_{\mathrm{t}}e^{-2\tau}$	0.0457	$0.064^{+0.024}_{-0.052}$ (+0.3 $\sigma$ )
$A_{143}^{\mathrm{dust}}$	0.974	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	13.8801	$13.883 \pm 0.030$ (+0.5 $\sigma$ )	$f_{2000}^{143}$	30.78	$30.5 \pm 3.3$ (−0.4 $\sigma$ )
$A_{217}^{\mathrm{dust}}$	0.966	$0.97 \pm 0.10$ (+0.1 $\sigma$ )	$z_{\mathrm{drag}}$	1059.742	$1059.76 \pm 0.34$ (+0.5 $\sigma$ )	$f_{2000}^{217}$	107.36	$107.4 \pm 2.2$ (−0.4 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dust}}$	1.000	$1.03 \pm 0.16$ (−0.0 $\sigma$ )	$r_{\mathrm{drag}}$	147.186	$147.21 \pm 0.33$ (+0.4 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.69	$32.7 \pm 2.3$ (−0.4 $\sigma$ )
$c_{100}$	0.99764	$0.9975 \pm 0.0011$ (+0.0 $\sigma$ )	$k_{\mathrm{D}}$	0.140707	$0.14068 \pm 0.00038$ (−0.1 $\sigma$ )	$\chi_{\mathrm{BKPLANCK}}^2$	735.31	$740.0 \pm 2.8$ (+0.3 $\sigma$ )
$c_{217}$	1.00138	$1.0012 \pm 0.0016$ (−0.1 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160858	$0.16085 \pm 0.00020$ (−0.6 $\sigma$ )	$\chi_{\mathrm{simall}}^2$	396.13	$397.2 \pm 1.9$ (−0.0 $\sigma$ )
$c_{TE}$	0.99620	$0.9963 \pm 0.0049$	$z_{\mathrm{eq}}$	3399.9	$3397 \pm 32$ (−0.6 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	23.09	$23.5 \pm 1.9$ (−0.0 $\sigma$ )
$c_{EE}$	0.99193	$0.9919 \pm 0.0049$	$k_{\mathrm{eq}}$	0.010377	$0.010368 \pm 0.000097$ (−0.6 $\sigma$ )	$\chi_{\mathrm{CamSpec}}^2$	11499.2	$11514.7 \pm 5.9$ (+792.2 $\sigma$ )
$H_0$	67.27	$67.33 \pm 0.61$ (+0.6 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8134	$0.8140 \pm 0.0059$ (+0.6 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	2.37	$9.5 \pm 3.8$ (+0.0 $\sigma$ )
$\Omega_{\Lambda}$	0.6842	$0.6849 \pm 0.0085$ (+0.6 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.44951	$0.4498 \pm 0.0031$ (+0.6 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	12653.8	$12675.4 \pm 6.5$ (+704.1 $\sigma$ )

Best-fit  $\chi_{\mathrm{eff}}^2 = 12656.13$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 4449.17$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 12684.91$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 4451.06$ ;  $R - 1 = 0.00385$   
 $\chi_{\mathrm{eff}}^2$ : CMB - BK15\_dust: 735.31 ( $\Delta$  0.45) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.13 ( $\Delta$  0.09) commander\_dx12\_v3.2\_29: 23.09 ( $\Delta$  0.23) CamSpec like\_10.7HM\_1400\_unified: 11499.22



15.50 base\_nrun\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BK15\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022346	$0.02234 \pm 0.00015$ (+0.4 $\sigma$ )	$\Omega_m h^3$	0.096172	$0.09612 \pm 0.00033$ (+0.2 $\sigma$ )	$H(0.51)$	89.724	$89.73 \pm 0.23$ (+0.2 $\sigma$ )
$\Omega_c h^2$	0.11919	$0.1191 \pm 0.0010$ (−0.1 $\sigma$ )	$\sigma_8$	0.8078	$0.8077 \pm 0.0073$ (−0.2 $\sigma$ )	$D_M(0.51)$	1980.7	$1980.1 \pm 9.1$ (−0.2 $\sigma$ )
$100\theta_{MC}$	1.040993	$1.04094 \pm 0.00029$ (−0.3 $\sigma$ )	$S_8$	0.8221	$0.821 \pm 0.013$ (−0.2 $\sigma$ )	$H(0.61)$	95.338	$95.34 \pm 0.19$ (+0.2 $\sigma$ )
$\tau$	0.0546	$0.0552^{+0.0073}_{-0.0083}$ (−0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4503	$0.4499 \pm 0.0070$ (−0.2 $\sigma$ )	$D_M(0.61)$	2304.9	$2304.3 \pm 9.8$ (−0.2 $\sigma$ )
$\ln(10^{10} A_s)$	3.0419	$3.043 \pm 0.017$ (−0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6031	$0.6028 \pm 0.0071$ (−0.2 $\sigma$ )	$H(2.33)$	236.01	$235.92 \pm 0.64$ (−0.0 $\sigma$ )
$n_s$	0.96694	$0.9671 \pm 0.0042$ (+0.2 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9822	$0.982 \pm 0.010$ (−0.2 $\sigma$ )	$D_M(2.33)$	5762.0	$5762.2 \pm 9.3$ (−0.2 $\sigma$ )
$dn_s/d \ln k$	−0.0028	$−0.0033 \pm 0.0070$ (+0.2 $\sigma$ )	$r_{drag} h$	99.65	$99.73 \pm 0.79$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4549	$0.4546 \pm 0.0066$ (−0.2 $\sigma$ )
$r$	0.0247	$0.035^{+0.013}_{-0.028}$ (+0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4241	$2.423 \pm 0.026$ (−0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7465	$0.7465 \pm 0.0066$ (−0.2 $\sigma$ )
$y_{cal}$	1.00050	$1.0007 \pm 0.0025$ (−0.0 $\sigma$ )	$z_{re}$	7.70	$7.74 \pm 0.81$ (−0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.4734	$0.4731 \pm 0.0057$ (−0.2 $\sigma$ )
$A_{B,dust}$	4.62	$4.87^{+0.83}_{-1.2}$ (+0.0 $\sigma$ )	$10^9 A_s$	2.0946	$2.098^{+0.033}_{-0.037}$ (−0.1 $\sigma$ )	$\sigma_8(0.38)$	0.6618	$0.6619 \pm 0.0057$ (−0.2 $\sigma$ )
$A_{B,sync}$	1.37	$1.62^{+0.51}_{-1.3}$ (−0.0 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8780	$1.878 \pm 0.011$ (−0.1 $\sigma$ )	$f\sigma_8(0.51)$	0.4721	$0.4719 \pm 0.0052$ (−0.2 $\sigma$ )
$\alpha_{B,dust}$	−0.504	$−0.56^{+0.22}_{-0.31}$ (−0.0 $\sigma$ )	$D_{40}$	1225.4	$1228 \pm 19$ (+0.2 $\sigma$ )	$\sigma_8(0.51)$	0.6193	$0.6195 \pm 0.0053$ (−0.1 $\sigma$ )
$\beta_{B,dust}$	1.583	$1.600 \pm 0.097$ (+0.0 $\sigma$ )	$D_{220}$	5717.5	$5719 \pm 39$ (+0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.46716	$0.4670 \pm 0.0049$ (−0.2 $\sigma$ )
$\alpha_{B,sync}$	−0.48	—	$D_{810}$	2535.9	$2536 \pm 14$ (−0.0 $\sigma$ )	$\sigma_8(0.61)$	0.58934	$0.5895 \pm 0.0050$ (−0.1 $\sigma$ )
$\beta_{B,sync}$	−3.045	$−3.10^{+0.29}_{-0.26}$ (−0.0 $\sigma$ )	$D_{1420}$	815.82	$815.8 \pm 5.0$ (+0.2 $\sigma$ )	$f\sigma_8(2.33)$	0.29718	$0.2973 \pm 0.0025$ (−0.1 $\sigma$ )
$\epsilon_{dust,sync}$	−0.383	$−0.36 \pm 0.28$ (−0.0 $\sigma$ )	$D_{2000}$	230.16	$230.1 \pm 1.8$ (+0.3 $\sigma$ )	$\sigma_8(2.33)$	0.30641	$0.3065 \pm 0.0026$ (−0.1 $\sigma$ )
$A_{100}^{PS}$	235.9	$241 \pm 25$ (−0.2 $\sigma$ )	$n_{s,0.002}$	0.9759	$0.978 \pm 0.021$ (−0.2 $\sigma$ )	$r_{0.002}$	0.0228	$0.033^{+0.012}_{-0.028}$ (+0.2 $\sigma$ )
$A_{143}^{PS}$	40.8	$40 \pm 8$ (−0.2 $\sigma$ )	$Y_P$	0.245386	$0.245383^{+0.000064}_{-0.000056}$ (+0.4 $\sigma$ )	$r_{0.01}$	0.0236	$0.033^{+0.012}_{-0.028}$ (+0.3 $\sigma$ )
$A_{217}^{PS}$	101.3	$102 \pm 10$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246712	$0.246709^{+0.000064}_{-0.000057}$ (+0.4 $\sigma$ )	$\ln(10^{10} A_t)$	−0.66	$−0.59^{+0.96}_{-0.36}$ (+0.2 $\sigma$ )
$A_{217}^{CIB}$	44.9	$40^{+7}_{-8}$ (−0.2 $\sigma$ )	$10^5 D/H$	2.5901	$2.591 \pm 0.028$ (−0.4 $\sigma$ )	$r_{10}$	0.0117	$0.0168^{+0.0058}_{-0.014}$ (+0.2 $\sigma$ )
$A_{143}^{tSZ}$	6.46	$3.8^{+1.8}_{-2.6}$ (+0.1 $\sigma$ )	Age/Gyr	13.7946	$13.795 \pm 0.021$ (−0.2 $\sigma$ )	$10^9 A_t$	0.0518	$0.073^{+0.028}_{-0.059}$ (+0.3 $\sigma$ )
$r_{143 \times 217}^{PS}$	0.592	$0.65 \pm 0.13$ (+0.1 $\sigma$ )	$z_*$	1089.879	$1089.87 \pm 0.24$ (−0.4 $\sigma$ )	$10^9 A_t e^{-2\tau}$	0.0464	$0.065^{+0.025}_{-0.053}$ (+0.3 $\sigma$ )
$r_{143 \times 217}^{CIB}$	0.798	$0.57^{+0.41}_{-0.14}$ (−0.1 $\sigma$ )	$r_*$	144.659	$144.70 \pm 0.26$ (−0.1 $\sigma$ )	$f_{2000}^{143}$	30.56	$30.2 \pm 3.3$ (−0.4 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.12	—	$100\theta_*$	1.041174	$1.04113 \pm 0.00029$ (−0.3 $\sigma$ )	$f_{2000}^{217}$	107.16	$107.2 \pm 2.2$ (−0.4 $\sigma$ )
$A^{kSZ}$	0.32	$4.9 \pm 2.7$ (−0.1 $\sigma$ )	$D_M(z_*)/\text{Gpc}$	13.8938	$13.898 \pm 0.024$ (−0.0 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.51	$32.5 \pm 2.3$ (−0.4 $\sigma$ )
$A_{100}^{dust}$	1.008	$1.01 \pm 0.20$ (−0.0 $\sigma$ )	$z_{drag}$	1059.818	$1059.81 \pm 0.34$ (+0.4 $\sigma$ )	$\chi_{BKPLANCK}^2$	735.68	$740.2 \pm 2.7$ (+0.1 $\sigma$ )
$A_{143}^{dust}$	0.977	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	$r_{drag}$	147.333	$147.37 \pm 0.27$ (−0.2 $\sigma$ )	$\chi_{simall}^2$	396.13	$397.3 \pm 2.0$ (−0.1 $\sigma$ )
$A_{217}^{dust}$	0.968	$0.97 \pm 0.10$ (+0.0 $\sigma$ )	$k_D$	0.140593	$0.14055 \pm 0.00034$ (+0.3 $\sigma$ )	$\chi_{lowl}^2$	22.83	$23.3 \pm 1.9$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{dust}$	0.998	$1.02 \pm 0.16$ (−0.0 $\sigma$ )	$100\theta_D$	0.160829	$0.16083 \pm 0.00020$ (−0.5 $\sigma$ )	$\chi_{CamSpec}^2$	11499.5	$11514.5 \pm 5.8$ (+804.0 $\sigma$ )
$c_{100}$	0.99760	$0.9975 \pm 0.0011$ (+0.0 $\sigma$ )	$z_{eq}$	3382.3	$3379 \pm 24$ (−0.0 $\sigma$ )	$\chi_{6DF}^2$	0.0289	$0.050 \pm 0.061$ (−0.2 $\sigma$ )
$c_{217}$	1.00137	$1.0012 \pm 0.0016$ (−0.1 $\sigma$ )	$k_{eq}$	0.010323	$0.010313 \pm 0.000072$ (−0.0 $\sigma$ )	$\chi_{MGS}^2$	1.217	$1.32 \pm 0.44$ (+0.1 $\sigma$ )
$c_{TE}$	0.99650	$0.9965 \pm 0.0049$	$100\theta_{eq}$	0.81685	$0.8174 \pm 0.0044$ (+0.1 $\sigma$ )	$\chi_{DR12BAO}^2$	4.40	$4.7 \pm 1.4$ (−0.2 $\sigma$ )
$c_{EE}$	0.99208	$0.9923 \pm 0.0049$	$100\theta_{s,eq}$	0.45125	$0.4516 \pm 0.0023$ (+0.0 $\sigma$ )	$\chi_{prior}^2$	2.36	$9.5 \pm 3.8$ (+0.0 $\sigma$ )
$H_0$	67.639	$67.67 \pm 0.45$ (+0.1 $\sigma$ )	$H(0.15)$	72.913	$72.94 \pm 0.39$ (+0.2 $\sigma$ )	$\chi_{BAO}^2$	5.64	$6.1 \pm 1.1$ (−0.2 $\sigma$ )
$\Omega_\Lambda$	0.6892	$0.6898 \pm 0.0061$ (+0.1 $\sigma$ )	$D_M(0.15)$	640.99	$640.7 \pm 3.9$ (−0.2 $\sigma$ )	$\chi_{CMB}^2$	12654.2	$12675.4 \pm 6.4$ (+706.6 $\sigma$ )
$\Omega_m$	0.3108	$0.3102 \pm 0.0061$ (−0.1 $\sigma$ )	$H(0.38)$	83.013	$83.03 \pm 0.29$ (+0.2 $\sigma$ )			
$\Omega_m h^2$	0.14218	$0.14205 \pm 0.00099$ (−0.0 $\sigma$ )	$D_M(0.38)$	1528.9	$1528.4 \pm 7.7$ (−0.2 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 12662.16$ ;  $\Delta\chi_{\text{eff}}^2 = 4448.35$ ;  $\bar{\chi}_{\text{eff}}^2 = 12690.95$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4450.23$ ;  $R - 1 = 0.00720$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.03 ( $\Delta$  0.00) MGS: 1.22 ( $\Delta$  0.00) DR12BAO: 4.40 ( $\Delta$  0.03) CMB - BK15\_dust: 735.68 ( $\Delta$  0.05) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.13 ( $\Delta$  −0.07) commander\_dx12\_v3.2\_29: 22.83 ( $\Delta$  0.57) CamSpec like\_10.7HM\_1400\_unified: 11499.52



# 15.51 base\_nrun\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BK15\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022287	$0.02230 \pm 0.00016$ (+0.5 $\sigma$ )	$\Omega_{\mathrm{m}}h^2$	0.14282	$0.1428 \pm 0.0012$ (−0.4 $\sigma$ )	$H(0.38)$	82.799	$82.83 \pm 0.34$ (+0.5 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11988	$0.1198 \pm 0.0012$ (−0.4 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.096114	$0.09613 \pm 0.00033$ (+0.2 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1534.8	$1534.1 \pm 9.3$ (−0.5 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.040837	$1.04085 \pm 0.00030$ (−0.0 $\sigma$ )	$\sigma_8$	0.8099	$0.8101 \pm 0.0060$ (−0.3 $\sigma$ )	$H(0.51)$	89.554	$89.58 \pm 0.27$ (+0.5 $\sigma$ )
$\tau$	0.0536	$0.0547^{+0.0069}_{-0.0078}$ (+0.1 $\sigma$ )	$S_8$	0.8303	$0.830 \pm 0.013$ (−0.5 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1987.5	$1987 \pm 11$ (−0.5 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0420	$3.044 \pm 0.015$ (+0.0 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4548	$0.4546 \pm 0.0070$ (−0.5 $\sigma$ )	$H(0.61)$	95.203	$95.22 \pm 0.22$ (+0.5 $\sigma$ )
$n_{\mathrm{s}}$	0.96525	$0.9652 \pm 0.0045$ (+0.4 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6069	$0.6069 \pm 0.0064$ (−0.4 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2312.3	$2311 \pm 12$ (−0.5 $\sigma$ )
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	−0.0018	$−0.0030 \pm 0.0069$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9872	$0.9873 \pm 0.0091$ (−0.4 $\sigma$ )	$H(2.33)$	236.39	$236.36 \pm 0.74$ (−0.3 $\sigma$ )
$r$	0.0215	$0.033^{+0.012}_{-0.028}$ (+0.3 $\sigma$ )	$r_{\mathrm{drag}}h$	99.07	$99.14 \pm 0.94$ (+0.4 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5768.0	$5767 \pm 11$ (−0.5 $\sigma$ )
$y_{\mathrm{cal}}$	1.00078	$1.0007 \pm 0.0025$ (+0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4375	$2.436 \pm 0.023$ (−0.3 $\sigma$ )	$f\sigma_8(0.15)$	0.4591	$0.4589 \pm 0.0065$ (−0.5 $\sigma$ )
$A_{B,\mathrm{dust}}$	4.62	$4.87^{+0.82}_{-1.2}$ (+0.0 $\sigma$ )	$z_{\mathrm{re}}$	7.62	$7.71 \pm 0.76$ (+0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7480	$0.7483 \pm 0.0054$ (−0.2 $\sigma$ )
$A_{B,\mathrm{sync}}$	1.42	$1.62^{+0.52}_{-1.3}$ (−0.0 $\sigma$ )	$10^9A_{\mathrm{s}}$	2.0948	$2.099^{+0.029}_{-0.033}$ (+0.0 $\sigma$ )	$f\sigma_8(0.38)$	0.4765	$0.4765 \pm 0.0052$ (−0.4 $\sigma$ )
$\alpha_{B,\mathrm{dust}}$	−0.507	$−0.57^{+0.22}_{-0.32}$ (+0.0 $\sigma$ )	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8820	$1.882 \pm 0.011$ (−0.2 $\sigma$ )	$\sigma_8(0.38)$	0.66264	$0.6629 \pm 0.0047$ (−0.1 $\sigma$ )
$\beta_{B,\mathrm{dust}}$	1.583	$1.600 \pm 0.097$ (+0.0 $\sigma$ )	$D_{40}$	1231.2	$1233 \pm 19$ (+0.1 $\sigma$ )	$f\sigma_8(0.51)$	0.47467	$0.4747 \pm 0.0046$ (−0.4 $\sigma$ )
$\alpha_{B,\mathrm{sync}}$	−0.38	—	$D_{220}$	5719.6	$5718 \pm 39$ (+0.3 $\sigma$ )	$\sigma_8(0.51)$	0.61994	$0.6202 \pm 0.0045$ (−0.1 $\sigma$ )
$\beta_{B,\mathrm{sync}}$	−3.039	$−3.10^{+0.29}_{-0.26}$ (−0.0 $\sigma$ )	$D_{810}$	2537.8	$2537 \pm 13$ (+0.1 $\sigma$ )	$f\sigma_8(0.61)$	0.46940	$0.4694 \pm 0.0042$ (−0.4 $\sigma$ )
$\epsilon_{\mathrm{dust,sync}}$	−0.365	$−0.36 \pm 0.28$ (−0.0 $\sigma$ )	$D_{1420}$	816.0	$815.5 \pm 5.0$ (+0.3 $\sigma$ )	$\sigma_8(0.61)$	0.58978	$0.5901 \pm 0.0043$ (−0.0 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	237.0	$242 \pm 25$ (−0.2 $\sigma$ )	$D_{2000}$	230.20	$230.0 \pm 1.9$ (+0.4 $\sigma$ )	$f\sigma_8(2.33)$	0.29722	$0.2974 \pm 0.0022$ (+0.0 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	42.9	$40 \pm 8$ (−0.2 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.9710	$0.975 \pm 0.021$ (−0.1 $\sigma$ )	$\sigma_8(2.33)$	0.30626	$0.3065 \pm 0.0024$ (+0.1 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	102.2	$102 \pm 10$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}$	0.245362	$0.245365^{+0.000068}_{-0.000061}$ (+0.6 $\sigma$ )	$r_{0.002}$	0.0196	$0.031^{+0.010}_{-0.027}$ (+0.3 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	43.6	$40^{+7}_{-8}$ (−0.2 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246688	$0.246691^{+0.000068}_{-0.000061}$ (+0.6 $\sigma$ )	$r_{0.01}$	0.0205	$0.032^{+0.011}_{-0.027}$ (+0.3 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	5.77	$3.8^{+1.8}_{-2.6}$ (+0.1 $\sigma$ )	$10^5\mathrm{D}/\mathrm{H}$	2.6013	$2.599 \pm 0.030$ (−0.6 $\sigma$ )	$\ln(10^{10}A_{\mathrm{t}})$	−0.80	$−0.65^{+0.99}_{-0.37}$ (+0.2 $\sigma$ )
$r_{143\times 217}^{\mathrm{PS}}$	0.630	$0.65 \pm 0.13$ (+0.1 $\sigma$ )	Age/Gyr	13.8078	$13.806 \pm 0.024$ (−0.4 $\sigma$ )	$r_{10}$	0.0100	$0.0158^{+0.0051}_{-0.014}$ (+0.3 $\sigma$ )
$r_{143\times 217}^{\mathrm{CIB}}$	0.772	$0.57^{+0.40}_{-0.15}$ (−0.1 $\sigma$ )	$z_{*}$	1090.016	$1089.99 \pm 0.27$ (−0.6 $\sigma$ )	$10^9A_{\mathrm{t}}$	0.0450	$0.069^{+0.025}_{-0.059}$ (+0.3 $\sigma$ )
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	0.31	—	$r_{*}$	144.525	$144.53 \pm 0.29$ (+0.2 $\sigma$ )	$10^9A_{\mathrm{t}}e^{-2\tau}$	0.0405	$0.062^{+0.022}_{-0.053}$ (+0.3 $\sigma$ )
$A^{\mathrm{kSZ}}$	1.29	$4.9 \pm 2.7$ (−0.1 $\sigma$ )	$100\theta_{*}$	1.041032	$1.04104 \pm 0.00030$ (−0.0 $\sigma$ )	$f_{2000}^{143}$	30.46	$30.3 \pm 3.3$ (−0.4 $\sigma$ )
$A_{100}^{\mathrm{dust}}$	1.013	$1.01 \pm 0.20$ (−0.0 $\sigma$ )	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	13.8828	$13.884 \pm 0.027$ (+0.2 $\sigma$ )	$f_{2000}^{217}$	107.19	$107.3 \pm 2.2$ (−0.4 $\sigma$ )
$A_{143}^{\mathrm{dust}}$	0.973	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	$z_{\mathrm{drag}}$	1059.742	$1059.76 \pm 0.34$ (+0.5 $\sigma$ )	$f_{2000}^{143\times 217}$	32.49	$32.6 \pm 2.3$ (−0.4 $\sigma$ )
$A_{217}^{\mathrm{dust}}$	0.970	$0.97 \pm 0.10$ (+0.1 $\sigma$ )	$r_{\mathrm{drag}}$	147.214	$147.22 \pm 0.30$ (+0.1 $\sigma$ )	$\chi_{\mathrm{lensing}}^2$	8.899	$9.39 \pm 0.70$ (−0.3 $\sigma$ )
$A_{143\times 217}^{\mathrm{dust}}$	1.004	$1.02 \pm 0.16$ (−0.0 $\sigma$ )	$k_{\mathrm{D}}$	0.140673	$0.14068 \pm 0.00035$ (+0.1 $\sigma$ )	$\chi_{\mathrm{BKPLANCK}}^2$	735.38	$739.9 \pm 2.7$ (+0.2 $\sigma$ )
$c_{100}$	0.99766	$0.9975 \pm 0.0011$ (+0.1 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160865	$0.16085 \pm 0.00020$ (−0.5 $\sigma$ )	$\chi_{\mathrm{small}}^2$	396.03	$397.2 \pm 1.8$ (+0.0 $\sigma$ )
$c_{217}$	1.00131	$1.0012 \pm 0.0016$ (−0.1 $\sigma$ )	$z_{\mathrm{eq}}$	3397.4	$3396 \pm 28$ (−0.4 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	23.34	$23.7 \pm 2.0$ (+0.0 $\sigma$ )
$c_{TE}$	0.99639	$0.9963 \pm 0.0049$	$k_{\mathrm{eq}}$	0.010369	$0.010365 \pm 0.000085$ (−0.4 $\sigma$ )	$\chi_{\mathrm{CamSpec}}^2$	11499.2	$11514.2 \pm 5.7$ (+821.2 $\sigma$ )
$c_{EE}$	0.99203	$0.9920 \pm 0.0049$	$100\theta_{\mathrm{eq}}$	0.8139	$0.8142 \pm 0.0052$ (+0.4 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	2.29	$9.5 \pm 3.8$ (+0.0 $\sigma$ )
$H_0$	67.30	$67.34 \pm 0.54$ (+0.5 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.44974	$0.4499 \pm 0.0027$ (+0.4 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	12662.8	$12684.4 \pm 6.5$ (+706.8 $\sigma$ )
$\Omega_{\Lambda}$	0.6847	$0.6851 \pm 0.0075$ (+0.5 $\sigma$ )	$H(0.15)$	72.620	$72.66 \pm 0.47$ (+0.5 $\sigma$ )			
$\Omega_{\mathrm{m}}$	0.3153	$0.3149 \pm 0.0075$ (−0.5 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	643.91	$643.6 \pm 4.7$ (−0.5 $\sigma$ )			

Best-fit  $\chi_{\mathrm{eff}}^2 = 12665.09$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 4448.87$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 12693.83$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.71$ ;  $R - 1 = 0.00535$   
 $\chi_{\mathrm{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.90 ( $\Delta$  -0.21) BK15\_dust: 735.38 ( $\Delta$  0.20) small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.03 ( $\Delta$  0.01) com-  
mander\_dx12\_v3\_2\_29: 23.34 ( $\Delta$  0.39) CamSpec like\_10.7HM\_1400\_unified: 11499.17



# 15.52 base\_nrun\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BK15\_post\_BAO\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022335	$0.02234 \pm 0.00015$ (+0.4 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.096118	$0.09613 \pm 0.00033$ (+0.2 $\sigma$ )	$H(0.51)$	89.703	$89.71 \pm 0.22$ (+0.2 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11917	$0.11915 \pm 0.00095$ (−0.1 $\sigma$ )	$\sigma_8$	0.8088	$0.8093 \pm 0.0060$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1981.2	$1980.9 \pm 8.6$ (−0.2 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.040921	$1.04093 \pm 0.00029$ (−0.3 $\sigma$ )	$S_8$	0.8234	$0.824 \pm 0.011$ (−0.2 $\sigma$ )	$H(0.61)$	95.317	$95.33 \pm 0.19$ (+0.2 $\sigma$ )
$\tau$	0.0558	$0.0564^{+0.0067}_{-0.0078}$ (−0.1 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4510	$0.4511 \pm 0.0058$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2305.5	$2305.1 \pm 9.3$ (−0.2 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0452	$3.046^{+0.014}_{-0.016}$ (−0.1 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6040	$0.6042 \pm 0.0057$ (−0.2 $\sigma$ )	$H(2.33)$	235.98	$235.97 \pm 0.60$ (−0.0 $\sigma$ )
$n_{\mathrm{s}}$	0.96668	$0.9668 \pm 0.0041$ (+0.2 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9836	$0.9841 \pm 0.0084$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5763.2	$5762.7 \pm 9.2$ (−0.2 $\sigma$ )
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	−0.0031	$−0.0028 \pm 0.0069$ (+0.2 $\sigma$ )	$r_{\mathrm{drag}}h$	99.64	$99.66 \pm 0.74$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4556	$0.4558 \pm 0.0055$ (−0.2 $\sigma$ )
$r$	0.0248	$0.034^{+0.012}_{-0.028}$ (+0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4278	$2.429 \pm 0.022$ (−0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7475	$0.7479 \pm 0.0055$ (−0.2 $\sigma$ )
$y_{\mathrm{cal}}$	1.00077	$1.0009 \pm 0.0025$ (−0.0 $\sigma$ )	$z_{\mathrm{re}}$	7.83	$7.87 \pm 0.74$ (−0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.47407	$0.4743 \pm 0.0046$ (−0.2 $\sigma$ )
$A_{B,\mathrm{dust}}$	4.62	$4.87^{+0.82}_{-1.2}$ (+0.0 $\sigma$ )	$10^9A_{\mathrm{s}}$	2.1015	$2.104^{+0.029}_{-0.033}$ (−0.1 $\sigma$ )	$\sigma_8(0.38)$	0.66264	$0.6630 \pm 0.0048$ (−0.1 $\sigma$ )
$A_{B,\mathrm{sync}}$	1.40	$1.62^{+0.52}_{-1.3}$ (−0.0 $\sigma$ )	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8795	$1.879 \pm 0.011$ (−0.1 $\sigma$ )	$f\sigma_8(0.51)$	0.47274	$0.4729 \pm 0.0042$ (−0.2 $\sigma$ )
$\alpha_{B,\mathrm{dust}}$	−0.519	$−0.56^{+0.22}_{-0.31}$ (−0.0 $\sigma$ )	$D_{40}$	1226.4	$1231 \pm 18$ (+0.2 $\sigma$ )	$\sigma_8(0.51)$	0.62015	$0.6205 \pm 0.0045$ (−0.1 $\sigma$ )
$\beta_{B,\mathrm{dust}}$	1.584	$1.600 \pm 0.097$ (+0.0 $\sigma$ )	$D_{220}$	5722.3	$5723 \pm 39$ (+0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.46782	$0.4680 \pm 0.0039$ (−0.2 $\sigma$ )
$\alpha_{B,\mathrm{sync}}$	−0.35	—	$D_{810}$	2537.6	$2538 \pm 13$ (+0.0 $\sigma$ )	$\sigma_8(0.61)$	0.59010	$0.5905 \pm 0.0043$ (−0.1 $\sigma$ )
$\beta_{B,\mathrm{sync}}$	−3.044	$−3.10^{+0.29}_{-0.26}$ (−0.0 $\sigma$ )	$D_{1420}$	816.08	$816.2 \pm 5.0$ (+0.2 $\sigma$ )	$f\sigma_8(2.33)$	0.29756	$0.2977 \pm 0.0022$ (−0.1 $\sigma$ )
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	−0.369	$−0.36 \pm 0.28$ (−0.0 $\sigma$ )	$D_{2000}$	230.19	$230.3 \pm 1.8$ (+0.3 $\sigma$ )	$\sigma_8(2.33)$	0.30679	$0.3070^{+0.0022}_{-0.0024}$ (−0.1 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	235.9	$241 \pm 25$ (−0.2 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.9768	$0.976 \pm 0.021$ (−0.2 $\sigma$ )	$r_{0.002}$	0.0229	$0.031^{+0.011}_{-0.027}$ (+0.2 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	39.2	$40 \pm 8$ (−0.2 $\sigma$ )	$Y_{\mathrm{P}}$	0.245382	$0.245382^{+0.000064}_{-0.000057}$ (+0.4 $\sigma$ )	$r_{0.01}$	0.0238	$0.032^{+0.012}_{-0.028}$ (+0.3 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	101.7	$102 \pm 10$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246708	$0.246708^{+0.000064}_{-0.000057}$ (+0.4 $\sigma$ )	$\ln(10^{10}A_{\mathrm{t}})$	−0.65	$−0.63^{+0.99}_{-0.37}$ (+0.2 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	45.2	$40^{+7}_{-8}$ (−0.2 $\sigma$ )	$10^5\mathrm{D}/\mathrm{H}$	2.5920	$2.591 \pm 0.028$ (−0.4 $\sigma$ )	$r_{10}$	0.0117	$0.0162^{+0.0054}_{-0.014}$ (+0.2 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	6.65	$3.8^{+1.9}_{-2.6}$ (+0.1 $\sigma$ )	Age/Gyr	13.7974	$13.796 \pm 0.021$ (−0.2 $\sigma$ )	$10^9A_{\mathrm{t}}$	0.0522	$0.071^{+0.026}_{-0.060}$ (+0.3 $\sigma$ )
$r_{143\times 217}^{\mathrm{PS}}$	0.577	$0.65 \pm 0.13$ (+0.1 $\sigma$ )	$z_{\ast}$	1089.890	$1089.88 \pm 0.23$ (−0.4 $\sigma$ )	$10^9A_{\mathrm{t}}e^{-2\tau}$	0.0467	$0.063^{+0.023}_{-0.053}$ (+0.3 $\sigma$ )
$r_{143\times 217}^{\mathrm{CIB}}$	0.772	$0.57^{+0.40}_{-0.16}$ (−0.1 $\sigma$ )	$r_{\ast}$	144.673	$144.67 \pm 0.24$ (−0.1 $\sigma$ )	$f_{2000}^{143}$	30.45	$30.0 \pm 3.2$ (−0.4 $\sigma$ )
$\xi^{\mathrm{tSZ}\times\mathrm{CIB}}$	0.02	—	$100\theta_{\ast}$	1.041111	$1.04112 \pm 0.00028$ (−0.3 $\sigma$ )	$f_{2000}^{217}$	107.22	$107.1 \pm 2.2$ (−0.4 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.00	$4.8^{+2.5}_{-3.8}$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(z_{\ast})/\mathrm{Gpc}$	13.8960	$13.896 \pm 0.023$ (−0.1 $\sigma$ )	$f_{2000}^{143\times 217}$	32.47	$32.4 \pm 2.3$ (−0.4 $\sigma$ )
$A_{100}^{\mathrm{dust}}$	1.010	$1.01 \pm 0.19$ (−0.0 $\sigma$ )	$z_{\mathrm{drag}}$	1059.780	$1059.81 \pm 0.34$ (+0.4 $\sigma$ )	$\chi_{\mathrm{lensing}}^2$	8.965	$9.34 \pm 0.71$ (−0.1 $\sigma$ )
$A_{143}^{\mathrm{dust}}$	0.967	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	$r_{\mathrm{drag}}$	147.351	$147.35 \pm 0.26$ (−0.2 $\sigma$ )	$\chi_{\mathrm{BKPLANCK}}^2$	735.57	$740.1 \pm 2.7$ (+0.1 $\sigma$ )
$A_{217}^{\mathrm{dust}}$	0.967	$0.97 \pm 0.10$ (+0.1 $\sigma$ )	$k_{\mathrm{D}}$	0.140567	$0.14057 \pm 0.00033$ (+0.3 $\sigma$ )	$\chi_{\mathrm{simall}}^2$	396.36	$397.4 \pm 2.0$ (−0.1 $\sigma$ )
$A_{143\times 217}^{\mathrm{dust}}$	1.004	$1.02 \pm 0.16$ (−0.0 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160834	$0.16083 \pm 0.00020$ (−0.5 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	22.82	$23.5 \pm 1.9$ (+0.2 $\sigma$ )
$c_{100}$	0.99771	$0.9976 \pm 0.0011$ (+0.0 $\sigma$ )	$z_{\mathrm{eq}}$	3381.5	$3381 \pm 22$ (−0.0 $\sigma$ )	$\chi_{\mathrm{CamSpec}}^2$	11499.5	$11514.0 \pm 5.7$ (+820.3 $\sigma$ )
$c_{217}$	1.00132	$1.0012 \pm 0.0016$ (−0.1 $\sigma$ )	$k_{\mathrm{eq}}$	0.010321	$0.010320 \pm 0.000067$ (−0.0 $\sigma$ )	$\chi_{6\mathrm{DF}}^2$	0.0303	$0.051 \pm 0.059$ (−0.2 $\sigma$ )
$c_{TE}$	0.99641	$0.9964 \pm 0.0049$	$100\theta_{\mathrm{eq}}$	0.81691	$0.8170 \pm 0.0041$ (+0.1 $\sigma$ )	$\chi_{\mathrm{MGS}}^2$	1.217	$1.27 \pm 0.40$ (+0.1 $\sigma$ )
$c_{EE}$	0.99249	$0.9923 \pm 0.0049$	$100\theta_{\mathrm{s,eq}}$	0.45130	$0.4513 \pm 0.0021$ (+0.0 $\sigma$ )	$\chi_{\mathrm{DR12BAO}}^2$	4.43	$4.8 \pm 1.3$ (−0.1 $\sigma$ )
$H_0$	67.618	$67.63 \pm 0.43$ (+0.2 $\sigma$ )	$H(0.15)$	72.892	$72.91 \pm 0.37$ (+0.2 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	2.25	$9.4 \pm 3.8$ (+0.0 $\sigma$ )
$\Omega_{\Lambda}$	0.6891	$0.6892 \pm 0.0057$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	641.19	$641.1 \pm 3.7$ (−0.2 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	12663.2	$12684.4 \pm 6.5$ (+708.3 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3109	$0.3108 \pm 0.0057$ (−0.1 $\sigma$ )	$H(0.38)$	82.993	$83.01 \pm 0.28$ (+0.2 $\sigma$ )	$\chi_{\mathrm{BAO}}^2$	5.68	$6.1 \pm 1.0$ (−0.1 $\sigma$ )
$\Omega_{\mathrm{m}}h^2$	0.14215	$0.14214 \pm 0.00092$ (−0.0 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1529.3	$1529.1 \pm 7.4$ (−0.2 $\sigma$ )			

Best-fit  $\chi_{\mathrm{eff}}^2 = 12671.14$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 4448.26$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 12699.90$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.15$ ;  $R - 1 = 0.00769$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.03 ( $\Delta$  -0.01) MGS: 1.22 ( $\Delta$  0.06) DR12BAO: 4.43 ( $\Delta$  -0.14) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.96 ( $\Delta$  -0.06) BK15\_dust: 735.57 ( $\Delta$  0.01) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.36 ( $\Delta$  -0.06) commander\_dx12\_v3.2\_29: 22.82 ( $\Delta$  0.39) CamSpec like\_10.7HM\_1400\_unified: 11499.49



### 15.53 base\_nrun\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BK15\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02230 \pm 0.00016 \quad (+0.6\sigma)$	$\Omega_{\mathrm{m}}$	$0.3149 \pm 0.0085 \quad (-0.6\sigma)$	$H(0.15)$	$72.66 \pm 0.52 \quad (+0.6\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1198 \pm 0.0014 \quad (-0.6\sigma)$	$\Omega_{\mathrm{m}}h^2$	$0.1428 \pm 0.0013 \quad (-0.6\sigma)$	$D_{\mathrm{M}}(0.15)$	$643.6 \pm 5.2 \quad (-0.6\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04085 \pm 0.00031 \quad (+0.1\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09614 \pm 0.00033 \quad (+0.1\sigma)$	$H(0.38)$	$82.83 \pm 0.37 \quad (+0.6\sigma)$
$\tau$	$0.0554^{+0.0050}_{-0.0088} \quad (+0.0\sigma)$	$\sigma_8$	$0.8106 \pm 0.0071 \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.38)$	$1534 \pm 10 \quad (-0.6\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.013}_{-0.017} \quad (-0.2\sigma)$	$S_8$	$0.830 \pm 0.016 \quad (-0.6\sigma)$	$H(0.51)$	$89.58 \pm 0.30 \quad (+0.6\sigma)$
$n_{\mathrm{s}}$	$0.9653 \pm 0.0048 \quad (+0.6\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4549 \pm 0.0089 \quad (-0.6\sigma)$	$D_{\mathrm{M}}(0.51)$	$1987 \pm 12 \quad (-0.6\sigma)$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0039 \pm 0.0070 \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6072 \pm 0.0082 \quad (-0.6\sigma)$	$H(0.61)$	$95.23 \pm 0.24 \quad (+0.6\sigma)$
$r$	$0.034^{+0.013}_{-0.028} \quad (+0.3\sigma)$	$\sigma_8/h^{0.5}$	$0.988 \pm 0.012 \quad (-0.6\sigma)$	$D_{\mathrm{M}}(0.61)$	$2311 \pm 13 \quad (-0.6\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (-0.0\sigma)$	$r_{\mathrm{drag}}h$	$99.1 \pm 1.1 \quad (+0.6\sigma)$	$H(2.33)$	$236.37 \pm 0.85 \quad (-0.5\sigma)$
$A_{B,\mathrm{dust}}$	$4.86^{+0.82}_{-1.2} \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.436 \pm 0.028 \quad (-0.5\sigma)$	$D_{\mathrm{M}}(2.33)$	$5767 \pm 11 \quad (-0.6\sigma)$
$A_{B,\mathrm{sync}}$	$1.62^{+0.52}_{-1.3} \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.79^{+0.57}_{-0.85} \quad (-0.0\sigma)$	$f\sigma_8(0.15)$	$0.4592 \pm 0.0082 \quad (-0.6\sigma)$
$\alpha_{B,\mathrm{dust}}$	$-0.56^{+0.22}_{-0.32} \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.102^{+0.026}_{-0.037} \quad (-0.2\sigma)$	$\sigma_8(0.15)$	$0.7487^{+0.0057}_{-0.0066} \quad (-0.5\sigma)$
$\beta_{B,\mathrm{dust}}$	$1.601 \pm 0.097 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.882 \pm 0.012 \quad (-0.4\sigma)$	$f\sigma_8(0.38)$	$0.4767 \pm 0.0067 \quad (-0.6\sigma)$
$\alpha_{B,\mathrm{sync}}$	—	$D_{40}$	$1230 \pm 19 \quad (-0.0\sigma)$	$\sigma_8(0.38)$	$0.6633^{+0.0046}_{-0.0056} \quad (-0.4\sigma)$
$\beta_{B,\mathrm{sync}}$	$-3.10^{+0.29}_{-0.26} \quad (-0.0\sigma)$	$D_{220}$	$5715 \pm 39 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4749 \pm 0.0059 \quad (-0.6\sigma)$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$-0.36 \pm 0.28 \quad (-0.0\sigma)$	$D_{810}$	$2537 \pm 14 \quad (-0.0\sigma)$	$\sigma_8(0.51)$	$0.6206^{+0.0041}_{-0.0052} \quad (-0.3\sigma)$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25 \quad (-0.1\sigma)$	$D_{1420}$	$815.2 \pm 5.0 \quad (+0.3\sigma)$	$f\sigma_8(0.61)$	$0.4697 \pm 0.0053 \quad (-0.6\sigma)$
$A_{143}^{\mathrm{PS}}$	$41 \pm 8 \quad (-0.3\sigma)$	$D_{2000}$	$229.9 \pm 1.9 \quad (+0.4\sigma)$	$\sigma_8(0.61)$	$0.5904^{+0.0039}_{-0.0050} \quad (-0.3\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.978 \pm 0.021 \quad (-0.1\sigma)$	$f\sigma_8(2.33)$	$0.2975^{+0.0019}_{-0.0025} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40^{+7}_{-8} \quad (-0.2\sigma)$	$Y_{\mathrm{P}}$	$0.245367^{+0.000068}_{-0.000061} \quad (+0.6\sigma)$	$\sigma_8(2.33)$	$0.3066^{+0.0019}_{-0.0027} \quad (-0.0\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.6} \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246693^{+0.000068}_{-0.000062} \quad (+0.6\sigma)$	$r_{0.002}$	$0.032^{+0.011}_{-0.027} \quad (+0.3\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.599 \pm 0.030 \quad (-0.6\sigma)$	$r_{0.01}$	$0.033^{+0.012}_{-0.027} \quad (+0.3\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.57^{+0.41}_{-0.15} \quad (-0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.805 \pm 0.025 \quad (-0.6\sigma)$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.61^{+0.97}_{-0.36} \quad (+0.3\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$z_*$	$1089.99 \pm 0.28 \quad (-0.7\sigma)$	$r_{10}$	$0.0164^{+0.0056}_{-0.014} \quad (+0.3\sigma)$
$A^{\mathrm{kSZ}}$	$4.9 \pm 2.7 \quad (-0.1\sigma)$	$r_*$	$144.53 \pm 0.32 \quad (+0.4\sigma)$	$10^9 A_{\mathrm{t}}$	$0.071^{+0.027}_{-0.058} \quad (+0.3\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$100\theta_*$	$1.04104 \pm 0.00030 \quad (+0.1\sigma)$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$0.064^{+0.024}_{-0.052} \quad (+0.3\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.883 \pm 0.030 \quad (+0.5\sigma)$	$f_{2000}^{143}$	$30.5 \pm 3.3 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10 \quad (+0.1\sigma)$	$z_{\mathrm{drag}}$	$1059.77 \pm 0.34 \quad (+0.5\sigma)$	$f_{2000}^{217}$	$107.4 \pm 2.2 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$r_{\mathrm{drag}}$	$147.21 \pm 0.33 \quad (+0.3\sigma)$	$f_{2000}^{143 \times 217}$	$32.7 \pm 2.3 \quad (-0.4\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$k_{\mathrm{D}}$	$0.14069 \pm 0.00038 \quad (-0.1\sigma)$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.9 \pm 2.8 \quad (+0.3\sigma)$
$c_{217}$	$1.0012 \pm 0.0016 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16085 \pm 0.00020 \quad (-0.5\sigma)$	$\chi_{\mathrm{simall}}^2$	$397.2 \pm 1.9 \quad (-0.0\sigma)$
$c_{TE}$	$0.9962 \pm 0.0049$	$z_{\mathrm{eq}}$	$3396 \pm 32 \quad (-0.6\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.5 \pm 1.9 \quad (-0.0\sigma)$
$c_{EE}$	$0.9919 \pm 0.0049$	$k_{\mathrm{eq}}$	$0.010366 \pm 0.000097 \quad (-0.6\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11514.6 \pm 5.9 \quad (+793.7\sigma)$
$H_0$	$67.34 \pm 0.61 \quad (+0.6\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8142 \pm 0.0059 \quad (+0.6\sigma)$	$\chi_{\mathrm{prior}}^2$	$9.5 \pm 3.8 \quad (+0.0\sigma)$
$\Omega_{\Lambda}$	$0.6851 \pm 0.0085 \quad (+0.6\sigma)$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4499 \pm 0.0031 \quad (+0.6\sigma)$	$\chi_{\mathrm{CMB}}^2$	$12675.2 \pm 6.5 \quad (+710.9\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 12684.69; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4451.06; R - 1 = 0.00378$$



15.54 base\_nrun\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BK15\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02235 \pm 0.00015 \quad (+0.4\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09613 \pm 0.00033 \quad (+0.2\sigma)$	$H(0.51)$	$89.74 \pm 0.23 \quad (+0.2\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1190 \pm 0.0010 \quad (-0.1\sigma)$	$\sigma_8$	$0.8085^{+0.0061}_{-0.0072} \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1980.0 \pm 9.1 \quad (-0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04095 \pm 0.00029 \quad (-0.3\sigma)$	$S_8$	$0.822 \pm 0.013 \quad (-0.2\sigma)$	$H(0.61)$	$95.34 \pm 0.19 \quad (+0.2\sigma)$
$\tau$	$0.0562^{+0.0053}_{-0.0086} \quad (-0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4503 \pm 0.0069 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.61)$	$2304.2 \pm 9.8 \quad (-0.2\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.013}_{-0.018} \quad (-0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6033 \pm 0.0068 \quad (-0.2\sigma)$	$H(2.33)$	$235.91 \pm 0.64 \quad (-0.0\sigma)$
$n_{\mathrm{s}}$	$0.9672 \pm 0.0042 \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.983 \pm 0.010 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5762.1 \pm 9.3 \quad (-0.2\sigma)$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0035 \pm 0.0069 \quad (+0.2\sigma)$	$r_{\mathrm{drag}}h$	$99.74 \pm 0.79 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4549 \pm 0.0065 \quad (-0.2\sigma)$
$r$	$0.035^{+0.013}_{-0.028} \quad (+0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.425 \pm 0.025 \quad (-0.1\sigma)$	$\sigma_8(0.15)$	$0.7472^{+0.0054}_{-0.0065} \quad (-0.2\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.85^{+0.59}_{-0.84} \quad (-0.1\sigma)$	$f\sigma_8(0.38)$	$0.4735 \pm 0.0055 \quad (-0.2\sigma)$
$A_{B,\mathrm{dust}}$	$4.87^{+0.83}_{-1.2} \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.102^{+0.026}_{-0.038} \quad (-0.1\sigma)$	$\sigma_8(0.38)$	$0.6625^{+0.0045}_{-0.0057} \quad (-0.2\sigma)$
$A_{B,\mathrm{sync}}$	$1.62^{+0.51}_{-1.3} \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878 \pm 0.011 \quad (-0.1\sigma)$	$f\sigma_8(0.51)$	$0.4723 \pm 0.0050 \quad (-0.2\sigma)$
$\alpha_{B,\mathrm{dust}}$	$-0.56^{+0.22}_{-0.31} \quad (-0.0\sigma)$	$D_{40}$	$1228 \pm 19 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6200^{+0.0041}_{-0.0053} \quad (-0.1\sigma)$
$\beta_{B,\mathrm{dust}}$	$1.600 \pm 0.097 \quad (+0.0\sigma)$	$D_{220}$	$5719 \pm 39 \quad (+0.2\sigma)$	$f\sigma_8(0.61)$	$0.4674 \pm 0.0047 \quad (-0.2\sigma)$
$\alpha_{B,\mathrm{sync}}$	—	$D_{810}$	$2536 \pm 14 \quad (-0.0\sigma)$	$\sigma_8(0.61)$	$0.5900^{+0.0039}_{-0.0051} \quad (-0.1\sigma)$
$\beta_{B,\mathrm{sync}}$	$-3.10^{+0.29}_{-0.26} \quad (-0.0\sigma)$	$D_{1420}$	$815.8 \pm 5.0 \quad (+0.2\sigma)$	$f\sigma_8(2.33)$	$0.2976^{+0.0019}_{-0.0026} \quad (-0.1\sigma)$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$-0.36 \pm 0.28 \quad (-0.0\sigma)$	$D_{2000}$	$230.1 \pm 1.8 \quad (+0.3\sigma)$	$\sigma_8(2.33)$	$0.3068^{+0.0020}_{-0.0027} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$241 \pm 25 \quad (-0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.978 \pm 0.021 \quad (-0.2\sigma)$	$r_{0.002}$	$0.033^{+0.012}_{-0.027} \quad (+0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8 \quad (-0.2\sigma)$	$Y_{\mathrm{P}}$	$0.245384^{+0.000064}_{-0.000056} \quad (+0.4\sigma)$	$r_{0.01}$	$0.033^{+0.012}_{-0.028} \quad (+0.3\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246710^{+0.000064}_{-0.000056} \quad (+0.4\sigma)$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.59^{+0.96}_{-0.36} \quad (+0.2\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40^{+7}_{-8} \quad (-0.2\sigma)$	$10^5\mathrm{D}/\mathrm{H}$	$2.591 \pm 0.028 \quad (-0.4\sigma)$	$r_{10}$	$0.0168^{+0.0059}_{-0.014} \quad (+0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.6} \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.795 \pm 0.021 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{t}}$	$0.073^{+0.028}_{-0.059} \quad (+0.3\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13 \quad (+0.1\sigma)$	$z_*$	$1089.87 \pm 0.23 \quad (-0.4\sigma)$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$0.065^{+0.025}_{-0.053} \quad (+0.3\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.57^{+0.41}_{-0.15} \quad (-0.1\sigma)$	$r_*$	$144.70 \pm 0.26 \quad (-0.1\sigma)$	$f_{2000}^{143}$	$30.2 \pm 3.3 \quad (-0.4\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$100\theta_*$	$1.04113 \pm 0.00029 \quad (-0.3\sigma)$	$f_{2000}^{217}$	$107.2 \pm 2.2 \quad (-0.4\sigma)$
$A^{\mathrm{kSZ}}$	$4.9 \pm 2.7 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.898 \pm 0.024 \quad (-0.0\sigma)$	$f_{2000}^{143 \times 217}$	$32.5 \pm 2.3 \quad (-0.4\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19 \quad (-0.0\sigma)$	$z_{\mathrm{drag}}$	$1059.81 \pm 0.34 \quad (+0.4\sigma)$	$\chi_{\mathrm{BKPLANCK}}^2$	$740.2 \pm 2.7 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$r_{\mathrm{drag}}$	$147.37 \pm 0.27 \quad (-0.2\sigma)$	$\chi_{\mathrm{simall}}^2$	$397.3 \pm 2.0 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10 \quad (+0.0\sigma)$	$k_{\mathrm{D}}$	$0.14055 \pm 0.00034 \quad (+0.3\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.3 \pm 1.9 \quad (+0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_{\mathrm{D}}$	$0.16083 \pm 0.00020 \quad (-0.5\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11514.4 \pm 5.8 \quad (+808.9\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$z_{\mathrm{eq}}$	$3379 \pm 24 \quad (-0.0\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.049 \pm 0.061 \quad (-0.2\sigma)$
$c_{217}$	$1.0012 \pm 0.0016 \quad (-0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010313 \pm 0.000072 \quad (-0.0\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.32 \pm 0.44 \quad (+0.1\sigma)$
$c_{TE}$	$0.9964 \pm 0.0049$	$100\theta_{\mathrm{eq}}$	$0.8175 \pm 0.0044 \quad (+0.1\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.3 \quad (-0.2\sigma)$
$c_{EE}$	$0.9923 \pm 0.0049$	$100\theta_{\mathrm{s,eq}}$	$0.4516 \pm 0.0023 \quad (+0.0\sigma)$	$\chi_{\mathrm{prior}}^2$	$9.5 \pm 3.8 \quad (+0.0\sigma)$
$H_0$	$67.68 \pm 0.45 \quad (+0.1\sigma)$	$H(0.15)$	$72.95 \pm 0.39 \quad (+0.2\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.1 \quad (-0.2\sigma)$
$\Omega_{\Lambda}$	$0.6898 \pm 0.0061 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$640.7 \pm 3.8 \quad (-0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$12675.2 \pm 6.4 \quad (+714.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.3102 \pm 0.0061 \quad (-0.1\sigma)$	$H(0.38)$	$83.03 \pm 0.29 \quad (+0.2\sigma)$		
$\Omega_{\mathrm{m}}h^2$	$0.14204 \pm 0.00099 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1528.3 \pm 7.7 \quad (-0.2\sigma)$		
$\bar{\chi}_{\mathrm{eff}}^2 = 12690.74; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.22; R - 1 = 0.00701$					



15.55 base\_nrun\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BK15\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02230 \pm 0.00016 \quad (+0.5\sigma)$	$\Omega_{\mathrm{m}}h^2$	$0.1427 \pm 0.0011 \quad (-0.3\sigma)$	$H(0.38)$	$82.84 \pm 0.34 \quad (+0.5\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1198 \pm 0.0012 \quad (-0.4\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09613 \pm 0.00033 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.38)$	$1533.7 \pm 9.2 \quad (-0.5\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04085 \pm 0.00030 \quad (-0.0\sigma)$	$\sigma_8$	$0.8106 \pm 0.0057 \quad (-0.3\sigma)$	$H(0.51)$	$89.59 \pm 0.27 \quad (+0.5\sigma)$
$\tau$	$0.0555^{+0.0053}_{-0.0082} \quad (+0.1\sigma)$	$S_8$	$0.830 \pm 0.013 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.51)$	$1986 \pm 11 \quad (-0.5\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046^{+0.012}_{-0.016} \quad (-0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4546 \pm 0.0070 \quad (-0.4\sigma)$	$H(0.61)$	$95.23 \pm 0.22 \quad (+0.4\sigma)$
$n_{\mathrm{s}}$	$0.9653 \pm 0.0045 \quad (+0.4\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6071 \pm 0.0064 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.61)$	$2311 \pm 12 \quad (-0.5\sigma)$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0031 \pm 0.0069 \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.9877 \pm 0.0089 \quad (-0.4\sigma)$	$H(2.33)$	$236.33 \pm 0.73 \quad (-0.3\sigma)$
$r$	$0.033^{+0.012}_{-0.028} \quad (+0.3\sigma)$	$r_{\mathrm{drag}}h$	$99.18 \pm 0.93 \quad (+0.4\sigma)$	$D_{\mathrm{M}}(2.33)$	$5767 \pm 10 \quad (-0.4\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.437 \pm 0.023 \quad (-0.3\sigma)$	$f\sigma_8(0.15)$	$0.4590 \pm 0.0065 \quad (-0.4\sigma)$
$A_{B,\mathrm{dust}}$	$4.87^{+0.82}_{-1.2} \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.80^{+0.58}_{-0.78} \quad (+0.0\sigma)$	$\sigma_8(0.15)$	$0.7487^{+0.0047}_{-0.0054} \quad (-0.2\sigma)$
$A_{B,\mathrm{sync}}$	$1.63^{+0.52}_{-1.3} \quad (-0.0\sigma)$	$10^9A_{\mathrm{s}}$	$2.102^{+0.024}_{-0.033} \quad (-0.0\sigma)$	$f\sigma_8(0.38)$	$0.4766 \pm 0.0052 \quad (-0.4\sigma)$
$\alpha_{B,\mathrm{dust}}$	$-0.57^{+0.22}_{-0.32} \quad (-0.0\sigma)$	$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.881 \pm 0.011 \quad (-0.2\sigma)$	$\sigma_8(0.38)$	$0.6634^{+0.0039}_{-0.0048} \quad (-0.1\sigma)$
$\beta_{B,\mathrm{dust}}$	$1.601 \pm 0.097 \quad (+0.0\sigma)$	$D_{40}$	$1232 \pm 19 \quad (+0.1\sigma)$	$f\sigma_8(0.51)$	$0.4748 \pm 0.0045 \quad (-0.4\sigma)$
$\alpha_{B,\mathrm{sync}}$	—	$D_{220}$	$5718 \pm 39 \quad (+0.3\sigma)$	$\sigma_8(0.51)$	$0.6207^{+0.0036}_{-0.0045} \quad (-0.1\sigma)$
$\beta_{B,\mathrm{sync}}$	$-3.10^{+0.29}_{-0.26} \quad (-0.0\sigma)$	$D_{810}$	$2537 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.61)$	$0.4696 \pm 0.0041 \quad (-0.4\sigma)$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$-0.36 \pm 0.28 \quad (-0.0\sigma)$	$D_{1420}$	$815.5 \pm 5.0 \quad (+0.3\sigma)$	$\sigma_8(0.61)$	$0.5905^{+0.0035}_{-0.0044} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$241 \pm 25 \quad (-0.2\sigma)$	$D_{2000}$	$230.0 \pm 1.9 \quad (+0.4\sigma)$	$f\sigma_8(2.33)$	$0.2976^{+0.0018}_{-0.0023} \quad (+0.0\sigma)$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8 \quad (-0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.975 \pm 0.021 \quad (-0.1\sigma)$	$\sigma_8(2.33)$	$0.3067^{+0.0019}_{-0.0025} \quad (+0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245367^{+0.000067}_{-0.000060} \quad (+0.5\sigma)$	$r_{0.002}$	$0.031^{+0.010}_{-0.027} \quad (+0.3\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40^{+7}_{-8} \quad (-0.2\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246693^{+0.000068}_{-0.000061} \quad (+0.5\sigma)$	$r_{0.01}$	$0.032^{+0.011}_{-0.027} \quad (+0.3\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.6} \quad (+0.1\sigma)$	$10^5\mathrm{D}/\mathrm{H}$	$2.599 \pm 0.030 \quad (-0.5\sigma)$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.65^{+0.99}_{-0.37} \quad (+0.2\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13 \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.805 \pm 0.024 \quad (-0.4\sigma)$	$r_{10}$	$0.0158^{+0.0052}_{-0.014} \quad (+0.3\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.57^{+0.40}_{-0.16} \quad (-0.1\sigma)$	$z_*$	$1089.98 \pm 0.26 \quad (-0.6\sigma)$	$10^9A_{\mathrm{t}}$	$0.070^{+0.025}_{-0.059} \quad (+0.3\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$r_*$	$144.54 \pm 0.28 \quad (+0.2\sigma)$	$10^9A_{\mathrm{t}}e^{-2\tau}$	$0.062^{+0.023}_{-0.053} \quad (+0.3\sigma)$
$A^{\mathrm{kSZ}}$	$4.9 \pm 2.7 \quad (-0.1\sigma)$	$100\theta_*$	$1.04104 \pm 0.00030 \quad (-0.1\sigma)$	$f_{2000}^{143}$	$30.3 \pm 3.3 \quad (-0.4\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.885 \pm 0.027 \quad (+0.2\sigma)$	$f_{2000}^{217}$	$107.3 \pm 2.2 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$z_{\mathrm{drag}}$	$1059.76 \pm 0.34 \quad (+0.5\sigma)$	$f_{2000}^{143 \times 217}$	$32.6 \pm 2.3 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10 \quad (+0.1\sigma)$	$r_{\mathrm{drag}}$	$147.23 \pm 0.29 \quad (+0.1\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.37 \pm 0.68 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16 \quad (-0.0\sigma)$	$k_{\mathrm{D}}$	$0.14067 \pm 0.00035 \quad (+0.1\sigma)$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.9 \pm 2.7 \quad (+0.2\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16085 \pm 0.00020 \quad (-0.5\sigma)$	$\chi_{\mathrm{small}}^2$	$397.1 \pm 1.8 \quad (+0.0\sigma)$
$c_{217}$	$1.0012 \pm 0.0016 \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3395 \pm 27 \quad (-0.3\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.7 \pm 2.0 \quad (+0.1\sigma)$
$c_{TE}$	$0.9962 \pm 0.0049$	$k_{\mathrm{eq}}$	$0.010362 \pm 0.000084 \quad (-0.3\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11514.1 \pm 5.7 \quad (+820.6\sigma)$
$c_{EE}$	$0.9920 \pm 0.0049$	$100\theta_{\mathrm{eq}}$	$0.8144 \pm 0.0051 \quad (+0.4\sigma)$	$\chi_{\mathrm{prior}}^2$	$9.5 \pm 3.8 \quad (+0.0\sigma)$
$H_0$	$67.36 \pm 0.54 \quad (+0.4\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4500 \pm 0.0026 \quad (+0.4\sigma)$	$\chi_{\mathrm{CMB}}^2$	$12684.2 \pm 6.5 \quad (+711.9\sigma)$
$\Omega_{\Lambda}$	$0.6854 \pm 0.0074 \quad (+0.4\sigma)$	$H(0.15)$	$72.68 \pm 0.46 \quad (+0.4\sigma)$		
$\Omega_{\mathrm{m}}$	$0.3146 \pm 0.0074 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.15)$	$643.4 \pm 4.6 \quad (-0.4\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 12693.65; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.75; R - 1 = 0.00582$$



15.56 base\_nrun\_r\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BK15\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02234 \pm 0.00015 \quad (+0.4\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09613 \pm 0.00033 \quad (+0.2\sigma)$	$H(0.51)$	$89.72 \pm 0.22 \quad (+0.2\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.11913 \pm 0.00095 \quad (-0.1\sigma)$	$\sigma_8$	$0.8096^{+0.0053}_{-0.0061} \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1980.7 \pm 8.6 \quad (-0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04093 \pm 0.00029 \quad (-0.3\sigma)$	$S_8$	$0.824 \pm 0.011 \quad (-0.2\sigma)$	$H(0.61)$	$95.33 \pm 0.19 \quad (+0.2\sigma)$
$\tau$	$0.0569^{+0.0057}_{-0.0080} \quad (-0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4512 \pm 0.0058 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.61)$	$2304.9 \pm 9.3 \quad (-0.2\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.047^{+0.012}_{-0.016} \quad (-0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6044 \pm 0.0056 \quad (-0.2\sigma)$	$H(2.33)$	$235.96 \pm 0.59 \quad (-0.0\sigma)$
$n_{\mathrm{s}}$	$0.9669 \pm 0.0041 \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.9844 \pm 0.0082 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5762.6 \pm 9.2 \quad (-0.2\sigma)$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0028 \pm 0.0069 \quad (+0.2\sigma)$	$r_{\mathrm{drag}}h$	$99.67 \pm 0.73 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4559 \pm 0.0054 \quad (-0.2\sigma)$
$r$	$0.034^{+0.013}_{-0.028} \quad (+0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.430 \pm 0.022 \quad (-0.1\sigma)$	$\sigma_8(0.15)$	$0.7482^{+0.0048}_{-0.0056} \quad (-0.2\sigma)$
$y_{\mathrm{cal}}$	$1.0009 \pm 0.0025 \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.92^{+0.61}_{-0.77} \quad (-0.1\sigma)$	$f\sigma_8(0.38)$	$0.4744 \pm 0.0046 \quad (-0.2\sigma)$
$A_{B,\mathrm{dust}}$	$4.88^{+0.83}_{-1.2} \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.106^{+0.026}_{-0.034} \quad (-0.1\sigma)$	$\sigma_8(0.38)$	$0.6633^{+0.0041}_{-0.0050} \quad (-0.1\sigma)$
$A_{B,\mathrm{sync}}$	$1.63^{+0.52}_{-1.3} \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879 \pm 0.011 \quad (-0.1\sigma)$	$f\sigma_8(0.51)$	$0.4731 \pm 0.0041 \quad (-0.2\sigma)$
$\alpha_{B,\mathrm{dust}}$	$-0.56^{+0.22}_{-0.31} \quad (-0.0\sigma)$	$D_{40}$	$1230 \pm 18 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6208^{+0.0038}_{-0.0047} \quad (-0.1\sigma)$
$\beta_{B,\mathrm{dust}}$	$1.600 \pm 0.097 \quad (+0.0\sigma)$	$D_{220}$	$5723 \pm 39 \quad (+0.2\sigma)$	$f\sigma_8(0.61)$	$0.4682 \pm 0.0038 \quad (-0.2\sigma)$
$\alpha_{B,\mathrm{sync}}$	—	$D_{810}$	$2537 \pm 13 \quad (+0.0\sigma)$	$\sigma_8(0.61)$	$0.5907^{+0.0036}_{-0.0045} \quad (-0.1\sigma)$
$\beta_{B,\mathrm{sync}}$	$-3.10^{+0.29}_{-0.26} \quad (-0.0\sigma)$	$D_{1420}$	$816.2 \pm 5.0 \quad (+0.2\sigma)$	$f\sigma_8(2.33)$	$0.2979^{+0.0019}_{-0.0023} \quad (-0.1\sigma)$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$-0.36 \pm 0.28 \quad (-0.0\sigma)$	$D_{2000}$	$230.3 \pm 1.8 \quad (+0.3\sigma)$	$\sigma_8(2.33)$	$0.3071^{+0.0020}_{-0.0025} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$241 \pm 25 \quad (-0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.976 \pm 0.021 \quad (-0.2\sigma)$	$r_{0.002}$	$0.031^{+0.011}_{-0.027} \quad (+0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8 \quad (-0.2\sigma)$	$Y_{\mathrm{P}}$	$0.245383^{+0.000064}_{-0.000056} \quad (+0.4\sigma)$	$r_{0.01}$	$0.032^{+0.012}_{-0.028} \quad (+0.3\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246709^{+0.000064}_{-0.000057} \quad (+0.4\sigma)$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.63^{+0.98}_{-0.37} \quad (+0.2\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40^{+7}_{-8} \quad (-0.2\sigma)$	$10^5\mathrm{D}/\mathrm{H}$	$2.591 \pm 0.028 \quad (-0.4\sigma)$	$r_{10}$	$0.0162^{+0.0055}_{-0.014} \quad (+0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.9}_{-2.6} \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.796 \pm 0.021 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{t}}$	$0.071^{+0.026}_{-0.059} \quad (+0.3\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13 \quad (+0.1\sigma)$	$z_*$	$1089.88 \pm 0.23 \quad (-0.4\sigma)$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$0.063^{+0.024}_{-0.053} \quad (+0.3\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.57^{+0.40}_{-0.16} \quad (-0.1\sigma)$	$r_*$	$144.68 \pm 0.24 \quad (-0.1\sigma)$	$f_{2000}^{143}$	$30.0 \pm 3.2 \quad (-0.4\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$100\theta_*$	$1.04112 \pm 0.00028 \quad (-0.3\sigma)$	$f_{2000}^{217}$	$107.1 \pm 2.2 \quad (-0.4\sigma)$
$A^{\mathrm{kSZ}}$	$4.8^{+2.5}_{-3.8} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.896 \pm 0.023 \quad (-0.1\sigma)$	$f_{2000}^{143 \times 217}$	$32.4 \pm 2.3 \quad (-0.4\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19 \quad (-0.0\sigma)$	$z_{\mathrm{drag}}$	$1059.81 \pm 0.34 \quad (+0.4\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.31 \pm 0.66 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$r_{\mathrm{drag}}$	$147.35 \pm 0.26 \quad (-0.2\sigma)$	$\chi_{\mathrm{BKPLANCK}}^2$	$740.1 \pm 2.7 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10 \quad (+0.0\sigma)$	$k_{\mathrm{D}}$	$0.14057 \pm 0.00033 \quad (+0.3\sigma)$	$\chi_{\mathrm{simall}}^2$	$397.4 \pm 2.0 \quad (-0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_{\mathrm{D}}$	$0.16083 \pm 0.00020 \quad (-0.5\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.5 \pm 1.9 \quad (+0.2\sigma)$
$c_{100}$	$0.9976 \pm 0.0011 \quad (+0.0\sigma)$	$z_{\mathrm{eq}}$	$3381 \pm 22 \quad (-0.0\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11514.0 \pm 5.7 \quad (+820.9\sigma)$
$c_{217}$	$1.0012 \pm 0.0016 \quad (-0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010319 \pm 0.000067 \quad (-0.0\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.050 \pm 0.058 \quad (-0.2\sigma)$
$c_{TE}$	$0.9963 \pm 0.0049$	$100\theta_{\mathrm{eq}}$	$0.8171 \pm 0.0041 \quad (+0.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.28 \pm 0.40 \quad (+0.1\sigma)$
$c_{EE}$	$0.9923 \pm 0.0049$	$100\theta_{\mathrm{s,eq}}$	$0.4514 \pm 0.0021 \quad (+0.0\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.3 \quad (-0.1\sigma)$
$H_0$	$67.64 \pm 0.43 \quad (+0.1\sigma)$	$H(0.15)$	$72.91 \pm 0.37 \quad (+0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$9.4 \pm 3.8 \quad (+0.0\sigma)$
$\Omega_{\Lambda}$	$0.6893 \pm 0.0057 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$641.0 \pm 3.6 \quad (-0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$12684.3 \pm 6.4 \quad (+711.3\sigma)$
$\Omega_{\mathrm{m}}$	$0.3107 \pm 0.0057 \quad (-0.1\sigma)$	$H(0.38)$	$83.01 \pm 0.27 \quad (+0.2\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.0 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14212 \pm 0.00091 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1528.9 \pm 7.3 \quad (-0.2\sigma)$		
$\bar{\chi}_{\mathrm{eff}}^2 = 12699.77; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.14; R - 1 = 0.00794$					



# 15.57 base\_nrun\_r\_plikHM\_TTTEE\_lowl\_lowE\_BK15\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022394	$0.02240 \pm 0.00015$ (+1.0 $\sigma$ )	$\Omega_\Lambda$	0.6837	$0.6837 \pm 0.0074$ (+0.3 $\sigma$ )	$D_M(0.15)$	643.87	$643.8 \pm 4.6$ (−0.5 $\sigma$ )
$\Omega_c h^2$	0.12021	$0.1202 \pm 0.0012$ (−0.2 $\sigma$ )	$\Omega_m$	0.3163	$0.3163 \pm 0.0074$ (−0.3 $\sigma$ )	$H(0.38)$	82.838	$82.85 \pm 0.34$ (+0.5 $\sigma$ )
$100\theta_{MC}$	1.040902	$1.04090 \pm 0.00030$ (+0.2 $\sigma$ )	$\Omega_m h^2$	0.14325	$0.1432 \pm 0.0011$ (−0.0 $\sigma$ )	$D_M(0.38)$	1534.4	$1534.3 \pm 9.3$ (−0.5 $\sigma$ )
$\tau$	0.0551	$0.0561 \pm 0.0077$ (+0.3 $\sigma$ )	$\Omega_m h^3$	0.096398	$0.09640 \pm 0.00030$ (+0.8 $\sigma$ )	$H(0.51)$	89.610	$89.62 \pm 0.27$ (+0.6 $\sigma$ )
$\ln(10^{10} A_s)$	3.0470	$3.050 \pm 0.015$ (+0.4 $\sigma$ )	$\sigma_8$	0.8117	$0.8123 \pm 0.0059$ (+0.1 $\sigma$ )	$D_M(0.51)$	1987.0	$1987 \pm 11$ (−0.5 $\sigma$ )
$n_s$	0.96448	$0.9639 \pm 0.0044$ (+0.3 $\sigma$ )	$S_8$	0.8335	$0.834 \pm 0.013$ (−0.2 $\sigma$ )	$H(0.61)$	95.272	$95.28 \pm 0.22$ (+0.7 $\sigma$ )
$dn_s/d \ln k$	−0.0051	$−0.0069 \pm 0.0070$ (−0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4565	$0.4568 \pm 0.0069$ (−0.2 $\sigma$ )	$D_M(0.61)$	2311.5	$2311 \pm 12$ (−0.5 $\sigma$ )
$r$	0.0194	$0.0300^{+0.0092}_{-0.028}$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6087	$0.6091 \pm 0.0063$ (−0.1 $\sigma$ )	$H(2.33)$	236.72	$236.71 \pm 0.72$ (+0.0 $\sigma$ )
$y_{cal}$	1.00035	$1.0008 \pm 0.0025$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9895	$0.9902 \pm 0.0089$ (−0.1 $\sigma$ )	$D_M(2.33)$	5763.3	$5763 \pm 10$ (−0.8 $\sigma$ )
$A_{B,dust}$	4.63	$4.86^{+0.80}_{-1.2}$ (+0.0 $\sigma$ )	$r_{drag} h$	98.93	$98.95 \pm 0.93$ (+0.3 $\sigma$ )	$f\sigma_8(0.15)$	0.4607	$0.4610 \pm 0.0064$ (−0.2 $\sigma$ )
$A_{B,sync}$	1.41	$1.62^{+0.52}_{-1.3}$ (−0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4394	$2.440 \pm 0.023$ (−0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7496	$0.7502 \pm 0.0053$ (+0.2 $\sigma$ )
$\alpha_{B,dust}$	−0.520	$−0.56^{+0.22}_{-0.32}$ (−0.0 $\sigma$ )	$z_{re}$	7.76	$7.85 \pm 0.76$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4780	$0.4783 \pm 0.0051$ (−0.1 $\sigma$ )
$\beta_{B,dust}$	1.583	$1.599 \pm 0.096$ (+0.0 $\sigma$ )	$10^9 A_s$	2.1052	$2.112^{+0.030}_{-0.033}$ (+0.4 $\sigma$ )	$\sigma_8(0.38)$	0.66392	$0.6644 \pm 0.0047$ (+0.2 $\sigma$ )
$\alpha_{B,sync}$	−0.39	—	$10^9 A_s e^{-2\tau}$	1.8855	$1.887 \pm 0.011$ (+0.1 $\sigma$ )	$f\sigma_8(0.51)$	0.47602	$0.4763 \pm 0.0045$ (−0.1 $\sigma$ )
$\beta_{B,sync}$	−3.043	$−3.10 \pm 0.27$ (−0.0 $\sigma$ )	$D_{40}$	1225.3	$1227 \pm 19$ (−0.2 $\sigma$ )	$\sigma_8(0.51)$	0.62110	$0.6216 \pm 0.0045$ (+0.3 $\sigma$ )
$\epsilon_{dust,sync}$	−0.361	$−0.36 \pm 0.28$ (−0.0 $\sigma$ )	$D_{220}$	5726.4	$5731 \pm 39$ (+0.4 $\sigma$ )	$f\sigma_8(0.61)$	0.47065	$0.4710 \pm 0.0041$ (−0.1 $\sigma$ )
$A_{217}^{CIB}$	50.0	$48 \pm 7$ (−0.1 $\sigma$ )	$D_{810}$	2540.4	$2542 \pm 13$ (+0.3 $\sigma$ )	$\sigma_8(0.61)$	0.59086	$0.5913 \pm 0.0043$ (+0.3 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.09	—	$D_{1420}$	816.37	$816.2 \pm 5.0$ (+0.4 $\sigma$ )	$f\sigma_8(2.33)$	0.29772	$0.2980 \pm 0.0022$ (+0.3 $\sigma$ )
$A_{143}^{tSZ}$	7.33	$5.2 \pm 2.0$ (+0.1 $\sigma$ )	$D_{2000}$	230.30	$230.1 \pm 1.8$ (+0.5 $\sigma$ )	$\sigma_8(2.33)$	0.30673	$0.3070 \pm 0.0024$ (+0.3 $\sigma$ )
$A_{100}^{PS}$	256.0	$263 \pm 28$ (−0.1 $\sigma$ )	$n_{s,0.002}$	0.9809	$0.986 \pm 0.021$ (+0.3 $\sigma$ )	$r_{0.002}$	0.0179	$0.0283^{+0.0078}_{-0.027}$ (+0.2 $\sigma$ )
$A_{143}^{PS}$	44.8	$48 \pm 8$ (−0.3 $\sigma$ )	$Y_P$	0.245405	$0.245404^{+0.000062}_{-0.000054}$ (+0.9 $\sigma$ )	$r_{0.01}$	0.0185	$0.0289^{+0.0085}_{-0.027}$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{PS}$	39.8	$43 \pm 9$ (−0.1 $\sigma$ )	$Y_P^{BBN}$	0.246731	$0.246731^{+0.000062}_{-0.000055}$ (+0.9 $\sigma$ )	$\ln(10^{10} A_t)$	−0.90	$−0.76^{+1.0}_{-0.40}$ (+0.1 $\sigma$ )
$A_{217}^{PS}$	116.2	$115 \pm 10$ (−0.0 $\sigma$ )	$10^5 D/H$	2.5810	$2.581 \pm 0.028$ (−1.0 $\sigma$ )	$r_{10}$	0.0092	$0.0147^{+0.0039}_{-0.014}$ (+0.2 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.93$ (−0.1 $\sigma$ )	Age/Gyr	13.7964	$13.796 \pm 0.023$ (−0.8 $\sigma$ )	$10^9 A_t$	0.0408	$0.063^{+0.019}_{-0.059}$ (+0.1 $\sigma$ )
$A_{100}^{dustTT}$	8.89	$8.9 \pm 1.8$ (+0.0 $\sigma$ )	$z_*$	1089.908	$1089.90 \pm 0.26$ (−0.8 $\sigma$ )	$10^9 A_t e^{-2\tau}$	0.0366	$0.057^{+0.017}_{-0.052}$ (+0.1 $\sigma$ )
$A_{143}^{dustTT}$	11.04	$11.0 \pm 1.8$ (+0.1 $\sigma$ )	$r_*$	144.360	$144.36 \pm 0.27$ (−0.3 $\sigma$ )	$f_{2000}^{143}$	30.24	$9.57^{+0.24}_{-0.85}$ (−7.0 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.37	$18.7 \pm 3.3$ (+0.1 $\sigma$ )	$100\theta_*$	1.041083	$1.04108 \pm 0.00030$ (+0.2 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.94	$739.6^{+1.3}_{-3.1}$ (+315.8 $\sigma$ )
$A_{217}^{dustTT}$	94.1	$93.5 \pm 7.3$ (+0.0 $\sigma$ )	$D_M(z_*)/\text{Gpc}$	13.8663	$13.867 \pm 0.025$ (−0.3 $\sigma$ )	$f_{2000}^{217}$	107.52	$397.33^{+0.13}_{-1.6}$ (+139.9 $\sigma$ )
$A_{100}^{dustTE}$	0.1139	$0.115 \pm 0.038$	$z_{drag}$	1060.009	$1060.01 \pm 0.32$ (+1.0 $\sigma$ )	$\chi_{lensing}^2$	9.04	$23.0 \pm 1.7$ (+12.6 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1343	$0.135 \pm 0.029$	$r_{drag}$	147.011	$147.01 \pm 0.27$ (−0.4 $\sigma$ )	$\chi_{BKPLANCK}^2$	735.3	$2360.3 \pm 5.8$ (+615.7 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.477	$0.481 \pm 0.085$	$k_D$	0.140971	$0.14097 \pm 0.00032$ (+0.7 $\sigma$ )	$\chi_{small}^2$	396.20	$13.2 \pm 4.8$ (−225.8 $\sigma$ )
$A_{143}^{dustTE}$	0.224	$0.226 \pm 0.054$	$100\theta_D$	0.160716	$0.16071 \pm 0.00018$ (−1.0 $\sigma$ )	$\chi_{lowl}^2$	22.64	$31.0 \pm 3.1$ (+3.3 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.664	$0.665 \pm 0.080$	$z_{eq}$	3407.7	$3407 \pm 27$ (−0.0 $\sigma$ )	$\chi_{plik}^2$	2344.94	$33.3 \pm 2.2$ (−133.5 $\sigma$ )
$A_{217}^{dustTE}$	2.078	$2.08 \pm 0.27$	$k_{eq}$	0.010401	$0.010400 \pm 0.000083$ (−0.0 $\sigma$ )	$\chi_{prior}^2$	1.94	$107.9 \pm 2.0$ (+24.7 $\sigma$ )
$c_{100}$	0.99968	$0.99968 \pm 0.00061$ (+0.1 $\sigma$ )	$100\theta_{eq}$	0.8124	$0.8125 \pm 0.0051$ (+0.1 $\sigma$ )	$\chi_{CMB}^2$	3508.1	$3529.8 \pm 6.5$ (+251.6 $\sigma$ )
$c_{217}$	0.99820	$0.99822 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_{s,eq}$	0.44888	$0.4489 \pm 0.0026$ (+0.1 $\sigma$ )			
$H_0$	67.30	$67.31 \pm 0.54$ (+0.4 $\sigma$ )	$H(0.15)$	72.632	$72.64 \pm 0.46$ (+0.5 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 3510.02$ ;  $\Delta\chi_{eff}^2 = 1585.85$ ;  $\bar{\chi}_{eff}^2 = 3542.98$ ;  $\Delta\bar{\chi}_{eff}^2 = 1591.83$ ;  $R - 1 = 0.00382$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consect8: 9.04 ( $\Delta$  -0.05) BK15\_dust: 735.27 ( $\Delta$  0.07) small\_100x143.offlike5\_EE\_Aplanck\_B: 396.20 ( $\Delta$  0.18) com-  
mander\_dx12\_v3\_2\_29: 22.64 ( $\Delta$  -0.57) plik\_rd12\_HM.v22b.TTTEEE: 2344.94



15.58 base\_nrun\_r\_plikHM\_TTTEE\_lowl\_lowE\_BK15\_lensing\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022461	$0.02245 \pm 0.00014$ (+0.9 $\sigma$ )	$\Omega_m$	0.3106	$0.3115 \pm 0.0057$ (−0.0 $\sigma$ )	$D_M(0.38)$	1527.4	$1528.5 \pm 7.3$ (−0.3 $\sigma$ )
$\Omega_c h^2$	0.11930	$0.11944 \pm 0.00094$ (+0.2 $\sigma$ )	$\Omega_m h^2$	0.14240	$0.14253 \pm 0.00090$ (+0.3 $\sigma$ )	$H(0.51)$	89.807	$89.78 \pm 0.22$ (+0.4 $\sigma$ )
$100\theta_{MC}$	1.041023	$1.04100 \pm 0.00029$ (+0.0 $\sigma$ )	$\Omega_m h^3$	0.096421	$0.09642 \pm 0.00030$ (+0.8 $\sigma$ )	$D_M(0.51)$	1978.7	$1980.0 \pm 8.6$ (−0.3 $\sigma$ )
$\tau$	0.0580	$0.0583 \pm 0.0075$ (+0.2 $\sigma$ )	$\sigma_8$	0.8116	$0.8115 \pm 0.0059$ (+0.2 $\sigma$ )	$H(0.61)$	95.425	$95.40 \pm 0.18$ (+0.5 $\sigma$ )
$\ln(10^{10} A_s)$	3.0514	$3.053 \pm 0.015$ (+0.3 $\sigma$ )	$S_8$	0.8258	$0.827 \pm 0.010$ (+0.1 $\sigma$ )	$D_M(0.61)$	2302.6	$2304.0 \pm 9.2$ (−0.3 $\sigma$ )
$n_s$	0.96772	$0.9658 \pm 0.0040$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4523	$0.4529 \pm 0.0057$ (+0.1 $\sigma$ )	$H(2.33)$	236.20	$236.28 \pm 0.58$ (+0.4 $\sigma$ )
$dn_s/d \ln k$	−0.0034	$−0.0066 \pm 0.0070$ (−0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6059	$0.6062 \pm 0.0056$ (+0.2 $\sigma$ )	$D_M(2.33)$	5756.8	$5757.8 \pm 8.9$ (−0.6 $\sigma$ )
$r$	0.0201	$0.031_{-0.028}^{+0.010}$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9863	$0.9866 \pm 0.0082$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4570	$0.4575 \pm 0.0054$ (+0.1 $\sigma$ )
$y_{cal}$	1.00069	$1.0009 \pm 0.0025$ (+0.0 $\sigma$ )	$r_{drag} h$	99.65	$99.54 \pm 0.73$ (−0.0 $\sigma$ )	$\sigma_8(0.15)$	0.7500	$0.7498 \pm 0.0054$ (+0.2 $\sigma$ )
$A_{B,dust}$	4.60	$4.86_{-1.2}^{+0.80}$ (+0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4326	$2.432 \pm 0.022$ (+0.0 $\sigma$ )	$f\sigma_8(0.38)$	0.47555	$0.4758 \pm 0.0045$ (+0.1 $\sigma$ )
$A_{B,sync}$	1.43	$1.61_{-1.3}^{+0.51}$ (−0.0 $\sigma$ )	$z_{re}$	8.02	$8.04 \pm 0.74$ (+0.1 $\sigma$ )	$\sigma_8(0.38)$	0.66494	$0.6647 \pm 0.0048$ (+0.2 $\sigma$ )
$\alpha_{B,dust}$	−0.509	$−0.56_{-0.32}^{+0.22}$ (−0.0 $\sigma$ )	$10^9 A_s$	2.1144	$2.118 \pm 0.032$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.47425	$0.4744 \pm 0.0041$ (+0.2 $\sigma$ )
$\beta_{B,dust}$	1.577	$1.600 \pm 0.096$ (+0.0 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8829	$1.885 \pm 0.011$ (+0.2 $\sigma$ )	$\sigma_8(0.51)$	0.62231	$0.6220 \pm 0.0045$ (+0.2 $\sigma$ )
$\alpha_{B,sync}$	−0.32	—	$D_{40}$	1224.9	$1225 \pm 19$ (−0.1 $\sigma$ )	$f\sigma_8(0.61)$	0.46934	$0.4695 \pm 0.0038$ (+0.2 $\sigma$ )
$\beta_{B,sync}$	−3.042	$−3.10 \pm 0.27$ (+0.0 $\sigma$ )	$D_{220}$	5734.0	$5737 \pm 38$ (+0.3 $\sigma$ )	$\sigma_8(0.61)$	0.59217	$0.5919 \pm 0.0043$ (+0.2 $\sigma$ )
$\epsilon_{dust,sync}$	−0.352	$−0.36 \pm 0.29$ (−0.0 $\sigma$ )	$D_{810}$	2542.6	$2543 \pm 13$ (+0.2 $\sigma$ )	$f\sigma_8(2.33)$	0.29861	$0.2984 \pm 0.0022$ (+0.2 $\sigma$ )
$A_{217}^{CIB}$	46.7	$48 \pm 7$ (−0.1 $\sigma$ )	$D_{1420}$	818.66	$817.1 \pm 4.9$ (+0.4 $\sigma$ )	$\sigma_8(2.33)$	0.30789	$0.3077 \pm 0.0024$ (+0.2 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.54	—	$D_{2000}$	231.28	$230.5 \pm 1.8$ (+0.4 $\sigma$ )	$r_{0.002}$	0.0186	$0.0292_{-0.027}^{+0.0088}$ (+0.1 $\sigma$ )
$A_{143}^{tSZ}$	7.12	$5.3 \pm 2.0$ (+0.2 $\sigma$ )	$n_{s,0.002}$	0.9786	$0.987 \pm 0.022$ (+0.2 $\sigma$ )	$r_{0.01}$	0.0193	$0.0297_{-0.027}^{+0.0094}$ (+0.1 $\sigma$ )
$A_{100}^{PS}$	250.0	$262 \pm 28$ (−0.1 $\sigma$ )	$Y_P$	0.245430	$0.245425 \pm 0.000054$ (+0.9 $\sigma$ )	$\ln(10^{10} A_t)$	−0.85	$−0.73_{-0.40}^{+1.0}$ (+0.1 $\sigma$ )
$A_{143}^{PS}$	49.7	$48 \pm 8$ (−0.3 $\sigma$ )	$Y_P^{BBN}$	0.246757	$0.246751 \pm 0.000054$ (+0.9 $\sigma$ )	$r_{10}$	0.0095	$0.0151_{-0.014}^{+0.0044}$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{PS}$	50.7	$43 \pm 9$ (−0.1 $\sigma$ )	$10^5 D/H$	2.5687	$2.571 \pm 0.026$ (−0.9 $\sigma$ )	$10^9 A_t$	0.0426	$0.065_{-0.059}^{+0.021}$ (+0.1 $\sigma$ )
$A_{217}^{PS}$	121.1	$115 \pm 10$ (+0.0 $\sigma$ )	Age/Gyr	13.7823	$13.785 \pm 0.020$ (−0.7 $\sigma$ )	$10^9 A_t e^{-2\tau}$	0.0379	$0.058_{-0.052}^{+0.019}$ (+0.1 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.77$ (−0.1 $\sigma$ )	$z_*$	1089.744	$1089.77 \pm 0.22$ (−0.7 $\sigma$ )	$f_{2000}^{143}$	28.98	$30.6 \pm 3.1$ (−0.3 $\sigma$ )
$A_{100}^{dustTT}$	8.87	$8.9 \pm 1.8$ (+0.0 $\sigma$ )	$r_*$	144.543	$144.52 \pm 0.23$ (−0.6 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.21	$33.0 \pm 2.1$ (−0.4 $\sigma$ )
$A_{143}^{dustTT}$	11.03	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$100\theta_*$	1.041196	$1.04118 \pm 0.00029$ (−0.0 $\sigma$ )	$f_{2000}^{217}$	106.79	$107.7 \pm 2.0$ (−0.4 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.04	$18.7 \pm 3.3$ (+0.1 $\sigma$ )	$D_M(z_*)/\text{Gpc}$	13.8824	$13.880 \pm 0.022$ (−0.6 $\sigma$ )	$\chi_{lensing}^2$	8.834	$9.32 \pm 0.61$ (−0.1 $\sigma$ )
$A_{217}^{dustTT}$	95.4	$93.6 \pm 7.4$ (+0.0 $\sigma$ )	$z_{drag}$	1060.085	$1060.08 \pm 0.31$ (+0.9 $\sigma$ )	$\chi_{BKPLANCK}^2$	735.47	$739.8 \pm 2.6$ (+0.0 $\sigma$ )
$A_{100}^{dustTE}$	0.1137	$0.115 \pm 0.038$	$r_{drag}$	147.177	$147.15 \pm 0.24$ (−0.8 $\sigma$ )	$\chi_{small}^2$	396.79	$397.7 \pm 2.1$ (+0.1 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1349	$0.135 \pm 0.030$	$k_D$	0.140848	$0.14087 \pm 0.00030$ (+0.9 $\sigma$ )	$\chi_{lowl}^2$	22.64	$22.8 \pm 1.7$ (−0.2 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.481	$0.481 \pm 0.085$	$100\theta_D$	0.160670	$0.16068 \pm 0.00018$ (−0.9 $\sigma$ )	$\chi_{plik}^2$	2345.2	$2360.2 \pm 5.8$ (+284.5 $\sigma$ )
$A_{143}^{dustTE}$	0.225	$0.225 \pm 0.054$	$z_{eq}$	3387.6	$3391 \pm 22$ (+0.3 $\sigma$ )	$\chi_{6DF}^2$	0.0292	$0.060 \pm 0.065$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.664	$0.663 \pm 0.080$	$k_{eq}$	0.010339	$0.010349 \pm 0.000066$ (+0.3 $\sigma$ )	$\chi_{MGS}^2$	1.217	$1.21 \pm 0.39$ (−0.1 $\sigma$ )
$A_{217}^{dustTE}$	2.077	$2.07 \pm 0.27$	$100\theta_{eq}$	0.81624	$0.8157 \pm 0.0040$ (−0.2 $\sigma$ )	$\chi_{DR12BAO}^2$	4.43	$5.0 \pm 1.4$ (−0.0 $\sigma$ )
$c_{100}$	0.99972	$0.99969 \pm 0.00062$ (+0.1 $\sigma$ )	$100\theta_{s,eq}$	0.45085	$0.4506 \pm 0.0021$ (−0.3 $\sigma$ )	$\chi_{prior}^2$	1.73	$13.2 \pm 4.9$ (+1.1 $\sigma$ )
$c_{217}$	0.99820	$0.99822 \pm 0.00062$ (−0.1 $\sigma$ )	$H(0.15)$	72.986	$72.93 \pm 0.37$ (+0.2 $\sigma$ )	$\chi_{CMB}^2$	3508.9	$3529.8 \pm 6.4$ (+250.3 $\sigma$ )
$H_0$	67.709	$67.65 \pm 0.42$ (+0.2 $\sigma$ )	$D_M(0.15)$	640.34	$640.9 \pm 3.6$ (−0.2 $\sigma$ )	$\chi_{BAO}^2$	5.68	$6.2 \pm 1.1$ (−0.0 $\sigma$ )
$\Omega_\Lambda$	0.6894	$0.6885 \pm 0.0057$ (+0.0 $\sigma$ )	$H(0.38)$	83.092	$83.05 \pm 0.27$ (+0.4 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 3516.32$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.66$ ;  $\bar{\chi}_{\text{eff}}^2 = 3549.29$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.59$ ;  $R - 1 = 0.00618$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.03 ( $\Delta$  -0.01) MGS: 1.22 ( $\Delta$  0.06) DR12BAO: 4.43 ( $\Delta$  -0.14) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.83 ( $\Delta$  -0.04) BK15\_dust: 735.47 ( $\Delta$  -0.03) small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.79 ( $\Delta$  0.44) commander\_dx12\_v3\_2\_29: 22.64 ( $\Delta$  -0.17) plik\_rd12\_HM\_v22b\_TTTEE: 2345.18



15.59 base\_nrun\_r\_plikHM\_TTTEE\_lowl\_lowE\_BK15\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02240 \pm 0.00015 \quad (+0.9\sigma)$	$\Omega_{\Lambda}$	$0.6840 \pm 0.0074 \quad (+0.3\sigma)$	$D_{\mathrm{M}}(0.15)$	$643.7 \pm 4.6 \quad (-0.4\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1202 \pm 0.0012 \quad (-0.1\sigma)$	$\Omega_{\mathrm{m}}$	$0.3160 \pm 0.0074 \quad (-0.3\sigma)$	$H(0.38)$	$82.86 \pm 0.33 \quad (+0.5\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00030 \quad (+0.2\sigma)$	$\Omega_{\mathrm{m}}h^2$	$0.1432 \pm 0.0011 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1534.0 \pm 9.2 \quad (-0.4\sigma)$
$\tau$	$0.0568^{+0.0059}_{-0.0081} \quad (+0.3\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09640 \pm 0.00030 \quad (+0.8\sigma)$	$H(0.51)$	$89.63 \pm 0.27 \quad (+0.6\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.051^{+0.012}_{-0.016} \quad (+0.3\sigma)$	$\sigma_8$	$0.8127 \pm 0.0057 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1986 \pm 11 \quad (-0.5\sigma)$
$n_{\mathrm{s}}$	$0.9640 \pm 0.0044 \quad (+0.3\sigma)$	$S_8$	$0.834 \pm 0.013 \quad (-0.2\sigma)$	$H(0.61)$	$95.29 \pm 0.22 \quad (+0.7\sigma)$
$\mathrm{d}n_{\mathrm{s}}/\mathrm{d}\ln k$	$-0.0069 \pm 0.0069 \quad (-0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4568 \pm 0.0069 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.61)$	$2311 \pm 12 \quad (-0.5\sigma)$
$r$	$0.0300^{+0.0093}_{-0.028} \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6093 \pm 0.0063 \quad (-0.1\sigma)$	$H(2.33)$	$236.69 \pm 0.71 \quad (+0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0025 \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9905 \pm 0.0088 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5763 \pm 10 \quad (-0.7\sigma)$
$A_{B,\mathrm{dust}}$	$4.85^{+0.80}_{-1.2} \quad (-0.0\sigma)$	$r_{\mathrm{drag}}h$	$98.98 \pm 0.92 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4611 \pm 0.0064 \quad (-0.2\sigma)$
$A_{B,\mathrm{sync}}$	$1.62^{+0.52}_{-1.3} \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.441 \pm 0.023 \quad (-0.2\sigma)$	$\sigma_8(0.15)$	$0.7505^{+0.0047}_{-0.0054} \quad (+0.1\sigma)$
$\alpha_{B,\mathrm{dust}}$	$-0.56^{+0.22}_{-0.32} \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.91^{+0.63}_{-0.77} \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4784 \pm 0.0051 \quad (-0.1\sigma)$
$\beta_{B,\mathrm{dust}}$	$1.600 \pm 0.096 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.114^{+0.026}_{-0.034} \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6648^{+0.0040}_{-0.0048} \quad (+0.2\sigma)$
$\alpha_{B,\mathrm{sync}}$	—	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.887 \pm 0.011 \quad (+0.1\sigma)$	$f\sigma_8(0.51)$	$0.4765 \pm 0.0045 \quad (-0.1\sigma)$
$\beta_{B,\mathrm{sync}}$	$-3.10 \pm 0.27 \quad (+0.0\sigma)$	$D_{40}$	$1227 \pm 19 \quad (-0.2\sigma)$	$\sigma_8(0.51)$	$0.6219^{+0.0038}_{-0.0045} \quad (+0.2\sigma)$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$-0.36 \pm 0.28 \quad (-0.0\sigma)$	$D_{220}$	$5731 \pm 39 \quad (+0.4\sigma)$	$f\sigma_8(0.61)$	$0.4711 \pm 0.0040 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7 \quad (-0.1\sigma)$	$D_{810}$	$2542 \pm 13 \quad (+0.3\sigma)$	$\sigma_8(0.61)$	$0.5917^{+0.0036}_{-0.0044} \quad (+0.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$816.2 \pm 5.0 \quad (+0.4\sigma)$	$f\sigma_8(2.33)$	$0.2981^{+0.0018}_{-0.0023} \quad (+0.3\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.2 \pm 2.0 \quad (+0.1\sigma)$	$D_{2000}$	$230.1 \pm 1.8 \quad (+0.5\sigma)$	$\sigma_8(2.33)$	$0.3072^{+0.0020}_{-0.0025} \quad (+0.3\sigma)$
$A_{100}^{\mathrm{PS}}$	$263 \pm 28 \quad (-0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.986 \pm 0.021 \quad (+0.3\sigma)$	$r_{0.002}$	$0.0283^{+0.0079}_{-0.027} \quad (+0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$48 \pm 8 \quad (-0.3\sigma)$	$Y_{\mathrm{P}}$	$0.245405^{+0.000061}_{-0.000054} \quad (+0.9\sigma)$	$r_{0.01}$	$0.0289^{+0.0086}_{-0.027} \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9 \quad (-0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246732^{+0.000061}_{-0.000054} \quad (+0.9\sigma)$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.76^{+1.0}_{-0.40} \quad (+0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (-0.0\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.580 \pm 0.028 \quad (-0.9\sigma)$	$r_{10}$	$0.0147^{+0.0040}_{-0.014} \quad (+0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.93 \quad (-0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.795 \pm 0.023 \quad (-0.8\sigma)$	$10^9 A_{\mathrm{t}}$	$0.064^{+0.020}_{-0.059} \quad (+0.1\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$z_*$	$1089.90 \pm 0.26 \quad (-0.8\sigma)$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$0.057^{+0.018}_{-0.052} \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$11.0 \pm 1.8 \quad (+0.1\sigma)$	$r_*$	$144.37 \pm 0.27 \quad (-0.3\sigma)$	$f_{2000}^{143}$	$9.57^{+0.24}_{-0.86} \quad (-7.0\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.7 \pm 3.3 \quad (+0.1\sigma)$	$100\theta_*$	$1.04109 \pm 0.00030 \quad (+0.2\sigma)$	$f_{2000}^{143 \times 217}$	$739.6^{+1.3}_{-3.1} \quad (+316.6\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.5 \pm 7.3 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.867 \pm 0.025 \quad (-0.3\sigma)$	$f_{2000}^{217}$	$397.317^{+0.099}_{-1.6} \quad (+140.4\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.115 \pm 0.038$	$z_{\mathrm{drag}}$	$1060.02 \pm 0.31 \quad (+1.0\sigma)$	$\chi_{\mathrm{lensing}}^2$	$23.0 \pm 1.7 \quad (+12.4\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.029$	$r_{\mathrm{drag}}$	$147.02 \pm 0.27 \quad (-0.5\sigma)$	$\chi_{\mathrm{BKPLANCK}}^2$	$2360.2 \pm 5.8 \quad (+616.8\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.480 \pm 0.085$	$k_{\mathrm{D}}$	$0.14097 \pm 0.00032 \quad (+0.7\sigma)$	$\chi_{\mathrm{simall}}^2$	$13.2 \pm 4.8 \quad (-223.6\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.225 \pm 0.054$	$100\theta_{\mathrm{D}}$	$0.16071 \pm 0.00018 \quad (-1.0\sigma)$	$\chi_{\mathrm{lowl}}^2$	$31.0 \pm 3.1 \quad (+3.4\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.664 \pm 0.080$	$z_{\mathrm{eq}}$	$3407 \pm 27 \quad (+0.0\sigma)$	$\chi_{\mathrm{plik}}^2$	$33.3 \pm 2.2 \quad (-133.7\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.08 \pm 0.27$	$k_{\mathrm{eq}}$	$0.010397 \pm 0.000082 \quad (+0.0\sigma)$	$\chi_{\mathrm{prior}}^2$	$107.9 \pm 2.0 \quad (+24.6\sigma)$
$c_{100}$	$0.99968 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8126 \pm 0.0050 \quad (+0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$3529.6 \pm 6.5 \quad (+254.0\sigma)$
$c_{217}$	$0.99822 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4490 \pm 0.0026 \quad (+0.0\sigma)$		
$H_0$	$67.32 \pm 0.53 \quad (+0.4\sigma)$	$H(0.15)$	$72.66 \pm 0.46 \quad (+0.4\sigma)$		

$\bar{\chi}_{\mathrm{eff}}^2 = 3542.82$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.88$ ;  $R - 1 = 0.00386$



15.60 base\_nrun\_r\_plikHM\_TTTEE\_lowl\_lowE\_BK15\_lensing\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02245 \pm 0.00014 \quad (+0.9\sigma)$	$\Omega_m$	$0.3115 \pm 0.0057 \quad (-0.0\sigma)$	$D_M(0.38)$	$1528.4 \pm 7.2 \quad (-0.2\sigma)$
$\Omega_c h^2$	$0.11943 \pm 0.00094 \quad (+0.2\sigma)$	$\Omega_m h^2$	$0.14252 \pm 0.00090 \quad (+0.4\sigma)$	$H(0.51)$	$89.78 \pm 0.22 \quad (+0.4\sigma)$
$100\theta_{MC}$	$1.04100 \pm 0.00029 \quad (+0.0\sigma)$	$\Omega_m h^3$	$0.09642 \pm 0.00030 \quad (+0.8\sigma)$	$D_M(0.51)$	$1979.9 \pm 8.5 \quad (-0.3\sigma)$
$\tau$	$0.0586^{+0.0065}_{-0.0078} \quad (+0.2\sigma)$	$\sigma_8$	$0.8117^{+0.0053}_{-0.0061} \quad (+0.2\sigma)$	$H(0.61)$	$95.40 \pm 0.18 \quad (+0.5\sigma)$
$\ln(10^{10} A_s)$	$3.054^{+0.013}_{-0.016} \quad (+0.3\sigma)$	$S_8$	$0.827 \pm 0.010 \quad (+0.1\sigma)$	$D_M(0.61)$	$2303.9 \pm 9.2 \quad (-0.3\sigma)$
$n_s$	$0.9658 \pm 0.0040 \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4530 \pm 0.0057 \quad (+0.1\sigma)$	$H(2.33)$	$236.27 \pm 0.58 \quad (+0.4\sigma)$
$dn_s/d \ln k$	$-0.0067 \pm 0.0070 \quad (-0.2\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6064 \pm 0.0055 \quad (+0.2\sigma)$	$D_M(2.33)$	$5757.7 \pm 8.9 \quad (-0.6\sigma)$
$r$	$0.031^{+0.010}_{-0.028} \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9869 \pm 0.0081 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4576 \pm 0.0053 \quad (+0.1\sigma)$
$y_{cal}$	$1.0009 \pm 0.0025 \quad (+0.0\sigma)$	$r_{drag} h$	$99.55 \pm 0.72 \quad (-0.0\sigma)$	$\sigma_8(0.15)$	$0.7501^{+0.0048}_{-0.0055} \quad (+0.2\sigma)$
$A_{B,dust}$	$4.86^{+0.80}_{-1.2} \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.433 \pm 0.021 \quad (+0.0\sigma)$	$f\sigma_8(0.38)$	$0.4760 \pm 0.0045 \quad (+0.1\sigma)$
$A_{B,sync}$	$1.61^{+0.51}_{-1.3} \quad (-0.0\sigma)$	$z_{re}$	$8.07 \pm 0.70 \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.6649^{+0.0042}_{-0.0049} \quad (+0.2\sigma)$
$\alpha_{B,dust}$	$-0.56^{+0.22}_{-0.32} \quad (-0.0\sigma)$	$10^9 A_s$	$2.119^{+0.028}_{-0.034} \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4746 \pm 0.0040 \quad (+0.2\sigma)$
$\beta_{B,dust}$	$1.600 \pm 0.096 \quad (+0.0\sigma)$	$10^9 A_s e^{-2\tau}$	$1.885 \pm 0.011 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6222^{+0.0039}_{-0.0046} \quad (+0.2\sigma)$
$\alpha_{B,sync}$	—	$D_{40}$	$1225 \pm 19 \quad (-0.1\sigma)$	$f\sigma_8(0.61)$	$0.4696 \pm 0.0038 \quad (+0.2\sigma)$
$\beta_{B,sync}$	$-3.10 \pm 0.27 \quad (+0.0\sigma)$	$D_{220}$	$5737 \pm 38 \quad (+0.3\sigma)$	$\sigma_8(0.61)$	$0.5921^{+0.0037}_{-0.0044} \quad (+0.2\sigma)$
$\epsilon_{dust,sync}$	$-0.36 \pm 0.29 \quad (-0.0\sigma)$	$D_{810}$	$2543 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(2.33)$	$0.2985^{+0.0019}_{-0.0023} \quad (+0.2\sigma)$
$A_{217}^{CIB}$	$48 \pm 7 \quad (-0.1\sigma)$	$D_{1420}$	$817.0 \pm 4.9 \quad (+0.4\sigma)$	$\sigma_8(2.33)$	$0.3078^{+0.0021}_{-0.0024} \quad (+0.2\sigma)$
$\xi^{tSZ \times CIB}$	—	$D_{2000}$	$230.5 \pm 1.8 \quad (+0.4\sigma)$	$r_{0.002}$	$0.0292^{+0.0088}_{-0.027} \quad (+0.1\sigma)$
$A_{143}^{tSZ}$	$5.3 \pm 2.0 \quad (+0.2\sigma)$	$n_{s,0.002}$	$0.987 \pm 0.022 \quad (+0.2\sigma)$	$r_{0.01}$	$0.0297^{+0.0095}_{-0.027} \quad (+0.1\sigma)$
$A_{100}^{PS}$	$262 \pm 28 \quad (-0.1\sigma)$	$Y_P$	$0.245425 \pm 0.000054 \quad (+0.9\sigma)$	$\ln(10^{10} A_t)$	$-0.73^{+1.0}_{-0.41} \quad (+0.1\sigma)$
$A_{143}^{PS}$	$48 \pm 8 \quad (-0.3\sigma)$	$Y_P^{BBN}$	$0.246752 \pm 0.000054 \quad (+0.9\sigma)$	$r_{10}$	$0.0151^{+0.0044}_{-0.014} \quad (+0.1\sigma)$
$A_{143 \times 217}^{PS}$	$43 \pm 9 \quad (-0.1\sigma)$	$10^5 D/H$	$2.571 \pm 0.026 \quad (-0.9\sigma)$	$10^9 A_t$	$0.065^{+0.021}_{-0.059} \quad (+0.1\sigma)$
$A_{217}^{PS}$	$115 \pm 10 \quad (+0.0\sigma)$	Age/Gyr	$13.784 \pm 0.020 \quad (-0.6\sigma)$	$10^9 A_t e^{-2\tau}$	$0.058^{+0.019}_{-0.052} \quad (+0.1\sigma)$
$A^{kSZ}$	$< 4.77 \quad (-0.1\sigma)$	$z_*$	$1089.77 \pm 0.22 \quad (-0.7\sigma)$	$f_{2000}^{143}$	$30.6 \pm 3.1 \quad (-0.3\sigma)$
$A_{100}^{dustTT}$	$8.9 \pm 1.8 \quad (+0.0\sigma)$	$r_*$	$144.52 \pm 0.23 \quad (-0.6\sigma)$	$f_{2000}^{143 \times 217}$	$33.0 \pm 2.1 \quad (-0.4\sigma)$
$A_{143}^{dustTT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$100\theta_*$	$1.04118 \pm 0.00029 \quad (-0.0\sigma)$	$f_{2000}^{217}$	$107.7 \pm 2.0 \quad (-0.4\sigma)$
$A_{143 \times 217}^{dustTT}$	$18.7 \pm 3.3 \quad (+0.1\sigma)$	$D_M(z_*)/\text{Gpc}$	$13.880 \pm 0.022 \quad (-0.6\sigma)$	$\chi_{lensing}^2$	$9.31 \pm 0.59 \quad (-0.1\sigma)$
$A_{217}^{dustTT}$	$93.5 \pm 7.4 \quad (+0.0\sigma)$	$z_{drag}$	$1060.08 \pm 0.31 \quad (+0.9\sigma)$	$\chi_{BKPLANCK}^2$	$739.8 \pm 2.6 \quad (+0.0\sigma)$
$A_{100}^{dustTE}$	$0.115 \pm 0.038$	$r_{drag}$	$147.15 \pm 0.24 \quad (-0.8\sigma)$	$\chi_{simall}^2$	$397.7 \pm 2.1 \quad (+0.1\sigma)$
$A_{100 \times 143}^{dustTE}$	$0.135 \pm 0.030$	$k_D$	$0.14086 \pm 0.00030 \quad (+0.9\sigma)$	$\chi_{lowl}^2$	$22.8 \pm 1.7 \quad (-0.2\sigma)$
$A_{100 \times 217}^{dustTE}$	$0.481 \pm 0.085$	$100\theta_D$	$0.16068 \pm 0.00018 \quad (-0.9\sigma)$	$\chi_{plik}^2$	$2360.1 \pm 5.8 \quad (+284.8\sigma)$
$A_{143}^{dustTE}$	$0.225 \pm 0.054$	$z_{eq}$	$3390 \pm 21 \quad (+0.4\sigma)$	$\chi_{6DF}^2$	$0.059 \pm 0.064 \quad (-0.0\sigma)$
$A_{143 \times 217}^{dustTE}$	$0.663 \pm 0.079$	$k_{eq}$	$0.010348 \pm 0.000065 \quad (+0.4\sigma)$	$\chi_{MGS}^2$	$1.21 \pm 0.39 \quad (-0.1\sigma)$
$A_{217}^{dustTE}$	$2.07 \pm 0.27$	$100\theta_{eq}$	$0.8157 \pm 0.0040 \quad (-0.2\sigma)$	$\chi_{DR12BAO}^2$	$5.0 \pm 1.4 \quad (+0.0\sigma)$
$c_{100}$	$0.99968 \pm 0.00062 \quad (+0.1\sigma)$	$100\theta_{s,eq}$	$0.4506 \pm 0.0021 \quad (-0.3\sigma)$	$\chi_{prior}^2$	$13.2 \pm 4.9 \quad (+1.1\sigma)$
$c_{217}$	$0.99822 \pm 0.00062 \quad (-0.1\sigma)$	$H(0.15)$	$72.94 \pm 0.36 \quad (+0.2\sigma)$	$\chi_{CMB}^2$	$3529.7 \pm 6.4 \quad (+251.7\sigma)$
$H_0$	$67.65 \pm 0.42 \quad (+0.2\sigma)$	$D_M(0.15)$	$640.8 \pm 3.6 \quad (-0.2\sigma)$	$\chi_{BAO}^2$	$6.2 \pm 1.1 \quad (-0.0\sigma)$
$\Omega_\Lambda$	$0.6885 \pm 0.0057 \quad (+0.0\sigma)$	$H(0.38)$	$83.06 \pm 0.27 \quad (+0.3\sigma)$		

$$\bar{\chi}_{eff}^2 = 3549.18; \Delta \bar{\chi}_{eff}^2 = 1591.61; R - 1 = 0.00588$$



## 16 omegak

### 16.1 base\_omegak\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022613	$0.02255 \pm 0.00026$	$\sigma_8 \Omega_m^{0.5}$	0.5525	$0.552 \pm 0.033$	$100\theta_{s,eq}$	0.4557	$0.4554 \pm 0.0051$
$\Omega_c h^2$	0.11712	$0.1173 \pm 0.0023$	$\sigma_8 \Omega_m^{0.25}$	0.6506	$0.649^{+0.016}_{-0.014}$	$H(0.15)$	58.15	$58.4 \pm 4.0$
$100\theta_{MC}$	1.04130	$1.04126 \pm 0.00051$	$\sigma_8/h^{0.5}$	1.0629	$1.061^{+0.025}_{-0.022}$	$D_M(0.15)$	819	$820^{+55}_{-67}$
$\tau$	0.0493	$0.0485^{+0.0087}_{-0.0077}$	$r_{drag}h$	76.7	$77.1 \pm 6.4$	$H(0.38)$	69.65	$69.9^{+3.3}_{-3.8}$
$\Omega_K$	-0.0549	$-0.056^{+0.028}_{-0.018}$	$\langle d^2 \rangle^{1/2}$	2.678	$2.679 \pm 0.082$	$D_M(0.38)$	1902	$1902^{+120}_{-130}$
$\ln(10^{10} A_s)$	3.0275	$3.026^{+0.019}_{-0.016}$	$z_{re}$	6.91	$6.82^{+0.96}_{-0.75}$	$H(0.51)$	77.07	$77.3^{+3.1}_{-3.6}$
$n_s$	0.9744	$0.9720 \pm 0.0064$	$10^9 A_s$	2.0645	$2.061^{+0.038}_{-0.033}$	$D_M(0.51)$	2432	$2431^{+140}_{-160}$
$y_{cal}$	0.99993	$1.0000 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8706	$1.871 \pm 0.014$	$H(0.61)$	83.18	$83.5^{+3.0}_{-3.4}$
$A_{217}^{CIB}$	42.4	$45 \pm 7$	$D_{40}$	1197.5	$1203 \pm 17$	$D_M(0.61)$	2805	$2803^{+150}_{-170}$
$\xi^{tSZ \times CIB}$	0.999	$> 0.414$	$D_{220}$	5740.4	$5745 \pm 42$	$H(2.33)$	227.33	$227.6 \pm 3.0$
$A_{143}^{tSZ}$	6.81	$5.6^{+2.1}_{-1.8}$	$D_{810}$	2531.7	$2529 \pm 14$	$D_M(2.33)$	6471	$6463 \pm 220$
$A_{100}^{PS}$	236.1	$250 \pm 30$	$D_{1420}$	815.7	$813.7 \pm 5.1$	$f\sigma_8(0.15)$	0.5388	$0.537 \pm 0.024$
$A_{143}^{PS}$	48.6	$42 \pm 8$	$D_{2000}$	233.29	$232.3 \pm 2.0$	$\sigma_8(0.15)$	0.6909	$0.690^{+0.024}_{-0.020}$
$A_{143 \times 217}^{PS}$	56.2	$40 \pm 9$	$n_{s,0.002}$	0.9744	$0.9720 \pm 0.0064$	$f\sigma_8(0.38)$	0.5139	$0.512^{+0.011}_{-0.0080}$
$A_{217}^{PS}$	122.6	$114 \pm 10$	$Y_P$	0.245485	$0.24546 \pm 0.00011$	$\sigma_8(0.38)$	0.5949	$0.594^{+0.026}_{-0.022}$
$A^{kSZ}$	0.00	$< 3.46$	$Y_P^{BBN}$	0.246811	$0.24679 \pm 0.00011$	$f\sigma_8(0.51)$	0.4928	$0.4908^{+0.0071}_{-0.0062}$
$A_{100}^{dustTT}$	8.96	$9.0 \pm 1.8$	$10^5 D/H$	2.5421	$2.554 \pm 0.048$	$\sigma_8(0.51)$	0.5497	$0.550^{+0.026}_{-0.023}$
$A_{143}^{dustTT}$	10.62	$10.5 \pm 1.8$	Age/Gyr	15.64	$15.62 \pm 0.60$	$f\sigma_8(0.61)$	0.4753	$0.4735^{+0.0074}_{-0.0061}$
$A_{143 \times 217}^{dustTT}$	19.81	$18.0 \pm 3.2$	$z_*$	1089.364	$1089.46 \pm 0.48$	$\sigma_8(0.61)$	0.5188	$0.519^{+0.026}_{-0.023}$
$A_{217}^{dustTT}$	96.1	$93.7 \pm 7.3$	$r_*$	144.996	$145.00 \pm 0.50$	$f\sigma_8(2.33)$	0.2572	$0.257^{+0.014}_{-0.013}$
$c_{100}$	0.99971	$0.99963 \pm 0.00062$	$100\theta_*$	1.041455	$1.04143 \pm 0.00049$	$\sigma_8(2.33)$	0.2561	$0.257 \pm 0.016$
$c_{217}$	0.99815	$0.99818 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	13.9225	$13.923 \pm 0.046$	$f_{2000}^{143}$	25.17	$27 \pm 3$
$H_0$	51.94	$52.2 \pm 4.3$	$z_{drag}$	1060.276	$1060.16 \pm 0.52$	$f_{2000}^{143 \times 217}$	29.14	$29.9 \pm 2.3$
$\Omega_\Lambda$	0.535	$0.531^{+0.069}_{-0.049}$	$r_{drag}$	147.590	$147.61 \pm 0.49$	$f_{2000}^{217}$	103.80	$104.9 \pm 2.2$
$\Omega_m$	0.520	$0.526^{+0.067}_{-0.096}$	$k_D$	0.14052	$0.14045 \pm 0.00051$	$\chi_{small}^2$	395.52	$396.8 \pm 1.7$
$\Omega_m h^2$	0.14037	$0.1405 \pm 0.0021$	$100\theta_D$	0.160580	$0.16066 \pm 0.00029$	$\chi_{lowl}^2$	20.969	$21.39 \pm 0.70$
$\Omega_m h^3$	0.0729	$0.0734 \pm 0.0066$	$z_{eq}$	3339	$3342 \pm 51$	$\chi_{plik}^2$	752.3	$766.6 \pm 5.4$
$\sigma_8$	0.7660	$0.765^{+0.021}_{-0.017}$	$k_{eq}$	0.010191	$0.01020 \pm 0.00016$	$\chi_{prior}^2$	1.00	$7.1 \pm 3.5$
$S_8$	1.009	$1.008 \pm 0.061$	$100\theta_{eq}$	0.8257	$0.825 \pm 0.010$	$\chi_{CMB}^2$	1168.8	$1184.8 \pm 5.7$

Best-fit  $\chi_{eff}^2 = 1169.83$ ;  $\bar{\chi}_{eff}^2 = 1191.91$ ;  $R - 1 = 0.01634$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.52 commander\_dx12.v3.2\_29: 20.97 plik\_rd12\_HM.v22\_TT: 752.34



## 16.2 base\_omegak\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02255 \pm 0.00026$	$\sigma_8 \Omega_m^{0.5}$	$0.549 \pm 0.033$	$100\theta_{s,eq}$	$0.4555 \pm 0.0051$
$\Omega_c h^2$	$0.1173 \pm 0.0023$	$\sigma_8 \Omega_m^{0.25}$	$0.650 \pm 0.015$	$H(0.15)$	$59.0 \pm 3.9$
$100\theta_{MC}$	$1.04126 \pm 0.00051$	$\sigma_8/h^{0.5}$	$1.062^{+0.025}_{-0.022}$	$D_M(0.15)$	$811^{+54}_{-63}$
$\tau$	$0.0531^{+0.0033}_{-0.0069}$	$r_{drag}h$	$77.9 \pm 6.2$	$H(0.38)$	$70.4^{+3.2}_{-3.7}$
$\Omega_K$	$-0.053^{+0.026}_{-0.017}$	$\langle d^2 \rangle^{1/2}$	$2.678 \pm 0.081$	$D_M(0.38)$	$1885 \pm 120$
$\ln(10^{10} A_s)$	$3.0350^{+0.0096}_{-0.014}$	$z_{re}$	$< 7.52$	$H(0.51)$	$77.8^{+3.0}_{-3.5}$
$n_s$	$0.9722 \pm 0.0065$	$10^9 A_s$	$2.080^{+0.020}_{-0.029}$	$D_M(0.51)$	$2411 \pm 140$
$y_{cal}$	$1.0001 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.871 \pm 0.014$	$H(0.61)$	$83.9^{+2.9}_{-3.4}$
$A_{217}^{CIB}$	$45 \pm 7$	$D_{40}$	$1204 \pm 17$	$D_M(0.61)$	$2781 \pm 160$
$\xi^{tSZ \times CIB}$	$> 0.423$	$D_{220}$	$5744 \pm 42$	$H(2.33)$	$227.8 \pm 3.0$
$A_{143}^{tSZ}$	$5.6 \pm 1.9$	$D_{810}$	$2529 \pm 14$	$D_M(2.33)$	$6435 \pm 210$
$A_{100}^{PS}$	$250 \pm 30$	$D_{1420}$	$813.8 \pm 5.1$	$f\sigma_8(0.15)$	$0.536 \pm 0.024$
$A_{143}^{PS}$	$42 \pm 8$	$D_{2000}$	$232.4 \pm 2.0$	$\sigma_8(0.15)$	$0.696^{+0.022}_{-0.019}$
$A_{143 \times 217}^{PS}$	$40 \pm 9$	$n_{s,0.002}$	$0.9722 \pm 0.0065$	$f\sigma_8(0.38)$	$0.513^{+0.011}_{-0.0080}$
$A_{217}^{PS}$	$114.1 \pm 9.9$	$Y_P$	$0.24546 \pm 0.00011$	$\sigma_8(0.38)$	$0.600 \pm 0.023$
$A^{kSZ}$	$< 3.45$	$Y_P^{BBN}$	$0.24679 \pm 0.00011$	$f\sigma_8(0.51)$	$0.4926 \pm 0.0063$
$A_{100}^{dustTT}$	$9.0 \pm 1.8$	$10^5 D/H$	$2.554 \pm 0.048$	$\sigma_8(0.51)$	$0.555 \pm 0.023$
$A_{143}^{dustTT}$	$10.5 \pm 1.8$	Age/Gyr	$15.55 \pm 0.58$	$f\sigma_8(0.61)$	$0.4757 \pm 0.0061$
$A_{143 \times 217}^{dustTT}$	$18.0 \pm 3.2$	$z_*$	$1089.46 \pm 0.47$	$\sigma_8(0.61)$	$0.524 \pm 0.023$
$A_{217}^{dustTT}$	$93.7 \pm 7.3$	$r_*$	$145.01 \pm 0.50$	$f\sigma_8(2.33)$	$0.260 \pm 0.013$
$c_{100}$	$0.99963 \pm 0.00062$	$100\theta_*$	$1.04143 \pm 0.00050$	$\sigma_8(2.33)$	$0.260 \pm 0.015$
$c_{217}$	$0.99817 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	$13.924 \pm 0.046$	$f_{2000}^{143}$	$27 \pm 3$
$H_0$	$52.8 \pm 4.2$	$z_{drag}$	$1060.15 \pm 0.52$	$f_{2000}^{143 \times 217}$	$29.9 \pm 2.4$
$\Omega_\Lambda$	$0.540^{+0.064}_{-0.048}$	$r_{drag}$	$147.62 \pm 0.48$	$f_{2000}^{217}$	$104.9 \pm 2.2$
$\Omega_m$	$0.513^{+0.065}_{-0.089}$	$k_D$	$0.14044 \pm 0.00051$	$\chi_{simall}^2$	$396.4 \pm 1.3$
$\Omega_m h^2$	$0.1405 \pm 0.0021$	$100\theta_D$	$0.16066 \pm 0.00029$	$\chi_{lowl}^2$	$21.39 \pm 0.73$
$\Omega_m h^3$	$0.0742 \pm 0.0064$	$z_{eq}$	$3341 \pm 51$	$\chi_{plik}^2$	$766.6 \pm 5.5$
$\sigma_8$	$0.770^{+0.018}_{-0.016}$	$k_{eq}$	$0.01020 \pm 0.00016$	$\chi_{prior}^2$	$7.1 \pm 3.5$
$S_8$	$1.003 \pm 0.060$	$100\theta_{eq}$	$0.825 \pm 0.010$	$\chi_{CMB}^2$	$1184.4 \pm 5.7$

$\bar{\chi}_{eff}^2 = 1191.43$ ;  $R - 1 = 0.01578$



### 16.3 base\_omegak\_plikHM\_TTTEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022632	$0.02260 \pm 0.00017$ (+0.2 $\sigma$ )	$\Omega_m h^2$	0.14120	$0.1413 \pm 0.0014$ (+0.4 $\sigma$ )	$k_{\text{eq}}$	0.010251	$0.01026 \pm 0.00010$ (+0.4 $\sigma$ )
$\Omega_c h^2$	0.11792	$0.1181 \pm 0.0015$ (+0.3 $\sigma$ )	$\Omega_m h^3$	0.0764	$0.0769^{+0.0048}_{-0.0059}$ (+0.5 $\sigma$ )	$100\theta_{\text{eq}}$	0.8221	$0.8214 \pm 0.0065$ (−0.4 $\sigma$ )
$100\theta_{\text{MC}}$	1.041187	$1.04116 \pm 0.00033$ (−0.2 $\sigma$ )	$\sigma_8$	0.7750	$0.774 \pm 0.015$ (+0.5 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.45376	$0.4534 \pm 0.0033$ (−0.4 $\sigma$ )
$\tau$	0.0495	$0.0486 \pm 0.0082$ (+0.0 $\sigma$ )	$S_8$	0.9830	$0.981 \pm 0.049$ (−0.4 $\sigma$ )	$H(0.15)$	60.17	$60.4^{+3.0}_{-3.7}$ (+0.5 $\sigma$ )
$\Omega_K$	−0.0438	$−0.044^{+0.018}_{-0.015}$ (+0.5 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.5384	$0.537 \pm 0.027$ (−0.4 $\sigma$ )	$D_{\text{M}}(0.15)$	789.0	$788 \pm 48$ (−0.5 $\sigma$ )
$\ln(10^{10} A_s)$	3.0304	$3.028 \pm 0.017$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6460	$0.645^{+0.013}_{-0.011}$ (−0.3 $\sigma$ )	$H(0.38)$	71.48	$71.8^{+2.6}_{-3.3}$ (+0.5 $\sigma$ )
$n_s$	0.97235	$0.9706 \pm 0.0048$ (−0.2 $\sigma$ )	$\sigma_8/h^{0.5}$	1.0538	$1.051^{+0.021}_{-0.018}$ (−0.4 $\sigma$ )	$D_{\text{M}}(0.38)$	1841	$1838 \pm 99$ (−0.5 $\sigma$ )
$y_{\text{cal}}$	1.00012	$0.9999 \pm 0.0025$ (−0.0 $\sigma$ )	$r_{\text{drag}} h$	79.7	$80.1^{+4.8}_{-5.8}$ (+0.5 $\sigma$ )	$H(0.51)$	78.82	$79.1^{+2.5}_{-3.1}$ (+0.5 $\sigma$ )
$A_{217}^{\text{CIB}}$	42.1	$45 \pm 7$ (−0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.646	$2.643 \pm 0.065$ (−0.4 $\sigma$ )	$D_{\text{M}}(0.51)$	2358	$2355 \pm 120$ (−0.5 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.9999	$> 0.440$ (+0.1 $\sigma$ )	$z_{\text{re}}$	6.96	$6.86^{+0.90}_{-0.75}$ (+0.0 $\sigma$ )	$H(0.61)$	84.88	$85.2^{+2.4}_{-3.0}$ (+0.5 $\sigma$ )
$A_{143}^{\text{tSZ}}$	6.82	$5.8^{+2.0}_{-1.8}$ (+0.1 $\sigma$ )	$10^9 A_s$	2.0706	$2.066 \pm 0.036$ (+0.1 $\sigma$ )	$D_{\text{M}}(0.61)$	2723	$2719 \pm 130$ (−0.5 $\sigma$ )
$A_{100}^{\text{PS}}$	237.7	$248 \pm 30$ (−0.1 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8754	$1.875 \pm 0.012$ (+0.3 $\sigma$ )	$H(2.33)$	228.92	$229.2^{+2.0}_{-2.4}$ (+0.5 $\sigma$ )
$A_{143}^{\text{PS}}$	48.5	$41 \pm 8$ (−0.1 $\sigma$ )	$D_{40}$	1204.9	$1208 \pm 14$ (+0.3 $\sigma$ )	$D_{\text{M}}(2.33)$	6357	$6346^{+190}_{-170}$ (−0.5 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	56.4	$41 \pm 9$ (+0.1 $\sigma$ )	$D_{220}$	5747.6	$5748 \pm 39$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.5285	$0.527^{+0.022}_{-0.018}$ (−0.4 $\sigma$ )
$A_{217}^{\text{PS}}$	123.6	$115.5 \pm 9.7$ (+0.1 $\sigma$ )	$D_{810}$	2535.4	$2532 \pm 14$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7017	$0.701 \pm 0.018$ (+0.5 $\sigma$ )
$A^{\text{kSZ}}$	0.00	$< 3.05$ (−0.1 $\sigma$ )	$D_{1420}$	816.95	$815.2 \pm 4.7$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.5110	$0.5092^{+0.0098}_{-0.0068}$ (−0.3 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.77	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$D_{2000}$	233.33	$232.5 \pm 1.7$ (+0.1 $\sigma$ )	$\sigma_8(0.38)$	0.6069	$0.607 \pm 0.020$ (+0.5 $\sigma$ )
$A_{143}^{\text{dustTT}}$	10.68	$10.6 \pm 1.8$ (+0.1 $\sigma$ )	$n_{\text{s},0.002}$	0.97235	$0.9706 \pm 0.0048$ (−0.2 $\sigma$ )	$f\sigma_8(0.51)$	0.4928	$0.4912^{+0.0057}_{-0.0047}$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	19.69	$18.1 \pm 3.2$ (+0.0 $\sigma$ )	$Y_{\text{P}}$	0.245491	$0.245481^{+0.000059}_{-0.000066}$ (+0.2 $\sigma$ )	$\sigma_8(0.51)$	0.5619	$0.562 \pm 0.020$ (+0.5 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.6	$93.6 \pm 7.2$ (−0.0 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.246818	$0.246808^{+0.000059}_{-0.000066}$ (+0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.47707	$0.4757^{+0.0052}_{-0.0047}$ (+0.3 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1138	$0.114 \pm 0.038$	$10^5 \text{D}/\text{H}$	2.5387	$2.545 \pm 0.031$ (−0.2 $\sigma$ )	$\sigma_8(0.61)$	0.5309	$0.531 \pm 0.020$ (+0.5 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1349	$0.134 \pm 0.030$	Age/Gyr	15.331	$15.31 \pm 0.47$ (−0.5 $\sigma$ )	$f\sigma_8(2.33)$	0.2638	$0.264 \pm 0.011$ (+0.5 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.481	$0.479 \pm 0.085$	$z_*$	1089.411	$1089.47 \pm 0.31$ (+0.0 $\sigma$ )	$\sigma_8(2.33)$	0.2639	$0.264 \pm 0.013$ (+0.5 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.223	$0.223 \pm 0.053$	$r_*$	144.771	$144.75 \pm 0.32$ (−0.5 $\sigma$ )	$f_{2000}^{143}$	25.11	$26 \pm 3$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.661	$0.661 \pm 0.079$	$100\theta_*$	1.041338	$1.04132 \pm 0.00032$ (−0.2 $\sigma$ )	$f_{2000}^{143 \times 217}$	29.16	$29.6 \pm 2.1$ (−0.1 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.055	$2.06 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9024	$13.901 \pm 0.029$ (−0.5 $\sigma$ )	$f_{2000}^{217}$	103.94	$104.7 \pm 1.9$ (−0.1 $\sigma$ )
$c_{100}$	0.99977	$0.99970 \pm 0.00061$ (+0.1 $\sigma$ )	$z_{\text{drag}}$	1060.390	$1060.33 \pm 0.33$ (+0.3 $\sigma$ )	$\chi_{\text{small}}^2$	395.55	$396.7 \pm 1.6$ (−0.1 $\sigma$ )
$c_{217}$	0.99808	$0.99812 \pm 0.00062$ (−0.1 $\sigma$ )	$r_{\text{drag}}$	147.353	$147.35 \pm 0.30$ (−0.6 $\sigma$ )	$\chi_{\text{lowl}}^2$	21.16	$21.51 \pm 0.63$ (+0.2 $\sigma$ )
$H_0$	54.09	$54.4^{+3.3}_{-4.0}$ (+0.5 $\sigma$ )	$k_{\text{D}}$	0.140786	$0.14077 \pm 0.00031$ (+0.6 $\sigma$ )	$\chi_{\text{plik}}^2$	2336.5	$2353.2 \pm 5.7$ (+291.4 $\sigma$ )
$\Omega_{\Lambda}$	0.5611	$0.560^{+0.050}_{-0.043}$ (+0.5 $\sigma$ )	$100\theta_{\text{D}}$	0.160509	$0.16055 \pm 0.00019$ (−0.4 $\sigma$ )	$\chi_{\text{prior}}^2$	1.27	$11.2 \pm 4.4$ (+1.2 $\sigma$ )
$\Omega_{\text{m}}$	0.483	$0.485^{+0.058}_{-0.068}$ (−0.5 $\sigma$ )	$z_{\text{eq}}$	3358.8	$3362 \pm 33$ (+0.4 $\sigma$ )	$\chi_{\text{CMB}}^2$	2753.2	$2771.4 \pm 5.9$ (+277.9 $\sigma$ )

Best-fit  $\chi_{\text{eff}}^2 = 2754.51$ ;  $\Delta\chi_{\text{eff}}^2 = 1584.68$ ;  $\bar{\chi}_{\text{eff}}^2 = 2782.60$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1590.69$ ;  $R - 1 = 0.01257$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.55 ( $\Delta$  0.03) commander\_dx12\_v3.2.29: 21.16 ( $\Delta$  0.20) plik\_rd12\_HM\_v22b\_TTTEE: 2336.53



## 16.4 base\_omegak\_plikHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02260 \pm 0.00017 \quad (+0.2\sigma)$	$\Omega_{\text{m}}h^2$	$0.1413 \pm 0.0014 \quad (+0.4\sigma)$	$k_{\text{eq}}$	$0.01026 \pm 0.00010 \quad (+0.4\sigma)$
$\Omega_{\text{c}}h^2$	$0.1181 \pm 0.0015 \quad (+0.4\sigma)$	$\Omega_{\text{m}}h^3$	$0.0778^{+0.0046}_{-0.0060} \quad (+0.6\sigma)$	$100\theta_{\text{eq}}$	$0.8215 \pm 0.0065 \quad (-0.4\sigma)$
$100\theta_{\text{MC}}$	$1.04116 \pm 0.00033 \quad (-0.2\sigma)$	$\sigma_8$	$0.779 \pm 0.014 \quad (+0.5\sigma)$	$100\theta_{\text{s,eq}}$	$0.4535 \pm 0.0033 \quad (-0.4\sigma)$
$\tau$	$0.0528^{+0.0029}_{-0.0069} \quad (-0.0\sigma)$	$S_8$	$0.974 \pm 0.048 \quad (-0.5\sigma)$	$H(0.15)$	$61.1^{+2.9}_{-3.7} \quad (+0.5\sigma)$
$\Omega_K$	$-0.041^{+0.017}_{-0.015} \quad (+0.5\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.534 \pm 0.026 \quad (-0.5\sigma)$	$D_{\text{M}}(0.15)$	$779 \pm 46 \quad (-0.5\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.0365^{+0.0094}_{-0.014} \quad (+0.1\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.645^{+0.013}_{-0.011} \quad (-0.4\sigma)$	$H(0.38)$	$72.3^{+2.5}_{-3.3} \quad (+0.5\sigma)$
$n_{\text{s}}$	$0.9708 \pm 0.0048 \quad (-0.2\sigma)$	$\sigma_8/h^{0.5}$	$1.051^{+0.021}_{-0.018} \quad (-0.4\sigma)$	$D_{\text{M}}(0.38)$	$1819 \pm 94 \quad (-0.5\sigma)$
$y_{\text{cal}}$	$0.99996 \pm 0.0025 \quad (-0.0\sigma)$	$r_{\text{drag}}h$	$81.1^{+4.6}_{-5.8} \quad (+0.5\sigma)$	$H(0.51)$	$79.6^{+2.4}_{-3.2} \quad (+0.6\sigma)$
$A_{217}^{\text{CIB}}$	$45 \pm 7 \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.640 \pm 0.064 \quad (-0.5\sigma)$	$D_{\text{M}}(0.51)$	$2332 \pm 110 \quad (-0.5\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	$> 0.441 \quad (+0.0\sigma)$	$z_{\text{re}}$	$< 7.52 \quad (-0.0\sigma)$	$H(0.61)$	$85.6^{+2.3}_{-3.0} \quad (+0.6\sigma)$
$A_{143}^{\text{tSZ}}$	$5.8^{+2.0}_{-1.8} \quad (+0.1\sigma)$	$10^9 A_{\text{s}}$	$2.083^{+0.019}_{-0.030} \quad (+0.1\sigma)$	$D_{\text{M}}(0.61)$	$2694 \pm 120 \quad (-0.5\sigma)$
$A_{100}^{\text{PS}}$	$248 \pm 30 \quad (-0.1\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.874 \pm 0.012 \quad (+0.3\sigma)$	$H(2.33)$	$229.5^{+2.0}_{-2.5} \quad (+0.6\sigma)$
$A_{143}^{\text{PS}}$	$41 \pm 8 \quad (-0.1\sigma)$	$D_{40}$	$1209 \pm 14 \quad (+0.3\sigma)$	$D_{\text{M}}(2.33)$	$6314^{+190}_{-160} \quad (-0.6\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$41 \pm 9 \quad (+0.1\sigma)$	$D_{220}$	$5748 \pm 39 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.525^{+0.022}_{-0.019} \quad (-0.5\sigma)$
$A_{217}^{\text{PS}}$	$115.5 \pm 9.7 \quad (+0.1\sigma)$	$D_{810}$	$2532 \pm 14 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.707 \pm 0.016 \quad (+0.5\sigma)$
$A^{\text{kSZ}}$	$< 2.99 \quad (-0.1\sigma)$	$D_{1420}$	$815.3 \pm 4.8 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.509^{+0.010}_{-0.0071} \quad (-0.3\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$D_{2000}$	$232.6 \pm 1.7 \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.612 \pm 0.018 \quad (+0.5\sigma)$
$A_{143}^{\text{dustTT}}$	$10.6 \pm 1.8 \quad (+0.0\sigma)$	$n_{\text{s},0.002}$	$0.9708 \pm 0.0048 \quad (-0.2\sigma)$	$f\sigma_8(0.51)$	$0.4924^{+0.0055}_{-0.0044} \quad (-0.0\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.1 \pm 3.2 \quad (+0.0\sigma)$	$Y_{\text{P}}$	$0.245482 \pm 0.000066 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.567 \pm 0.019 \quad (+0.5\sigma)$
$A_{217}^{\text{dustTT}}$	$93.5 \pm 7.2 \quad (-0.0\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246809 \pm 0.000066 \quad (+0.2\sigma)$	$f\sigma_8(0.61)$	$0.4774 \pm 0.0043 \quad (+0.3\sigma)$
$A_{100}^{\text{dustTE}}$	$0.113 \pm 0.038$	$10^5 \text{D/H}$	$2.544 \pm 0.031 \quad (-0.2\sigma)$	$\sigma_8(0.61)$	$0.536 \pm 0.019 \quad (+0.5\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134 \pm 0.029$	Age/Gyr	$15.22^{+0.48}_{-0.43} \quad (-0.6\sigma)$	$f\sigma_8(2.33)$	$0.267 \pm 0.010 \quad (+0.5\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.479 \pm 0.085$	$z_*$	$1089.46 \pm 0.31 \quad (+0.0\sigma)$	$\sigma_8(2.33)$	$0.268^{+0.011}_{-0.013} \quad (+0.5\sigma)$
$A_{143}^{\text{dustTE}}$	$0.223 \pm 0.053$	$r_*$	$144.76 \pm 0.32 \quad (-0.5\sigma)$	$f_{2000}^{143}$	$26 \pm 3 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.660 \pm 0.079$	$100\theta_*$	$1.04132 \pm 0.00032 \quad (-0.2\sigma)$	$f_{2000}^{143 \times 217}$	$29.6 \pm 2.1 \quad (-0.1\sigma)$
$A_{217}^{\text{dustTE}}$	$2.06 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.901 \pm 0.029 \quad (-0.5\sigma)$	$f_{2000}^{217}$	$104.7 \pm 1.9 \quad (-0.1\sigma)$
$c_{100}$	$0.99970 \pm 0.00061 \quad (+0.1\sigma)$	$z_{\text{drag}}$	$1060.33 \pm 0.33 \quad (+0.3\sigma)$	$\chi_{\text{small}}^2$	$396.3 \pm 1.3 \quad (-0.0\sigma)$
$c_{217}$	$0.99812 \pm 0.00062 \quad (-0.1\sigma)$	$r_{\text{drag}}$	$147.35 \pm 0.30 \quad (-0.6\sigma)$	$\chi_{\text{lowl}}^2$	$21.53 \pm 0.67 \quad (+0.2\sigma)$
$H_0$	$55.1^{+3.1}_{-3.9} \quad (+0.5\sigma)$	$k_{\text{D}}$	$0.14077 \pm 0.00031 \quad (+0.6\sigma)$	$\chi_{\text{plik}}^2$	$2353.2 \pm 5.7 \quad (+289.4\sigma)$
$\Omega_{\Lambda}$	$0.569^{+0.046}_{-0.041} \quad (+0.5\sigma)$	$100\theta_{\text{D}}$	$0.16055 \pm 0.00019 \quad (-0.4\sigma)$	$\chi_{\text{prior}}^2$	$11.2 \pm 4.4 \quad (+1.2\sigma)$
$\Omega_{\text{m}}$	$0.472^{+0.056}_{-0.063} \quad (-0.5\sigma)$	$z_{\text{eq}}$	$3361 \pm 33 \quad (+0.4\sigma)$	$\chi_{\text{CMB}}^2$	$2771.0 \pm 5.8 \quad (+279.9\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 2782.22; \Delta\bar{\chi}_{\text{eff}}^2 = 1590.79; R - 1 = 0.01621$$



# 16.5 base\_omegak\_CamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}} h^2$	0.022580	$0.02258 \pm 0.00028$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	0.5546	$0.554 \pm 0.035$	$H(0.15)$	58.09	$58.2^{+3.7}_{-4.4}$
$\Omega_{\mathrm{c}} h^2$	0.11749	$0.1173 \pm 0.0023$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	0.6521	$0.650^{+0.017}_{-0.014}$	$D_{\mathrm{M}}(0.15)$	820	$823^{+59}_{-69}$
$100\theta_{\mathrm{MC}}$	1.04131	$1.04135 \pm 0.00052$	$\sigma_8/h^{0.5}$	1.0646	$1.062^{+0.027}_{-0.022}$	$H(0.38)$	69.62	$69.8^{+3.3}_{-4.0}$
$\tau$	0.0492	$0.0491 \pm 0.0082$	$r_{\mathrm{drag}} h$	76.5	$76.7^{+6.0}_{-6.9}$	$D_{\mathrm{M}}(0.38)$	1904	$1909 \pm 130$
$\Omega_K$	-0.0550	$-0.058^{+0.029}_{-0.019}$	$\langle d^2 \rangle^{1/2}$	2.682	$2.682 \pm 0.084$	$H(0.51)$	77.06	$77.2^{+3.1}_{-3.7}$
$\ln(10^{10} A_{\mathrm{s}})$	3.0265	$3.026 \pm 0.017$	$z_{\mathrm{re}}$	6.91	$6.87^{+0.89}_{-0.76}$	$D_{\mathrm{M}}(0.51)$	2435	$2439 \pm 150$
$n_{\mathrm{s}}$	0.9738	$0.9732 \pm 0.0066$	$10^9 A_{\mathrm{s}}$	2.0625	$2.062 \pm 0.035$	$H(0.61)$	83.19	$83.3^{+3.0}_{-3.6}$
$y_{\mathrm{cal}}$	0.99980	$1.0000 \pm 0.0025$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8692	$1.869 \pm 0.014$	$D_{\mathrm{M}}(0.61)$	2807	$2811 \pm 170$
$A_{100}^{\mathrm{PS}}$	219.7	$229 \pm 30$	$D_{40}$	1196.9	$1199 \pm 17$	$H(2.33)$	227.59	$227.5 \pm 3.0$
$A_{143}^{\mathrm{PS}}$	39.7	$33 \pm 9$	$D_{220}$	5727.5	$5735 \pm 43$	$D_{\mathrm{M}}(2.33)$	6470	$6473 \pm 230$
$A_{217}^{\mathrm{PS}}$	107.4	$104^{+10}_{-10}$	$D_{810}$	2528.2	$2527 \pm 14$	$f\sigma_8(0.15)$	0.5405	$0.539^{+0.027}_{-0.023}$
$A_{217}^{\mathrm{CIB}}$	38.2	$37^{+7}_{-8}$	$D_{1420}$	814.4	$813.7 \pm 5.1$	$\sigma_8(0.15)$	0.6912	$0.689^{+0.024}_{-0.022}$
$A_{143}^{\mathrm{tSZ}}$	6.27	$4.1^{+2.0}_{-2.3}$	$D_{2000}$	232.89	$232.5 \pm 2.1$	$f\sigma_8(0.38)$	0.5149	$0.512^{+0.012}_{-0.0076}$
$r_{143 \times 217}^{\mathrm{PS}}$	0.742	$0.68 \pm 0.14$	$n_{\mathrm{s},0.002}$	0.9738	$0.9732 \pm 0.0066$	$\sigma_8(0.38)$	0.5950	$0.594 \pm 0.025$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.690	$0.49 \pm 0.26$	$Y_{\mathrm{P}}$	0.245473	$0.245473^{+0.000099}_{-0.00011}$	$f\sigma_8(0.51)$	0.4935	$0.4911^{+0.0071}_{-0.0059}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.65	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246800	$0.246800^{+0.000099}_{-0.00011}$	$\sigma_8(0.51)$	0.5497	$0.549 \pm 0.026$
$A^{\mathrm{kSZ}}$	0.01	$< 5.28$	$10^5 \mathrm{D}/\mathrm{H}$	2.5480	$2.549 \pm 0.050$	$f\sigma_8(0.61)$	0.4758	$0.4735^{+0.0073}_{-0.0061}$
$A_{100}^{\mathrm{dust}}$	0.999	$1.01 \pm 0.19$	$\mathrm{Age}/\mathrm{Gyr}$	15.64	$15.65 \pm 0.62$	$\sigma_8(0.61)$	0.5188	$0.518 \pm 0.025$
$A_{143}^{\mathrm{dust}}$	0.955	$0.95 \pm 0.17$	$z_*$	1089.438	$1089.43 \pm 0.49$	$f\sigma_8(2.33)$	0.2571	$0.257 \pm 0.014$
$A_{217}^{\mathrm{dust}}$	0.980	$0.98 \pm 0.10$	$r_*$	144.923	$144.98 \pm 0.49$	$\sigma_8(2.33)$	0.2560	$0.256 \pm 0.016$
$A_{143 \times 217}^{\mathrm{dust}}$	1.019	$1.02 \pm 0.16$	$100\theta_*$	1.04147	$1.04151 \pm 0.00050$	$f_{2000}^{143}$	25.54	$26 \pm 3$
$c_{100}$	0.99778	$0.9976 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.9152	$13.920 \pm 0.045$	$f_{2000}^{217}$	103.47	$104.1 \pm 2.3$
$c_{217}$	1.00072	$1.0008 \pm 0.0016$	$z_{\mathrm{drag}}$	1060.24	$1060.21 \pm 0.55$	$f_{2000}^{143 \times 217}$	28.69	$29.0 \pm 2.5$
$H_0$	51.85	$52.0^{+4.1}_{-4.7}$	$r_{\mathrm{drag}}$	147.526	$147.58 \pm 0.48$	$\chi_{\mathrm{small}}^2$	395.53	$396.7 \pm 1.5$
$\Omega_{\Lambda}$	0.532	$0.527^{+0.073}_{-0.053}$	$k_{\mathrm{D}}$	0.14056	$0.14050^{+0.00053}_{-0.00048}$	$\chi_{\mathrm{lowl}}^2$	20.976	$21.28 \pm 0.63$
$\Omega_{\mathrm{m}}$	0.523	$0.531^{+0.072}_{-0.10}$	$100\theta_{\mathrm{D}}$	0.160614	$0.16064 \pm 0.00030$	$\chi_{\mathrm{CamSpec}}^2$	7045.3	$7059.5 \pm 5.3$
$\Omega_{\mathrm{m}} h^2$	0.14072	$0.1405 \pm 0.0021$	$z_{\mathrm{eq}}$	3347	$3343 \pm 50$	$\chi_{\mathrm{prior}}^2$	1.47	$7.1 \pm 3.3$
$\Omega_{\mathrm{m}} h^3$	0.0730	$0.0731^{+0.0061}_{-0.0071}$	$k_{\mathrm{eq}}$	0.010216	$0.01020 \pm 0.00015$	$\chi_{\mathrm{CMB}}^2$	7461.8	$7477.5 \pm 5.5$
$\sigma_8$	0.7666	$0.765^{+0.021}_{-0.019}$	$100\theta_{\mathrm{eq}}$	0.8241	$0.825 \pm 0.010$			
$S_8$	1.013	$1.012 \pm 0.063$	$100\theta_{\mathrm{s,eq}}$	0.4549	$0.4554 \pm 0.0051$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 7463.28$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 7484.59$ ;  $R - 1 = 0.03021$

$\chi_{\mathrm{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.53 commander\_dx12\_v3.2\_29: 20.98 CamSpec like\_10.7HM: 7045.30



## 16.6 base\_omegak\_CamSpecHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02258 \pm 0.00027$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.551 \pm 0.034$	$H(0.15)$	$58.8^{+3.7}_{-4.3}$
$\Omega_{\mathrm{c}}h^2$	$0.1173 \pm 0.0022$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.651^{+0.016}_{-0.014}$	$D_{\mathrm{M}}(0.15)$	$814^{+57}_{-65}$
$100\theta_{\mathrm{MC}}$	$1.04137 \pm 0.00052$	$\sigma_8/h^{0.5}$	$1.063^{+0.026}_{-0.022}$	$H(0.38)$	$70.2^{+3.2}_{-3.8}$
$\tau$	$0.0532^{+0.0035}_{-0.0069}$	$r_{\mathrm{drag}}h$	$77.6^{+5.8}_{-6.7}$	$D_{\mathrm{M}}(0.38)$	$1891 \pm 120$
$\Omega_K$	$-0.054^{+0.027}_{-0.018}$	$\langle d^2 \rangle^{1/2}$	$2.679 \pm 0.082$	$H(0.51)$	$77.6^{+3.1}_{-3.6}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.034^{+0.010}_{-0.014}$	$z_{\mathrm{re}}$	$< 7.54$	$D_{\mathrm{M}}(0.51)$	$2418 \pm 150$
$n_{\mathrm{s}}$	$0.9734 \pm 0.0065$	$10^9 A_{\mathrm{s}}$	$2.078^{+0.020}_{-0.029}$	$H(0.61)$	$83.7^{+2.9}_{-3.5}$
$y_{\mathrm{cal}}$	$1.0000 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.868 \pm 0.014$	$D_{\mathrm{M}}(0.61)$	$2788 \pm 160$
$A_{100}^{\mathrm{PS}}$	$229 \pm 30$	$D_{40}$	$1200 \pm 17$	$H(2.33)$	$227.7^{+2.8}_{-3.1}$
$A_{143}^{\mathrm{PS}}$	$33 \pm 9$	$D_{220}$	$5734 \pm 43$	$D_{\mathrm{M}}(2.33)$	$6444 \pm 220$
$A_{217}^{\mathrm{PS}}$	$104 \pm 10$	$D_{810}$	$2527 \pm 14$	$f\sigma_8(0.15)$	$0.537^{+0.027}_{-0.023}$
$A_{217}^{\mathrm{CIB}}$	$37^{+7}_{-8}$	$D_{1420}$	$813.8 \pm 5.1$	$\sigma_8(0.15)$	$0.695^{+0.023}_{-0.020}$
$A_{143}^{\mathrm{tSZ}}$	$4.1^{+1.9}_{-2.3}$	$D_{2000}$	$232.5 \pm 2.1$	$f\sigma_8(0.38)$	$0.513^{+0.012}_{-0.0076}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.68 \pm 0.14$	$n_{\mathrm{s},0.002}$	$0.9734 \pm 0.0065$	$\sigma_8(0.38)$	$0.599 \pm 0.024$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.49 \pm 0.27$	$Y_{\mathrm{P}}$	$0.245475^{+0.000096}_{-0.00011}$	$f\sigma_8(0.51)$	$0.4926^{+0.0065}_{-0.0056}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246802^{+0.000097}_{-0.00011}$	$\sigma_8(0.51)$	$0.554 \pm 0.024$
$A^{\mathrm{kSZ}}$	$< 5.32$	$10^5 \mathrm{D}/\mathrm{H}$	$2.548 \pm 0.049$	$f\sigma_8(0.61)$	$0.4756 \pm 0.0061$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$\mathrm{Age}/\mathrm{Gyr}$	$15.57 \pm 0.59$	$\sigma_8(0.61)$	$0.523 \pm 0.024$
$A_{143}^{\mathrm{dust}}$	$0.95 \pm 0.17$	$z_*$	$1089.42 \pm 0.48$	$f\sigma_8(2.33)$	$0.259 \pm 0.013$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$r_*$	$144.99 \pm 0.48$	$\sigma_8(2.33)$	$0.259 \pm 0.015$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16$	$100\theta_*$	$1.04154 \pm 0.00050$	$f_{2000}^{143}$	$26 \pm 3$
$c_{100}$	$0.9976 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.921 \pm 0.044$	$f_{2000}^{217}$	$104.1 \pm 2.3$
$c_{217}$	$1.0008 \pm 0.0015$	$z_{\mathrm{drag}}$	$1060.22 \pm 0.54$	$f_{2000}^{143 \times 217}$	$29.0 \pm 2.5$
$H_0$	$52.6^{+4.0}_{-4.6}$	$r_{\mathrm{drag}}$	$147.59 \pm 0.47$	$\chi_{\mathrm{simall}}^2$	$396.4 \pm 1.2$
$\Omega_{\Lambda}$	$0.537^{+0.066}_{-0.051}$	$k_{\mathrm{D}}$	$0.14049 \pm 0.00051$	$\chi_{\mathrm{lowl}}^2$	$21.27 \pm 0.65$
$\Omega_{\mathrm{m}}$	$0.517^{+0.069}_{-0.093}$	$100\theta_{\mathrm{D}}$	$0.16064 \pm 0.00029$	$\chi_{\mathrm{CamSpec}}^2$	$7059.4 \pm 5.3$
$\Omega_{\mathrm{m}}h^2$	$0.1405 \pm 0.0021$	$z_{\mathrm{eq}}$	$3342 \pm 50$	$\chi_{\mathrm{prior}}^2$	$7.1 \pm 3.3$
$\Omega_{\mathrm{m}}h^3$	$0.0739^{+0.0060}_{-0.0069}$	$k_{\mathrm{eq}}$	$0.01020 \pm 0.00015$	$\chi_{\mathrm{CMB}}^2$	$7477.1 \pm 5.4$
$\sigma_8$	$0.769 \pm 0.018$	$100\theta_{\mathrm{eq}}$	$0.8254 \pm 0.0098$		
$S_8$	$1.006 \pm 0.061$	$100\theta_{\mathrm{s,eq}}$	$0.4555 \pm 0.0050$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7484.13$ ;  $R - 1 = 0.03650$



## 16.7 base\_omegak\_CamSpecHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022535	$0.02254 \pm 0.00018$ $(-0.1\sigma)$	$\sigma_8$	0.7817	$0.777^{+0.016}_{-0.014}$ $(+0.6\sigma)$	$100\theta_{\text{eq}}$	0.8226	$0.8223 \pm 0.0065$ $(-0.3\sigma)$
$\Omega_c h^2$	0.11783	$0.1179 \pm 0.0015$ $(+0.3\sigma)$	$S_8$	0.943	$0.953 \pm 0.053$ $(-0.9\sigma)$	$100\theta_{\text{s,eq}}$	0.45409	$0.4540 \pm 0.0033$ $(-0.3\sigma)$
$100\theta_{\text{MC}}$	1.041095	$1.04111 \pm 0.00032$ $(-0.5\sigma)$	$\sigma_8 \Omega_m^{0.5}$	0.5163	$0.522 \pm 0.029$ $(-0.9\sigma)$	$H(0.15)$	62.72	$62.1^{+3.4}_{-4.1}$ $(+0.9\sigma)$
$\tau$	0.0509	$0.0481^{+0.0084}_{-0.0069}$ $(-0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	0.6353	$0.637^{+0.015}_{-0.013}$ $(-0.9\sigma)$	$D_{\text{M}}(0.15)$	754	$766 \pm 51$ $(-0.9\sigma)$
$\Omega_K$	-0.0320	$-0.037^{+0.019}_{-0.014}$ $(+0.8\sigma)$	$\sigma_8/h^{0.5}$	1.0367	$1.039^{+0.024}_{-0.020}$ $(-1.0\sigma)$	$H(0.38)$	73.73	$73.2^{+3.0}_{-3.7}$ $(+0.9\sigma)$
$\ln(10^{10} A_s)$	3.0304	$3.025^{+0.018}_{-0.015}$ $(-0.0\sigma)$	$r_{\text{drag}} h$	83.8	$82.8^{+5.4}_{-6.5}$ $(+0.9\sigma)$	$D_{\text{M}}(0.38)$	1769	$1793 \pm 110$ $(-0.9\sigma)$
$n_s$	0.97187	$0.9713 \pm 0.0048$ $(-0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	2.591	$2.602 \pm 0.071$ $(-0.9\sigma)$	$H(0.51)$	80.91	$80.4^{+2.8}_{-3.5}$ $(+0.9\sigma)$
$y_{\text{cal}}$	0.99975	$1.0000 \pm 0.0025$ $(+0.0\sigma)$	$z_{\text{re}}$	7.15	$6.83^{+0.94}_{-0.70}$ $(-0.1\sigma)$	$D_{\text{M}}(0.51)$	2272	$2301 \pm 130$ $(-0.9\sigma)$
$A_{100}^{\text{PS}}$	225.5	$230 \pm 25$ $(+0.0\sigma)$	$10^9 A_s$	2.0705	$2.060^{+0.036}_{-0.032}$ $(-0.0\sigma)$	$H(0.61)$	86.86	$86.4^{+2.7}_{-3.4}$ $(+0.9\sigma)$
$A_{143}^{\text{PS}}$	42.6	$34 \pm 8$ $(+0.2\sigma)$	$10^9 A_s e^{-2\tau}$	1.8700	$1.871 \pm 0.012$ $(+0.2\sigma)$	$D_{\text{M}}(0.61)$	2629	$2660 \pm 140$ $(-0.9\sigma)$
$A_{217}^{\text{PS}}$	106.3	$104 \pm 10$ $(+0.0\sigma)$	$D_{40}$	1204.1	$1205 \pm 14$ $(+0.3\sigma)$	$H(2.33)$	229.98	$229.8^{+2.2}_{-2.6}$ $(+0.7\sigma)$
$A_{217}^{\text{CIB}}$	38.8	$37^{+7}_{-8}$ $(+0.1\sigma)$	$D_{220}$	5726.8	$5733 \pm 39$ $(-0.0\sigma)$	$D_{\text{M}}(2.33)$	6232	$6269 \pm 190$ $(-0.9\sigma)$
$A_{143}^{\text{tSZ}}$	5.71	$4.1^{+2.0}_{-2.3}$ $(+0.0\sigma)$	$D_{810}$	2529.7	$2529 \pm 14$ $(+0.2\sigma)$	$f\sigma_8(0.15)$	0.5111	$0.515^{+0.024}_{-0.021}$ $(-1.0\sigma)$
$r_{143 \times 217}^{\text{PS}}$	0.718	$0.68 \pm 0.14$ $(-0.0\sigma)$	$D_{1420}$	814.87	$814.6 \pm 4.8$ $(+0.2\sigma)$	$\sigma_8(0.15)$	0.7114	$0.706^{+0.019}_{-0.017}$ $(+0.7\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	0.745	$0.52^{+0.34}_{-0.27}$ $(+0.1\sigma)$	$D_{2000}$	232.05	$231.9 \pm 1.7$ $(-0.2\sigma)$	$f\sigma_8(0.38)$	0.5031	$0.503^{+0.012}_{-0.0083}$ $(-0.9\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.73	—	$n_{\text{s},0.002}$	0.97187	$0.9713 \pm 0.0048$ $(-0.3\sigma)$	$\sigma_8(0.38)$	0.6188	$0.613 \pm 0.021$ $(+0.8\sigma)$
$A^{\text{kSZ}}$	0.86	$< 5.22$ $(-0.0\sigma)$	$Y_{\text{P}}$	0.245457	$0.245457 \pm 0.000069$ $(-0.1\sigma)$	$f\sigma_8(0.51)$	0.4890	$0.4878^{+0.0066}_{-0.0054}$ $(-0.5\sigma)$
$A_{100}^{\text{dust}}$	1.005	$1.02 \pm 0.20$ $(+0.0\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	0.246784	$0.246784 \pm 0.000069$ $(-0.1\sigma)$	$\sigma_8(0.51)$	0.5743	$0.569 \pm 0.021$ $(+0.8\sigma)$
$A_{143}^{\text{dust}}$	0.959	$0.95 \pm 0.17$ $(-0.0\sigma)$	$10^5 \text{D}/\text{H}$	2.5558	$2.556 \pm 0.032$ $(+0.1\sigma)$	$f\sigma_8(0.61)$	0.47572	$0.4739 \pm 0.0052$ $(+0.0\sigma)$
$A_{217}^{\text{dust}}$	0.981	$0.98 \pm 0.10$ $(-0.1\sigma)$	Age/Gyr	15.00	$15.10 \pm 0.51$ $(-0.9\sigma)$	$\sigma_8(0.61)$	0.5435	$0.538 \pm 0.021$ $(+0.8\sigma)$
$A_{143 \times 217}^{\text{dust}}$	1.002	$1.01 \pm 0.16$ $(-0.1\sigma)$	$z_*$	1089.526	$1089.53 \pm 0.32$ $(+0.2\sigma)$	$f\sigma_8(2.33)$	0.2710	$0.268 \pm 0.012$ $(+0.8\sigma)$
$c_{100}$	0.99779	$0.9976 \pm 0.0010$ $(-0.0\sigma)$	$r_*$	144.869	$144.85 \pm 0.33$ $(-0.3\sigma)$	$\sigma_8(2.33)$	0.2727	$0.269 \pm 0.014$ $(+0.8\sigma)$
$c_{217}$	1.00089	$1.0008 \pm 0.0016$ $(+0.0\sigma)$	$100\theta_*$	1.041266	$1.04127 \pm 0.00032$ $(-0.5\sigma)$	$f_{2000}^{143}$	26.87	$27 \pm 3$ $(+0.2\sigma)$
$c_{TE}$	0.9927	$0.9923 \pm 0.0051$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9128	$13.911 \pm 0.030$ $(-0.2\sigma)$	$f_{2000}^{217}$	104.33	$104.6 \pm 2.1$ $(+0.2\sigma)$
$c_{EE}$	0.98993	$0.9897 \pm 0.0049$	$z_{\text{drag}}$	1060.162	$1060.17 \pm 0.36$ $(-0.1\sigma)$	$f_{2000}^{143 \times 217}$	29.52	$29.6 \pm 2.2$ $(+0.2\sigma)$
$H_0$	56.85	$56.1^{+3.7}_{-4.4}$ $(+0.9\sigma)$	$r_{\text{drag}}$	147.485	$147.47 \pm 0.32$ $(-0.2\sigma)$	$\chi_{\text{simall}}^2$	395.63	$396.7 \pm 1.7$ $(+0.0\sigma)$
$\Omega_{\Lambda}$	0.5958	$0.582^{+0.052}_{-0.042}$ $(+0.9\sigma)$	$k_{\text{D}}$	0.140575	$0.14059 \pm 0.00035$ $(+0.2\sigma)$	$\chi_{\text{lowl}}^2$	21.16	$21.40 \pm 0.64$ $(+0.2\sigma)$
$\Omega_{\text{m}}$	0.436	$0.455^{+0.056}_{-0.071}$ $(-0.9\sigma)$	$100\theta_{\text{D}}$	0.160629	$0.16063 \pm 0.00021$ $(-0.0\sigma)$	$\chi_{\text{CamSpec}}^2$	11495.3	$11511.3 \pm 5.5$ $(+840.6\sigma)$
$\Omega_{\text{m}} h^2$	0.14101	$0.1411 \pm 0.0014$ $(+0.3\sigma)$	$z_{\text{eq}}$	3354.2	$3356 \pm 33$ $(+0.3\sigma)$	$\chi_{\text{prior}}^2$	1.90	$7.7 \pm 3.3$ $(+0.2\sigma)$
$\Omega_{\text{m}} h^3$	0.0802	$0.0792^{+0.0055}_{-0.0065}$ $(+0.9\sigma)$	$k_{\text{eq}}$	0.010238	$0.01024 \pm 0.00010$ $(+0.3\sigma)$	$\chi_{\text{CMB}}^2$	11912.1	$11929.5 \pm 5.8$ $(+804.8\sigma)$

Best-fit  $\chi_{\text{eff}}^2 = 11914.02$ ;  $\Delta\chi_{\text{eff}}^2 = 4450.74$ ;  $\bar{\chi}_{\text{eff}}^2 = 11937.16$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4452.57$ ;  $R - 1 = 0.03285$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.63 ( $\Delta$  0.10) commander\_dx12\_v3.2.29: 21.16 ( $\Delta$  0.19) CamSpec like\_10.7HM.1400\_unified: 11495.33



16.8 base\_omegak\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02253 \pm 0.00018 \quad (-0.2\sigma)$	$\sigma_8$	$0.782 \pm 0.013 \quad (+0.7\sigma)$	$100\theta_{\text{eq}}$	$0.8225 \pm 0.0065 \quad (-0.3\sigma)$
$\Omega_c h^2$	$0.1179 \pm 0.0015 \quad (+0.3\sigma)$	$S_8$	$0.946 \pm 0.051 \quad (-1.0\sigma)$	$100\theta_{\text{s,eq}}$	$0.4540 \pm 0.0033 \quad (-0.3\sigma)$
$100\theta_{\text{MC}}$	$1.04111 \pm 0.00032 \quad (-0.5\sigma)$	$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.518 \pm 0.028 \quad (-1.0\sigma)$	$H(0.15)$	$62.8^{+3.3}_{-4.1} \quad (+1.0\sigma)$
$\tau$	$0.0524^{+0.0031}_{-0.0064} \quad (-0.1\sigma)$	$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.636^{+0.014}_{-0.013} \quad (-0.9\sigma)$	$D_{\text{M}}(0.15)$	$757 \pm 48 \quad (-0.9\sigma)$
$\Omega_K$	$-0.034^{+0.018}_{-0.014} \quad (+0.9\sigma)$	$\sigma_8/h^{0.5}$	$1.038^{+0.024}_{-0.021} \quad (-1.0\sigma)$	$H(0.38)$	$73.8^{+2.9}_{-3.7} \quad (+1.0\sigma)$
$\ln(10^{10} A_{\text{s}})$	$3.0337^{+0.0093}_{-0.014} \quad (-0.0\sigma)$	$r_{\text{drag}} h$	$83.9^{+5.2}_{-6.3} \quad (+1.0\sigma)$	$D_{\text{M}}(0.38)$	$1773 \pm 100 \quad (-0.9\sigma)$
$n_{\text{s}}$	$0.9715 \pm 0.0047 \quad (-0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.598 \pm 0.070 \quad (-1.0\sigma)$	$H(0.51)$	$81.0^{+2.7}_{-3.5} \quad (+1.0\sigma)$
$y_{\text{cal}}$	$1.0000 \pm 0.0025 \quad (-0.0\sigma)$	$z_{\text{re}}$	$7.30^{+0.21}_{-0.79} \quad (-0.0\sigma)$	$D_{\text{M}}(0.51)$	$2277 \pm 120 \quad (-0.9\sigma)$
$A_{100}^{\text{PS}}$	$230 \pm 25 \quad (+0.0\sigma)$	$10^9 A_{\text{s}}$	$2.077^{+0.019}_{-0.028} \quad (-0.0\sigma)$	$H(0.61)$	$86.9^{+2.6}_{-3.4} \quad (+1.0\sigma)$
$A_{143}^{\text{PS}}$	$34 \pm 8 \quad (+0.2\sigma)$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.871 \pm 0.012 \quad (+0.2\sigma)$	$D_{\text{M}}(0.61)$	$2634 \pm 130 \quad (-0.9\sigma)$
$A_{217}^{\text{PS}}$	$104 \pm 10 \quad (+0.0\sigma)$	$D_{40}$	$1206 \pm 14 \quad (+0.3\sigma)$	$H(2.33)$	$230.1^{+2.2}_{-2.6} \quad (+0.8\sigma)$
$A_{217}^{\text{CIB}}$	$37^{+7}_{-8} \quad (+0.1\sigma)$	$D_{220}$	$5731 \pm 39 \quad (-0.1\sigma)$	$D_{\text{M}}(2.33)$	$6236^{+190}_{-180} \quad (-0.9\sigma)$
$A_{143}^{\text{tSZ}}$	$4.1^{+2.0}_{-2.3} \quad (+0.0\sigma)$	$D_{810}$	$2529 \pm 14 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.512^{+0.024}_{-0.021} \quad (-1.0\sigma)$
$r_{143 \times 217}^{\text{PS}}$	$0.67 \pm 0.14 \quad (-0.0\sigma)$	$D_{1420}$	$814.7 \pm 4.8 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.712 \pm 0.016 \quad (+0.8\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	$0.52^{+0.34}_{-0.27} \quad (+0.1\sigma)$	$D_{2000}$	$231.9 \pm 1.7 \quad (-0.3\sigma)$	$f\sigma_8(0.38)$	$0.503^{+0.012}_{-0.0088} \quad (-1.0\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$n_{\text{s},0.002}$	$0.9715 \pm 0.0047 \quad (-0.3\sigma)$	$\sigma_8(0.38)$	$0.619 \pm 0.019 \quad (+0.8\sigma)$
$A^{\text{kSZ}}$	$< 5.24 \quad (-0.0\sigma)$	$Y_{\text{P}}$	$0.245456 \pm 0.000068 \quad (-0.2\sigma)$	$f\sigma_8(0.51)$	$0.4888^{+0.0069}_{-0.0052} \quad (-0.6\sigma)$
$A_{100}^{\text{dust}}$	$1.02 \pm 0.20 \quad (+0.0\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246783 \pm 0.000068 \quad (-0.2\sigma)$	$\sigma_8(0.51)$	$0.574 \pm 0.019 \quad (+0.9\sigma)$
$A_{143}^{\text{dust}}$	$0.94 \pm 0.17 \quad (-0.0\sigma)$	$10^5 \text{D}/\text{H}$	$2.556 \pm 0.032 \quad (+0.2\sigma)$	$f\sigma_8(0.61)$	$0.4755 \pm 0.0046 \quad (-0.0\sigma)$
$A_{217}^{\text{dust}}$	$0.98 \pm 0.10 \quad (-0.1\sigma)$	$\text{Age}/\text{Gyr}$	$15.01 \pm 0.48 \quad (-0.9\sigma)$	$\sigma_8(0.61)$	$0.544 \pm 0.019 \quad (+0.9\sigma)$
$A_{143 \times 217}^{\text{dust}}$	$1.01 \pm 0.16 \quad (-0.1\sigma)$	$z_*$	$1089.53 \pm 0.31 \quad (+0.2\sigma)$	$f\sigma_8(2.33)$	$0.271 \pm 0.011 \quad (+0.9\sigma)$
$c_{100}$	$0.9976 \pm 0.0010 \quad (+0.0\sigma)$	$r_*$	$144.86 \pm 0.33 \quad (-0.3\sigma)$	$\sigma_8(2.33)$	$0.273 \pm 0.013 \quad (+0.9\sigma)$
$c_{217}$	$1.0008 \pm 0.0016 \quad (+0.0\sigma)$	$100\theta_*$	$1.04128 \pm 0.00031 \quad (-0.5\sigma)$	$f_{2000}^{143}$	$27 \pm 3 \quad (+0.2\sigma)$
$c_{TE}$	$0.9924 \pm 0.0051$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.912 \pm 0.030 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$104.6 \pm 2.1 \quad (+0.2\sigma)$
$c_{EE}$	$0.9898 \pm 0.0049$	$z_{\text{drag}}$	$1060.16 \pm 0.36 \quad (-0.1\sigma)$	$f_{2000}^{143 \times 217}$	$29.6 \pm 2.2 \quad (+0.2\sigma)$
$H_0$	$56.9^{+3.5}_{-4.3} \quad (+1.0\sigma)$	$r_{\text{drag}}$	$147.48 \pm 0.32 \quad (-0.2\sigma)$	$\chi_{\text{small}}^2$	$396.2 \pm 1.1 \quad (-0.1\sigma)$
$\Omega_{\Lambda}$	$0.592^{+0.047}_{-0.040} \quad (+0.9\sigma)$	$k_{\text{D}}$	$0.14058 \pm 0.00035 \quad (+0.2\sigma)$	$\chi_{\text{lowl}}^2$	$21.43 \pm 0.67 \quad (+0.2\sigma)$
$\Omega_{\text{m}}$	$0.442^{+0.054}_{-0.065} \quad (-0.9\sigma)$	$100\theta_{\text{D}}$	$0.16064 \pm 0.00020 \quad (-0.0\sigma)$	$\chi_{\text{CamSpec}}^2$	$11511.3 \pm 5.5 \quad (+843.4\sigma)$
$\Omega_{\text{m}} h^2$	$0.1410 \pm 0.0014 \quad (+0.3\sigma)$	$z_{\text{eq}}$	$3355 \pm 33 \quad (+0.3\sigma)$	$\chi_{\text{prior}}^2$	$7.7 \pm 3.3 \quad (+0.2\sigma)$
$\Omega_{\text{m}} h^3$	$0.0802^{+0.0052}_{-0.0064} \quad (+1.0\sigma)$	$k_{\text{eq}}$	$0.01024 \pm 0.00010 \quad (+0.3\sigma)$	$\chi_{\text{CMB}}^2$	$11929.0 \pm 5.7 \quad (+821.9\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 11936.68; \Delta\bar{\chi}_{\text{eff}}^2 = 4452.55; R - 1 = 0.03528$$



## 16.9 base\_omegak\_plikHM\_TT\_lowl\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022179	$0.02216 \pm 0.00023$	$\sigma_8/h^{0.5}$	0.9841	$0.984 \pm 0.013$	$D_M(0.38)$	1524.4	$1525 \pm 14$
$\Omega_c h^2$	0.11988	$0.1198 \pm 0.0022$	$r_{\text{drag}} h$	99.95	$99.9 \pm 1.0$	$H(0.51)$	89.99	$89.95 \pm 0.70$
$100\theta_{\text{MC}}$	1.040904	$1.04087 \pm 0.00048$	$\langle d^2 \rangle^{1/2}$	2.4310	$2.431 \pm 0.029$	$D_M(0.51)$	1974.9	$1976 \pm 17$
$\tau$	0.0527	$0.0529 \pm 0.0079$	$z_{\text{re}}$	7.56	$7.56 \pm 0.80$	$H(0.61)$	95.61	$95.57 \pm 0.72$
$\Omega_K$	0.00125	$0.0012 \pm 0.0026$	$10^9 A_s$	2.0908	$2.091 \pm 0.034$	$D_M(0.61)$	2298.2	$2299 \pm 19$
$\ln(10^{10} A_s)$	3.0401	$3.040 \pm 0.016$	$10^9 A_s e^{-2\tau}$	1.8815	$1.881 \pm 0.014$	$H(2.33)$	236.58	$236.5 \pm 1.8$
$n_s$	0.9651	$0.9647 \pm 0.0060$	$D_{40}$	1228.2	$1229 \pm 16$	$D_M(2.33)$	5748.0	$5751 \pm 38$
$y_{\text{cal}}$	1.00056	$1.0006 \pm 0.0025$	$D_{220}$	5714.0	$5717 \pm 41$	$f\sigma_8(0.15)$	0.4559	$0.4558 \pm 0.0084$
$A_{217}^{\text{CIB}}$	49.5	$48 \pm 7$	$D_{810}$	2538.1	$2537 \pm 14$	$\sigma_8(0.15)$	0.7492	$0.7488 \pm 0.0093$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.19	—	$D_{1420}$	815.8	$815.2 \pm 5.1$	$f\sigma_8(0.38)$	0.4745	$0.4743 \pm 0.0074$
$A_{143}^{\text{tSZ}}$	7.11	$5.1 \pm 2.0$	$D_{2000}$	230.09	$229.7 \pm 1.9$	$\sigma_8(0.38)$	0.6643	$0.6639 \pm 0.0082$
$A_{100}^{\text{PS}}$	256.0	$263 \pm 28$	$n_{s,0.002}$	0.9651	$0.9647 \pm 0.0060$	$f\sigma_8(0.51)$	0.4733	$0.4731 \pm 0.0068$
$A_{143}^{\text{PS}}$	48.0	$49 \pm 8$	$Y_{\text{P}}$	0.245317	$0.24530^{+0.00011}_{-0.000087}$	$\sigma_8(0.51)$	0.6217	$0.6214 \pm 0.0076$
$A_{143 \times 217}^{\text{PS}}$	43.7	$44 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	0.246644	$0.24663^{+0.00011}_{-0.000087}$	$f\sigma_8(0.61)$	0.4684	$0.4682 \pm 0.0064$
$A_{217}^{\text{PS}}$	118.1	$115 \pm 10$	$10^5 D/H$	2.6219	$2.626 \pm 0.043$	$\sigma_8(0.61)$	0.5916	$0.5914 \pm 0.0073$
$A^{\text{kSZ}}$	0.00	$< 4.80$	Age/Gyr	13.757	$13.764 \pm 0.098$	$f\sigma_8(2.33)$	0.29831	$0.2982 \pm 0.0036$
$A_{100}^{\text{dustTT}}$	8.90	$9.0 \pm 1.8$	$z_*$	1090.152	$1090.17 \pm 0.43$	$\sigma_8(2.33)$	0.30779	$0.3076 \pm 0.0040$
$A_{143}^{\text{dustTT}}$	10.77	$10.7 \pm 1.8$	$r_*$	144.608	$144.65 \pm 0.48$	$f_{2000}^{143}$	30.67	$31.1 \pm 3.0$
$A_{143 \times 217}^{\text{dustTT}}$	19.31	$18.3 \pm 3.3$	$100\theta_*$	1.041105	$1.04108 \pm 0.00047$	$f_{2000}^{143 \times 217}$	33.38	$33.5 \pm 2.1$
$A_{217}^{\text{dustTT}}$	94.5	$93.4 \pm 7.4$	$D_M(z_*)/\text{Gpc}$	13.8899	$13.894 \pm 0.045$	$f_{2000}^{217}$	107.87	$108.1 \pm 1.9$
$c_{100}$	0.99965	$0.99961 \pm 0.00061$	$z_{\text{drag}}$	1059.475	$1059.43 \pm 0.46$	$\chi_{\text{small}}^2$	395.85	$397.0 \pm 1.7$
$c_{217}$	0.99827	$0.99825 \pm 0.00062$	$r_{\text{drag}}$	147.338	$147.39 \pm 0.48$	$\chi_{\text{lowl}}^2$	23.34	$23.6 \pm 1.5$
$H_0$	67.84	$67.81 \pm 0.69$	$k_{\text{D}}$	0.14046	$0.14039 \pm 0.00051$	$\chi_{\text{plik}}^2$	759.6	$772.4 \pm 5.4$
$\Omega_\Lambda$	0.6887	$0.6886 \pm 0.0075$	$100\theta_{\text{D}}$	0.161024	$0.16106 \pm 0.00027$	$\chi_{6\text{DF}}^2$	0.0107	$0.056 \pm 0.076$
$\Omega_{\text{m}}$	0.3101	$0.3102 \pm 0.0072$	$z_{\text{eq}}$	3394.7	$3392 \pm 49$	$\chi_{\text{MGS}}^2$	1.41	$1.48 \pm 0.60$
$\Omega_{\text{m}} h^2$	0.14270	$0.1426 \pm 0.0020$	$k_{\text{eq}}$	0.010361	$0.01035 \pm 0.00015$	$\chi_{\text{DR12BAO}}^2$	3.66	$4.6 \pm 1.8$
$\Omega_{\text{m}} h^3$	0.09681	$0.0967 \pm 0.0018$	$100\theta_{\text{eq}}$	0.8141	$0.8146 \pm 0.0092$	$\chi_{\text{prior}}^2$	1.46	$7.3 \pm 3.7$
$\sigma_8$	0.8106	$0.810 \pm 0.010$	$100\theta_{s,\text{eq}}$	0.44994	$0.4502 \pm 0.0047$	$\chi_{\text{BAO}}^2$	5.08	$6.1 \pm 1.6$
$S_8$	0.8241	$0.824 \pm 0.016$	$H(0.15)$	73.13	$73.10 \pm 0.67$	$\chi_{\text{CMB}}^2$	1178.8	$1192.9 \pm 5.5$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4514	$0.4512 \pm 0.0089$	$D_M(0.15)$	639.1	$639.4 \pm 6.2$			
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6049	$0.6046 \pm 0.0094$	$H(0.38)$	83.26	$83.22 \pm 0.68$			

Best-fit  $\chi_{\text{eff}}^2 = 1185.37$ ;  $\bar{\chi}_{\text{eff}}^2 = 1206.26$ ;  $R - 1 = 0.01197$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.66 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.85 commander\_dx12\_v3.2.29: 23.34 plik\_rd12\_HM\_v22\_TT: 759.63



## 16.10 base\_omegak\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022209	$0.02217 \pm 0.00022$	$\sigma_8/h^{0.5}$	0.9849	$0.9857 \pm 0.0096$	$D_M(0.38)$	1525.9	$1526 \pm 14$
$\Omega_c h^2$	0.11978	$0.1198 \pm 0.0020$	$r_{\text{drag}} h$	99.84	$99.84 \pm 0.96$	$H(0.51)$	89.92	$89.91 \pm 0.70$
$100\theta_{\text{MC}}$	1.040876	$1.04086 \pm 0.00048$	$\langle d^2 \rangle^{1/2}$	2.4347	$2.436 \pm 0.022$	$D_M(0.51)$	1976.7	$1977 \pm 17$
$\tau$	0.0539	$0.0540 \pm 0.0074$	$z_{\text{re}}$	7.68	$7.68 \pm 0.74$	$H(0.61)$	95.54	$95.54 \pm 0.72$
$\Omega_K$	0.00100	$0.0011 \pm 0.0025$	$10^9 A_s$	2.0952	$2.097 \pm 0.030$	$D_M(0.61)$	2300.3	$2301 \pm 19$
$\ln(10^{10} A_s)$	3.0422	$3.043 \pm 0.014$	$10^9 A_s e^{-2\tau}$	1.8811	$1.882 \pm 0.012$	$H(2.33)$	236.49	$236.5 \pm 1.7$
$n_s$	0.9649	$0.9644 \pm 0.0057$	$D_{40}$	1229.1	$1231 \pm 15$	$D_M(2.33)$	5751.5	$5752 \pm 38$
$y_{\text{cal}}$	1.00045	$1.0007 \pm 0.0025$	$D_{220}$	5718.2	$5721 \pm 41$	$f\sigma_8(0.15)$	0.4564	$0.4568 \pm 0.0065$
$A_{217}^{\text{CIB}}$	49.4	$48 \pm 7$	$D_{810}$	2537.5	$2538 \pm 13$	$\sigma_8(0.15)$	0.7493	$0.7498 \pm 0.0078$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.12	—	$D_{1420}$	815.6	$815.4 \pm 5.1$	$f\sigma_8(0.38)$	0.4749	$0.4753 \pm 0.0057$
$A_{143}^{\text{tSZ}}$	7.12	$5.1 \pm 2.0$	$D_{2000}$	230.07	$229.8 \pm 1.9$	$\sigma_8(0.38)$	0.6643	$0.6647 \pm 0.0070$
$A_{100}^{\text{PS}}$	257.2	$263 \pm 28$	$n_{s,0.002}$	0.9649	$0.9644 \pm 0.0057$	$f\sigma_8(0.51)$	0.4736	$0.4739 \pm 0.0052$
$A_{143}^{\text{PS}}$	46.7	$49 \pm 8$	$Y_{\text{P}}$	0.245329	$0.24531^{+0.00010}_{-0.000085}$	$\sigma_8(0.51)$	0.6217	$0.6221 \pm 0.0066$
$A_{143 \times 217}^{\text{PS}}$	41.4	$44 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	0.246656	$0.24663^{+0.00010}_{-0.000086}$	$f\sigma_8(0.61)$	0.46866	$0.4690 \pm 0.0049$
$A_{217}^{\text{PS}}$	117.7	$115 \pm 10$	$10^5 D/H$	2.6163	$2.625 \pm 0.042$	$\sigma_8(0.61)$	0.5916	$0.5920 \pm 0.0063$
$A^{\text{kSZ}}$	0.01	$< 4.79$	Age/Gyr	13.766	$13.768 \pm 0.098$	$f\sigma_8(2.33)$	0.29829	$0.2985 \pm 0.0032$
$A_{100}^{\text{dustTT}}$	8.81	$8.9 \pm 1.9$	$z_*$	1090.106	$1090.17 \pm 0.41$	$\sigma_8(2.33)$	0.30772	$0.3079 \pm 0.0036$
$A_{143}^{\text{dustTT}}$	10.84	$10.7 \pm 1.8$	$r_*$	144.610	$144.63 \pm 0.44$	$f_{2000}^{143}$	30.60	$31.1 \pm 3.0$
$A_{143 \times 217}^{\text{dustTT}}$	19.32	$18.3 \pm 3.3$	$100\theta_*$	1.041073	$1.04107 \pm 0.00047$	$f_{2000}^{143 \times 217}$	33.17	$33.5 \pm 2.0$
$A_{217}^{\text{dustTT}}$	94.7	$93.4 \pm 7.3$	$D_M(z_*)/\text{Gpc}$	13.8905	$13.893 \pm 0.040$	$f_{2000}^{217}$	107.81	$108.1 \pm 1.9$
$c_{100}$	0.99966	$0.99962 \pm 0.00061$	$z_{\text{drag}}$	1059.551	$1059.45 \pm 0.46$	$\chi_{\text{lensing}}^2$	8.876	$9.34 \pm 0.74$
$c_{217}$	0.99825	$0.99825 \pm 0.00062$	$r_{\text{drag}}$	147.328	$147.36 \pm 0.44$	$\chi_{\text{small}}^2$	396	$295 \pm 200$
$H_0$	67.77	$67.75 \pm 0.68$	$k_{\text{D}}$	0.140493	$0.14042 \pm 0.00048$	$\chi_{\text{lowl}}^2$	23	$125 \pm 200$
$\Omega_\Lambda$	0.6884	$0.6881 \pm 0.0066$	$100\theta_{\text{D}}$	0.160982	$0.16104 \pm 0.00026$	$\chi_{\text{plik}}^2$	759.40	$771.7 \pm 5.2$
$\Omega_{\text{m}}$	0.3106	$0.3109 \pm 0.0065$	$z_{\text{eq}}$	3393.2	$3393 \pm 44$	$\chi_{6\text{DF}}^2$	0.016	$0.43 \pm 0.68$
$\Omega_{\text{m}} h^2$	0.14264	$0.1426 \pm 0.0018$	$k_{\text{eq}}$	0.010356	$0.01036 \pm 0.00013$	$\chi_{\text{MGS}}^2$	1.34	$1.04 \pm 0.77$
$\Omega_{\text{m}} h^3$	0.09666	$0.0966 \pm 0.0018$	$100\theta_{\text{eq}}$	0.8144	$0.8144 \pm 0.0084$	$\chi_{\text{DR12BAO}}^2$	3.85	$4.7 \pm 1.9$
$\sigma_8$	0.8108	$0.8113 \pm 0.0084$	$100\theta_{s,\text{eq}}$	0.45009	$0.4501 \pm 0.0043$	$\chi_{\text{prior}}^2$	1.42	$7.3 \pm 3.7$
$S_8$	0.8249	$0.826 \pm 0.013$	$H(0.15)$	73.06	$73.04 \pm 0.67$	$\chi_{\text{CMB}}^2$	1187.7	$1201.7 \pm 5.5$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4518	$0.4523 \pm 0.0070$	$D_M(0.15)$	639.7	$640.0 \pm 6.1$	$\chi_{\text{BAO}}^2$	5.21	$6.1 \pm 1.6$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6052	$0.6058 \pm 0.0073$	$H(0.38)$	83.19	$83.18 \pm 0.68$			

Best-fit  $\chi_{\text{eff}}^2 = 1194.36$ ;  $\bar{\chi}_{\text{eff}}^2 = 1215.14$ ;  $R - 1 = 0.01348$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.34 DR12BAO: 3.85 CMB - smicadx12\_Dec5.ftl\_mv2.ndclpp\_p.teb\_consext8: 8.88 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.03 commander\_dx12.v3.2.29: 23.43 plik\_rd12\_HM.v22\_TT: 759.40



16.11 base\_omegak\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02218 \pm 0.00022$	$\sigma_8/h^{0.5}$	$0.9849 \pm 0.0095$	$D_M(0.38)$	$1525 \pm 13$
$\Omega_c h^2$	$0.1197 \pm 0.0019$	$r_{\text{drag}} h$	$99.96 \pm 0.93$	$H(0.51)$	$89.94 \pm 0.69$
$100\theta_{\text{MC}}$	$1.04088 \pm 0.00047$	$\langle d^2 \rangle^{1/2}$	$2.435 \pm 0.022$	$D_M(0.51)$	$1976 \pm 17$
$\tau$	$0.0543 \pm 0.0074$	$z_{\text{re}}$	$7.71 \pm 0.74$	$H(0.61)$	$95.56 \pm 0.72$
$\Omega_K$	$0.0011 \pm 0.0025$	$10^9 A_s$	$2.098 \pm 0.030$	$D_M(0.61)$	$2299 \pm 19$
$\ln(10^{10} A_s)$	$3.043 \pm 0.014$	$10^9 A_s e^{-2\tau}$	$1.882 \pm 0.012$	$H(2.33)$	$236.4 \pm 1.7$
$n_s$	$0.9648 \pm 0.0056$	$D_{40}$	$1230 \pm 15$	$D_M(2.33)$	$5751 \pm 38$
$y_{\text{cal}}$	$1.0008 \pm 0.0025$	$D_{220}$	$5722 \pm 41$	$f\sigma_8(0.15)$	$0.4561 \pm 0.0064$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{810}$	$2538 \pm 13$	$\sigma_8(0.15)$	$0.7496 \pm 0.0078$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$815.6 \pm 5.1$	$f\sigma_8(0.38)$	$0.4747 \pm 0.0056$
$A_{143}^{\text{tSZ}}$	$5.1 \pm 2.0$	$D_{2000}$	$229.9 \pm 1.8$	$\sigma_8(0.38)$	$0.6647 \pm 0.0070$
$A_{100}^{\text{PS}}$	$263 \pm 28$	$n_{s,0.002}$	$0.9648 \pm 0.0056$	$f\sigma_8(0.51)$	$0.4735 \pm 0.0052$
$A_{143}^{\text{PS}}$	$49 \pm 8$	$Y_{\text{P}}$	$0.24531^{+0.00010}_{-0.000084}$	$\sigma_8(0.51)$	$0.6221 \pm 0.0066$
$A_{143 \times 217}^{\text{PS}}$	$44 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	$0.24664^{+0.00010}_{-0.000085}$	$f\sigma_8(0.61)$	$0.4686 \pm 0.0049$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$10^5 \text{D}/\text{H}$	$2.622 \pm 0.042$	$\sigma_8(0.61)$	$0.5920 \pm 0.0063$
$A^{\text{kSZ}}$	$< 4.75$	$\text{Age}/\text{Gyr}$	$13.766 \pm 0.097$	$f\sigma_8(2.33)$	$0.2985 \pm 0.0032$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.9$	$z_*$	$1090.14 \pm 0.40$	$\sigma_8(2.33)$	$0.3080 \pm 0.0036$
$A_{143}^{\text{dustTT}}$	$10.7 \pm 1.8$	$r_*$	$144.66 \pm 0.43$	$f_{2000}^{143}$	$31.0 \pm 2.9$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04109 \pm 0.00047$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.0$
$A_{217}^{\text{dustTT}}$	$93.4 \pm 7.3$	$D_M(z_*)/\text{Gpc}$	$13.895 \pm 0.040$	$f_{2000}^{217}$	$108.1 \pm 1.9$
$c_{100}$	$0.99962 \pm 0.00061$	$z_{\text{drag}}$	$1059.47 \pm 0.46$	$\chi_{\text{lensing}}^2$	$9.34 \pm 0.75$
$c_{217}$	$0.99825 \pm 0.00062$	$r_{\text{drag}}$	$147.39 \pm 0.43$	$\chi_{\text{simall}}^2$	$294 \pm 200$
$H_0$	$67.82 \pm 0.66$	$k_{\text{D}}$	$0.14040 \pm 0.00048$	$\chi_{\text{lowl}}^2$	$127 \pm 200$
$\Omega_\Lambda$	$0.6890 \pm 0.0063$	$100\theta_{\text{D}}$	$0.16103 \pm 0.00026$	$\chi_{\text{plik}}^2$	$771.8 \pm 5.2$
$\Omega_{\text{m}}$	$0.3099 \pm 0.0062$	$z_{\text{eq}}$	$3390 \pm 44$	$\chi_{\text{JLA}}^2$	$1035.08 \pm 0.30$
$\Omega_{\text{m}} h^2$	$0.1425 \pm 0.0018$	$k_{\text{eq}}$	$0.01035 \pm 0.00013$	$\chi_{6\text{DF}}^2$	$0.45 \pm 0.71$
$\Omega_{\text{m}} h^3$	$0.0966 \pm 0.0018$	$100\theta_{\text{eq}}$	$0.8150 \pm 0.0083$	$\chi_{\text{MGS}}^2$	$1.08 \pm 0.80$
$\sigma_8$	$0.8110 \pm 0.0084$	$100\theta_{\text{s,eq}}$	$0.4504 \pm 0.0042$	$\chi_{\text{DR12BAO}}^2$	$4.5 \pm 1.7$
$S_8$	$0.824 \pm 0.012$	$H(0.15)$	$73.10 \pm 0.66$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4515 \pm 0.0068$	$D_M(0.15)$	$639.4 \pm 6.0$	$\chi_{\text{CMB}}^2$	$1201.7 \pm 5.5$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.6051 \pm 0.0072$	$H(0.38)$	$83.22 \pm 0.67$	$\chi_{\text{BAO}}^2$	$6.0 \pm 1.5$

$$\bar{\chi}_{\text{eff}}^2 = 2250.15; R - 1 = 0.01337$$



## 16.12 base\_omegak\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02217 \pm 0.00023$	$\sigma_8/h^{0.5}$	$0.985 \pm 0.012$	$D_{\mathrm{M}}(0.38)$	$1525 \pm 14$
$\Omega_{\mathrm{c}}h^2$	$0.1197 \pm 0.0022$	$r_{\mathrm{drag}}h$	$99.9 \pm 1.0$	$H(0.51)$	$89.94 \pm 0.70$
$100\theta_{\mathrm{MC}}$	$1.04088 \pm 0.00048$	$\langle d^2 \rangle^{1/2}$	$2.434 \pm 0.028$	$D_{\mathrm{M}}(0.51)$	$1976 \pm 17$
$\tau$	$0.0543^{+0.0050}_{-0.0081}$	$z_{\mathrm{re}}$	$7.71^{+0.55}_{-0.81}$	$H(0.61)$	$95.56 \pm 0.73$
$\Omega_K$	$0.0011 \pm 0.0026$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.025}_{-0.034}$	$D_{\mathrm{M}}(0.61)$	$2300 \pm 19$
$\ln(10^{10} A_{\mathrm{s}})$	$3.043^{+0.012}_{-0.016}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.881 \pm 0.014$	$H(2.33)$	$236.4 \pm 1.8$
$n_{\mathrm{s}}$	$0.9649 \pm 0.0060$	$D_{40}$	$1229 \pm 16$	$D_{\mathrm{M}}(2.33)$	$5751 \pm 38$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{220}$	$5717 \pm 41$	$f\sigma_8(0.15)$	$0.4562 \pm 0.0083$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2537 \pm 14$	$\sigma_8(0.15)$	$0.7497 \pm 0.0091$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815.2 \pm 5.1$	$f\sigma_8(0.38)$	$0.4748 \pm 0.0073$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{2000}$	$229.8 \pm 1.9$	$\sigma_8(0.38)$	$0.6647 \pm 0.0079$
$A_{100}^{\mathrm{PS}}$	$263 \pm 28$	$n_{\mathrm{s},0.002}$	$0.9649 \pm 0.0060$	$f\sigma_8(0.51)$	$0.4736 \pm 0.0066$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}$	$0.24531^{+0.00011}_{-0.000086}$	$\sigma_8(0.51)$	$0.6221 \pm 0.0074$
$A_{143 \times 217}^{\mathrm{PS}}$	$44 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00011}_{-0.000087}$	$f\sigma_8(0.61)$	$0.4687 \pm 0.0062$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.625 \pm 0.043$	$\sigma_8(0.61)$	$0.5920 \pm 0.0070$
$A^{\mathrm{kSZ}}$	$< 4.79$	$\mathrm{Age}/\mathrm{Gyr}$	$13.766 \pm 0.099$	$f\sigma_8(2.33)$	$0.2985 \pm 0.0034$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	$z_*$	$1090.16 \pm 0.43$	$\sigma_8(2.33)$	$0.3080 \pm 0.0039$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$r_*$	$144.66 \pm 0.48$	$f_{2000}^{143}$	$31.0 \pm 3.0$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04109 \pm 0.00047$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.1$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.4$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.895 \pm 0.045$	$f_{2000}^{217}$	$108.1 \pm 1.9$
$c_{100}$	$0.99961 \pm 0.00061$	$z_{\mathrm{drag}}$	$1059.44 \pm 0.46$	$\chi_{\mathrm{small}}^2$	$396.9 \pm 1.7$
$c_{217}$	$0.99825 \pm 0.00062$	$r_{\mathrm{drag}}$	$147.40 \pm 0.48$	$\chi_{\mathrm{lowl}}^2$	$23.6 \pm 1.5$
$H_0$	$67.81 \pm 0.69$	$k_{\mathrm{D}}$	$0.14039 \pm 0.00051$	$\chi_{\mathrm{plik}}^2$	$772.2 \pm 5.4$
$\Omega_{\Lambda}$	$0.6888 \pm 0.0075$	$100\theta_{\mathrm{D}}$	$0.16105 \pm 0.00027$	$\chi_{6\mathrm{DF}}^2$	$0.057 \pm 0.076$
$\Omega_{\mathrm{m}}$	$0.3101 \pm 0.0072$	$z_{\mathrm{eq}}$	$3391 \pm 49$	$\chi_{\mathrm{MGS}}^2$	$1.48 \pm 0.61$
$\Omega_{\mathrm{m}}h^2$	$0.1425 \pm 0.0020$	$k_{\mathrm{eq}}$	$0.01035 \pm 0.00015$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.9$
$\Omega_{\mathrm{m}}h^3$	$0.0967 \pm 0.0018$	$100\theta_{\mathrm{eq}}$	$0.8149 \pm 0.0092$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8$	$0.811 \pm 0.010$	$100\theta_{\mathrm{s,eq}}$	$0.4504 \pm 0.0047$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.6$
$S_8$	$0.825 \pm 0.016$	$H(0.15)$	$73.09 \pm 0.68$	$\chi_{\mathrm{CMB}}^2$	$1192.6 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4517 \pm 0.0089$	$D_{\mathrm{M}}(0.15)$	$639.5 \pm 6.2$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6052 \pm 0.0093$	$H(0.38)$	$83.21 \pm 0.68$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1206.04; R - 1 = 0.01397$$



### 16.13 base\_omegak\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02217 \pm 0.00022$	$\sigma_8/h^{0.5}$	$0.9861 \pm 0.0095$	$D_{\mathrm{M}}(0.38)$	$1526 \pm 14$
$\Omega_{\mathrm{c}}h^2$	$0.1197 \pm 0.0019$	$r_{\mathrm{drag}}h$	$99.85 \pm 0.96$	$H(0.51)$	$89.90 \pm 0.70$
$100\theta_{\mathrm{MC}}$	$1.04087 \pm 0.00048$	$\langle d^2 \rangle^{1/2}$	$2.438 \pm 0.022$	$D_{\mathrm{M}}(0.51)$	$1977 \pm 17$
$\tau$	$0.0549^{+0.0054}_{-0.0078}$	$z_{\mathrm{re}}$	$7.77^{+0.58}_{-0.76}$	$H(0.61)$	$95.52 \pm 0.72$
$\Omega_K$	$0.00099 \pm 0.0025$	$10^9 A_{\mathrm{s}}$	$2.100^{+0.023}_{-0.031}$	$D_{\mathrm{M}}(0.61)$	$2301 \pm 19$
$\ln(10^{10} A_{\mathrm{s}})$	$3.045^{+0.011}_{-0.014}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.882 \pm 0.012$	$H(2.33)$	$236.4 \pm 1.7$
$n_{\mathrm{s}}$	$0.9646 \pm 0.0056$	$D_{40}$	$1230 \pm 15$	$D_{\mathrm{M}}(2.33)$	$5753 \pm 38$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025$	$D_{220}$	$5721 \pm 41$	$f\sigma_8(0.15)$	$0.4569 \pm 0.0065$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2537 \pm 13$	$\sigma_8(0.15)$	$0.7501 \pm 0.0077$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815.4 \pm 5.1$	$f\sigma_8(0.38)$	$0.4754 \pm 0.0056$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{2000}$	$229.9 \pm 1.9$	$\sigma_8(0.38)$	$0.6650 \pm 0.0069$
$A_{100}^{\mathrm{PS}}$	$263 \pm 28$	$n_{\mathrm{s},0.002}$	$0.9646 \pm 0.0056$	$f\sigma_8(0.51)$	$0.4741 \pm 0.0052$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}$	$0.24531^{+0.00010}_{-0.000084}$	$\sigma_8(0.51)$	$0.6224 \pm 0.0065$
$A_{143 \times 217}^{\mathrm{PS}}$	$44 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00010}_{-0.000085}$	$f\sigma_8(0.61)$	$0.4692 \pm 0.0049$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.623 \pm 0.042$	$\sigma_8(0.61)$	$0.5923 \pm 0.0062$
$A^{\mathrm{kSZ}}$	$< 4.79$	Age/Gyr	$13.771 \pm 0.097$	$f\sigma_8(2.33)$	$0.2986 \pm 0.0031$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.9$	$z_*$	$1090.15 \pm 0.40$	$\sigma_8(2.33)$	$0.3081 \pm 0.0036$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$r_*$	$144.65 \pm 0.43$	$f_{2000}^{143}$	$31.0 \pm 3.0$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04108 \pm 0.00047$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.0$
$A_{217}^{\mathrm{dust}TT}$	$93.5 \pm 7.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.894 \pm 0.040$	$f_{2000}^{217}$	$108.1 \pm 1.9$
$c_{100}$	$0.99962 \pm 0.00061$	$z_{\mathrm{drag}}$	$1059.46 \pm 0.46$	$\chi_{\mathrm{lensing}}^2$	$9.29 \pm 0.69$
$c_{217}$	$0.99825 \pm 0.00062$	$r_{\mathrm{drag}}$	$147.38 \pm 0.43$	$\chi_{\mathrm{simall}}^2$	$296 \pm 200$
$H_0$	$67.75 \pm 0.68$	$k_{\mathrm{D}}$	$0.14041 \pm 0.00047$	$\chi_{\mathrm{lowl}}^2$	$125 \pm 200$
$\Omega_{\Lambda}$	$0.6884 \pm 0.0065$	$100\theta_{\mathrm{D}}$	$0.16104 \pm 0.00026$	$\chi_{\mathrm{plik}}^2$	$771.6 \pm 5.2$
$\Omega_{\mathrm{m}}$	$0.3106 \pm 0.0064$	$z_{\mathrm{eq}}$	$3391 \pm 43$	$\chi_{6\mathrm{DF}}^2$	$0.43 \pm 0.68$
$\Omega_{\mathrm{m}}h^2$	$0.1426 \pm 0.0018$	$k_{\mathrm{eq}}$	$0.01035 \pm 0.00013$	$\chi_{\mathrm{MGS}}^2$	$1.04 \pm 0.78$
$\Omega_{\mathrm{m}}h^3$	$0.0966 \pm 0.0018$	$100\theta_{\mathrm{eq}}$	$0.8147 \pm 0.0082$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.9$
$\sigma_8$	$0.8117 \pm 0.0083$	$100\theta_{\mathrm{s,eq}}$	$0.4503 \pm 0.0042$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$S_8$	$0.826 \pm 0.013$	$H(0.15)$	$73.04 \pm 0.67$	$\chi_{\mathrm{CMB}}^2$	$1201.5 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4524 \pm 0.0069$	$D_{\mathrm{M}}(0.15)$	$639.9 \pm 6.1$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.6$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6059 \pm 0.0073$	$H(0.38)$	$83.17 \pm 0.68$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1214.95; R - 1 = 0.01494$$



16.14 base\_omegak\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00022$	$\sigma_8/h^{0.5}$	$0.9853 \pm 0.0094$	$D_{\mathrm{M}}(0.38)$	$1525 \pm 13$
$\Omega_{\mathrm{c}}h^2$	$0.1196 \pm 0.0019$	$r_{\mathrm{drag}}h$	$99.97 \pm 0.93$	$H(0.51)$	$89.93 \pm 0.69$
$100\theta_{\mathrm{MC}}$	$1.04089 \pm 0.00047$	$\langle d^2 \rangle^{1/2}$	$2.436 \pm 0.022$	$D_{\mathrm{M}}(0.51)$	$1976 \pm 17$
$\tau$	$0.0552^{+0.0055}_{-0.0078}$	$z_{\mathrm{re}}$	$7.80^{+0.59}_{-0.76}$	$H(0.61)$	$95.55 \pm 0.72$
$\Omega_K$	$0.00099 \pm 0.0025$	$10^9 A_{\mathrm{s}}$	$2.101^{+0.024}_{-0.031}$	$D_{\mathrm{M}}(0.61)$	$2300 \pm 19$
$\ln(10^{10} A_{\mathrm{s}})$	$3.045^{+0.011}_{-0.015}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.881 \pm 0.012$	$H(2.33)$	$236.3 \pm 1.7$
$n_{\mathrm{s}}$	$0.9650 \pm 0.0056$	$D_{40}$	$1230 \pm 15$	$D_{\mathrm{M}}(2.33)$	$5752 \pm 38$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0025$	$D_{220}$	$5722 \pm 41$	$f\sigma_8(0.15)$	$0.4562 \pm 0.0064$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2537 \pm 13$	$\sigma_8(0.15)$	$0.7500 \pm 0.0077$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815.6 \pm 5.1$	$f\sigma_8(0.38)$	$0.4749 \pm 0.0055$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{2000}$	$229.9 \pm 1.8$	$\sigma_8(0.38)$	$0.6650 \pm 0.0069$
$A_{100}^{\mathrm{PS}}$	$263 \pm 28$	$n_{\mathrm{s},0.002}$	$0.9650 \pm 0.0056$	$f\sigma_8(0.51)$	$0.4737 \pm 0.0051$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}$	$0.24532^{+0.00010}_{-0.000084}$	$\sigma_8(0.51)$	$0.6224 \pm 0.0065$
$A_{143 \times 217}^{\mathrm{PS}}$	$44 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00010}_{-0.000084}$	$f\sigma_8(0.61)$	$0.4688 \pm 0.0049$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.621 \pm 0.042$	$\sigma_8(0.61)$	$0.5923 \pm 0.0062$
$A^{\mathrm{kSZ}}$	$< 4.76$	Age/Gyr	$13.768 \pm 0.097$	$f\sigma_8(2.33)$	$0.2987 \pm 0.0031$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.9$	$z_*$	$1090.12 \pm 0.40$	$\sigma_8(2.33)$	$0.3082 \pm 0.0036$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$r_*$	$144.68 \pm 0.43$	$f_{2000}^{143}$	$31.0 \pm 3.0$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04109 \pm 0.00047$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.0$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.897 \pm 0.040$	$f_{2000}^{217}$	$108.0 \pm 1.9$
$c_{100}$	$0.99962 \pm 0.00061$	$z_{\mathrm{drag}}$	$1059.48 \pm 0.46$	$\chi_{\mathrm{lensing}}^2$	$9.29 \pm 0.70$
$c_{217}$	$0.99825 \pm 0.00062$	$r_{\mathrm{drag}}$	$147.41 \pm 0.43$	$\chi_{\mathrm{simall}}^2$	$294 \pm 200$
$H_0$	$67.82 \pm 0.66$	$k_{\mathrm{D}}$	$0.14039 \pm 0.00047$	$\chi_{\mathrm{lowl}}^2$	$126 \pm 200$
$\Omega_{\Lambda}$	$0.6893 \pm 0.0063$	$100\theta_{\mathrm{D}}$	$0.16103 \pm 0.00026$	$\chi_{\mathrm{plik}}^2$	$771.7 \pm 5.2$
$\Omega_{\mathrm{m}}$	$0.3097 \pm 0.0062$	$z_{\mathrm{eq}}$	$3388 \pm 43$	$\chi_{\mathrm{JLA}}^2$	$1035.07 \pm 0.30$
$\Omega_{\mathrm{m}}h^2$	$0.1424 \pm 0.0018$	$k_{\mathrm{eq}}$	$0.01034 \pm 0.00013$	$\chi_{6\mathrm{DF}}^2$	$0.45 \pm 0.71$
$\Omega_{\mathrm{m}}h^3$	$0.0966 \pm 0.0018$	$100\theta_{\mathrm{eq}}$	$0.8153 \pm 0.0082$	$\chi_{\mathrm{MGS}}^2$	$1.08 \pm 0.80$
$\sigma_8$	$0.8114 \pm 0.0083$	$100\theta_{\mathrm{s,eq}}$	$0.4506 \pm 0.0042$	$\chi_{\mathrm{DR12BAO}}^2$	$4.5 \pm 1.7$
$S_8$	$0.824 \pm 0.012$	$H(0.15)$	$73.10 \pm 0.66$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4516 \pm 0.0068$	$D_{\mathrm{M}}(0.15)$	$639.4 \pm 6.0$	$\chi_{\mathrm{CMB}}^2$	$1201.5 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6053 \pm 0.0072$	$H(0.38)$	$83.21 \pm 0.67$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.5$

$$\bar{\chi}_{\mathrm{eff}}^2 = 2249.97; R - 1 = 0.01495$$



# 16.15 base\_omegak\_plikHM\_TTTEE\_lowl\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022396	$0.02239 \pm 0.00015$ (+1.0 $\sigma$ )	$\sigma_8$	0.8109	$0.8109 \pm 0.0084$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	638.9	$638.8 \pm 6.0$ (−0.1 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11972	$0.1197 \pm 0.0014$ (−0.0 $\sigma$ )	$S_8$	0.8242	$0.824 \pm 0.013$ (+0.0 $\sigma$ )	$H(0.38)$	83.28	$83.29 \pm 0.62$ (+0.1 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.040949	$1.04095 \pm 0.00031$ (+0.2 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4515	$0.4514 \pm 0.0070$ (+0.0 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1523.9	$1524 \pm 13$ (−0.1 $\sigma$ )
$\tau$	0.0544	$0.0548 \pm 0.0078$ (+0.2 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6051	$0.6050 \pm 0.0073$ (+0.0 $\sigma$ )	$H(0.51)$	90.00	$90.01 \pm 0.61$ (+0.1 $\sigma$ )
$\Omega_K$	0.00079	$0.0008 \pm 0.0019$ (−0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9843	$0.984 \pm 0.010$ (+0.0 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1974.3	$1974 \pm 16$ (−0.1 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0441	$3.044 \pm 0.016$ (+0.3 $\sigma$ )	$r_{\mathrm{drag}}h$	99.86	$99.89 \pm 0.99$ (−0.0 $\sigma$ )	$H(0.61)$	95.63	$95.64 \pm 0.61$ (+0.1 $\sigma$ )
$n_{\mathrm{s}}$	0.96638	$0.9659 \pm 0.0045$ (+0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4336	$2.434 \pm 0.025$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2297.5	$2297 \pm 18$ (−0.1 $\sigma$ )
$y_{\mathrm{cal}}$	1.00064	$1.0006 \pm 0.0025$ (−0.0 $\sigma$ )	$z_{\mathrm{re}}$	7.69	$7.71 \pm 0.79$ (+0.2 $\sigma$ )	$H(2.33)$	236.59	$236.6 \pm 1.2$ (+0.1 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	47.4	$47 \pm 7$ (−0.1 $\sigma$ )	$10^9A_{\mathrm{s}}$	2.0991	$2.100 \pm 0.034$ (+0.3 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5746.4	$5746 \pm 31$ (−0.1 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.43	—	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8827	$1.882 \pm 0.012$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4561	$0.4560 \pm 0.0066$ (+0.0 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	7.16	$5.4_{-1.9}^{+2.1}$ (+0.2 $\sigma$ )	$D_{40}$	1228.1	$1229 \pm 13$ (−0.0 $\sigma$ )	$\sigma_8(0.15)$	0.7495	$0.7495 \pm 0.0077$ (+0.1 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	251.1	$259 \pm 28$ (−0.1 $\sigma$ )	$D_{220}$	5732.8	$5734 \pm 39$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4747	$0.4747 \pm 0.0058$ (+0.0 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	48.1	$46 \pm 8$ (−0.4 $\sigma$ )	$D_{810}$	2541.2	$2539 \pm 14$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6646	$0.6646 \pm 0.0069$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	47.6	$42 \pm 9$ (−0.2 $\sigma$ )	$D_{1420}$	818.24	$817.5 \pm 4.8$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.4735	$0.4735 \pm 0.0053$ (+0.1 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	119.5	$115 \pm 10$ (−0.0 $\sigma$ )	$D_{2000}$	231.28	$230.9 \pm 1.6$ (+0.6 $\sigma$ )	$\sigma_8(0.51)$	0.6220	$0.6221 \pm 0.0065$ (+0.1 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.00	$< 4.39$ (−0.1 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.96638	$0.9659 \pm 0.0045$ (+0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.4686	$0.4686 \pm 0.0051$ (+0.1 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.79	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_{\mathrm{P}}$	0.245406	$0.245400_{-0.000055}^{+0.000063}$ (+1.0 $\sigma$ )	$\sigma_8(0.61)$	0.5919	$0.5920 \pm 0.0062$ (+0.1 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	11.01	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246732	$0.246726_{-0.000055}^{+0.000063}$ (+1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.29846	$0.2985 \pm 0.0032$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.80	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$10^5\mathrm{D}/\mathrm{H}$	2.5806	$2.583 \pm 0.028$ (−1.0 $\sigma$ )	$\sigma_8(2.33)$	0.30789	$0.3080 \pm 0.0035$ (+0.1 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	94.9	$93.7 \pm 7.3$ (+0.0 $\sigma$ )	Age/Gyr	13.755	$13.755 \pm 0.080$ (−0.1 $\sigma$ )	$f_{2000}^{143}$	29.06	$29.5 \pm 2.8$ (−0.5 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1141	$0.115 \pm 0.039$	$z_*$	1089.862	$1089.88 \pm 0.28$ (−0.7 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.10	$32.2 \pm 1.9$ (−0.6 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1352	$0.135 \pm 0.030$	$r_*$	144.483	$144.50 \pm 0.31$ (−0.3 $\sigma$ )	$f_{2000}^{217}$	106.68	$107.0 \pm 1.8$ (−0.6 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.482	$0.482 \pm 0.085$	$100\theta_*$	1.041130	$1.04113 \pm 0.00031$ (+0.1 $\sigma$ )	$\chi_{\mathrm{small}}^2$	396.06	$397.2 \pm 1.9$ (+0.1 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.225	$0.224 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8775	$13.879 \pm 0.029$ (−0.3 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	23.21	$23.4 \pm 1.1$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.666	$0.665 \pm 0.080$	$z_{\mathrm{drag}}$	1059.971	$1059.95 \pm 0.31$ (+1.1 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2345.1	$2360.2 \pm 5.8$ (+292.9 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.082	$2.08 \pm 0.27$	$r_{\mathrm{drag}}$	147.137	$147.15 \pm 0.31$ (−0.5 $\sigma$ )	$\chi_{6\mathrm{DF}}^2$	0.0157	$0.057 \pm 0.079$ (+0.0 $\sigma$ )
$c_{100}$	0.99969	$0.99969 \pm 0.00062$ (+0.1 $\sigma$ )	$k_{\mathrm{D}}$	0.140840	$0.14081 \pm 0.00033$ (+0.8 $\sigma$ )	$\chi_{\mathrm{MGS}}^2$	1.34	$1.44 \pm 0.59$ (−0.1 $\sigma$ )
$c_{217}$	0.99817	$0.99822 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160736	$0.16075 \pm 0.00018$ (−1.1 $\sigma$ )	$\chi_{\mathrm{DR12BAO}}^2$	3.92	$4.7 \pm 1.9$ (+0.1 $\sigma$ )
$H_0$	67.87	$67.88 \pm 0.68$ (+0.1 $\sigma$ )	$z_{\mathrm{eq}}$	3396.2	$3396 \pm 32$ (+0.1 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.75	$11.6 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_{\Lambda}$	0.6893	$0.6894 \pm 0.0061$ (+0.1 $\sigma$ )	$k_{\mathrm{eq}}$	0.010365	$0.010364 \pm 0.000097$ (+0.1 $\sigma$ )	$\chi_{\mathrm{BAO}}^2$	5.28	$6.2 \pm 1.7$ (+0.1 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3099	$0.3098 \pm 0.0066$ (−0.1 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8145	$0.8146 \pm 0.0060$ (+0.0 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	2764.4	$2780.7 \pm 5.8$ (+289.5 $\sigma$ )
$\Omega_{\mathrm{m}}h^2$	0.14276	$0.1427 \pm 0.0013$ (+0.1 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.44998	$0.4501 \pm 0.0031$ (−0.0 $\sigma$ )			
$\Omega_{\mathrm{m}}h^3$	0.09689	$0.0969 \pm 0.0014$ (+0.1 $\sigma$ )	$H(0.15)$	73.15	$73.17 \pm 0.65$ (+0.1 $\sigma$ )			

Best-fit  $\chi_{\mathrm{eff}}^2 = 2771.38$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1586.02$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2798.58$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.32$ ;  $R - 1 = 0.01668$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.02 ( $\Delta$  0.01) MGS: 1.34 ( $\Delta$  -0.06) DR12BAO: 3.92 ( $\Delta$  0.25) CMB - simall\_100x143.offlike5\_EE\_Aplanck\_B: 396.06 ( $\Delta$  0.21) commander\_dx12.v3.2.29: 23.21 ( $\Delta$  -0.13) plik\_rd12\_HM\_v22b\_TTTEE: 2345.09



16.16 base\_omegak\_plikHM\_TTTEE\_lowl\_lowE\_BAO\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022412	$0.02239 \pm 0.00015$ (+1.0 $\sigma$ )	$\sigma_8$	0.8118	$0.8115 \pm 0.0072$ (+0.0 $\sigma$ )	$D_M(0.15)$	638.8	$639.0 \pm 5.8$ (-0.2 $\sigma$ )
$\Omega_c h^2$	0.11970	$0.1197 \pm 0.0014$ (-0.1 $\sigma$ )	$S_8$	0.8250	$0.825 \pm 0.011$ (-0.1 $\sigma$ )	$H(0.38)$	83.28	$83.27 \pm 0.61$ (+0.1 $\sigma$ )
$100\theta_{MC}$	1.040988	$1.04095 \pm 0.00032$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4519	$0.4518 \pm 0.0058$ (-0.1 $\sigma$ )	$D_M(0.38)$	1523.8	$1524 \pm 13$ (-0.2 $\sigma$ )
$\tau$	0.0556	$0.0556 \pm 0.0073$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6057	$0.6055 \pm 0.0060$ (-0.0 $\sigma$ )	$H(0.51)$	90.00	$89.99 \pm 0.60$ (+0.1 $\sigma$ )
$\Omega_K$	0.00073	$0.0007 \pm 0.0019$ (-0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9854	$0.9851 \pm 0.0085$ (-0.1 $\sigma$ )	$D_M(0.51)$	1974.2	$1975 \pm 16$ (-0.2 $\sigma$ )
$\ln(10^{10} A_s)$	3.0462	$3.046 \pm 0.014$ (+0.2 $\sigma$ )	$r_{drag} h$	99.86	$99.86 \pm 0.95$ (+0.0 $\sigma$ )	$H(0.61)$	95.63	$95.61 \pm 0.60$ (+0.1 $\sigma$ )
$n_s$	0.96694	$0.9658 \pm 0.0044$ (+0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4351	$2.437 \pm 0.020$ (+0.0 $\sigma$ )	$D_M(0.61)$	2297.4	$2298 \pm 18$ (-0.1 $\sigma$ )
$y_{cal}$	1.00049	$1.0007 \pm 0.0025$ (-0.0 $\sigma$ )	$z_{re}$	7.80	$7.78 \pm 0.73$ (+0.1 $\sigma$ )	$H(2.33)$	236.58	$236.6 \pm 1.2$ (+0.0 $\sigma$ )
$A_{217}^{CIB}$	46.8	$47 \pm 7$ (-0.1 $\sigma$ )	$10^9 A_s$	2.1036	$2.104 \pm 0.030$ (+0.2 $\sigma$ )	$D_M(2.33)$	5746.3	$5747 \pm 31$ (-0.1 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.47	—	$10^9 A_s e^{-2\tau}$	1.8821	$1.882 \pm 0.011$ (+0.0 $\sigma$ )	$f\sigma_8(0.15)$	0.4565	$0.4564 \pm 0.0055$ (-0.1 $\sigma$ )
$A_{143}^{tSZ}$	7.20	$5.4_{-1.9}^{+2.1}$ (+0.2 $\sigma$ )	$D_{40}$	1226.9	$1230 \pm 13$ (-0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7503	$0.7501 \pm 0.0068$ (+0.0 $\sigma$ )
$A_{100}^{PS}$	249.1	$259 \pm 28$ (-0.1 $\sigma$ )	$D_{220}$	5730.0	$5737 \pm 39$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.47523	$0.4751 \pm 0.0047$ (-0.0 $\sigma$ )
$A_{143}^{PS}$	47.7	$46 \pm 8$ (-0.4 $\sigma$ )	$D_{810}$	2540.9	$2540 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6653	$0.6651 \pm 0.0062$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{PS}$	48.3	$42 \pm 9$ (-0.2 $\sigma$ )	$D_{1420}$	818.43	$817.7 \pm 4.7$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.47401	$0.4739 \pm 0.0044$ (-0.0 $\sigma$ )
$A_{217}^{PS}$	120.2	$115 \pm 10$ (-0.0 $\sigma$ )	$D_{2000}$	231.41	$231.0 \pm 1.6$ (+0.6 $\sigma$ )	$\sigma_8(0.51)$	0.6227	$0.6225 \pm 0.0059$ (+0.1 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.24$ (-0.2 $\sigma$ )	$n_{s,0.002}$	0.96694	$0.9658 \pm 0.0044$ (+0.3 $\sigma$ )	$f\sigma_8(0.61)$	0.46915	$0.4690 \pm 0.0041$ (+0.0 $\sigma$ )
$A_{100}^{dustTT}$	8.83	$8.9 \pm 1.8$ (-0.0 $\sigma$ )	$Y_P$	0.245412	$0.245403_{-0.000055}^{+0.000061}$ (+1.0 $\sigma$ )	$\sigma_8(0.61)$	0.5926	$0.5923 \pm 0.0057$ (+0.1 $\sigma$ )
$A_{143}^{dustTT}$	11.00	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246738	$0.246729_{-0.000055}^{+0.000061}$ (+1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.29880	$0.2987 \pm 0.0029$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.80	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5777	$2.582 \pm 0.028$ (-1.0 $\sigma$ )	$\sigma_8(2.33)$	0.30823	$0.3081 \pm 0.0033$ (+0.1 $\sigma$ )
$A_{217}^{dustTT}$	95.1	$93.7 \pm 7.4$ (+0.0 $\sigma$ )	Age/Gyr	13.755	$13.758 \pm 0.079$ (-0.1 $\sigma$ )	$f_{2000}^{143}$	28.62	$29.5 \pm 2.8$ (-0.5 $\sigma$ )
$A_{100}^{dustTE}$	0.1142	$0.114 \pm 0.038$	$z_*$	1089.840	$1089.86 \pm 0.28$ (-0.7 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.86	$32.2 \pm 1.9$ (-0.6 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1335	$0.135 \pm 0.029$	$r_*$	144.478	$144.50 \pm 0.30$ (-0.3 $\sigma$ )	$f_{2000}^{217}$	106.50	$107.0 \pm 1.8$ (-0.6 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.480	$0.483 \pm 0.085$	$100\theta_*$	1.041163	$1.04113 \pm 0.00031$ (+0.1 $\sigma$ )	$\chi_{lensing}^2$	8.786	$9.13 \pm 0.58$ (-0.3 $\sigma$ )
$A_{143}^{dustTE}$	0.223	$0.225 \pm 0.055$	$D_M(z_*)/\text{Gpc}$	13.8766	$13.879 \pm 0.028$ (-0.3 $\sigma$ )	$\chi_{small}^2$	396	$291 \pm 200$ (-0.0 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.665	$0.664 \pm 0.080$	$z_{drag}$	1060.009	$1059.97 \pm 0.30$ (+1.1 $\sigma$ )	$\chi_{lowl}^2$	23	$129 \pm 200$ (+0.0 $\sigma$ )
$A_{217}^{dustTE}$	2.091	$2.08 \pm 0.27$	$r_{drag}$	147.126	$147.15 \pm 0.29$ (-0.5 $\sigma$ )	$\chi_{plik}^2$	2345.0	$2359.8 \pm 5.8$ (+305.1 $\sigma$ )
$c_{100}$	0.99971	$0.99969 \pm 0.00061$ (+0.1 $\sigma$ )	$k_D$	0.140863	$0.14082 \pm 0.00031$ (+0.8 $\sigma$ )	$\chi_{6DF}^2$	0.016	$0.44 \pm 0.69$ (+0.0 $\sigma$ )
$c_{217}$	0.99818	$0.99821 \pm 0.00061$ (-0.1 $\sigma$ )	$100\theta_D$	0.160720	$0.16074 \pm 0.00017$ (-1.1 $\sigma$ )	$\chi_{MGS}^2$	1.34	$1.03 \pm 0.77$ (-0.0 $\sigma$ )
$H_0$	67.87	$67.86 \pm 0.65$ (+0.2 $\sigma$ )	$z_{eq}$	3395.9	$3395 \pm 31$ (+0.0 $\sigma$ )	$\chi_{DR12BAO}^2$	3.93	$4.7 \pm 1.9$ (+0.0 $\sigma$ )
$\Omega_\Lambda$	0.6894	$0.6893 \pm 0.0058$ (+0.2 $\sigma$ )	$k_{eq}$	0.010365	$0.010362 \pm 0.000093$ (+0.0 $\sigma$ )	$\chi_{prior}^2$	1.70	$11.5 \pm 4.4$ (+1.1 $\sigma$ )
$\Omega_m$	0.3099	$0.3100 \pm 0.0063$ (-0.1 $\sigma$ )	$100\theta_{eq}$	0.8146	$0.8147 \pm 0.0058$ (+0.0 $\sigma$ )	$\chi_{CMB}^2$	2773.2	$2789.5 \pm 5.9$ (+288.3 $\sigma$ )
$\Omega_m h^2$	0.14275	$0.1427 \pm 0.0013$ (+0.0 $\sigma$ )	$100\theta_{s,eq}$	0.45003	$0.4501 \pm 0.0030$ (+0.0 $\sigma$ )	$\chi_{BAO}^2$	5.29	$6.2 \pm 1.6$ (+0.0 $\sigma$ )
$\Omega_m h^3$	0.09689	$0.0969 \pm 0.0014$ (+0.1 $\sigma$ )	$H(0.15)$	73.16	$73.15 \pm 0.63$ (+0.2 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2780.16$ ;  $\Delta\chi_{eff}^2 = 1585.80$ ;  $\bar{\chi}_{eff}^2 = 2807.21$ ;  $\Delta\bar{\chi}_{eff}^2 = 1592.06$ ;  $R - 1 = 0.02276$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.02 ( $\Delta$  0.00) MGS: 1.34 ( $\Delta$  0.00) DR12BAO: 3.93 ( $\Delta$  0.08) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb\_consext8: 8.79 ( $\Delta$  -0.09) small\_100x143\_offlike5\_EE\_Aplanck. 396.28 ( $\Delta$  0.26) commander\_dx12\_v3\_2.29: 23.14 ( $\Delta$  -0.29) plik\_rd12\_HM\_v22b.TTTEE: 2344.96



16.17 base\_omegak\_plikHM\_TTTEE\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022420	$0.02240 \pm 0.00015$ (+1.0 $\sigma$ )	$\sigma_8$	0.8117	$0.8115 \pm 0.0072$ (+0.1 $\sigma$ )	$D_M(0.15)$	638.2	$638.4 \pm 5.7$ (−0.2 $\sigma$ )
$\Omega_c h^2$	0.11956	$0.1196 \pm 0.0014$ (−0.0 $\sigma$ )	$S_8$	0.8238	$0.824 \pm 0.010$ (−0.0 $\sigma$ )	$H(0.38)$	83.32	$83.32 \pm 0.60$ (+0.1 $\sigma$ )
$100\theta_{MC}$	1.040974	$1.04096 \pm 0.00032$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4512	$0.4512 \pm 0.0057$ (−0.0 $\sigma$ )	$D_M(0.38)$	1522.7	$1523 \pm 12$ (−0.2 $\sigma$ )
$\tau$	0.0559	$0.0559 \pm 0.0073$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6052	$0.6051 \pm 0.0059$ (+0.0 $\sigma$ )	$H(0.51)$	90.04	$90.03 \pm 0.60$ (+0.1 $\sigma$ )
$\Omega_K$	0.00077	$0.0008 \pm 0.0019$ (−0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9848	$0.9846 \pm 0.0084$ (−0.0 $\sigma$ )	$D_M(0.51)$	1972.9	$1973 \pm 15$ (−0.2 $\sigma$ )
$\ln(10^{10} A_s)$	3.0470	$3.047 \pm 0.014$ (+0.2 $\sigma$ )	$r_{drag} h$	99.98	$99.97 \pm 0.92$ (+0.0 $\sigma$ )	$H(0.61)$	95.66	$95.65 \pm 0.60$ (+0.1 $\sigma$ )
$n_s$	0.96722	$0.9660^{+0.0042}_{-0.0047}$ (+0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4339	$2.436 \pm 0.020$ (+0.0 $\sigma$ )	$D_M(0.61)$	2296.0	$2296 \pm 17$ (−0.2 $\sigma$ )
$y_{cal}$	1.00076	$1.0007 \pm 0.0025$ (−0.0 $\sigma$ )	$z_{re}$	7.83	$7.81 \pm 0.72$ (+0.1 $\sigma$ )	$H(2.33)$	236.51	$236.5 \pm 1.2$ (+0.1 $\sigma$ )
$A_{217}^{CIB}$	46.4	$47 \pm 7$ (−0.1 $\sigma$ )	$10^9 A_s$	2.1052	$2.105 \pm 0.030$ (+0.2 $\sigma$ )	$D_M(2.33)$	5745.2	$5745 \pm 31$ (−0.2 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.61	—	$10^9 A_s e^{-2\tau}$	1.8825	$1.882 \pm 0.011$ (+0.0 $\sigma$ )	$f\sigma_8(0.15)$	0.4559	$0.4559 \pm 0.0054$ (−0.0 $\sigma$ )
$A_{143}^{tSZ}$	7.10	$5.4^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$D_{40}$	1227.0	$1229 \pm 13$ (−0.0 $\sigma$ )	$\sigma_8(0.15)$	0.7503	$0.7501 \pm 0.0068$ (+0.1 $\sigma$ )
$A_{100}^{PS}$	249.2	$259 \pm 28$ (−0.1 $\sigma$ )	$D_{220}$	5734.0	$5738 \pm 39$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.47481	$0.4748 \pm 0.0047$ (+0.0 $\sigma$ )
$A_{143}^{PS}$	49.9	$46 \pm 8$ (−0.4 $\sigma$ )	$D_{810}$	2542.2	$2540 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6654	$0.6652 \pm 0.0062$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{PS}$	51.9	$42 \pm 9$ (−0.2 $\sigma$ )	$D_{1420}$	818.91	$817.8 \pm 4.7$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.47369	$0.4736 \pm 0.0043$ (+0.0 $\sigma$ )
$A_{217}^{PS}$	121.2	$115 \pm 10$ (−0.0 $\sigma$ )	$D_{2000}$	231.57	$231.1 \pm 1.6$ (+0.6 $\sigma$ )	$\sigma_8(0.51)$	0.6228	$0.6227 \pm 0.0059$ (+0.1 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.22$ (−0.2 $\sigma$ )	$n_{s,0.002}$	0.96722	$0.9660^{+0.0042}_{-0.0047}$ (+0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.46890	$0.4688 \pm 0.0041$ (+0.0 $\sigma$ )
$A_{100}^{dustTT}$	8.84	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P$	0.245415	$0.245405^{+0.000061}_{-0.000054}$ (+1.0 $\sigma$ )	$\sigma_8(0.61)$	0.5927	$0.5925 \pm 0.0057$ (+0.1 $\sigma$ )
$A_{143}^{dustTT}$	11.07	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246742	$0.246732^{+0.000061}_{-0.000055}$ (+1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.29891	$0.2988 \pm 0.0029$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.13	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5761	$2.580 \pm 0.028$ (−1.0 $\sigma$ )	$\sigma_8(2.33)$	0.30839	$0.3083 \pm 0.0033$ (+0.1 $\sigma$ )
$A_{217}^{dustTT}$	95.4	$93.7 \pm 7.4$ (+0.0 $\sigma$ )	Age/Gyr	13.752	$13.753 \pm 0.079$ (−0.1 $\sigma$ )	$f_{2000}^{143}$	28.63	$29.5 \pm 2.8$ (−0.5 $\sigma$ )
$A_{100}^{dustTE}$	0.1137	$0.114 \pm 0.038$	$z_*$	1089.818	$1089.85 \pm 0.28$ (−0.7 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.97	$32.1 \pm 1.9$ (−0.6 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1340	$0.135 \pm 0.029$	$r_*$	144.506	$144.51 \pm 0.30$ (−0.3 $\sigma$ )	$f_{2000}^{217}$	106.52	$107.0 \pm 1.8$ (−0.6 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.482	$0.483 \pm 0.085$	$100\theta_*$	1.041150	$1.04114 \pm 0.00031$ (+0.1 $\sigma$ )	$\chi_{lensing}^2$	8.771	$9.13 \pm 0.58$ (−0.3 $\sigma$ )
$A_{143}^{dustTE}$	0.226	$0.224 \pm 0.055$	$D_M(z_*)/\text{Gpc}$	13.8794	$13.880 \pm 0.028$ (−0.4 $\sigma$ )	$\chi_{small}^2$	396	$291 \pm 200$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.668	$0.664 \pm 0.080$	$z_{drag}$	1060.009	$1059.98 \pm 0.30$ (+1.1 $\sigma$ )	$\chi_{lowl}^2$	23	$129 \pm 200$ (+0.0 $\sigma$ )
$A_{217}^{dustTE}$	2.094	$2.08 \pm 0.27$	$r_{drag}$	147.152	$147.16 \pm 0.29$ (−0.5 $\sigma$ )	$\chi_{plik}^2$	2345.1	$2359.9 \pm 5.8$ (+304.4 $\sigma$ )
$c_{100}$	0.99972	$0.99969 \pm 0.00061$ (+0.1 $\sigma$ )	$k_D$	0.140842	$0.14081 \pm 0.00031$ (+0.9 $\sigma$ )	$\chi_{JLA}^2$	1034.957	$1035.03 \pm 0.27$ (−0.2 $\sigma$ )
$c_{217}$	0.99819	$0.99821 \pm 0.00061$ (−0.1 $\sigma$ )	$100\theta_D$	0.160711	$0.16074 \pm 0.00017$ (−1.1 $\sigma$ )	$\chi_{6DF}^2$	0.010	$0.46 \pm 0.72$ (+0.0 $\sigma$ )
$H_0$	67.94	$67.93 \pm 0.64$ (+0.2 $\sigma$ )	$z_{eq}$	3393.0	$3393 \pm 30$ (+0.1 $\sigma$ )	$\chi_{MGS}^2$	1.41	$1.07 \pm 0.79$ (−0.0 $\sigma$ )
$\Omega_\Lambda$	0.6902	$0.6900 \pm 0.0056$ (+0.2 $\sigma$ )	$k_{eq}$	0.010356	$0.010357 \pm 0.000093$ (+0.1 $\sigma$ )	$\chi_{DR12BAO}^2$	3.79	$4.5 \pm 1.7$ (+0.0 $\sigma$ )
$\Omega_m$	0.3090	$0.3092 \pm 0.0060$ (−0.1 $\sigma$ )	$100\theta_{eq}$	0.8151	$0.8150 \pm 0.0058$ (+0.0 $\sigma$ )	$\chi_{prior}^2$	1.68	$11.5 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_m h^2$	0.14263	$0.1426 \pm 0.0013$ (+0.1 $\sigma$ )	$100\theta_{s,eq}$	0.45030	$0.4503 \pm 0.0030$ (−0.0 $\sigma$ )	$\chi_{CMB}^2$	2773.3	$2789.6 \pm 5.9$ (+289.2 $\sigma$ )
$\Omega_m h^3$	0.09690	$0.0969 \pm 0.0014$ (+0.1 $\sigma$ )	$H(0.15)$	73.22	$73.21 \pm 0.62$ (+0.2 $\sigma$ )	$\chi_{BAO}^2$	5.20	$6.1 \pm 1.4$ (+0.0 $\sigma$ )

Best-fit  $\chi_{eff}^2 = 3815.13$ ;  $\bar{\chi}_{eff}^2 = 3842.20$ ;  $\Delta\bar{\chi}_{eff}^2 = 1592.05$ ;  $R - 1 = 0.02228$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.79 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.77 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.34 commander\_dx12.v3.2.29: 23.10 plik\_rd12\_HM\_v22b\_TTTEE: 2345.08 SN - JLA Pantheon18: 1034.96



## 16.18 base\_omegak\_plikHM\_TTTEE\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02239 \pm 0.00015 \quad (+1.0\sigma)$	$\sigma_8$	$0.8117^{+0.0073}_{-0.0084} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$638.7 \pm 6.0 \quad (-0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1197 \pm 0.0014 \quad (-0.0\sigma)$	$S_8$	$0.825 \pm 0.013 \quad (+0.0\sigma)$	$H(0.38)$	$83.29 \pm 0.62 \quad (+0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04095 \pm 0.00031 \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4517 \pm 0.0069 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1524 \pm 13 \quad (-0.1\sigma)$
$\tau$	$0.0558^{+0.0057}_{-0.0081} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6055 \pm 0.0071 \quad (+0.0\sigma)$	$H(0.51)$	$90.02 \pm 0.61 \quad (+0.1\sigma)$
$\Omega_K$	$0.0008 \pm 0.0019 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9851^{+0.0094}_{-0.010} \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1974 \pm 16 \quad (-0.1\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046^{+0.013}_{-0.016} \quad (+0.2\sigma)$	$r_{\mathrm{drag}}h$	$99.91 \pm 0.99 \quad (-0.0\sigma)$	$H(0.61)$	$95.64 \pm 0.61 \quad (+0.1\sigma)$
$n_{\mathrm{s}}$	$0.9660 \pm 0.0044 \quad (+0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.436^{+0.022}_{-0.025} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2297 \pm 18 \quad (-0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025 \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.81^{+0.62}_{-0.80} \quad (+0.1\sigma)$	$H(2.33)$	$236.6 \pm 1.2 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}}$	$2.104^{+0.026}_{-0.035} \quad (+0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5746 \pm 31 \quad (-0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.882 \pm 0.012 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4563 \pm 0.0065 \quad (+0.0\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.4^{+2.2}_{-1.9} \quad (+0.2\sigma)$	$D_{40}$	$1229 \pm 13 \quad (+0.0\sigma)$	$\sigma_8(0.15)$	$0.7502^{+0.0067}_{-0.0077} \quad (+0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$259 \pm 28 \quad (-0.1\sigma)$	$D_{220}$	$5734 \pm 39 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4751 \pm 0.0056 \quad (+0.0\sigma)$
$A_{143}^{\mathrm{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2539 \pm 14 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6652^{+0.0060}_{-0.0069} \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.2\sigma)$	$D_{1420}$	$817.5 \pm 4.8 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4739 \pm 0.0052 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (-0.0\sigma)$	$D_{2000}$	$230.9 \pm 1.6 \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.6227^{+0.0057}_{-0.0065} \quad (+0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.38 \quad (-0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9660 \pm 0.0044 \quad (+0.2\sigma)$	$f\sigma_8(0.61)$	$0.4690 \pm 0.0048 \quad (+0.0\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.245400^{+0.000063}_{-0.000055} \quad (+1.0\sigma)$	$\sigma_8(0.61)$	$0.5925^{+0.0054}_{-0.0062} \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246727^{+0.000063}_{-0.000055} \quad (+1.0\sigma)$	$f\sigma_8(2.33)$	$0.2988^{+0.0027}_{-0.0031} \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.583 \pm 0.028 \quad (-1.0\sigma)$	$\sigma_8(2.33)$	$0.3083^{+0.0031}_{-0.0035} \quad (+0.1\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.7 \pm 7.3 \quad (+0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.755 \pm 0.080 \quad (-0.1\sigma)$	$f_{2000}^{143}$	$29.5 \pm 2.8 \quad (-0.5\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.115 \pm 0.039$	$z_*$	$1089.87 \pm 0.28 \quad (-0.7\sigma)$	$f_{2000}^{143 \times 217}$	$32.2 \pm 1.9 \quad (-0.6\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.029$	$r_*$	$144.50 \pm 0.31 \quad (-0.3\sigma)$	$f_{2000}^{217}$	$107.0 \pm 1.8 \quad (-0.5\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.482 \pm 0.085$	$100\theta_*$	$1.04113 \pm 0.00031 \quad (+0.1\sigma)$	$\chi_{\mathrm{small}}^2$	$397.1 \pm 1.9 \quad (+0.2\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.224 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.879 \pm 0.029 \quad (-0.4\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.4 \pm 1.1 \quad (-0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.665 \pm 0.080$	$z_{\mathrm{drag}}$	$1059.95 \pm 0.31 \quad (+1.1\sigma)$	$\chi_{\mathrm{plik}}^2$	$2360.0 \pm 5.8 \quad (+293.9\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.27$	$r_{\mathrm{drag}}$	$147.16 \pm 0.31 \quad (-0.5\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.057 \pm 0.078 \quad (-0.0\sigma)$
$c_{100}$	$0.99968 \pm 0.00062 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.14081 \pm 0.00033 \quad (+0.8\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.45 \pm 0.59 \quad (-0.1\sigma)$
$c_{217}$	$0.99822 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16075 \pm 0.00018 \quad (-1.1\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.9 \quad (+0.1\sigma)$
$H_0$	$67.89 \pm 0.67 \quad (+0.1\sigma)$	$z_{\mathrm{eq}}$	$3395 \pm 32 \quad (+0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.6 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\Lambda}$	$0.6895 \pm 0.0061 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010362 \pm 0.000097 \quad (+0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.7 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}$	$0.3097 \pm 0.0066 \quad (-0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8147 \pm 0.0060 \quad (-0.0\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2780.5 \pm 5.7 \quad (+292.8\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1427 \pm 0.0013 \quad (+0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4501 \pm 0.0031 \quad (-0.1\sigma)$		
$\Omega_{\mathrm{m}}h^3$	$0.0969 \pm 0.0014 \quad (+0.1\sigma)$	$H(0.15)$	$73.18 \pm 0.65 \quad (+0.1\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2798.34; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.29; R - 1 = 0.01378$$



16.19 base\_omegak\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02240 \pm 0.00015 \quad (+1.0\sigma)$	$\sigma_8$	$0.8119 \pm 0.0070 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.15)$	$638.9 \pm 5.8 \quad (-0.2\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1197 \pm 0.0014 \quad (-0.0\sigma)$	$S_8$	$0.825 \pm 0.011 \quad (-0.1\sigma)$	$H(0.38)$	$83.27 \pm 0.61 \quad (+0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04096 \pm 0.00032 \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4519 \pm 0.0058 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1524 \pm 13 \quad (-0.2\sigma)$
$\tau$	$0.0562^{+0.0060}_{-0.0076} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6057 \pm 0.0059 \quad (-0.0\sigma)$	$H(0.51)$	$90.00 \pm 0.60 \quad (+0.1\sigma)$
$\Omega_K$	$0.0007 \pm 0.0019 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9855 \pm 0.0083 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1974 \pm 16 \quad (-0.2\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.047^{+0.012}_{-0.015} \quad (+0.2\sigma)$	$r_{\mathrm{drag}}h$	$99.88 \pm 0.95 \quad (+0.0\sigma)$	$H(0.61)$	$95.62 \pm 0.60 \quad (+0.1\sigma)$
$n_{\mathrm{s}}$	$0.9659^{+0.0042}_{-0.0047} \quad (+0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.438 \pm 0.020 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2298 \pm 18 \quad (-0.2\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.85^{+0.64}_{-0.74} \quad (+0.1\sigma)$	$H(2.33)$	$236.5 \pm 1.2 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}}$	$2.106^{+0.026}_{-0.031} \quad (+0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5747 \pm 31 \quad (-0.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.882 \pm 0.011 \quad (+0.0\sigma)$	$f\sigma_8(0.15)$	$0.4565 \pm 0.0055 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.4^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$D_{40}$	$1229 \pm 13 \quad (-0.0\sigma)$	$\sigma_8(0.15)$	$0.7504^{+0.0062}_{-0.0069} \quad (+0.0\sigma)$
$A_{100}^{\mathrm{PS}}$	$259 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5737 \pm 39 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4752 \pm 0.0047 \quad (-0.0\sigma)$
$A_{143}^{\mathrm{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2540 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6654^{+0.0056}_{-0.0063} \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.2\sigma)$	$D_{1420}$	$817.7 \pm 4.7 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4740 \pm 0.0043 \quad (-0.0\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (-0.0\sigma)$	$D_{2000}$	$231.0 \pm 1.6 \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.6228^{+0.0053}_{-0.0060} \quad (+0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.22 \quad (-0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.9659^{+0.0042}_{-0.0047} \quad (+0.2\sigma)$	$f\sigma_8(0.61)$	$0.4692 \pm 0.0041 \quad (-0.0\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.245403^{+0.000061}_{-0.000055} \quad (+1.0\sigma)$	$\sigma_8(0.61)$	$0.5927^{+0.0051}_{-0.0058} \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246730^{+0.000062}_{-0.000055} \quad (+1.0\sigma)$	$f\sigma_8(2.33)$	$0.2989^{+0.0026}_{-0.0030} \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.581 \pm 0.028 \quad (-1.0\sigma)$	$\sigma_8(2.33)$	$0.3083^{+0.0030}_{-0.0034} \quad (+0.1\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.7 \pm 7.4 \quad (+0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.757 \pm 0.079 \quad (-0.1\sigma)$	$f_{2000}^{143}$	$29.5 \pm 2.8 \quad (-0.5\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.038$	$z_*$	$1089.86 \pm 0.28 \quad (-0.7\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 1.9 \quad (-0.6\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.029$	$r_*$	$144.50 \pm 0.30 \quad (-0.3\sigma)$	$f_{2000}^{217}$	$107.0 \pm 1.8 \quad (-0.6\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.483 \pm 0.085$	$100\theta_*$	$1.04114 \pm 0.00031 \quad (+0.1\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.11 \pm 0.55 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.224 \pm 0.055$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.879 \pm 0.028 \quad (-0.4\sigma)$	$\chi_{\mathrm{small}}^2$	$291 \pm 200 \quad (-0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.664 \pm 0.080$	$z_{\mathrm{drag}}$	$1059.97 \pm 0.30 \quad (+1.1\sigma)$	$\chi_{\mathrm{lowl}}^2$	$130 \pm 200 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.08 \pm 0.26$	$r_{\mathrm{drag}}$	$147.16 \pm 0.29 \quad (-0.5\sigma)$	$\chi_{\mathrm{plik}}^2$	$2359.7 \pm 5.8 \quad (+305.7\sigma)$
$c_{100}$	$0.99969 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.14082 \pm 0.00031 \quad (+0.9\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.45 \pm 0.70 \quad (+0.0\sigma)$
$c_{217}$	$0.99821 \pm 0.00061 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16074 \pm 0.00018 \quad (-1.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.03 \pm 0.78 \quad (-0.0\sigma)$
$H_0$	$67.87 \pm 0.65 \quad (+0.2\sigma)$	$z_{\mathrm{eq}}$	$3395 \pm 30 \quad (+0.1\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.9 \quad (+0.0\sigma)$
$\Omega_{\Lambda}$	$0.6894 \pm 0.0057 \quad (+0.2\sigma)$	$k_{\mathrm{eq}}$	$0.010360 \pm 0.000093 \quad (+0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.4 \quad (+1.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3098 \pm 0.0062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8148 \pm 0.0058 \quad (+0.0\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2789.4 \pm 5.9 \quad (+291.6\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1427 \pm 0.0013 \quad (+0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4502 \pm 0.0030 \quad (-0.0\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.6 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.0969 \pm 0.0014 \quad (+0.1\sigma)$	$H(0.15)$	$73.16 \pm 0.63 \quad (+0.2\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2807.05; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.10; R - 1 = 0.02354$$



16.20 base\_omegak\_plikHM\_TTTEE\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02240 \pm 0.00015 \quad (+1.0\sigma)$	$\sigma_8$	$0.8119 \pm 0.0070 \quad (+0.1\sigma)$	$D_M(0.15)$	$638.3 \pm 5.7 \quad (-0.2\sigma)$
$\Omega_c h^2$	$0.1196 \pm 0.0014 \quad (-0.0\sigma)$	$S_8$	$0.824 \pm 0.010 \quad (-0.0\sigma)$	$H(0.38)$	$83.32 \pm 0.60 \quad (+0.2\sigma)$
$100\theta_{MC}$	$1.04096 \pm 0.00032 \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4513 \pm 0.0057 \quad (-0.0\sigma)$	$D_M(0.38)$	$1523 \pm 12 \quad (-0.2\sigma)$
$\tau$	$0.0564^{+0.0060}_{-0.0076} \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6053 \pm 0.0058 \quad (+0.0\sigma)$	$H(0.51)$	$90.04 \pm 0.60 \quad (+0.2\sigma)$
$\Omega_K$	$0.0008 \pm 0.0019 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9850 \pm 0.0082 \quad (-0.0\sigma)$	$D_M(0.51)$	$1973 \pm 15 \quad (-0.2\sigma)$
$\ln(10^{10} A_s)$	$3.048^{+0.012}_{-0.015} \quad (+0.2\sigma)$	$r_{drag} h$	$99.99 \pm 0.92 \quad (+0.0\sigma)$	$H(0.61)$	$95.66 \pm 0.60 \quad (+0.2\sigma)$
$n_s$	$0.9661^{+0.0042}_{-0.0047} \quad (+0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.436 \pm 0.020 \quad (+0.0\sigma)$	$D_M(0.61)$	$2296 \pm 17 \quad (-0.2\sigma)$
$y_{cal}$	$1.0007 \pm 0.0025 \quad (-0.0\sigma)$	$z_{re}$	$7.87^{+0.64}_{-0.74} \quad (+0.1\sigma)$	$H(2.33)$	$236.5 \pm 1.2 \quad (+0.1\sigma)$
$A_{217}^{CIB}$	$47 \pm 7 \quad (-0.1\sigma)$	$10^9 A_s$	$2.107^{+0.026}_{-0.031} \quad (+0.2\sigma)$	$D_M(2.33)$	$5745 \pm 31 \quad (-0.2\sigma)$
$\xi^{tSZ \times CIB}$	—	$10^9 A_s e^{-2\tau}$	$1.882 \pm 0.011 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4560 \pm 0.0053 \quad (-0.0\sigma)$
$A_{143}^{tSZ}$	$5.4^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$D_{40}$	$1229 \pm 13 \quad (-0.0\sigma)$	$\sigma_8(0.15)$	$0.7505^{+0.0062}_{-0.0069} \quad (+0.1\sigma)$
$A_{100}^{PS}$	$259 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5738 \pm 39 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4749 \pm 0.0046 \quad (+0.0\sigma)$
$A_{143}^{PS}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2540 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6655^{+0.0056}_{-0.0063} \quad (+0.1\sigma)$
$A_{143 \times 217}^{PS}$	$42 \pm 9 \quad (-0.2\sigma)$	$D_{1420}$	$817.8 \pm 4.7 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4738 \pm 0.0043 \quad (+0.0\sigma)$
$A_{217}^{PS}$	$115 \pm 10 \quad (-0.0\sigma)$	$D_{2000}$	$231.1 \pm 1.6 \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.6229^{+0.0053}_{-0.0061} \quad (+0.1\sigma)$
$A^{kSZ}$	$< 4.20 \quad (-0.2\sigma)$	$n_{s,0.002}$	$0.9661^{+0.0042}_{-0.0047} \quad (+0.2\sigma)$	$f\sigma_8(0.61)$	$0.4690 \pm 0.0041 \quad (+0.0\sigma)$
$A_{100}^{dustTT}$	$8.9 \pm 1.8 \quad (+0.0\sigma)$	$Y_P$	$0.245406^{+0.000061}_{-0.000054} \quad (+1.0\sigma)$	$\sigma_8(0.61)$	$0.5928^{+0.0051}_{-0.0058} \quad (+0.1\sigma)$
$A_{143}^{dustTT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_P^{BBN}$	$0.246733^{+0.000061}_{-0.000055} \quad (+1.0\sigma)$	$f\sigma_8(2.33)$	$0.2990^{+0.0026}_{-0.0030} \quad (+0.1\sigma)$
$A_{143 \times 217}^{dustTT}$	$18.5 \pm 3.4 \quad (+0.1\sigma)$	$10^5 D/H$	$2.580 \pm 0.028 \quad (-1.0\sigma)$	$\sigma_8(2.33)$	$0.3085^{+0.0030}_{-0.0034} \quad (+0.1\sigma)$
$A_{217}^{dustTT}$	$93.7 \pm 7.4 \quad (+0.0\sigma)$	Age/Gyr	$13.753 \pm 0.079 \quad (-0.2\sigma)$	$f_{2000}^{143}$	$29.4 \pm 2.8 \quad (-0.5\sigma)$
$A_{100}^{dustTE}$	$0.114 \pm 0.038$	$z_*$	$1089.84 \pm 0.28 \quad (-0.7\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 1.9 \quad (-0.6\sigma)$
$A_{100 \times 143}^{dustTE}$	$0.135 \pm 0.029$	$r_*$	$144.52 \pm 0.30 \quad (-0.4\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.8 \quad (-0.6\sigma)$
$A_{100 \times 217}^{dustTE}$	$0.483 \pm 0.085$	$100\theta_*$	$1.04114 \pm 0.00031 \quad (+0.1\sigma)$	$\chi_{lensing}^2$	$9.10 \pm 0.55 \quad (-0.3\sigma)$
$A_{143}^{dustTE}$	$0.224 \pm 0.055$	$D_M(z_*)/\text{Gpc}$	$13.881 \pm 0.027 \quad (-0.4\sigma)$	$\chi_{small}^2$	$291 \pm 200 \quad (-0.0\sigma)$
$A_{143 \times 217}^{dustTE}$	$0.664 \pm 0.080$	$z_{drag}$	$1059.98 \pm 0.30 \quad (+1.1\sigma)$	$\chi_{lowl}^2$	$130 \pm 200 \quad (+0.0\sigma)$
$A_{217}^{dustTE}$	$2.08 \pm 0.26$	$r_{drag}$	$147.17 \pm 0.29 \quad (-0.6\sigma)$	$\chi_{plik}^2$	$2359.8 \pm 5.8 \quad (+304.6\sigma)$
$c_{100}$	$0.99969 \pm 0.00061 \quad (+0.1\sigma)$	$k_D$	$0.14081 \pm 0.00031 \quad (+0.9\sigma)$	$\chi_{JLA}^2$	$1035.03 \pm 0.26 \quad (-0.1\sigma)$
$c_{217}$	$0.99821 \pm 0.00061 \quad (-0.1\sigma)$	$100\theta_D$	$0.16074 \pm 0.00018 \quad (-1.1\sigma)$	$\chi_{6DF}^2$	$0.46 \pm 0.72 \quad (+0.0\sigma)$
$H_0$	$67.94 \pm 0.64 \quad (+0.2\sigma)$	$z_{eq}$	$3393 \pm 30 \quad (+0.1\sigma)$	$\chi_{MGS}^2$	$1.07 \pm 0.80 \quad (-0.0\sigma)$
$\Omega_\Lambda$	$0.6902 \pm 0.0055 \quad (+0.1\sigma)$	$k_{eq}$	$0.010355 \pm 0.000093 \quad (+0.1\sigma)$	$\chi_{DR12BAO}^2$	$4.5 \pm 1.7 \quad (+0.0\sigma)$
$\Omega_m$	$0.3090 \pm 0.0060 \quad (-0.1\sigma)$	$100\theta_{eq}$	$0.8151 \pm 0.0058 \quad (-0.0\sigma)$	$\chi_{prior}^2$	$11.5 \pm 4.4 \quad (+1.1\sigma)$
$\Omega_m h^2$	$0.1426 \pm 0.0013 \quad (+0.1\sigma)$	$100\theta_{s,eq}$	$0.4503 \pm 0.0029 \quad (-0.1\sigma)$	$\chi_{CMB}^2$	$2789.5 \pm 5.9 \quad (+292.0\sigma)$
$\Omega_m h^3$	$0.0969 \pm 0.0014 \quad (+0.2\sigma)$	$H(0.15)$	$73.22 \pm 0.62 \quad (+0.2\sigma)$	$\chi_{BAO}^2$	$6.0 \pm 1.4 \quad (+0.0\sigma)$

$$\bar{\chi}_{eff}^2 = 3842.05; \Delta \bar{\chi}_{eff}^2 = 1592.08; R - 1 = 0.02292$$



## 16.21 base\_omegak\_CamSpecHM\_TT\_lowl\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022178	$0.02217 \pm 0.00023$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6036	$0.6036 \pm 0.0097$	$H(0.38)$	83.23	$83.26 \pm 0.66$
$\Omega_{\mathrm{c}}h^2$	0.11972	$0.1197 \pm 0.0022$	$\sigma_8/h^{0.5}$	0.9824	$0.982 \pm 0.013$	$D_{\mathrm{M}}(0.38)$	1524.9	$1524 \pm 13$
$100\theta_{\mathrm{MC}}$	1.040934	$1.04094 \pm 0.00049$	$r_{\mathrm{drag}}h$	99.96	$100.0 \pm 1.0$	$H(0.51)$	89.95	$89.98 \pm 0.69$
$\tau$	0.0528	$0.0527 \pm 0.0082$	$\langle d^2 \rangle^{1/2}$	2.4276	$2.425 \pm 0.030$	$D_{\mathrm{M}}(0.51)$	1975.5	$1975 \pm 17$
$\Omega_K$	0.00108	$0.0011 \pm 0.0025$	$z_{\mathrm{re}}$	7.57	$7.53 \pm 0.84$	$H(0.61)$	95.57	$95.60 \pm 0.71$
$\ln(10^{10}A_{\mathrm{s}})$	3.0378	$3.038 \pm 0.017$	$10^9A_{\mathrm{s}}$	2.0859	$2.086 \pm 0.035$	$D_{\mathrm{M}}(0.61)$	2299.0	$2298 \pm 19$
$n_{\mathrm{s}}$	0.9652	$0.9657 \pm 0.0060$	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8769	$1.877 \pm 0.014$	$H(2.33)$	236.44	$236.4 \pm 1.8$
$y_{\mathrm{cal}}$	1.00027	$1.0004 \pm 0.0025$	$D_{40}$	1225.3	$1224 \pm 16$	$D_{\mathrm{M}}(2.33)$	5750.3	$5749 \pm 38$
$A_{100}^{\mathrm{PS}}$	242.6	$242 \pm 25$	$D_{220}$	5702.9	$5703 \pm 41$	$f\sigma_8(0.15)$	0.4550	$0.4548 \pm 0.0086$
$A_{143}^{\mathrm{PS}}$	37.7	$41 \pm 8$	$D_{810}$	2532.5	$2533 \pm 14$	$\sigma_8(0.15)$	0.7478	$0.7480 \pm 0.0095$
$A_{217}^{\mathrm{PS}}$	100.4	$101 \pm 10$	$D_{1420}$	814.0	$814.5 \pm 5.1$	$f\sigma_8(0.38)$	0.4736	$0.4735 \pm 0.0075$
$A_{217}^{\mathrm{CIB}}$	43.3	$41 \pm 7$	$D_{2000}$	229.53	$229.6 \pm 1.9$	$\sigma_8(0.38)$	0.6631	$0.6633 \pm 0.0083$
$A_{143}^{\mathrm{tSZ}}$	4.78	$3.7_{-2.6}^{+1.8}$	$n_{\mathrm{s},0.002}$	0.9652	$0.9657 \pm 0.0060$	$f\sigma_8(0.51)$	0.4724	$0.4723 \pm 0.0069$
$r_{143 \times 217}^{\mathrm{PS}}$	0.594	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	0.245317	$0.24531_{-0.000087}^{+0.00011}$	$\sigma_8(0.51)$	0.6206	$0.6208 \pm 0.0078$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.599	$> 0.460$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246643	$0.24664_{-0.000088}^{+0.00011}$	$f\sigma_8(0.61)$	0.4675	$0.4675 \pm 0.0065$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.01	—	$10^5D/H$	2.6222	$2.623 \pm 0.043$	$\sigma_8(0.61)$	0.5906	$0.5908 \pm 0.0074$
$A^{\mathrm{kSZ}}$	3.1	—	Age/Gyr	13.764	$13.762 \pm 0.097$	$f\sigma_8(2.33)$	0.29779	$0.2979 \pm 0.0036$
$A_{100}^{\mathrm{dust}}$	1.006	$1.01 \pm 0.19$	$z_{*}$	1090.141	$1090.14 \pm 0.43$	$\sigma_8(2.33)$	0.30725	$0.3074 \pm 0.0040$
$A_{143}^{\mathrm{dust}}$	0.971	$0.98 \pm 0.17$	$r_{*}$	144.649	$144.66 \pm 0.50$	$f_{2000}^{143}$	30.95	$30.7 \pm 3.1$
$A_{217}^{\mathrm{dust}}$	0.961	$0.97 \pm 0.10$	$100\theta_{*}$	1.041141	$1.04114 \pm 0.00048$	$f_{2000}^{217}$	107.63	$107.5 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	1.040	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	13.8933	$13.894 \pm 0.045$	$f_{2000}^{143 \times 217}$	33.15	$32.9 \pm 2.2$
$c_{100}$	0.99748	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	1059.475	$1059.46 \pm 0.46$	$\chi_{\mathrm{simall}}^2$	395.87	$397.0 \pm 1.8$
$c_{217}$	1.00125	$1.0012 \pm 0.0016$	$r_{\mathrm{drag}}$	147.379	$147.39 \pm 0.49$	$\chi_{\mathrm{lowl}}^2$	23.19	$23.2 \pm 1.4$
$H_0$	67.82	$67.86 \pm 0.68$	$k_{\mathrm{D}}$	0.14042	$0.14040 \pm 0.00051$	$\chi_{\mathrm{CamSpec}}^2$	7051.1	$7064.3 \pm 5.4$
$\Omega_{\Lambda}$	0.6890	$0.6893 \pm 0.0078$	$100\theta_{\mathrm{D}}$	0.161037	$0.16105 \pm 0.00026$	$\chi_{6\mathrm{DF}}^2$	0.0105	$0.053 \pm 0.073$
$\Omega_{\mathrm{m}}$	0.3099	$0.3095 \pm 0.0073$	$z_{\mathrm{eq}}$	3391	$3390 \pm 50$	$\chi_{\mathrm{MGS}}^2$	1.41	$1.52 \pm 0.60$
$\Omega_{\mathrm{m}}h^2$	0.14255	$0.1425 \pm 0.0021$	$k_{\mathrm{eq}}$	0.010350	$0.01035 \pm 0.00015$	$\chi_{\mathrm{DR12BAO}}^2$	3.68	$4.5 \pm 1.8$
$\Omega_{\mathrm{m}}h^3$	0.09668	$0.0967_{-0.0019}^{+0.0017}$	$100\theta_{\mathrm{eq}}$	0.8148	$0.8150 \pm 0.0095$	$\chi_{\mathrm{prior}}^2$	2.25	$7.5 \pm 3.3$
$\sigma_8$	0.8091	$0.809 \pm 0.011$	$100\theta_{\mathrm{s,eq}}$	0.45030	$0.4504 \pm 0.0049$	$\chi_{\mathrm{BAO}}^2$	5.10	$6.1 \pm 1.5$
$S_8$	0.8223	$0.822 \pm 0.017$	$H(0.15)$	73.11	$73.14 \pm 0.66$	$\chi_{\mathrm{CMB}}^2$	7470.1	$7484.5 \pm 5.5$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4504	$0.4502 \pm 0.0091$	$D_{\mathrm{M}}(0.15)$	639.3	$639.0 \pm 6.1$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 7477.49$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 7498.13$ ;  $R - 1 = 0.00836$

$\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.01 MGS: 1.41 DR12BAO: 3.69 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 commander\_dx12\_v3.2\_29: 23.19 CamSpec like\_10.7HM: 7051.07



## 16.22 base\_omegak\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02218 \pm 0.00022$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6057 \pm 0.0074$	$H(0.38)$	$83.22 \pm 0.67$
$\Omega_{\mathrm{c}}h^2$	$0.1199 \pm 0.0020$	$\sigma_8/h^{0.5}$	$0.9855 \pm 0.0097$	$D_{\mathrm{M}}(0.38)$	$1525 \pm 13$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00048$	$r_{\mathrm{drag}}h$	$99.88 \pm 0.96$	$H(0.51)$	$89.95 \pm 0.69$
$\tau$	$0.0543 \pm 0.0079$	$\langle d^2 \rangle^{1/2}$	$2.434 \pm 0.022$	$D_{\mathrm{M}}(0.51)$	$1976 \pm 17$
$\Omega_K$	$0.0011 \pm 0.0025$	$z_{\mathrm{re}}$	$7.71 \pm 0.78$	$H(0.61)$	$95.57 \pm 0.71$
$\ln(10^{10}A_{\mathrm{s}})$	$3.042 \pm 0.015$	$10^9 A_{\mathrm{s}}$	$2.095 \pm 0.031$	$D_{\mathrm{M}}(0.61)$	$2300 \pm 19$
$n_{\mathrm{s}}$	$0.9651 \pm 0.0056$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879 \pm 0.012$	$H(2.33)$	$236.6 \pm 1.7$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{40}$	$1227 \pm 15$	$D_{\mathrm{M}}(2.33)$	$5750 \pm 37$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25$	$D_{220}$	$5708 \pm 41$	$f\sigma_8(0.15)$	$0.4567 \pm 0.0066$
$A_{143}^{\mathrm{PS}}$	$41 \pm 8$	$D_{810}$	$2534 \pm 13$	$\sigma_8(0.15)$	$0.7499 \pm 0.0078$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{1420}$	$814.7 \pm 5.1$	$f\sigma_8(0.38)$	$0.4752 \pm 0.0057$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{2000}$	$229.7 \pm 1.8$	$\sigma_8(0.38)$	$0.6648 \pm 0.0070$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.7}$	$n_{\mathrm{s},0.002}$	$0.9651 \pm 0.0056$	$f\sigma_8(0.51)$	$0.4739 \pm 0.0053$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	$0.24531^{+0.00010}_{-0.000087}$	$\sigma_8(0.51)$	$0.6222 \pm 0.0066$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.459$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00010}_{-0.000088}$	$f\sigma_8(0.61)$	$0.4690 \pm 0.0050$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.623 \pm 0.042$	$\sigma_8(0.61)$	$0.5921 \pm 0.0063$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.763 \pm 0.096$	$f\sigma_8(2.33)$	$0.2985 \pm 0.0032$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$z_*$	$1090.16 \pm 0.41$	$\sigma_8(2.33)$	$0.3080 \pm 0.0036$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	$r_*$	$144.61 \pm 0.44$	$f_{2000}^{143}$	$30.6 \pm 3.1$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04111 \pm 0.00047$	$f_{2000}^{217}$	$107.5 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.890 \pm 0.041$	$f_{2000}^{143 \times 217}$	$32.9 \pm 2.2$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.47 \pm 0.46$	$\chi_{\mathrm{lensing}}^2$	$9.49 \pm 0.83$
$c_{217}$	$1.0012 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.34 \pm 0.44$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.9$
$H_0$	$67.79 \pm 0.67$	$k_{\mathrm{D}}$	$0.14045 \pm 0.00048$	$\chi_{\mathrm{lowl}}^2$	$23.4 \pm 1.3$
$\Omega_{\Lambda}$	$0.6883 \pm 0.0068$	$100\theta_{\mathrm{D}}$	$0.16104 \pm 0.00026$	$\chi_{\mathrm{CamSpec}}^2$	$7063.5 \pm 5.2$
$\Omega_{\mathrm{m}}$	$0.3106 \pm 0.0066$	$z_{\mathrm{eq}}$	$3395 \pm 45$	$\chi_{6\mathrm{DF}}^2$	$0.055 \pm 0.074$
$\Omega_{\mathrm{m}}h^2$	$0.1427 \pm 0.0019$	$k_{\mathrm{eq}}$	$0.01036 \pm 0.00014$	$\chi_{\mathrm{MGS}}^2$	$1.44 \pm 0.57$
$\Omega_{\mathrm{m}}h^3$	$0.0967 \pm 0.0017$	$100\theta_{\mathrm{eq}}$	$0.8142 \pm 0.0085$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.8$
$\sigma_8$	$0.8114 \pm 0.0085$	$100\theta_{\mathrm{s,eq}}$	$0.4500 \pm 0.0044$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.3$
$S_8$	$0.826 \pm 0.013$	$H(0.15)$	$73.08 \pm 0.66$	$\chi_{\mathrm{CMB}}^2$	$7493.5 \pm 5.5$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4522 \pm 0.0071$	$D_{\mathrm{M}}(0.15)$	$639.6 \pm 6.0$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.6$

$\bar{\chi}_{\mathrm{eff}}^2 = 7507.17$ ;  $R - 1 = 0.01378$



### 16.23 base\_omegak\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00022$	$\sigma_8/h^{0.5}$	$0.9846 \pm 0.0096$	$H(0.51)$	$89.97 \pm 0.68$
$\Omega_{\mathrm{c}}h^2$	$0.1197 \pm 0.0020$	$r_{\mathrm{drag}}h$	$100.00 \pm 0.93$	$D_{\mathrm{M}}(0.51)$	$1975 \pm 17$
$100\theta_{\mathrm{MC}}$	$1.04094 \pm 0.00048$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.022$	$H(0.61)$	$95.60 \pm 0.71$
$\tau$	$0.0548 \pm 0.0079$	$z_{\mathrm{re}}$	$7.75 \pm 0.78$	$D_{\mathrm{M}}(0.61)$	$2298 \pm 19$
$\Omega_K$	$0.0011 \pm 0.0025$	$10^9 A_{\mathrm{s}}$	$2.096^{+0.029}_{-0.032}$	$H(2.33)$	$236.4 \pm 1.7$
$\ln(10^{10} A_{\mathrm{s}})$	$3.043 \pm 0.015$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.879 \pm 0.012$	$D_{\mathrm{M}}(2.33)$	$5749 \pm 37$
$n_{\mathrm{s}}$	$0.9655 \pm 0.0056$	$D_{40}$	$1226 \pm 14$	$f\sigma_8(0.15)$	$0.4559 \pm 0.0064$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{220}$	$5710 \pm 41$	$\sigma_8(0.15)$	$0.7497 \pm 0.0078$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25$	$D_{810}$	$2534 \pm 13$	$f\sigma_8(0.38)$	$0.4746 \pm 0.0056$
$A_{143}^{\mathrm{PS}}$	$41 \pm 8$	$D_{1420}$	$814.9 \pm 5.1$	$\sigma_8(0.38)$	$0.6648 \pm 0.0070$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{2000}$	$229.8 \pm 1.8$	$f\sigma_8(0.51)$	$0.4734 \pm 0.0052$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$n_{\mathrm{s},0.002}$	$0.9655 \pm 0.0056$	$\sigma_8(0.51)$	$0.6222 \pm 0.0066$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.7}$	$Y_{\mathrm{P}}$	$0.24532^{+0.00010}_{-0.000087}$	$f\sigma_8(0.61)$	$0.4686 \pm 0.0049$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00010}_{-0.000087}$	$\sigma_8(0.61)$	$0.5921 \pm 0.0063$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.58^{+0.42}_{-0.13}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.620 \pm 0.042$	$f\sigma_8(2.33)$	$0.2986 \pm 0.0032$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	Age/Gyr	$13.761 \pm 0.096$	$\sigma_8(2.33)$	$0.3081 \pm 0.0036$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.13 \pm 0.41$	$f_{2000}^{143}$	$30.6 \pm 3.1$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$r_*$	$144.65 \pm 0.44$	$f_{2000}^{217}$	$107.5 \pm 2.0$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	$100\theta_*$	$1.04114 \pm 0.00047$	$f_{2000}^{143 \times 217}$	$32.8 \pm 2.2$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.893 \pm 0.040$	$\chi_{\mathrm{lensing}}^2$	$9.50 \pm 0.86$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$z_{\mathrm{drag}}$	$1059.49 \pm 0.46$	$\chi_{\mathrm{simall}}^2$	$397.2 \pm 2.0$
$c_{100}$	$0.9975 \pm 0.0011$	$r_{\mathrm{drag}}$	$147.37 \pm 0.44$	$\chi_{\mathrm{lowl}}^2$	$23.3 \pm 1.3$
$c_{217}$	$1.0012 \pm 0.0016$	$k_{\mathrm{D}}$	$0.14043 \pm 0.00048$	$\chi_{\mathrm{CamSpec}}^2$	$7063.6 \pm 5.2$
$H_0$	$67.86 \pm 0.66$	$100\theta_{\mathrm{D}}$	$0.16103 \pm 0.00026$	$\chi_{\mathrm{JLA}}^2$	$1035.07 \pm 0.31$
$\Omega_{\Lambda}$	$0.6893 \pm 0.0066$	$z_{\mathrm{eq}}$	$3391 \pm 44$	$\chi_{6\mathrm{DF}}^2$	$0.047 \pm 0.065$
$\Omega_{\mathrm{m}}$	$0.3096 \pm 0.0064$	$k_{\mathrm{eq}}$	$0.01035 \pm 0.00014$	$\chi_{\mathrm{MGS}}^2$	$1.51 \pm 0.56$
$\Omega_{\mathrm{m}}h^2$	$0.1425 \pm 0.0019$	$100\theta_{\mathrm{eq}}$	$0.8149 \pm 0.0084$	$\chi_{\mathrm{DR12BAO}}^2$	$4.4 \pm 1.7$
$\Omega_{\mathrm{m}}h^3$	$0.0967^{+0.0017}_{-0.0018}$	$100\theta_{\mathrm{s,eq}}$	$0.4504 \pm 0.0043$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.3$
$\sigma_8$	$0.8111 \pm 0.0085$	$H(0.15)$	$73.14 \pm 0.65$	$\chi_{\mathrm{CMB}}^2$	$7493.6 \pm 5.4$
$S_8$	$0.824 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$639.0 \pm 5.9$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4513 \pm 0.0069$	$H(0.38)$	$83.26 \pm 0.66$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6050 \pm 0.0072$	$D_{\mathrm{M}}(0.38)$	$1524 \pm 13$		
$\bar{\chi}_{\mathrm{eff}}^2 = 8542.21$ ; $R - 1 = 0.01384$					



## 16.24 base\_omegak\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02218 \pm 0.00023$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6043 \pm 0.0095$	$H(0.38)$	$83.26 \pm 0.66$
$\Omega_{\mathrm{c}}h^2$	$0.1196 \pm 0.0022$	$\sigma_8/h^{0.5}$	$0.984 \pm 0.013$	$D_{\mathrm{M}}(0.38)$	$1524 \pm 13$
$100\theta_{\mathrm{MC}}$	$1.04094 \pm 0.00049$	$r_{\mathrm{drag}}h$	$100.0 \pm 1.0$	$H(0.51)$	$89.97 \pm 0.69$
$\tau$	$0.0543^{+0.0049}_{-0.0083}$	$\langle d^2 \rangle^{1/2}$	$2.429 \pm 0.029$	$D_{\mathrm{M}}(0.51)$	$1975 \pm 17$
$\Omega_K$	$0.0011 \pm 0.0025$	$z_{\mathrm{re}}$	$7.71^{+0.53}_{-0.84}$	$H(0.61)$	$95.59 \pm 0.71$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.012}_{-0.017}$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.025}_{-0.035}$	$D_{\mathrm{M}}(0.61)$	$2298 \pm 19$
$n_{\mathrm{s}}$	$0.9659 \pm 0.0061$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.014$	$H(2.33)$	$236.4 \pm 1.9$
$y_{\mathrm{cal}}$	$1.0003 \pm 0.0025$	$D_{40}$	$1224 \pm 16$	$D_{\mathrm{M}}(2.33)$	$5750 \pm 38$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25$	$D_{220}$	$5703 \pm 41$	$f\sigma_8(0.15)$	$0.4554 \pm 0.0086$
$A_{143}^{\mathrm{PS}}$	$41 \pm 8$	$D_{810}$	$2533 \pm 14$	$\sigma_8(0.15)$	$0.7490 \pm 0.0092$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{1420}$	$814.4 \pm 5.2$	$f\sigma_8(0.38)$	$0.4741 \pm 0.0074$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{2000}$	$229.6 \pm 1.9$	$\sigma_8(0.38)$	$0.6642 \pm 0.0080$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.8}_{-2.6}$	$n_{\mathrm{s},0.002}$	$0.9659 \pm 0.0061$	$f\sigma_8(0.51)$	$0.4729 \pm 0.0068$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	$0.24531^{+0.00011}_{-0.000087}$	$\sigma_8(0.51)$	$0.6217 \pm 0.0074$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.457$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00011}_{-0.000087}$	$f\sigma_8(0.61)$	$0.4681 \pm 0.0064$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.622 \pm 0.043$	$\sigma_8(0.61)$	$0.5916 \pm 0.0071$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.763 \pm 0.097$	$f\sigma_8(2.33)$	$0.2983^{+0.0032}_{-0.0036}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$z_*$	$1090.13 \pm 0.43$	$\sigma_8(2.33)$	$0.3078^{+0.0036}_{-0.0040}$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.17$	$r_*$	$144.67 \pm 0.50$	$f_{2000}^{143}$	$30.6 \pm 3.1$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04114 \pm 0.00048$	$f_{2000}^{217}$	$107.5 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.895 \pm 0.046$	$f_{2000}^{143 \times 217}$	$32.8 \pm 2.2$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.47 \pm 0.46$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.8$
$c_{217}$	$1.0012 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.40 \pm 0.49$	$\chi_{\mathrm{lowl}}^2$	$23.2 \pm 1.4$
$H_0$	$67.87 \pm 0.68$	$k_{\mathrm{D}}$	$0.14040 \pm 0.00052$	$\chi_{\mathrm{CamSpec}}^2$	$7064.1 \pm 5.4$
$\Omega_{\Lambda}$	$0.6895 \pm 0.0078$	$100\theta_{\mathrm{D}}$	$0.16104 \pm 0.00026$	$\chi_{6\mathrm{DF}}^2$	$0.052 \pm 0.073$
$\Omega_{\mathrm{m}}$	$0.3094 \pm 0.0073$	$z_{\mathrm{eq}}$	$3389 \pm 50$	$\chi_{\mathrm{MGS}}^2$	$1.53 \pm 0.60$
$\Omega_{\mathrm{m}}h^2$	$0.1425 \pm 0.0021$	$k_{\mathrm{eq}}$	$0.01034 \pm 0.00015$	$\chi_{\mathrm{DR12BAO}}^2$	$4.5 \pm 1.7$
$\Omega_{\mathrm{m}}h^3$	$0.0967^{+0.0017}_{-0.0019}$	$100\theta_{\mathrm{eq}}$	$0.8152 \pm 0.0095$	$\chi_{\mathrm{prior}}^2$	$7.5 \pm 3.3$
$\sigma_8$	$0.810 \pm 0.010$	$100\theta_{\mathrm{s,eq}}$	$0.4505 \pm 0.0049$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.5$
$S_8$	$0.823 \pm 0.017$	$H(0.15)$	$73.15 \pm 0.66$	$\chi_{\mathrm{CMB}}^2$	$7484.3 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4507 \pm 0.0091$	$D_{\mathrm{M}}(0.15)$	$639.0 \pm 6.1$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7497.90$ ;  $R - 1 = 0.01053$



**16.25**    **base\_omegak\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_post\_lensing\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02218 \pm 0.00022$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6059 \pm 0.0073$	$H(0.38)$	$83.21 \pm 0.67$
$\Omega_{\mathrm{c}}h^2$	$0.1198 \pm 0.0020$	$\sigma_8/h^{0.5}$	$0.9859 \pm 0.0096$	$D_{\mathrm{M}}(0.38)$	$1525 \pm 13$
$100\theta_{\mathrm{MC}}$	$1.04092 \pm 0.00048$	$r_{\mathrm{drag}}h$	$99.90 \pm 0.96$	$H(0.51)$	$89.94 \pm 0.69$
$\tau$	$0.0553^{+0.0057}_{-0.0080}$	$\langle d^2 \rangle^{1/2}$	$2.435 \pm 0.022$	$D_{\mathrm{M}}(0.51)$	$1976 \pm 17$
$\Omega_K$	$0.0011 \pm 0.0025$	$z_{\mathrm{re}}$	$7.81^{+0.59}_{-0.79}$	$H(0.61)$	$95.56 \pm 0.71$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044^{+0.012}_{-0.015}$	$10^9 A_{\mathrm{s}}$	$2.099^{+0.024}_{-0.032}$	$D_{\mathrm{M}}(0.61)$	$2300 \pm 19$
$n_{\mathrm{s}}$	$0.9653 \pm 0.0056$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879 \pm 0.012$	$H(2.33)$	$236.5 \pm 1.7$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{40}$	$1227 \pm 15$	$D_{\mathrm{M}}(2.33)$	$5751 \pm 37$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25$	$D_{220}$	$5708 \pm 41$	$f\sigma_8(0.15)$	$0.4568 \pm 0.0066$
$A_{143}^{\mathrm{PS}}$	$41 \pm 8$	$D_{810}$	$2534 \pm 13$	$\sigma_8(0.15)$	$0.7503 \pm 0.0077$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{1420}$	$814.7 \pm 5.1$	$f\sigma_8(0.38)$	$0.4754 \pm 0.0057$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{2000}$	$229.7 \pm 1.9$	$\sigma_8(0.38)$	$0.6652 \pm 0.0069$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.7}$	$n_{\mathrm{s},0.002}$	$0.9653 \pm 0.0056$	$f\sigma_8(0.51)$	$0.4741 \pm 0.0052$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	$0.24531^{+0.00010}_{-0.000087}$	$\sigma_8(0.51)$	$0.6226 \pm 0.0065$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.460$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00010}_{-0.000088}$	$f\sigma_8(0.61)$	$0.4692 \pm 0.0049$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.622 \pm 0.042$	$\sigma_8(0.61)$	$0.5925 \pm 0.0062$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.765 \pm 0.096$	$f\sigma_8(2.33)$	$0.2987 \pm 0.0031$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$z_*$	$1090.14 \pm 0.41$	$\sigma_8(2.33)$	$0.3082 \pm 0.0036$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	$r_*$	$144.63 \pm 0.44$	$f_{2000}^{143}$	$30.6 \pm 3.1$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04112 \pm 0.00047$	$f_{2000}^{217}$	$107.5 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.892 \pm 0.040$	$f_{2000}^{143 \times 217}$	$32.8 \pm 2.2$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.48 \pm 0.46$	$\chi_{\mathrm{lensing}}^2$	$9.43 \pm 0.77$
$c_{217}$	$1.0012 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.36 \pm 0.44$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.9$
$H_0$	$67.79 \pm 0.67$	$k_{\mathrm{D}}$	$0.14044 \pm 0.00048$	$\chi_{\mathrm{lowl}}^2$	$23.4 \pm 1.3$
$\Omega_{\Lambda}$	$0.6886 \pm 0.0068$	$100\theta_{\mathrm{D}}$	$0.16103 \pm 0.00026$	$\chi_{\mathrm{CamSpec}}^2$	$7063.4 \pm 5.1$
$\Omega_{\mathrm{m}}$	$0.3104 \pm 0.0066$	$z_{\mathrm{eq}}$	$3393 \pm 44$	$\chi_{6\mathrm{DF}}^2$	$0.054 \pm 0.072$
$\Omega_{\mathrm{m}}h^2$	$0.1426 \pm 0.0019$	$k_{\mathrm{eq}}$	$0.01035 \pm 0.00014$	$\chi_{\mathrm{MGS}}^2$	$1.45 \pm 0.57$
$\Omega_{\mathrm{m}}h^3$	$0.0967^{+0.0016}_{-0.0018}$	$100\theta_{\mathrm{eq}}$	$0.8146 \pm 0.0084$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.8$
$\sigma_8$	$0.8118 \pm 0.0083$	$100\theta_{\mathrm{s,eq}}$	$0.4502 \pm 0.0043$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.3$
$S_8$	$0.826 \pm 0.013$	$H(0.15)$	$73.08 \pm 0.66$	$\chi_{\mathrm{CMB}}^2$	$7493.3 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4522 \pm 0.0071$	$D_{\mathrm{M}}(0.15)$	$639.6 \pm 6.1$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.6$

$\bar{\chi}_{\mathrm{eff}}^2 = 7506.97$ ;  $R - 1 = 0.01641$



**16.26**    **base\_omegak\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00022$	$\sigma_8/h^{0.5}$	$0.9851 \pm 0.0095$	$H(0.51)$	$89.97 \pm 0.68$
$\Omega_{\mathrm{c}}h^2$	$0.1196 \pm 0.0019$	$r_{\mathrm{drag}}h$	$100.02 \pm 0.93$	$D_{\mathrm{M}}(0.51)$	$1975 \pm 17$
$100\theta_{\mathrm{MC}}$	$1.04094 \pm 0.00048$	$\langle d^2 \rangle^{1/2}$	$2.433 \pm 0.022$	$H(0.61)$	$95.58 \pm 0.71$
$\tau$	$0.0557^{+0.0057}_{-0.0080}$	$z_{\mathrm{re}}$	$7.84^{+0.60}_{-0.79}$	$D_{\mathrm{M}}(0.61)$	$2298 \pm 19$
$\Omega_K$	$0.0010 \pm 0.0025$	$10^9 A_{\mathrm{s}}$	$2.100^{+0.024}_{-0.032}$	$H(2.33)$	$236.4 \pm 1.7$
$\ln(10^{10} A_{\mathrm{s}})$	$3.044^{+0.012}_{-0.015}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878 \pm 0.012$	$D_{\mathrm{M}}(2.33)$	$5750 \pm 37$
$n_{\mathrm{s}}$	$0.9657 \pm 0.0056$	$D_{40}$	$1226 \pm 14$	$f\sigma_8(0.15)$	$0.4560 \pm 0.0064$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{220}$	$5710 \pm 41$	$\sigma_8(0.15)$	$0.7501 \pm 0.0077$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25$	$D_{810}$	$2534 \pm 13$	$f\sigma_8(0.38)$	$0.4748 \pm 0.0056$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8$	$D_{1420}$	$814.9 \pm 5.1$	$\sigma_8(0.38)$	$0.6651 \pm 0.0069$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{2000}$	$229.8 \pm 1.8$	$f\sigma_8(0.51)$	$0.4736 \pm 0.0052$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7$	$n_{\mathrm{s},0.002}$	$0.9657 \pm 0.0056$	$\sigma_8(0.51)$	$0.6226 \pm 0.0065$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.7}_{-2.7}$	$Y_{\mathrm{P}}$	$0.24532^{+0.00010}_{-0.000087}$	$f\sigma_8(0.61)$	$0.4688 \pm 0.0049$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24665^{+0.00010}_{-0.000087}$	$\sigma_8(0.61)$	$0.5925 \pm 0.0062$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.457$	$10^5 \mathrm{D}/\mathrm{H}$	$2.619 \pm 0.042$	$f\sigma_8(2.33)$	$0.2988 \pm 0.0031$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	Age/Gyr	$13.763 \pm 0.096$	$\sigma_8(2.33)$	$0.3083 \pm 0.0036$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.11 \pm 0.40$	$f_{2000}^{143}$	$30.5 \pm 3.1$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$r_*$	$144.66 \pm 0.44$	$f_{2000}^{217}$	$107.5 \pm 2.0$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	$100\theta_*$	$1.04115 \pm 0.00047$	$f_{2000}^{143 \times 217}$	$32.8 \pm 2.2$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.895 \pm 0.040$	$\chi_{\mathrm{lensing}}^2$	$9.44 \pm 0.80$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$z_{\mathrm{drag}}$	$1059.50 \pm 0.46$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 2.0$
$c_{100}$	$0.9975 \pm 0.0011$	$r_{\mathrm{drag}}$	$147.39 \pm 0.43$	$\chi_{\mathrm{lowl}}^2$	$23.3 \pm 1.3$
$c_{217}$	$1.0012 \pm 0.0016$	$k_{\mathrm{D}}$	$0.14042 \pm 0.00048$	$\chi_{\mathrm{CamSpec}}^2$	$7063.5 \pm 5.1$
$H_0$	$67.86 \pm 0.66$	$100\theta_{\mathrm{D}}$	$0.16102 \pm 0.00026$	$\chi_{\mathrm{JLA}}^2$	$1035.06 \pm 0.30$
$\Omega_{\Lambda}$	$0.6895 \pm 0.0065$	$z_{\mathrm{eq}}$	$3389 \pm 44$	$\chi_{6\mathrm{DF}}^2$	$0.047 \pm 0.064$
$\Omega_{\mathrm{m}}$	$0.3094 \pm 0.0063$	$k_{\mathrm{eq}}$	$0.01034 \pm 0.00013$	$\chi_{\mathrm{MGS}}^2$	$1.51 \pm 0.56$
$\Omega_{\mathrm{m}}h^2$	$0.1425 \pm 0.0018$	$100\theta_{\mathrm{eq}}$	$0.8153 \pm 0.0084$	$\chi_{\mathrm{DR12BAO}}^2$	$4.4 \pm 1.6$
$\Omega_{\mathrm{m}}h^3$	$0.0967^{+0.0016}_{-0.0018}$	$100\theta_{\mathrm{s,eq}}$	$0.4505 \pm 0.0043$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.3$
$\sigma_8$	$0.8115 \pm 0.0083$	$H(0.15)$	$73.14 \pm 0.65$	$\chi_{\mathrm{CMB}}^2$	$7493.4 \pm 5.4$
$S_8$	$0.824 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$639.0 \pm 5.9$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4514 \pm 0.0069$	$H(0.38)$	$83.25 \pm 0.66$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6052 \pm 0.0072$	$D_{\mathrm{M}}(0.38)$	$1524 \pm 13$		

$\bar{\chi}_{\mathrm{eff}}^2 = 8542.02$ ;  $R - 1 = 0.01706$



## 16.27 base\_omegak\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022328	$0.02232 \pm 0.00016$ (+0.7 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4488	$0.4485 \pm 0.0071$ (−0.2 $\sigma$ )	$H(0.38)$	83.29	$83.22 \pm 0.61$ (−0.1 $\sigma$ )
$\Omega_c h^2$	0.11934	$0.1192 \pm 0.0015$ (−0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6022	$0.6017 \pm 0.0074$ (−0.2 $\sigma$ )	$D_M(0.38)$	1523.0	$1525 \pm 13$ (+0.0 $\sigma$ )
$100\theta_{MC}$	1.040927	$1.04092 \pm 0.00032$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9805	$0.980 \pm 0.011$ (−0.2 $\sigma$ )	$H(0.51)$	89.99	$89.92 \pm 0.61$ (−0.1 $\sigma$ )
$\tau$	0.0531	$0.0532 \pm 0.0079$ (+0.1 $\sigma$ )	$r_{drag}h$	100.08	$100.01 \pm 0.99$ (−0.0 $\sigma$ )	$D_M(0.51)$	1973.4	$1975 \pm 16$ (+0.0 $\sigma$ )
$\Omega_K$	0.00079	$0.0005 \pm 0.0020$ (−0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4229	$2.423 \pm 0.025$ (−0.1 $\sigma$ )	$H(0.61)$	95.60	$95.53 \pm 0.61$ (−0.1 $\sigma$ )
$\ln(10^{10} A_s)$	3.0392	$3.038 \pm 0.016$ (+0.0 $\sigma$ )	$z_{re}$	7.56	$7.55 \pm 0.81$ (+0.0 $\sigma$ )	$D_M(0.61)$	2296.7	$2299 \pm 18$ (+0.0 $\sigma$ )
$n_s$	0.96722	$0.9668 \pm 0.0046$ (+0.2 $\sigma$ )	$10^9 A_s$	2.0889	$2.088 \pm 0.034$ (+0.0 $\sigma$ )	$H(2.33)$	236.27	$236.1 \pm 1.2$ (−0.2 $\sigma$ )
$y_{cal}$	1.00054	$1.0004 \pm 0.0025$ (+0.0 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8784	$1.877 \pm 0.012$ (−0.1 $\sigma$ )	$D_M(2.33)$	5748.8	$5753 \pm 32$ (+0.1 $\sigma$ )
$A_{100}^{PS}$	234.6	$240 \pm 24$ (−0.1 $\sigma$ )	$D_{40}$	1223.3	$1223 \pm 13$ (−0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4535	$0.4533 \pm 0.0067$ (−0.2 $\sigma$ )
$A_{143}^{PS}$	49.2	$39 \pm 8$ (−0.2 $\sigma$ )	$D_{220}$	5718.7	$5720 \pm 39$ (+0.4 $\sigma$ )	$\sigma_8(0.15)$	0.7471	$0.7462 \pm 0.0077$ (−0.2 $\sigma$ )
$A_{217}^{PS}$	105.6	$102 \pm 10$ (+0.1 $\sigma$ )	$D_{810}$	2537.3	$2534 \pm 13$ (+0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.4725	$0.4721 \pm 0.0059$ (−0.2 $\sigma$ )
$A_{217}^{CIB}$	39.9	$40 \pm 7$ (−0.1 $\sigma$ )	$D_{1420}$	816.89	$815.8 \pm 4.8$ (+0.3 $\sigma$ )	$\sigma_8(0.38)$	0.6626	$0.6618 \pm 0.0069$ (−0.2 $\sigma$ )
$A_{143}^{tSZ}$	4.97	$3.8^{+1.8}_{-2.6}$ (+0.1 $\sigma$ )	$D_{2000}$	230.71	$230.3 \pm 1.6$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.4714	$0.4710 \pm 0.0054$ (−0.2 $\sigma$ )
$r_{143 \times 217}^{PS}$	0.758	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$n_{s,0.002}$	0.96722	$0.9668 \pm 0.0046$ (+0.2 $\sigma$ )	$\sigma_8(0.51)$	0.6203	$0.6195 \pm 0.0065$ (−0.2 $\sigma$ )
$r_{143 \times 217}^{CIB}$	0.711	$0.56^{+0.39}_{-0.18}$ (−0.1 $\sigma$ )	$Y_P$	0.245378	$0.245375^{+0.000070}_{-0.000060}$ (+0.7 $\sigma$ )	$f\sigma_8(0.61)$	0.4667	$0.4663 \pm 0.0051$ (−0.2 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.95	—	$Y_P^{BBN}$	0.246705	$0.246701^{+0.000070}_{-0.000060}$ (+0.7 $\sigma$ )	$\sigma_8(0.61)$	0.5903	$0.5895 \pm 0.0062$ (−0.2 $\sigma$ )
$A^{kSZ}$	2.55	$4.8^{+2.3}_{-4.0}$ (−0.1 $\sigma$ )	$10^5 D/H$	2.5935	$2.595 \pm 0.031$ (−0.7 $\sigma$ )	$f\sigma_8(2.33)$	0.29772	$0.2973 \pm 0.0031$ (−0.2 $\sigma$ )
$A_{100}^{dust}$	1.008	$1.01 \pm 0.20$ (−0.0 $\sigma$ )	Age/Gyr	13.761	$13.772 \pm 0.081$ (+0.1 $\sigma$ )	$\sigma_8(2.33)$	0.30720	$0.3067 \pm 0.0035$ (−0.2 $\sigma$ )
$A_{143}^{dust}$	0.952	$0.97 \pm 0.18$ (−0.1 $\sigma$ )	$z_*$	1089.916	$1089.91 \pm 0.30$ (−0.5 $\sigma$ )	$f_{2000}^{143}$	29.71	$29.8 \pm 2.9$ (−0.3 $\sigma$ )
$A_{217}^{dust}$	0.966	$0.97 \pm 0.10$ (+0.1 $\sigma$ )	$r_*$	144.635	$144.67 \pm 0.32$ (+0.0 $\sigma$ )	$f_{2000}^{217}$	106.35	$106.8 \pm 1.9$ (−0.3 $\sigma$ )
$A_{143 \times 217}^{dust}$	1.019	$1.03 \pm 0.16$ (−0.0 $\sigma$ )	$100\theta_*$	1.041111	$1.04111 \pm 0.00031$ (−0.1 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.07	$32.1 \pm 2.0$ (−0.4 $\sigma$ )
$c_{100}$	0.99785	$0.9975 \pm 0.0011$ (+0.0 $\sigma$ )	$D_M(z_*)/\text{Gpc}$	13.8923	$13.896 \pm 0.030$ (+0.0 $\sigma$ )	$\chi_{small}^2$	395.85	$396.9 \pm 1.7$ (−0.0 $\sigma$ )
$c_{217}$	1.00095	$1.0011 \pm 0.0016$ (−0.0 $\sigma$ )	$z_{drag}$	1059.780	$1059.77 \pm 0.33$ (+0.7 $\sigma$ )	$\chi_{lowl}^2$	22.88	$23.0 \pm 1.0$ (−0.2 $\sigma$ )
$c_{TE}$	0.99693	$0.9966 \pm 0.0049$	$r_{drag}$	147.315	$147.35 \pm 0.32$ (−0.1 $\sigma$ )	$\chi_{CamSpec}^2$	11500.8	$11514.9 \pm 5.6$ (+822.1 $\sigma$ )
$c_{EE}$	0.99225	$0.9921 \pm 0.0049$	$k_D$	0.140600	$0.14056 \pm 0.00034$ (+0.3 $\sigma$ )	$\chi_{6DF}^2$	0.0063	$0.052 \pm 0.071$ (−0.0 $\sigma$ )
$H_0$	67.94	$67.87 \pm 0.67$ (+0.0 $\sigma$ )	$100\theta_D$	0.160838	$0.16085 \pm 0.00019$ (−0.8 $\sigma$ )	$\chi_{MGS}^2$	1.47	$1.50 \pm 0.59$ (−0.0 $\sigma$ )
$\Omega_\Lambda$	0.6909	$0.6907 \pm 0.0061$ (+0.2 $\sigma$ )	$z_{eq}$	3385.4	$3382 \pm 33$ (−0.2 $\sigma$ )	$\chi_{DR12BAO}^2$	3.65	$4.6 \pm 1.8$ (+0.1 $\sigma$ )
$\Omega_m$	0.3083	$0.3087 \pm 0.0066$ (−0.1 $\sigma$ )	$k_{eq}$	0.010333	$0.01032 \pm 0.00010$ (−0.2 $\sigma$ )	$\chi_{prior}^2$	1.81	$7.8 \pm 3.4$ (+0.1 $\sigma$ )
$\Omega_m h^2$	0.14231	$0.1422 \pm 0.0014$ (−0.2 $\sigma$ )	$100\theta_{eq}$	0.8162	$0.8168 \pm 0.0063$ (+0.2 $\sigma$ )	$\chi_{BAO}^2$	5.13	$6.2 \pm 1.5$ (+0.1 $\sigma$ )
$\Omega_m h^3$	0.09668	$0.0965 \pm 0.0014$ (−0.1 $\sigma$ )	$100\theta_{s,eq}$	0.45093	$0.4512 \pm 0.0032$ (+0.2 $\sigma$ )	$\chi_{CMB}^2$	11919.5	$11934.9 \pm 5.8$ (+810.8 $\sigma$ )
$\sigma_8$	0.8082	$0.8072 \pm 0.0084$ (−0.2 $\sigma$ )	$H(0.15)$	73.20	$73.13 \pm 0.64$ (−0.0 $\sigma$ )			
$S_8$	0.8193	$0.819 \pm 0.013$ (−0.2 $\sigma$ )	$D_M(0.15)$	638.3	$639.0 \pm 5.9$ (−0.0 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 11926.45$ ;  $\Delta\chi_{eff}^2 = 4448.97$ ;  $\bar{\chi}_{eff}^2 = 11948.83$ ;  $\Delta\bar{\chi}_{eff}^2 = 4450.70$ ;  $R - 1 = 0.01869$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.01 ( $\Delta$  -0.00) MGS: 1.47 ( $\Delta$  0.07) DR12BAO: 3.65 ( $\Delta$  -0.03) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.85 ( $\Delta$  -0.03) commander\_dx12\_v3\_2\_29: 22.88 ( $\Delta$  -0.31) CamSpec like\_10.7HM\_1400\_unified: 11500.78



16.28 base\_omegak\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02233 \pm 0.00016 \quad (+0.7\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4504 \pm 0.0059 \quad (-0.3\sigma)$	$H(0.38)$	$83.16 \pm 0.61 \quad (-0.1\sigma)$
$\Omega_{\text{c}}h^2$	$0.1193 \pm 0.0014 \quad (-0.3\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6037 \pm 0.0061 \quad (-0.3\sigma)$	$D_{\text{M}}(0.38)$	$1526 \pm 13 \quad (+0.0\sigma)$
$100\theta_{\text{MC}}$	$1.04091 \pm 0.00031 \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.9830 \pm 0.0086 \quad (-0.3\sigma)$	$H(0.51)$	$89.87 \pm 0.61 \quad (-0.1\sigma)$
$\tau$	$0.0551 \pm 0.0074 \quad (+0.1\sigma)$	$r_{\text{drag}}h$	$99.87 \pm 0.95 \quad (-0.0\sigma)$	$D_{\text{M}}(0.51)$	$1977 \pm 16 \quad (+0.0\sigma)$
$\Omega_K$	$0.0005 \pm 0.0020 \quad (-0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.431 \pm 0.020 \quad (-0.1\sigma)$	$H(0.61)$	$95.48 \pm 0.61 \quad (-0.1\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.043 \pm 0.014 \quad (+0.1\sigma)$	$z_{\text{re}}$	$7.74 \pm 0.74 \quad (+0.0\sigma)$	$D_{\text{M}}(0.61)$	$2301 \pm 18 \quad (+0.1\sigma)$
$n_{\text{s}}$	$0.9665 \pm 0.0045 \quad (+0.2\sigma)$	$10^9 A_{\text{s}}$	$2.097 \pm 0.030 \quad (+0.1\sigma)$	$H(2.33)$	$236.2 \pm 1.2 \quad (-0.2\sigma)$
$y_{\text{cal}}$	$1.0006 \pm 0.0024 \quad (+0.0\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.878 \pm 0.011 \quad (-0.1\sigma)$	$D_{\text{M}}(2.33)$	$5755 \pm 32 \quad (+0.1\sigma)$
$A_{100}^{\text{PS}}$	$240 \pm 25 \quad (-0.1\sigma)$	$D_{40}$	$1225 \pm 13 \quad (-0.1\sigma)$	$f\sigma_8(0.15)$	$0.4551 \pm 0.0056 \quad (-0.2\sigma)$
$A_{143}^{\text{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$D_{220}$	$5724 \pm 38 \quad (+0.4\sigma)$	$\sigma_8(0.15)$	$0.7480 \pm 0.0068 \quad (-0.2\sigma)$
$A_{217}^{\text{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2536 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4737 \pm 0.0048 \quad (-0.3\sigma)$
$A_{217}^{\text{CIB}}$	$40 \pm 7 \quad (-0.1\sigma)$	$D_{1420}$	$816.1 \pm 4.7 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6633 \pm 0.0062 \quad (-0.2\sigma)$
$A_{143}^{\text{tSZ}}$	$3.9^{+1.8}_{-2.6} \quad (+0.1\sigma)$	$D_{2000}$	$230.4 \pm 1.6 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4725 \pm 0.0044 \quad (-0.3\sigma)$
$r_{143 \times 217}^{\text{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$n_{\text{s},0.002}$	$0.9665 \pm 0.0045 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6208 \pm 0.0059 \quad (-0.2\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	$0.56^{+0.38}_{-0.19} \quad (-0.1\sigma)$	$Y_{\text{P}}$	$0.245376^{+0.000068}_{-0.000060} \quad (+0.7\sigma)$	$f\sigma_8(0.61)$	$0.4677 \pm 0.0042 \quad (-0.3\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.246702^{+0.000069}_{-0.000060} \quad (+0.7\sigma)$	$\sigma_8(0.61)$	$0.5908 \pm 0.0057 \quad (-0.2\sigma)$
$A^{\text{kSZ}}$	$4.7^{+1.7}_{-4.5} \quad (-0.1\sigma)$	$10^5 \text{D}/\text{H}$	$2.594 \pm 0.030 \quad (-0.7\sigma)$	$f\sigma_8(2.33)$	$0.2979 \pm 0.0029 \quad (-0.2\sigma)$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$\text{Age}/\text{Gyr}$	$13.777 \pm 0.081 \quad (+0.1\sigma)$	$\sigma_8(2.33)$	$0.3073 \pm 0.0033 \quad (-0.2\sigma)$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.17 \quad (-0.1\sigma)$	$z_*$	$1089.92 \pm 0.29 \quad (-0.6\sigma)$	$f_{2000}^{143}$	$29.6 \pm 2.8 \quad (-0.3\sigma)$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10 \quad (+0.0\sigma)$	$r_*$	$144.64 \pm 0.31 \quad (+0.1\sigma)$	$f_{2000}^{217}$	$106.8 \pm 2.0 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_*$	$1.04110 \pm 0.00031 \quad (-0.0\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.0 \quad (-0.4\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.893 \pm 0.029 \quad (+0.1\sigma)$	$\chi_{\text{lensing}}^2$	$9.31 \pm 0.77 \quad (-0.2\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$z_{\text{drag}}$	$1059.79 \pm 0.33 \quad (+0.7\sigma)$	$\chi_{\text{small}}^2$	$397.1 \pm 1.8 \quad (-0.0\sigma)$
$c_{TE}$	$0.9965 \pm 0.0049$	$r_{\text{drag}}$	$147.32 \pm 0.31 \quad (-0.1\sigma)$	$\chi_{\text{lowl}}^2$	$23.1 \pm 1.0 \quad (-0.2\sigma)$
$c_{EE}$	$0.9921 \pm 0.0048$	$k_{\text{D}}$	$0.14059 \pm 0.00034 \quad (+0.3\sigma)$	$\chi_{\text{CamSpec}}^2$	$11514.4 \pm 5.6 \quad (+863.3\sigma)$
$H_0$	$67.79 \pm 0.65 \quad (-0.0\sigma)$	$100\theta_{\text{D}}$	$0.16084 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{6\text{DF}}^2$	$0.056 \pm 0.074 \quad (+0.0\sigma)$
$\Omega_{\Lambda}$	$0.6898 \pm 0.0058 \quad (+0.2\sigma)$	$z_{\text{eq}}$	$3385 \pm 31 \quad (-0.2\sigma)$	$\chi_{\text{MGS}}^2$	$1.42 \pm 0.56 \quad (-0.0\sigma)$
$\Omega_{\text{m}}$	$0.3097 \pm 0.0063 \quad (-0.1\sigma)$	$k_{\text{eq}}$	$0.010332 \pm 0.000096 \quad (-0.2\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.8 \pm 1.9 \quad (+0.1\sigma)$
$\Omega_{\text{m}}h^2$	$0.1423 \pm 0.0013 \quad (-0.2\sigma)$	$100\theta_{\text{eq}}$	$0.8163 \pm 0.0060 \quad (+0.2\sigma)$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.5 \quad (+0.1\sigma)$
$\Omega_{\text{m}}h^3$	$0.0965 \pm 0.0014 \quad (-0.2\sigma)$	$100\theta_{\text{s,eq}}$	$0.4510 \pm 0.0031 \quad (+0.2\sigma)$	$\chi_{\text{CMB}}^2$	$11943.9 \pm 5.9 \quad (+814.6\sigma)$
$\sigma_8$	$0.8093 \pm 0.0073 \quad (-0.2\sigma)$	$H(0.15)$	$73.06 \pm 0.63 \quad (-0.0\sigma)$	$\chi_{\text{BAO}}^2$	$6.2 \pm 1.6 \quad (+0.1\sigma)$
$S_8$	$0.822 \pm 0.011 \quad (-0.3\sigma)$	$D_{\text{M}}(0.15)$	$639.7 \pm 5.8 \quad (+0.0\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 11957.96; \Delta\bar{\chi}_{\text{eff}}^2 = 4450.79; R - 1 = 0.03026$$



**16.29 base\_omegak\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02233 \pm 0.00016 \quad (+0.6\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4498 \pm 0.0058 \quad (-0.2\sigma)$	$H(0.38)$	$83.21 \pm 0.60 \quad (-0.1\sigma)$
$\Omega_c h^2$	$0.1192 \pm 0.0014 \quad (-0.2\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6033 \pm 0.0060 \quad (-0.2\sigma)$	$D_M(0.38)$	$1525 \pm 13 \quad (+0.0\sigma)$
$100\theta_{MC}$	$1.04092 \pm 0.00031 \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.9825 \pm 0.0085 \quad (-0.2\sigma)$	$H(0.51)$	$89.91 \pm 0.60 \quad (-0.1\sigma)$
$\tau$	$0.0554 \pm 0.0074 \quad (+0.1\sigma)$	$r_{drag} h$	$99.97 \pm 0.92 \quad (-0.0\sigma)$	$D_M(0.51)$	$1976 \pm 16 \quad (+0.0\sigma)$
$\Omega_K$	$0.0005 \pm 0.0020 \quad (-0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.430 \pm 0.020 \quad (-0.1\sigma)$	$H(0.61)$	$95.52 \pm 0.61 \quad (-0.1\sigma)$
$\ln(10^{10} A_s)$	$3.043 \pm 0.014 \quad (+0.1\sigma)$	$z_{re}$	$7.77 \pm 0.74 \quad (+0.0\sigma)$	$D_M(0.61)$	$2299 \pm 18 \quad (+0.0\sigma)$
$n_s$	$0.9667 \pm 0.0045 \quad (+0.2\sigma)$	$10^9 A_s$	$2.098 \pm 0.030 \quad (+0.0\sigma)$	$H(2.33)$	$236.2 \pm 1.2 \quad (-0.2\sigma)$
$y_{cal}$	$1.0006 \pm 0.0024 \quad (+0.0\sigma)$	$10^9 A_s e^{-2\tau}$	$1.878 \pm 0.011 \quad (-0.1\sigma)$	$D_M(2.33)$	$5753 \pm 31 \quad (+0.1\sigma)$
$A_{100}^{PS}$	$240 \pm 25 \quad (-0.1\sigma)$	$D_{40}$	$1225 \pm 13 \quad (-0.1\sigma)$	$f\sigma_8(0.15)$	$0.4545 \pm 0.0054 \quad (-0.2\sigma)$
$A_{143}^{PS}$	$39 \pm 8 \quad (-0.1\sigma)$	$D_{220}$	$5725 \pm 38 \quad (+0.4\sigma)$	$\sigma_8(0.15)$	$0.7481 \pm 0.0068 \quad (-0.2\sigma)$
$A_{217}^{PS}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2536 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4734 \pm 0.0047 \quad (-0.2\sigma)$
$A_{217}^{CIB}$	$40 \pm 7 \quad (-0.1\sigma)$	$D_{1420}$	$816.2 \pm 4.7 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6634 \pm 0.0062 \quad (-0.2\sigma)$
$A_{143}^{tSZ}$	$3.9_{-2.6}^{+1.8} \quad (+0.1\sigma)$	$D_{2000}$	$230.4 \pm 1.6 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4723 \pm 0.0044 \quad (-0.2\sigma)$
$r_{143 \times 217}^{PS}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$n_{s,0.002}$	$0.9667 \pm 0.0045 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6210 \pm 0.0059 \quad (-0.2\sigma)$
$r_{143 \times 217}^{CIB}$	$0.55_{-0.19}^{+0.38} \quad (-0.1\sigma)$	$Y_P$	$0.245379_{-0.000060}^{+0.000067} \quad (+0.6\sigma)$	$f\sigma_8(0.61)$	$0.4675 \pm 0.0042 \quad (-0.2\sigma)$
$\xi^{tSZ \times CIB}$	—	$Y_P^{BBN}$	$0.246705_{-0.000060}^{+0.000067} \quad (+0.6\sigma)$	$\sigma_8(0.61)$	$0.5910 \pm 0.0057 \quad (-0.2\sigma)$
$A^{kSZ}$	$4.7_{-4.6}^{+1.6} \quad (-0.1\sigma)$	$10^5 D/H$	$2.593 \pm 0.030 \quad (-0.6\sigma)$	$f\sigma_8(2.33)$	$0.2980 \pm 0.0029 \quad (-0.2\sigma)$
$A_{100}^{dust}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	Age/Gyr	$13.772 \pm 0.080 \quad (+0.1\sigma)$	$\sigma_8(2.33)$	$0.3075 \pm 0.0033 \quad (-0.2\sigma)$
$A_{143}^{dust}$	$0.96 \pm 0.17 \quad (-0.1\sigma)$	$z_*$	$1089.90 \pm 0.29 \quad (-0.6\sigma)$	$f_{2000}^{143}$	$29.6 \pm 2.8 \quad (-0.3\sigma)$
$A_{217}^{dust}$	$0.97 \pm 0.10 \quad (+0.0\sigma)$	$r_*$	$144.66 \pm 0.31 \quad (+0.0\sigma)$	$f_{2000}^{217}$	$106.8 \pm 2.0 \quad (-0.4\sigma)$
$A_{143 \times 217}^{dust}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_*$	$1.04110 \pm 0.00031 \quad (-0.1\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.0 \quad (-0.4\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$D_M(z_*)/\text{Gpc}$	$13.894 \pm 0.028 \quad (+0.0\sigma)$	$\chi_{lensing}^2$	$9.33 \pm 0.80 \quad (-0.2\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$z_{drag}$	$1059.80 \pm 0.33 \quad (+0.7\sigma)$	$\chi_{small}^2$	$397.1 \pm 1.8 \quad (-0.0\sigma)$
$c_{TE}$	$0.9965 \pm 0.0049$	$r_{drag}$	$147.33 \pm 0.31 \quad (-0.1\sigma)$	$\chi_{lowl}^2$	$23.1 \pm 1.0 \quad (-0.2\sigma)$
$c_{EE}$	$0.9921 \pm 0.0048$	$k_D$	$0.14058 \pm 0.00033 \quad (+0.3\sigma)$	$\chi_{CamSpec}^2$	$11514.4 \pm 5.6 \quad (+861.4\sigma)$
$H_0$	$67.86 \pm 0.64 \quad (-0.0\sigma)$	$100\theta_D$	$0.16083 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{JLA}^2$	$1035.02 \pm 0.26 \quad (-0.2\sigma)$
$\Omega_\Lambda$	$0.6905 \pm 0.0056 \quad (+0.2\sigma)$	$z_{eq}$	$3383 \pm 31 \quad (-0.2\sigma)$	$\chi_{6DF}^2$	$0.048 \pm 0.066 \quad (+0.0\sigma)$
$\Omega_m$	$0.3090 \pm 0.0060 \quad (-0.1\sigma)$	$k_{eq}$	$0.010326 \pm 0.000095 \quad (-0.2\sigma)$	$\chi_{MGS}^2$	$1.48 \pm 0.55 \quad (-0.1\sigma)$
$\Omega_m h^2$	$0.1422 \pm 0.0013 \quad (-0.2\sigma)$	$100\theta_{eq}$	$0.8166 \pm 0.0059 \quad (+0.2\sigma)$	$\chi_{DR12BAO}^2$	$4.6 \pm 1.8 \quad (+0.1\sigma)$
$\Omega_m h^3$	$0.0965 \pm 0.0014 \quad (-0.1\sigma)$	$100\theta_{s,eq}$	$0.4511 \pm 0.0030 \quad (+0.2\sigma)$	$\chi_{prior}^2$	$7.8 \pm 3.5 \quad (+0.1\sigma)$
$\sigma_8$	$0.8093 \pm 0.0073 \quad (-0.2\sigma)$	$H(0.15)$	$73.12 \pm 0.62 \quad (-0.0\sigma)$	$\chi_{CMB}^2$	$11944.0 \pm 5.8 \quad (+817.9\sigma)$
$S_8$	$0.821 \pm 0.011 \quad (-0.2\sigma)$	$D_M(0.15)$	$639.1 \pm 5.7 \quad (+0.0\sigma)$	$\chi_{BAO}^2$	$6.1 \pm 1.5 \quad (+0.1\sigma)$

$$\bar{\chi}_{eff}^2 = 12992.90; \Delta\bar{\chi}_{eff}^2 = 4450.70; R - 1 = 0.03012$$



16.30 base\_omegak\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02233 \pm 0.00016 \quad (+0.6\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4490 \pm 0.0069 \quad (-0.2\sigma)$	$H(0.38)$	$83.22 \pm 0.62 \quad (-0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1192 \pm 0.0015 \quad (-0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6024 \pm 0.0071 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.38)$	$1524 \pm 13 \quad (+0.0\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04092 \pm 0.00032 \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.981 \pm 0.010 \quad (-0.2\sigma)$	$H(0.51)$	$89.92 \pm 0.61 \quad (-0.1\sigma)$
$\tau$	$0.0547_{-0.0081}^{+0.0052} \quad (+0.1\sigma)$	$r_{\mathrm{drag}}h$	$100.02 \pm 0.99 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1975 \pm 16 \quad (+0.0\sigma)$
$\Omega_K$	$0.0005 \pm 0.0020 \quad (-0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.426 \pm 0.023 \quad (-0.1\sigma)$	$H(0.61)$	$95.53 \pm 0.62 \quad (-0.1\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041_{-0.016}^{+0.012} \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.70_{-0.81}^{+0.56} \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2299 \pm 18 \quad (+0.0\sigma)$
$n_{\mathrm{s}}$	$0.9669 \pm 0.0046 \quad (+0.2\sigma)$	$10^9A_{\mathrm{s}}$	$2.093_{-0.034}^{+0.025} \quad (+0.0\sigma)$	$H(2.33)$	$236.1 \pm 1.2 \quad (-0.2\sigma)$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025 \quad (+0.0\sigma)$	$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.876_{-0.012}^{+0.011} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5753 \pm 32 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$240 \pm 24 \quad (-0.1\sigma)$	$D_{40}$	$1223 \pm 13 \quad (-0.0\sigma)$	$f\sigma_8(0.15)$	$0.4538 \pm 0.0065 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$D_{220}$	$5719 \pm 39 \quad (+0.4\sigma)$	$\sigma_8(0.15)$	$0.7472 \pm 0.0072 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2534 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4727 \pm 0.0056 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7 \quad (-0.1\sigma)$	$D_{1420}$	$815.8 \pm 4.8 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6627_{-0.0067}^{+0.0060} \quad (-0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.8_{-2.6}^{+1.8} \quad (+0.1\sigma)$	$D_{2000}$	$230.3 \pm 1.6 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4716 \pm 0.0052 \quad (-0.2\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9669 \pm 0.0046 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6203 \pm 0.0061 \quad (-0.2\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56_{-0.18}^{+0.39} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245377_{-0.000060}^{+0.000069} \quad (+0.6\sigma)$	$f\sigma_8(0.61)$	$0.4669 \pm 0.0048 \quad (-0.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246703_{-0.000060}^{+0.000069} \quad (+0.6\sigma)$	$\sigma_8(0.61)$	$0.5903 \pm 0.0058 \quad (-0.2\sigma)$
$A^{\mathrm{kSZ}}$	$4.7_{-4.1}^{+2.2} \quad (-0.1\sigma)$	$10^5\mathrm{D}/\mathrm{H}$	$2.594 \pm 0.030 \quad (-0.7\sigma)$	$f\sigma_8(2.33)$	$0.2977 \pm 0.0029 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.772 \pm 0.081 \quad (+0.1\sigma)$	$\sigma_8(2.33)$	$0.3072 \pm 0.0033 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.18 \quad (-0.1\sigma)$	$z_*$	$1089.90 \pm 0.30 \quad (-0.5\sigma)$	$f_{2000}^{143}$	$29.7 \pm 2.8 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10 \quad (+0.1\sigma)$	$r_*$	$144.68 \pm 0.32 \quad (+0.0\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.9 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_*$	$1.04111 \pm 0.00031 \quad (-0.1\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 2.0 \quad (-0.3\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.896 \pm 0.030 \quad (+0.0\sigma)$	$\chi_{\mathrm{small}}^2$	$396.9 \pm 1.7 \quad (-0.0\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$z_{\mathrm{drag}}$	$1059.78 \pm 0.33 \quad (+0.7\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.0 \pm 1.0 \quad (-0.2\sigma)$
$c_{TE}$	$0.9965 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.36 \pm 0.32 \quad (-0.1\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11514.7 \pm 5.6 \quad (+826.6\sigma)$
$c_{EE}$	$0.9921 \pm 0.0048$	$k_{\mathrm{D}}$	$0.14056 \pm 0.00034 \quad (+0.3\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.052 \pm 0.071 \quad (-0.0\sigma)$
$H_0$	$67.88 \pm 0.67 \quad (+0.0\sigma)$	$100\theta_{\mathrm{D}}$	$0.16084 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.51 \pm 0.59 \quad (-0.0\sigma)$
$\Omega_{\Lambda}$	$0.6908 \pm 0.0061 \quad (+0.2\sigma)$	$z_{\mathrm{eq}}$	$3382 \pm 33 \quad (-0.2\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.8 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3086 \pm 0.0066 \quad (-0.1\sigma)$	$k_{\mathrm{eq}}$	$0.01032 \pm 0.00010 \quad (-0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1422 \pm 0.0014 \quad (-0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8169 \pm 0.0062 \quad (+0.2\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.6 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.0965 \pm 0.0014 \quad (-0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4513 \pm 0.0032 \quad (+0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11934.6 \pm 5.7 \quad (+820.7\sigma)$
$\sigma_8$	$0.8083 \pm 0.0079 \quad (-0.2\sigma)$	$H(0.15)$	$73.14 \pm 0.64 \quad (-0.0\sigma)$		
$S_8$	$0.820 \pm 0.013 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$638.9 \pm 6.0 \quad (-0.0\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11948.57; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.67; R - 1 = 0.01907$$



16.31 base\_omegak\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02233 \pm 0.00016 \quad (+0.7\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4505 \pm 0.0059 \quad (-0.2\sigma)$	$H(0.38)$	$83.16 \pm 0.61 \quad (-0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1193 \pm 0.0014 \quad (-0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6040 \pm 0.0060 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.38)$	$1526 \pm 13 \quad (+0.0\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00031 \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.9835 \pm 0.0083 \quad (-0.3\sigma)$	$H(0.51)$	$89.87 \pm 0.61 \quad (-0.1\sigma)$
$\tau$	$0.0558^{+0.0058}_{-0.0077} \quad (+0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.88 \pm 0.95 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1977 \pm 16 \quad (+0.0\sigma)$
$\Omega_K$	$0.0005 \pm 0.0020 \quad (-0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.020 \quad (-0.1\sigma)$	$H(0.61)$	$95.48 \pm 0.61 \quad (-0.1\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044^{+0.012}_{-0.015} \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.82^{+0.62}_{-0.75} \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2301 \pm 18 \quad (+0.0\sigma)$
$n_{\mathrm{s}}$	$0.9666 \pm 0.0045 \quad (+0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.100^{+0.025}_{-0.031} \quad (+0.0\sigma)$	$H(2.33)$	$236.2 \pm 1.2 \quad (-0.2\sigma)$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0024 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878^{+0.010}_{-0.012} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5755 \pm 32 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$240 \pm 25 \quad (-0.1\sigma)$	$D_{40}$	$1225 \pm 13 \quad (-0.1\sigma)$	$f\sigma_8(0.15)$	$0.4552 \pm 0.0055 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.1\sigma)$	$D_{220}$	$5724 \pm 38 \quad (+0.4\sigma)$	$\sigma_8(0.15)$	$0.7485 \pm 0.0066 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2535 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4739 \pm 0.0047 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7 \quad (-0.1\sigma)$	$D_{1420}$	$816.1 \pm 4.7 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6637 \pm 0.0060 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.8}_{-2.6} \quad (+0.1\sigma)$	$D_{2000}$	$230.4 \pm 1.6 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4728 \pm 0.0043 \quad (-0.3\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9666 \pm 0.0045 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6212 \pm 0.0057 \quad (-0.2\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.38}_{-0.18} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245377^{+0.000068}_{-0.000060} \quad (+0.7\sigma)$	$f\sigma_8(0.61)$	$0.4679 \pm 0.0041 \quad (-0.3\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246704^{+0.000068}_{-0.000060} \quad (+0.7\sigma)$	$\sigma_8(0.61)$	$0.5911 \pm 0.0055 \quad (-0.2\sigma)$
$A^{\mathrm{kSZ}}$	$4.7^{+1.6}_{-4.6} \quad (-0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.594 \pm 0.030 \quad (-0.7\sigma)$	$f\sigma_8(2.33)$	$0.2981 \pm 0.0028 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.777 \pm 0.081 \quad (+0.1\sigma)$	$\sigma_8(2.33)$	$0.3075 \pm 0.0032 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$z_*$	$1089.91 \pm 0.29 \quad (-0.6\sigma)$	$f_{2000}^{143}$	$29.6 \pm 2.8 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10 \quad (+0.0\sigma)$	$r_*$	$144.65 \pm 0.31 \quad (+0.0\sigma)$	$f_{2000}^{217}$	$106.8 \pm 2.0 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_*$	$1.04110 \pm 0.00031 \quad (-0.0\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.0 \quad (-0.4\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.894 \pm 0.029 \quad (+0.0\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.26 \pm 0.70 \quad (-0.2\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$z_{\mathrm{drag}}$	$1059.79 \pm 0.33 \quad (+0.7\sigma)$	$\chi_{\mathrm{small}}^2$	$397.1 \pm 1.8 \quad (-0.0\sigma)$
$c_{TE}$	$0.9964 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.32 \pm 0.31 \quad (-0.1\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.1 \pm 1.0 \quad (-0.2\sigma)$
$c_{EE}$	$0.9920 \pm 0.0048$	$k_{\mathrm{D}}$	$0.14059 \pm 0.00034 \quad (+0.3\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11514.3 \pm 5.6 \quad (+866.2\sigma)$
$H_0$	$67.80 \pm 0.65 \quad (+0.0\sigma)$	$100\theta_{\mathrm{D}}$	$0.16084 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.055 \pm 0.073 \quad (+0.0\sigma)$
$\Omega_{\Lambda}$	$0.6900 \pm 0.0057 \quad (+0.2\sigma)$	$z_{\mathrm{eq}}$	$3384 \pm 31 \quad (-0.2\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.43 \pm 0.56 \quad (-0.0\sigma)$
$\Omega_{\mathrm{m}}$	$0.3096 \pm 0.0062 \quad (-0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010329 \pm 0.000095 \quad (-0.2\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.9 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1423 \pm 0.0013 \quad (-0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8164 \pm 0.0059 \quad (+0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.5 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.0965 \pm 0.0014 \quad (-0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4510 \pm 0.0030 \quad (+0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11943.7 \pm 5.8 \quad (+825.6\sigma)$
$\sigma_8$	$0.8098 \pm 0.0071 \quad (-0.2\sigma)$	$H(0.15)$	$73.07 \pm 0.63 \quad (-0.0\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.6 \quad (+0.1\sigma)$
$S_8$	$0.823 \pm 0.011 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$639.6 \pm 5.8 \quad (+0.0\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11957.78; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.80; R - 1 = 0.03337$$



**16.32 base\_omegak\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_Pantheon18\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02234 \pm 0.00016 \quad (+0.6\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4499 \pm 0.0057 \quad (-0.2\sigma)$	$H(0.38)$	$83.21 \pm 0.60 \quad (-0.1\sigma)$
$\Omega_{\text{c}}h^2$	$0.1192 \pm 0.0014 \quad (-0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6036 \pm 0.0059 \quad (-0.2\sigma)$	$D_{\text{M}}(0.38)$	$1525 \pm 13 \quad (+0.0\sigma)$
$100\theta_{\text{MC}}$	$1.04092 \pm 0.00031 \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.9829 \pm 0.0083 \quad (-0.2\sigma)$	$H(0.51)$	$89.91 \pm 0.60 \quad (-0.1\sigma)$
$\tau$	$0.0561^{+0.0059}_{-0.0077} \quad (+0.1\sigma)$	$r_{\text{drag}}h$	$99.99 \pm 0.92 \quad (-0.0\sigma)$	$D_{\text{M}}(0.51)$	$1975 \pm 16 \quad (+0.0\sigma)$
$\Omega_K$	$0.0005 \pm 0.0020 \quad (-0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.431 \pm 0.019 \quad (-0.1\sigma)$	$H(0.61)$	$95.52 \pm 0.61 \quad (-0.1\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.045^{+0.012}_{-0.015} \quad (+0.0\sigma)$	$z_{\text{re}}$	$7.84^{+0.62}_{-0.75} \quad (+0.0\sigma)$	$D_{\text{M}}(0.61)$	$2299 \pm 18 \quad (+0.0\sigma)$
$n_{\text{s}}$	$0.9667 \pm 0.0045 \quad (+0.2\sigma)$	$10^9 A_{\text{s}}$	$2.101^{+0.025}_{-0.031} \quad (+0.0\sigma)$	$H(2.33)$	$236.1 \pm 1.2 \quad (-0.2\sigma)$
$y_{\text{cal}}$	$1.0006 \pm 0.0024 \quad (+0.0\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.878 \pm 0.011 \quad (-0.1\sigma)$	$D_{\text{M}}(2.33)$	$5753 \pm 31 \quad (+0.1\sigma)$
$A_{100}^{\text{PS}}$	$240 \pm 25 \quad (-0.1\sigma)$	$D_{40}$	$1225 \pm 13 \quad (-0.1\sigma)$	$f\sigma_8(0.15)$	$0.4547 \pm 0.0054 \quad (-0.2\sigma)$
$A_{143}^{\text{PS}}$	$39 \pm 8 \quad (-0.1\sigma)$	$D_{220}$	$5724 \pm 38 \quad (+0.4\sigma)$	$\sigma_8(0.15)$	$0.7485 \pm 0.0066 \quad (-0.2\sigma)$
$A_{217}^{\text{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2535 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4736 \pm 0.0047 \quad (-0.2\sigma)$
$A_{217}^{\text{CIB}}$	$40 \pm 7 \quad (-0.1\sigma)$	$D_{1420}$	$816.2 \pm 4.7 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6638 \pm 0.0060 \quad (-0.2\sigma)$
$A_{143}^{\text{tSZ}}$	$3.9^{+1.8}_{-2.6} \quad (+0.1\sigma)$	$D_{2000}$	$230.4 \pm 1.6 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4725 \pm 0.0043 \quad (-0.2\sigma)$
$r_{143 \times 217}^{\text{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$n_{\text{s},0.002}$	$0.9667 \pm 0.0045 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6213 \pm 0.0057 \quad (-0.2\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	$0.56^{+0.38}_{-0.18} \quad (-0.1\sigma)$	$Y_{\text{P}}$	$0.245380^{+0.000066}_{-0.000060} \quad (+0.6\sigma)$	$f\sigma_8(0.61)$	$0.4677 \pm 0.0041 \quad (-0.2\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.246706^{+0.000067}_{-0.000060} \quad (+0.6\sigma)$	$\sigma_8(0.61)$	$0.5913 \pm 0.0055 \quad (-0.2\sigma)$
$A^{\text{kSZ}}$	$< 6.21 \quad (-0.1\sigma)$	$10^5\text{D}/\text{H}$	$2.592 \pm 0.030 \quad (-0.6\sigma)$	$f\sigma_8(2.33)$	$0.2982 \pm 0.0028 \quad (-0.2\sigma)$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$\text{Age}/\text{Gyr}$	$13.772 \pm 0.080 \quad (+0.1\sigma)$	$\sigma_8(2.33)$	$0.3077 \pm 0.0032 \quad (-0.2\sigma)$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.17 \quad (-0.1\sigma)$	$z_*$	$1089.90 \pm 0.29 \quad (-0.5\sigma)$	$f_{2000}^{143}$	$29.6 \pm 2.8 \quad (-0.3\sigma)$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10 \quad (+0.0\sigma)$	$r_*$	$144.66 \pm 0.31 \quad (-0.0\sigma)$	$f_{2000}^{217}$	$106.7 \pm 2.0 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_*$	$1.04111 \pm 0.00031 \quad (-0.1\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.0 \quad (-0.4\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.895 \pm 0.028 \quad (+0.0\sigma)$	$\chi_{\text{lensing}}^2$	$9.27 \pm 0.72 \quad (-0.2\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$z_{\text{drag}}$	$1059.80 \pm 0.33 \quad (+0.7\sigma)$	$\chi_{\text{small}}^2$	$397.1 \pm 1.8 \quad (-0.0\sigma)$
$c_{TE}$	$0.9964 \pm 0.0049$	$r_{\text{drag}}$	$147.34 \pm 0.30 \quad (-0.1\sigma)$	$\chi_{\text{lowl}}^2$	$23.1 \pm 1.0 \quad (-0.2\sigma)$
$c_{EE}$	$0.9921 \pm 0.0048$	$k_{\text{D}}$	$0.14058 \pm 0.00034 \quad (+0.3\sigma)$	$\chi_{\text{CamSpec}}^2$	$11514.3 \pm 5.6 \quad (+864.3\sigma)$
$H_0$	$67.86 \pm 0.64 \quad (+0.0\sigma)$	$100\theta_{\text{D}}$	$0.16083 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{\text{JLA}}^2$	$1035.01 \pm 0.26 \quad (-0.2\sigma)$
$\Omega_{\Lambda}$	$0.6907 \pm 0.0055 \quad (+0.2\sigma)$	$z_{\text{eq}}$	$3383 \pm 31 \quad (-0.1\sigma)$	$\chi_{6\text{DF}}^2$	$0.048 \pm 0.065 \quad (+0.0\sigma)$
$\Omega_{\text{m}}$	$0.3088 \pm 0.0060 \quad (-0.1\sigma)$	$k_{\text{eq}}$	$0.010324 \pm 0.000094 \quad (-0.1\sigma)$	$\chi_{\text{MGS}}^2$	$1.48 \pm 0.55 \quad (-0.0\sigma)$
$\Omega_{\text{m}}h^2$	$0.1422 \pm 0.0013 \quad (-0.1\sigma)$	$100\theta_{\text{eq}}$	$0.8168 \pm 0.0059 \quad (+0.2\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.6 \pm 1.7 \quad (+0.1\sigma)$
$\Omega_{\text{m}}h^3$	$0.0965 \pm 0.0014 \quad (-0.1\sigma)$	$100\theta_{\text{s,eq}}$	$0.4512 \pm 0.0030 \quad (+0.2\sigma)$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.5 \quad (+0.1\sigma)$
$\sigma_8$	$0.8097 \pm 0.0071 \quad (-0.2\sigma)$	$H(0.15)$	$73.13 \pm 0.62 \quad (-0.0\sigma)$	$\chi_{\text{CMB}}^2$	$11943.8 \pm 5.8 \quad (+828.2\sigma)$
$S_8$	$0.821 \pm 0.010 \quad (-0.2\sigma)$	$D_{\text{M}}(0.15)$	$639.0 \pm 5.7 \quad (+0.0\sigma)$	$\chi_{\text{BAO}}^2$	$6.1 \pm 1.5 \quad (+0.1\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 12992.73; \Delta\bar{\chi}_{\text{eff}}^2 = 4450.71; R - 1 = 0.03308$$



16.33    base\_omegak\_plikHM\_TT\_lowl\_lowE\_BAO\_Riess18\_JLA

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022173	$0.02217 \pm 0.00023$	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6030	$0.6023 \pm 0.0095$	$D_{\text{M}}(0.38)$	1508.4	$1508 \pm 13$
$\Omega_{\text{c}}h^2$	0.12004	$0.1201 \pm 0.0022$	$\sigma_8/h^{0.5}$	0.9808	$0.980 \pm 0.013$	$H(0.51)$	90.70	$90.75 \pm 0.68$
$100\theta_{\text{MC}}$	1.040866	$1.04086 \pm 0.00047$	$r_{\text{drag}}h$	101.16	$101.22 \pm 0.95$	$D_{\text{M}}(0.51)$	1955.2	$1954 \pm 16$
$\tau$	0.0540	$0.0527 \pm 0.0081$	$\langle d^2 \rangle^{1/2}$	2.4220	$2.420 \pm 0.029$	$H(0.61)$	96.31	$96.36 \pm 0.72$
$\Omega_K$	0.00305	$0.0032 \pm 0.0025$	$z_{\text{re}}$	7.70	$7.56^{+0.83}_{-0.75}$	$D_{\text{M}}(0.61)$	2276.2	$2275 \pm 18$
$\ln(10^{10}A_{\text{s}})$	3.0422	$3.040 \pm 0.017$	$10^9A_{\text{s}}$	2.0952	$2.092 \pm 0.035$	$H(2.33)$	237.12	$237.2 \pm 1.9$
$n_{\text{s}}$	0.9645	$0.9639 \pm 0.0060$	$10^9A_{\text{s}}e^{-2\tau}$	1.8809	$1.882 \pm 0.014$	$D_{\text{M}}(2.33)$	5713.7	$5712 \pm 37$
$\alpha_{JLA}$	0.1412	$0.1412 \pm 0.0065$	$D_{40}$	1229.6	$1231 \pm 16$	$f\sigma_8(0.15)$	0.4523	$0.4517 \pm 0.0083$
$\beta_{JLA}$	3.101	$3.103 \pm 0.081$	$D_{220}$	5710.1	$5717 \pm 43$	$\sigma_8(0.15)$	0.7519	$0.7513 \pm 0.0095$
$y_{\text{cal}}$	1.00022	$1.0004 \pm 0.0026$	$D_{810}$	2536.4	$2537 \pm 14$	$f\sigma_8(0.38)$	0.4724	$0.4719 \pm 0.0074$
$A_{217}^{\text{CIB}}$	50.0	$48 \pm 7$	$D_{1420}$	815.2	$815.2 \pm 5.2$	$\sigma_8(0.38)$	0.6676	$0.6670 \pm 0.0083$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.11	—	$D_{2000}$	229.80	$229.7 \pm 1.9$	$f\sigma_8(0.51)$	0.4720	$0.4714 \pm 0.0069$
$A_{143}^{\text{tSZ}}$	7.14	$5.1 \pm 2.0$	$n_{\text{s},0.002}$	0.9645	$0.9639 \pm 0.0060$	$\sigma_8(0.51)$	0.6252	$0.6247 \pm 0.0078$
$A_{100}^{\text{PS}}$	256.0	$264 \pm 28$	$Y_{\text{P}}$	0.245315	$0.24531^{+0.00011}_{-0.000084}$	$f\sigma_8(0.61)$	0.4677	$0.4672 \pm 0.0065$
$A_{143}^{\text{PS}}$	46.9	$49 \pm 8$	$Y_{\text{P}}^{\text{BBN}}$	0.246641	$0.24664^{+0.00011}_{-0.000085}$	$\sigma_8(0.61)$	0.5952	$0.5947 \pm 0.0074$
$A_{143 \times 217}^{\text{PS}}$	41.7	$43 \pm 9$	$10^5\text{D}/\text{H}$	2.6231	$2.624 \pm 0.044$	$f\sigma_8(2.33)$	0.30029	$0.3001 \pm 0.0036$
$A_{217}^{\text{PS}}$	117.2	$115 \pm 10$	$\text{Age}/\text{Gyr}$	13.672	$13.666 \pm 0.097$	$\sigma_8(2.33)$	0.31045	$0.3103 \pm 0.0040$
$A^{\text{kSZ}}$	0.02	$< 4.96$	$z_*$	1090.173	$1090.18 \pm 0.44$	$f_{2000}^{143}$	30.79	$31.2 \pm 2.9$
$A_{100}^{\text{dustTT}}$	8.98	$8.9 \pm 1.8$	$r_*$	144.57	$144.56 \pm 0.50$	$f_{2000}^{143 \times 217}$	33.49	$33.6 \pm 2.0$
$A_{143}^{\text{dustTT}}$	10.69	$10.7 \pm 1.8$	$100\theta_*$	1.041070	$1.04107 \pm 0.00046$	$f_{2000}^{217}$	107.97	$108.1 \pm 1.9$
$A_{143 \times 217}^{\text{dustTT}}$	19.10	$18.3 \pm 3.3$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8869	$13.886 \pm 0.046$	$\chi_{\text{small}}^2$	396.06	$397.0 \pm 1.7$
$A_{217}^{\text{dustTT}}$	94.3	$93.4 \pm 7.3$	$z_{\text{drag}}$	1059.475	$1059.48 \pm 0.47$	$\chi_{\text{lowl}}^2$	23.66	$23.9 \pm 1.5$
$c_{100}$	0.99961	$0.99961 \pm 0.00061$	$r_{\text{drag}}$	147.30	$147.29 \pm 0.50$	$\chi_{\text{plik}}^2$	760.0	$773.0 \pm 5.4$
$c_{217}$	0.99827	$0.99826 \pm 0.00062$	$k_{\text{D}}$	0.14049	$0.14050 \pm 0.00053$	$\chi_{\text{H073p45}}^2$	8.28	$8.3 \pm 2.2$
$H_0$	68.67	$68.72 \pm 0.65$	$100\theta_{\text{D}}$	0.161024	$0.16103 \pm 0.00027$	$\chi_{\text{JLA}}^2$	695.12	$697.2 \pm 2.0$
$\Omega_{\Lambda}$	0.6940	$0.6942 \pm 0.0073$	$z_{\text{eq}}$	3398	$3400 \pm 51$	$\chi_{6\text{DF}}^2$	0.0229	$0.067 \pm 0.086$
$\Omega_{\text{m}}$	0.3029	$0.3026 \pm 0.0067$	$k_{\text{eq}}$	0.010372	$0.01038 \pm 0.00015$	$\chi_{\text{MGS}}^2$	2.19	$2.30 \pm 0.65$
$\Omega_{\text{m}}h^2$	0.14285	$0.1429 \pm 0.0021$	$100\theta_{\text{eq}}$	0.8134	$0.8133 \pm 0.0095$	$\chi_{\text{DR12BAO}}^2$	3.30	$4.1 \pm 1.3$
$\Omega_{\text{m}}h^3$	0.09810	$0.0982 \pm 0.0019$	$100\theta_{\text{s,eq}}$	0.44958	$0.4495 \pm 0.0049$	$\chi_{\text{prior}}^2$	1.57	$7.4 \pm 3.7$
$\sigma_8$	0.8128	$0.812 \pm 0.011$	$H(0.15)$	73.93	$73.98 \pm 0.64$	$\chi_{\text{BAO}}^2$	5.52	$6.5 \pm 1.9$
$S_8$	0.8167	$0.816 \pm 0.016$	$D_{\text{M}}(0.15)$	631.8	$631.4 \pm 5.7$	$\chi_{\text{CMB}}^2$	1179.7	$1194.0 \pm 5.6$
$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4473	$0.4467 \pm 0.0088$	$H(0.38)$	84.00	$84.05 \pm 0.65$			

Best-fit  $\chi_{\text{eff}}^2 = 1890.21$ ;  $\bar{\chi}_{\text{eff}}^2 = 1913.25$ ;  $R - 1 = 0.01616$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 MGS: 2.19 DR12BAO: 3.30 CMB - small-100x143.offlike5\_EE\_Aplanck\_B: 396.06 commander\_dx12\_v3.2.29: 23.66 plik\_rd12\_HM\_v22.TT: 760.01  
Hubble - H073p45: 8.28 SN - JLA December\_2013: 695.12



16.34 base\_omegak\_plikHM\_TT\_lowl\_lowE\_BAO\_Riess18\_JLA\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022181	$0.02217 \pm 0.00023$	$\sigma_8 \Omega_m^{0.25}$	0.6052	$0.6050 \pm 0.0075$	$D_M(0.38)$	1507.3	$1508 \pm 13$
$\Omega_c h^2$	0.12037	$0.1204 \pm 0.0020$	$\sigma_8/h^{0.5}$	0.9839	$0.9835 \pm 0.0098$	$H(0.51)$	90.79	$90.74 \pm 0.68$
$100\theta_{MC}$	1.040810	$1.04084 \pm 0.00046$	$r_{drag}h$	101.15	$101.08 \pm 0.91$	$D_M(0.51)$	1953.7	$1955 \pm 16$
$\tau$	0.0551	$0.0547 \pm 0.0077$	$\langle d^2 \rangle^{1/2}$	2.4287	$2.430 \pm 0.022$	$H(0.61)$	96.40	$96.36 \pm 0.71$
$\Omega_K$	0.00339	$0.0033 \pm 0.0025$	$z_{re}$	7.82	$7.76 \pm 0.76$	$D_M(0.61)$	2274.4	$2276 \pm 18$
$\ln(10^{10} A_s)$	3.0464	$3.046 \pm 0.015$	$10^9 A_s$	2.1040	$2.102 \pm 0.031$	$H(2.33)$	237.43	$237.4 \pm 1.7$
$n_s$	0.9640	$0.9631 \pm 0.0056$	$10^9 A_s e^{-2\tau}$	1.8846	$1.884 \pm 0.013$	$D_M(2.33)$	5708.4	$5711 \pm 37$
$y_{cal}$	1.00056	$1.0006 \pm 0.0026$	$D_{40}$	1232.8	$1235 \pm 15$	$f\sigma_8(0.15)$	0.4541	$0.4540 \pm 0.0066$
$\alpha_{JLA}$	0.1413	$0.1411 \pm 0.0065$	$D_{220}$	5716.5	$5722 \pm 43$	$\sigma_8(0.15)$	0.7545	$0.7538 \pm 0.0079$
$\beta_{JLA}$	3.099	$3.104 \pm 0.080$	$D_{810}$	2539.8	$2538 \pm 14$	$f\sigma_8(0.38)$	0.4742	$0.4740 \pm 0.0058$
$A_{217}^{CIB}$	48.9	$48 \pm 7$	$D_{1420}$	816.3	$815.5 \pm 5.2$	$\sigma_8(0.38)$	0.6698	$0.6691 \pm 0.0070$
$\xi^{tSZ \times CIB}$	0.31	—	$D_{2000}$	230.17	$229.8 \pm 1.9$	$f\sigma_8(0.51)$	0.4737	$0.4734 \pm 0.0054$
$A_{143}^{tSZ}$	6.96	$5.1 \pm 2.0$	$n_{s,0.002}$	0.9640	$0.9631 \pm 0.0056$	$\sigma_8(0.51)$	0.6272	$0.6266 \pm 0.0066$
$A_{100}^{PS}$	255.0	$263 \pm 28$	$Y_P$	0.245318	$0.24531^{+0.00011}_{-0.000085}$	$f\sigma_8(0.61)$	0.4693	$0.4690 \pm 0.0051$
$A_{143}^{PS}$	49.5	$49 \pm 8$	$Y_P^{BBN}$	0.246644	$0.24664^{+0.00011}_{-0.000085}$	$\sigma_8(0.61)$	0.5971	$0.5965 \pm 0.0063$
$A_{143 \times 217}^{PS}$	46.8	$44 \pm 9$	$10^5 D/H$	2.6216	$2.623 \pm 0.043$	$f\sigma_8(2.33)$	0.30125	$0.3009 \pm 0.0032$
$A_{217}^{PS}$	119.2	$115 \pm 10$	Age/Gyr	13.658	$13.664 \pm 0.095$	$\sigma_8(2.33)$	0.31146	$0.3111 \pm 0.0036$
$A^{kSZ}$	0.02	$< 4.83$	$z_*$	1090.191	$1090.21 \pm 0.42$	$f_{2000}^{143}$	30.35	$31.1 \pm 2.9$
$A_{100}^{dustTT}$	8.85	$8.8 \pm 1.8$	$r_*$	144.480	$144.49 \pm 0.45$	$f_{2000}^{143 \times 217}$	33.25	$33.5 \pm 2.0$
$A_{143}^{dustTT}$	10.82	$10.7 \pm 1.8$	$100\theta_*$	1.041019	$1.04104 \pm 0.00045$	$f_{2000}^{217}$	107.71	$108.1 \pm 1.9$
$A_{143 \times 217}^{dustTT}$	19.35	$18.3 \pm 3.3$	$D_M(z_*)/\text{Gpc}$	13.8787	$13.879 \pm 0.042$	$\chi_{lensing}^2$	9.04	$9.53 \pm 0.88$
$A_{217}^{dustTT}$	94.4	$93.5 \pm 7.3$	$z_{drag}$	1059.513	$1059.50 \pm 0.47$	$\chi_{small}^2$	396.29	$397.2 \pm 1.9$
$c_{100}$	0.99967	$0.99961 \pm 0.00063$	$r_{drag}$	147.206	$147.22 \pm 0.45$	$\chi_{lowl}^2$	23.89	$24.2 \pm 1.4$
$c_{217}$	0.99825	$0.99827^{+0.00065}_{-0.00059}$	$k_D$	0.140601	$0.14058 \pm 0.00049$	$\chi_{plik}^2$	760.03	$772.1 \pm 5.2$
$H_0$	68.71	$68.66 \pm 0.64$	$100\theta_D$	0.160995	$0.16101 \pm 0.00027$	$\chi_{H073p45}^2$	8.14	$8.5 \pm 2.2$
$\Omega_\Lambda$	0.6933	$0.6929 \pm 0.0065$	$z_{eq}$	3406.5	$3406 \pm 46$	$\chi_{JLA}^2$	695.13	$697.2 \pm 2.0$
$\Omega_m$	0.3033	$0.3038 \pm 0.0061$	$k_{eq}$	0.010397	$0.01040 \pm 0.00014$	$\chi_{6DF}^2$	0.0226	$0.055 \pm 0.073$
$\Omega_m h^2$	0.14319	$0.1432 \pm 0.0019$	$100\theta_{eq}$	0.8119	$0.8121 \pm 0.0086$	$\chi_{MGS}^2$	2.19	$2.21 \pm 0.62$
$\Omega_m h^3$	0.09839	$0.0983 \pm 0.0018$	$100\theta_{s,eq}$	0.44881	$0.4489 \pm 0.0044$	$\chi_{DR12BAO}^2$	3.29	$4.0 \pm 1.2$
$\sigma_8$	0.8156	$0.8149 \pm 0.0086$	$H(0.15)$	73.98	$73.93 \pm 0.63$	$\chi_{prior}^2$	1.31	$7.4 \pm 3.8$
$S_8$	0.8200	$0.820 \pm 0.013$	$D_M(0.15)$	631.4	$631.9 \pm 5.6$	$\chi_{CMB}^2$	1189.2	$1203.0 \pm 5.5$
$\sigma_8 \Omega_m^{0.5}$	0.4491	$0.4491 \pm 0.0070$	$H(0.38)$	84.07	$84.03 \pm 0.65$	$\chi_{BAO}^2$	5.51	$6.2 \pm 1.7$

Best-fit  $\chi_{eff}^2 = 1899.34$ ;  $\bar{\chi}_{eff}^2 = 1922.24$ ;  $R - 1 = 0.02517$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.02 MGS: 2.19 DR12BAO: 3.29 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p\_teb\_consext8: 9.04 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.29 comman-  
der\_dx12\_v3\_2\_29: 23.89 plik\_rd12\_HM\_v22\_TT: 760.03 Hubble - H073p45: 8.14 SN - JLA December\_2013: 695.13



16.35 base\_omegak\_plikHM\_TT\_lowl\_lowE\_BAO\_Riess18\_JLA\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02218 \pm 0.00023$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6029 \pm 0.0093$	$D_{\mathrm{M}}(0.38)$	$1508 \pm 13$
$\Omega_{\mathrm{c}}h^2$	$0.1200 \pm 0.0022$	$\sigma_8/h^{0.5}$	$0.981 \pm 0.012$	$H(0.51)$	$90.74 \pm 0.68$
$100\theta_{\mathrm{MC}}$	$1.04087 \pm 0.00047$	$r_{\mathrm{drag}}h$	$101.23 \pm 0.95$	$D_{\mathrm{M}}(0.51)$	$1954 \pm 16$
$\tau$	$0.0543^{+0.0053}_{-0.0079}$	$\langle d^2 \rangle^{1/2}$	$2.423 \pm 0.028$	$H(0.61)$	$96.34 \pm 0.71$
$\Omega_K$	$0.0031 \pm 0.0025$	$z_{\mathrm{re}}$	$7.72^{+0.57}_{-0.80}$	$D_{\mathrm{M}}(0.61)$	$2275 \pm 18$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.012}_{-0.016}$	$10^9 A_{\mathrm{s}}$	$2.098^{+0.026}_{-0.033}$	$H(2.33)$	$237.1 \pm 1.9$
$n_{\mathrm{s}}$	$0.9642 \pm 0.0059$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.882 \pm 0.014$	$D_{\mathrm{M}}(2.33)$	$5712 \pm 37$
$\alpha_{JLA}$	$0.1412 \pm 0.0065$	$D_{40}$	$1231 \pm 16$	$f\sigma_8(0.15)$	$0.4522 \pm 0.0082$
$\beta_{JLA}$	$3.103 \pm 0.081$	$D_{220}$	$5717 \pm 43$	$\sigma_8(0.15)$	$0.7522 \pm 0.0092$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0026$	$D_{810}$	$2536 \pm 14$	$f\sigma_8(0.38)$	$0.4724 \pm 0.0072$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{1420}$	$815.2 \pm 5.2$	$\sigma_8(0.38)$	$0.6678 \pm 0.0080$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{2000}$	$229.7 \pm 1.9$	$f\sigma_8(0.51)$	$0.4720 \pm 0.0067$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$n_{\mathrm{s},0.002}$	$0.9642 \pm 0.0059$	$\sigma_8(0.51)$	$0.6255 \pm 0.0074$
$A_{100}^{\mathrm{PS}}$	$264 \pm 28$	$Y_{\mathrm{P}}$	$0.24531^{+0.00011}_{-0.000083}$	$f\sigma_8(0.61)$	$0.4677 \pm 0.0063$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24664^{+0.00011}_{-0.000083}$	$\sigma_8(0.61)$	$0.5954 \pm 0.0071$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$10^5 \mathrm{D}/\mathrm{H}$	$2.622 \pm 0.043$	$f\sigma_8(2.33)$	$0.3005 \pm 0.0035$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$\mathrm{Age}/\mathrm{Gyr}$	$13.668 \pm 0.096$	$\sigma_8(2.33)$	$0.3107 \pm 0.0039$
$A^{\mathrm{kSZ}}$	$< 4.90$	$z_*$	$1090.17 \pm 0.43$	$f_{2000}^{143}$	$31.1 \pm 2.9$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$r_*$	$144.58 \pm 0.50$	$f_{2000}^{143 \times 217}$	$33.5 \pm 2.0$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$100\theta_*$	$1.04108 \pm 0.00046$	$f_{2000}^{217}$	$108.1 \pm 1.9$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.887 \pm 0.046$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.7$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.3$	$z_{\mathrm{drag}}$	$1059.49 \pm 0.46$	$\chi_{\mathrm{lowl}}^2$	$23.9 \pm 1.5$
$c_{100}$	$0.99961 \pm 0.00061$	$r_{\mathrm{drag}}$	$147.30 \pm 0.49$	$\chi_{\mathrm{plik}}^2$	$772.8 \pm 5.4$
$c_{217}$	$0.99826 \pm 0.00062$	$k_{\mathrm{D}}$	$0.14049 \pm 0.00053$	$\chi_{\mathrm{H073p45}}^2$	$8.3 \pm 2.2$
$H_0$	$68.73 \pm 0.65$	$100\theta_{\mathrm{D}}$	$0.16102 \pm 0.00027$	$\chi_{\mathrm{JLA}}^2$	$697.1 \pm 2.0$
$\Omega_{\Lambda}$	$0.6944 \pm 0.0072$	$z_{\mathrm{eq}}$	$3398 \pm 50$	$\chi_{6\mathrm{DF}}^2$	$0.068 \pm 0.087$
$\Omega_{\mathrm{m}}$	$0.3025 \pm 0.0066$	$k_{\mathrm{eq}}$	$0.01037 \pm 0.00015$	$\chi_{\mathrm{MGS}}^2$	$2.31 \pm 0.65$
$\Omega_{\mathrm{m}}h^2$	$0.1428 \pm 0.0021$	$100\theta_{\mathrm{eq}}$	$0.8136 \pm 0.0094$	$\chi_{\mathrm{DR12BAO}}^2$	$4.1 \pm 1.3$
$\Omega_{\mathrm{m}}h^3$	$0.0982 \pm 0.0018$	$100\theta_{\mathrm{s,eq}}$	$0.4497 \pm 0.0048$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.7$
$\sigma_8$	$0.813 \pm 0.010$	$H(0.15)$	$73.98 \pm 0.64$	$\chi_{\mathrm{BAO}}^2$	$6.5 \pm 1.9$
$S_8$	$0.816 \pm 0.016$	$D_{\mathrm{M}}(0.15)$	$631.4 \pm 5.7$	$\chi_{\mathrm{CMB}}^2$	$1193.6 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4471 \pm 0.0087$	$H(0.38)$	$84.04 \pm 0.65$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1912.92; R - 1 = 0.02011$$



16.36 base\_omegak\_plikHM\_TT\_lowl\_lowE\_BAO\_Riess18\_JLA\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02218 \pm 0.00023$	$\sigma_8 \Omega_m^{0.25}$	$0.6051 \pm 0.0075$	$D_M(0.38)$	$1508 \pm 13$
$\Omega_c h^2$	$0.1203 \pm 0.0020$	$\sigma_8/h^{0.5}$	$0.9838 \pm 0.0097$	$H(0.51)$	$90.73 \pm 0.68$
$100\theta_{MC}$	$1.04084 \pm 0.00046$	$r_{drag}h$	$101.09 \pm 0.90$	$D_M(0.51)$	$1955 \pm 16$
$\tau$	$0.0555^{+0.0059}_{-0.0077}$	$\langle d^2 \rangle^{1/2}$	$2.431 \pm 0.022$	$H(0.61)$	$96.35 \pm 0.70$
$\Omega_K$	$0.0032 \pm 0.0024$	$z_{re}$	$7.85^{+0.63}_{-0.76}$	$D_M(0.61)$	$2276 \pm 18$
$\ln(10^{10} A_s)$	$3.047^{+0.012}_{-0.015}$	$10^9 A_s$	$2.105^{+0.025}_{-0.031}$	$H(2.33)$	$237.3 \pm 1.7$
$n_s$	$0.9634 \pm 0.0055$	$10^9 A_s e^{-2\tau}$	$1.884 \pm 0.013$	$D_M(2.33)$	$5712 \pm 37$
$y_{cal}$	$1.0006 \pm 0.0026$	$D_{40}$	$1234 \pm 14$	$f\sigma_8(0.15)$	$0.4541 \pm 0.0066$
$\alpha_{JLA}$	$0.1411 \pm 0.0065$	$D_{220}$	$5721 \pm 42$	$\sigma_8(0.15)$	$0.7541 \pm 0.0078$
$\beta_{JLA}$	$3.104 \pm 0.080$	$D_{810}$	$2538 \pm 14$	$f\sigma_8(0.38)$	$0.4741 \pm 0.0058$
$A_{217}^{CIB}$	$48 \pm 7$	$D_{1420}$	$815.5 \pm 5.2$	$\sigma_8(0.38)$	$0.6694 \pm 0.0069$
$\xi^{tSZ \times CIB}$	—	$D_{2000}$	$229.8 \pm 1.9$	$f\sigma_8(0.51)$	$0.4736 \pm 0.0053$
$A_{143}^{tSZ}$	$5.2 \pm 2.0$	$n_{s,0.002}$	$0.9634 \pm 0.0055$	$\sigma_8(0.51)$	$0.6269 \pm 0.0065$
$A_{100}^{PS}$	$263 \pm 28$	$Y_P$	$0.24531^{+0.00011}_{-0.000084}$	$f\sigma_8(0.61)$	$0.4692 \pm 0.0050$
$A_{143}^{PS}$	$49 \pm 8$	$Y_P^{BBN}$	$0.24664^{+0.00011}_{-0.000084}$	$\sigma_8(0.61)$	$0.5968 \pm 0.0063$
$A_{143 \times 217}^{PS}$	$44 \pm 9$	$10^5 D/H$	$2.622 \pm 0.043$	$f\sigma_8(2.33)$	$0.3011 \pm 0.0031$
$A_{217}^{PS}$	$115 \pm 10$	Age/Gyr	$13.666 \pm 0.094$	$\sigma_8(2.33)$	$0.3113 \pm 0.0035$
$A^{kSZ}$	$< 4.81$	$z_*$	$1090.19 \pm 0.41$	$f_{2000}^{143}$	$31.0 \pm 2.9$
$A_{100}^{dustTT}$	$8.8 \pm 1.8$	$r_*$	$144.50 \pm 0.45$	$f_{2000}^{143 \times 217}$	$33.5 \pm 2.0$
$A_{143}^{dustTT}$	$10.7 \pm 1.8$	$100\theta_*$	$1.04105 \pm 0.00045$	$f_{2000}^{217}$	$108.1 \pm 1.9$
$A_{143 \times 217}^{dustTT}$	$18.3 \pm 3.3$	$D_M(z_*)/\text{Gpc}$	$13.881 \pm 0.041$	$\chi_{lensing}^2$	$9.48 \pm 0.83$
$A_{217}^{dustTT}$	$93.5 \pm 7.3$	$z_{drag}$	$1059.51 \pm 0.46$	$\chi_{simall}^2$	$397.2 \pm 1.9$
$c_{100}$	$0.99961 \pm 0.00063$	$r_{drag}$	$147.23 \pm 0.44$	$\chi_{lowl}^2$	$24.1 \pm 1.4$
$c_{217}$	$0.99827^{+0.00065}_{-0.00059}$	$k_D$	$0.14057 \pm 0.00049$	$\chi_{plik}^2$	$772.0 \pm 5.1$
$H_0$	$68.66 \pm 0.64$	$100\theta_D$	$0.16101 \pm 0.00027$	$\chi_{H073p45}^2$	$8.5 \pm 2.2$
$\Omega_\Lambda$	$0.6932 \pm 0.0064$	$z_{eq}$	$3405 \pm 45$	$\chi_{JLA}^2$	$697.1 \pm 2.0$
$\Omega_m$	$0.3036 \pm 0.0060$	$k_{eq}$	$0.01039 \pm 0.00014$	$\chi_{6DF}^2$	$0.055 \pm 0.073$
$\Omega_m h^2$	$0.1431 \pm 0.0019$	$100\theta_{eq}$	$0.8124 \pm 0.0085$	$\chi_{MGS}^2$	$2.21 \pm 0.62$
$\Omega_m h^3$	$0.0983 \pm 0.0018$	$100\theta_{s,eq}$	$0.4490 \pm 0.0044$	$\chi_{DR12BAO}^2$	$4.0 \pm 1.2$
$\sigma_8$	$0.8152 \pm 0.0085$	$H(0.15)$	$73.93 \pm 0.63$	$\chi_{prior}^2$	$7.4 \pm 3.8$
$S_8$	$0.820 \pm 0.013$	$D_M(0.15)$	$631.9 \pm 5.6$	$\chi_{CMB}^2$	$1202.8 \pm 5.4$
$\sigma_8 \Omega_m^{0.5}$	$0.4492 \pm 0.0070$	$H(0.38)$	$84.02 \pm 0.65$	$\chi_{BAO}^2$	$6.2 \pm 1.7$
$\bar{\chi}_{eff}^2 = 1922.05; R - 1 = 0.02915$					



16.37 base\_omegak\_plikHM\_TTTEE\_lowl\_lowE\_BAO\_Riess18\_JLA

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02240 \pm 0.00015 \quad (+1.0\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.0982^{+0.0013}_{-0.0015} \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.15)$	$631.3 \pm 5.6 \quad (-0.0\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1198 \pm 0.0014 \quad (-0.1\sigma)$	$\sigma_8$	$0.8129 \pm 0.0083 \quad (+0.1\sigma)$	$H(0.38)$	$84.04 \pm 0.60 \quad (-0.0\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04095 \pm 0.00032 \quad (+0.2\sigma)$	$S_8$	$0.816 \pm 0.012 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1508 \pm 12 \quad (-0.0\sigma)$
$\tau$	$0.0556^{+0.0071}_{-0.0081} \quad (+0.4\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4470 \pm 0.0067 \quad (+0.0\sigma)$	$H(0.51)$	$90.73 \pm 0.60 \quad (-0.0\sigma)$
$\Omega_K$	$0.0025^{+0.0018}_{-0.0020} \quad (-0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6028 \pm 0.0071 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1954 \pm 15 \quad (+0.0\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046 \pm 0.016 \quad (+0.4\sigma)$	$\sigma_8/h^{0.5}$	$0.981 \pm 0.010 \quad (+0.1\sigma)$	$H(0.61)$	$96.33 \pm 0.61 \quad (-0.0\sigma)$
$n_{\mathrm{s}}$	$0.9660 \pm 0.0045 \quad (+0.4\sigma)$	$r_{\mathrm{drag}}h$	$101.12 \pm 0.95 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2275 \pm 17 \quad (+0.0\sigma)$
$\alpha_{JLA}$	$0.1412 \pm 0.0066 \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.423 \pm 0.024 \quad (+0.1\sigma)$	$H(2.33)$	$237.1 \pm 1.2 \quad (-0.1\sigma)$
$\beta_{JLA}$	$3.104 \pm 0.080 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.79 \pm 0.78 \quad (+0.3\sigma)$	$D_{\mathrm{M}}(2.33)$	$5712 \pm 31 \quad (+0.0\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$10^9 A_{\mathrm{s}}$	$2.104^{+0.031}_{-0.035} \quad (+0.4\sigma)$	$f\sigma_8(0.15)$	$0.4521 \pm 0.0063 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.883 \pm 0.012 \quad (+0.0\sigma)$	$\sigma_8(0.15)$	$0.7521 \pm 0.0077 \quad (+0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{40}$	$1230 \pm 13 \quad (-0.1\sigma)$	$f\sigma_8(0.38)$	$0.4723 \pm 0.0056 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$D_{220}$	$5734 \pm 39 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6678 \pm 0.0069 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$258 \pm 27 \quad (-0.2\sigma)$	$D_{810}$	$2540 \pm 14 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4720 \pm 0.0052 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{1420}$	$818.1 \pm 4.8 \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.6254 \pm 0.0065 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{2000}$	$231.1 \pm 1.6 \quad (+0.8\sigma)$	$f\sigma_8(0.61)$	$0.4677 \pm 0.0050 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$n_{\mathrm{s},0.002}$	$0.9660 \pm 0.0045 \quad (+0.4\sigma)$	$\sigma_8(0.61)$	$0.5954 \pm 0.0062 \quad (+0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.08 \quad (-0.2\sigma)$	$Y_{\mathrm{P}}$	$0.245405^{+0.000063}_{-0.000055} \quad (+1.0\sigma)$	$f\sigma_8(2.33)$	$0.3005 \pm 0.0031 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (+0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246731^{+0.000064}_{-0.000055} \quad (+1.0\sigma)$	$\sigma_8(2.33)$	$0.3106 \pm 0.0035 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.581 \pm 0.028 \quad (-1.0\sigma)$	$f_{2000}^{143}$	$29.4 \pm 2.8 \quad (-0.6\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.670 \pm 0.078 \quad (+0.0\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 1.9 \quad (-0.7\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.9 \pm 7.3 \quad (+0.1\sigma)$	$z_*$	$1089.86 \pm 0.29 \quad (-0.7\sigma)$	$f_{2000}^{217}$	$107.0 \pm 1.8 \quad (-0.6\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.114 \pm 0.039$	$r_*$	$144.47 \pm 0.31 \quad (-0.2\sigma)$	$\chi_{\mathrm{simall}}^2$	$397.3 \pm 2.1 \quad (+0.2\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.030$	$100\theta_*$	$1.04113 \pm 0.00031 \quad (+0.1\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.5 \pm 1.1 \quad (-0.3\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.482 \pm 0.085$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.876 \pm 0.029 \quad (-0.2\sigma)$	$\chi_{\mathrm{plik}}^2$	$2361.1 \pm 5.8 \quad (+292.0\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.224 \pm 0.053$	$z_{\mathrm{drag}}$	$1059.99 \pm 0.30 \quad (+1.1\sigma)$	$\chi_{\mathrm{H073p45}}^2$	$8.2 \pm 2.2 \quad (-0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.666 \pm 0.081$	$r_{\mathrm{drag}}$	$147.12 \pm 0.30 \quad (-0.3\sigma)$	$\chi_{\mathrm{JLA}}^2$	$697.1 \pm 2.0 \quad (-0.0\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.27$	$k_{\mathrm{D}}$	$0.14086 \pm 0.00032 \quad (+0.7\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.059 \pm 0.079 \quad (-0.1\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16073 \pm 0.00018 \quad (-1.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$2.22 \pm 0.65 \quad (-0.1\sigma)$
$c_{217}$	$0.99821 \pm 0.00062 \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3398 \pm 32 \quad (-0.0\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.1 \pm 1.2 \quad (-0.0\sigma)$
$H_0$	$68.74 \pm 0.65 \quad (+0.0\sigma)$	$k_{\mathrm{eq}}$	$0.010370 \pm 0.000098 \quad (-0.0\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.6 \pm 4.5 \quad (+1.1\sigma)$
$\Omega_{\Lambda}$	$0.6951 \pm 0.0057 \quad (+0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8143 \pm 0.0061 \quad (+0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.3 \pm 1.7 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3024 \pm 0.0060 \quad (-0.0\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4499 \pm 0.0031 \quad (+0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2781.9 \pm 5.8 \quad (+285.5\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1428 \pm 0.0013 \quad (-0.0\sigma)$	$H(0.15)$	$73.98 \pm 0.62 \quad (+0.0\sigma)$		

$\bar{\chi}_{\mathrm{eff}}^2 = 3505.21$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.96$ ;  $R - 1 = 0.02028$



16.38 base\_omegak\_plikHM\_TTTEE\_lowl\_lowE\_BAO\_Riess18\_JLA\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022418	$0.02240 \pm 0.00015$ (+1.0 $\sigma$ )	$\Omega_m h^3$	0.09813	$0.0981 \pm 0.0014$ (−0.1 $\sigma$ )	$D_M(0.15)$	631.5	$631.9 \pm 5.5$ (+0.0 $\sigma$ )
$\Omega_c h^2$	0.11977	$0.1198 \pm 0.0014$ (−0.3 $\sigma$ )	$\sigma_8$	0.8146	$0.8145 \pm 0.0072$ (−0.0 $\sigma$ )	$H(0.38)$	84.01	$83.99 \pm 0.59$ (−0.1 $\sigma$ )
$100\theta_{MC}$	1.040971	$1.04095 \pm 0.00032$ (+0.2 $\sigma$ )	$S_8$	0.8181	$0.819 \pm 0.010$ (−0.1 $\sigma$ )	$D_M(0.38)$	1508.0	$1509 \pm 12$ (+0.0 $\sigma$ )
$\tau$	0.0574	$0.0571^{+0.0068}_{-0.0076}$ (+0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4481	$0.4484 \pm 0.0057$ (−0.1 $\sigma$ )	$H(0.51)$	90.70	$90.68 \pm 0.59$ (−0.1 $\sigma$ )
$\Omega_K$	0.00244	$0.0024 \pm 0.0019$ (−0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6042	$0.6043 \pm 0.0059$ (−0.1 $\sigma$ )	$D_M(0.51)$	1954.7	$1956 \pm 15$ (+0.0 $\sigma$ )
$\ln(10^{10} A_s)$	3.0505	$3.050 \pm 0.014$ (+0.3 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9828	$0.9829 \pm 0.0083$ (−0.1 $\sigma$ )	$H(0.61)$	96.30	$96.29 \pm 0.60$ (−0.1 $\sigma$ )
$n_s$	0.96656	$0.9657 \pm 0.0045$ (+0.5 $\sigma$ )	$r_{drag} h$	101.06	$101.01 \pm 0.92$ (−0.1 $\sigma$ )	$D_M(0.61)$	2275.7	$2277 \pm 17$ (+0.0 $\sigma$ )
$y_{cal}$	1.00063	$1.0009 \pm 0.0025$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4282	$2.430 \pm 0.020$ (−0.0 $\sigma$ )	$H(2.33)$	237.06	$237.1 \pm 1.2$ (−0.2 $\sigma$ )
$\alpha_{JLA}$	0.1412	$0.1412 \pm 0.0066$ (+0.0 $\sigma$ )	$z_{re}$	7.99	$7.95 \pm 0.72$ (+0.2 $\sigma$ )	$D_M(2.33)$	5713.1	$5714 \pm 31$ (+0.1 $\sigma$ )
$\beta_{JLA}$	3.101	$3.102 \pm 0.080$ (−0.0 $\sigma$ )	$10^9 A_s$	2.1126	$2.112^{+0.029}_{-0.032}$ (+0.3 $\sigma$ )	$f\sigma_8(0.15)$	0.4532	$0.4535 \pm 0.0053$ (−0.1 $\sigma$ )
$A_{217}^{CIB}$	46.9	$47 \pm 7$ (−0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8834	$1.884 \pm 0.011$ (−0.0 $\sigma$ )	$\sigma_8(0.15)$	0.7536	$0.7535 \pm 0.0068$ (−0.0 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.48	—	$D_{40}$	1229.7	$1231 \pm 13$ (−0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.47345	$0.4736 \pm 0.0047$ (−0.1 $\sigma$ )
$A_{143}^{tSZ}$	7.19	$5.4 \pm 1.9$ (+0.1 $\sigma$ )	$D_{220}$	5734.5	$5738 \pm 39$ (+0.4 $\sigma$ )	$\sigma_8(0.38)$	0.6691	$0.6689 \pm 0.0062$ (−0.0 $\sigma$ )
$A_{100}^{PS}$	248.5	$258 \pm 27$ (−0.2 $\sigma$ )	$D_{810}$	2542.2	$2541 \pm 13$ (+0.2 $\sigma$ )	$f\sigma_8(0.51)$	0.47305	$0.4731 \pm 0.0043$ (−0.1 $\sigma$ )
$A_{143}^{PS}$	48.0	$46 \pm 8$ (−0.4 $\sigma$ )	$D_{1420}$	818.85	$818.3 \pm 4.8$ (+0.5 $\sigma$ )	$\sigma_8(0.51)$	0.6266	$0.6264 \pm 0.0059$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{PS}$	48.7	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{2000}$	231.47	$231.2 \pm 1.6$ (+0.7 $\sigma$ )	$f\sigma_8(0.61)$	0.46877	$0.4688 \pm 0.0041$ (−0.0 $\sigma$ )
$A_{217}^{PS}$	120.1	$115 \pm 10$ (+0.0 $\sigma$ )	$n_{s,0.002}$	0.96656	$0.9657 \pm 0.0045$ (+0.5 $\sigma$ )	$\sigma_8(0.61)$	0.5965	$0.5964 \pm 0.0057$ (−0.0 $\sigma$ )
$A^{kSZ}$	0.01	$< 4.10$ (−0.2 $\sigma$ )	$Y_P$	0.245414	$0.245405^{+0.000063}_{-0.000056}$ (+1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.30102	$0.3009 \pm 0.0029$ (−0.0 $\sigma$ )
$A_{100}^{dustTT}$	8.78	$8.9 \pm 1.8$ (+0.0 $\sigma$ )	$Y_P^{BBN}$	0.246741	$0.246732^{+0.000063}_{-0.000056}$ (+1.0 $\sigma$ )	$\sigma_8(2.33)$	0.31112	$0.3110 \pm 0.0033$ (−0.0 $\sigma$ )
$A_{143}^{dustTT}$	10.89	$10.9 \pm 1.7$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5766	$2.580 \pm 0.028$ (−1.0 $\sigma$ )	$f_{2000}^{143}$	28.63	$29.3 \pm 2.8$ (−0.6 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.80	$18.6 \pm 3.4$ (+0.1 $\sigma$ )	Age/Gyr	13.672	$13.674 \pm 0.078$ (+0.1 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.87	$32.1 \pm 1.9$ (−0.7 $\sigma$ )
$A_{217}^{dustTT}$	95.1	$93.9 \pm 7.4$ (+0.1 $\sigma$ )	$z_*$	1089.838	$1089.87 \pm 0.28$ (−0.8 $\sigma$ )	$f_{2000}^{217}$	106.49	$107.0 \pm 1.8$ (−0.6 $\sigma$ )
$A_{100}^{dustTE}$	0.1149	$0.114 \pm 0.039$	$r_*$	144.454	$144.45 \pm 0.30$ (−0.1 $\sigma$ )	$\chi_{lensing}^2$	8.866	$9.25 \pm 0.69$ (−0.3 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1355	$0.135 \pm 0.030$	$100\theta_*$	1.041155	$1.04113 \pm 0.00031$ (+0.2 $\sigma$ )	$\chi_{simall}^2$	397	$295 \pm 200$ (−54.7 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.482	$0.483 \pm 0.086$	$D_M(z_*)/\text{Gpc}$	13.8744	$13.874 \pm 0.028$ (−0.1 $\sigma$ )	$\chi_{lowl}^2$	23.44	$23.7 \pm 1.1$ (−0.4 $\sigma$ )
$A_{143}^{dustTE}$	0.225	$0.224 \pm 0.054$	$z_{drag}$	1060.047	$1060.00 \pm 0.30$ (+1.1 $\sigma$ )	$\chi_{plik}^2$	2345.5	$2360.5 \pm 5.7$ (+308.3 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.665	$0.666 \pm 0.081$	$r_{drag}$	147.097	$147.10 \pm 0.29$ (−0.3 $\sigma$ )	$\chi_{H073p45}^2$	8	$110 \pm 200$ (+45.6 $\sigma$ )
$A_{217}^{dustTE}$	2.080	$2.09 \pm 0.27$	$k_D$	0.140896	$0.14088 \pm 0.00031$ (+0.6 $\sigma$ )	$\chi_{JLA}^2$	695.12	$697.2 \pm 2.0$ (−0.0 $\sigma$ )
$c_{100}$	0.99973	$0.99968 \pm 0.00061$ (+0.1 $\sigma$ )	$100\theta_D$	0.160709	$0.16073 \pm 0.00018$ (−1.1 $\sigma$ )	$\chi_{6DF}^2$	0.0165	$0.051 \pm 0.069$ (−0.1 $\sigma$ )
$c_{217}$	0.99820	$0.99821 \pm 0.00062$ (−0.1 $\sigma$ )	$z_{eq}$	3397.8	$3399 \pm 31$ (−0.2 $\sigma$ )	$\chi_{MGS}^2$	2.12	$2.14 \pm 0.62$ (−0.1 $\sigma$ )
$H_0$	68.71	$68.67 \pm 0.63$ (+0.0 $\sigma$ )	$k_{eq}$	0.010371	$0.010375 \pm 0.000095$ (−0.2 $\sigma$ )	$\chi_{DR12BAO}^2$	3.256	$4.0 \pm 1.1$ (−0.0 $\sigma$ )
$\Omega_\Lambda$	0.6950	$0.6944 \pm 0.0054$ (+0.2 $\sigma$ )	$100\theta_{eq}$	0.8143	$0.8140 \pm 0.0059$ (+0.2 $\sigma$ )	$\chi_{prior}^2$	1.69	$11.6 \pm 4.7$ (+1.1 $\sigma$ )
$\Omega_m$	0.3026	$0.3031 \pm 0.0058$ (−0.1 $\sigma$ )	$100\theta_{s,eq}$	0.44985	$0.4497 \pm 0.0030$ (+0.2 $\sigma$ )	$\chi_{CMB}^2$	2775	$2689 \pm 170$ (+269.0 $\sigma$ )
$\Omega_m h^2$	0.14283	$0.1429 \pm 0.0013$ (−0.2 $\sigma$ )	$H(0.15)$	73.95	$73.92 \pm 0.61$ (−0.0 $\sigma$ )	$\chi_{BAO}^2$	5.39	$6.1 \pm 1.5$ (−0.0 $\sigma$ )

Best-fit  $\chi_{eff}^2 = 3484.92$ ;  $\Delta\chi_{eff}^2 = 1585.57$ ;  $\bar{\chi}_{eff}^2 = 3514.30$ ;  $\Delta\bar{\chi}_{eff}^2 = 1592.05$ ;  $R - 1 = 0.02289$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.02 ( $\Delta$  -0.01) MGS: 2.12 ( $\Delta$  -0.08) DR12BAO: 3.26 ( $\Delta$  -0.04) CMB - smicadx12\_Dec5.ftl.mv2.ndclpp\_p.teb.consext8: 8.87 ( $\Delta$  -0.17) simall.100x143\_offlike5.EE.Aplan  
396.72 ( $\Delta$  0.43) commander\_dx12\_v3.2.29: 23.44 ( $\Delta$  -0.45) plik\_rd12\_HM\_v22b\_TTTEE: 2345.53 Hubble - H073p45: 8.17 ( $\Delta$  0.03) SN - JLA December.2013: 695.12 ( $\Delta$  -0.01)



16.39 base\_omegak\_plikHM\_TTTEE\_lowl\_lowE\_BAO\_Riess18\_JLA\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02240 \pm 0.00015 \quad (+1.0\sigma)$	$\Omega_{\text{m}}h^3$	$0.0982^{+0.0013}_{-0.0015} \quad (+0.0\sigma)$	$D_{\text{M}}(0.15)$	$631.3 \pm 5.6 \quad (-0.0\sigma)$
$\Omega_{\text{c}}h^2$	$0.1198 \pm 0.0014 \quad (-0.1\sigma)$	$\sigma_8$	$0.8135 \pm 0.0080 \quad (+0.0\sigma)$	$H(0.38)$	$84.04 \pm 0.60 \quad (-0.0\sigma)$
$100\theta_{\text{MC}}$	$1.04095 \pm 0.00032 \quad (+0.2\sigma)$	$S_8$	$0.817 \pm 0.012 \quad (+0.0\sigma)$	$D_{\text{M}}(0.38)$	$1507 \pm 12 \quad (-0.0\sigma)$
$\tau$	$0.0564^{+0.0056}_{-0.0083} \quad (+0.3\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4473 \pm 0.0065 \quad (+0.0\sigma)$	$H(0.51)$	$90.73 \pm 0.60 \quad (-0.0\sigma)$
$\Omega_K$	$0.0025 \pm 0.0019 \quad (-0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6032 \pm 0.0069 \quad (+0.0\sigma)$	$D_{\text{M}}(0.51)$	$1954 \pm 15 \quad (-0.0\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.048^{+0.013}_{-0.017} \quad (+0.3\sigma)$	$\sigma_8/h^{0.5}$	$0.9812 \pm 0.0097 \quad (+0.0\sigma)$	$H(0.61)$	$96.33 \pm 0.60 \quad (-0.0\sigma)$
$n_{\text{s}}$	$0.9661 \pm 0.0045 \quad (+0.3\sigma)$	$r_{\text{drag}}h$	$101.13 \pm 0.94 \quad (-0.1\sigma)$	$D_{\text{M}}(0.61)$	$2275 \pm 17 \quad (-0.0\sigma)$
$\alpha_{\text{JLA}}$	$0.1412 \pm 0.0066 \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.425 \pm 0.023 \quad (+0.1\sigma)$	$H(2.33)$	$237.1 \pm 1.2 \quad (-0.0\sigma)$
$\beta_{\text{JLA}}$	$3.104 \pm 0.080 \quad (+0.0\sigma)$	$z_{\text{re}}$	$7.87^{+0.61}_{-0.81} \quad (+0.2\sigma)$	$D_{\text{M}}(2.33)$	$5712 \pm 31 \quad (-0.0\sigma)$
$y_{\text{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$10^9 A_{\text{s}}$	$2.107^{+0.026}_{-0.035} \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4524 \pm 0.0062 \quad (+0.0\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.882 \pm 0.012 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7527 \pm 0.0073 \quad (+0.1\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{40}$	$1230 \pm 13 \quad (-0.1\sigma)$	$f\sigma_8(0.38)$	$0.4727 \pm 0.0055 \quad (+0.0\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$D_{220}$	$5734 \pm 39 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6683 \pm 0.0066 \quad (+0.1\sigma)$
$A_{100}^{\text{PS}}$	$258 \pm 27 \quad (-0.2\sigma)$	$D_{810}$	$2540 \pm 14 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4723 \pm 0.0051 \quad (+0.1\sigma)$
$A_{143}^{\text{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{1420}$	$818.1 \pm 4.8 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.6259 \pm 0.0062 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{2000}$	$231.1 \pm 1.6 \quad (+0.7\sigma)$	$f\sigma_8(0.61)$	$0.4680 \pm 0.0048 \quad (+0.1\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$n_{\text{s},0.002}$	$0.9661 \pm 0.0045 \quad (+0.3\sigma)$	$\sigma_8(0.61)$	$0.5958 \pm 0.0059 \quad (+0.1\sigma)$
$A^{\text{kSZ}}$	$< 4.06 \quad (-0.2\sigma)$	$Y_{\text{P}}$	$0.245405^{+0.000063}_{-0.000055} \quad (+0.9\sigma)$	$f\sigma_8(2.33)$	$0.3007 \pm 0.0030 \quad (+0.1\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (+0.0\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246732^{+0.000063}_{-0.000056} \quad (+0.9\sigma)$	$\sigma_8(2.33)$	$0.3108 \pm 0.0034 \quad (+0.0\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$10^5 \text{D/H}$	$2.580 \pm 0.028 \quad (-1.0\sigma)$	$f_{2000}^{143}$	$29.3 \pm 2.8 \quad (-0.6\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$\text{Age/Gyr}$	$13.670 \pm 0.078 \quad (+0.0\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 1.9 \quad (-0.7\sigma)$
$A_{217}^{\text{dustTT}}$	$93.9 \pm 7.3 \quad (+0.1\sigma)$	$z_*$	$1089.86 \pm 0.29 \quad (-0.7\sigma)$	$f_{2000}^{217}$	$107.0 \pm 1.8 \quad (-0.6\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$r_*$	$144.47 \pm 0.31 \quad (-0.2\sigma)$	$\chi_{\text{simall}}^2$	$397.3 \pm 2.1 \quad (+0.2\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$100\theta_*$	$1.04113 \pm 0.00031 \quad (+0.1\sigma)$	$\chi_{\text{lowl}}^2$	$23.5 \pm 1.1 \quad (-0.2\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.483 \pm 0.085$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.876 \pm 0.029 \quad (-0.2\sigma)$	$\chi_{\text{plik}}^2$	$2360.9 \pm 5.8 \quad (+295.0\sigma)$
$A_{143}^{\text{dustTE}}$	$0.224 \pm 0.053$	$z_{\text{drag}}$	$1059.99 \pm 0.30 \quad (+1.1\sigma)$	$\chi_{\text{H073p45}}^2$	$8.2 \pm 2.2 \quad (-0.0\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.666 \pm 0.081$	$r_{\text{drag}}$	$147.12 \pm 0.30 \quad (-0.4\sigma)$	$\chi_{\text{JLA}}^2$	$697.1 \pm 2.0 \quad (-0.0\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.27$	$k_{\text{D}}$	$0.14086 \pm 0.00032 \quad (+0.7\sigma)$	$\chi_{6\text{DF}}^2$	$0.059 \pm 0.079 \quad (-0.1\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_{\text{D}}$	$0.16073 \pm 0.00018 \quad (-1.1\sigma)$	$\chi_{\text{MGS}}^2$	$2.22 \pm 0.64 \quad (-0.1\sigma)$
$c_{217}$	$0.99821 \pm 0.00063 \quad (-0.1\sigma)$	$z_{\text{eq}}$	$3397 \pm 32 \quad (-0.0\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.0 \pm 1.2 \quad (-0.1\sigma)$
$H_0$	$68.74 \pm 0.64 \quad (+0.0\sigma)$	$k_{\text{eq}}$	$0.010369 \pm 0.000098 \quad (-0.0\sigma)$	$\chi_{\text{prior}}^2$	$11.6 \pm 4.5 \quad (+1.1\sigma)$
$\Omega_{\Lambda}$	$0.6952 \pm 0.0057 \quad (+0.1\sigma)$	$100\theta_{\text{eq}}$	$0.8143 \pm 0.0061 \quad (+0.1\sigma)$	$\chi_{\text{BAO}}^2$	$6.3 \pm 1.7 \quad (-0.1\sigma)$
$\Omega_{\text{m}}$	$0.3023 \pm 0.0060 \quad (-0.0\sigma)$	$100\theta_{\text{s,eq}}$	$0.4499 \pm 0.0031 \quad (+0.0\sigma)$	$\chi_{\text{CMB}}^2$	$2781.7 \pm 5.7 \quad (+293.9\sigma)$
$\Omega_{\text{m}}h^2$	$0.1428 \pm 0.0013 \quad (-0.0\sigma)$	$H(0.15)$	$73.98 \pm 0.62 \quad (+0.0\sigma)$		

$\bar{\chi}_{\text{eff}}^2 = 3505.05$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1592.13$ ;  $R - 1 = 0.01737$



16.40 base\_omegak\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_JLA\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02240 \pm 0.00015 \quad (+1.0\sigma)$	$\Omega_m h^3$	$0.0981 \pm 0.0014 \quad (-0.1\sigma)$	$D_M(0.15)$	$631.8 \pm 5.5 \quad (-0.0\sigma)$
$\Omega_c h^2$	$0.1198 \pm 0.0014 \quad (-0.2\sigma)$	$\sigma_8$	$0.8147 \pm 0.0071 \quad (-0.1\sigma)$	$H(0.38)$	$83.99 \pm 0.59 \quad (-0.1\sigma)$
$100\theta_{MC}$	$1.04095 \pm 0.00032 \quad (+0.2\sigma)$	$S_8$	$0.819 \pm 0.010 \quad (-0.1\sigma)$	$D_M(0.38)$	$1509 \pm 12 \quad (+0.0\sigma)$
$\tau$	$0.0575^{+0.0060}_{-0.0077} \quad (+0.3\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4485 \pm 0.0056 \quad (-0.1\sigma)$	$H(0.51)$	$90.68 \pm 0.59 \quad (-0.1\sigma)$
$\Omega_K$	$0.0024 \pm 0.0019 \quad (-0.3\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6045 \pm 0.0058 \quad (-0.1\sigma)$	$D_M(0.51)$	$1956 \pm 15 \quad (+0.0\sigma)$
$\ln(10^{10} A_s)$	$3.051^{+0.013}_{-0.015} \quad (+0.3\sigma)$	$\sigma_8/h^{0.5}$	$0.9832 \pm 0.0082 \quad (-0.1\sigma)$	$H(0.61)$	$96.28 \pm 0.60 \quad (-0.1\sigma)$
$n_s$	$0.9658 \pm 0.0045 \quad (+0.4\sigma)$	$r_{drag} h$	$101.02 \pm 0.91 \quad (-0.1\sigma)$	$D_M(0.61)$	$2277 \pm 17 \quad (+0.0\sigma)$
$y_{cal}$	$1.0008 \pm 0.0025 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.430 \pm 0.020 \quad (-0.0\sigma)$	$H(2.33)$	$237.1 \pm 1.2 \quad (-0.1\sigma)$
$\alpha_{JLA}$	$0.1411 \pm 0.0066 \quad (+0.0\sigma)$	$z_{re}$	$7.99^{+0.64}_{-0.73} \quad (+0.2\sigma)$	$D_M(2.33)$	$5714 \pm 30 \quad (+0.1\sigma)$
$\beta_{JLA}$	$3.102 \pm 0.080 \quad (-0.0\sigma)$	$10^9 A_s$	$2.113^{+0.026}_{-0.032} \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4535 \pm 0.0053 \quad (-0.1\sigma)$
$A_{217}^{CIB}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_s e^{-2\tau}$	$1.884 \pm 0.011 \quad (-0.0\sigma)$	$\sigma_8(0.15)$	$0.7537 \pm 0.0066 \quad (-0.1\sigma)$
$\xi^{tSZ \times CIB}$	—	$D_{40}$	$1231 \pm 13 \quad (-0.2\sigma)$	$f\sigma_8(0.38)$	$0.4737 \pm 0.0046 \quad (-0.1\sigma)$
$A_{143}^{tSZ}$	$5.4 \pm 1.9 \quad (+0.1\sigma)$	$D_{220}$	$5738 \pm 39 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6691 \pm 0.0060 \quad (-0.0\sigma)$
$A_{100}^{PS}$	$258 \pm 27 \quad (-0.2\sigma)$	$D_{810}$	$2541 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4733 \pm 0.0043 \quad (-0.1\sigma)$
$A_{143}^{PS}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{1420}$	$818.3 \pm 4.8 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.6266 \pm 0.0057 \quad (-0.0\sigma)$
$A_{143 \times 217}^{PS}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{2000}$	$231.2 \pm 1.6 \quad (+0.7\sigma)$	$f\sigma_8(0.61)$	$0.4689 \pm 0.0041 \quad (-0.1\sigma)$
$A_{217}^{PS}$	$115 \pm 10 \quad (+0.0\sigma)$	$n_{s,0.002}$	$0.9658 \pm 0.0045 \quad (+0.4\sigma)$	$\sigma_8(0.61)$	$0.5965 \pm 0.0055 \quad (-0.0\sigma)$
$A^{kSZ}$	$< 4.09 \quad (-0.2\sigma)$	$Y_P$	$0.245406^{+0.000063}_{-0.000056} \quad (+1.0\sigma)$	$f\sigma_8(2.33)$	$0.3010 \pm 0.0028 \quad (-0.0\sigma)$
$A_{100}^{dustTT}$	$8.9 \pm 1.8 \quad (+0.0\sigma)$	$Y_P^{BBN}$	$0.246732^{+0.000063}_{-0.000056} \quad (+1.0\sigma)$	$\sigma_8(2.33)$	$0.3111 \pm 0.0032 \quad (-0.0\sigma)$
$A_{143}^{dustTT}$	$10.9 \pm 1.7 \quad (+0.1\sigma)$	$10^5 D/H$	$2.580 \pm 0.028 \quad (-1.0\sigma)$	$f_{2000}^{143}$	$29.3 \pm 2.8 \quad (-0.6\sigma)$
$A_{143 \times 217}^{dustTT}$	$18.6 \pm 3.4 \quad (+0.1\sigma)$	Age/Gyr	$13.674 \pm 0.078 \quad (+0.1\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 1.9 \quad (-0.7\sigma)$
$A_{217}^{dustTT}$	$93.9 \pm 7.4 \quad (+0.1\sigma)$	$z_*$	$1089.87 \pm 0.28 \quad (-0.8\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.8 \quad (-0.6\sigma)$
$A_{100}^{dustTE}$	$0.114 \pm 0.039$	$r_*$	$144.45 \pm 0.30 \quad (-0.1\sigma)$	$\chi_{lensing}^2$	$9.23 \pm 0.65 \quad (-0.3\sigma)$
$A_{100 \times 143}^{dustTE}$	$0.135 \pm 0.030$	$100\theta_*$	$1.04113 \pm 0.00031 \quad (+0.2\sigma)$	$\chi_{simall}^2$	$296 \pm 200 \quad (-53.2\sigma)$
$A_{100 \times 217}^{dustTE}$	$0.483 \pm 0.086$	$D_M(z_*)/\text{Gpc}$	$13.874 \pm 0.028 \quad (-0.2\sigma)$	$\chi_{lowl}^2$	$23.7 \pm 1.1 \quad (-0.3\sigma)$
$A_{143}^{dustTE}$	$0.224 \pm 0.054$	$z_{drag}$	$1060.00 \pm 0.30 \quad (+1.0\sigma)$	$\chi_{plik}^2$	$2360.4 \pm 5.7 \quad (+310.3\sigma)$
$A_{143 \times 217}^{dustTE}$	$0.667 \pm 0.081$	$r_{drag}$	$147.10 \pm 0.29 \quad (-0.3\sigma)$	$\chi_{H073p45}^2$	$109 \pm 200 \quad (+45.3\sigma)$
$A_{217}^{dustTE}$	$2.09 \pm 0.27$	$k_D$	$0.14088 \pm 0.00031 \quad (+0.6\sigma)$	$\chi_{JLA}^2$	$697.2 \pm 2.0 \quad (+0.0\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_D$	$0.16073 \pm 0.00018 \quad (-1.1\sigma)$	$\chi_{6DF}^2$	$0.051 \pm 0.069 \quad (-0.1\sigma)$
$c_{217}$	$0.99821 \pm 0.00062 \quad (-0.1\sigma)$	$z_{eq}$	$3399 \pm 31 \quad (-0.1\sigma)$	$\chi_{MGS}^2$	$2.15 \pm 0.62 \quad (-0.1\sigma)$
$H_0$	$68.67 \pm 0.63 \quad (+0.0\sigma)$	$k_{eq}$	$0.010374 \pm 0.000095 \quad (-0.1\sigma)$	$\chi_{DR12BAO}^2$	$4.0 \pm 1.1 \quad (-0.0\sigma)$
$\Omega_\Lambda$	$0.6945 \pm 0.0054 \quad (+0.2\sigma)$	$100\theta_{eq}$	$0.8140 \pm 0.0059 \quad (+0.2\sigma)$	$\chi_{prior}^2$	$11.6 \pm 4.7 \quad (+1.1\sigma)$
$\Omega_m$	$0.3030 \pm 0.0058 \quad (-0.1\sigma)$	$100\theta_{s,eq}$	$0.4497 \pm 0.0030 \quad (+0.2\sigma)$	$\chi_{CMB}^2$	$2690 \pm 170 \quad (+275.1\sigma)$
$\Omega_m h^2$	$0.1429 \pm 0.0013 \quad (-0.1\sigma)$	$H(0.15)$	$73.92 \pm 0.61 \quad (-0.0\sigma)$	$\chi_{BAO}^2$	$6.2 \pm 1.5 \quad (-0.1\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 3514.21; \Delta\bar{\chi}_{\text{eff}}^2 = 1592.17; R - 1 = 0.02147$$



# 16.41 base\_omegak\_plikHM\_TT\_lowl\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022317	$0.02232 \pm 0.00024$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6101	$0.6099 \pm 0.0074$	$D_{\mathrm{M}}(0.15)$	675.7	$682 \pm 24$
$\Omega_{\mathrm{c}}h^2$	0.11806	$0.1178 \pm 0.0021$	$\sigma_8/h^{0.5}$	0.9955	$0.996 \pm 0.011$	$H(0.38)$	79.71	$79.2 \pm 2.2$
$100\theta_{\mathrm{MC}}$	1.041071	$1.04111 \pm 0.00049$	$r_{\mathrm{drag}}h$	94.45	$93.6 \pm 3.4$	$D_{\mathrm{M}}(0.38)$	1604	$1618 \pm 53$
$\tau$	0.0510	$0.0494 \pm 0.0081$	$\langle d^2 \rangle^{1/2}$	2.4687	$2.473 \pm 0.029$	$H(0.51)$	86.54	$86.0^{+2.0}_{-2.2}$
$\Omega_K$	-0.0092	$-0.0114 \pm 0.0075$	$z_{\mathrm{re}}$	7.29	$7.08^{+0.88}_{-0.74}$	$D_{\mathrm{M}}(0.51)$	2073	$2091 \pm 65$
$\ln(10^{10}A_{\mathrm{s}})$	3.0316	$3.027 \pm 0.017$	$10^9A_{\mathrm{s}}$	2.0731	$2.065 \pm 0.035$	$H(0.61)$	92.24	$91.8^{+2.0}_{-2.2}$
$n_{\mathrm{s}}$	0.9696	$0.9693 \pm 0.0062$	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8719	$1.870 \pm 0.014$	$D_{\mathrm{M}}(0.61)$	2409	$2428 \pm 72$
$y_{\mathrm{cal}}$	1.00010	$0.99998 \pm 0.0025$	$D_{40}$	1213.4	$1213 \pm 17$	$H(2.33)$	233.28	$232.8^{+2.3}_{-2.6}$
$A_{217}^{\mathrm{CIB}}$	48.0	$47 \pm 7$	$D_{220}$	5718.2	$5723 \pm 41$	$D_{\mathrm{M}}(2.33)$	5924	$5953 \pm 110$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.40	—	$D_{810}$	2533.1	$2531 \pm 14$	$f\sigma_8(0.15)$	0.4700	$0.471 \pm 0.010$
$A_{143}^{\mathrm{tSZ}}$	7.01	$5.2 \pm 2.0$	$D_{1420}$	815.3	$814.3 \pm 5.1$	$\sigma_8(0.15)$	0.7325	$0.729 \pm 0.014$
$A_{100}^{\mathrm{PS}}$	252.1	$261 \pm 28$	$D_{2000}$	230.62	$230.3 \pm 1.9$	$f\sigma_8(0.38)$	0.4812	$0.4812 \pm 0.0062$
$A_{143}^{\mathrm{PS}}$	48.5	$47 \pm 8$	$n_{\mathrm{s},0.002}$	0.9696	$0.9693 \pm 0.0062$	$\sigma_8(0.38)$	0.6457	$0.642 \pm 0.014$
$A_{143 \times 217}^{\mathrm{PS}}$	47.1	$42 \pm 9$	$Y_{\mathrm{P}}$	0.245374	$0.245373^{+0.000099}_{-0.000086}$	$f\sigma_8(0.51)$	0.47615	$0.4756 \pm 0.0050$
$A_{217}^{\mathrm{PS}}$	118.8	$114 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246701	$0.24670^{+0.00010}_{-0.000087}$	$\sigma_8(0.51)$	0.6028	$0.599 \pm 0.014$
$A^{\mathrm{kSZ}}$	0.22	$< 4.66$	$10^5\mathrm{D}/\mathrm{H}$	2.5954	$2.595 \pm 0.044$	$f\sigma_8(0.61)$	0.46877	$0.4678 \pm 0.0047$
$A_{100}^{\mathrm{dustTT}}$	8.97	$9.0 \pm 1.8$	$\mathrm{Age}/\mathrm{Gyr}$	14.203	$14.28 \pm 0.29$	$\sigma_8(0.61)$	0.5726	$0.569 \pm 0.014$
$A_{143}^{\mathrm{dustTT}}$	10.93	$10.7 \pm 1.8$	$z_*$	1089.816	$1089.79 \pm 0.44$	$f\sigma_8(2.33)$	0.2878	$0.2856 \pm 0.0075$
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.50	$18.3 \pm 3.3$	$r_*$	144.975	$145.03 \pm 0.47$	$\sigma_8(2.33)$	0.2942	$0.2917 \pm 0.0093$
$A_{217}^{\mathrm{dustTT}}$	94.6	$93.5 \pm 7.4$	$100\theta_*$	1.041264	$1.04130 \pm 0.00047$	$f_{2000}^{143}$	29.55	$30.1 \pm 3.0$
$c_{100}$	0.99963	$0.99961 \pm 0.00061$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.9229	$13.928 \pm 0.043$	$f_{2000}^{143 \times 217}$	32.50	$32.6 \pm 2.1$
$c_{217}$	0.99822	$0.99825 \pm 0.00062$	$z_{\mathrm{drag}}$	1059.666	$1059.67 \pm 0.47$	$f_{2000}^{217}$	106.95	$107.2 \pm 2.0$
$H_0$	63.96	$63.4 \pm 2.4$	$r_{\mathrm{drag}}$	147.666	$147.72 \pm 0.46$	$\chi_{\mathrm{lensing}}^2$	9.44	$10.4 \pm 2.2$
$\Omega_{\Lambda}$	0.6645	$0.660^{+0.019}_{-0.017}$	$k_{\mathrm{D}}$	0.140222	$0.14016 \pm 0.00048$	$\chi_{\mathrm{simall}}^2$	395.67	$396.7 \pm 1.5$
$\Omega_{\mathrm{m}}$	0.3447	$0.352^{+0.023}_{-0.026}$	$100\theta_{\mathrm{D}}$	0.160917	$0.16093 \pm 0.00027$	$\chi_{\mathrm{lowl}}^2$	21.81	$22.0 \pm 1.2$
$\Omega_{\mathrm{m}}h^2$	0.14103	$0.1408 \pm 0.0020$	$z_{\mathrm{eq}}$	3354.7	$3349 \pm 48$	$\chi_{\mathrm{plik}}^2$	757.9	$770.7 \pm 5.5$
$\Omega_{\mathrm{m}}h^3$	0.09020	$0.0893^{+0.0039}_{-0.0043}$	$k_{\mathrm{eq}}$	0.010239	$0.01022 \pm 0.00015$	$\chi_{\mathrm{prior}}^2$	1.44	$7.3 \pm 3.7$
$\sigma_8$	0.7962	$0.792 \pm 0.013$	$100\theta_{\mathrm{eq}}$	0.8219	$0.8230 \pm 0.0094$	$\chi_{\mathrm{CMB}}^2$	1184.8	$1199.8 \pm 5.6$
$S_8$	0.8534	$0.857 \pm 0.022$	$100\theta_{\mathrm{s,eq}}$	0.45389	$0.4545 \pm 0.0048$			
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4675	$0.470 \pm 0.012$	$H(0.15)$	69.39	$68.8 \pm 2.3$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 1186.22$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1207.14$ ;  $R - 1 = 0.01227$   
 $\chi_{\mathrm{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 9.44 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.67 commander\_dx12\_v3.2.29: 21.81 plik\_rd12\_HM.v22.TT: 757.86



# 16.42 base\_omegak\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02233 \pm 0.00024$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6101 \pm 0.0074$	$D_{\mathrm{M}}(0.15)$	$679 \pm 23$
$\Omega_{\mathrm{c}}h^2$	$0.1177^{+0.0020}_{-0.0022}$	$\sigma_8/h^{0.5}$	$0.996 \pm 0.011$	$H(0.38)$	$79.5^{+2.0}_{-2.2}$
$100\theta_{\mathrm{MC}}$	$1.04113 \pm 0.00049$	$r_{\mathrm{drag}}h$	$94.2^{+3.1}_{-3.4}$	$D_{\mathrm{M}}(0.38)$	$1610 \pm 50$
$\tau$	$0.0525^{+0.0036}_{-0.0074}$	$\langle d^2 \rangle^{1/2}$	$2.473 \pm 0.029$	$H(0.51)$	$86.3^{+1.9}_{-2.2}$
$\Omega_K$	$-0.0104^{+0.0076}_{-0.0068}$	$z_{\mathrm{re}}$	$7.42^{+0.30}_{-0.84}$	$D_{\mathrm{M}}(0.51)$	$2081 \pm 62$
$\ln(10^{10}A_{\mathrm{s}})$	$3.033^{+0.010}_{-0.015}$	$10^9 A_{\mathrm{s}}$	$2.077^{+0.021}_{-0.031}$	$H(0.61)$	$92.0^{+1.9}_{-2.1}$
$n_{\mathrm{s}}$	$0.9696 \pm 0.0062$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.870 \pm 0.013$	$D_{\mathrm{M}}(0.61)$	$2417 \pm 69$
$y_{\mathrm{cal}}$	$0.99997 \pm 0.0025$	$D_{40}$	$1213 \pm 17$	$H(2.33)$	$232.9^{+2.3}_{-2.6}$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$D_{220}$	$5723 \pm 41$	$D_{\mathrm{M}}(2.33)$	$5938 \pm 110$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2530 \pm 14$	$f\sigma_8(0.15)$	$0.470 \pm 0.010$
$A_{143}^{\mathrm{tSZ}}$	$5.2 \pm 2.0$	$D_{1420}$	$814.3 \pm 5.1$	$\sigma_8(0.15)$	$0.731 \pm 0.012$
$A_{100}^{\mathrm{PS}}$	$260 \pm 28$	$D_{2000}$	$230.3 \pm 1.9$	$f\sigma_8(0.38)$	$0.4812 \pm 0.0062$
$A_{143}^{\mathrm{PS}}$	$47 \pm 8$	$n_{\mathrm{s},0.002}$	$0.9696 \pm 0.0062$	$\sigma_8(0.38)$	$0.645 \pm 0.013$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9$	$Y_{\mathrm{P}}$	$0.245376^{+0.000098}_{-0.000088}$	$f\sigma_8(0.51)$	$0.4760 \pm 0.0049$
$A_{217}^{\mathrm{PS}}$	$114 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246703^{+0.000099}_{-0.000089}$	$\sigma_8(0.51)$	$0.602 \pm 0.013$
$A^{\mathrm{kSZ}}$	$< 4.62$	$10^5 \mathrm{D}/\mathrm{H}$	$2.594 \pm 0.044$	$f\sigma_8(0.61)$	$0.4685 \pm 0.0045$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	$\mathrm{Age}/\mathrm{Gyr}$	$14.24 \pm 0.28$	$\sigma_8(0.61)$	$0.571 \pm 0.013$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$z_*$	$1089.77 \pm 0.44$	$f\sigma_8(2.33)$	$0.2872 \pm 0.0070$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$r_*$	$145.05 \pm 0.47$	$\sigma_8(2.33)$	$0.2935 \pm 0.0087$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.4$	$100\theta_*$	$1.04132 \pm 0.00048$	$f_{2000}^{143}$	$30.0 \pm 3.0$
$c_{100}$	$0.99961 \pm 0.00061$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.930 \pm 0.043$	$f_{2000}^{143 \times 217}$	$32.5 \pm 2.1$
$c_{217}$	$0.99825 \pm 0.00063$	$z_{\mathrm{drag}}$	$1059.68 \pm 0.47$	$f_{2000}^{217}$	$107.1 \pm 2.0$
$H_0$	$63.8^{+2.2}_{-2.4}$	$r_{\mathrm{drag}}$	$147.74 \pm 0.46$	$\chi_{\mathrm{lensing}}^2$	$10.4 \pm 2.1$
$\Omega_{\Lambda}$	$0.663 \pm 0.017$	$k_{\mathrm{D}}$	$0.14015 \pm 0.00048$	$\chi_{\mathrm{simall}}^2$	$396.4 \pm 1.1$
$\Omega_{\mathrm{m}}$	$0.347 \pm 0.023$	$100\theta_{\mathrm{D}}$	$0.16092 \pm 0.00027$	$\chi_{\mathrm{lowl}}^2$	$22.1 \pm 1.2$
$\Omega_{\mathrm{m}}h^2$	$0.1407^{+0.0019}_{-0.0021}$	$z_{\mathrm{eq}}$	$3347^{+44}_{-50}$	$\chi_{\mathrm{plik}}^2$	$770.6 \pm 5.5$
$\Omega_{\mathrm{m}}h^3$	$0.0897^{+0.0038}_{-0.0043}$	$k_{\mathrm{eq}}$	$0.01022^{+0.00014}_{-0.00015}$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8$	$0.795 \pm 0.012$	$100\theta_{\mathrm{eq}}$	$0.8234 \pm 0.0094$	$\chi_{\mathrm{CMB}}^2$	$1199.4 \pm 5.6$
$S_8$	$0.855 \pm 0.021$	$100\theta_{\mathrm{s,eq}}$	$0.4547 \pm 0.0048$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.468 \pm 0.012$	$H(0.15)$	$69.2^{+2.1}_{-2.3}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1206.71$ ;  $R - 1 = 0.01427$



### 16.43 base\_omegak\_plikHM\_TTTEEE\_lowl\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022509	$0.02249 \pm 0.00016$ (+0.7 $\sigma$ )	$\Omega_m h^3$	0.09063	$0.0900^{+0.0033}_{-0.0038}$ (+0.2 $\sigma$ )	$100\theta_{s,eq}$	0.45283	$0.4527 \pm 0.0033$ (−0.4 $\sigma$ )
$\Omega_c h^2$	0.11839	$0.1185 \pm 0.0015$ (+0.3 $\sigma$ )	$\sigma_8$	0.7974	$0.795 \pm 0.011$ (+0.2 $\sigma$ )	$H(0.15)$	69.47	$69.0^{+2.0}_{-2.2}$ (+0.1 $\sigma$ )
$100\theta_{MC}$	1.041060	$1.04107 \pm 0.00032$ (−0.1 $\sigma$ )	$S_8$	0.8554	$0.860 \pm 0.021$ (+0.1 $\sigma$ )	$D_M(0.15)$	675.0	$680 \pm 22$ (−0.1 $\sigma$ )
$\tau$	0.0515	$0.0497^{+0.0082}_{-0.0071}$ (+0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4685	$0.471 \pm 0.011$ (+0.1 $\sigma$ )	$H(0.38)$	79.82	$79.4^{+1.8}_{-2.1}$ (+0.1 $\sigma$ )
$\Omega_K$	−0.0092	$−0.0106 \pm 0.0065$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6112	$0.6121 \pm 0.0066$ (+0.3 $\sigma$ )	$D_M(0.38)$	1602.4	$1614 \pm 48$ (−0.1 $\sigma$ )
$\ln(10^{10} A_s)$	3.0336	$3.030^{+0.017}_{-0.015}$ (+0.2 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9965	$0.998 \pm 0.010$ (+0.2 $\sigma$ )	$H(0.51)$	86.67	$86.3^{+1.8}_{-2.0}$ (+0.1 $\sigma$ )
$n_s$	0.96989	$0.9688 \pm 0.0047$ (−0.1 $\sigma$ )	$r_{drag} h$	94.36	$93.7^{+3.0}_{-3.4}$ (+0.0 $\sigma$ )	$D_M(0.51)$	2071	$2084 \pm 59$ (−0.1 $\sigma$ )
$y_{cal}$	1.00002	$0.99998 \pm 0.0025$ (−0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4720	$2.478 \pm 0.028$ (+0.2 $\sigma$ )	$H(0.61)$	92.38	$92.0^{+1.7}_{-2.0}$ (+0.1 $\sigma$ )
$A_{217}^{CIB}$	46.8	$46 \pm 7$ (−0.1 $\sigma$ )	$z_{re}$	7.30	$7.09^{+0.90}_{-0.70}$ (+0.0 $\sigma$ )	$D_M(0.61)$	2406	$2420 \pm 65$ (−0.1 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.52	—	$10^9 A_s$	2.0772	$2.070^{+0.035}_{-0.032}$ (+0.2 $\sigma$ )	$H(2.33)$	233.70	$233.6 \pm 1.9$ (+0.3 $\sigma$ )
$A_{143}^{tSZ}$	7.25	$5.5^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8741	$1.874 \pm 0.012$ (+0.3 $\sigma$ )	$D_M(2.33)$	5915	$5935 \pm 100$ (−0.2 $\sigma$ )
$A_{100}^{PS}$	247.2	$257 \pm 28$ (−0.1 $\sigma$ )	$D_{40}$	1214.6	$1216 \pm 14$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4710	$0.4731 \pm 0.0098$ (+0.2 $\sigma$ )
$A_{143}^{PS}$	47.2	$44 \pm 8$ (−0.3 $\sigma$ )	$D_{220}$	5731.3	$5735 \pm 38$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7335	$0.731 \pm 0.012$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{PS}$	48.3	$41 \pm 9$ (−0.1 $\sigma$ )	$D_{810}$	2535.3	$2534 \pm 13$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.4821	$0.4829 \pm 0.0057$ (+0.3 $\sigma$ )
$A_{217}^{PS}$	119.1	$114 \pm 10$ (+0.0 $\sigma$ )	$D_{1420}$	817.16	$816.2 \pm 4.7$ (+0.4 $\sigma$ )	$\sigma_8(0.38)$	0.6466	$0.644 \pm 0.013$ (+0.2 $\sigma$ )
$A^{kSZ}$	0.01	$< 4.17$ (−0.1 $\sigma$ )	$D_{2000}$	231.60	$231.2 \pm 1.6$ (+0.5 $\sigma$ )	$f\sigma_8(0.51)$	0.47699	$0.4771 \pm 0.0044$ (+0.3 $\sigma$ )
$A_{100}^{dustTT}$	8.94	$9.0 \pm 1.8$ (−0.0 $\sigma$ )	$n_{s,0.002}$	0.96989	$0.9688 \pm 0.0047$ (−0.1 $\sigma$ )	$\sigma_8(0.51)$	0.6035	$0.601 \pm 0.013$ (+0.2 $\sigma$ )
$A_{143}^{dustTT}$	11.10	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P$	0.245448	$0.245438 \pm 0.000060$ (+0.7 $\sigma$ )	$f\sigma_8(0.61)$	0.46955	$0.4693 \pm 0.0040$ (+0.3 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.03	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246774	$0.246765 \pm 0.000061$ (+0.7 $\sigma$ )	$\sigma_8(0.61)$	0.5733	$0.571 \pm 0.013$ (+0.1 $\sigma$ )
$A_{217}^{dustTT}$	95.1	$93.6 \pm 7.3$ (+0.0 $\sigma$ )	$10^5 D/H$	2.5603	$2.565 \pm 0.029$ (−0.7 $\sigma$ )	$f\sigma_8(2.33)$	0.2881	$0.2866 \pm 0.0069$ (+0.1 $\sigma$ )
$A_{100}^{dustTE}$	0.1140	$0.113 \pm 0.038$	Age/Gyr	14.182	$14.23 \pm 0.26$ (−0.2 $\sigma$ )	$\sigma_8(2.33)$	0.2946	$0.2928 \pm 0.0085$ (+0.1 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1346	$0.134 \pm 0.030$	$z_*$	1089.606	$1089.64 \pm 0.30$ (−0.3 $\sigma$ )	$f_{2000}^{143}$	28.11	$28.8 \pm 2.8$ (−0.4 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.480	$0.481 \pm 0.085$	$r_*$	144.741	$144.73 \pm 0.32$ (−0.6 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.35	$31.5 \pm 1.9$ (−0.5 $\sigma$ )
$A_{143}^{dustTE}$	0.224	$0.223 \pm 0.053$	$100\theta_*$	1.041231	$1.04124 \pm 0.00031$ (−0.1 $\sigma$ )	$f_{2000}^{217}$	105.88	$106.3 \pm 1.8$ (−0.4 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.660	$0.663 \pm 0.081$	$D_M(z_*)/\text{Gpc}$	13.9010	$13.900 \pm 0.030$ (−0.7 $\sigma$ )	$\chi_{lensing}^2$	9.78	$10.9 \pm 2.4$ (+0.2 $\sigma$ )
$A_{217}^{dustTE}$	2.072	$2.07 \pm 0.27$	$z_{drag}$	1060.123	$1060.10 \pm 0.31$ (+0.9 $\sigma$ )	$\chi_{simall}^2$	395.65	$396.7 \pm 1.5$ (−0.0 $\sigma$ )
$c_{100}$	0.99970	$0.99968 \pm 0.00060$ (+0.1 $\sigma$ )	$r_{drag}$	147.364	$147.36 \pm 0.31$ (−0.8 $\sigma$ )	$\chi_{lowl}^2$	21.84	$22.15 \pm 0.98$ (+0.1 $\sigma$ )
$c_{217}$	0.99817	$0.99818 \pm 0.00062$ (−0.1 $\sigma$ )	$k_D$	0.140685	$0.14067 \pm 0.00032$ (+1.1 $\sigma$ )	$\chi_{plik}^2$	2342.4	$2357.5 \pm 5.9$ (+288.4 $\sigma$ )
$H_0$	64.03	$63.6^{+2.1}_{-2.3}$ (+0.1 $\sigma$ )	$100\theta_D$	0.160641	$0.16067 \pm 0.00018$ (−0.9 $\sigma$ )	$\chi_{prior}^2$	1.76	$11.5 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_\Lambda$	0.6639	$0.659 \pm 0.017$ (−0.0 $\sigma$ )	$z_{eq}$	3367.1	$3369 \pm 33$ (+0.4 $\sigma$ )	$\chi_{CMB}^2$	2769.7	$2787.2 \pm 5.9$ (+281.3 $\sigma$ )
$\Omega_m$	0.3453	$0.352 \pm 0.023$ (−0.0 $\sigma$ )	$k_{eq}$	0.010277	$0.01028 \pm 0.00010$ (+0.4 $\sigma$ )			
$\Omega_m h^2$	0.14155	$0.1416 \pm 0.0014$ (+0.4 $\sigma$ )	$100\theta_{eq}$	0.8201	$0.8198 \pm 0.0064$ (−0.3 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2771.41$ ;  $\Delta\chi_{eff}^2 = 1585.19$ ;  $\bar{\chi}_{eff}^2 = 2798.70$ ;  $\Delta\bar{\chi}_{eff}^2 = 1591.56$ ;  $R - 1 = 0.02587$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 9.79 ( $\Delta$  0.35) simall\_100x143\_offlike5\_EE\_Aplanck.B: 395.65 ( $\Delta$  -0.02) commander\_dx12\_v3.2.29: 21.84 ( $\Delta$  0.03) plik\_rd12\_HM\_v22b\_TTTEEE: 2342.38



16.44 base\_omegak\_plikHM\_TTTEE\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02249 \pm 0.00016 \quad (+0.7\sigma)$	$\Omega_{\text{m}}h^3$	$0.0906^{+0.0032}_{-0.0038} \quad (+0.2\sigma)$	$100\theta_{\text{s,eq}}$	$0.4527 \pm 0.0033 \quad (-0.4\sigma)$
$\Omega_{\text{c}}h^2$	$0.1185 \pm 0.0015 \quad (+0.3\sigma)$	$\sigma_8$	$0.7982^{+0.0093}_{-0.010} \quad (+0.3\sigma)$	$H(0.15)$	$69.4^{+1.9}_{-2.2} \quad (+0.1\sigma)$
$100\theta_{\text{MC}}$	$1.04107 \pm 0.00032 \quad (-0.1\sigma)$	$S_8$	$0.858 \pm 0.020 \quad (+0.2\sigma)$	$D_{\text{M}}(0.15)$	$676 \pm 21 \quad (-0.1\sigma)$
$\tau$	$0.0528^{+0.0036}_{-0.0073} \quad (+0.0\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.470 \pm 0.011 \quad (+0.2\sigma)$	$H(0.38)$	$79.8^{+1.8}_{-2.1} \quad (+0.1\sigma)$
$\Omega_K$	$-0.0096 \pm 0.0061 \quad (+0.1\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6124 \pm 0.0065 \quad (+0.3\sigma)$	$D_{\text{M}}(0.38)$	$1605 \pm 45 \quad (-0.1\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.0361^{+0.0099}_{-0.014} \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.998 \pm 0.010 \quad (+0.2\sigma)$	$H(0.51)$	$86.6^{+1.7}_{-2.0} \quad (+0.1\sigma)$
$n_{\text{s}}$	$0.9689 \pm 0.0047 \quad (-0.1\sigma)$	$r_{\text{drag}}h$	$94.2^{+2.8}_{-3.3} \quad (+0.0\sigma)$	$D_{\text{M}}(0.51)$	$2074 \pm 55 \quad (-0.1\sigma)$
$y_{\text{cal}}$	$0.99997 \pm 0.0025 \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.478 \pm 0.028 \quad (+0.2\sigma)$	$H(0.61)$	$92.3^{+1.7}_{-1.9} \quad (+0.2\sigma)$
$A_{217}^{\text{CIB}}$	$46 \pm 7 \quad (-0.1\sigma)$	$z_{\text{re}}$	$7.42^{+0.32}_{-0.82} \quad (+0.0\sigma)$	$D_{\text{M}}(0.61)$	$2409 \pm 62 \quad (-0.1\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_{\text{s}}$	$2.083^{+0.020}_{-0.030} \quad (+0.2\sigma)$	$H(2.33)$	$233.7^{+1.8}_{-2.0} \quad (+0.3\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.874 \pm 0.012 \quad (+0.3\sigma)$	$D_{\text{M}}(2.33)$	$5919 \pm 96 \quad (-0.2\sigma)$
$A_{100}^{\text{PS}}$	$257 \pm 28 \quad (-0.1\sigma)$	$D_{40}$	$1217 \pm 14 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4722 \pm 0.0097 \quad (+0.2\sigma)$
$A_{143}^{\text{PS}}$	$44 \pm 8 \quad (-0.3\sigma)$	$D_{220}$	$5734 \pm 38 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.734^{+0.010}_{-0.011} \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$41 \pm 9 \quad (-0.1\sigma)$	$D_{810}$	$2533 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4829 \pm 0.0058 \quad (+0.3\sigma)$
$A_{217}^{\text{PS}}$	$114 \pm 10 \quad (+0.0\sigma)$	$D_{1420}$	$816.2 \pm 4.7 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.647^{+0.011}_{-0.012} \quad (+0.2\sigma)$
$A^{\text{kSZ}}$	$< 4.10 \quad (-0.1\sigma)$	$D_{2000}$	$231.2 \pm 1.6 \quad (+0.5\sigma)$	$f\sigma_8(0.51)$	$0.4777 \pm 0.0043 \quad (+0.3\sigma)$
$A_{100}^{\text{dustTT}}$	$9.0 \pm 1.8 \quad (-0.0\sigma)$	$n_{\text{s},0.002}$	$0.9689 \pm 0.0047 \quad (-0.1\sigma)$	$\sigma_8(0.51)$	$0.604^{+0.011}_{-0.012} \quad (+0.2\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.245440 \pm 0.000060 \quad (+0.7\sigma)$	$f\sigma_8(0.61)$	$0.4701 \pm 0.0037 \quad (+0.4\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246766 \pm 0.000061 \quad (+0.7\sigma)$	$\sigma_8(0.61)$	$0.574^{+0.011}_{-0.012} \quad (+0.2\sigma)$
$A_{217}^{\text{dustTT}}$	$93.6 \pm 7.3 \quad (+0.0\sigma)$	$10^5 \text{D/H}$	$2.564 \pm 0.029 \quad (-0.7\sigma)$	$f\sigma_8(2.33)$	$0.2883^{+0.0058}_{-0.0067} \quad (+0.2\sigma)$
$A_{100}^{\text{dustTE}}$	$0.113 \pm 0.038$	Age/Gyr	$14.19 \pm 0.24 \quad (-0.2\sigma)$	$\sigma_8(2.33)$	$0.2947^{+0.0072}_{-0.0084} \quad (+0.1\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134 \pm 0.029$	$z_*$	$1089.64 \pm 0.30 \quad (-0.3\sigma)$	$f_{2000}^{143}$	$28.7 \pm 2.8 \quad (-0.4\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.480 \pm 0.085$	$r_*$	$144.74 \pm 0.32 \quad (-0.7\sigma)$	$f_{2000}^{143 \times 217}$	$31.4 \pm 1.9 \quad (-0.5\sigma)$
$A_{143}^{\text{dustTE}}$	$0.222 \pm 0.054$	$100\theta_*$	$1.04124 \pm 0.00031 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$106.3 \pm 1.8 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.663 \pm 0.081$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.901 \pm 0.030 \quad (-0.7\sigma)$	$\chi_{\text{lensing}}^2$	$10.8 \pm 2.4 \quad (+0.2\sigma)$
$A_{217}^{\text{dustTE}}$	$2.07 \pm 0.27$	$z_{\text{drag}}$	$1060.10 \pm 0.31 \quad (+0.9\sigma)$	$\chi_{\text{small}}^2$	$396.4 \pm 1.2 \quad (+0.0\sigma)$
$c_{100}$	$0.99968 \pm 0.00060 \quad (+0.1\sigma)$	$r_{\text{drag}}$	$147.37 \pm 0.31 \quad (-0.8\sigma)$	$\chi_{\text{lowl}}^2$	$22.2 \pm 1.0 \quad (+0.1\sigma)$
$c_{217}$	$0.99818 \pm 0.00062 \quad (-0.1\sigma)$	$k_{\text{D}}$	$0.14067 \pm 0.00032 \quad (+1.1\sigma)$	$\chi_{\text{plik}}^2$	$2357.4 \pm 5.9 \quad (+289.0\sigma)$
$H_0$	$64.0^{+2.0}_{-2.3} \quad (+0.1\sigma)$	$100\theta_{\text{D}}$	$0.16067 \pm 0.00018 \quad (-0.9\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.4 \quad (+1.1\sigma)$
$\Omega_{\Lambda}$	$0.662 \pm 0.016 \quad (-0.1\sigma)$	$z_{\text{eq}}$	$3368 \pm 33 \quad (+0.4\sigma)$	$\chi_{\text{CMB}}^2$	$2786.8 \pm 5.8 \quad (+285.9\sigma)$
$\Omega_{\text{m}}$	$0.347 \pm 0.022 \quad (-0.0\sigma)$	$k_{\text{eq}}$	$0.01028 \pm 0.00010 \quad (+0.4\sigma)$		
$\Omega_{\text{m}}h^2$	$0.1416 \pm 0.0014 \quad (+0.4\sigma)$	$100\theta_{\text{eq}}$	$0.8199 \pm 0.0064 \quad (-0.4\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2798.28; \Delta\bar{\chi}_{\text{eff}}^2 = 1591.57; R - 1 = 0.02761$$



16.45 base\_omegak\_CamSpecHM\_TT\_lowl\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022289	$0.02235 \pm 0.00025$	$\sigma_8 \Omega_m^{0.5}$	0.4678	$0.470 \pm 0.012$	$H(0.15)$	69.30	$68.7 \pm 2.3$
$\Omega_c h^2$	0.11825	$0.1177 \pm 0.0022$	$\sigma_8 \Omega_m^{0.25}$	0.6099	$0.6099 \pm 0.0075$	$D_M(0.15)$	676.6	$684 \pm 25$
$100\theta_{MC}$	1.041032	$1.04119 \pm 0.00050$	$\sigma_8/h^{0.5}$	0.9950	$0.996 \pm 0.011$	$H(0.38)$	79.65	$79.0 \pm 2.2$
$\tau$	0.0498	$0.0494 \pm 0.0084$	$r_{\text{drag}} h$	94.29	$93.4 \pm 3.5$	$D_M(0.38)$	1606	$1623 \pm 53$
$\Omega_K$	-0.0093	$-0.0121^{+0.0084}_{-0.0069}$	$\langle d^2 \rangle^{1/2}$	2.4689	$2.472 \pm 0.030$	$H(0.51)$	86.49	$85.9 \pm 2.1$
$\ln(10^{10} A_s)$	3.0282	$3.026 \pm 0.017$	$z_{\text{re}}$	7.17	$7.07^{+0.90}_{-0.74}$	$D_M(0.51)$	2076	$2096 \pm 66$
$n_s$	0.9685	$0.9705 \pm 0.0064$	$10^9 A_s$	2.0661	$2.062 \pm 0.035$	$H(0.61)$	92.20	$91.6 \pm 2.1$
$y_{\text{cal}}$	1.00026	$1.0001 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8701	$1.868 \pm 0.014$	$D_M(0.61)$	2411	$2434 \pm 73$
$A_{100}^{\text{PS}}$	241.9	$240 \pm 25$	$D_{40}$	1213.8	$1209 \pm 17$	$H(2.33)$	233.37	$232.6 \pm 2.6$
$A_{143}^{\text{PS}}$	36.4	$38 \pm 9$	$D_{220}$	5711.4	$5715 \pm 41$	$D_M(2.33)$	5926	$5962 \pm 120$
$A_{217}^{\text{PS}}$	98.4	$101 \pm 10$	$D_{810}$	2529.2	$2529 \pm 14$	$f\sigma_8(0.15)$	0.4702	$0.472 \pm 0.010$
$A_{217}^{\text{CIB}}$	42.9	$40 \pm 7$	$D_{1420}$	813.6	$814.2 \pm 5.0$	$\sigma_8(0.15)$	0.7315	$0.727 \pm 0.014$
$A_{143}^{\text{tSZ}}$	4.37	$3.8^{+1.8}_{-2.6}$	$D_{2000}$	230.02	$230.3 \pm 1.8$	$f\sigma_8(0.38)$	0.4811	$0.4813 \pm 0.0062$
$r_{143 \times 217}^{\text{PS}}$	0.565	$0.65 \pm 0.13$	$n_{s,0.002}$	0.9685	$0.9705 \pm 0.0064$	$\sigma_8(0.38)$	0.6446	$0.640 \pm 0.014$
$r_{143 \times 217}^{\text{CIB}}$	0.648	$0.56^{+0.39}_{-0.17}$	$Y_P$	0.245363	$0.24538^{+0.00010}_{-0.000090}$	$f\sigma_8(0.51)$	0.4759	$0.4755 \pm 0.0050$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.07	—	$Y_P^{\text{BBN}}$	0.246689	$0.24671^{+0.00010}_{-0.000090}$	$\sigma_8(0.51)$	0.6017	$0.598 \pm 0.014$
$A^{\text{kSZ}}$	3.8	—	$10^5 D/H$	2.6009	$2.591 \pm 0.045$	$f\sigma_8(0.61)$	0.46843	$0.4675 \pm 0.0048$
$A_{100}^{\text{dust}}$	1.010	$1.01 \pm 0.19$	Age/Gyr	14.208	$14.30 \pm 0.30$	$\sigma_8(0.61)$	0.5715	$0.567 \pm 0.014$
$A_{143}^{\text{dust}}$	0.989	$0.98 \pm 0.18$	$z_*$	1089.870	$1089.75 \pm 0.46$	$f\sigma_8(2.33)$	0.2872	$0.2850 \pm 0.0076$
$A_{217}^{\text{dust}}$	0.960	$0.97 \pm 0.10$	$r_*$	144.95	$145.06 \pm 0.49$	$\sigma_8(2.33)$	0.2936	$0.2909 \pm 0.0094$
$A_{143 \times 217}^{\text{dust}}$	1.004	$1.02 \pm 0.16$	$100\theta_*$	1.041227	$1.04138 \pm 0.00048$	$f_{2000}^{143}$	30.33	$29.5 \pm 3.1$
$c_{100}$	0.99735	$0.9975 \pm 0.0011$	$D_M(z_*)/\text{Gpc}$	13.9209	$13.929 \pm 0.045$	$f_{2000}^{217}$	107.02	$106.5 \pm 2.2$
$c_{217}$	1.00124	$1.0011 \pm 0.0016$	$z_{\text{drag}}$	1059.628	$1059.71 \pm 0.48$	$f_{2000}^{143 \times 217}$	32.32	$31.9 \pm 2.3$
$H_0$	63.86	$63.2 \pm 2.4$	$r_{\text{drag}}$	147.648	$147.74 \pm 0.48$	$\chi_{\text{lensing}}^2$	9.19	$10.3 \pm 2.1$
$\Omega_\Lambda$	0.6631	$0.659 \pm 0.018$	$k_D$	0.140219	$0.14016 \pm 0.00050$	$\chi_{\text{small}}^2$	395.64	$396.8 \pm 1.6$
$\Omega_m$	0.3461	$0.353^{+0.023}_{-0.026}$	$100\theta_D$	0.160944	$0.16091 \pm 0.00027$	$\chi_{\text{lowl}}^2$	21.85	$21.8 \pm 1.1$
$\Omega_m h^2$	0.14118	$0.1407 \pm 0.0021$	$z_{\text{eq}}$	3358	$3346 \pm 50$	$\chi_{\text{CamSpec}}^2$	7049.2	$7062.9 \pm 5.5$
$\Omega_m h^3$	0.09016	$0.0889 \pm 0.0042$	$k_{\text{eq}}$	0.010250	$0.01021 \pm 0.00015$	$\chi_{\text{prior}}^2$	2.37	$7.5 \pm 3.4$
$\sigma_8$	0.7952	$0.791 \pm 0.013$	$100\theta_{\text{eq}}$	0.8211	$0.8238 \pm 0.0098$	$\chi_{\text{CMB}}^2$	7475.9	$7491.7 \pm 5.6$
$S_8$	0.8542	$0.858 \pm 0.022$	$100\theta_{s,\text{eq}}$	0.4535	$0.4549 \pm 0.0050$			

Best-fit  $\chi_{\text{eff}}^2 = 7478.30$ ;  $\bar{\chi}_{\text{eff}}^2 = 7499.29$ ;  $R - 1 = 0.01550$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 9.19 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.64 commander\_dx12\_v3.2\_29: 21.85 CamSpec like\_10.7HM: 7049.24



16.46 base\_omegak\_CamSpecHM\_TT\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02236 \pm 0.00025$	$\sigma_8 \Omega_m^{0.5}$	$0.469 \pm 0.012$	$H(0.15)$	$69.0 \pm 2.3$
$\Omega_c h^2$	$0.1176 \pm 0.0022$	$\sigma_8 \Omega_m^{0.25}$	$0.6100 \pm 0.0076$	$D_M(0.15)$	$680 \pm 24$
$100\theta_{MC}$	$1.04121 \pm 0.00050$	$\sigma_8/h^{0.5}$	$0.996 \pm 0.011$	$H(0.38)$	$79.4 \pm 2.2$
$\tau$	$0.0528^{+0.0036}_{-0.0074}$	$r_{\text{drag}} h$	$94.0 \pm 3.4$	$D_M(0.38)$	$1614 \pm 52$
$\Omega_K$	$-0.0111^{+0.0083}_{-0.0066}$	$\langle d^2 \rangle^{1/2}$	$2.472 \pm 0.030$	$H(0.51)$	$86.2 \pm 2.1$
$\ln(10^{10} A_s)$	$3.033^{+0.010}_{-0.015}$	$z_{\text{re}}$	$7.43^{+0.31}_{-0.83}$	$D_M(0.51)$	$2085 \pm 64$
$n_s$	$0.9708 \pm 0.0063$	$10^9 A_s$	$2.075^{+0.021}_{-0.031}$	$H(0.61)$	$91.9 \pm 2.1$
$y_{\text{cal}}$	$1.0000 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.867 \pm 0.014$	$D_M(0.61)$	$2422 \pm 71$
$A_{100}^{\text{PS}}$	$240 \pm 25$	$D_{40}$	$1209 \pm 17$	$H(2.33)$	$232.7 \pm 2.6$
$A_{143}^{\text{PS}}$	$38 \pm 9$	$D_{220}$	$5714 \pm 42$	$D_M(2.33)$	$5946 \pm 110$
$A_{217}^{\text{PS}}$	$101 \pm 10$	$D_{810}$	$2528 \pm 14$	$f\sigma_8(0.15)$	$0.471 \pm 0.010$
$A_{217}^{\text{CIB}}$	$40 \pm 7$	$D_{1420}$	$814.2 \pm 5.0$	$\sigma_8(0.15)$	$0.730 \pm 0.013$
$A_{143}^{\text{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$D_{2000}$	$230.4 \pm 1.8$	$f\sigma_8(0.38)$	$0.4812 \pm 0.0064$
$r_{143 \times 217}^{\text{PS}}$	$0.65 \pm 0.13$	$n_{s,0.002}$	$0.9708 \pm 0.0063$	$\sigma_8(0.38)$	$0.644 \pm 0.013$
$r_{143 \times 217}^{\text{CIB}}$	$0.56^{+0.39}_{-0.17}$	$Y_P$	$0.24539^{+0.00010}_{-0.000091}$	$f\sigma_8(0.51)$	$0.4759 \pm 0.0050$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24671^{+0.00010}_{-0.000091}$	$\sigma_8(0.51)$	$0.601 \pm 0.013$
$A^{\text{kSZ}}$	—	$10^5 D/H$	$2.589 \pm 0.046$	$f\sigma_8(0.61)$	$0.4683 \pm 0.0046$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.19$	Age/Gyr	$14.26 \pm 0.29$	$\sigma_8(0.61)$	$0.570 \pm 0.013$
$A_{143}^{\text{dust}}$	$0.98 \pm 0.18$	$z_*$	$1089.73 \pm 0.46$	$f\sigma_8(2.33)$	$0.2867 \pm 0.0071$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$r_*$	$145.08 \pm 0.49$	$\sigma_8(2.33)$	$0.2929 \pm 0.0088$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.16$	$100\theta_*$	$1.04140 \pm 0.00049$	$f_{2000}^{143}$	$29.5 \pm 3.1$
$c_{100}$	$0.9975 \pm 0.0011$	$D_M(z_*)/\text{Gpc}$	$13.931 \pm 0.045$	$f_{2000}^{217}$	$106.5 \pm 2.1$
$c_{217}$	$1.0011 \pm 0.0016$	$z_{\text{drag}}$	$1059.72 \pm 0.49$	$f_{2000}^{143 \times 217}$	$31.8 \pm 2.3$
$H_0$	$63.6 \pm 2.4$	$r_{\text{drag}}$	$147.76 \pm 0.48$	$\chi_{\text{lensing}}^2$	$10.3 \pm 2.2$
$\Omega_\Lambda$	$0.662 \pm 0.017$	$k_D$	$0.14015 \pm 0.00050$	$\chi_{\text{simall}}^2$	$396.4 \pm 1.3$
$\Omega_m$	$0.349^{+0.022}_{-0.024}$	$100\theta_D$	$0.16091 \pm 0.00028$	$\chi_{\text{lowl}}^2$	$21.8 \pm 1.1$
$\Omega_m h^2$	$0.1406 \pm 0.0021$	$z_{\text{eq}}$	$3344 \pm 50$	$\chi_{\text{CamSpec}}^2$	$7063.0 \pm 5.5$
$\Omega_m h^3$	$0.0894 \pm 0.0042$	$k_{\text{eq}}$	$0.01021 \pm 0.00015$	$\chi_{\text{prior}}^2$	$7.5 \pm 3.4$
$\sigma_8$	$0.794 \pm 0.012$	$100\theta_{\text{eq}}$	$0.8242 \pm 0.0098$	$\chi_{\text{CMB}}^2$	$7491.5 \pm 5.6$
$S_8$	$0.856 \pm 0.022$	$100\theta_{s,\text{eq}}$	$0.4551 \pm 0.0050$		

$$\bar{\chi}_{\text{eff}}^2 = 7498.95; R - 1 = 0.01796$$



# 16.47 base\_omegak\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022422	$0.02242 \pm 0.00017$ (+0.3 $\sigma$ )	$S_8$	0.8541	$0.857 \pm 0.021$ (−0.1 $\sigma$ )	$H(0.15)$	69.39	$69.0 \pm 2.1$ (+0.2 $\sigma$ )
$\Omega_c h^2$	0.11833	$0.1182 \pm 0.0015$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4678	$0.469 \pm 0.012$ (−0.1 $\sigma$ )	$D_M(0.15)$	675.7	$680 \pm 23$ (−0.2 $\sigma$ )
$100\theta_{MC}$	1.041001	$1.04101 \pm 0.00033$ (−0.4 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6101	$0.6101 \pm 0.0065$ (+0.0 $\sigma$ )	$H(0.38)$	79.74	$79.4 \pm 2.0$ (+0.2 $\sigma$ )
$\tau$	0.0500	$0.0488 \pm 0.0082$ (−0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9949	$0.995 \pm 0.010$ (−0.1 $\sigma$ )	$D_M(0.38)$	1604.1	$1614 \pm 48$ (−0.2 $\sigma$ )
$\Omega_K$	−0.0092	$-0.0106^{+0.0072}_{-0.0059}$ (+0.2 $\sigma$ )	$r_{drag} h$	94.31	$93.8 \pm 3.2$ (+0.1 $\sigma$ )	$H(0.51)$	86.59	$86.3 \pm 1.9$ (+0.2 $\sigma$ )
$\ln(10^{10} A_s)$	3.0294	$3.027 \pm 0.017$ (+0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4684	$2.470 \pm 0.028$ (−0.1 $\sigma$ )	$D_M(0.51)$	2073	$2085 \pm 59$ (−0.2 $\sigma$ )
$n_s$	0.96930	$0.9694 \pm 0.0048$ (−0.2 $\sigma$ )	$z_{re}$	7.16	$7.01^{+0.90}_{-0.75}$ (−0.1 $\sigma$ )	$H(0.61)$	92.30	$92.0 \pm 1.9$ (+0.2 $\sigma$ )
$y_{cal}$	0.99993	$1.0001 \pm 0.0024$ (−0.0 $\sigma$ )	$10^9 A_s$	2.0685	$2.063 \pm 0.035$ (+0.0 $\sigma$ )	$D_M(0.61)$	2408	$2421 \pm 66$ (−0.2 $\sigma$ )
$A_{100}^{PS}$	233.1	$238 \pm 25$ (−0.1 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8717	$1.871 \pm 0.012$ (+0.2 $\sigma$ )	$H(2.33)$	233.57	$233.3 \pm 1.9$ (+0.3 $\sigma$ )
$A_{143}^{PS}$	46.5	$37 \pm 8$ (−0.1 $\sigma$ )	$D_{40}$	1213.6	$1212 \pm 14$ (+0.2 $\sigma$ )	$D_M(2.33)$	5920	$5939 \pm 100$ (−0.2 $\sigma$ )
$A_{217}^{PS}$	104.8	$102 \pm 10$ (+0.1 $\sigma$ )	$D_{220}$	5721.4	$5722 \pm 38$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4702	$0.4713 \pm 0.0099$ (−0.1 $\sigma$ )
$A_{217}^{CIB}$	39.1	$39^{+7}_{-8}$ (−0.2 $\sigma$ )	$D_{810}$	2531.9	$2530 \pm 13$ (+0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7319	$0.729 \pm 0.012$ (+0.1 $\sigma$ )
$A_{143}^{tSZ}$	4.82	$4.0^{+2.0}_{-2.5}$ (+0.1 $\sigma$ )	$D_{1420}$	815.41	$814.9 \pm 4.8$ (+0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.4812	$0.4813^{+0.0061}_{-0.0053}$ (−0.0 $\sigma$ )
$r_{143 \times 217}^{PS}$	0.753	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$D_{2000}$	230.86	$230.6 \pm 1.6$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6451	$0.642 \pm 0.013$ (+0.1 $\sigma$ )
$r_{143 \times 217}^{CIB}$	0.684	$0.55^{+0.40}_{-0.19}$ (−0.1 $\sigma$ )	$n_{s,0.002}$	0.96930	$0.9694 \pm 0.0048$ (−0.2 $\sigma$ )	$f\sigma_8(0.51)$	0.47606	$0.4757 \pm 0.0043$ (+0.0 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.94	—	$Y_P$	0.245416	$0.245411^{+0.000068}_{-0.000060}$ (+0.3 $\sigma$ )	$\sigma_8(0.51)$	0.6021	$0.599 \pm 0.013$ (+0.1 $\sigma$ )
$A^{kSZ}$	3.00	$< 6.19$ (−0.1 $\sigma$ )	$Y_P^{BBN}$	0.246743	$0.246737^{+0.000068}_{-0.000061}$ (+0.3 $\sigma$ )	$f\sigma_8(0.61)$	0.46860	$0.4680 \pm 0.0039$ (+0.1 $\sigma$ )
$A_{100}^{dust}$	1.009	$1.01 \pm 0.19$ (−0.0 $\sigma$ )	$10^5 D/H$	2.5758	$2.578 \pm 0.031$ (−0.3 $\sigma$ )	$\sigma_8(0.61)$	0.5719	$0.569 \pm 0.013$ (+0.1 $\sigma$ )
$A_{143}^{dust}$	0.950	$0.97 \pm 0.18$ (−0.1 $\sigma$ )	Age/Gyr	14.193	$14.24 \pm 0.26$ (−0.2 $\sigma$ )	$f\sigma_8(2.33)$	0.2874	$0.2860 \pm 0.0069$ (+0.1 $\sigma$ )
$A_{217}^{dust}$	0.981	$0.97 \pm 0.10$ (+0.1 $\sigma$ )	$z_*$	1089.707	$1089.71 \pm 0.30$ (−0.1 $\sigma$ )	$\sigma_8(2.33)$	0.2938	$0.2922 \pm 0.0085$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{dust}$	1.033	$1.02 \pm 0.16$ (−0.0 $\sigma$ )	$r_*$	144.825	$144.87 \pm 0.33$ (−0.4 $\sigma$ )	$f_{2000}^{143}$	28.93	$28.8 \pm 2.9$ (−0.2 $\sigma$ )
$c_{100}$	0.99785	$0.9975 \pm 0.0011$ (+0.0 $\sigma$ )	$100\theta_*$	1.041186	$1.04119 \pm 0.00032$ (−0.4 $\sigma$ )	$f_{2000}^{217}$	105.89	$106.1 \pm 2.0$ (−0.2 $\sigma$ )
$c_{217}$	1.00113	$1.0010 \pm 0.0016$ (−0.0 $\sigma$ )	$D_M(z_*)/\text{Gpc}$	13.9096	$13.914 \pm 0.030$ (−0.4 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.50	$31.4 \pm 2.1$ (−0.2 $\sigma$ )
$c_{TE}$	0.99567	$0.9955 \pm 0.0049$	$z_{drag}$	1059.933	$1059.91 \pm 0.34$ (+0.4 $\sigma$ )	$\chi_{lensing}^2$	9.39	$10.2 \pm 1.9$ (−0.0 $\sigma$ )
$c_{EE}$	0.99173	$0.9914 \pm 0.0049$	$r_{drag}$	147.477	$147.52 \pm 0.32$ (−0.5 $\sigma$ )	$\chi_{small}^2$	395.63	$396.8 \pm 1.5$ (−0.0 $\sigma$ )
$H_0$	63.95	$63.6 \pm 2.2$ (+0.2 $\sigma$ )	$k_D$	0.140499	$0.14045 \pm 0.00035$ (+0.6 $\sigma$ )	$\chi_{lowl}^2$	21.83	$21.93 \pm 0.94$ (+0.1 $\sigma$ )
$\Omega_\Lambda$	0.6635	$0.660 \pm 0.018$ (+0.1 $\sigma$ )	$100\theta_D$	0.160754	$0.16077 \pm 0.00019$ (−0.5 $\sigma$ )	$\chi_{CamSpec}^2$	11498.3	$11513.1 \pm 5.7$ (+805.0 $\sigma$ )
$\Omega_m$	0.3457	$0.351^{+0.022}_{-0.025}$ (−0.1 $\sigma$ )	$z_{eq}$	3363.5	$3360 \pm 33$ (+0.3 $\sigma$ )	$\chi_{prior}^2$	1.96	$7.7 \pm 3.3$ (+0.0 $\sigma$ )
$\Omega_m h^2$	0.14140	$0.1413 \pm 0.0014$ (+0.3 $\sigma$ )	$k_{eq}$	0.010266	$0.01026 \pm 0.00010$ (+0.3 $\sigma$ )	$\chi_{CMB}^2$	11925.1	$11942.0 \pm 5.9$ (+789.4 $\sigma$ )
$\Omega_m h^3$	0.09043	$0.0898 \pm 0.0036$ (+0.2 $\sigma$ )	$100\theta_{eq}$	0.8205	$0.8212 \pm 0.0064$ (−0.3 $\sigma$ )			
$\sigma_8$	0.7956	$0.793 \pm 0.011$ (+0.1 $\sigma$ )	$100\theta_{s,eq}$	0.45309	$0.4535 \pm 0.0033$ (−0.3 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 11927.06$ ;  $\Delta\chi_{eff}^2 = 4448.77$ ;  $\bar{\chi}_{eff}^2 = 11949.70$ ;  $\Delta\bar{\chi}_{eff}^2 = 4450.41$ ;  $R - 1 = 0.01965$   
 $\chi_{eff}^2$ : CMB - smicadx12.Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 9.39 ( $\Delta$  0.20) simall\_100x143\_offlike5.EE\_Aplanck.B: 395.63 ( $\Delta$  -0.01) commander\_dx12.v3.2.29: 21.83 ( $\Delta$  -0.02) CamSpec like\_10.7HM\_1400\_unified: 11498.26



16.48 base\_omegak\_CamSpecHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02242 \pm 0.00017 \quad (+0.3\sigma)$	$S_8$	$0.854 \pm 0.020 \quad (-0.1\sigma)$	$H(0.15)$	$69.5 \pm 2.0 \quad (+0.2\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1181 \pm 0.0015 \quad (+0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.468 \pm 0.011 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$675 \pm 21 \quad (-0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04102 \pm 0.00033 \quad (-0.4\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6103 \pm 0.0065 \quad (+0.0\sigma)$	$H(0.38)$	$79.8 \pm 1.9 \quad (+0.2\sigma)$
$\tau$	$0.0523^{+0.0033}_{-0.0074} \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.996 \pm 0.010 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1603 \pm 45 \quad (-0.2\sigma)$
$\Omega_K$	$-0.0094^{+0.0067}_{-0.0056} \quad (+0.2\sigma)$	$r_{\mathrm{drag}}h$	$94.5 \pm 3.0 \quad (+0.2\sigma)$	$H(0.51)$	$86.7 \pm 1.8 \quad (+0.2\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.033^{+0.010}_{-0.015} \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.470 \pm 0.028 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$2072 \pm 55 \quad (-0.2\sigma)$
$n_{\mathrm{s}}$	$0.9696 \pm 0.0048 \quad (-0.2\sigma)$	$z_{\mathrm{re}}$	$< 7.62 \quad (-0.1\sigma)$	$H(0.61)$	$92.4 \pm 1.8 \quad (+0.2\sigma)$
$y_{\mathrm{cal}}$	$1.0001 \pm 0.0024 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.077^{+0.020}_{-0.031} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2407 \pm 62 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$238 \pm 25 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.870 \pm 0.012 \quad (+0.2\sigma)$	$H(2.33)$	$233.5 \pm 1.9 \quad (+0.3\sigma)$
$A_{143}^{\mathrm{PS}}$	$37 \pm 8 \quad (-0.1\sigma)$	$D_{40}$	$1213 \pm 14 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5919 \pm 96 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{220}$	$5721 \pm 38 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4701 \pm 0.0096 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$39^{+7}_{-8} \quad (-0.2\sigma)$	$D_{810}$	$2530 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.733 \pm 0.010 \quad (+0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+2.0}_{-2.5} \quad (+0.1\sigma)$	$D_{1420}$	$815.0 \pm 4.8 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4812^{+0.0062}_{-0.0054} \quad (+0.0\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$D_{2000}$	$230.7 \pm 1.6 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.646 \pm 0.011 \quad (+0.2\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.54^{+0.39}_{-0.20} \quad (-0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9696 \pm 0.0048 \quad (-0.2\sigma)$	$f\sigma_8(0.51)$	$0.4762 \pm 0.0043 \quad (+0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.245411^{+0.000068}_{-0.000061} \quad (+0.3\sigma)$	$\sigma_8(0.51)$	$0.603 \pm 0.011 \quad (+0.2\sigma)$
$A^{\mathrm{kSZ}}$	$< 6.16 \quad (-0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246738^{+0.000068}_{-0.000062} \quad (+0.3\sigma)$	$f\sigma_8(0.61)$	$0.4688 \pm 0.0037 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19 \quad (-0.0\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.577 \pm 0.031 \quad (-0.3\sigma)$	$\sigma_8(0.61)$	$0.573 \pm 0.011 \quad (+0.2\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.18 \quad (-0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$14.19 \pm 0.24 \quad (-0.2\sigma)$	$f\sigma_8(2.33)$	$0.2880 \pm 0.0061 \quad (+0.2\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$z_*$	$1089.70 \pm 0.31 \quad (-0.1\sigma)$	$\sigma_8(2.33)$	$0.2946 \pm 0.0076 \quad (+0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (+0.0\sigma)$	$r_*$	$144.88 \pm 0.33 \quad (-0.4\sigma)$	$f_{2000}^{143}$	$28.8 \pm 2.9 \quad (-0.2\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$100\theta_*$	$1.04120 \pm 0.00032 \quad (-0.4\sigma)$	$f_{2000}^{217}$	$106.1 \pm 2.0 \quad (-0.2\sigma)$
$c_{217}$	$1.0010 \pm 0.0016 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.914 \pm 0.030 \quad (-0.4\sigma)$	$f_{2000}^{143 \times 217}$	$31.4 \pm 2.0 \quad (-0.2\sigma)$
$c_{TE}$	$0.9955 \pm 0.0049$	$z_{\mathrm{drag}}$	$1059.91 \pm 0.34 \quad (+0.4\sigma)$	$\chi_{\mathrm{lensing}}^2$	$10.1 \pm 1.8 \quad (-0.1\sigma)$
$c_{EE}$	$0.9915 \pm 0.0050$	$r_{\mathrm{drag}}$	$147.53 \pm 0.32 \quad (-0.5\sigma)$	$\chi_{\mathrm{small}}^2$	$396.3 \pm 1.1 \quad (-0.0\sigma)$
$H_0$	$64.1 \pm 2.1 \quad (+0.2\sigma)$	$k_{\mathrm{D}}$	$0.14044 \pm 0.00035 \quad (+0.6\sigma)$	$\chi_{\mathrm{lowl}}^2$	$21.99 \pm 0.96 \quad (+0.2\sigma)$
$\Omega_{\Lambda}$	$0.664 \pm 0.016 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16077 \pm 0.00019 \quad (-0.5\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11513.1 \pm 5.7 \quad (+804.5\sigma)$
$\Omega_{\mathrm{m}}$	$0.345 \pm 0.021 \quad (-0.2\sigma)$	$z_{\mathrm{eq}}$	$3359 \pm 33 \quad (+0.3\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1412 \pm 0.0014 \quad (+0.3\sigma)$	$k_{\mathrm{eq}}$	$0.01025 \pm 0.00010 \quad (+0.3\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11941.6 \pm 5.8 \quad (+796.6\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.0905 \pm 0.0035 \quad (+0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8214 \pm 0.0064 \quad (-0.3\sigma)$		
$\sigma_8$	$0.7967^{+0.0090}_{-0.010} \quad (+0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4535 \pm 0.0033 \quad (-0.3\sigma)$		

$\bar{\chi}_{\mathrm{eff}}^2 = 11949.31$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.36$ ;  $R - 1 = 0.03090$



# 16.49 base\_omegak\_CleanedCamSpecHM\_TT\_lowl\_lowE

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02253 \pm 0.00027$	$\sigma_8/h^{0.5}$	$1.059^{+0.026}_{-0.022}$	$D_{\mathrm{M}}(0.15)$	$820^{+58}_{-68}$
$\Omega_{\mathrm{c}}h^2$	$0.1172 \pm 0.0023$	$r_{\mathrm{drag}}h$	$77.1^{+6.0}_{-6.9}$	$H(0.38)$	$69.9^{+3.3}_{-3.9}$
$100\theta_{\mathrm{MC}}$	$1.04128 \pm 0.00050$	$\langle d^2 \rangle^{1/2}$	$2.677 \pm 0.084$	$D_{\mathrm{M}}(0.38)$	$1903^{+120}_{-140}$
$\tau$	$0.0484^{+0.0088}_{-0.0076}$	$z_{\mathrm{re}}$	$6.81^{+0.96}_{-0.75}$	$H(0.51)$	$77.3^{+3.1}_{-3.7}$
$\Omega_K$	$-0.057^{+0.028}_{-0.018}$	$10^9 A_{\mathrm{s}}$	$2.057^{+0.038}_{-0.033}$	$D_{\mathrm{M}}(0.51)$	$2433 \pm 160$
$\ln(10^{10} A_{\mathrm{s}})$	$3.023^{+0.019}_{-0.016}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.867 \pm 0.014$	$H(0.61)$	$83.4^{+3.0}_{-3.6}$
$n_{\mathrm{s}}$	$0.9716 \pm 0.0066$	$D_{40}$	$1201 \pm 17$	$D_{\mathrm{M}}(0.61)$	$2804 \pm 170$
$y_{\mathrm{cal}}$	$0.9998 \pm 0.0026$	$D_{220}$	$5734 \pm 43$	$H(2.33)$	$227.5 \pm 3.0$
$A_{100}^{\mathrm{PS}}$	$240 \pm 30$	$D_{810}$	$2523 \pm 14$	$D_{\mathrm{M}}(2.33)$	$6465 \pm 230$
$A_{143}^{\mathrm{tSZ}}$	$4.5 \pm 2.1$	$D_{1420}$	$811.7 \pm 5.3$	$f\sigma_8(0.15)$	$0.536^{+0.027}_{-0.024}$
$A^{\mathrm{kSZ}}$	$< 5.11$	$D_{2000}$	$231.6 \pm 2.1$	$\sigma_8(0.15)$	$0.689^{+0.024}_{-0.021}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$n_{\mathrm{s},0.002}$	$0.9716 \pm 0.0066$	$f\sigma_8(0.38)$	$0.511^{+0.012}_{-0.0081}$
$A_{143}^{\mathrm{power}}$	$8.0^{+2.1}_{-2.3}$	$Y_{\mathrm{P}}$	$0.24545 \pm 0.00011$	$\sigma_8(0.38)$	$0.594^{+0.026}_{-0.023}$
$A_{217}^{\mathrm{power}}$	$6.5^{+1.2}_{-2.2}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24678 \pm 0.00011$	$f\sigma_8(0.51)$	$0.4900^{+0.0073}_{-0.0062}$
$A_{143 \times 217}^{\mathrm{power}}$	$2.60^{+0.67}_{-2.6}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.558 \pm 0.050$	$\sigma_8(0.51)$	$0.549 \pm 0.026$
$\gamma_{143}^{\mathrm{power}}$	$1.32^{+0.49}_{-0.61}$	$\mathrm{Age}/\mathrm{Gyr}$	$15.63 \pm 0.61$	$f\sigma_8(0.61)$	$0.4727^{+0.0074}_{-0.0060}$
$\gamma_{217}^{\mathrm{power}}$	$> 1.27$	$z_*$	$1089.48 \pm 0.49$	$\sigma_8(0.61)$	$0.518 \pm 0.026$
$\gamma_{143 \times 217}^{\mathrm{power}}$	$1.39^{+0.80}_{-0.57}$	$r_*$	$145.03 \pm 0.49$	$f\sigma_8(2.33)$	$0.257 \pm 0.014$
$c_{100}$	$0.9979 \pm 0.0010$	$100\theta_*$	$1.04145 \pm 0.00049$	$\sigma_8(2.33)$	$0.256 \pm 0.016$
$c_{217}$	$0.9992^{+0.0011}_{-0.0015}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.926 \pm 0.046$	$f_{2000}^{143}$	$19.3 \pm 3.3$
$H_0$	$52.2^{+4.1}_{-4.7}$	$z_{\mathrm{drag}}$	$1060.10 \pm 0.54$	$f_{2000}^{217}$	$13.6 \pm 2.3$
$\Omega_{\Lambda}$	$0.530^{+0.071}_{-0.051}$	$r_{\mathrm{drag}}$	$147.66 \pm 0.48$	$f_{2000}^{143 \times 217}$	$7.5 \pm 2.4$
$\Omega_{\mathrm{m}}$	$0.527^{+0.069}_{-0.099}$	$k_{\mathrm{D}}$	$0.14039 \pm 0.00052$	$\chi_{\mathrm{simall}}^2$	$396.8 \pm 1.7$
$\Omega_{\mathrm{m}}h^2$	$0.1404 \pm 0.0021$	$100\theta_{\mathrm{D}}$	$0.16069 \pm 0.00030$	$\chi_{\mathrm{lowl}}^2$	$21.39 \pm 0.71$
$\Omega_{\mathrm{m}}h^3$	$0.0733^{+0.0061}_{-0.0070}$	$z_{\mathrm{eq}}$	$3340 \pm 51$	$\chi_{\mathrm{CamSpec}}^2$	$6712.6 \pm 5.3$
$\sigma_8$	$0.764^{+0.021}_{-0.017}$	$k_{\mathrm{eq}}$	$0.01019 \pm 0.00015$	$\chi_{\mathrm{prior}}^2$	$5.1 \pm 2.8$
$S_8$	$1.007 \pm 0.063$	$100\theta_{\mathrm{eq}}$	$0.825 \pm 0.010$	$\chi_{\mathrm{CMB}}^2$	$7130.8 \pm 5.6$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.551 \pm 0.035$	$100\theta_{\mathrm{s,eq}}$	$0.4556 \pm 0.0051$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.648^{+0.016}_{-0.014}$	$H(0.15)$	$58.4^{+3.7}_{-4.4}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7135.85$ ;  $R - 1 = 0.01609$



# 17 r

## 17.1 base\_r\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022127	$0.02213 \pm 0.00022$	$\sigma_8/h^{0.5}$	0.9947	$0.990 \pm 0.016$	$D_M(0.38)$	1542.1	$1540 \pm 16$
$\Omega_c h^2$	0.12064	$0.1203 \pm 0.0021$	$r_{\text{drag}} h$	98.45	$98.7 \pm 1.6$	$H(0.51)$	89.323	$89.38 \pm 0.44$
$100\theta_{\text{MC}}$	1.040778	$1.04082 \pm 0.00047$	$\langle d^2 \rangle^{1/2}$	2.4556	$2.446 \pm 0.038$	$D_M(0.51)$	1996.3	$1994 \pm 18$
$\tau$	0.0535	$0.0518 \pm 0.0080$	$z_{\text{re}}$	7.66	$7.46 \pm 0.83$	$H(0.61)$	95.008	$95.05 \pm 0.35$
$\ln(10^{10} A_s)$	3.0436	$3.039 \pm 0.017$	$10^9 A_s$	2.0980	$2.089 \pm 0.034$	$D_M(0.61)$	2321.8	$2319 \pm 20$
$n_s$	0.9637	$0.9639 \pm 0.0057$	$10^9 A_s e^{-2\tau}$	1.8853	$1.883 \pm 0.014$	$H(2.33)$	236.73	$236.5 \pm 1.3$
$r$	0.0001	$< 0.0468$	$D_{40}$	1231.7	$1244^{+16}_{-19}$	$D_M(2.33)$	5777.4	$5776 \pm 16$
$y_{\text{cal}}$	1.00047	$1.0005 \pm 0.0025$	$D_{220}$	5710.6	$5711 \pm 41$	$f\sigma_8(0.15)$	0.4644	$0.462 \pm 0.012$
$A_{217}^{\text{CIB}}$	49.0	$48 \pm 7$	$D_{810}$	2538.4	$2537 \pm 14$	$\sigma_8(0.15)$	0.7508	$0.7483 \pm 0.0077$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.28	—	$D_{1420}$	815.6	$815.0 \pm 5.1$	$f\sigma_8(0.38)$	0.4808	$0.4783 \pm 0.0097$
$A_{143}^{\text{tSZ}}$	7.00	$5.1 \pm 2.0$	$D_{2000}$	230.00	$229.7 \pm 1.8$	$\sigma_8(0.38)$	0.6645	$0.6625 \pm 0.0061$
$A_{100}^{\text{PS}}$	254.7	$263 \pm 28$	$n_{s,0.002}$	0.9637	$0.9639 \pm 0.0057$	$f\sigma_8(0.51)$	0.4783	$0.4760 \pm 0.0083$
$A_{143}^{\text{PS}}$	49.3	$49 \pm 8$	$Y_{\text{P}}$	0.245295	$0.24529^{+0.00010}_{-0.000087}$	$\sigma_8(0.51)$	0.6215	$0.6197 \pm 0.0056$
$A_{143 \times 217}^{\text{PS}}$	46.2	$44 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	0.246621	$0.24662^{+0.00010}_{-0.000087}$	$f\sigma_8(0.61)$	0.4726	$0.4705 \pm 0.0074$
$A_{217}^{\text{PS}}$	119.2	$115 \pm 10$	$10^5 D/H$	2.6320	$2.632 \pm 0.042$	$\sigma_8(0.61)$	0.5911	$0.5895 \pm 0.0052$
$A^{\text{kSZ}}$	0.01	$< 4.75$	Age/Gyr	13.8290	$13.826 \pm 0.036$	$f\sigma_8(2.33)$	0.29769	$0.2969 \pm 0.0026$
$A_{100}^{\text{dustTT}}$	8.91	$8.9 \pm 1.8$	$z_*$	1090.287	$1090.26 \pm 0.41$	$\sigma_8(2.33)$	0.30652	$0.3058 \pm 0.0027$
$A_{143}^{\text{dustTT}}$	10.76	$10.7 \pm 1.8$	$r_*$	144.452	$144.54 \pm 0.48$	$r_{0.002}$	0.0001	$< 0.0424$
$A_{143 \times 217}^{\text{dustTT}}$	19.30	$18.3 \pm 3.3$	$100\theta_*$	1.040982	$1.04102 \pm 0.00046$	$r_{0.01}$	0.0001	$< 0.0446$
$A_{217}^{\text{dustTT}}$	94.4	$93.5 \pm 7.3$	$D_M(z_*)/\text{Gpc}$	13.8765	$13.884 \pm 0.044$	$\ln(10^{10} A_t)$	-6.27	$-0.72^{+1.4}_{-0.61}$
$c_{100}$	0.99965	$0.99959 \pm 0.00061$	$z_{\text{drag}}$	1059.399	$1059.39 \pm 0.45$	$r_{10}$	0.0000	$< 0.0218$
$c_{217}$	0.99828	$0.99826 \pm 0.00062$	$r_{\text{drag}}$	147.196	$147.28 \pm 0.48$	$10^9 A_t$	0.0002	$< 0.0977$
$H_0$	66.88	$67.01 \pm 0.92$	$k_{\text{D}}$	0.14057	$0.14048 \pm 0.00051$	$10^9 A_t e^{-2\tau}$	0.0002	$< 0.0880$
$\Omega_\Lambda$	0.6794	$0.681 \pm 0.013$	$100\theta_{\text{D}}$	0.161055	$0.16108 \pm 0.00026$	$f_{2000}^{143}$	30.47	$31.0 \pm 2.9$
$\Omega_{\text{m}}$	0.3206	$0.319 \pm 0.013$	$z_{\text{eq}}$	3411.6	$3404 \pm 47$	$f_{2000}^{143 \times 217}$	33.32	$33.5 \pm 2.0$
$\Omega_{\text{m}} h^2$	0.14341	$0.1431 \pm 0.0020$	$k_{\text{eq}}$	0.010413	$0.01039 \pm 0.00014$	$f_{2000}^{217}$	107.81	$108.0 \pm 1.9$
$\Omega_{\text{m}} h^3$	0.095916	$0.09588 \pm 0.00045$	$100\theta_{\text{eq}}$	0.8108	$0.8123 \pm 0.0089$	$\chi_{\text{small}}^2$	396.03	$397.1 \pm 1.7$
$\sigma_8$	0.8135	$0.8106 \pm 0.0091$	$100\theta_{s,\text{eq}}$	0.44827	$0.4490 \pm 0.0046$	$\chi_{\text{lowl}}^2$	23.61	$25.0 \pm 1.8$
$S_8$	0.8409	$0.836 \pm 0.024$	$H(0.15)$	72.26	$72.37 \pm 0.78$	$\chi_{\text{plik}}^2$	758.6	$771.7 \pm 5.4$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4606	$0.458 \pm 0.013$	$D_M(0.15)$	647.5	$646.5 \pm 7.9$	$\chi_{\text{prior}}^2$	1.38	$7.3 \pm 3.7$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6121	$0.609 \pm 0.012$	$H(0.38)$	82.52	$82.60 \pm 0.57$	$\chi_{\text{CMB}}^2$	1178.2	$1193.7 \pm 5.7$

Best-fit  $\chi_{\text{eff}}^2 = 1179.62$ ;  $\bar{\chi}_{\text{eff}}^2 = 1201.03$ ;  $R - 1 = 0.00654$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.03 commander\_dx12\_v3.2\_29: 23.61 plik\_rd12\_HM\_v22\_TT: 758.60



## 17.2 base\_r\_plikHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022246	$0.02222 \pm 0.00020$	$\langle d^2 \rangle^{1/2}$	2.4237	$2.423 \pm 0.028$	$D_M(0.61)$	2305.8	$2305 \pm 12$
$\Omega_c h^2$	0.11896	$0.1188 \pm 0.0012$	$z_{\text{re}}$	7.58	$7.56 \pm 0.81$	$H(2.33)$	235.76	$235.65 \pm 0.79$
$100\theta_{\text{MC}}$	1.040956	$1.04101 \pm 0.00041$	$10^9 A_s$	2.0870	$2.088 \pm 0.034$	$D_M(2.33)$	5766.0	$5766 \pm 12$
$\tau$	0.0532	$0.0532 \pm 0.0079$	$10^9 A_s e^{-2\tau}$	1.8761	$1.877 \pm 0.012$	$f\sigma_8(0.15)$	0.4539	$0.4533 \pm 0.0078$
$\ln(10^{10} A_s)$	3.0383	$3.038 \pm 0.016$	$D_{40}$	1222.0	$1238_{-18}^{+14}$	$\sigma_8(0.15)$	0.7455	$0.7453 \pm 0.0069$
$n_s$	0.96753	$0.9673 \pm 0.0042$	$D_{220}$	5713.6	$5717 \pm 41$	$f\sigma_8(0.38)$	0.4725	$0.4720 \pm 0.0066$
$r$	0.0001	$< 0.0502$	$D_{810}$	2535.0	$2536 \pm 14$	$\sigma_8(0.38)$	0.6610	$0.6609 \pm 0.0059$
$y_{\text{cal}}$	1.00014	$1.0006 \pm 0.0025$	$D_{1420}$	815.9	$815.8 \pm 5.0$	$f\sigma_8(0.51)$	0.4712	$0.4708 \pm 0.0059$
$A_{217}^{\text{CIB}}$	48.9	$48 \pm 7$	$D_{2000}$	230.18	$230.1 \pm 1.8$	$\sigma_8(0.51)$	0.6186	$0.6186 \pm 0.0054$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.28	—	$n_{s,0.002}$	0.96753	$0.9673 \pm 0.0042$	$f\sigma_8(0.61)$	0.4664	$0.4661 \pm 0.0054$
$A_{143}^{\text{tSZ}}$	7.11	$5.2 \pm 2.0$	$Y_{\text{P}}$	0.245345	$0.245329_{-0.000075}^{+0.000088}$	$\sigma_8(0.61)$	0.5887	$0.5886 \pm 0.0051$
$A_{100}^{\text{PS}}$	253.9	$262 \pm 28$	$Y_{\text{P}}^{\text{BBN}}$	0.246671	$0.246655_{-0.000075}^{+0.000089}$	$f\sigma_8(2.33)$	0.29687	$0.2969 \pm 0.0026$
$A_{143}^{\text{PS}}$	48.1	$48 \pm 8$	$10^5 \text{D}/\text{H}$	2.6091	$2.615 \pm 0.037$	$\sigma_8(2.33)$	0.30612	$0.3062 \pm 0.0026$
$A_{143 \times 217}^{\text{PS}}$	45.5	$43_{-10}^{+9}$	Age/Gyr	13.8045	$13.806 \pm 0.028$	$r_{0.002}$	0.0001	$< 0.0462$
$A_{217}^{\text{PS}}$	118.4	$115 \pm 10$	$z_*$	1089.986	$1090.02 \pm 0.30$	$r_{0.01}$	0.0001	$< 0.0481$
$A^{\text{kSZ}}$	0.01	$< 4.67$	$r_*$	144.795	$144.85 \pm 0.32$	$\ln(10^{10} A_t)$	-5.91	$-0.64_{-0.61}^{+1.4}$
$A_{100}^{\text{dustTT}}$	8.92	$8.9 \pm 1.9$	$100\theta_*$	1.041157	$1.04121 \pm 0.00040$	$r_{10}$	0.0001	$< 0.0237$
$A_{143}^{\text{dustTT}}$	10.83	$10.7 \pm 1.8$	$D_M(z_*)/\text{Gpc}$	13.9071	$13.912 \pm 0.031$	$10^9 A_t$	0.000	$< 0.105$
$A_{143 \times 217}^{\text{dustTT}}$	19.37	$18.3 \pm 3.3$	$z_{\text{drag}}$	1059.589	$1059.49 \pm 0.44$	$10^9 A_t e^{-2\tau}$	0.0002	$< 0.0941$
$A_{217}^{\text{dustTT}}$	94.5	$93.5 \pm 7.4$	$r_{\text{drag}}$	147.503	$147.57 \pm 0.35$	$f_{2000}^{143}$	30.07	$30.7 \pm 2.9$
$c_{100}$	0.99964	$0.99960 \pm 0.00061$	$k_{\text{D}}$	0.140336	$0.14024 \pm 0.00045$	$f_{2000}^{143 \times 217}$	33.00	$33.2 \pm 2.0$
$c_{217}$	0.99827	$0.99826 \pm 0.00063$	$100\theta_{\text{D}}$	0.160969	$0.16103 \pm 0.00026$	$f_{2000}^{217}$	107.41	$107.8 \pm 1.9$
$H_0$	67.63	$67.67 \pm 0.54$	$z_{\text{eq}}$	3374.4	$3371 \pm 29$	$\chi_{\text{small}}^2$	395.88	$397.2 \pm 1.8$
$\Omega_{\Lambda}$	0.6899	$0.6905 \pm 0.0073$	$k_{\text{eq}}$	0.010299	$0.010288 \pm 0.000088$	$\chi_{\text{lowl}}^2$	22.78	$24.3 \pm 1.6$
$\Omega_{\text{m}}$	0.3101	$0.3095 \pm 0.0073$	$100\theta_{\text{eq}}$	0.8180	$0.8187 \pm 0.0053$	$\chi_{\text{plik}}^2$	760.2	$772.4 \pm 5.5$
$\Omega_{\text{m}} h^2$	0.14185	$0.1417 \pm 0.0012$	$100\theta_{s,\text{eq}}$	0.45192	$0.4523 \pm 0.0028$	$\chi_{6\text{DF}}^2$	0.0222	$0.053 \pm 0.072$
$\Omega_{\text{m}} h^3$	0.095935	$0.09588 \pm 0.00046$	$H(0.15)$	72.892	$72.92 \pm 0.47$	$\chi_{\text{MGS}}^2$	1.28	$1.41 \pm 0.53$
$\sigma_8$	0.8066	$0.8064 \pm 0.0078$	$D_M(0.15)$	641.13	$640.8 \pm 4.6$	$\chi_{\text{DR12BAO}}^2$	4.21	$4.6 \pm 1.5$
$S_8$	0.8202	$0.819 \pm 0.015$	$H(0.38)$	82.973	$82.99 \pm 0.35$	$\chi_{\text{prior}}^2$	1.44	$7.4 \pm 3.7$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4492	$0.4486 \pm 0.0082$	$D_M(0.38)$	1529.4	$1528.8 \pm 9.4$	$\chi_{\text{BAO}}^2$	5.51	$6.1 \pm 1.2$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6020	$0.6015 \pm 0.0081$	$H(0.51)$	89.672	$89.68 \pm 0.29$	$\chi_{\text{CMB}}^2$	1178.8	$1193.8 \pm 5.7$
$\sigma_8/h^{0.5}$	0.9809	$0.980 \pm 0.012$	$D_M(0.51)$	1981.4	$1981 \pm 11$			
$r_{\text{drag}} h$	99.76	$99.86 \pm 0.94$	$H(0.61)$	95.276	$95.28 \pm 0.25$			

Best-fit  $\chi_{\text{eff}}^2 = 1185.79$ ;  $\bar{\chi}_{\text{eff}}^2 = 1207.29$ ;  $R - 1 = 0.01115$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.28 DR12BAO: 4.21 CMB - simall\_100x143.offlike5\_EE\_Aplanck\_B: 395.88 commander\_dx12\_v3\_2\_29: 22.79 plik\_rd12\_HM\_v22\_TT: 760.17



### 17.3 base\_r\_plikHM\_TT\_lowl\_lowE\_post\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022389	$0.02237 \pm 0.00021$	$r_{\text{drag}} h$	101.15	$101.3 \pm 1.4$	$D_M(0.51)$	1965.2	$1964 \pm 15$
$\Omega_c h^2$	0.11728	$0.1171 \pm 0.0017$	$\langle d^2 \rangle^{1/2}$	2.4002	$2.396 \pm 0.034$	$H(0.61)$	95.599	$95.61 \pm 0.33$
$100\theta_{\text{MC}}$	1.041240	$1.04126 \pm 0.00044$	$z_{\text{re}}$	7.83	$7.68 \pm 0.84$	$D_M(0.61)$	2288.3	$2287 \pm 17$
$\tau$	0.0562	$0.0550^{+0.0074}_{-0.0087}$	$10^9 A_s$	2.0934	$2.087^{+0.033}_{-0.038}$	$H(2.33)$	234.82	$234.7 \pm 1.0$
$\ln(10^{10} A_s)$	3.0414	$3.038^{+0.016}_{-0.018}$	$10^9 A_s e^{-2\tau}$	1.8706	$1.870 \pm 0.013$	$D_M(2.33)$	5752.1	$5752 \pm 15$
$n_s$	0.9720	$0.9715 \pm 0.0051$	$D_{40}$	1214.1	$1231^{+16}_{-19}$	$f\sigma_8(0.15)$	0.4450	$0.444 \pm 0.010$
$r$	0.0000	$< 0.0557$	$D_{220}$	5726.1	$5729 \pm 41$	$\sigma_8(0.15)$	0.7433	$0.7417 \pm 0.0077$
$y_{\text{cal}}$	1.00044	$1.0007 \pm 0.0025$	$D_{810}$	2536.6	$2536 \pm 14$	$f\sigma_8(0.38)$	0.4659	$0.4645 \pm 0.0085$
$A_{217}^{\text{CIB}}$	47.5	$47 \pm 6$	$D_{1420}$	818.0	$817.3 \pm 5.1$	$\sigma_8(0.38)$	0.6602	$0.6588 \pm 0.0064$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.48	—	$D_{2000}$	231.05	$230.7 \pm 1.8$	$f\sigma_8(0.51)$	0.4659	$0.4646 \pm 0.0075$
$A_{143}^{\text{tSZ}}$	7.05	$5.3 \pm 2.0$	$n_{\text{s},0.002}$	0.9720	$0.9715 \pm 0.0051$	$\sigma_8(0.51)$	0.6184	$0.6172 \pm 0.0058$
$A_{100}^{\text{PS}}$	250.7	$260 \pm 28$	$Y_{\text{P}}$	0.245403	$0.245391 \pm 0.000083$	$f\sigma_8(0.61)$	0.4619	$0.4607 \pm 0.0068$
$A_{143}^{\text{PS}}$	49.3	$47 \pm 8$	$Y_{\text{P}}^{\text{BBN}}$	0.246730	$0.246717 \pm 0.000084$	$\sigma_8(0.61)$	0.5888	$0.5876 \pm 0.0055$
$A_{143 \times 217}^{\text{PS}}$	49.5	$42 \pm 9$	$10^5 \text{D}/\text{H}$	2.5819	$2.587 \pm 0.039$	$f\sigma_8(2.33)$	0.29734	$0.2968^{+0.0025}_{-0.0028}$
$A_{217}^{\text{PS}}$	120.0	$114 \pm 10$	$\text{Age}/\text{Gyr}$	13.7744	$13.775 \pm 0.033$	$\sigma_8(2.33)$	0.30708	$0.3066^{+0.0025}_{-0.0029}$
$A^{\text{kSZ}}$	0.00	$< 4.61$	$z_*$	1089.656	$1089.68 \pm 0.35$	$r_{0.002}$	0.0000	$< 0.0516$
$A_{100}^{\text{dustTT}}$	8.90	$8.9 \pm 1.8$	$r_*$	145.123	$145.18^{+0.45}_{-0.41}$	$r_{0.01}$	0.0000	$< 0.0536$
$A_{143}^{\text{dustTT}}$	10.84	$10.7 \pm 1.7$	$100\theta_*$	1.041420	$1.04145 \pm 0.00043$	$\ln(10^{10} A_t)$	-7.17	$-0.53^{+1.3}_{-0.65}$
$A_{143 \times 217}^{\text{dustTT}}$	19.60	$18.4 \pm 3.4$	$D_M(z_*)/\text{Gpc}$	13.9352	$13.940^{+0.042}_{-0.038}$	$r_{10}$	0.0000	$< 0.0263$
$A_{217}^{\text{dustTT}}$	94.9	$93.7 \pm 7.3$	$z_{\text{drag}}$	1059.780	$1059.72 \pm 0.45$	$10^9 A_t$	0.000	$< 0.116$
$c_{100}$	0.99968	$0.99959 \pm 0.00059$	$r_{\text{drag}}$	147.794	$147.86^{+0.45}_{-0.40}$	$10^9 A_t e^{-2\tau}$	0.000	$< 0.104$
$c_{217}$	0.99826	$0.99828 \pm 0.00064$	$k_{\text{D}}$	0.140142	$0.14005 \pm 0.00048$	$f_{2000}^{143}$	29.19	$30.2 \pm 2.8$
$H_0$	68.44	$68.49 \pm 0.77$	$100\theta_{\text{D}}$	0.160868	$0.16091 \pm 0.00025$	$f_{2000}^{143 \times 217}$	32.40	$32.7 \pm 1.9$
$\Omega_{\Lambda}$	0.7004	$0.701^{+0.011}_{-0.0092}$	$z_{\text{eq}}$	3337.7	$3334 \pm 39$	$f_{2000}^{217}$	106.87	$107.4 \pm 1.9$
$\Omega_{\text{m}}$	0.2996	$0.2989^{+0.0092}_{-0.011}$	$k_{\text{eq}}$	0.010187	$0.01017 \pm 0.00012$	$\chi_{\text{simall}}^2$	396.24	$397.4 \pm 2.1$
$\Omega_{\text{m}} h^2$	0.14032	$0.1401 \pm 0.0016$	$100\theta_{\text{eq}}$	0.8253	$0.8261 \pm 0.0075$	$\chi_{\text{lowl}}^2$	22.08	$23.6 \pm 1.6$
$\Omega_{\text{m}} h^3$	0.096032	$0.09597 \pm 0.00046$	$100\theta_{\text{s,eq}}$	0.45564	$0.4561 \pm 0.0039$	$\chi_{\text{plik}}^2$	762.9	$775.1 \pm 6.2$
$\sigma_8$	0.8031	$0.8013 \pm 0.0089$	$H(0.15)$	73.59	$73.63 \pm 0.67$	$\chi_{\text{H073p45}}^2$	9.11	$9.1 \pm 2.8$
$S_8$	0.8025	$0.800 \pm 0.020$	$D_M(0.15)$	634.3	$633.9 \pm 6.5$	$\chi_{\text{prior}}^2$	1.31	$7.4 \pm 3.7$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4396	$0.438 \pm 0.011$	$H(0.38)$	83.485	$83.51 \pm 0.49$	$\chi_{\text{CMB}}^2$	1181.2	$1196.1 \pm 6.2$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5942	$0.592 \pm 0.010$	$D_M(0.38)$	1515.6	$1515 \pm 13$			
$\sigma_8/h^{0.5}$	0.9708	$0.968 \pm 0.015$	$H(0.51)$	90.076	$90.09 \pm 0.40$			

Best-fit  $\chi_{\text{eff}}^2 = 1191.61$ ;  $\bar{\chi}_{\text{eff}}^2 = 1212.59$ ;  $R - 1 = 0.05992$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.24 commander\_dx12.v3.2.29: 22.08 plik\_rd12\_HM.v22\_TT: 762.86 Hubble - H073p45: 9.11



#### 17.4 base\_r\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02213 \pm 0.00022$	$\sigma_8/h^{0.5}$	$0.991 \pm 0.016$	$D_{\mathrm{M}}(0.38)$	$1539 \pm 16$
$\Omega_{\mathrm{c}}h^2$	$0.1202 \pm 0.0021$	$r_{\mathrm{drag}}h$	$98.8 \pm 1.6$	$H(0.51)$	$89.40 \pm 0.44$
$100\theta_{\mathrm{MC}}$	$1.04083 \pm 0.00046$	$\langle d^2 \rangle^{1/2}$	$2.449 \pm 0.037$	$D_{\mathrm{M}}(0.51)$	$1993 \pm 18$
$\tau$	$0.0536^{+0.0045}_{-0.0083}$	$z_{\mathrm{re}}$	$7.65^{+0.50}_{-0.84}$	$H(0.61)$	$95.07 \pm 0.35$
$\ln(10^{10}A_{\mathrm{s}})$	$3.042^{+0.012}_{-0.016}$	$10^9 A_{\mathrm{s}}$	$2.096^{+0.024}_{-0.034}$	$D_{\mathrm{M}}(0.61)$	$2318 \pm 20$
$n_{\mathrm{s}}$	$0.9642 \pm 0.0056$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.883 \pm 0.014$	$H(2.33)$	$236.5 \pm 1.3$
$r$	$< 0.0469$	$D_{40}$	$1244^{+16}_{-19}$	$D_{\mathrm{M}}(2.33)$	$5775 \pm 16$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{220}$	$5711 \pm 41$	$f\sigma_8(0.15)$	$0.462 \pm 0.012$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2536 \pm 14$	$\sigma_8(0.15)$	$0.7494 \pm 0.0071$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815.0 \pm 5.1$	$f\sigma_8(0.38)$	$0.4788 \pm 0.0096$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{2000}$	$229.8 \pm 1.8$	$\sigma_8(0.38)$	$0.6636^{+0.0052}_{-0.0059}$
$A_{100}^{\mathrm{PS}}$	$262 \pm 28$	$n_{\mathrm{s},0.002}$	$0.9642 \pm 0.0056$	$f\sigma_8(0.51)$	$0.4766 \pm 0.0082$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}$	$0.24529^{+0.00010}_{-0.000085}$	$\sigma_8(0.51)$	$0.6207^{+0.0045}_{-0.0053}$
$A_{143 \times 217}^{\mathrm{PS}}$	$44 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24662^{+0.00010}_{-0.000086}$	$f\sigma_8(0.61)$	$0.4710 \pm 0.0072$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.631 \pm 0.041$	$\sigma_8(0.61)$	$0.5904^{+0.0041}_{-0.0050}$
$A^{\mathrm{kSZ}}$	$< 4.70$	Age/Gyr	$13.825 \pm 0.036$	$f\sigma_8(2.33)$	$0.2974^{+0.0019}_{-0.0025}$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$z_*$	$1090.24 \pm 0.40$	$\sigma_8(2.33)$	$0.3064^{+0.0019}_{-0.0026}$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$r_*$	$144.55 \pm 0.47$	$r_{0.002}$	$< 0.0425$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04104 \pm 0.00046$	$r_{0.01}$	$< 0.0447$
$A_{217}^{\mathrm{dust}TT}$	$93.5 \pm 7.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.885 \pm 0.044$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.72^{+1.4}_{-0.61}$
$c_{100}$	$0.99959 \pm 0.00061$	$z_{\mathrm{drag}}$	$1059.40 \pm 0.45$	$r_{10}$	$< 0.0218$
$c_{217}$	$0.99826 \pm 0.00062$	$r_{\mathrm{drag}}$	$147.29 \pm 0.47$	$10^9 A_{\mathrm{t}}$	$< 0.0981$
$H_0$	$67.05 \pm 0.91$	$k_{\mathrm{D}}$	$0.14047 \pm 0.00051$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.0881$
$\Omega_{\Lambda}$	$0.682 \pm 0.013$	$100\theta_{\mathrm{D}}$	$0.16107 \pm 0.00026$	$f_{2000}^{143}$	$30.9 \pm 2.9$
$\Omega_{\mathrm{m}}$	$0.318 \pm 0.013$	$z_{\mathrm{eq}}$	$3402 \pm 47$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.0$
$\Omega_{\mathrm{m}}h^2$	$0.1430 \pm 0.0020$	$k_{\mathrm{eq}}$	$0.01038 \pm 0.00014$	$f_{2000}^{217}$	$108.0 \pm 1.9$
$\Omega_{\mathrm{m}}h^3$	$0.09588 \pm 0.00045$	$100\theta_{\mathrm{eq}}$	$0.8127 \pm 0.0088$	$\chi_{\mathrm{small}}^2$	$397.0 \pm 1.7$
$\sigma_8$	$0.8117 \pm 0.0086$	$100\theta_{\mathrm{s,eq}}$	$0.4492 \pm 0.0045$	$\chi_{\mathrm{lowl}}^2$	$25.0 \pm 1.8$
$S_8$	$0.836 \pm 0.024$	$H(0.15)$	$72.40 \pm 0.78$	$\chi_{\mathrm{plik}}^2$	$771.5 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.458 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$646.2 \pm 7.9$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.610 \pm 0.012$	$H(0.38)$	$82.62 \pm 0.56$	$\chi_{\mathrm{CMB}}^2$	$1193.4 \pm 5.6$

$$\bar{\chi}_{\mathrm{eff}}^2 = 1200.73; R - 1 = 0.00675$$



17.5 base\_r\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02222 \pm 0.00020$	$\langle d^2 \rangle^{1/2}$	$2.426 \pm 0.027$	$D_{\mathrm{M}}(0.61)$	$2305 \pm 12$
$\Omega_{\mathrm{c}}h^2$	$0.1188 \pm 0.0012$	$z_{\mathrm{re}}$	$7.72^{+0.53}_{-0.82}$	$H(2.33)$	$235.63 \pm 0.79$
$100\theta_{\mathrm{MC}}$	$1.04101 \pm 0.00041$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.024}_{-0.035}$	$D_{\mathrm{M}}(2.33)$	$5766 \pm 12$
$\tau$	$0.0546^{+0.0047}_{-0.0082}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.877 \pm 0.012$	$f\sigma_8(0.15)$	$0.4538 \pm 0.0077$
$\ln(10^{10} A_{\mathrm{s}})$	$3.041^{+0.012}_{-0.017}$	$D_{40}$	$1238^{+14}_{-18}$	$\sigma_8(0.15)$	$0.7463^{+0.0057}_{-0.0068}$
$n_{\mathrm{s}}$	$0.9674 \pm 0.0042$	$D_{220}$	$5717 \pm 41$	$f\sigma_8(0.38)$	$0.4726 \pm 0.0064$
$r$	$< 0.0502$	$D_{810}$	$2536 \pm 14$	$\sigma_8(0.38)$	$0.6618^{+0.0047}_{-0.0058}$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{1420}$	$815.8 \pm 5.0$	$f\sigma_8(0.51)$	$0.4714 \pm 0.0057$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{2000}$	$230.1 \pm 1.8$	$\sigma_8(0.51)$	$0.6194^{+0.0042}_{-0.0054}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.9674 \pm 0.0042$	$f\sigma_8(0.61)$	$0.4666 \pm 0.0052$
$A_{143}^{\mathrm{tSZ}}$	$5.2 \pm 2.0$	$Y_{\mathrm{P}}$	$0.245330^{+0.000088}_{-0.000075}$	$\sigma_8(0.61)$	$0.5895^{+0.0040}_{-0.0051}$
$A_{100}^{\mathrm{PS}}$	$261 \pm 28$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246656^{+0.000089}_{-0.000075}$	$f\sigma_8(2.33)$	$0.2973^{+0.0019}_{-0.0026}$
$A_{143}^{\mathrm{PS}}$	$48 \pm 8$	$10^5 \mathrm{D}/\mathrm{H}$	$2.615 \pm 0.037$	$\sigma_8(2.33)$	$0.3066^{+0.0019}_{-0.0027}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43^{+9}_{-10}$	Age/Gyr	$13.805 \pm 0.028$	$r_{0.002}$	$< 0.0463$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$z_*$	$1090.01 \pm 0.30$	$r_{0.01}$	$< 0.0481$
$A^{\mathrm{kSZ}}$	$< 4.64$	$r_*$	$144.86 \pm 0.32$	$\ln(10^{10} A_{\mathrm{t}})$	$-0.64^{+1.4}_{-0.61}$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$100\theta_*$	$1.04121 \pm 0.00040$	$r_{10}$	$< 0.0236$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.912 \pm 0.031$	$10^9 A_{\mathrm{t}}$	$< 0.105$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$z_{\mathrm{drag}}$	$1059.50 \pm 0.44$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	$< 0.0941$
$A_{217}^{\mathrm{dust}TT}$	$93.5 \pm 7.3$	$r_{\mathrm{drag}}$	$147.58 \pm 0.35$	$f_{2000}^{143}$	$30.6 \pm 2.9$
$c_{100}$	$0.99960 \pm 0.00061$	$k_{\mathrm{D}}$	$0.14024 \pm 0.00045$	$f_{2000}^{143 \times 217}$	$33.2 \pm 2.0$
$c_{217}$	$0.99826 \pm 0.00063$	$100\theta_{\mathrm{D}}$	$0.16102 \pm 0.00026$	$f_{2000}^{217}$	$107.8 \pm 1.9$
$H_0$	$67.68 \pm 0.55$	$z_{\mathrm{eq}}$	$3370 \pm 29$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.8$
$\Omega_{\Lambda}$	$0.6906 \pm 0.0073$	$k_{\mathrm{eq}}$	$0.010286 \pm 0.000088$	$\chi_{\mathrm{lowl}}^2$	$24.3 \pm 1.6$
$\Omega_{\mathrm{m}}$	$0.3094 \pm 0.0073$	$100\theta_{\mathrm{eq}}$	$0.8188 \pm 0.0053$	$\chi_{\mathrm{plik}}^2$	$772.2 \pm 5.4$
$\Omega_{\mathrm{m}} h^2$	$0.1417 \pm 0.0012$	$100\theta_{\mathrm{s,eq}}$	$0.4523 \pm 0.0028$	$\chi_{6\mathrm{DF}}^2$	$0.053 \pm 0.071$
$\Omega_{\mathrm{m}} h^3$	$0.09588 \pm 0.00046$	$H(0.15)$	$72.93 \pm 0.47$	$\chi_{\mathrm{MGS}}^2$	$1.42 \pm 0.53$
$\sigma_8$	$0.8074^{+0.0067}_{-0.0076}$	$D_{\mathrm{M}}(0.15)$	$640.7 \pm 4.6$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.5$
$S_8$	$0.820 \pm 0.015$	$H(0.38)$	$83.00 \pm 0.35$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.7$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4491 \pm 0.0082$	$D_{\mathrm{M}}(0.38)$	$1528.6 \pm 9.4$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.2$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.6022 \pm 0.0078$	$H(0.51)$	$89.69 \pm 0.29$	$\chi_{\mathrm{CMB}}^2$	$1193.6 \pm 5.6$
$\sigma_8/h^{0.5}$	$0.982 \pm 0.011$	$D_{\mathrm{M}}(0.51)$	$1981 \pm 11$		
$r_{\mathrm{drag}} h$	$99.88 \pm 0.94$	$H(0.61)$	$95.28 \pm 0.25$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1207.00; R - 1 = 0.01158$$



## 17.6 base\_r\_plikHM\_TT\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02237 \pm 0.00021$	$r_{\mathrm{drag}}h$	$101.3 \pm 1.3$	$D_{\mathrm{M}}(0.51)$	$1964 \pm 15$
$\Omega_{\mathrm{c}}h^2$	$0.1171 \pm 0.0017$	$\langle d^2 \rangle^{1/2}$	$2.399 \pm 0.033$	$H(0.61)$	$95.62 \pm 0.33$
$100\theta_{\mathrm{MC}}$	$1.04127 \pm 0.00044$	$z_{\mathrm{re}}$	$7.81^{+0.55}_{-0.91}$	$D_{\mathrm{M}}(0.61)$	$2287 \pm 17$
$\tau$	$0.0562^{+0.0054}_{-0.0087}$	$10^9 A_{\mathrm{s}}$	$2.092^{+0.026}_{-0.037}$	$H(2.33)$	$234.7 \pm 1.0$
$\ln(10^{10} A_{\mathrm{s}})$	$3.041^{+0.013}_{-0.018}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.870 \pm 0.013$	$D_{\mathrm{M}}(2.33)$	$5752 \pm 15$
$n_{\mathrm{s}}$	$0.9716 \pm 0.0051$	$D_{40}$	$1231^{+16}_{-19}$	$f\sigma_8(0.15)$	$0.444 \pm 0.010$
$r$	$< 0.0556$	$D_{220}$	$5729 \pm 41$	$\sigma_8(0.15)$	$0.7425 \pm 0.0072$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025$	$D_{810}$	$2535 \pm 14$	$f\sigma_8(0.38)$	$0.4649 \pm 0.0084$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 6$	$D_{1420}$	$817.3 \pm 5.1$	$\sigma_8(0.38)$	$0.6596^{+0.0055}_{-0.0062}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{2000}$	$230.7 \pm 1.8$	$f\sigma_8(0.51)$	$0.4650 \pm 0.0074$
$A_{143}^{\mathrm{tSZ}}$	$5.3 \pm 2.0$	$n_{\mathrm{s},0.002}$	$0.9716 \pm 0.0051$	$\sigma_8(0.51)$	$0.6178^{+0.0049}_{-0.0057}$
$A_{100}^{\mathrm{PS}}$	$260 \pm 28$	$Y_{\mathrm{P}}$	$0.245392 \pm 0.000084$	$f\sigma_8(0.61)$	$0.4611 \pm 0.0066$
$A_{143}^{\mathrm{PS}}$	$47 \pm 8$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246718 \pm 0.000084$	$\sigma_8(0.61)$	$0.5882^{+0.0045}_{-0.0054}$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9$	$10^5 \mathrm{D}/\mathrm{H}$	$2.586 \pm 0.039$	$f\sigma_8(2.33)$	$0.2971^{+0.0021}_{-0.0027}$
$A_{217}^{\mathrm{PS}}$	$114 \pm 10$	$\mathrm{Age}/\mathrm{Gyr}$	$13.774 \pm 0.033$	$\sigma_8(2.33)$	$0.3069^{+0.0020}_{-0.0028}$
$A^{\mathrm{kSZ}}$	$< 4.61$	$z_*$	$1089.67 \pm 0.35$	$r_{0.002}$	$< 0.0516$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8$	$r_*$	$145.19 \pm 0.40$	$r_{0.01}$	$< 0.0537$
$A_{143}^{\mathrm{dustTT}}$	$10.7 \pm 1.8$	$100\theta_*$	$1.04145 \pm 0.00043$	$\ln(10^{10} A_{\mathrm{t}})$	$-0.53^{+1.3}_{-0.65}$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.3 \pm 3.4$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.941^{+0.042}_{-0.038}$	$r_{10}$	$< 0.0263$
$A_{217}^{\mathrm{dustTT}}$	$93.7 \pm 7.2$	$z_{\mathrm{drag}}$	$1059.73 \pm 0.45$	$10^9 A_{\mathrm{t}}$	$< 0.116$
$c_{100}$	$0.99959 \pm 0.00059$	$r_{\mathrm{drag}}$	$147.87 \pm 0.42$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	$< 0.104$
$c_{217}$	$0.99829 \pm 0.00064$	$k_{\mathrm{D}}$	$0.14005 \pm 0.00048$	$f_{2000}^{143}$	$30.1 \pm 2.8$
$H_0$	$68.51 \pm 0.77$	$100\theta_{\mathrm{D}}$	$0.16091 \pm 0.00025$	$f_{2000}^{143 \times 217}$	$32.6^{+1.8}_{-2.0}$
$\Omega_{\Lambda}$	$0.701^{+0.010}_{-0.0091}$	$z_{\mathrm{eq}}$	$3333 \pm 39$	$f_{2000}^{217}$	$107.4 \pm 1.9$
$\Omega_{\mathrm{m}}$	$0.2988^{+0.0091}_{-0.010}$	$k_{\mathrm{eq}}$	$0.01017 \pm 0.00012$	$\chi_{\mathrm{simall}}^2$	$397.3 \pm 2.1$
$\Omega_{\mathrm{m}}h^2$	$0.1401 \pm 0.0016$	$100\theta_{\mathrm{eq}}$	$0.8262 \pm 0.0075$	$\chi_{\mathrm{lowl}}^2$	$23.6 \pm 1.6$
$\Omega_{\mathrm{m}}h^3$	$0.09598 \pm 0.00046$	$100\theta_{\mathrm{s,eq}}$	$0.4561 \pm 0.0038$	$\chi_{\mathrm{plik}}^2$	$774.9 \pm 6.1$
$\sigma_8$	$0.8021 \pm 0.0085$	$H(0.15)$	$73.65 \pm 0.66$	$\chi_{\mathrm{H073p45}}^2$	$9.1 \pm 2.8$
$S_8$	$0.800 \pm 0.020$	$D_{\mathrm{M}}(0.15)$	$633.8 \pm 6.4$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.6$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.438 \pm 0.011$	$H(0.38)$	$83.52 \pm 0.49$	$\chi_{\mathrm{CMB}}^2$	$1195.9 \pm 6.2$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.593 \pm 0.010$	$D_{\mathrm{M}}(0.38)$	$1515 \pm 13$		
$\sigma_8/h^{0.5}$	$0.969 \pm 0.014$	$H(0.51)$	$90.10 \pm 0.40$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1212.36; R - 1 = 0.06373$$



## 17.7 base\_r\_plikHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022376	$0.02236 \pm 0.00015$ (+1.1 $\sigma$ )	$\sigma_8$	0.8119	$0.8112 \pm 0.0074$ (+0.1 $\sigma$ )	$D_M(0.15)$	643.6	$643.6 \pm 5.2$ (−0.4 $\sigma$ )
$\Omega_c h^2$	0.12007	$0.1200 \pm 0.0014$ (−0.1 $\sigma$ )	$S_8$	0.8328	$0.832 \pm 0.016$ (−0.2 $\sigma$ )	$H(0.38)$	82.852	$82.85 \pm 0.37$ (+0.5 $\sigma$ )
$100\theta_{MC}$	1.040902	$1.04091 \pm 0.00031$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4562	$0.4557 \pm 0.0088$ (−0.2 $\sigma$ )	$D_M(0.38)$	1533.9	$1534 \pm 10$ (−0.4 $\sigma$ )
$\tau$	0.0543	$0.0539^{+0.0069}_{-0.0078}$ (+0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6086	$0.6080 \pm 0.0083$ (−0.1 $\sigma$ )	$H(0.51)$	89.616	$89.61 \pm 0.29$ (+0.5 $\sigma$ )
$\ln(10^{10} A_s)$	3.0449	$3.043 \pm 0.016$ (+0.3 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9895	$0.989 \pm 0.012$ (−0.1 $\sigma$ )	$D_M(0.51)$	1986.4	$1986 \pm 12$ (−0.4 $\sigma$ )
$n_s$	0.96606	$0.9657 \pm 0.0044$ (+0.3 $\sigma$ )	$r_{drag} h$	99.02	$99.0 \pm 1.1$ (+0.2 $\sigma$ )	$H(0.61)$	95.271	$95.27 \pm 0.24$ (+0.6 $\sigma$ )
$r$	0.0001	$< 0.0522$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4447	$2.443 \pm 0.028$ (−0.1 $\sigma$ )	$D_M(0.61)$	2310.9	$2311 \pm 13$ (−0.4 $\sigma$ )
$y_{cal}$	1.00059	$1.0007 \pm 0.0024$ (+0.1 $\sigma$ )	$z_{re}$	7.68	$7.62 \pm 0.77$ (+0.2 $\sigma$ )	$H(2.33)$	236.61	$236.57 \pm 0.82$ (+0.0 $\sigma$ )
$A_{217}^{CIB}$	46.5	$47 \pm 7$ (−0.2 $\sigma$ )	$10^9 A_s$	2.1008	$2.098 \pm 0.033$ (+0.3 $\sigma$ )	$D_M(2.33)$	5763.7	$5764 \pm 11$ (−0.7 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.55	—	$10^9 A_s e^{-2\tau}$	1.8845	$1.883 \pm 0.012$ (+0.0 $\sigma$ )	$f\sigma_8(0.15)$	0.4604	$0.4599 \pm 0.0082$ (−0.1 $\sigma$ )
$A_{143}^{tSZ}$	7.14	$5.5^{+2.2}_{-1.9}$ (+0.2 $\sigma$ )	$D_{40}$	1229.2	$1244^{+14}_{-18}$ (+0.0 $\sigma$ )	$\sigma_8(0.15)$	0.7499	$0.7492 \pm 0.0065$ (+0.1 $\sigma$ )
$A_{100}^{PS}$	248.2	$258 \pm 28$ (−0.2 $\sigma$ )	$D_{220}$	5731.2	$5730 \pm 38$ (+0.5 $\sigma$ )	$f\sigma_8(0.38)$	0.4779	$0.4773 \pm 0.0067$ (−0.1 $\sigma$ )
$A_{143}^{PS}$	49.3	$46 \pm 8$ (−0.4 $\sigma$ )	$D_{810}$	2541.7	$2540 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6643	$0.6636 \pm 0.0055$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{PS}$	50.7	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{1420}$	818.53	$817.8 \pm 4.7$ (+0.5 $\sigma$ )	$f\sigma_8(0.51)$	0.4760	$0.4755 \pm 0.0059$ (−0.1 $\sigma$ )
$A_{217}^{PS}$	121.1	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	231.34	$231.1 \pm 1.5$ (+0.7 $\sigma$ )	$\sigma_8(0.51)$	0.62145	$0.6209 \pm 0.0051$ (+0.2 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.16$ (−0.2 $\sigma$ )	$n_{s,0.002}$	0.96606	$0.9657 \pm 0.0044$ (+0.3 $\sigma$ )	$f\sigma_8(0.61)$	0.4707	$0.4701 \pm 0.0054$ (−0.0 $\sigma$ )
$A_{100}^{dustTT}$	8.86	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P$	0.245398	$0.245390^{+0.000062}_{-0.000053}$ (+1.0 $\sigma$ )	$\sigma_8(0.61)$	0.59121	$0.5907 \pm 0.0048$ (+0.2 $\sigma$ )
$A_{143}^{dustTT}$	10.99	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246725	$0.246716^{+0.000062}_{-0.000053}$ (+1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.29793	$0.2977 \pm 0.0024$ (+0.3 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.00	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5843	$2.588 \pm 0.027$ (−1.1 $\sigma$ )	$\sigma_8(2.33)$	0.30697	$0.3067 \pm 0.0025$ (+0.3 $\sigma$ )
$A_{217}^{dustTT}$	95.3	$93.7 \pm 7.4$ (+0.0 $\sigma$ )	Age/Gyr	13.7975	$13.799 \pm 0.024$ (−0.8 $\sigma$ )	$r_{0.002}$	0.0001	$< 0.0477$ (+0.1 $\sigma$ )
$A_{100}^{dustTE}$	0.1152	$0.115 \pm 0.038$	$z_*$	1089.918	$1089.93 \pm 0.27$ (−0.8 $\sigma$ )	$r_{0.01}$	0.0001	$< 0.0499$ (+0.1 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1352	$0.135 \pm 0.030$	$r_*$	144.409	$144.43 \pm 0.30$ (−0.2 $\sigma$ )	$\ln(10^{10} A_t)$	−6.12	$−0.58^{+1.3}_{-0.58}$ (+0.1 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.484	$0.482 \pm 0.084$	$100\theta_*$	1.041090	$1.04109 \pm 0.00030$ (+0.1 $\sigma$ )	$r_{10}$	0.0000	$< 0.0245$ (+0.1 $\sigma$ )
$A_{143}^{dustTE}$	0.225	$0.226 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	13.8710	$13.873 \pm 0.028$ (−0.2 $\sigma$ )	$10^9 A_t$	0.000	$< 0.110$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.667	$0.666 \pm 0.079$	$z_{drag}$	1059.971	$1059.92 \pm 0.30$ (+1.2 $\sigma$ )	$10^9 A_t e^{-2\tau}$	0.0002	$< 0.0981$ (+0.1 $\sigma$ )
$A_{217}^{dustTE}$	2.089	$2.08 \pm 0.27$	$r_{drag}$	147.065	$147.10 \pm 0.30$ (−0.4 $\sigma$ )	$f_{2000}^{143}$	28.71	$29.3 \pm 2.7$ (−0.6 $\sigma$ )
$c_{100}$	0.99974	$0.99965 \pm 0.00061$ (+0.1 $\sigma$ )	$k_D$	0.140898	$0.14086 \pm 0.00032$ (+0.7 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.98	$32.1 \pm 1.8$ (−0.7 $\sigma$ )
$c_{217}$	0.99817	$0.99820 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_D$	0.160745	$0.16077 \pm 0.00017$ (−1.2 $\sigma$ )	$f_{2000}^{217}$	106.60	$106.9 \pm 1.8$ (−0.6 $\sigma$ )
$H_0$	67.33	$67.34 \pm 0.61$ (+0.4 $\sigma$ )	$z_{eq}$	3404.0	$3403 \pm 31$ (−0.0 $\sigma$ )	$\chi_{small}^2$	396.05	$397.2 \pm 1.8$ (+0.1 $\sigma$ )
$\Omega_\Lambda$	0.6844	$0.6844 \pm 0.0084$ (+0.3 $\sigma$ )	$k_{eq}$	0.010389	$0.010385 \pm 0.000094$ (−0.0 $\sigma$ )	$\chi_{lowl}^2$	23.24	$24.8 \pm 1.6$ (−0.1 $\sigma$ )
$\Omega_m$	0.3156	$0.3156 \pm 0.0084$ (−0.3 $\sigma$ )	$100\theta_{eq}$	0.8130	$0.8132 \pm 0.0058$ (+0.1 $\sigma$ )	$\chi_{plik}^2$	2344.9	$2359.6 \pm 5.8$ (+294.2 $\sigma$ )
$\Omega_m h^2$	0.14309	$0.1430 \pm 0.0013$ (−0.0 $\sigma$ )	$100\theta_{s,eq}$	0.44922	$0.4494 \pm 0.0030$ (+0.1 $\sigma$ )	$\chi_{prior}^2$	1.62	$11.6 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_m h^3$	0.096344	$0.09631 \pm 0.00029$ (+1.0 $\sigma$ )	$H(0.15)$	72.66	$72.66 \pm 0.52$ (+0.4 $\sigma$ )	$\chi_{CMB}^2$	2764.1	$2781.6 \pm 6.0$ (+280.9 $\sigma$ )

Best-fit  $\chi_{eff}^2 = 2765.76$ ;  $\Delta\chi_{eff}^2 = 1586.15$ ;  $\bar{\chi}_{eff}^2 = 2793.18$ ;  $\Delta\bar{\chi}_{eff}^2 = 1592.15$ ;  $R - 1 = 0.00988$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.05 ( $\Delta$  0.02) commander\_dx12\_v3.2.29: 23.24 ( $\Delta$  -0.37) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.85



## 17.8 base\_r\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022440	$0.02241 \pm 0.00013$ (+1.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4518	$0.4509 \pm 0.0068$ (+0.3 $\sigma$ )	$D_M(0.51)$	1979.1	$1979.3 \pm 8.9$ (−0.1 $\sigma$ )
$\Omega_c h^2$	0.11926	$0.1192 \pm 0.0010$ (+0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6051	$0.6040 \pm 0.0069$ (+0.3 $\sigma$ )	$H(0.61)$	95.406	$95.39 \pm 0.19$ (+0.5 $\sigma$ )
$100\theta_{MC}$	1.040993	$1.04100 \pm 0.00029$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9852	$0.983 \pm 0.010$ (+0.3 $\sigma$ )	$D_M(0.61)$	2303.0	$2303.3 \pm 9.6$ (−0.2 $\sigma$ )
$\tau$	0.0565	$0.0550^{+0.0070}_{-0.0078}$ (+0.2 $\sigma$ )	$r_{drag}h$	99.66	$99.68 \pm 0.77$ (−0.2 $\sigma$ )	$H(2.33)$	236.15	$236.10 \pm 0.61$ (+0.6 $\sigma$ )
$\ln(10^{10} A_s)$	3.0472	$3.044 \pm 0.016$ (+0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4350	$2.431 \pm 0.024$ (+0.3 $\sigma$ )	$D_M(2.33)$	5757.9	$5758.8 \pm 8.8$ (−0.6 $\sigma$ )
$n_s$	0.96802	$0.9677 \pm 0.0038$ (+0.1 $\sigma$ )	$z_{re}$	7.88	$7.72 \pm 0.77$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4564	$0.4555 \pm 0.0064$ (+0.3 $\sigma$ )
$r$	0.0001	$< 0.0561$ (+0.1 $\sigma$ )	$10^9 A_s$	2.1057	$2.099^{+0.031}_{-0.034}$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7491	$0.7478 \pm 0.0063$ (+0.4 $\sigma$ )
$y_{cal}$	1.00048	$1.0008 \pm 0.0024$ (+0.1 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8806	$1.880 \pm 0.011$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4750	$0.4741 \pm 0.0055$ (+0.3 $\sigma$ )
$A_{217}^{CIB}$	46.1	$47 \pm 7$ (−0.2 $\sigma$ )	$D_{40}$	1225.2	$1241^{+13}_{-17}$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6642	$0.6630 \pm 0.0055$ (+0.4 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.63	—	$D_{220}$	5733.7	$5733 \pm 37$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.4737	$0.4728 \pm 0.0051$ (+0.3 $\sigma$ )
$A_{143}^{tSZ}$	7.12	$5.5^{+2.2}_{-1.9}$ (+0.2 $\sigma$ )	$D_{810}$	2540.4	$2540 \pm 13$ (+0.3 $\sigma$ )	$\sigma_8(0.51)$	0.6216	$0.6205 \pm 0.0051$ (+0.3 $\sigma$ )
$A_{100}^{PS}$	248.7	$258 \pm 28$ (−0.1 $\sigma$ )	$D_{1420}$	818.81	$818.3 \pm 4.5$ (+0.5 $\sigma$ )	$f\sigma_8(0.61)$	0.46878	$0.4679 \pm 0.0047$ (+0.3 $\sigma$ )
$A_{143}^{PS}$	49.9	$45 \pm 8$ (−0.4 $\sigma$ )	$D_{2000}$	231.53	$231.3 \pm 1.5$ (+0.7 $\sigma$ )	$\sigma_8(0.61)$	0.59147	$0.5904 \pm 0.0048$ (+0.3 $\sigma$ )
$A_{143 \times 217}^{PS}$	52.3	$42 \pm 9$ (−0.1 $\sigma$ )	$n_{s,0.002}$	0.96802	$0.9677 \pm 0.0038$ (+0.1 $\sigma$ )	$f\sigma_8(2.33)$	0.29826	$0.2977 \pm 0.0024$ (+0.3 $\sigma$ )
$A_{217}^{PS}$	121.3	$115 \pm 10$ (+0.0 $\sigma$ )	$Y_P$	0.245422	$0.245411^{+0.000053}_{-0.000047}$ (+1.0 $\sigma$ )	$\sigma_8(2.33)$	0.30753	$0.3070 \pm 0.0025$ (+0.3 $\sigma$ )
$A^{kSZ}$	0.01	$< 4.11$ (−0.2 $\sigma$ )	$Y_P^{BBN}$	0.246749	$0.246738^{+0.000053}_{-0.000048}$ (+1.0 $\sigma$ )	$r_{0.002}$	0.0001	$< 0.0515$ (+0.1 $\sigma$ )
$A_{100}^{dustTT}$	8.83	$8.9 \pm 1.9$ (−0.0 $\sigma$ )	$10^5 D/H$	2.5726	$2.578 \pm 0.024$ (−1.0 $\sigma$ )	$r_{0.01}$	0.0001	$< 0.0537$ (+0.1 $\sigma$ )
$A_{143}^{dustTT}$	11.02	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	Age/Gyr	13.7850	$13.787 \pm 0.020$ (−0.7 $\sigma$ )	$\ln(10^{10} A_t)$	−6.22	$−0.52^{+1.3}_{-0.57}$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.11	$18.6 \pm 3.4$ (+0.1 $\sigma$ )	$z_*$	1089.767	$1089.80 \pm 0.22$ (−0.7 $\sigma$ )	$r_{10}$	0.0000	$< 0.0264$ (+0.1 $\sigma$ )
$A_{217}^{dustTT}$	95.4	$93.8 \pm 7.4$ (+0.0 $\sigma$ )	$r_*$	144.570	$144.60 \pm 0.24$ (−0.8 $\sigma$ )	$10^9 A_t$	0.000	$< 0.117$ (+0.1 $\sigma$ )
$A_{100}^{dustTE}$	0.1147	$0.115 \pm 0.038$	$100\theta_*$	1.041176	$1.04118 \pm 0.00029$ (−0.1 $\sigma$ )	$10^9 A_t e^{-2\tau}$	0.000	$< 0.105$ (+0.1 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1346	$0.136 \pm 0.030$	$D_M(z_*)/\text{Gpc}$	13.8852	$13.888 \pm 0.023$ (−0.8 $\sigma$ )	$f_{2000}^{143}$	28.46	$29.1 \pm 2.7$ (−0.6 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.480	$0.482 \pm 0.084$	$z_{drag}$	1060.047	$1059.98 \pm 0.29$ (+1.1 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.78	$31.9 \pm 1.8$ (−0.7 $\sigma$ )
$A_{143}^{dustTE}$	0.224	$0.226 \pm 0.054$	$r_{drag}$	147.209	$147.25 \pm 0.24$ (−0.9 $\sigma$ )	$f_{2000}^{217}$	106.28	$106.8 \pm 1.8$ (−0.5 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.662	$0.665 \pm 0.079$	$k_D$	0.140795	$0.14073 \pm 0.00029$ (+1.1 $\sigma$ )	$\chi_{small}^2$	396	$1323 \pm 1000$ (+523.9 $\sigma$ )
$A_{217}^{dustTE}$	2.076	$2.08 \pm 0.26$	$100\theta_D$	0.160698	$0.16074 \pm 0.00017$ (−1.1 $\sigma$ )	$\chi_{lowl}^2$	22.92	$24.5 \pm 1.5$ (+0.1 $\sigma$ )
$c_{100}$	0.99973	$0.99966 \pm 0.00061$ (+0.1 $\sigma$ )	$z_{eq}$	3386.2	$3385 \pm 23$ (+0.5 $\sigma$ )	$\chi_{plik}^2$	2345	$1435 \pm 1000$ (+121.1 $\sigma$ )
$c_{217}$	0.99818	$0.99820 \pm 0.00062$ (−0.1 $\sigma$ )	$k_{eq}$	0.010335	$0.010330 \pm 0.000070$ (+0.5 $\sigma$ )	$\chi_{6DF}^2$	0.0289	$0.052 \pm 0.062$ (−0.0 $\sigma$ )
$H_0$	67.698	$67.70 \pm 0.44$ (+0.0 $\sigma$ )	$100\theta_{eq}$	0.81643	$0.8167 \pm 0.0043$ (−0.4 $\sigma$ )	$\chi_{MGS}^2$	1.217	$1.29 \pm 0.42$ (−0.2 $\sigma$ )
$\Omega_\Lambda$	0.6894	$0.6895 \pm 0.0060$ (−0.1 $\sigma$ )	$100\theta_{s,eq}$	0.45097	$0.4511 \pm 0.0022$ (−0.4 $\sigma$ )	$\chi_{DR12BAO}^2$	4.42	$4.8 \pm 1.4$ (+0.1 $\sigma$ )
$\Omega_m$	0.3106	$0.3105 \pm 0.0060$ (+0.1 $\sigma$ )	$H(0.15)$	72.973	$72.97 \pm 0.38$ (+0.1 $\sigma$ )	$\chi_{prior}^2$	1.58	$11.5 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_m h^2$	0.14234	$0.14228 \pm 0.00095$ (+0.5 $\sigma$ )	$D_M(0.15)$	640.45	$640.5 \pm 3.8$ (−0.1 $\sigma$ )	$\chi_{BAO}^2$	5.67	$6.1 \pm 1.1$ (+0.0 $\sigma$ )
$\Omega_m h^3$	0.096364	$0.09631 \pm 0.00029$ (+1.0 $\sigma$ )	$H(0.38)$	83.077	$83.07 \pm 0.28$ (+0.2 $\sigma$ )	$\chi_{CMB}^2$	2764.7	$2781.6 \pm 5.9$ (+278.6 $\sigma$ )
$\sigma_8$	0.8106	$0.8091 \pm 0.0071$ (+0.4 $\sigma$ )	$D_M(0.38)$	1527.7	$1527.8 \pm 7.6$ (−0.1 $\sigma$ )			
$S_8$	0.8248	$0.823 \pm 0.012$ (+0.3 $\sigma$ )	$H(0.51)$	89.790	$89.78 \pm 0.22$ (+0.3 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2771.96$ ;  $\Delta\chi_{eff}^2 = 1586.17$ ;  $\bar{\chi}_{eff}^2 = 2799.17$ ;  $\Delta\bar{\chi}_{eff}^2 = 1591.88$ ;  $R - 1 = 0.01744$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.03 ( $\Delta$  0.01) MGS: 1.22 ( $\Delta$  -0.06) DR12BAO: 4.42 ( $\Delta$  0.21) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.48 ( $\Delta$  0.60) commander\_dx12\_v3\_2\_29: 22.92 ( $\Delta$  0.13) plik\_rd12\_HM\_v22b\_TTTEEE: 2345.31



## 17.9 base\_r\_plikHM\_TTTEEE\_lowl\_lowE\_post\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022506	$0.02248 \pm 0.00014$ (+0.6 $\sigma$ )	$\sigma_8$	0.8085	$0.8072 \pm 0.0076$ (+0.7 $\sigma$ )	$D_M(0.15)$	637.68	$637.5 \pm 4.8$ (+0.6 $\sigma$ )
$\Omega_c h^2$	0.11860	$0.1185 \pm 0.0013$ (+0.8 $\sigma$ )	$S_8$	0.8170	$0.815 \pm 0.015$ (+0.8 $\sigma$ )	$H(0.38)$	83.285	$83.29 \pm 0.36$ (−0.4 $\sigma$ )
$100\theta_{MC}$	1.041113	$1.04110 \pm 0.00030$ (−0.4 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4475	$0.4464 \pm 0.0085$ (+0.8 $\sigma$ )	$D_M(0.38)$	1522.1	$1521.8 \pm 9.7$ (+0.5 $\sigma$ )
$\tau$	0.0570	$0.0562^{+0.0071}_{-0.0081}$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6015	$0.6003 \pm 0.0082$ (+0.8 $\sigma$ )	$H(0.51)$	89.956	$89.96 \pm 0.28$ (−0.3 $\sigma$ )
$\ln(10^{10} A_s)$	3.0466	$3.045 \pm 0.016$ (+0.4 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9803	$0.979 \pm 0.012$ (+0.7 $\sigma$ )	$D_M(0.51)$	1972.5	$1972 \pm 11$ (+0.5 $\sigma$ )
$n_s$	0.96988	$0.9695 \pm 0.0042$ (−0.4 $\sigma$ )	$r_{drag} h$	100.21	$100.3 \pm 1.0$ (−0.7 $\sigma$ )	$H(0.61)$	95.540	$95.53^{+0.21}_{-0.24}$ (−0.2 $\sigma$ )
$r$	0.0005	$< 0.0578$ (+0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4233	$2.420 \pm 0.028$ (+0.7 $\sigma$ )	$D_M(0.61)$	2295.9	$2296 \pm 12$ (+0.5 $\sigma$ )
$y_{cal}$	1.00048	$1.0008 \pm 0.0024$ (+0.0 $\sigma$ )	$z_{re}$	7.90	$7.80 \pm 0.77$ (+0.1 $\sigma$ )	$H(2.33)$	235.79	$235.68 \pm 0.78$ (+0.9 $\sigma$ )
$A_{217}^{CIB}$	46.1	$46 \pm 7$ (−0.2 $\sigma$ )	$10^9 A_s$	2.1044	$2.100 \pm 0.034$ (+0.4 $\sigma$ )	$D_M(2.33)$	5752.1	$5753 \pm 10$ (+0.0 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.59	—	$10^9 A_s e^{-2\tau}$	1.8777	$1.877 \pm 0.011$ (+0.6 $\sigma$ )	$f\sigma_8(0.15)$	0.4525	$0.4514 \pm 0.0080$ (+0.8 $\sigma$ )
$A_{143}^{tSZ}$	7.16	$5.6^{+2.2}_{-1.9}$ (+0.2 $\sigma$ )	$D_{40}$	1221.4	$1238^{+14}_{-18}$ (+0.4 $\sigma$ )	$\sigma_8(0.15)$	0.7476	$0.7464 \pm 0.0067$ (+0.6 $\sigma$ )
$A_{100}^{PS}$	246.8	$257 \pm 27$ (−0.1 $\sigma$ )	$D_{220}$	5736.8	$5738 \pm 38$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.4719	$0.4709 \pm 0.0067$ (+0.8 $\sigma$ )
$A_{143}^{PS}$	48.3	$45 \pm 8$ (−0.3 $\sigma$ )	$D_{810}$	2540.3	$2539 \pm 13$ (+0.3 $\sigma$ )	$\sigma_8(0.38)$	0.6633	$0.6623 \pm 0.0057$ (+0.5 $\sigma$ )
$A_{143 \times 217}^{PS}$	50.5	$42 \pm 9$ (−0.0 $\sigma$ )	$D_{1420}$	819.51	$818.9 \pm 4.6$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.4711	$0.4702 \pm 0.0060$ (+0.7 $\sigma$ )
$A_{217}^{PS}$	120.6	$115.1 \pm 9.9$ (+0.1 $\sigma$ )	$D_{2000}$	231.83	$231.6 \pm 1.5$ (+0.5 $\sigma$ )	$\sigma_8(0.51)$	0.6210	$0.6200 \pm 0.0052$ (+0.5 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.00$ (−0.1 $\sigma$ )	$n_{s,0.002}$	0.96988	$0.9695 \pm 0.0042$ (−0.4 $\sigma$ )	$f\sigma_8(0.61)$	0.4666	$0.4657 \pm 0.0055$ (+0.7 $\sigma$ )
$A_{100}^{dustTT}$	8.87	$8.8 \pm 1.9$ (−0.1 $\sigma$ )	$Y_P$	0.245447	$0.245437 \pm 0.000054$ (+0.6 $\sigma$ )	$\sigma_8(0.61)$	0.59100	$0.5901 \pm 0.0049$ (+0.5 $\sigma$ )
$A_{143}^{dustTT}$	10.99	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246773	$0.246764 \pm 0.000054$ (+0.6 $\sigma$ )	$f\sigma_8(2.33)$	0.29819	$0.2978 \pm 0.0025$ (+0.4 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.97	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5609	$2.565 \pm 0.026$ (−0.6 $\sigma$ )	$\sigma_8(2.33)$	0.30765	$0.3073 \pm 0.0026$ (+0.3 $\sigma$ )
$A_{217}^{dustTT}$	95.3	$93.8 \pm 7.3$ (+0.0 $\sigma$ )	Age/Gyr	13.7721	$13.774 \pm 0.023$ (−0.0 $\sigma$ )	$r_{0.002}$	0.0005	$< 0.0539$ (+0.0 $\sigma$ )
$A_{100}^{dustTE}$	0.1123	$0.115 \pm 0.038$	$z_*$	1089.628	$1089.64 \pm 0.26$ (−0.1 $\sigma$ )	$r_{0.01}$	0.0005	$< 0.0557$ (+0.0 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1344	$0.135 \pm 0.030$	$r_*$	144.691	$144.74 \pm 0.29$ (−1.1 $\sigma$ )	$\ln(10^{10} A_t)$	−4.52	$−0.48^{+1.3}_{-0.55}$ (+0.0 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.479	$0.481 \pm 0.085$	$100\theta_*$	1.041283	$1.04127 \pm 0.00030$ (−0.4 $\sigma$ )	$r_{10}$	0.0002	$< 0.0275$ (+0.0 $\sigma$ )
$A_{143}^{dustTE}$	0.224	$0.224 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	13.8955	$13.900 \pm 0.028$ (−1.0 $\sigma$ )	$10^9 A_t$	0.001	$< 0.122$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.663	$0.662 \pm 0.079$	$z_{drag}$	1060.162	$1060.09 \pm 0.29$ (+0.8 $\sigma$ )	$10^9 A_t e^{-2\tau}$	0.001	$< 0.109$ (+0.0 $\sigma$ )
$A_{217}^{dustTE}$	2.064	$2.06 \pm 0.27$	$r_{drag}$	147.311	$147.37 \pm 0.29$ (−1.2 $\sigma$ )	$\chi_{simall}^2$	396	$1327 \pm 1000$ (+448.8 $\sigma$ )
$c_{100}$	0.99971	$0.99966 \pm 0.00061$ (+0.1 $\sigma$ )	$k_D$	0.140736	$0.14066 \pm 0.00032$ (+1.3 $\sigma$ )	$\chi_{lowl}^2$	22.59	$24.2 \pm 1.6$ (+0.4 $\sigma$ )
$c_{217}$	0.99819	$0.99818 \pm 0.00061$ (−0.2 $\sigma$ )	$100\theta_D$	0.160647	$0.16068 \pm 0.00017$ (−0.9 $\sigma$ )	$\chi_{plik}^2$	2346	$1431 \pm 1000$ (+106.5 $\sigma$ )
$H_0$	68.02	$68.05 \pm 0.58$ (−0.6 $\sigma$ )	$z_{eq}$	3371.9	$3368 \pm 29$ (+0.9 $\sigma$ )	$\chi_{H073p45}^2$	10.68	$10.7 \pm 2.3$ (+0.6 $\sigma$ )
$\Omega_\Lambda$	0.6937	$0.6941 \pm 0.0077$ (−0.7 $\sigma$ )	$k_{eq}$	0.010291	$0.010281 \pm 0.000090$ (+0.9 $\sigma$ )	$\chi_{prior}^2$	1.71	$11.5 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_m$	0.3063	$0.3059 \pm 0.0077$ (+0.7 $\sigma$ )	$100\theta_{eq}$	0.8193	$0.8199 \pm 0.0056$ (−0.8 $\sigma$ )	$\chi_{CMB}^2$	2765.6	$2782.9 \pm 6.3$ (+254.4 $\sigma$ )
$\Omega_m h^2$	0.14175	$0.1416 \pm 0.0012$ (+0.9 $\sigma$ )	$100\theta_{s,eq}$	0.45241	$0.4527 \pm 0.0029$ (−0.9 $\sigma$ )			
$\Omega_m h^3$	0.096423	$0.09635 \pm 0.00029$ (+0.8 $\sigma$ )	$H(0.15)$	73.255	$73.27 \pm 0.49$ (−0.5 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2777.94$ ;  $\Delta\chi_{eff}^2 = 1586.34$ ;  $\bar{\chi}_{eff}^2 = 2805.11$ ;  $\Delta\bar{\chi}_{eff}^2 = 1592.51$ ;  $R - 1 = 0.02628$   
 $\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.48 ( $\Delta$  0.24) commander\_dx12\_v3\_2\_29: 22.59 ( $\Delta$  0.51) plik\_rd12\_HM\_v22b\_TTTEEE: 2346.48 Hubble - H073p45: 10.68 ( $\Delta$  1.57)



17.10 base\_r\_plikHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02236 \pm 0.00015 \quad (+1.1\sigma)$	$\sigma_8$	$0.8119 \pm 0.0070 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.15)$	$643.4 \pm 5.2 \quad (-0.3\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1200 \pm 0.0014 \quad (-0.1\sigma)$	$S_8$	$0.832 \pm 0.016 \quad (-0.2\sigma)$	$H(0.38)$	$82.86 \pm 0.37 \quad (+0.4\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00031 \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4559 \pm 0.0088 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.38)$	$1534 \pm 10 \quad (-0.4\sigma)$
$\tau$	$0.0550^{+0.0049}_{-0.0082} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6084 \pm 0.0081 \quad (-0.1\sigma)$	$H(0.51)$	$89.62 \pm 0.29 \quad (+0.5\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046^{+0.012}_{-0.016} \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.989 \pm 0.011 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1986 \pm 12 \quad (-0.4\sigma)$
$n_{\mathrm{s}}$	$0.9659 \pm 0.0044 \quad (+0.3\sigma)$	$r_{\mathrm{drag}}h$	$99.1 \pm 1.1 \quad (+0.2\sigma)$	$H(0.61)$	$95.27 \pm 0.24 \quad (+0.6\sigma)$
$r$	$< 0.0520 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.445 \pm 0.027 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2311 \pm 13 \quad (-0.4\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0024 \quad (+0.1\sigma)$	$z_{\mathrm{re}}$	$7.73^{+0.54}_{-0.80} \quad (+0.1\sigma)$	$H(2.33)$	$236.55 \pm 0.82 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.102^{+0.024}_{-0.034} \quad (+0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5764 \pm 11 \quad (-0.7\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.883 \pm 0.012 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4602 \pm 0.0082 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.2}_{-1.9} \quad (+0.2\sigma)$	$D_{40}$	$1244^{+14}_{-18} \quad (+0.0\sigma)$	$\sigma_8(0.15)$	$0.7499^{+0.0056}_{-0.0064} \quad (+0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$258 \pm 28 \quad (-0.1\sigma)$	$D_{220}$	$5730 \pm 38 \quad (+0.5\sigma)$	$f\sigma_8(0.38)$	$0.4777 \pm 0.0066 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2540 \pm 13 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6643^{+0.0045}_{-0.0054} \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$817.8 \pm 4.6 \quad (+0.5\sigma)$	$f\sigma_8(0.51)$	$0.4758 \pm 0.0058 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$231.1 \pm 1.5 \quad (+0.7\sigma)$	$\sigma_8(0.51)$	$0.6215^{+0.0040}_{-0.0051} \quad (+0.2\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.15 \quad (-0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.9659 \pm 0.0044 \quad (+0.3\sigma)$	$f\sigma_8(0.61)$	$0.4705 \pm 0.0052 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.245391^{+0.000062}_{-0.000053} \quad (+1.0\sigma)$	$\sigma_8(0.61)$	$0.5913^{+0.0037}_{-0.0048} \quad (+0.2\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246718^{+0.000062}_{-0.000053} \quad (+1.0\sigma)$	$f\sigma_8(2.33)$	$0.2980^{+0.0018}_{-0.0024} \quad (+0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.587 \pm 0.027 \quad (-1.1\sigma)$	$\sigma_8(2.33)$	$0.3070^{+0.0018}_{-0.0026} \quad (+0.3\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.7 \pm 7.4 \quad (+0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.798 \pm 0.024 \quad (-0.7\sigma)$	$r_{0.002}$	$< 0.0475 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.115 \pm 0.038$	$z_*$	$1089.93 \pm 0.27 \quad (-0.8\sigma)$	$r_{0.01}$	$< 0.0497 \quad (+0.1\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.030$	$r_*$	$144.44 \pm 0.30 \quad (-0.2\sigma)$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.58^{+1.4}_{-0.58} \quad (+0.1\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.483 \pm 0.084$	$100\theta_*$	$1.04110 \pm 0.00030 \quad (+0.1\sigma)$	$r_{10}$	$< 0.0244 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.226 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.874 \pm 0.028 \quad (-0.3\sigma)$	$10^9 A_{\mathrm{t}}$	$< 0.109 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.665 \pm 0.079$	$z_{\mathrm{drag}}$	$1059.92 \pm 0.30 \quad (+1.2\sigma)$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	$< 0.0979 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.27$	$r_{\mathrm{drag}}$	$147.10 \pm 0.30 \quad (-0.4\sigma)$	$f_{2000}^{143}$	$29.3 \pm 2.7 \quad (-0.6\sigma)$
$c_{100}$	$0.99965 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.14085 \pm 0.00032 \quad (+0.7\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 1.8 \quad (-0.7\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16077 \pm 0.00017 \quad (-1.2\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.8 \quad (-0.6\sigma)$
$H_0$	$67.35 \pm 0.60 \quad (+0.3\sigma)$	$z_{\mathrm{eq}}$	$3402 \pm 31 \quad (-0.0\sigma)$	$\chi_{\mathrm{small}}^2$	$397.2 \pm 1.9 \quad (+0.1\sigma)$
$\Omega_{\Lambda}$	$0.6846 \pm 0.0084 \quad (+0.2\sigma)$	$k_{\mathrm{eq}}$	$0.010383 \pm 0.000094 \quad (-0.0\sigma)$	$\chi_{\mathrm{lowl}}^2$	$24.8 \pm 1.6 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3154 \pm 0.0084 \quad (-0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8134 \pm 0.0058 \quad (+0.1\sigma)$	$\chi_{\mathrm{plik}}^2$	$2359.4 \pm 5.8 \quad (+295.5\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1430 \pm 0.0013 \quad (-0.0\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4494 \pm 0.0030 \quad (+0.0\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.5 \quad (+1.1\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09631 \pm 0.00029 \quad (+1.0\sigma)$	$H(0.15)$	$72.68 \pm 0.52 \quad (+0.4\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2781.4 \pm 5.9 \quad (+284.4\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 2792.94; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.20; R - 1 = 0.01114$$



17.11 base\_r\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02242 \pm 0.00013 \quad (+1.0\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4512 \pm 0.0067 \quad (+0.3\sigma)$	$D_M(0.51)$	$1979.1 \pm 8.8 \quad (-0.1\sigma)$
$\Omega_c h^2$	$0.1192 \pm 0.0010 \quad (+0.3\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6044 \pm 0.0067 \quad (+0.3\sigma)$	$H(0.61)$	$95.40 \pm 0.19 \quad (+0.5\sigma)$
$100\theta_{MC}$	$1.04101 \pm 0.00029 \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.9842 \pm 0.0097 \quad (+0.2\sigma)$	$D_M(0.61)$	$2303.1 \pm 9.5 \quad (-0.2\sigma)$
$\tau$	$0.0559^{+0.0054}_{-0.0080} \quad (+0.2\sigma)$	$r_{\text{drag}} h$	$99.70 \pm 0.77 \quad (-0.2\sigma)$	$H(2.33)$	$236.09 \pm 0.61 \quad (+0.6\sigma)$
$\ln(10^{10} A_s)$	$3.046^{+0.012}_{-0.016} \quad (+0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.433^{+0.022}_{-0.025} \quad (+0.3\sigma)$	$D_M(2.33)$	$5758.6 \pm 8.8 \quad (-0.6\sigma)$
$n_s$	$0.9678 \pm 0.0037 \quad (+0.1\sigma)$	$z_{\text{re}}$	$7.81^{+0.59}_{-0.79} \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4558 \pm 0.0064 \quad (+0.3\sigma)$
$r$	$< 0.0557 \quad (+0.1\sigma)$	$10^9 A_s$	$2.103^{+0.025}_{-0.034} \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7484^{+0.0053}_{-0.0064} \quad (+0.3\sigma)$
$y_{\text{cal}}$	$1.0008 \pm 0.0024 \quad (+0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.880 \pm 0.011 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4744 \pm 0.0054 \quad (+0.3\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.1\sigma)$	$D_{40}$	$1241^{+13}_{-17} \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6635^{+0.0044}_{-0.0056} \quad (+0.3\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{220}$	$5733 \pm 37 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4731 \pm 0.0049 \quad (+0.3\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.2}_{-1.9} \quad (+0.2\sigma)$	$D_{810}$	$2540 \pm 13 \quad (+0.3\sigma)$	$\sigma_8(0.51)$	$0.6210^{+0.0041}_{-0.0052} \quad (+0.3\sigma)$
$A_{100}^{\text{PS}}$	$258 \pm 28 \quad (-0.1\sigma)$	$D_{1420}$	$818.3 \pm 4.5 \quad (+0.5\sigma)$	$f\sigma_8(0.61)$	$0.4682 \pm 0.0045 \quad (+0.3\sigma)$
$A_{143}^{\text{PS}}$	$45 \pm 8 \quad (-0.3\sigma)$	$D_{2000}$	$231.3 \pm 1.5 \quad (+0.7\sigma)$	$\sigma_8(0.61)$	$0.5909^{+0.0038}_{-0.0049} \quad (+0.3\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$n_{s,0.002}$	$0.9678 \pm 0.0037 \quad (+0.1\sigma)$	$f\sigma_8(2.33)$	$0.2980^{+0.0019}_{-0.0025} \quad (+0.3\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$Y_{\text{P}}$	$0.245412^{+0.000053}_{-0.000047} \quad (+1.0\sigma)$	$\sigma_8(2.33)$	$0.3073^{+0.0019}_{-0.0026} \quad (+0.3\sigma)$
$A^{\text{kSZ}}$	$< 4.10 \quad (-0.2\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246738^{+0.000053}_{-0.000047} \quad (+1.0\sigma)$	$r_{0.002}$	$< 0.0513 \quad (+0.1\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.9 \quad (-0.0\sigma)$	$10^5 \text{D/H}$	$2.577 \pm 0.024 \quad (-1.0\sigma)$	$r_{0.01}$	$< 0.0535 \quad (+0.1\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$\text{Age/Gyr}$	$13.787 \pm 0.020 \quad (-0.7\sigma)$	$\ln(10^{10} A_t)$	$-0.53^{+1.3}_{-0.57} \quad (+0.1\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.4 \quad (+0.1\sigma)$	$z_*$	$1089.79 \pm 0.22 \quad (-0.7\sigma)$	$r_{10}$	$< 0.0263 \quad (+0.1\sigma)$
$A_{217}^{\text{dustTT}}$	$93.8 \pm 7.4 \quad (+0.0\sigma)$	$r_*$	$144.60 \pm 0.24 \quad (-0.8\sigma)$	$10^9 A_t$	$< 0.117 \quad (+0.1\sigma)$
$A_{100}^{\text{dustTE}}$	$0.116 \pm 0.037$	$100\theta_*$	$1.04119 \pm 0.00029 \quad (-0.1\sigma)$	$10^9 A_t e^{-2\tau}$	$< 0.105 \quad (+0.1\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.136 \pm 0.030$	$D_M(z_*)/\text{Gpc}$	$13.888 \pm 0.023 \quad (-0.8\sigma)$	$f_{2000}^{143}$	$29.0 \pm 2.7 \quad (-0.5\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.482 \pm 0.084$	$z_{\text{drag}}$	$1059.99 \pm 0.28 \quad (+1.1\sigma)$	$f_{2000}^{143 \times 217}$	$31.8 \pm 1.8 \quad (-0.7\sigma)$
$A_{143}^{\text{dustTE}}$	$0.226 \pm 0.054$	$r_{\text{drag}}$	$147.25 \pm 0.25 \quad (-0.9\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.7 \quad (-0.5\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.665 \pm 0.079$	$k_{\text{D}}$	$0.14073 \pm 0.00029 \quad (+1.1\sigma)$	$\chi_{\text{small}}^2$	$1323 \pm 1000 \quad (+517.3\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.26$	$100\theta_{\text{D}}$	$0.16073 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{\text{lowl}}^2$	$24.5 \pm 1.5 \quad (+0.1\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$z_{\text{eq}}$	$3384 \pm 23 \quad (+0.5\sigma)$	$\chi_{\text{plik}}^2$	$1434 \pm 1000 \quad (+122.0\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$k_{\text{eq}}$	$0.010329 \pm 0.000070 \quad (+0.5\sigma)$	$\chi_{6\text{DF}}^2$	$0.051 \pm 0.062 \quad (-0.0\sigma)$
$H_0$	$67.70 \pm 0.44 \quad (+0.0\sigma)$	$100\theta_{\text{eq}}$	$0.8168 \pm 0.0043 \quad (-0.4\sigma)$	$\chi_{\text{MGS}}^2$	$1.30 \pm 0.42 \quad (-0.2\sigma)$
$\Omega_{\Lambda}$	$0.6896 \pm 0.0060 \quad (-0.1\sigma)$	$100\theta_{s,\text{eq}}$	$0.4512 \pm 0.0022 \quad (-0.4\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.7 \pm 1.4 \quad (+0.1\sigma)$
$\Omega_{\text{m}}$	$0.3104 \pm 0.0060 \quad (+0.1\sigma)$	$H(0.15)$	$72.98 \pm 0.38 \quad (+0.1\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.5 \quad (+1.1\sigma)$
$\Omega_{\text{m}} h^2$	$0.14226 \pm 0.00095 \quad (+0.5\sigma)$	$D_M(0.15)$	$640.4 \pm 3.8 \quad (-0.1\sigma)$	$\chi_{\text{BAO}}^2$	$6.1 \pm 1.1 \quad (+0.0\sigma)$
$\Omega_{\text{m}} h^3$	$0.09631 \pm 0.00029 \quad (+1.0\sigma)$	$H(0.38)$	$83.07 \pm 0.28 \quad (+0.2\sigma)$	$\chi_{\text{CMB}}^2$	$2781.4 \pm 5.9 \quad (+282.0\sigma)$
$\sigma_8$	$0.8098^{+0.0060}_{-0.0071} \quad (+0.3\sigma)$	$D_M(0.38)$	$1527.6 \pm 7.5 \quad (-0.1\sigma)$		
$S_8$	$0.824 \pm 0.012 \quad (+0.3\sigma)$	$H(0.51)$	$89.78 \pm 0.22 \quad (+0.3\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2798.95; \Delta\bar{\chi}_{\text{eff}}^2 = 1591.95; R - 1 = 0.02065$$



17.12 base\_r\_plikHM\_TTTEEE\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02249 \pm 0.00014 \quad (+0.5\sigma)$	$S_8$	$0.815 \pm 0.015 \quad (+0.8\sigma)$	$D_M(0.38)$	$1521.6 \pm 9.7 \quad (+0.5\sigma)$
$\Omega_c h^2$	$0.1185 \pm 0.0013 \quad (+0.8\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4466 \pm 0.0084 \quad (+0.8\sigma)$	$H(0.51)$	$89.96 \pm 0.28 \quad (-0.4\sigma)$
$100\theta_{MC}$	$1.04110 \pm 0.00030 \quad (-0.4\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6006 \pm 0.0081 \quad (+0.7\sigma)$	$D_M(0.51)$	$1972 \pm 11 \quad (+0.5\sigma)$
$\tau$	$0.0569^{+0.0058}_{-0.0082} \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.979 \pm 0.011 \quad (+0.7\sigma)$	$H(0.61)$	$95.54^{+0.21}_{-0.24} \quad (-0.2\sigma)$
$\ln(10^{10} A_s)$	$3.046^{+0.013}_{-0.016} \quad (+0.3\sigma)$	$r_{\text{drag}} h$	$100.3 \pm 1.0 \quad (-0.7\sigma)$	$D_M(0.61)$	$2295 \pm 12 \quad (+0.5\sigma)$
$n_s$	$0.9696 \pm 0.0042 \quad (-0.4\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.422 \pm 0.027 \quad (+0.7\sigma)$	$H(2.33)$	$235.67 \pm 0.78 \quad (+1.0\sigma)$
$r$	$< 0.0577 \quad (+0.0\sigma)$	$z_{\text{re}}$	$7.87^{+0.61}_{-0.82} \quad (+0.1\sigma)$	$D_M(2.33)$	$5753 \pm 10 \quad (+0.0\sigma)$
$y_{\text{cal}}$	$1.0008 \pm 0.0024 \quad (+0.0\sigma)$	$10^9 A_s$	$2.103^{+0.028}_{-0.035} \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4516 \pm 0.0079 \quad (+0.8\sigma)$
$A_{217}^{\text{CIB}}$	$46 \pm 6 \quad (-0.2\sigma)$	$10^9 A_s e^{-2\tau}$	$1.877 \pm 0.011 \quad (+0.6\sigma)$	$\sigma_8(0.15)$	$0.7469 \pm 0.0064 \quad (+0.6\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{40}$	$1238^{+14}_{-18} \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4712 \pm 0.0066 \quad (+0.8\sigma)$
$A_{143}^{\text{tSZ}}$	$5.6^{+2.2}_{-1.9} \quad (+0.2\sigma)$	$D_{220}$	$5738 \pm 38 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6627^{+0.0050}_{-0.0056} \quad (+0.5\sigma)$
$A_{100}^{\text{PS}}$	$257 \pm 27 \quad (-0.1\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4705 \pm 0.0059 \quad (+0.7\sigma)$
$A_{143}^{\text{PS}}$	$45 \pm 8 \quad (-0.3\sigma)$	$D_{1420}$	$818.9 \pm 4.6 \quad (+0.3\sigma)$	$\sigma_8(0.51)$	$0.6205^{+0.0045}_{-0.0052} \quad (+0.5\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.0\sigma)$	$D_{2000}$	$231.6 \pm 1.5 \quad (+0.5\sigma)$	$f\sigma_8(0.61)$	$0.4660 \pm 0.0053 \quad (+0.7\sigma)$
$A_{217}^{\text{PS}}$	$115.1 \pm 9.9 \quad (+0.1\sigma)$	$n_{s,0.002}$	$0.9696 \pm 0.0042 \quad (-0.4\sigma)$	$\sigma_8(0.61)$	$0.5905^{+0.0042}_{-0.0050} \quad (+0.5\sigma)$
$A^{\text{kSZ}}$	$< 3.99 \quad (-0.1\sigma)$	$Y_P$	$0.245438 \pm 0.000053 \quad (+0.5\sigma)$	$f\sigma_8(2.33)$	$0.2980^{+0.0020}_{-0.0026} \quad (+0.4\sigma)$
$A_{100}^{\text{dustTT}}$	$8.8 \pm 1.9 \quad (-0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.246765 \pm 0.000054 \quad (+0.5\sigma)$	$\sigma_8(2.33)$	$0.3075^{+0.0021}_{-0.0027} \quad (+0.2\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.7 \quad (+0.1\sigma)$	$10^5 D/H$	$2.565 \pm 0.026 \quad (-0.6\sigma)$	$r_{0.002}$	$< 0.0538 \quad (+0.0\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$\text{Age}/\text{Gyr}$	$13.774 \pm 0.023 \quad (-0.0\sigma)$	$r_{0.01}$	$< 0.0557 \quad (+0.0\sigma)$
$A_{217}^{\text{dustTT}}$	$93.8 \pm 7.3 \quad (+0.0\sigma)$	$z_*$	$1089.64 \pm 0.25 \quad (-0.1\sigma)$	$\ln(10^{10} A_t)$	$-0.48^{+1.4}_{-0.56} \quad (+0.0\sigma)$
$A_{100}^{\text{dustTE}}$	$0.115 \pm 0.037$	$r_*$	$144.75 \pm 0.29 \quad (-1.1\sigma)$	$r_{10}$	$< 0.0275 \quad (+0.0\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$100\theta_*$	$1.04127 \pm 0.00030 \quad (-0.4\sigma)$	$10^9 A_t$	$< 0.122 \quad (+0.0\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.482 \pm 0.084$	$D_M(z_*)/\text{Gpc}$	$13.901 \pm 0.028 \quad (-1.1\sigma)$	$10^9 A_t e^{-2\tau}$	$< 0.109 \quad (+0.0\sigma)$
$A_{143}^{\text{dustTE}}$	$0.224 \pm 0.053$	$z_{\text{drag}}$	$1060.09 \pm 0.29 \quad (+0.8\sigma)$	$f_{2000}^{143}$	$28.7 \pm 2.6 \quad (-0.5\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.662 \pm 0.079$	$r_{\text{drag}}$	$147.37 \pm 0.29 \quad (-1.2\sigma)$	$f_{2000}^{143 \times 217}$	$31.6 \pm 1.8 \quad (-0.6\sigma)$
$A_{217}^{\text{dustTE}}$	$2.06 \pm 0.27$	$k_D$	$0.14065 \pm 0.00032 \quad (+1.3\sigma)$	$f_{2000}^{217}$	$106.5 \pm 1.7 \quad (-0.4\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_D$	$0.16068 \pm 0.00017 \quad (-0.9\sigma)$	$\chi_{\text{small}}^2$	$1329 \pm 1000 \quad (+442.6\sigma)$
$c_{217}$	$0.99818 \pm 0.00061 \quad (-0.2\sigma)$	$z_{\text{eq}}$	$3368 \pm 29 \quad (+0.9\sigma)$	$\chi_{\text{lowl}}^2$	$24.2 \pm 1.6 \quad (+0.4\sigma)$
$H_0$	$68.06 \pm 0.57 \quad (-0.6\sigma)$	$k_{\text{eq}}$	$0.010279 \pm 0.000089 \quad (+0.9\sigma)$	$\chi_{\text{plik}}^2$	$1430 \pm 1000 \quad (+106.5\sigma)$
$\Omega_\Lambda$	$0.6942 \pm 0.0077 \quad (-0.7\sigma)$	$100\theta_{\text{eq}}$	$0.8200 \pm 0.0056 \quad (-0.8\sigma)$	$\chi_{\text{H073p45}}^2$	$10.7 \pm 2.2 \quad (+0.6\sigma)$
$\Omega_m$	$0.3058 \pm 0.0077 \quad (+0.7\sigma)$	$100\theta_{s,\text{eq}}$	$0.4528 \pm 0.0029 \quad (-0.9\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.5 \quad (+1.1\sigma)$
$\Omega_m h^2$	$0.1416 \pm 0.0012 \quad (+0.9\sigma)$	$H(0.15)$	$73.28 \pm 0.49 \quad (-0.5\sigma)$	$\chi_{\text{CMB}}^2$	$2782.7 \pm 6.2 \quad (+256.3\sigma)$
$\Omega_m h^3$	$0.09635 \pm 0.00029 \quad (+0.8\sigma)$	$D_M(0.15)$	$637.4 \pm 4.8 \quad (+0.6\sigma)$		
$\sigma_8$	$0.8077 \pm 0.0073 \quad (+0.7\sigma)$	$H(0.38)$	$83.30 \pm 0.36 \quad (-0.5\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2804.92; \Delta \bar{\chi}_{\text{eff}}^2 = 1592.56; R - 1 = 0.02655$$



### 17.13 base\_r\_CamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022148	$0.02214 \pm 0.00022$	$\sigma_8/h^{0.5}$	0.9893	$0.989 \pm 0.016$	$H(0.51)$	89.435	$89.43 \pm 0.46$
$\Omega_c h^2$	0.12010	$0.1201 \pm 0.0021$	$r_{\text{drag}} h$	98.89	$98.9 \pm 1.7$	$D_M(0.51)$	1991.4	$1992 \pm 19$
$100\theta_{\text{MC}}$	1.040896	$1.04087 \pm 0.00048$	$\langle d^2 \rangle^{1/2}$	2.4429	$2.440 \pm 0.039$	$H(0.61)$	95.094	$95.09 \pm 0.37$
$\tau$	0.0527	$0.0520 \pm 0.0080$	$z_{\text{re}}$	7.56	$7.47 \pm 0.82$	$D_M(0.61)$	2316.5	$2317 \pm 20$
$\ln(10^{10} A_s)$	3.0397	$3.038 \pm 0.016$	$10^9 A_s$	2.0899	$2.086 \pm 0.034$	$H(2.33)$	236.40	$236.4 \pm 1.3$
$n_s$	0.9648	$0.9652 \pm 0.0059$	$10^9 A_s e^{-2\tau}$	1.8810	$1.880 \pm 0.014$	$D_M(2.33)$	5773.7	$5774 \pm 17$
$r$	0.0000	$< 0.0497$	$D_{40}$	1227.6	$1240^{+17}_{-19}$	$f\sigma_8(0.15)$	0.4606	$0.460 \pm 0.012$
$y_{\text{cal}}$	1.00069	$1.0005 \pm 0.0025$	$D_{220}$	5706.3	$5700 \pm 42$	$\sigma_8(0.15)$	0.7484	$0.7476 \pm 0.0076$
$A_{100}^{\text{PS}}$	239.9	$242 \pm 25$	$D_{810}$	2535.5	$2534 \pm 14$	$f\sigma_8(0.38)$	0.4776	$0.4773 \pm 0.0098$
$A_{143}^{\text{PS}}$	44.7	$41 \pm 8$	$D_{1420}$	815.0	$814.5 \pm 5.2$	$\sigma_8(0.38)$	0.6628	$0.6621 \pm 0.0060$
$A_{217}^{\text{PS}}$	101.0	$102 \pm 10$	$D_{2000}$	229.80	$229.7 \pm 1.8$	$f\sigma_8(0.51)$	0.4756	$0.4751 \pm 0.0084$
$A_{217}^{\text{CIB}}$	43.6	$41 \pm 7$	$n_{s,0.002}$	0.9648	$0.9652 \pm 0.0059$	$\sigma_8(0.51)$	0.6200	$0.6193 \pm 0.0055$
$A_{143}^{\text{tSZ}}$	5.20	$3.8^{+1.8}_{-2.6}$	$Y_{\text{P}}$	0.245304	$0.24530^{+0.00010}_{-0.000088}$	$f\sigma_8(0.61)$	0.4702	$0.4697 \pm 0.0074$
$r_{143 \times 217}^{\text{PS}}$	0.633	$0.65 \pm 0.13$	$Y_{\text{P}}^{\text{BBN}}$	0.246630	$0.24662^{+0.00010}_{-0.000088}$	$\sigma_8(0.61)$	0.5898	$0.5891 \pm 0.0051$
$r_{143 \times 217}^{\text{CIB}}$	0.787	$0.58^{+0.41}_{-0.14}$	$10^5 D/H$	2.6280	$2.629 \pm 0.042$	$f\sigma_8(2.33)$	0.29717	$0.2968 \pm 0.0025$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.41	—	Age/Gyr	13.8211	$13.822 \pm 0.037$	$\sigma_8(2.33)$	0.30613	$0.3058 \pm 0.0026$
$A^{\text{kSZ}}$	2.2	—	$z_*$	1090.211	$1090.22 \pm 0.42$	$r_{0.002}$	0.0000	$< 0.0453$
$A_{100}^{\text{dust}}$	1.011	$1.01 \pm 0.20$	$r_*$	144.575	$144.57 \pm 0.49$	$r_{0.01}$	0.0000	$< 0.0475$
$A_{143}^{\text{dust}}$	0.987	$0.98 \pm 0.18$	$100\theta_*$	1.041103	$1.04108 \pm 0.00047$	$\ln(10^{10} A_t)$	-7.90	$-0.67^{+1.4}_{-0.60}$
$A_{217}^{\text{dust}}$	0.969	$0.97 \pm 0.10$	$D_M(z_*)/\text{Gpc}$	13.8867	$13.887 \pm 0.045$	$r_{10}$	0.0000	$< 0.0233$
$A_{143 \times 217}^{\text{dust}}$	0.998	$1.03 \pm 0.16$	$z_{\text{drag}}$	1059.437	$1059.41 \pm 0.46$	$10^9 A_t$	0.000	$< 0.104$
$c_{100}$	0.99756	$0.9974 \pm 0.0011$	$r_{\text{drag}}$	147.312	$147.31 \pm 0.49$	$10^9 A_t e^{-2\tau}$	0.0000	$< 0.0934$
$c_{217}$	1.00143	$1.0012 \pm 0.0016$	$k_{\text{D}}$	0.14046	$0.14045 \pm 0.00053$	$f_{2000}^{143}$	31.13	$30.6 \pm 3.1$
$H_0$	67.13	$67.11 \pm 0.95$	$100\theta_{\text{D}}$	0.161063	$0.16107 \pm 0.00027$	$f_{2000}^{217}$	107.56	$107.5 \pm 2.0$
$\Omega_{\Lambda}$	0.6829	$0.682^{+0.014}_{-0.013}$	$z_{\text{eq}}$	3399.3	$3400 \pm 49$	$f_{2000}^{143 \times 217}$	32.96	$32.8 \pm 2.2$
$\Omega_{\text{m}}$	0.3171	$0.318 \pm 0.013$	$k_{\text{eq}}$	0.010375	$0.01038 \pm 0.00015$	$\chi_{\text{small}}^2$	395.88	$397.1 \pm 1.6$
$\Omega_{\text{m}} h^2$	0.14289	$0.1429 \pm 0.0020$	$100\theta_{\text{eq}}$	0.8132	$0.8132 \pm 0.0092$	$\chi_{\text{lowl}}^2$	23.22	$24.7 \pm 1.8$
$\Omega_{\text{m}} h^3$	0.095920	$0.09590 \pm 0.00046$	$100\theta_{s,\text{eq}}$	0.44948	$0.4495 \pm 0.0047$	$\chi_{\text{CamSpec}}^2$	7050.5	$7063.7 \pm 5.5$
$\sigma_8$	0.8105	$0.8097 \pm 0.0090$	$H(0.15)$	72.46	$72.45 \pm 0.81$	$\chi_{\text{prior}}^2$	2.23	$7.6 \pm 3.5$
$S_8$	0.8333	$0.833 \pm 0.025$	$D_M(0.15)$	645.4	$645.6 \pm 8.2$	$\chi_{\text{CMB}}^2$	7469.6	$7485.5 \pm 5.7$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4564	$0.456 \pm 0.013$	$H(0.38)$	82.67	$82.66 \pm 0.58$			
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6082	$0.608 \pm 0.012$	$D_M(0.38)$	1538.0	$1538 \pm 16$			

Best-fit  $\chi_{\text{eff}}^2 = 7471.85$ ;  $\bar{\chi}_{\text{eff}}^2 = 7493.09$ ;  $R - 1 = 0.00732$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.88 commander\_dx12.v3.2.29: 23.22 CamSpec like\_10.7HM: 7050.52



# 17.14 base\_r\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02222 \pm 0.00020$	$r_{\mathrm{drag}}h$	$99.92 \pm 0.94$	$H(0.61)$	$95.30 \pm 0.25$
$\Omega_{\mathrm{c}}h^2$	$0.1188 \pm 0.0012$	$\langle d^2 \rangle^{1/2}$	$2.419 \pm 0.028$	$D_{\mathrm{M}}(0.61)$	$2304 \pm 12$
$100\theta_{\mathrm{MC}}$	$1.04105 \pm 0.00042$	$z_{\mathrm{re}}$	$7.57 \pm 0.81$	$H(2.33)$	$235.63 \pm 0.79$
$\tau$	$0.0533 \pm 0.0079$	$10^9 A_{\mathrm{s}}$	$2.085 \pm 0.034$	$D_{\mathrm{M}}(2.33)$	$5766 \pm 12$
$\ln(10^{10} A_{\mathrm{s}})$	$3.037 \pm 0.016$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.874 \pm 0.012$	$f\sigma_8(0.15)$	$0.4529 \pm 0.0077$
$n_{\mathrm{s}}$	$0.9682 \pm 0.0044$	$D_{40}$	$1235^{+15}_{-19}$	$\sigma_8(0.15)$	$0.7450 \pm 0.0068$
$r$	$< 0.0532$	$D_{220}$	$5704 \pm 41$	$f\sigma_8(0.38)$	$0.4716 \pm 0.0065$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{810}$	$2533 \pm 14$	$\sigma_8(0.38)$	$0.6606 \pm 0.0058$
$A_{100}^{\mathrm{PS}}$	$241 \pm 25$	$D_{1420}$	$815.2 \pm 5.2$	$f\sigma_8(0.51)$	$0.4705 \pm 0.0058$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8$	$D_{2000}$	$229.9 \pm 1.8$	$\sigma_8(0.51)$	$0.6184 \pm 0.0054$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$n_{\mathrm{s},0.002}$	$0.9682 \pm 0.0044$	$f\sigma_8(0.61)$	$0.4657 \pm 0.0054$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$Y_{\mathrm{P}}$	$0.245331 \pm 0.000083$	$\sigma_8(0.61)$	$0.5884 \pm 0.0051$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.5}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246657 \pm 0.000084$	$f\sigma_8(2.33)$	$0.2968 \pm 0.0026$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$10^5 \mathrm{D}/\mathrm{H}$	$2.615 \pm 0.037$	$\sigma_8(2.33)$	$0.3061 \pm 0.0026$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.58^{+0.39}_{-0.15}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.804 \pm 0.028$	$r_{0.002}$	$< 0.0491$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$z_*$	$1090.01 \pm 0.30$	$r_{0.01}$	$< 0.0512$
$A^{\mathrm{kSZ}}$	$4.9 \pm 2.7$	$r_*$	$144.86 \pm 0.32$	$\ln(10^{10} A_{\mathrm{t}})$	$-0.60^{+1.4}_{-0.59}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$100\theta_*$	$1.04125 \pm 0.00042$	$r_{10}$	$< 0.0251$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.18$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.912 \pm 0.031$	$10^9 A_{\mathrm{t}}$	$< 0.111$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$z_{\mathrm{drag}}$	$1059.50 \pm 0.45$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	$< 0.0996$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$r_{\mathrm{drag}}$	$147.58 \pm 0.35$	$f_{2000}^{143}$	$30.4 \pm 3.0$
$c_{100}$	$0.9975 \pm 0.0011$	$k_{\mathrm{D}}$	$0.14023 \pm 0.00045$	$f_{2000}^{217}$	$107.3 \pm 2.0$
$c_{217}$	$1.0012 \pm 0.0016$	$100\theta_{\mathrm{D}}$	$0.16103 \pm 0.00026$	$f_{2000}^{143 \times 217}$	$32.6 \pm 2.2$
$H_0$	$67.70 \pm 0.55$	$z_{\mathrm{eq}}$	$3370 \pm 29$	$\chi_{\mathrm{simall}}^2$	$397.2 \pm 1.7$
$\Omega_{\Lambda}$	$0.6908 \pm 0.0073$	$k_{\mathrm{eq}}$	$0.010285 \pm 0.000087$	$\chi_{\mathrm{lowl}}^2$	$24.1 \pm 1.6$
$\Omega_{\mathrm{m}}$	$0.3092 \pm 0.0073$	$100\theta_{\mathrm{eq}}$	$0.8189 \pm 0.0053$	$\chi_{\mathrm{CamSpec}}^2$	$7064.2 \pm 5.4$
$\Omega_{\mathrm{m}}h^2$	$0.1417 \pm 0.0012$	$100\theta_{\mathrm{s,eq}}$	$0.4524 \pm 0.0027$	$\chi_{6\mathrm{DF}}^2$	$0.051 \pm 0.069$
$\Omega_{\mathrm{m}}h^3$	$0.09590 \pm 0.00046$	$H(0.15)$	$72.95 \pm 0.47$	$\chi_{\mathrm{MGS}}^2$	$1.44 \pm 0.54$
$\sigma_8$	$0.8060 \pm 0.0077$	$D_{\mathrm{M}}(0.15)$	$640.6 \pm 4.7$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.5$
$S_8$	$0.818 \pm 0.015$	$H(0.38)$	$83.01 \pm 0.35$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.5$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4481 \pm 0.0081$	$D_{\mathrm{M}}(0.38)$	$1528.3 \pm 9.4$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.2$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.6010 \pm 0.0080$	$H(0.51)$	$89.70 \pm 0.29$	$\chi_{\mathrm{CMB}}^2$	$7485.4 \pm 5.6$
$\sigma_8/h^{0.5}$	$0.980 \pm 0.011$	$D_{\mathrm{M}}(0.51)$	$1980 \pm 11$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7499.09$ ;  $R - 1 = 0.01122$



17.15 base\_r\_CamSpecHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02215 \pm 0.00022$	$\sigma_8/h^{0.5}$	$0.989 \pm 0.016$	$H(0.51)$	$89.45 \pm 0.46$
$\Omega_{\mathrm{c}}h^2$	$0.1200 \pm 0.0021$	$r_{\mathrm{drag}}h$	$98.9 \pm 1.7$	$D_{\mathrm{M}}(0.51)$	$1991 \pm 19$
$100\theta_{\mathrm{MC}}$	$1.04088 \pm 0.00048$	$\langle d^2 \rangle^{1/2}$	$2.442 \pm 0.038$	$H(0.61)$	$95.11^{+0.34}_{-0.38}$
$\tau$	$0.0537^{+0.0045}_{-0.0083}$	$z_{\mathrm{re}}$	$7.65^{+0.52}_{-0.82}$	$D_{\mathrm{M}}(0.61)$	$2316 \pm 20$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.012}_{-0.016}$	$10^9 A_{\mathrm{s}}$	$2.092^{+0.024}_{-0.033}$	$H(2.33)$	$236.4 \pm 1.3$
$n_{\mathrm{s}}$	$0.9654 \pm 0.0059$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879 \pm 0.014$	$D_{\mathrm{M}}(2.33)$	$5773 \pm 17$
$r$	$< 0.0495$	$D_{40}$	$1240^{+17}_{-19}$	$f\sigma_8(0.15)$	$0.461 \pm 0.012$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{220}$	$5700 \pm 42$	$\sigma_8(0.15)$	$0.7486 \pm 0.0071$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25$	$D_{810}$	$2533 \pm 14$	$f\sigma_8(0.38)$	$0.4776 \pm 0.0097$
$A_{143}^{\mathrm{PS}}$	$41 \pm 8$	$D_{1420}$	$814.6 \pm 5.2$	$\sigma_8(0.38)$	$0.6630^{+0.0051}_{-0.0057}$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{2000}$	$229.7 \pm 1.8$	$f\sigma_8(0.51)$	$0.4756 \pm 0.0083$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$n_{\mathrm{s},0.002}$	$0.9654 \pm 0.0059$	$\sigma_8(0.51)$	$0.6202^{+0.0045}_{-0.0052}$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$Y_{\mathrm{P}}$	$0.24530^{+0.00010}_{-0.000088}$	$f\sigma_8(0.61)$	$0.4702 \pm 0.0073$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24663^{+0.00010}_{-0.000088}$	$\sigma_8(0.61)$	$0.5900^{+0.0041}_{-0.0049}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.58^{+0.40}_{-0.14}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.628 \pm 0.042$	$f\sigma_8(2.33)$	$0.2973^{+0.0019}_{-0.0024}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	Age/Gyr	$13.821 \pm 0.037$	$\sigma_8(2.33)$	$0.3063^{+0.0019}_{-0.0026}$
$A^{\mathrm{kSZ}}$	$4.9^{+2.8}_{-3.5}$	$z_*$	$1090.21 \pm 0.41$	$r_{0.002}$	$< 0.0451$
$A_{100}^{\mathrm{dust}}$	$1.00 \pm 0.19$	$r_*$	$144.59 \pm 0.49$	$r_{0.01}$	$< 0.0473$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.17$	$100\theta_*$	$1.04109 \pm 0.00047$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.67^{+1.4}_{-0.61}$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.888 \pm 0.045$	$r_{10}$	$< 0.0232$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$z_{\mathrm{drag}}$	$1059.43 \pm 0.46$	$10^9 A_{\mathrm{t}}$	$< 0.104$
$c_{100}$	$0.9974 \pm 0.0011$	$r_{\mathrm{drag}}$	$147.33 \pm 0.49$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.0930$
$c_{217}$	$1.0012 \pm 0.0016$	$k_{\mathrm{D}}$	$0.14045 \pm 0.00053$	$f_{2000}^{143}$	$30.5 \pm 3.0$
$H_0$	$67.15 \pm 0.94$	$100\theta_{\mathrm{D}}$	$0.16106 \pm 0.00026$	$f_{2000}^{217}$	$107.4 \pm 2.0$
$\Omega_{\Lambda}$	$0.683 \pm 0.013$	$z_{\mathrm{eq}}$	$3398 \pm 49$	$f_{2000}^{143 \times 217}$	$32.8 \pm 2.2$
$\Omega_{\mathrm{m}}$	$0.317 \pm 0.013$	$k_{\mathrm{eq}}$	$0.01037 \pm 0.00015$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.6$
$\Omega_{\mathrm{m}}h^2$	$0.1428 \pm 0.0020$	$100\theta_{\mathrm{eq}}$	$0.8135 \pm 0.0091$	$\chi_{\mathrm{lowl}}^2$	$24.6 \pm 1.8$
$\Omega_{\mathrm{m}}h^3$	$0.09590 \pm 0.00046$	$100\theta_{\mathrm{s,eq}}$	$0.4497 \pm 0.0047$	$\chi_{\mathrm{CamSpec}}^2$	$7063.6 \pm 5.5$
$\sigma_8$	$0.8108 \pm 0.0086$	$H(0.15)$	$72.49 \pm 0.80$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.4$
$S_8$	$0.833 \pm 0.025$	$D_{\mathrm{M}}(0.15)$	$645.3 \pm 8.1$	$\chi_{\mathrm{CMB}}^2$	$7485.2 \pm 5.6$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.456 \pm 0.013$	$H(0.38)$	$82.69 \pm 0.58$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.608 \pm 0.012$	$D_{\mathrm{M}}(0.38)$	$1538 \pm 16$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7492.76; R - 1 = 0.00713$$



17.16 base\_r\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02222 \pm 0.00020$	$r_{\mathrm{drag}}h$	$99.93 \pm 0.94$	$H(0.61)$	$95.30 \pm 0.25$
$\Omega_{\mathrm{c}}h^2$	$0.1188 \pm 0.0012$	$\langle d^2 \rangle^{1/2}$	$2.422 \pm 0.026$	$D_{\mathrm{M}}(0.61)$	$2304 \pm 12$
$100\theta_{\mathrm{MC}}$	$1.04105 \pm 0.00042$	$z_{\mathrm{re}}$	$7.72^{+0.56}_{-0.82}$	$H(2.33)$	$235.61 \pm 0.79$
$\tau$	$0.0547^{+0.0050}_{-0.0082}$	$10^9 A_{\mathrm{s}}$	$2.090^{+0.025}_{-0.034}$	$D_{\mathrm{M}}(2.33)$	$5765 \pm 12$
$\ln(10^{10} A_{\mathrm{s}})$	$3.040^{+0.012}_{-0.016}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.873 \pm 0.012$	$f\sigma_8(0.15)$	$0.4533 \pm 0.0075$
$n_{\mathrm{s}}$	$0.9683 \pm 0.0043$	$D_{40}$	$1234^{+15}_{-19}$	$\sigma_8(0.15)$	$0.7459^{+0.0057}_{-0.0066}$
$r$	$< 0.0529$	$D_{220}$	$5704 \pm 41$	$f\sigma_8(0.38)$	$0.4722 \pm 0.0063$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{810}$	$2533 \pm 14$	$\sigma_8(0.38)$	$0.6615^{+0.0047}_{-0.0057}$
$A_{100}^{\mathrm{PS}}$	$241 \pm 25$	$D_{1420}$	$815.2 \pm 5.2$	$f\sigma_8(0.51)$	$0.4710 \pm 0.0056$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8$	$D_{2000}$	$230.0 \pm 1.8$	$\sigma_8(0.51)$	$0.6192^{+0.0042}_{-0.0053}$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$n_{\mathrm{s},0.002}$	$0.9683 \pm 0.0043$	$f\sigma_8(0.61)$	$0.4663 \pm 0.0051$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$Y_{\mathrm{P}}$	$0.245332 \pm 0.000083$	$\sigma_8(0.61)$	$0.5892^{+0.0040}_{-0.0050}$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.5}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246658 \pm 0.000083$	$f\sigma_8(2.33)$	$0.2972^{+0.0019}_{-0.0025}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$10^5 \mathrm{D}/\mathrm{H}$	$2.614 \pm 0.037$	$\sigma_8(2.33)$	$0.3065^{+0.0020}_{-0.0026}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.57^{+0.39}_{-0.16}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.803 \pm 0.028$	$r_{0.002}$	$< 0.0488$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$z_*$	$1090.00 \pm 0.30$	$r_{0.01}$	$< 0.0508$
$A^{\mathrm{kSZ}}$	$4.9 \pm 2.7$	$r_*$	$144.86 \pm 0.32$	$\ln(10^{10} A_{\mathrm{t}})$	$-0.61^{+1.4}_{-0.59}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$100\theta_*$	$1.04125 \pm 0.00042$	$r_{10}$	$< 0.0249$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.18$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.912 \pm 0.031$	$10^9 A_{\mathrm{t}}$	$< 0.111$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$z_{\mathrm{drag}}$	$1059.50 \pm 0.45$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	$< 0.0992$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$r_{\mathrm{drag}}$	$147.58 \pm 0.35$	$f_{2000}^{143}$	$30.3 \pm 3.0$
$c_{100}$	$0.9975 \pm 0.0011$	$k_{\mathrm{D}}$	$0.14023 \pm 0.00045$	$f_{2000}^{217}$	$107.2 \pm 2.0$
$c_{217}$	$1.0012 \pm 0.0016$	$100\theta_{\mathrm{D}}$	$0.16103 \pm 0.00026$	$f_{2000}^{143 \times 217}$	$32.6 \pm 2.2$
$H_0$	$67.71 \pm 0.54$	$z_{\mathrm{eq}}$	$3369 \pm 29$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.7$
$\Omega_{\Lambda}$	$0.6910 \pm 0.0073$	$k_{\mathrm{eq}}$	$0.010283 \pm 0.000087$	$\chi_{\mathrm{lowl}}^2$	$24.1 \pm 1.6$
$\Omega_{\mathrm{m}}$	$0.3090 \pm 0.0073$	$100\theta_{\mathrm{eq}}$	$0.8190 \pm 0.0053$	$\chi_{\mathrm{CamSpec}}^2$	$7064.0 \pm 5.4$
$\Omega_{\mathrm{m}}h^2$	$0.1416 \pm 0.0012$	$100\theta_{\mathrm{s,eq}}$	$0.4524 \pm 0.0027$	$\chi_{6\mathrm{DF}}^2$	$0.050 \pm 0.067$
$\Omega_{\mathrm{m}}h^3$	$0.09590 \pm 0.00046$	$H(0.15)$	$72.96 \pm 0.47$	$\chi_{\mathrm{MGS}}^2$	$1.44 \pm 0.54$
$\sigma_8$	$0.8070^{+0.0066}_{-0.0075}$	$D_{\mathrm{M}}(0.15)$	$640.5 \pm 4.6$	$\chi_{\mathrm{DR12BAO}}^2$	$4.5 \pm 1.5$
$S_8$	$0.819 \pm 0.015$	$H(0.38)$	$83.02 \pm 0.35$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.4$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4486 \pm 0.0080$	$D_{\mathrm{M}}(0.38)$	$1528.1 \pm 9.4$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.2$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.6017 \pm 0.0077$	$H(0.51)$	$89.71 \pm 0.29$	$\chi_{\mathrm{CMB}}^2$	$7485.2 \pm 5.6$
$\sigma_8/h^{0.5}$	$0.981 \pm 0.011$	$D_{\mathrm{M}}(0.51)$	$1980 \pm 11$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7498.81$ ;  $R - 1 = 0.01239$



# 17.17 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022286	$0.02230 \pm 0.00016$ (+0.7 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4524	$0.4509 \pm 0.0092$ (−0.4 $\sigma$ )	$H(0.38)$	82.863	$82.93 \pm 0.40$ (+0.5 $\sigma$ )
$\Omega_c h^2$	0.11958	$0.1193 \pm 0.0014$ (−0.4 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6046	$0.6032 \pm 0.0086$ (−0.4 $\sigma$ )	$D_M(0.38)$	1532.8	$1531 \pm 11$ (−0.4 $\sigma$ )
$100\theta_{MC}$	1.040880	$1.04090 \pm 0.00032$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9839	$0.982 \pm 0.012$ (−0.4 $\sigma$ )	$H(0.51)$	89.600	$89.65 \pm 0.31$ (+0.5 $\sigma$ )
$\tau$	0.0524	$0.0524 \pm 0.0078$ (+0.0 $\sigma$ )	$r_{drag}h$	99.30	$99.5 \pm 1.1$ (+0.4 $\sigma$ )	$D_M(0.51)$	1985.3	$1983 \pm 13$ (−0.5 $\sigma$ )
$\ln(10^{10} A_s)$	3.0375	$3.037 \pm 0.016$ (−0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4306	$2.426 \pm 0.029$ (−0.4 $\sigma$ )	$H(0.61)$	95.234	$95.28 \pm 0.25$ (+0.5 $\sigma$ )
$n_s$	0.96661	$0.9673 \pm 0.0047$ (+0.4 $\sigma$ )	$z_{re}$	7.49	$7.47 \pm 0.80$ (−0.0 $\sigma$ )	$D_M(0.61)$	2309.9	$2308 \pm 14$ (−0.5 $\sigma$ )
$r$	0.0103	$< 0.0751$ (+0.5 $\sigma$ )	$10^9 A_s$	2.0854	$2.084 \pm 0.033$ (−0.0 $\sigma$ )	$H(2.33)$	236.20	$236.06 \pm 0.85$ (−0.3 $\sigma$ )
$y_{cal}$	1.00042	$1.0005 \pm 0.0025$ (+0.0 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8780	$1.877 \pm 0.012$ (−0.2 $\sigma$ )	$D_M(2.33)$	5766.9	$5765 \pm 11$ (−0.5 $\sigma$ )
$A_{100}^{PS}$	234.2	$239 \pm 25$ (−0.1 $\sigma$ )	$D_{40}$	1227.1	$1243^{+16}_{-20}$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4568	$0.4554 \pm 0.0086$ (−0.4 $\sigma$ )
$A_{143}^{PS}$	39.9	$39 \pm 8$ (−0.2 $\sigma$ )	$D_{220}$	5712.4	$5713 \pm 39$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7463	$0.7456 \pm 0.0067$ (−0.3 $\sigma$ )
$A_{217}^{PS}$	102.1	$103 \pm 10$ (+0.1 $\sigma$ )	$D_{810}$	2534.9	$2535 \pm 14$ (+0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.4746	$0.4735 \pm 0.0070$ (−0.4 $\sigma$ )
$A_{217}^{CIB}$	44.4	$39 \pm 7$ (−0.2 $\sigma$ )	$D_{1420}$	815.98	$816.1 \pm 4.9$ (+0.3 $\sigma$ )	$\sigma_8(0.38)$	0.6613	$0.6609 \pm 0.0056$ (−0.2 $\sigma$ )
$A_{143}^{tSZ}$	6.41	$3.9^{+1.9}_{-2.5}$ (+0.1 $\sigma$ )	$D_{2000}$	230.33	$230.4 \pm 1.7$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.4730	$0.4720 \pm 0.0062$ (−0.4 $\sigma$ )
$r_{143 \times 217}^{PS}$	0.599	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$n_{s,0.002}$	0.96661	$0.9673 \pm 0.0047$ (+0.4 $\sigma$ )	$\sigma_8(0.51)$	0.6188	$0.6184 \pm 0.0052$ (−0.2 $\sigma$ )
$r_{143 \times 217}^{CIB}$	0.770	$0.55^{+0.39}_{-0.19}$ (−0.1 $\sigma$ )	$Y_P$	0.245362	$0.245365 \pm 0.000066$ (+0.7 $\sigma$ )	$f\sigma_8(0.61)$	0.4679	$0.4670 \pm 0.0056$ (−0.4 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.11	—	$Y_P^{BBN}$	0.246688	$0.246691 \pm 0.000066$ (+0.7 $\sigma$ )	$\sigma_8(0.61)$	0.58874	$0.5884 \pm 0.0049$ (−0.1 $\sigma$ )
$A^{kSZ}$	0.14	$4.6^{+1.6}_{-4.5}$ (−0.1 $\sigma$ )	$10^5 D/H$	2.6014	$2.599 \pm 0.031$ (−0.7 $\sigma$ )	$f\sigma_8(2.33)$	0.29677	$0.2967 \pm 0.0024$ (−0.1 $\sigma$ )
$A_{100}^{dust}$	1.014	$1.00 \pm 0.19$ (−0.0 $\sigma$ )	Age/Gyr	13.8056	$13.802 \pm 0.026$ (−0.5 $\sigma$ )	$\sigma_8(2.33)$	0.30586	$0.3058 \pm 0.0026$ (+0.0 $\sigma$ )
$A_{143}^{dust}$	0.973	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	$z_*$	1089.991	$1089.95 \pm 0.29$ (−0.6 $\sigma$ )	$r_{0.002}$	0.0093	$< 0.0696$ (+0.5 $\sigma$ )
$A_{217}^{dust}$	0.971	$0.97 \pm 0.10$ (+0.1 $\sigma$ )	$r_*$	144.603	$144.66 \pm 0.32$ (+0.2 $\sigma$ )	$r_{0.01}$	0.0098	$< 0.0723$ (+0.5 $\sigma$ )
$A_{143 \times 217}^{dust}$	1.008	$1.03 \pm 0.16$ (+0.0 $\sigma$ )	$100\theta_*$	1.041064	$1.04109 \pm 0.00032$ (+0.0 $\sigma$ )	$\ln(10^{10} A_t)$	−1.54	$−0.18^{+1.2}_{-0.46}$ (+0.4 $\sigma$ )
$c_{100}$	0.99764	$0.9975 \pm 0.0010$ (+0.0 $\sigma$ )	$D_M(z_*)/\text{Gpc}$	13.8899	$13.895 \pm 0.030$ (+0.2 $\sigma$ )	$r_{10}$	0.0048	$< 0.0358$ (+0.5 $\sigma$ )
$c_{217}$	1.00129	$1.0011 \pm 0.0016$ (−0.1 $\sigma$ )	$z_{drag}$	1059.704	$1059.72 \pm 0.34$ (+0.7 $\sigma$ )	$10^9 A_t$	0.022	$< 0.156$ (+0.5 $\sigma$ )
$c_{TE}$	0.99664	$0.9968 \pm 0.0049$	$r_{drag}$	147.296	$147.34 \pm 0.32$ (+0.1 $\sigma$ )	$10^9 A_t e^{-2\tau}$	0.019	$< 0.141$ (+0.5 $\sigma$ )
$c_{EE}$	0.99215	$0.9923 \pm 0.0049$	$k_D$	0.140589	$0.14055 \pm 0.00035$ (+0.2 $\sigma$ )	$f_{2000}^{143}$	29.94	$29.5 \pm 2.9$ (−0.4 $\sigma$ )
$H_0$	67.41	$67.52 \pm 0.63$ (+0.4 $\sigma$ )	$100\theta_D$	0.160879	$0.16088 \pm 0.00020$ (−0.7 $\sigma$ )	$f_{2000}^{217}$	106.83	$106.7 \pm 1.9$ (−0.4 $\sigma$ )
$\Omega_\Lambda$	0.6864	$0.6878 \pm 0.0087$ (+0.4 $\sigma$ )	$z_{eq}$	3390.3	$3385 \pm 32$ (−0.3 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.08	$32.0 \pm 2.0$ (−0.4 $\sigma$ )
$\Omega_m$	0.3136	$0.3122 \pm 0.0087$ (−0.4 $\sigma$ )	$k_{eq}$	0.010347	$0.010331 \pm 0.000098$ (−0.3 $\sigma$ )	$\chi_{simall}^2$	395.84	$397.1 \pm 1.6$ (+0.0 $\sigma$ )
$\Omega_m h^2$	0.14252	$0.1423 \pm 0.0013$ (−0.3 $\sigma$ )	$100\theta_{eq}$	0.8152	$0.8162 \pm 0.0061$ (+0.3 $\sigma$ )	$\chi_{lowl}^2$	23.19	$24.9 \pm 1.9$ (+0.2 $\sigma$ )
$\Omega_m h^3$	0.096076	$0.09607 \pm 0.00032$ (+0.4 $\sigma$ )	$100\theta_{s,eq}$	0.45042	$0.4510 \pm 0.0031$ (+0.3 $\sigma$ )	$\chi_{CamSpec}^2$	11499.5	$11513.6 \pm 5.8$ (+810.4 $\sigma$ )
$\sigma_8$	0.8079	$0.8070 \pm 0.0076$ (−0.3 $\sigma$ )	$H(0.15)$	72.72	$72.81 \pm 0.54$ (+0.4 $\sigma$ )	$\chi_{prior}^2$	2.16	$7.8 \pm 3.4$ (+0.1 $\sigma$ )
$S_8$	0.8260	$0.823 \pm 0.017$ (−0.4 $\sigma$ )	$D_M(0.15)$	642.9	$642.0 \pm 5.4$ (−0.4 $\sigma$ )	$\chi_{CMB}^2$	11918.6	$11935.7 \pm 5.9$ (+777.4 $\sigma$ )

Best-fit  $\chi_{eff}^2 = 11920.72$ ;  $\Delta\chi_{eff}^2 = 4448.87$ ;  $\bar{\chi}_{eff}^2 = 11943.49$ ;  $\Delta\bar{\chi}_{eff}^2 = 4450.40$ ;  $R - 1 = 0.01020$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.84 ( $\Delta$  -0.04) commander\_dx12\_v3.2.29: 23.20 ( $\Delta$  -0.02) CamSpec like\_10.7HM\_1400\_unified: 11499.52



17.18 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02234 \pm 0.00015 \quad (+0.6\sigma)$	$\sigma_8/h^{0.5}$	$0.978 \pm 0.010 \quad (-0.1\sigma)$	$H(0.61)$	$95.37 \pm 0.20 \quad (+0.3\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1188 \pm 0.0010 \quad (-0.0\sigma)$	$r_{\mathrm{drag}}h$	$99.94 \pm 0.81 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2302 \pm 10 \quad (-0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04097 \pm 0.00030 \quad (-0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.418 \pm 0.025 \quad (-0.1\sigma)$	$H(2.33)$	$235.72 \pm 0.64 \quad (+0.1\sigma)$
$\tau$	$0.0530 \pm 0.0078 \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.52 \pm 0.79 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5761.4 \pm 9.4 \quad (-0.3\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.037 \pm 0.016 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.085 \pm 0.033 \quad (-0.0\sigma)$	$f\sigma_8(0.15)$	$0.4522 \pm 0.0067 \quad (-0.1\sigma)$
$n_{\mathrm{s}}$	$0.9686 \pm 0.0041 \quad (+0.1\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.875 \pm 0.011 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7446 \pm 0.0065 \quad (-0.1\sigma)$
$r$	$< 0.0786 \quad (+0.5\sigma)$	$D_{40}$	$1241^{+15}_{-20} \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4711 \pm 0.0058 \quad (-0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025 \quad (+0.0\sigma)$	$D_{220}$	$5716 \pm 39 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6603 \pm 0.0056 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$238 \pm 25 \quad (-0.1\sigma)$	$D_{810}$	$2534 \pm 14 \quad (+0.1\sigma)$	$f\sigma_8(0.51)$	$0.4700 \pm 0.0053 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$D_{1420}$	$816.5 \pm 4.8 \quad (+0.3\sigma)$	$\sigma_8(0.51)$	$0.6181 \pm 0.0052 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$D_{2000}$	$230.5 \pm 1.6 \quad (+0.3\sigma)$	$f\sigma_8(0.61)$	$0.4653 \pm 0.0049 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7 \quad (-0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.9686 \pm 0.0041 \quad (+0.1\sigma)$	$\sigma_8(0.61)$	$0.5882 \pm 0.0049 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+1.9}_{-2.4} \quad (+0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245380 \pm 0.000059 \quad (+0.6\sigma)$	$f\sigma_8(2.33)$	$0.2967 \pm 0.0025 \quad (-0.0\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246707 \pm 0.000060 \quad (+0.6\sigma)$	$\sigma_8(2.33)$	$0.3060 \pm 0.0025 \quad (-0.0\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.40}_{-0.18} \quad (-0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.592 \pm 0.028 \quad (-0.6\sigma)$	$r_{0.002}$	$< 0.0735 \quad (+0.5\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	Age/Gyr	$13.794 \pm 0.021 \quad (-0.3\sigma)$	$r_{0.01}$	$< 0.0760 \quad (+0.5\sigma)$
$A^{\mathrm{kSZ}}$	$< 6.05 \quad (-0.1\sigma)$	$z_*$	$1089.86 \pm 0.24 \quad (-0.5\sigma)$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.12^{+1.2}_{-0.45} \quad (+0.4\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$r_*$	$144.77 \pm 0.25 \quad (-0.3\sigma)$	$r_{10}$	$< 0.0377 \quad (+0.5\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.17 \quad (-0.1\sigma)$	$100\theta_*$	$1.04116 \pm 0.00030 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{t}}$	$< 0.163 \quad (+0.5\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.905 \pm 0.024 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.147 \quad (+0.5\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (+0.0\sigma)$	$z_{\mathrm{drag}}$	$1059.77 \pm 0.32 \quad (+0.6\sigma)$	$f_{2000}^{143}$	$29.3 \pm 2.9 \quad (-0.4\sigma)$
$c_{100}$	$0.9975 \pm 0.0010 \quad (+0.1\sigma)$	$r_{\mathrm{drag}}$	$147.45 \pm 0.26 \quad (-0.4\sigma)$	$f_{2000}^{217}$	$106.6 \pm 1.9 \quad (-0.3\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$k_{\mathrm{D}}$	$0.14046 \pm 0.00032 \quad (+0.5\sigma)$	$f_{2000}^{143 \times 217}$	$31.8 \pm 2.0 \quad (-0.4\sigma)$
$c_{TE}$	$0.9968 \pm 0.0049$	$100\theta_{\mathrm{D}}$	$0.16085 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{\mathrm{simall}}^2$	$397.2 \pm 1.6 \quad (+0.0\sigma)$
$c_{EE}$	$0.9925 \pm 0.0049$	$z_{\mathrm{eq}}$	$3372 \pm 24 \quad (+0.1\sigma)$	$\chi_{\mathrm{lowl}}^2$	$24.7 \pm 1.8 \quad (+0.4\sigma)$
$H_0$	$67.78 \pm 0.47 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010292 \pm 0.000073 \quad (+0.1\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11513.5 \pm 5.7 \quad (+817.7\sigma)$
$\Omega_{\Lambda}$	$0.6913 \pm 0.0063 \quad (+0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8187 \pm 0.0045 \quad (-0.0\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.040 \pm 0.052 \quad (-0.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.3087 \pm 0.0063 \quad (-0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4522 \pm 0.0023 \quad (-0.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.44 \pm 0.46 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1418 \pm 0.0010 \quad (+0.1\sigma)$	$H(0.15)$	$73.03 \pm 0.40 \quad (+0.2\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.4 \pm 1.2 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09608 \pm 0.00031 \quad (+0.4\sigma)$	$D_{\mathrm{M}}(0.15)$	$639.9 \pm 4.0 \quad (-0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.0\sigma)$
$\sigma_8$	$0.8054 \pm 0.0072 \quad (-0.1\sigma)$	$H(0.38)$	$83.09 \pm 0.30 \quad (+0.2\sigma)$	$\chi_{\mathrm{BAO}}^2$	$5.89 \pm 0.90 \quad (-0.1\sigma)$
$S_8$	$0.817 \pm 0.013 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1526.7 \pm 8.0 \quad (-0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11935.4 \pm 5.8 \quad (+790.4\sigma)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4475 \pm 0.0071 \quad (-0.1\sigma)$	$H(0.51)$	$89.77 \pm 0.24 \quad (+0.2\sigma)$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6003 \pm 0.0071 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1978.2 \pm 9.4 \quad (-0.2\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11949.07; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4449.98; R - 1 = 0.01061$$



17.19 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02230 \pm 0.00016 \quad (+0.7\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4513 \pm 0.0091 \quad (-0.4\sigma)$	$H(0.38)$	$82.94 \pm 0.40 \quad (+0.4\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1193 \pm 0.0014 \quad (-0.4\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6039 \pm 0.0084 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.38)$	$1531 \pm 11 \quad (-0.4\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00032 \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.983 \pm 0.012 \quad (-0.4\sigma)$	$H(0.51)$	$89.66 \pm 0.31 \quad (+0.5\sigma)$
$\tau$	$0.0540^{+0.0047}_{-0.0080} \quad (+0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.5 \pm 1.1 \quad (+0.4\sigma)$	$D_{\mathrm{M}}(0.51)$	$1983 \pm 13 \quad (-0.4\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.040^{+0.011}_{-0.016} \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.429 \pm 0.028 \quad (-0.4\sigma)$	$H(0.61)$	$95.28 \pm 0.25 \quad (+0.5\sigma)$
$n_{\mathrm{s}}$	$0.9675 \pm 0.0047 \quad (+0.4\sigma)$	$z_{\mathrm{re}}$	$7.64^{+0.52}_{-0.80} \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2307 \pm 14 \quad (-0.4\sigma)$
$r$	$< 0.0751 \quad (+0.5\sigma)$	$10^9A_{\mathrm{s}}$	$2.091^{+0.023}_{-0.033} \quad (-0.0\sigma)$	$H(2.33)$	$236.03 \pm 0.85 \quad (-0.3\sigma)$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025 \quad (+0.0\sigma)$	$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.012 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5765 \pm 11 \quad (-0.5\sigma)$
$A_{100}^{\mathrm{PS}}$	$238 \pm 25 \quad (-0.1\sigma)$	$D_{40}$	$1243^{+16}_{-20} \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4558 \pm 0.0085 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$D_{220}$	$5713 \pm 39 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7467^{+0.0056}_{-0.0064} \quad (-0.3\sigma)$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2534 \pm 14 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4740 \pm 0.0069 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7 \quad (-0.2\sigma)$	$D_{1420}$	$816.1 \pm 4.9 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6619^{+0.0044}_{-0.0054} \quad (-0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5} \quad (+0.1\sigma)$	$D_{2000}$	$230.4 \pm 1.7 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4726 \pm 0.0060 \quad (-0.4\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9675 \pm 0.0047 \quad (+0.4\sigma)$	$\sigma_8(0.51)$	$0.6194^{+0.0040}_{-0.0050} \quad (-0.2\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.39}_{-0.19} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245367 \pm 0.000066 \quad (+0.7\sigma)$	$f\sigma_8(0.61)$	$0.4676 \pm 0.0054 \quad (-0.4\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246693 \pm 0.000066 \quad (+0.7\sigma)$	$\sigma_8(0.61)$	$0.5894^{+0.0037}_{-0.0048} \quad (-0.2\sigma)$
$A^{\mathrm{kSZ}}$	$4.6^{+1.7}_{-4.4} \quad (-0.1\sigma)$	$10^5\mathrm{D}/\mathrm{H}$	$2.598 \pm 0.030 \quad (-0.7\sigma)$	$f\sigma_8(2.33)$	$0.2971^{+0.0018}_{-0.0024} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19 \quad (+0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.801 \pm 0.026 \quad (-0.5\sigma)$	$\sigma_8(2.33)$	$0.3063^{+0.0018}_{-0.0025} \quad (+0.0\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$z_*$	$1089.94 \pm 0.29 \quad (-0.6\sigma)$	$r_{0.002}$	$< 0.0697 \quad (+0.6\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$r_*$	$144.66 \pm 0.32 \quad (+0.2\sigma)$	$r_{0.01}$	$< 0.0723 \quad (+0.6\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (+0.0\sigma)$	$100\theta_*$	$1.04110 \pm 0.00032 \quad (+0.0\sigma)$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.17^{+1.2}_{-0.46} \quad (+0.4\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.895 \pm 0.030 \quad (+0.2\sigma)$	$r_{10}$	$< 0.0358 \quad (+0.6\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$z_{\mathrm{drag}}$	$1059.73 \pm 0.33 \quad (+0.7\sigma)$	$10^9A_{\mathrm{t}}$	$< 0.157 \quad (+0.5\sigma)$
$c_{TE}$	$0.9966 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.35 \pm 0.32 \quad (+0.1\sigma)$	$10^9A_{\mathrm{t}}e^{-2\tau}$	$< 0.141 \quad (+0.5\sigma)$
$c_{EE}$	$0.9922 \pm 0.0049$	$k_{\mathrm{D}}$	$0.14054 \pm 0.00035 \quad (+0.2\sigma)$	$f_{2000}^{143}$	$29.4 \pm 2.9 \quad (-0.4\sigma)$
$H_0$	$67.55 \pm 0.63 \quad (+0.4\sigma)$	$100\theta_{\mathrm{D}}$	$0.16087 \pm 0.00020 \quad (-0.7\sigma)$	$f_{2000}^{217}$	$106.7 \pm 1.9 \quad (-0.4\sigma)$
$\Omega_{\Lambda}$	$0.6881 \pm 0.0087 \quad (+0.4\sigma)$	$z_{\mathrm{eq}}$	$3384 \pm 32 \quad (-0.3\sigma)$	$f_{2000}^{143 \times 217}$	$31.9 \pm 2.0 \quad (-0.4\sigma)$
$\Omega_{\mathrm{m}}$	$0.3119 \pm 0.0087 \quad (-0.4\sigma)$	$k_{\mathrm{eq}}$	$0.010328 \pm 0.000098 \quad (-0.3\sigma)$	$\chi_{\mathrm{small}}^2$	$397.0 \pm 1.6 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1422 \pm 0.0013 \quad (-0.3\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8165 \pm 0.0061 \quad (+0.3\sigma)$	$\chi_{\mathrm{lowl}}^2$	$24.9 \pm 1.9 \quad (+0.2\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09607 \pm 0.00032 \quad (+0.4\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4511 \pm 0.0031 \quad (+0.3\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11513.5 \pm 5.8 \quad (+813.6\sigma)$
$\sigma_8$	$0.8081 \pm 0.0070 \quad (-0.3\sigma)$	$H(0.15)$	$72.83 \pm 0.54 \quad (+0.4\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$S_8$	$0.824 \pm 0.017 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.15)$	$641.9 \pm 5.4 \quad (-0.4\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11935.4 \pm 5.9 \quad (+790.6\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 11943.24; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.48; R - 1 = 0.00947$$



# 17.20 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02234 \pm 0.00015 \quad (+0.6\sigma)$	$\sigma_8/h^{0.5}$	$0.9796 \pm 0.0099 \quad (-0.1\sigma)$	$H(0.61)$	$95.37 \pm 0.20 \quad (+0.3\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1187 \pm 0.0010 \quad (-0.0\sigma)$	$r_{\mathrm{drag}}h$	$99.96 \pm 0.81 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2302 \pm 10 \quad (-0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04098 \pm 0.00030 \quad (-0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.420 \pm 0.024 \quad (-0.1\sigma)$	$H(2.33)$	$235.71 \pm 0.65 \quad (+0.1\sigma)$
$\tau$	$0.0545^{+0.0049}_{-0.0079} \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.68^{+0.53}_{-0.80} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5761.2 \pm 9.5 \quad (-0.3\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.040^{+0.012}_{-0.016} \quad (+0.0\sigma)$	$10^9A_{\mathrm{s}}$	$2.091^{+0.025}_{-0.033} \quad (+0.0\sigma)$	$f\sigma_8(0.15)$	$0.4528 \pm 0.0066 \quad (-0.1\sigma)$
$n_{\mathrm{s}}$	$0.9688 \pm 0.0041 \quad (+0.1\sigma)$	$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.874 \pm 0.011 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7456^{+0.0052}_{-0.0063} \quad (-0.1\sigma)$
$r$	$< 0.0783 \quad (+0.5\sigma)$	$D_{40}$	$1241^{+15}_{-20} \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4717 \pm 0.0056 \quad (-0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025 \quad (+0.0\sigma)$	$D_{220}$	$5715 \pm 39 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6612^{+0.0043}_{-0.0054} \quad (-0.0\sigma)$
$A_{100}^{\mathrm{PS}}$	$238 \pm 25 \quad (-0.1\sigma)$	$D_{810}$	$2534 \pm 14 \quad (+0.1\sigma)$	$f\sigma_8(0.51)$	$0.4706 \pm 0.0050 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$D_{1420}$	$816.5 \pm 4.9 \quad (+0.3\sigma)$	$\sigma_8(0.51)$	$0.6190^{+0.0040}_{-0.0050} \quad (-0.0\sigma)$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$D_{2000}$	$230.6 \pm 1.6 \quad (+0.3\sigma)$	$f\sigma_8(0.61)$	$0.4659 \pm 0.0046 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7 \quad (-0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.9688 \pm 0.0041 \quad (+0.1\sigma)$	$\sigma_8(0.61)$	$0.5890^{+0.0037}_{-0.0048} \quad (-0.0\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$4.0^{+1.9}_{-2.5} \quad (+0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245381 \pm 0.000059 \quad (+0.6\sigma)$	$f\sigma_8(2.33)$	$0.2971^{+0.0019}_{-0.0024} \quad (-0.0\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246708 \pm 0.000060 \quad (+0.6\sigma)$	$\sigma_8(2.33)$	$0.3065^{+0.0019}_{-0.0025} \quad (-0.0\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.39}_{-0.18} \quad (-0.1\sigma)$	$10^5\mathrm{D}/\mathrm{H}$	$2.592 \pm 0.028 \quad (-0.6\sigma)$	$r_{0.002}$	$< 0.0733 \quad (+0.5\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	Age/Gyr	$13.794 \pm 0.021 \quad (-0.3\sigma)$	$r_{0.01}$	$< 0.0758 \quad (+0.5\sigma)$
$A^{\mathrm{kSZ}}$	$< 6.05 \quad (-0.1\sigma)$	$z_*$	$1089.85 \pm 0.24 \quad (-0.5\sigma)$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.11^{+1.2}_{-0.46} \quad (+0.4\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$r_*$	$144.78 \pm 0.25 \quad (-0.3\sigma)$	$r_{10}$	$< 0.0375 \quad (+0.5\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.17 \quad (-0.1\sigma)$	$100\theta_*$	$1.04116 \pm 0.00030 \quad (-0.2\sigma)$	$10^9A_{\mathrm{t}}$	$< 0.163 \quad (+0.5\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.905 \pm 0.024 \quad (-0.2\sigma)$	$10^9A_{\mathrm{t}}e^{-2\tau}$	$< 0.147 \quad (+0.5\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (+0.0\sigma)$	$z_{\mathrm{drag}}$	$1059.78 \pm 0.33 \quad (+0.6\sigma)$	$f_{2000}^{143}$	$29.2 \pm 2.9 \quad (-0.4\sigma)$
$c_{100}$	$0.9975 \pm 0.0010 \quad (+0.1\sigma)$	$r_{\mathrm{drag}}$	$147.46 \pm 0.26 \quad (-0.4\sigma)$	$f_{2000}^{217}$	$106.6 \pm 1.9 \quad (-0.3\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$k_{\mathrm{D}}$	$0.14046 \pm 0.00032 \quad (+0.5\sigma)$	$f_{2000}^{143 \times 217}$	$31.8 \pm 2.0 \quad (-0.4\sigma)$
$c_{TE}$	$0.9966 \pm 0.0049$	$100\theta_{\mathrm{D}}$	$0.16085 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.6 \quad (+0.0\sigma)$
$c_{EE}$	$0.9925 \pm 0.0049$	$z_{\mathrm{eq}}$	$3372 \pm 24 \quad (+0.1\sigma)$	$\chi_{\mathrm{lowl}}^2$	$24.7 \pm 1.8 \quad (+0.4\sigma)$
$H_0$	$67.79 \pm 0.47 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010290 \pm 0.000073 \quad (+0.1\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11513.4 \pm 5.7 \quad (+820.5\sigma)$
$\Omega_{\Lambda}$	$0.6915 \pm 0.0063 \quad (+0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8188 \pm 0.0045 \quad (-0.0\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.039 \pm 0.051 \quad (-0.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.3085 \pm 0.0063 \quad (-0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4523 \pm 0.0023 \quad (-0.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.45 \pm 0.47 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1417 \pm 0.0010 \quad (+0.1\sigma)$	$H(0.15)$	$73.04 \pm 0.40 \quad (+0.2\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.4 \pm 1.2 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09608 \pm 0.00031 \quad (+0.4\sigma)$	$D_{\mathrm{M}}(0.15)$	$639.8 \pm 4.0 \quad (-0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$\sigma_8$	$0.8066^{+0.0060}_{-0.0070} \quad (-0.1\sigma)$	$H(0.38)$	$83.09 \pm 0.30 \quad (+0.2\sigma)$	$\chi_{\mathrm{BAO}}^2$	$5.88 \pm 0.89 \quad (-0.1\sigma)$
$S_8$	$0.818 \pm 0.013 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1526.5 \pm 8.0 \quad (-0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11935.2 \pm 5.8 \quad (+799.8\sigma)$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4480 \pm 0.0070 \quad (-0.1\sigma)$	$H(0.51)$	$89.78 \pm 0.24 \quad (+0.2\sigma)$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6011 \pm 0.0069 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1977.9 \pm 9.4 \quad (-0.2\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11948.86; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.05; R - 1 = 0.01058$$



## 17.21 base\_r\_plikHM\_TE\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022491	$0.02248 \pm 0.00025$	$z_{\text{re}}$	7.13	$7.07^{+0.94}_{-0.72}$	$D_{\text{M}}(0.38)$	1516.0	$1515 \pm 15$
$\Omega_c h^2$	0.11778	$0.1177 \pm 0.0020$	$10^9 A_s$	2.0459	$2.043 \pm 0.041$	$H(0.51)$	90.121	$90.14^{+0.43}_{-0.48}$
$100\theta_{\text{MC}}$	1.04137	$1.04140 \pm 0.00051$	$10^9 A_s e^{-2\tau}$	1.8530	$1.851 \pm 0.018$	$D_{\text{M}}(0.51)$	1965.4	$1965 \pm 18$
$\tau$	0.0495	$0.0492^{+0.0087}_{-0.0075}$	$D_{40}$	1214.8	$1253^{+33}_{-46}$	$H(0.61)$	95.664	$95.68^{+0.35}_{-0.40}$
$\ln(10^{10} A_s)$	3.0184	$3.017^{+0.021}_{-0.018}$	$D_{220}$	5699	$5686 \pm 57$	$D_{\text{M}}(0.61)$	2288.4	$2288 \pm 19$
$n_s$	0.9663	$0.968 \pm 0.011$	$D_{810}$	2508.0	$2507 \pm 25$	$H(2.33)$	235.26	$235.2 \pm 1.2$
$r$	0.000	$< 0.149$	$D_{1420}$	807.3	$808 \pm 12$	$D_{\text{M}}(2.33)$	5747.3	$5747 \pm 17$
$A_{100}^{\text{dustTE}}$	0.1131	$0.116 \pm 0.038$	$D_{2000}$	227.67	$227.8 \pm 4.2$	$f\sigma_8(0.15)$	0.4409	$0.440 \pm 0.012$
$A_{100 \times 143}^{\text{dustTE}}$	0.1359	$0.138 \pm 0.030$	$n_{\text{s},0.002}$	0.9663	$0.968 \pm 0.011$	$\sigma_8(0.15)$	0.7344	$0.7339 \pm 0.0097$
$A_{100 \times 217}^{\text{dustTE}}$	0.478	$0.477 \pm 0.085$	$Y_{\text{P}}$	0.245441	$0.24543 \pm 0.00010$	$f\sigma_8(0.38)$	0.4611	$0.461 \pm 0.010$
$A_{143}^{\text{dustTE}}$	0.221	$0.225 \pm 0.054$	$Y_{\text{P}}^{\text{BBN}}$	0.246768	$0.24676 \pm 0.00010$	$\sigma_8(0.38)$	0.6521	$0.6517^{+0.0083}_{-0.0076}$
$A_{143 \times 217}^{\text{dustTE}}$	0.659	$0.657 \pm 0.080$	$10^5 D/H$	2.5635	$2.567 \pm 0.046$	$f\sigma_8(0.51)$	0.4609	$0.4604 \pm 0.0090$
$A_{217}^{\text{dustTE}}$	2.040	$2.03 \pm 0.27$	Age/Gyr	13.7622	$13.762 \pm 0.038$	$\sigma_8(0.51)$	0.6107	$0.6104^{+0.0076}_{-0.0069}$
$c_{100}$	1.00017	$1.00017 \pm 0.00070$	$z_*$	1089.574	$1089.59 \pm 0.42$	$f\sigma_8(0.61)$	0.4569	$0.4564 \pm 0.0082$
$c_{217}$	0.99799	$0.99800 \pm 0.00066$	$r_*$	144.913	$144.95 \pm 0.48$	$\sigma_8(0.61)$	0.5814	$0.5811 \pm 0.0070$
$y_{\text{cal}}$	1.00008	$1.0000 \pm 0.0025$	$100\theta_*$	1.041550	$1.04157 \pm 0.00050$	$f\sigma_8(2.33)$	0.29354	$0.2934 \pm 0.0035$
$H_0$	68.39	$68.43 \pm 0.91$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.9132	$13.917 \pm 0.045$	$\sigma_8(2.33)$	0.30308	$0.3030 \pm 0.0036$
$\Omega_{\Lambda}$	0.6987	$0.699 \pm 0.012$	$z_{\text{drag}}$	1060.05	$1060.01 \pm 0.54$	$r_{0.002}$	0.000	$< 0.142$
$\Omega_{\text{m}}$	0.3013	$0.301 \pm 0.012$	$r_{\text{drag}}$	147.546	$147.59 \pm 0.49$	$r_{0.01}$	0.000	$< 0.146$
$\Omega_{\text{m}} h^2$	0.14092	$0.1408 \pm 0.0019$	$k_{\text{D}}$	0.14048	$0.14042 \pm 0.00057$	$\ln(10^{10} A_{\text{t}})$	-11.51	$0.47^{+1.3}_{-0.51}$
$\Omega_{\text{m}} h^3$	0.09638	$0.09634 \pm 0.00052$	$100\theta_{\text{D}}$	0.160734	$0.16076 \pm 0.00031$	$r_{10}$	0.0000	$< 0.0735$
$\sigma_8$	0.7937	$0.793 \pm 0.011$	$z_{\text{eq}}$	3352.1	$3349 \pm 46$	$10^9 A_{\text{t}}$	0.000	$< 0.304$
$S_8$	0.7954	$0.794 \pm 0.024$	$k_{\text{eq}}$	0.010231	$0.01022 \pm 0.00014$	$10^9 A_{\text{t}} e^{-2\tau}$	0.000	$< 0.275$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4356	$0.435 \pm 0.013$	$100\theta_{\text{eq}}$	0.8230	$0.8236 \pm 0.0088$	$\chi_{\text{simall}}^2$	395.70	$397.4 \pm 1.7$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.5880	$0.587 \pm 0.012$	$100\theta_{\text{s,eq}}$	0.45439	$0.4547 \pm 0.0045$	$\chi_{\text{plikTE}}^2$	852.87	$860.3 \pm 3.8$
$\sigma_8/h^{0.5}$	0.9597	$0.959 \pm 0.017$	$H(0.15)$	73.57	$73.60 \pm 0.78$	$\chi_{\text{prior}}^2$	0.43	$7.4 \pm 3.7$
$r_{\text{drag}} h$	100.91	$101.0 \pm 1.6$	$D_{\text{M}}(0.15)$	634.6	$634.4 \pm 7.6$	$\chi_{\text{CMB}}^2$	1248.57	$1257.8 \pm 4.2$
$\langle d^2 \rangle^{1/2}$	2.3877	$2.382 \pm 0.042$	$H(0.38)$	83.50	$83.53 \pm 0.58$			

Best-fit  $\chi_{\text{eff}}^2 = 1249.01$ ;  $\bar{\chi}_{\text{eff}}^2 = 1265.18$ ;  $R - 1 = 0.00716$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.70 plik\_rd12\_HM\_v22\_TE: 852.88



## 17.22 base\_r\_plikHM\_TE\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022448	$0.02244 \pm 0.00023$	$10^9 A_s$	2.0457	$2.043 \pm 0.041$	$D_M(0.51)$	1969.5	$1969 \pm 11$
$\Omega_c h^2$	0.11823	$0.1181 \pm 0.0012$	$10^9 A_s e^{-2\tau}$	1.8552	$1.853 \pm 0.017$	$H(0.61)$	95.584	$95.59 \pm 0.26$
$100\theta_{MC}$	1.041342	$1.04135 \pm 0.00047$	$D_{40}$	1217.9	$1255^{+31}_{-44}$	$D_M(0.61)$	2292.7	$2292 \pm 12$
$\tau$	0.0489	$0.0489^{+0.0084}_{-0.0075}$	$D_{220}$	5698	$5685 \pm 56$	$H(2.33)$	235.51	$235.45 \pm 0.79$
$\ln(10^{10} A_s)$	3.0183	$3.017 \pm 0.020$	$D_{810}$	2508.4	$2507 \pm 25$	$D_M(2.33)$	5750.7	$5750 \pm 13$
$n_s$	0.9651	$0.967 \pm 0.010$	$D_{1420}$	806.9	$807 \pm 12$	$f\sigma_8(0.15)$	0.4433	$0.4429 \pm 0.0082$
$r$	0.001	$< 0.147$	$D_{2000}$	227.49	$227.6 \pm 4.2$	$\sigma_8(0.15)$	0.7353	$0.7351 \pm 0.0090$
$y_{cal}$	1.00010	$0.99998 \pm 0.0025$	$n_{s,0.002}$	0.9651	$0.967 \pm 0.010$	$f\sigma_8(0.38)$	0.4630	$0.4626 \pm 0.0073$
$A_{100}^{dustTE}$	0.1135	$0.116 \pm 0.038$	$Y_P$	0.245425	$0.245421 \pm 0.000091$	$\sigma_8(0.38)$	0.6526	$0.6524 \pm 0.0078$
$A_{100 \times 143}^{dustTE}$	0.1345	$0.138 \pm 0.029$	$Y_P^{BBN}$	0.246752	$0.246747 \pm 0.000092$	$f\sigma_8(0.51)$	0.4625	$0.4622 \pm 0.0068$
$A_{100 \times 217}^{dustTE}$	0.476	$0.476 \pm 0.084$	$10^5 D/H$	2.5712	$2.573 \pm 0.042$	$\sigma_8(0.51)$	0.6110	$0.6109 \pm 0.0072$
$A_{143}^{dustTE}$	0.220	$0.225 \pm 0.055$	Age/Gyr	13.7694	$13.769 \pm 0.030$	$f\sigma_8(0.61)$	0.4582	$0.4579 \pm 0.0064$
$A_{143 \times 217}^{dustTE}$	0.658	$0.658 \pm 0.080$	$z_*$	1089.667	$1089.67 \pm 0.33$	$\sigma_8(0.61)$	0.5816	$0.5815 \pm 0.0069$
$A_{217}^{dustTE}$	2.057	$2.04 \pm 0.27$	$r_*$	144.831	$144.86 \pm 0.33$	$f\sigma_8(2.33)$	0.29356	$0.2935 \pm 0.0034$
$c_{100}$	1.00016	$1.00017 \pm 0.00070$	$100\theta_*$	1.041522	$1.04152 \pm 0.00046$	$\sigma_8(2.33)$	0.30298	$0.3030 \pm 0.0036$
$c_{217}$	0.99801	$0.99799 \pm 0.00065$	$D_M(z_*)/\text{Gpc}$	13.9057	$13.908 \pm 0.033$	$r_{0.002}$	0.001	$< 0.140$
$H_0$	68.19	$68.22 \pm 0.54$	$z_{drag}$	1059.97	$1059.97 \pm 0.53$	$r_{0.01}$	0.001	$< 0.144$
$\Omega_\Lambda$	0.6960	$0.6964 \pm 0.0070$	$r_{drag}$	147.477	$147.50 \pm 0.37$	$\ln(10^{10} A_t)$	-3.90	$0.47^{+1.3}_{-0.49}$
$\Omega_m$	0.3040	$0.3036 \pm 0.0070$	$k_D$	0.14052	$0.14049 \pm 0.00051$	$r_{10}$	0.0005	$< 0.0724$
$\Omega_m h^2$	0.14132	$0.1412 \pm 0.0012$	$100\theta_D$	0.160774	$0.16079 \pm 0.00031$	$10^9 A_t$	0.002	$< 0.300$
$\Omega_m h^3$	0.09636	$0.09634 \pm 0.00052$	$z_{eq}$	3361.7	$3360 \pm 29$	$10^9 A_t e^{-2\tau}$	0.002	$< 0.273$
$\sigma_8$	0.7949	$0.7946 \pm 0.0099$	$k_{eq}$	0.010260	$0.010254 \pm 0.000087$	$\chi_{small}^2$	395.69	$397.4 \pm 1.7$
$S_8$	0.8001	$0.799 \pm 0.016$	$100\theta_{eq}$	0.8212	$0.8216 \pm 0.0053$	$\chi_{plikTE}^2$	852.95	$859.7 \pm 3.6$
$\sigma_8 \Omega_m^{0.5}$	0.4382	$0.4378 \pm 0.0086$	$100\theta_{s,eq}$	0.45343	$0.4537 \pm 0.0027$	$\chi_{6DF}^2$	0.0002	$0.037 \pm 0.053$
$\sigma_8 \Omega_m^{0.25}$	0.5902	$0.5898 \pm 0.0091$	$H(0.15)$	73.390	$73.42 \pm 0.47$	$\chi_{MGS}^2$	1.75	$1.85 \pm 0.58$
$\sigma_8/h^{0.5}$	0.9626	$0.962 \pm 0.013$	$D_M(0.15)$	636.34	$636.1 \pm 4.6$	$\chi_{DR12BAO}^2$	3.435	$3.97 \pm 0.88$
$r_{drag} h$	100.56	$100.62 \pm 0.92$	$H(0.38)$	83.375	$83.39 \pm 0.36$	$\chi_{prior}^2$	0.41	$7.4 \pm 3.6$
$\langle d^2 \rangle^{1/2}$	2.3948	$2.389 \pm 0.032$	$D_M(0.38)$	1519.4	$1519.0 \pm 9.3$	$\chi_{BAO}^2$	5.183	$5.86 \pm 0.95$
$z_{re}$	7.08	$7.05^{+0.92}_{-0.73}$	$H(0.51)$	90.020	$90.03 \pm 0.30$	$\chi_{CMB}^2$	1248.64	$1257.2 \pm 4.0$

Best-fit  $\chi_{eff}^2 = 1254.24$ ;  $\bar{\chi}_{eff}^2 = 1270.41$ ;  $R - 1 = 0.01140$

$\chi_{eff}^2$ : BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.44 CMB - small\_100x143.offlike5\_EE\_Aplanck\_B: 395.69 plik\_rd12\_HM\_v22\_TE: 852.95



### 17.23 base\_r\_plikHM\_TE\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02249 \pm 0.00025$	$z_{\text{re}}$	$7.43^{+0.33}_{-0.84}$	$D_{\text{M}}(0.38)$	$1515 \pm 15$
$\Omega_c h^2$	$0.1176 \pm 0.0020$	$10^9 A_s$	$2.057^{+0.027}_{-0.035}$	$H(0.51)$	$90.16 \pm 0.46$
$100\theta_{\text{MC}}$	$1.04141 \pm 0.00051$	$10^9 A_s e^{-2\tau}$	$1.851 \pm 0.018$	$D_{\text{M}}(0.51)$	$1964 \pm 18$
$\tau$	$0.0526^{+0.0035}_{-0.0078}$	$D_{40}$	$1252^{+33}_{-46}$	$H(0.61)$	$95.70^{+0.35}_{-0.40}$
$\ln(10^{10} A_s)$	$3.024^{+0.014}_{-0.017}$	$D_{220}$	$5686 \pm 57$	$D_{\text{M}}(0.61)$	$2287 \pm 19$
$n_s$	$0.969 \pm 0.011$	$D_{810}$	$2508 \pm 25$	$H(2.33)$	$235.2 \pm 1.2$
$r$	$< 0.149$	$D_{1420}$	$808 \pm 12$	$D_{\text{M}}(2.33)$	$5746 \pm 17$
$A_{100}^{\text{dustTE}}$	$0.116 \pm 0.038$	$D_{2000}$	$228.2 \pm 4.2$	$f\sigma_8(0.15)$	$0.442 \pm 0.012$
$A_{100 \times 143}^{\text{dustTE}}$	$0.138 \pm 0.030$	$n_{\text{s},0.002}$	$0.969 \pm 0.011$	$\sigma_8(0.15)$	$0.7365 \pm 0.0085$
$A_{100 \times 217}^{\text{dustTE}}$	$0.477 \pm 0.084$	$Y_{\text{P}}$	$0.24544 \pm 0.00010$	$f\sigma_8(0.38)$	$0.4620 \pm 0.0098$
$A_{143}^{\text{dustTE}}$	$0.225 \pm 0.054$	$Y_{\text{P}}^{\text{BBN}}$	$0.24677 \pm 0.00010$	$\sigma_8(0.38)$	$0.6541 \pm 0.0069$
$A_{143 \times 217}^{\text{dustTE}}$	$0.657 \pm 0.080$	$10^5 \text{D/H}$	$2.564 \pm 0.046$	$f\sigma_8(0.51)$	$0.4619 \pm 0.0086$
$A_{217}^{\text{dustTE}}$	$2.03 \pm 0.27$	Age/Gyr	$13.760 \pm 0.038$	$\sigma_8(0.51)$	$0.6126 \pm 0.0062$
$c_{100}$	$1.00017 \pm 0.00070$	$z_*$	$1089.56 \pm 0.42$	$f\sigma_8(0.61)$	$0.4579 \pm 0.0078$
$c_{217}$	$0.99800 \pm 0.00065$	$r_*$	$144.96 \pm 0.48$	$\sigma_8(0.61)$	$0.5833 \pm 0.0058$
$y_{\text{cal}}$	$1.0000 \pm 0.0025$	$100\theta_*$	$1.04159 \pm 0.00050$	$f\sigma_8(2.33)$	$0.2945^{+0.0026}_{-0.0030}$
$H_0$	$68.47 \pm 0.91$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.917 \pm 0.045$	$\sigma_8(2.33)$	$0.3042^{+0.0026}_{-0.0031}$
$\Omega_{\Lambda}$	$0.700 \pm 0.012$	$z_{\text{drag}}$	$1060.04 \pm 0.54$	$r_{0.002}$	$< 0.143$
$\Omega_{\text{m}}$	$0.300 \pm 0.012$	$r_{\text{drag}}$	$147.59 \pm 0.49$	$r_{0.01}$	$< 0.146$
$\Omega_{\text{m}} h^2$	$0.1408 \pm 0.0019$	$k_{\text{D}}$	$0.14043 \pm 0.00057$	$\ln(10^{10} A_{\text{t}})$	$0.47^{+1.3}_{-0.50}$
$\Omega_{\text{m}} h^3$	$0.09636 \pm 0.00052$	$100\theta_{\text{D}}$	$0.16075 \pm 0.00031$	$r_{10}$	$< 0.0737$
$\sigma_8$	$0.7959 \pm 0.0099$	$z_{\text{eq}}$	$3348 \pm 46$	$10^9 A_{\text{t}}$	$< 0.306$
$S_8$	$0.796 \pm 0.023$	$k_{\text{eq}}$	$0.01022 \pm 0.00014$	$10^9 A_{\text{t}} e^{-2\tau}$	$< 0.276$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.436 \pm 0.013$	$100\theta_{\text{eq}}$	$0.8239 \pm 0.0088$	$\chi_{\text{simall}}^2$	$397.0 \pm 1.3$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.589 \pm 0.012$	$100\theta_{\text{s,eq}}$	$0.4548 \pm 0.0045$	$\chi_{\text{plikTE}}^2$	$860.4 \pm 3.8$
$\sigma_8/h^{0.5}$	$0.962 \pm 0.017$	$H(0.15)$	$73.64 \pm 0.78$	$\chi_{\text{prior}}^2$	$7.4 \pm 3.7$
$r_{\text{drag}} h$	$101.1 \pm 1.6$	$D_{\text{M}}(0.15)$	$634.0 \pm 7.6$	$\chi_{\text{CMB}}^2$	$1257.4 \pm 4.1$
$\langle d^2 \rangle^{1/2}$	$2.388 \pm 0.041$	$H(0.38)$	$83.56 \pm 0.58$		

$\bar{\chi}_{\text{eff}}^2 = 1264.77$ ;  $R - 1 = 0.00680$



**17.24 base\_r\_plikHM-TE\_lowE\_post\_BAO\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02246 \pm 0.00023$	$10^9 A_s$	$2.058^{+0.027}_{-0.035}$	$D_M(0.51)$	$1968 \pm 11$
$\Omega_c h^2$	$0.1181 \pm 0.0012$	$10^9 A_s e^{-2\tau}$	$1.853 \pm 0.017$	$H(0.61)$	$95.61 \pm 0.26$
$100\theta_{MC}$	$1.04136 \pm 0.00046$	$D_{40}$	$1255^{+31}_{-44}$	$D_M(0.61)$	$2292 \pm 12$
$\tau$	$0.0524^{+0.0035}_{-0.0076}$	$D_{220}$	$5684 \pm 56$	$H(2.33)$	$235.45 \pm 0.79$
$\ln(10^{10} A_s)$	$3.024^{+0.013}_{-0.017}$	$D_{810}$	$2508 \pm 25$	$D_M(2.33)$	$5750 \pm 13$
$n_s$	$0.967 \pm 0.010$	$D_{1420}$	$808 \pm 11$	$f\sigma_8(0.15)$	$0.4445 \pm 0.0077$
$r$	$< 0.150$	$D_{2000}$	$228.0 \pm 4.2$	$\sigma_8(0.15)$	$0.7379^{+0.0070}_{-0.0078}$
$y_{cal}$	$0.99998 \pm 0.0025$	$n_{s,0.002}$	$0.967 \pm 0.010$	$f\sigma_8(0.38)$	$0.4643 \pm 0.0067$
$A_{100}^{dustTE}$	$0.116 \pm 0.038$	$Y_P$	$0.245425 \pm 0.000090$	$\sigma_8(0.38)$	$0.6549^{+0.0059}_{-0.0068}$
$A_{100 \times 143}^{dustTE}$	$0.138 \pm 0.029$	$Y_P^{BBN}$	$0.246752 \pm 0.000091$	$f\sigma_8(0.51)$	$0.4639 \pm 0.0061$
$A_{100 \times 217}^{dustTE}$	$0.476 \pm 0.083$	$10^5 D/H$	$2.571 \pm 0.042$	$\sigma_8(0.51)$	$0.6133^{+0.0054}_{-0.0063}$
$A_{143}^{dustTE}$	$0.224 \pm 0.055$	Age/Gyr	$13.768 \pm 0.030$	$f\sigma_8(0.61)$	$0.4596 \pm 0.0057$
$A_{143 \times 217}^{dustTE}$	$0.658 \pm 0.080$	$z_*$	$1089.65 \pm 0.32$	$\sigma_8(0.61)$	$0.5838^{+0.0051}_{-0.0060}$
$A_{217}^{dustTE}$	$2.04 \pm 0.27$	$r_*$	$144.85 \pm 0.33$	$f\sigma_8(2.33)$	$0.2947^{+0.0025}_{-0.0030}$
$c_{100}$	$1.00017 \pm 0.00070$	$100\theta_*$	$1.04154 \pm 0.00046$	$\sigma_8(2.33)$	$0.3042^{+0.0026}_{-0.0031}$
$c_{217}$	$0.99799 \pm 0.00065$	$D_M(z_*)/\text{Gpc}$	$13.908 \pm 0.033$	$r_{0.002}$	$< 0.143$
$H_0$	$68.24 \pm 0.54$	$z_{drag}$	$1060.00 \pm 0.52$	$r_{0.01}$	$< 0.146$
$\Omega_\Lambda$	$0.6966 \pm 0.0070$	$r_{drag}$	$147.50 \pm 0.37$	$\ln(10^{10} A_t)$	$0.49^{+1.3}_{-0.49}$
$\Omega_m$	$0.3034 \pm 0.0070$	$k_D$	$0.14050 \pm 0.00050$	$r_{10}$	$< 0.0737$
$\Omega_m h^2$	$0.1412 \pm 0.0012$	$100\theta_D$	$0.16077 \pm 0.00031$	$10^9 A_t$	$< 0.308$
$\Omega_m h^3$	$0.09636 \pm 0.00052$	$z_{eq}$	$3359 \pm 28$	$10^9 A_t e^{-2\tau}$	$< 0.278$
$\sigma_8$	$0.7976 \pm 0.0084$	$k_{eq}$	$0.010253 \pm 0.000087$	$\chi_{simall}^2$	$397.0 \pm 1.3$
$S_8$	$0.802 \pm 0.015$	$100\theta_{eq}$	$0.8217 \pm 0.0052$	$\chi_{plikTE}^2$	$859.8 \pm 3.5$
$\sigma_8 \Omega_m^{0.5}$	$0.4393 \pm 0.0081$	$100\theta_{s,eq}$	$0.4537 \pm 0.0027$	$\chi_{6DF}^2$	$0.037 \pm 0.054$
$\sigma_8 \Omega_m^{0.25}$	$0.5920 \pm 0.0082$	$H(0.15)$	$73.44 \pm 0.47$	$\chi_{MGS}^2$	$1.87 \pm 0.58$
$\sigma_8/h^{0.5}$	$0.966 \pm 0.012$	$D_M(0.15)$	$635.9 \pm 4.5$	$\chi_{DR12BAO}^2$	$3.96 \pm 0.87$
$r_{drag} h$	$100.65 \pm 0.92$	$H(0.38)$	$83.41 \pm 0.36$	$\chi_{prior}^2$	$7.3 \pm 3.6$
$\langle d^2 \rangle^{1/2}$	$2.396 \pm 0.029$	$D_M(0.38)$	$1518.6 \pm 9.2$	$\chi_{BAO}^2$	$5.87 \pm 0.96$
$z_{re}$	$7.42^{+0.31}_{-0.84}$	$H(0.51)$	$90.05 \pm 0.30$	$\chi_{CMB}^2$	$1256.8 \pm 3.9$

 $\bar{\chi}_{eff}^2 = 1269.96; R - 1 = 0.01240$



# 17.25 base\_r\_plikHM\_EE\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.02387	$0.0239 \pm 0.0012$	$D_{810}$	2585.9	$2583 \pm 39$	$D_{\mathrm{M}}(0.51)$	1924	$1920 \pm 57$
$\Omega_{\mathrm{c}}h^2$	0.11440	$0.1138 \pm 0.0048$	$D_{1420}$	845.3	$846 \pm 19$	$H(0.61)$	96.75	$96.9^{+1.3}_{-1.6}$
$100\theta_{\mathrm{MC}}$	1.04018	$1.04020 \pm 0.00088$	$D_{2000}$	241.8	$242.1 \pm 7.3$	$D_{\mathrm{M}}(0.61)$	2243	$2238 \pm 62$
$\tau$	0.0537	$0.0528 \pm 0.0090$	$n_{\mathrm{s},0.002}$	0.9879	$0.993^{+0.016}_{-0.018}$	$H(2.33)$	234.31	$233.9 \pm 2.2$
$\ln(10^{10}A_{\mathrm{s}})$	3.0476	$3.043 \pm 0.023$	$Y_{\mathrm{P}}$	0.246003	$0.24599^{+0.00043}_{-0.00056}$	$D_{\mathrm{M}}(2.33)$	5695	$5691^{+73}_{-66}$
$n_{\mathrm{s}}$	0.9879	$0.993^{+0.016}_{-0.018}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.247331	$0.24732^{+0.00043}_{-0.00056}$	$f\sigma_8(0.15)$	0.4266	$0.423 \pm 0.030$
$r$	0.187	$0.267^{+0.076}_{-0.26}$	$10^5\mathrm{D}/\mathrm{H}$	2.329	$2.34^{+0.18}_{-0.21}$	$\sigma_8(0.15)$	0.7355	$0.732^{+0.017}_{-0.014}$
$y_{\mathrm{cal}}$	1.00017	$1.0001 \pm 0.0025$	Age/Gyr	13.644	$13.64 \pm 0.15$	$f\sigma_8(0.38)$	0.4512	$0.448 \pm 0.024$
$H_0$	70.36	$70.7 \pm 2.8$	$z_*$	1087.68	$1087.7^{+1.6}_{-1.8}$	$\sigma_8(0.38)$	0.6554	$0.653^{+0.012}_{-0.010}$
$\Omega_{\Lambda}$	0.7194	$0.721^{+0.032}_{-0.026}$	$r_*$	144.74	$144.90 \pm 0.76$	$f\sigma_8(0.51)$	0.4535	$0.450 \pm 0.021$
$\Omega_{\mathrm{m}}$	0.2806	$0.279^{+0.026}_{-0.032}$	$100\theta_*$	1.04020	$1.04023 \pm 0.00085$	$\sigma_8(0.51)$	0.6148	$0.613^{+0.010}_{-0.0086}$
$\Omega_{\mathrm{m}}h^2$	0.13891	$0.1383 \pm 0.0039$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.915	$13.930 \pm 0.071$	$f\sigma_8(0.61)$	0.4512	$0.448^{+0.020}_{-0.017}$
$\Omega_{\mathrm{m}}h^3$	0.09774	$0.0977^{+0.0017}_{-0.0019}$	$z_{\mathrm{drag}}$	1062.91	$1062.9 \pm 2.5$	$\sigma_8(0.61)$	0.5860	$0.5839^{+0.0089}_{-0.0078}$
$\sigma_8$	0.7926	$0.789^{+0.021}_{-0.018}$	$r_{\mathrm{drag}}$	146.93	$147.10 \pm 0.84$	$f\sigma_8(2.33)$	0.29673	$0.2958 \pm 0.0037$
$S_8$	0.767	$0.760 \pm 0.058$	$k_{\mathrm{D}}$	0.14207	$0.1418 \pm 0.0014$	$\sigma_8(2.33)$	0.30741	$0.3068 \pm 0.0037$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4198	$0.416 \pm 0.032$	$100\theta_{\mathrm{D}}$	0.15892	$0.1590^{+0.0012}_{-0.0014}$	$r_{0.002}$	0.194	$< 0.385$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.5769	$0.573 \pm 0.028$	$z_{\mathrm{eq}}$	3304	$3289 \pm 93$	$r_{0.01}$	0.191	$< 0.361$
$\sigma_8/h^{0.5}$	0.9449	$0.939 \pm 0.040$	$k_{\mathrm{eq}}$	0.010084	$0.01004 \pm 0.00028$	$\ln(10^{10}A_{\mathrm{t}})$	1.37	$1.41^{+1.1}_{-0.35}$
$r_{\mathrm{drag}}h$	103.39	$104.0 \pm 4.2$	$100\theta_{\mathrm{eq}}$	0.8349	$0.838 \pm 0.021$	$r_{10}$	0.100	$< 0.201$
$\langle d^2 \rangle^{1/2}$	2.341	$2.320 \pm 0.084$	$100\theta_{\mathrm{s,eq}}$	0.4595	$0.461 \pm 0.010$	$10^9A_{\mathrm{t}}$	0.395	$0.56^{+0.17}_{-0.54}$
$z_{\mathrm{re}}$	7.22	$7.10^{+0.88}_{-0.73}$	$H(0.15)$	75.33	$75.6 \pm 2.5$	$10^9A_{\mathrm{t}}e^{-2\tau}$	0.355	$0.50^{+0.15}_{-0.48}$
$10^9A_{\mathrm{s}}$	2.1065	$2.097 \pm 0.049$	$D_{\mathrm{M}}(0.15)$	618.3	$616 \pm 23$	$\chi_{\mathrm{small}}^2$	396.53	$398.4 \pm 2.1$
$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8920	$1.886 \pm 0.027$	$H(0.38)$	84.93	$85.2^{+1.9}_{-2.2}$	$\chi_{\mathrm{plikEE}}^2$	737.59	$742.5 \pm 3.2$
$D_{40}$	1275	$1297^{+44}_{-65}$	$D_{\mathrm{M}}(0.38)$	1481.8	$1478 \pm 47$	$\chi_{\mathrm{prior}}^2$	0.004	$0.99 \pm 1.4$
$D_{220}$	5905	$5880 \pm 200$	$H(0.51)$	91.36	$91.6^{+1.6}_{-1.9}$	$\chi_{\mathrm{CMB}}^2$	1134.12	$1140.9 \pm 3.7$

Best-fit  $\chi_{\mathrm{eff}}^2 = 1134.13$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1141.89$ ;  $R - 1 = 0.00830$

$\chi_{\mathrm{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.53 plik\_rd12\_HM\_v22\_EE: 737.59



## 17.26 base\_r\_plikHM\_EE\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02330	$0.02305 \pm 0.00071$	$D_{2000}$	238.3	$238.0 \pm 5.5$	$D_M(2.33)$	5731.5	$5741 \pm 31$
$\Omega_c h^2$	0.11753	$0.1174 \pm 0.0015$	$n_{s,0.002}$	0.9767	$0.983 \pm 0.011$	$f\sigma_8(0.15)$	0.4457	$0.4452 \pm 0.0098$
$100\theta_{MC}$	1.03986	$1.03993 \pm 0.00077$	$Y_P$	0.245788	$0.24567 \pm 0.00029$	$\sigma_8(0.15)$	0.7436	$0.7425 \pm 0.0091$
$\tau$	0.0532	$0.0512 \pm 0.0085$	$Y_P^{BBN}$	0.247116	$0.24699 \pm 0.00029$	$f\sigma_8(0.38)$	0.4663	$0.4658 \pm 0.0084$
$\ln(10^{10} A_s)$	3.0493	$3.040 \pm 0.022$	$10^5 D/H$	2.422	$2.47^{+0.11}_{-0.13}$	$\sigma_8(0.38)$	0.6603	$0.6594 \pm 0.0078$
$n_s$	0.9767	$0.983 \pm 0.011$	Age/Gyr	13.725	$13.747 \pm 0.073$	$f\sigma_8(0.51)$	0.4663	$0.4657 \pm 0.0076$
$r$	0.065	$< 0.314$	$z_*$	1088.59	$1088.89 \pm 0.88$	$\sigma_8(0.51)$	0.6185	$0.6176 \pm 0.0072$
$y_{cal}$	1.00017	$1.0001 \pm 0.0025$	$r_*$	144.36	$144.60 \pm 0.59$	$f\sigma_8(0.61)$	0.4623	$0.4617 \pm 0.0071$
$H_0$	68.65	$68.53 \pm 0.86$	$100\theta_*$	1.03995	$1.04005 \pm 0.00078$	$\sigma_8(0.61)$	0.5888	$0.5880 \pm 0.0068$
$\Omega_\Lambda$	0.6998	$0.6995 \pm 0.0091$	$D_M(z_*)/\text{Gpc}$	13.881	$13.903 \pm 0.057$	$f\sigma_8(2.33)$	0.29734	$0.2969 \pm 0.0034$
$\Omega_m$	0.3002	$0.3005 \pm 0.0091$	$z_{drag}$	1061.88	$1061.3 \pm 1.6$	$\sigma_8(2.33)$	0.30705	$0.3066 \pm 0.0035$
$\Omega_m h^2$	0.14147	$0.1411 \pm 0.0015$	$r_{drag}$	146.72	$147.05 \pm 0.79$	$r_{0.002}$	0.062	$< 0.342$
$\Omega_m h^3$	0.09711	$0.0967 \pm 0.0013$	$k_D$	0.14194	$0.1414 \pm 0.0013$	$r_{0.01}$	0.064	$< 0.327$
$\sigma_8$	0.8034	$0.802 \pm 0.010$	$100\theta_D$	0.15945	$0.15982^{+0.00086}_{-0.00097}$	$\ln(10^{10} A_t)$	0.32	$1.32^{+1.1}_{-0.39}$
$S_8$	0.8038	$0.803 \pm 0.019$	$z_{eq}$	3365.4	$3355 \pm 36$	$r_{10}$	0.032	$< 0.180$
$\sigma_8 \Omega_m^{0.5}$	0.4402	$0.440 \pm 0.010$	$k_{eq}$	0.010271	$0.01024 \pm 0.00011$	$10^9 A_t$	0.138	$< 0.656$
$\sigma_8 \Omega_m^{0.25}$	0.5947	$0.594 \pm 0.010$	$100\theta_{eq}$	0.8217	$0.8230 \pm 0.0062$	$10^9 A_t e^{-2\tau}$	0.124	$< 0.590$
$\sigma_8/h^{0.5}$	0.9697	$0.969 \pm 0.015$	$100\theta_{s,eq}$	0.45304	$0.4539 \pm 0.0033$	$\chi_{small}^2$	395.97	$398.3 \pm 2.1$
$r_{drag} h$	100.71	$100.8 \pm 1.1$	$H(0.15)$	73.82	$73.70 \pm 0.78$	$\chi_{plikEE}^2$	738.57	$742.1 \pm 2.9$
$\langle d^2 \rangle^{1/2}$	2.4004	$2.377 \pm 0.040$	$D_M(0.15)$	632.3	$633.5 \pm 7.3$	$\chi_{6DF}^2$	0.0017	$0.057 \pm 0.082$
$z_{re}$	7.33	$7.16^{+0.87}_{-0.73}$	$H(0.38)$	83.77	$83.63 \pm 0.67$	$\chi_{MGS}^2$	1.82	$1.94 \pm 0.71$
$10^9 A_s$	2.1101	$2.091 \pm 0.047$	$D_M(0.38)$	1510.8	$1513 \pm 15$	$\chi_{DR12BAO}^2$	3.61	$4.4 \pm 1.2$
$10^9 A_s e^{-2\tau}$	1.8972	$1.888 \pm 0.027$	$H(0.51)$	90.39	$90.25 \pm 0.61$	$\chi_{prior}^2$	0.00	$0.98 \pm 1.4$
$D_{40}$	1247	$1295^{+44}_{-61}$	$D_M(0.51)$	1958.9	$1962 \pm 19$	$\chi_{BAO}^2$	5.43	$6.4 \pm 1.4$
$D_{220}$	5855	$5773 \pm 160$	$H(0.61)$	95.94	$95.79 \pm 0.58$	$\chi_{CMB}^2$	1134.54	$1140.4 \pm 3.5$
$D_{810}$	2575.0	$2567 \pm 35$	$D_M(0.61)$	2280.9	$2285 \pm 21$			
$D_{1420}$	836.4	$836 \pm 15$	$H(2.33)$	235.76	$235.4 \pm 1.1$			

Best-fit  $\chi_{eff}^2 = 1139.97$ ;  $\bar{\chi}_{eff}^2 = 1147.71$ ;  $R - 1 = 0.01154$

$\chi_{eff}^2$ : BAO - 6DF: 0.00 MGS: 1.82 DR12BAO: 3.61 CMB - small\_100x143.offlike5\_EE\_Aplanck\_B: 395.97 plik\_rd12\_HM\_v22\_EE: 738.57



**17.27 base\_r\_plikHM\_EE\_lowE\_post\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.0239 \pm 0.0012$	$D_{810}$	$2582 \pm 39$	$D_{\mathrm{M}}(0.51)$	$1921 \pm 56$
$\Omega_{\mathrm{c}}h^2$	$0.1138 \pm 0.0048$	$D_{1420}$	$846 \pm 19$	$H(0.61)$	$96.9^{+1.3}_{-1.6}$
$100\theta_{\mathrm{MC}}$	$1.04019 \pm 0.00087$	$D_{2000}$	$242.1 \pm 7.3$	$D_{\mathrm{M}}(0.61)$	$2239 \pm 61$
$\tau$	$0.0561^{+0.0048}_{-0.0082}$	$n_{\mathrm{s},0.002}$	$0.993^{+0.016}_{-0.018}$	$H(2.33)$	$233.9 \pm 2.2$
$\ln(10^{10}A_{\mathrm{s}})$	$3.049^{+0.019}_{-0.021}$	$Y_{\mathrm{P}}$	$0.24598^{+0.00042}_{-0.00055}$	$D_{\mathrm{M}}(2.33)$	$5692 \pm 69$
$n_{\mathrm{s}}$	$0.993^{+0.016}_{-0.018}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24731^{+0.00042}_{-0.00055}$	$f\sigma_8(0.15)$	$0.425 \pm 0.029$
$r$	$0.268^{+0.079}_{-0.26}$	$10^5\mathrm{D}/\mathrm{H}$	$2.34^{+0.18}_{-0.21}$	$\sigma_8(0.15)$	$0.735^{+0.016}_{-0.014}$
$y_{\mathrm{cal}}$	$1.0001 \pm 0.0025$	Age/Gyr	$13.64 \pm 0.15$	$f\sigma_8(0.38)$	$0.449 \pm 0.024$
$H_0$	$70.6 \pm 2.8$	$z_*$	$1087.7^{+1.6}_{-1.8}$	$\sigma_8(0.38)$	$0.655^{+0.011}_{-0.0094}$
$\Omega_{\Lambda}$	$0.721^{+0.032}_{-0.026}$	$r_*$	$144.91 \pm 0.76$	$f\sigma_8(0.51)$	$0.452 \pm 0.020$
$\Omega_{\mathrm{m}}$	$0.279^{+0.026}_{-0.032}$	$100\theta_*$	$1.04022 \pm 0.00084$	$\sigma_8(0.51)$	$0.6148^{+0.0091}_{-0.0079}$
$\Omega_{\mathrm{m}}h^2$	$0.1383 \pm 0.0039$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.931 \pm 0.071$	$f\sigma_8(0.61)$	$0.450^{+0.019}_{-0.017}$
$\Omega_{\mathrm{m}}h^3$	$0.0976 \pm 0.0018$	$z_{\mathrm{drag}}$	$1062.8 \pm 2.5$	$\sigma_8(0.61)$	$0.5860^{+0.0079}_{-0.0072}$
$\sigma_8$	$0.792^{+0.020}_{-0.018}$	$r_{\mathrm{drag}}$	$147.12 \pm 0.84$	$f\sigma_8(2.33)$	$0.2969 \pm 0.0032$
$S_8$	$0.763 \pm 0.057$	$k_{\mathrm{D}}$	$0.1418 \pm 0.0014$	$\sigma_8(2.33)$	$0.3078^{+0.0029}_{-0.0034}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.418 \pm 0.031$	$100\theta_{\mathrm{D}}$	$0.1590^{+0.0012}_{-0.0014}$	$r_{0.002}$	$< 0.384$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.575 \pm 0.028$	$z_{\mathrm{eq}}$	$3290 \pm 93$	$r_{0.01}$	$< 0.361$
$\sigma_8/h^{0.5}$	$0.943 \pm 0.040$	$k_{\mathrm{eq}}$	$0.01004 \pm 0.00028$	$\ln(10^{10}A_{\mathrm{t}})$	$1.42^{+1.1}_{-0.35}$
$r_{\mathrm{drag}}h$	$103.9 \pm 4.2$	$100\theta_{\mathrm{eq}}$	$0.838 \pm 0.021$	$r_{10}$	$< 0.201$
$\langle d^2 \rangle^{1/2}$	$2.327 \pm 0.082$	$100\theta_{\mathrm{s,eq}}$	$0.4611 \pm 0.0099$	$10^9A_{\mathrm{t}}$	$0.56^{+0.18}_{-0.53}$
$z_{\mathrm{re}}$	$7.43^{+0.33}_{-0.83}$	$H(0.15)$	$75.6 \pm 2.5$	$10^9A_{\mathrm{t}}e^{-2\tau}$	$0.50^{+0.16}_{-0.48}$
$10^9A_{\mathrm{s}}$	$2.110^{+0.039}_{-0.046}$	$D_{\mathrm{M}}(0.15)$	$617 \pm 23$	$\chi_{\mathrm{simall}}^2$	$398.1 \pm 2.0$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.886 \pm 0.027$	$H(0.38)$	$85.1^{+1.9}_{-2.1}$	$\chi_{\mathrm{plikEE}}^2$	$742.4 \pm 3.2$
$D_{40}$	$1296^{+44}_{-64}$	$D_{\mathrm{M}}(0.38)$	$1479 \pm 47$	$\chi_{\mathrm{prior}}^2$	$0.99 \pm 1.4$
$D_{220}$	$5872 \pm 200$	$H(0.51)$	$91.5^{+1.6}_{-1.8}$	$\chi_{\mathrm{CMB}}^2$	$1140.5 \pm 3.5$

 $\bar{\chi}_{\mathrm{eff}}^2 = 1141.46; R - 1 = 0.01059$



## 17.28 base\_r\_plikHM\_EE\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02302 \pm 0.00070$	$D_{2000}$	$238.0 \pm 5.6$	$D_{\mathrm{M}}(2.33)$	$5742 \pm 31$
$\Omega_{\mathrm{c}}h^2$	$0.1174 \pm 0.0015$	$n_{\mathrm{s},0.002}$	$0.984 \pm 0.011$	$f\sigma_8(0.15)$	$0.4467 \pm 0.0095$
$100\theta_{\mathrm{MC}}$	$1.03993 \pm 0.00077$	$Y_{\mathrm{P}}$	$0.24566^{+0.00030}_{-0.00027}$	$\sigma_8(0.15)$	$0.7448 \pm 0.0081$
$\tau$	$0.0542^{+0.0042}_{-0.0075}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24698^{+0.00030}_{-0.00027}$	$f\sigma_8(0.38)$	$0.4673 \pm 0.0080$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046 \pm 0.020$	$10^5\mathrm{D}/\mathrm{H}$	$2.47 \pm 0.12$	$\sigma_8(0.38)$	$0.6614 \pm 0.0069$
$n_{\mathrm{s}}$	$0.984 \pm 0.011$	Age/Gyr	$13.750 \pm 0.072$	$f\sigma_8(0.51)$	$0.4672 \pm 0.0071$
$r$	$< 0.317$	$z_*$	$1088.92 \pm 0.86$	$\sigma_8(0.51)$	$0.6194^{+0.0061}_{-0.0068}$
$y_{\mathrm{cal}}$	$1.0001 \pm 0.0024$	$r_*$	$144.62 \pm 0.59$	$f\sigma_8(0.61)$	$0.4631 \pm 0.0066$
$H_0$	$68.51 \pm 0.85$	$100\theta_*$	$1.04005 \pm 0.00078$	$\sigma_8(0.61)$	$0.5897^{+0.0057}_{-0.0064}$
$\Omega_{\Lambda}$	$0.6993 \pm 0.0090$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.905 \pm 0.057$	$f\sigma_8(2.33)$	$0.2978^{+0.0028}_{-0.0032}$
$\Omega_{\mathrm{m}}$	$0.3007 \pm 0.0090$	$z_{\mathrm{drag}}$	$1061.2 \pm 1.6$	$\sigma_8(2.33)$	$0.3075^{+0.0029}_{-0.0034}$
$\Omega_{\mathrm{m}}h^2$	$0.1410 \pm 0.0015$	$r_{\mathrm{drag}}$	$147.08 \pm 0.78$	$r_{0.002}$	$< 0.347$
$\Omega_{\mathrm{m}}h^3$	$0.0966 \pm 0.0013$	$k_{\mathrm{D}}$	$0.1414 \pm 0.0013$	$r_{0.01}$	$< 0.331$
$\sigma_8$	$0.8048 \pm 0.0092$	$100\theta_{\mathrm{D}}$	$0.15985 \pm 0.00091$	$\ln(10^{10}A_{\mathrm{t}})$	$1.34^{+1.1}_{-0.39}$
$S_8$	$0.806 \pm 0.018$	$z_{\mathrm{eq}}$	$3355 \pm 36$	$r_{10}$	$< 0.182$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.441 \pm 0.010$	$k_{\mathrm{eq}}$	$0.01024 \pm 0.00011$	$10^9A_{\mathrm{t}}$	$< 0.664$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5959 \pm 0.0097$	$100\theta_{\mathrm{eq}}$	$0.8230 \pm 0.0063$	$10^9A_{\mathrm{t}}e^{-2\tau}$	$< 0.595$
$\sigma_8/h^{0.5}$	$0.972 \pm 0.014$	$100\theta_{\mathrm{s,eq}}$	$0.4539 \pm 0.0033$	$\chi_{\mathrm{simall}}^2$	$398.0 \pm 1.9$
$r_{\mathrm{drag}}h$	$100.8 \pm 1.1$	$H(0.15)$	$73.68 \pm 0.77$	$\chi_{\mathrm{plikEE}}^2$	$741.9 \pm 2.8$
$\langle d^2 \rangle^{1/2}$	$2.382 \pm 0.038$	$D_{\mathrm{M}}(0.15)$	$633.7 \pm 7.3$	$\chi_{6\mathrm{DF}}^2$	$0.057 \pm 0.081$
$z_{\mathrm{re}}$	$7.47^{+0.36}_{-0.81}$	$H(0.38)$	$83.61 \pm 0.66$	$\chi_{\mathrm{MGS}}^2$	$1.93 \pm 0.71$
$10^9A_{\mathrm{s}}$	$2.103 \pm 0.041$	$D_{\mathrm{M}}(0.38)$	$1514 \pm 15$	$\chi_{\mathrm{DR12BAO}}^2$	$4.4 \pm 1.2$
$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.887 \pm 0.027$	$H(0.51)$	$90.22 \pm 0.61$	$\chi_{\mathrm{prior}}^2$	$0.95 \pm 1.4$
$D_{40}$	$1295^{+43}_{-62}$	$D_{\mathrm{M}}(0.51)$	$1963 \pm 19$	$\chi_{\mathrm{BAO}}^2$	$6.3 \pm 1.4$
$D_{220}$	$5766 \pm 150$	$H(0.61)$	$95.77 \pm 0.57$	$\chi_{\mathrm{CMB}}^2$	$1140.0 \pm 3.3$
$D_{810}$	$2566 \pm 35$	$D_{\mathrm{M}}(0.61)$	$2285 \pm 21$		
$D_{1420}$	$835 \pm 15$	$H(2.33)$	$235.4 \pm 1.1$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1147.29$ ;  $R - 1 = 0.01573$



## 17.29 base\_r\_plikHM\_TT\_lowl\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022177	$0.02214 \pm 0.00021$	$r_{\mathrm{drag}}h$	98.82	$98.9 \pm 1.2$	$D_{\mathrm{M}}(0.51)$	1991.6	$1992 \pm 14$
$\Omega_{\mathrm{c}}h^2$	0.12018	$0.1200 \pm 0.0015$	$\langle d^2 \rangle^{1/2}$	2.4451	$2.444 \pm 0.025$	$H(0.61)$	95.099	$95.08 \pm 0.30$
$100\theta_{\mathrm{MC}}$	1.040852	$1.04082 \pm 0.00045$	$z_{\mathrm{re}}$	7.55	$7.53^{+0.80}_{-0.71}$	$D_{\mathrm{M}}(0.61)$	2316.8	$2317 \pm 15$
$\tau$	0.0526	$0.0525 \pm 0.0077$	$10^9 A_{\mathrm{s}}$	2.0922	$2.091 \pm 0.031$	$H(2.33)$	236.48	$236.35 \pm 0.94$
$\ln(10^{10} A_{\mathrm{s}})$	3.0408	$3.040 \pm 0.015$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8834	$1.882 \pm 0.011$	$D_{\mathrm{M}}(2.33)$	5773.2	$5775 \pm 14$
$n_{\mathrm{s}}$	0.96474	$0.9643 \pm 0.0048$	$D_{40}$	1229.4	$1244^{+14}_{-17}$	$f\sigma_8(0.15)$	0.4611	$0.4603 \pm 0.0081$
$r$	0.0002	$< 0.0468$	$D_{220}$	5714.8	$5714 \pm 42$	$\sigma_8(0.15)$	0.7488	$0.7481 \pm 0.0056$
$y_{\mathrm{cal}}$	1.00047	$1.0006 \pm 0.0025$	$D_{810}$	2538.4	$2537 \pm 14$	$f\sigma_8(0.38)$	0.4781	$0.4774 \pm 0.0063$
$A_{217}^{\mathrm{CIB}}$	48.7	$48 \pm 7$	$D_{1420}$	816.1	$815.0 \pm 5.2$	$\sigma_8(0.38)$	0.66315	$0.6625 \pm 0.0048$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.34	—	$D_{2000}$	230.18	$229.8 \pm 1.8$	$f\sigma_8(0.51)$	0.4760	$0.4753 \pm 0.0054$
$A_{143}^{\mathrm{tSZ}}$	7.01	$5.1 \pm 2.0$	$n_{\mathrm{s},0.002}$	0.96474	$0.9643 \pm 0.0048$	$\sigma_8(0.51)$	0.62032	$0.6198 \pm 0.0046$
$A_{100}^{\mathrm{PS}}$	254.4	$263 \pm 28$	$Y_{\mathrm{P}}$	0.245316	$0.245297^{+0.000096}_{-0.000083}$	$f\sigma_8(0.61)$	0.47054	$0.4699 \pm 0.0048$
$A_{143}^{\mathrm{PS}}$	49.5	$49 \pm 8$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246643	$0.246623^{+0.000097}_{-0.000083}$	$\sigma_8(0.61)$	0.59009	$0.5896 \pm 0.0044$
$A_{143 \times 217}^{\mathrm{PS}}$	47.3	$44 \pm 9$	$10^5 \mathrm{D}/\mathrm{H}$	2.6223	$2.629 \pm 0.040$	$f\sigma_8(2.33)$	0.29729	$0.2970 \pm 0.0023$
$A_{217}^{\mathrm{PS}}$	119.3	$115 \pm 10$	$\mathrm{Age}/\mathrm{Gyr}$	13.8198	$13.824 \pm 0.032$	$\sigma_8(2.33)$	0.30623	$0.3060 \pm 0.0025$
$A^{\mathrm{kSZ}}$	0.02	$< 4.76$	$z_*$	1090.179	$1090.22 \pm 0.35$	$r_{0.002}$	0.0001	$< 0.0425$
$A_{100}^{\mathrm{dustTT}}$	8.88	$8.9 \pm 1.8$	$r_*$	144.532	$144.60 \pm 0.36$	$r_{0.01}$	0.0001	$< 0.0446$
$A_{143}^{\mathrm{dustTT}}$	10.79	$10.7 \pm 1.8$	$100\theta_*$	1.041055	$1.04103 \pm 0.00044$	$\ln(10^{10} A_{\mathrm{t}})$	-5.72	$-0.70^{+1.4}_{-0.62}$
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.46	$18.3 \pm 3.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8833	$13.890 \pm 0.034$	$r_{10}$	0.0001	$< 0.0218$
$A_{217}^{\mathrm{dustTT}}$	94.7	$93.5 \pm 7.3$	$z_{\mathrm{drag}}$	1059.513	$1059.41 \pm 0.45$	$10^9 A_{\mathrm{t}}$	0.0003	$< 0.0977$
$c_{100}$	0.99965	$0.99960 \pm 0.00061$	$r_{\mathrm{drag}}$	147.258	$147.34 \pm 0.38$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	0.0003	$< 0.0879$
$c_{217}$	0.99827	$0.99827 \pm 0.00063$	$k_{\mathrm{D}}$	0.140540	$0.14043 \pm 0.00045$	$f_{2000}^{143}$	30.23	$31.0 \pm 2.9$
$H_0$	67.11	$67.12 \pm 0.70$	$100\theta_{\mathrm{D}}$	0.161012	$0.16106 \pm 0.00026$	$f_{2000}^{143 \times 217}$	33.17	$33.5 \pm 2.0$
$\Omega_{\Lambda}$	0.6825	$0.6828 \pm 0.0097$	$z_{\mathrm{eq}}$	3401.9	$3398 \pm 35$	$f_{2000}^{217}$	107.60	$108.1 \pm 1.9$
$\Omega_{\mathrm{m}}$	0.3175	$0.3172 \pm 0.0097$	$k_{\mathrm{eq}}$	0.010383	$0.01037 \pm 0.00011$	$\chi_{\mathrm{lensing}}^2$	8.901	$9.46 \pm 0.85$
$\Omega_{\mathrm{m}}h^2$	0.14300	$0.1428 \pm 0.0015$	$100\theta_{\mathrm{eq}}$	0.8128	$0.8135 \pm 0.0066$	$\chi_{\mathrm{small}}^2$	395.87	$397.1 \pm 1.6$
$\Omega_{\mathrm{m}}h^3$	0.095967	$0.09586 \pm 0.00045$	$100\theta_{\mathrm{s,eq}}$	0.44925	$0.4496 \pm 0.0034$	$\chi_{\mathrm{lowl}}^2$	23.37	$24.9 \pm 1.6$
$\sigma_8$	0.8110	$0.8102 \pm 0.0063$	$H(0.15)$	72.45	$72.46 \pm 0.60$	$\chi_{\mathrm{plik}}^2$	759.04	$771.2 \pm 5.2$
$S_8$	0.8344	$0.833 \pm 0.016$	$D_{\mathrm{M}}(0.15)$	645.6	$645.5 \pm 6.1$	$\chi_{\mathrm{prior}}^2$	1.36	$7.3 \pm 3.7$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	0.4570	$0.4562 \pm 0.0088$	$H(0.38)$	82.662	$82.66 \pm 0.45$	$\chi_{\mathrm{CMB}}^2$	1187.2	$1202.6 \pm 5.7$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	0.6088	$0.6079 \pm 0.0077$	$D_{\mathrm{M}}(0.38)$	1538.2	$1538 \pm 12$			
$\sigma_8/h^{0.5}$	0.9900	$0.989 \pm 0.010$	$H(0.51)$	89.437	$89.43 \pm 0.36$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 1188.55$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1209.87$ ;  $R - 1 = 0.00994$   
 $\chi_{\mathrm{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p.teb.consext8: 8.90 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 commander\_dx12\_v3.2.29: 23.37 plik\_rd12\_HM.v22\_TT: 759.04



### 17.30 base\_r\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022253	$0.02221 \pm 0.00020$	$\langle d^2 \rangle^{1/2}$	2.4337	$2.433 \pm 0.022$	$D_{\mathrm{M}}(0.61)$	2306.8	$2307 \pm 11$
$\Omega_{\mathrm{c}}h^2$	0.11914	$0.1190 \pm 0.0011$	$z_{\mathrm{re}}$	7.75	$7.75 \pm 0.73$	$H(2.33)$	235.88	$235.78 \pm 0.69$
$100\theta_{\mathrm{MC}}$	1.040958	$1.04098 \pm 0.00042$	$10^9 A_{\mathrm{s}}$	2.0990	$2.097 \pm 0.030$	$D_{\mathrm{M}}(2.33)$	5766.1	$5768 \pm 12$
$\tau$	0.0549	$0.0549 \pm 0.0072$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8808	$1.879 \pm 0.011$	$f\sigma_8(0.15)$	0.4560	$0.4555 \pm 0.0061$
$\ln(10^{10} A_{\mathrm{s}})$	3.0440	$3.043 \pm 0.014$	$D_{40}$	1226.7	$1241^{+13}_{-17}$	$\sigma_8(0.15)$	0.7479	$0.7474 \pm 0.0056$
$n_{\mathrm{s}}$	0.96686	$0.9666 \pm 0.0041$	$D_{220}$	5727.7	$5722 \pm 41$	$f\sigma_8(0.38)$	0.4744	$0.4740 \pm 0.0051$
$r$	0.0000	$< 0.0490$	$D_{810}$	2540.0	$2537 \pm 14$	$\sigma_8(0.38)$	0.66299	$0.6626 \pm 0.0049$
$y_{\mathrm{cal}}$	1.00090	$1.0008 \pm 0.0025$	$D_{1420}$	817.3	$816.1 \pm 5.0$	$f\sigma_8(0.51)$	0.47305	$0.4726 \pm 0.0045$
$A_{217}^{\mathrm{CIB}}$	48.1	$48 \pm 7$	$D_{2000}$	230.62	$230.2 \pm 1.8$	$\sigma_8(0.51)$	0.62047	$0.6201 \pm 0.0046$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.42	—	$n_{\mathrm{s},0.002}$	0.96686	$0.9666 \pm 0.0041$	$f\sigma_8(0.61)$	0.46812	$0.4677 \pm 0.0042$
$A_{143}^{\mathrm{tSZ}}$	6.96	$5.2^{+2.2}_{-1.9}$	$Y_{\mathrm{P}}$	0.245348	$0.245326^{+0.000087}_{-0.000076}$	$\sigma_8(0.61)$	0.59040	$0.5901 \pm 0.0044$
$A_{100}^{\mathrm{PS}}$	253.6	$262 \pm 28$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246674	$0.246652^{+0.000087}_{-0.000076}$	$f\sigma_8(2.33)$	0.29770	$0.2976 \pm 0.0022$
$A_{143}^{\mathrm{PS}}$	50.6	$48 \pm 8$	$10^5 \mathrm{D}/\mathrm{H}$	2.6077	$2.617 \pm 0.037$	$\sigma_8(2.33)$	0.30694	$0.3068 \pm 0.0024$
$A_{143 \times 217}^{\mathrm{PS}}$	49.2	$43 \pm 9$	Age/Gyr	13.8045	$13.808 \pm 0.028$	$r_{0.002}$	0.0000	$< 0.0448$
$A_{217}^{\mathrm{PS}}$	120.3	$115 \pm 10$	$z_*$	1089.993	$1090.04 \pm 0.29$	$r_{0.01}$	0.0000	$< 0.0469$
$A^{\mathrm{kSZ}}$	0.01	$< 4.59$	$r_*$	144.744	$144.80 \pm 0.28$	$\ln(10^{10} A_{\mathrm{t}})$	-6.92	$-0.65^{+1.4}_{-0.61}$
$A_{100}^{\mathrm{dustTT}}$	8.89	$8.9 \pm 1.8$	$100\theta_*$	1.041155	$1.04118 \pm 0.00042$	$r_{10}$	0.0000	$< 0.0229$
$A_{143}^{\mathrm{dustTT}}$	10.83	$10.7 \pm 1.8$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.9023	$13.908 \pm 0.028$	$10^9 A_{\mathrm{t}}$	0.000	$< 0.103$
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.58	$18.3 \pm 3.2$	$z_{\mathrm{drag}}$	1059.589	$1059.49 \pm 0.45$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	0.0001	$< 0.0920$
$A_{217}^{\mathrm{dustTT}}$	94.9	$93.6 \pm 7.2$	$r_{\mathrm{drag}}$	147.452	$147.53 \pm 0.32$	$f_{2000}^{143}$	30.07	$30.7 \pm 2.9$
$c_{100}$	0.99967	$0.99960 \pm 0.00061$	$k_{\mathrm{D}}$	0.140399	$0.14028 \pm 0.00043$	$f_{2000}^{143 \times 217}$	33.02	$33.2 \pm 2.0$
$c_{217}$	0.99823	$0.99827 \pm 0.00063$	$100\theta_{\mathrm{D}}$	0.160954	$0.16103 \pm 0.00026$	$f_{2000}^{217}$	107.50	$107.9 \pm 1.9$
$H_0$	67.574	$67.58 \pm 0.49$	$z_{\mathrm{eq}}$	3378.7	$3376 \pm 25$	$\chi_{\mathrm{lensing}}^2$	8.808	$9.32 \pm 0.77$
$\Omega_{\Lambda}$	0.6889	$0.6892 \pm 0.0065$	$k_{\mathrm{eq}}$	0.010312	$0.010303 \pm 0.000076$	$\chi_{\mathrm{small}}^2$	396.18	$397.3 \pm 1.7$
$\Omega_{\mathrm{m}}$	0.3111	$0.3108 \pm 0.0065$	$100\theta_{\mathrm{eq}}$	0.81721	$0.8177 \pm 0.0046$	$\chi_{\mathrm{lowl}}^2$	23.01	$24.5 \pm 1.5$
$\Omega_{\mathrm{m}} h^2$	0.14203	$0.1419 \pm 0.0010$	$100\theta_{\mathrm{s,eq}}$	0.45151	$0.4518 \pm 0.0024$	$\chi_{\mathrm{plik}}^2$	759.74	$771.5 \pm 5.2$
$\Omega_{\mathrm{m}} h^3$	0.095978	$0.09589 \pm 0.00045$	$H(0.15)$	72.847	$72.85 \pm 0.43$	$\chi_{6\mathrm{DF}}^2$	0.0299	$0.055 \pm 0.068$
$\sigma_8$	0.8093	$0.8088 \pm 0.0062$	$D_{\mathrm{M}}(0.15)$	641.59	$641.6 \pm 4.2$	$\chi_{\mathrm{MGS}}^2$	1.217	$1.30 \pm 0.46$
$S_8$	0.8241	$0.823 \pm 0.012$	$H(0.38)$	82.945	$82.94 \pm 0.33$	$\chi_{\mathrm{DR12BAO}}^2$	4.40	$4.8 \pm 1.5$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	0.4514	$0.4509 \pm 0.0065$	$D_{\mathrm{M}}(0.38)$	1530.3	$1530.4 \pm 8.6$	$\chi_{\mathrm{prior}}^2$	1.35	$7.3 \pm 3.6$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	0.6044	$0.6039 \pm 0.0062$	$H(0.51)$	89.654	$89.64 \pm 0.27$	$\chi_{\mathrm{CMB}}^2$	1187.7	$1202.6 \pm 5.6$
$\sigma_8/h^{0.5}$	0.9845	$0.9839 \pm 0.0089$	$D_{\mathrm{M}}(0.51)$	1982.4	$1983 \pm 10$	$\chi_{\mathrm{BAO}}^2$	5.64	$6.1 \pm 1.2$
$r_{\mathrm{drag}} h$	99.64	$99.69 \pm 0.83$	$H(0.61)$	95.267	$95.25 \pm 0.24$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 1194.73$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1215.99$ ;  $R - 1 = 0.01776$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.03 MGS: 1.22 DR12BAO: 4.40 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.81 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.18 comman-  
der\_dx12.v3.2.29: 23.01 plik\_rd12\_HM\_v22\_TT: 759.74



### 17.31 base\_r\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02215 \pm 0.00021$	$r_{\mathrm{drag}}h$	$99.0 \pm 1.2$	$D_{\mathrm{M}}(0.51)$	$1991 \pm 14$
$\Omega_{\mathrm{c}}h^2$	$0.1199 \pm 0.0015$	$\langle d^2 \rangle^{1/2}$	$2.445 \pm 0.025$	$H(0.61)$	$95.10 \pm 0.29$
$100\theta_{\mathrm{MC}}$	$1.04083 \pm 0.00045$	$z_{\mathrm{re}}$	$7.68^{+0.55}_{-0.77}$	$D_{\mathrm{M}}(0.61)$	$2316 \pm 15$
$\tau$	$0.0540^{+0.0050}_{-0.0079}$	$10^9 A_{\mathrm{s}}$	$2.096^{+0.023}_{-0.030}$	$H(2.33)$	$236.28 \pm 0.92$
$\ln(10^{10} A_{\mathrm{s}})$	$3.043^{+0.011}_{-0.014}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.881 \pm 0.011$	$D_{\mathrm{M}}(2.33)$	$5774 \pm 14$
$n_{\mathrm{s}}$	$0.9646 \pm 0.0047$	$D_{40}$	$1243^{+14}_{-17}$	$f\sigma_8(0.15)$	$0.4602 \pm 0.0081$
$r$	$< 0.0471$	$D_{220}$	$5714 \pm 42$	$\sigma_8(0.15)$	$0.7488 \pm 0.0051$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{810}$	$2536 \pm 14$	$f\sigma_8(0.38)$	$0.4775 \pm 0.0063$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{1420}$	$815.1 \pm 5.2$	$\sigma_8(0.38)$	$0.6632^{+0.0040}_{-0.0047}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{2000}$	$229.8 \pm 1.8$	$f\sigma_8(0.51)$	$0.4755 \pm 0.0053$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$n_{\mathrm{s},0.002}$	$0.9646 \pm 0.0047$	$\sigma_8(0.51)$	$0.6205^{+0.0037}_{-0.0044}$
$A_{100}^{\mathrm{PS}}$	$263 \pm 28$	$Y_{\mathrm{P}}$	$0.245301^{+0.000096}_{-0.000082}$	$f\sigma_8(0.61)$	$0.4701 \pm 0.0047$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246627^{+0.000096}_{-0.000082}$	$\sigma_8(0.61)$	$0.5903^{+0.0035}_{-0.0042}$
$A_{143 \times 217}^{\mathrm{PS}}$	$44 \pm 9$	$10^5 \mathrm{D}/\mathrm{H}$	$2.628 \pm 0.040$	$f\sigma_8(2.33)$	$0.2974^{+0.0017}_{-0.0023}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$\mathrm{Age}/\mathrm{Gyr}$	$13.822 \pm 0.032$	$\sigma_8(2.33)$	$0.3064^{+0.0019}_{-0.0025}$
$A^{\mathrm{kSZ}}$	$< 4.71$	$z_*$	$1090.19 \pm 0.34$	$r_{0.002}$	$< 0.0428$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$r_*$	$144.62 \pm 0.35$	$r_{0.01}$	$< 0.0449$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$100\theta_*$	$1.04104 \pm 0.00044$	$\ln(10^{10} A_{\mathrm{t}})$	$-0.69^{+1.4}_{-0.62}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.892 \pm 0.033$	$r_{10}$	$< 0.0220$
$A_{217}^{\mathrm{dust}TT}$	$93.5 \pm 7.3$	$z_{\mathrm{drag}}$	$1059.42 \pm 0.45$	$10^9 A_{\mathrm{t}}$	$< 0.0987$
$c_{100}$	$0.99960 \pm 0.00061$	$r_{\mathrm{drag}}$	$147.36 \pm 0.37$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	$< 0.0885$
$c_{217}$	$0.99827 \pm 0.00063$	$k_{\mathrm{D}}$	$0.14041 \pm 0.00045$	$f_{2000}^{143}$	$31.0 \pm 2.9$
$H_0$	$67.18 \pm 0.69$	$100\theta_{\mathrm{D}}$	$0.16106 \pm 0.00026$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.0$
$\Omega_{\Lambda}$	$0.6836 \pm 0.0094$	$z_{\mathrm{eq}}$	$3395 \pm 34$	$f_{2000}^{217}$	$108.0 \pm 1.9$
$\Omega_{\mathrm{m}}$	$0.3164 \pm 0.0094$	$k_{\mathrm{eq}}$	$0.01036 \pm 0.00010$	$\chi_{\mathrm{lensing}}^2$	$9.43 \pm 0.84$
$\Omega_{\mathrm{m}}h^2$	$0.1427 \pm 0.0014$	$100\theta_{\mathrm{eq}}$	$0.8140 \pm 0.0064$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.6$
$\Omega_{\mathrm{m}}h^3$	$0.09586 \pm 0.00045$	$100\theta_{\mathrm{s,eq}}$	$0.4499 \pm 0.0033$	$\chi_{\mathrm{lowl}}^2$	$24.9 \pm 1.6$
$\sigma_8$	$0.8109 \pm 0.0060$	$H(0.15)$	$72.51 \pm 0.59$	$\chi_{\mathrm{plik}}^2$	$771.1 \pm 5.2$
$S_8$	$0.833 \pm 0.016$	$D_{\mathrm{M}}(0.15)$	$645.0 \pm 5.9$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4561 \pm 0.0088$	$H(0.38)$	$82.69 \pm 0.44$	$\chi_{\mathrm{CMB}}^2$	$1202.4 \pm 5.6$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.6081 \pm 0.0076$	$D_{\mathrm{M}}(0.38)$	$1537 \pm 12$		
$\sigma_8/h^{0.5}$	$0.989 \pm 0.010$	$H(0.51)$	$89.45 \pm 0.35$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1209.64; R - 1 = 0.01135$$



**17.32**    **base\_r\_plikHM\_TT\_lowl\_lowE\_lensing\_post\_BAO\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02221 \pm 0.00020$	$\langle d^2 \rangle^{1/2}$	$2.434 \pm 0.021$	$D_{\mathrm{M}}(0.61)$	$2307 \pm 11$
$\Omega_{\mathrm{c}}h^2$	$0.1190 \pm 0.0011$	$z_{\mathrm{re}}$	$7.83^{+0.61}_{-0.72}$	$H(2.33)$	$235.76 \pm 0.68$
$100\theta_{\mathrm{MC}}$	$1.04098 \pm 0.00042$	$10^9 A_{\mathrm{s}}$	$2.100^{+0.025}_{-0.031}$	$D_{\mathrm{M}}(2.33)$	$5767 \pm 12$
$\tau$	$0.0557^{+0.0056}_{-0.0074}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.879 \pm 0.011$	$f\sigma_8(0.15)$	$0.4556 \pm 0.0061$
$\ln(10^{10} A_{\mathrm{s}})$	$3.045^{+0.012}_{-0.014}$	$D_{40}$	$1241^{+13}_{-17}$	$\sigma_8(0.15)$	$0.7479^{+0.0049}_{-0.0056}$
$n_{\mathrm{s}}$	$0.9667 \pm 0.0041$	$D_{220}$	$5722 \pm 41$	$f\sigma_8(0.38)$	$0.4741 \pm 0.0050$
$r$	$< 0.0492$	$D_{810}$	$2537 \pm 14$	$\sigma_8(0.38)$	$0.6630^{+0.0042}_{-0.0049}$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0025$	$D_{1420}$	$816.1 \pm 5.0$	$f\sigma_8(0.51)$	$0.4728 \pm 0.0044$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{2000}$	$230.2 \pm 1.8$	$\sigma_8(0.51)$	$0.6205^{+0.0039}_{-0.0046}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.9667 \pm 0.0041$	$f\sigma_8(0.61)$	$0.4679 \pm 0.0041$
$A_{143}^{\mathrm{tSZ}}$	$5.2^{+2.2}_{-1.9}$	$Y_{\mathrm{P}}$	$0.245328^{+0.000087}_{-0.000076}$	$\sigma_8(0.61)$	$0.5905^{+0.0037}_{-0.0044}$
$A_{100}^{\mathrm{PS}}$	$262 \pm 28$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246654^{+0.000087}_{-0.000076}$	$f\sigma_8(2.33)$	$0.2978^{+0.0019}_{-0.0023}$
$A_{143}^{\mathrm{PS}}$	$48 \pm 8$	$10^5 \mathrm{D}/\mathrm{H}$	$2.616 \pm 0.037$	$\sigma_8(2.33)$	$0.3070^{+0.0020}_{-0.0024}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	Age/Gyr	$13.807 \pm 0.028$	$r_{0.002}$	$< 0.0453$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$z_*$	$1090.04 \pm 0.29$	$r_{0.01}$	$< 0.0472$
$A^{\mathrm{kSZ}}$	$< 4.58$	$r_*$	$144.81 \pm 0.28$	$\ln(10^{10} A_{\mathrm{t}})$	$-0.64^{+1.4}_{-0.61}$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$100\theta_*$	$1.04118 \pm 0.00042$	$r_{10}$	$< 0.0231$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.908 \pm 0.028$	$10^9 A_{\mathrm{t}}$	$< 0.104$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$z_{\mathrm{drag}}$	$1059.50 \pm 0.45$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	$< 0.0926$
$A_{217}^{\mathrm{dust}TT}$	$93.6 \pm 7.2$	$r_{\mathrm{drag}}$	$147.53 \pm 0.32$	$f_{2000}^{143}$	$30.7 \pm 2.9$
$c_{100}$	$0.99960 \pm 0.00061$	$k_{\mathrm{D}}$	$0.14028 \pm 0.00043$	$f_{2000}^{143 \times 217}$	$33.2 \pm 2.0$
$c_{217}$	$0.99827 \pm 0.00063$	$100\theta_{\mathrm{D}}$	$0.16102 \pm 0.00026$	$f_{2000}^{217}$	$107.9 \pm 1.9$
$H_0$	$67.59 \pm 0.49$	$z_{\mathrm{eq}}$	$3375 \pm 25$	$\chi_{\mathrm{lensing}}^2$	$9.28 \pm 0.72$
$\Omega_{\Lambda}$	$0.6894 \pm 0.0064$	$k_{\mathrm{eq}}$	$0.010300 \pm 0.000075$	$\chi_{\mathrm{simall}}^2$	$397.2 \pm 1.7$
$\Omega_{\mathrm{m}}$	$0.3106 \pm 0.0064$	$100\theta_{\mathrm{eq}}$	$0.8179 \pm 0.0046$	$\chi_{\mathrm{lowl}}^2$	$24.5 \pm 1.5$
$\Omega_{\mathrm{m}} h^2$	$0.1419 \pm 0.0010$	$100\theta_{\mathrm{s,eq}}$	$0.4519 \pm 0.0024$	$\chi_{\mathrm{plik}}^2$	$771.4 \pm 5.2$
$\Omega_{\mathrm{m}} h^3$	$0.09589 \pm 0.00045$	$H(0.15)$	$72.86 \pm 0.43$	$\chi_{6\mathrm{DF}}^2$	$0.053 \pm 0.066$
$\sigma_8$	$0.8092^{+0.0055}_{-0.0062}$	$D_{\mathrm{M}}(0.15)$	$641.5 \pm 4.2$	$\chi_{\mathrm{MGS}}^2$	$1.32 \pm 0.46$
$S_8$	$0.823 \pm 0.012$	$H(0.38)$	$82.95 \pm 0.33$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.4$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4510 \pm 0.0065$	$D_{\mathrm{M}}(0.38)$	$1530.1 \pm 8.5$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.6$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.6041 \pm 0.0061$	$H(0.51)$	$89.65 \pm 0.27$	$\chi_{\mathrm{CMB}}^2$	$1202.5 \pm 5.6$
$\sigma_8/h^{0.5}$	$0.9843 \pm 0.0088$	$D_{\mathrm{M}}(0.51)$	$1982 \pm 10$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.1$
$r_{\mathrm{drag}} h$	$99.72 \pm 0.83$	$H(0.61)$	$95.25 \pm 0.24$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1215.85; R - 1 = 0.01875$$



### 17.33 base\_r\_plikHM\_TTTEEE\_lowl\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022391	$0.02237 \pm 0.00014$ (+1.1 $\sigma$ )	$S_8$	0.8320	$0.830 \pm 0.013$ (−0.2 $\sigma$ )	$D_M(0.38)$	1533.2	$1532.9 \pm 9.3$ (−0.4 $\sigma$ )
$\Omega_c h^2$	0.12002	$0.1199 \pm 0.0012$ (−0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4557	$0.4549 \pm 0.0070$ (−0.2 $\sigma$ )	$H(0.51)$	89.639	$89.64 \pm 0.27$ (+0.6 $\sigma$ )
$100\theta_{MC}$	1.040933	$1.04092 \pm 0.00031$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6082	$0.6073 \pm 0.0064$ (−0.1 $\sigma$ )	$D_M(0.51)$	1985.6	$1985 \pm 11$ (−0.5 $\sigma$ )
$\tau$	0.0543	$0.0543 \pm 0.0075$ (+0.2 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9889	$0.9878 \pm 0.0090$ (−0.1 $\sigma$ )	$H(0.61)$	95.291	$95.29 \pm 0.22$ (+0.7 $\sigma$ )
$\ln(10^{10} A_s)$	3.0445	$3.044 \pm 0.014$ (+0.3 $\sigma$ )	$r_{drag} h$	99.08	$99.16 \pm 0.93$ (+0.2 $\sigma$ )	$D_M(0.61)$	2310.0	$2310 \pm 12$ (−0.5 $\sigma$ )
$n_s$	0.96634	$0.9659 \pm 0.0041$ (+0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4430	$2.442 \pm 0.022$ (−0.1 $\sigma$ )	$H(2.33)$	236.59	$236.49 \pm 0.72$ (+0.1 $\sigma$ )
$r$	0.0005	$< 0.0494$ (+0.1 $\sigma$ )	$z_{re}$	7.68	$7.66 \pm 0.75$ (+0.2 $\sigma$ )	$D_M(2.33)$	5762.7	$5763 \pm 10$ (−0.8 $\sigma$ )
$y_{cal}$	1.00038	$1.0006 \pm 0.0025$ (+0.0 $\sigma$ )	$10^9 A_s$	2.0999	$2.099 \pm 0.030$ (+0.3 $\sigma$ )	$f\sigma_8(0.15)$	0.4600	$0.4592 \pm 0.0065$ (−0.1 $\sigma$ )
$A_{217}^{CIB}$	45.8	$47 \pm 7$ (−0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8836	$1.883 \pm 0.011$ (+0.0 $\sigma$ )	$\sigma_8(0.15)$	0.7496	$0.7490 \pm 0.0053$ (+0.2 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.65	—	$D_{40}$	1228.3	$1243_{-17}^{+13}$ (−0.0 $\sigma$ )	$f\sigma_8(0.38)$	0.4775	$0.4768 \pm 0.0052$ (−0.1 $\sigma$ )
$A_{143}^{tSZ}$	7.08	$5.5_{-1.9}^{+2.1}$ (+0.2 $\sigma$ )	$D_{220}$	5729.4	$5730 \pm 39$ (+0.4 $\sigma$ )	$\sigma_8(0.38)$	0.66410	$0.6636 \pm 0.0047$ (+0.2 $\sigma$ )
$A_{100}^{PS}$	248.4	$258 \pm 28$ (−0.2 $\sigma$ )	$D_{810}$	2540.9	$2539 \pm 13$ (+0.2 $\sigma$ )	$f\sigma_8(0.51)$	0.47567	$0.4750 \pm 0.0046$ (−0.1 $\sigma$ )
$A_{143}^{PS}$	50.6	$46 \pm 8$ (−0.4 $\sigma$ )	$D_{1420}$	818.43	$817.6 \pm 4.8$ (+0.5 $\sigma$ )	$\sigma_8(0.51)$	0.62132	$0.6209 \pm 0.0044$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{PS}$	53.1	$43 \pm 9$ (−0.1 $\sigma$ )	$D_{2000}$	231.35	$231.0 \pm 1.6$ (+0.7 $\sigma$ )	$f\sigma_8(0.61)$	0.47039	$0.4698 \pm 0.0041$ (−0.0 $\sigma$ )
$A_{217}^{PS}$	122.1	$115 \pm 10$ (+0.0 $\sigma$ )	$n_{s,0.002}$	0.96634	$0.9659 \pm 0.0041$ (+0.3 $\sigma$ )	$\sigma_8(0.61)$	0.59110	$0.5907 \pm 0.0042$ (+0.3 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.07$ (−0.2 $\sigma$ )	$Y_P$	0.245404	$0.245394_{-0.000052}^{+0.000060}$ (+1.1 $\sigma$ )	$f\sigma_8(2.33)$	0.29789	$0.2977 \pm 0.0022$ (+0.3 $\sigma$ )
$A_{100}^{dustTT}$	8.81	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P^{BBN}$	0.246730	$0.246720_{-0.000052}^{+0.000060}$ (+1.1 $\sigma$ )	$\sigma_8(2.33)$	0.30695	$0.3068 \pm 0.0024$ (+0.3 $\sigma$ )
$A_{143}^{dustTT}$	11.02	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5815	$2.586 \pm 0.027$ (−1.1 $\sigma$ )	$r_{0.002}$	0.0004	$< 0.0452$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.21	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	Age/Gyr	13.7951	$13.797 \pm 0.023$ (−0.8 $\sigma$ )	$r_{0.01}$	0.0004	$< 0.0473$ (+0.1 $\sigma$ )
$A_{217}^{dustTT}$	95.6	$93.8 \pm 7.3$ (+0.0 $\sigma$ )	$z_*$	1089.894	$1089.91 \pm 0.25$ (−0.9 $\sigma$ )	$\ln(10^{10} A_t)$	−4.62	$−0.65_{-0.57}^{+1.4}$ (+0.0 $\sigma$ )
$A_{100}^{dustTE}$	0.1151	$0.115 \pm 0.038$	$r_*$	144.411	$144.46 \pm 0.27$ (−0.4 $\sigma$ )	$r_{10}$	0.0002	$< 0.0231$ (+0.1 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1353	$0.135 \pm 0.030$	$100\theta_*$	1.041110	$1.04110 \pm 0.00030$ (+0.2 $\sigma$ )	$10^9 A_t$	0.001	$< 0.104$ (+0.1 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.482	$0.481 \pm 0.084$	$D_M(z_*)/\text{Gpc}$	13.8709	$13.876 \pm 0.025$ (−0.4 $\sigma$ )	$10^9 A_t e^{-2\tau}$	0.0009	$< 0.0930$ (+0.1 $\sigma$ )
$A_{143}^{dustTE}$	0.226	$0.226 \pm 0.054$	$z_{drag}$	1059.971	$1059.93 \pm 0.29$ (+1.2 $\sigma$ )	$f_{2000}^{143}$	28.57	$29.3 \pm 2.7$ (−0.6 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.667	$0.667 \pm 0.081$	$r_{drag}$	147.065	$147.12 \pm 0.27$ (−0.6 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.92	$32.1 \pm 1.8$ (−0.7 $\sigma$ )
$A_{217}^{dustTE}$	2.088	$2.09 \pm 0.27$	$k_D$	0.140912	$0.14084 \pm 0.00030$ (+0.9 $\sigma$ )	$f_{2000}^{217}$	106.44	$106.9 \pm 1.8$ (−0.6 $\sigma$ )
$c_{100}$	0.99973	$0.99966 \pm 0.00061$ (+0.1 $\sigma$ )	$100\theta_D$	0.160730	$0.16076 \pm 0.00017$ (−1.1 $\sigma$ )	$\chi_{lensing}^2$	8.839	$9.25 \pm 0.67$ (−0.3 $\sigma$ )
$c_{217}$	0.99818	$0.99819 \pm 0.00062$ (−0.1 $\sigma$ )	$z_{eq}$	3403.1	$3400 \pm 27$ (+0.1 $\sigma$ )	$\chi_{small}^2$	396.05	$397.2 \pm 1.8$ (+0.1 $\sigma$ )
$H_0$	67.37	$67.40 \pm 0.54$ (+0.4 $\sigma$ )	$k_{eq}$	0.010387	$0.010376 \pm 0.000082$ (+0.1 $\sigma$ )	$\chi_{lowl}^2$	23.21	$24.7 \pm 1.5$ (−0.1 $\sigma$ )
$\Omega_\Lambda$	0.6848	$0.6853 \pm 0.0074$ (+0.3 $\sigma$ )	$100\theta_{eq}$	0.8132	$0.8138 \pm 0.0051$ (+0.1 $\sigma$ )	$\chi_{plik}^2$	2345.0	$2359.2 \pm 5.7$ (+304.4 $\sigma$ )
$\Omega_m$	0.3152	$0.3147 \pm 0.0074$ (−0.3 $\sigma$ )	$100\theta_{s,eq}$	0.44932	$0.4496 \pm 0.0026$ (+0.0 $\sigma$ )	$\chi_{prior}^2$	1.55	$11.6 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_m h^2$	0.14305	$0.1429 \pm 0.0011$ (+0.1 $\sigma$ )	$H(0.15)$	72.693	$72.71 \pm 0.46$ (+0.4 $\sigma$ )	$\chi_{CMB}^2$	2773.1	$2790.4 \pm 6.0$ (+279.5 $\sigma$ )
$\Omega_m h^3$	0.096372	$0.09631 \pm 0.00029$ (+1.0 $\sigma$ )	$D_M(0.15)$	643.25	$643.1 \pm 4.6$ (−0.4 $\sigma$ )			
$\sigma_8$	0.8117	$0.8109 \pm 0.0059$ (+0.1 $\sigma$ )	$H(0.38)$	82.879	$82.89 \pm 0.34$ (+0.5 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2774.63$ ;  $\Delta\chi_{eff}^2 = 1586.09$ ;  $\bar{\chi}_{eff}^2 = 2801.95$ ;  $\Delta\bar{\chi}_{eff}^2 = 1592.09$ ;  $R - 1 = 0.00682$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.84 ( $\Delta$  -0.06) small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.05 ( $\Delta$  0.18) commander\_dx12\_v3.2.29: 23.20 ( $\Delta$  -0.17) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.99



### 17.34 base\_r\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022447	$0.02242 \pm 0.00013$ (+1.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4521	$0.4515 \pm 0.0058$ (+0.1 $\sigma$ )	$D_M(0.51)$	1979.0	$1979.3 \pm 8.6$ (−0.3 $\sigma$ )
$\Omega_c h^2$	0.11929	$0.11924 \pm 0.00094$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6056	$0.6047 \pm 0.0056$ (+0.1 $\sigma$ )	$H(0.61)$	95.413	$95.40 \pm 0.18$ (+0.6 $\sigma$ )
$100\theta_{MC}$	1.041014	$1.04101 \pm 0.00029$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9859	$0.9846 \pm 0.0083$ (+0.1 $\sigma$ )	$D_M(0.61)$	2303.0	$2303.3 \pm 9.3$ (−0.3 $\sigma$ )
$\tau$	0.0566	$0.0561^{+0.0068}_{-0.0076}$ (+0.2 $\sigma$ )	$r_{drag}h$	99.65	$99.67 \pm 0.73$ (−0.0 $\sigma$ )	$H(2.33)$	236.18	$236.11 \pm 0.57$ (+0.5 $\sigma$ )
$\ln(10^{10} A_s)$	3.0484	$3.046 \pm 0.014$ (+0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4367	$2.435 \pm 0.020$ (+0.1 $\sigma$ )	$D_M(2.33)$	5757.5	$5758.7 \pm 8.8$ (−0.7 $\sigma$ )
$n_s$	0.96801	$0.9675 \pm 0.0038$ (+0.2 $\sigma$ )	$z_{re}$	7.89	$7.82 \pm 0.73$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4568	$0.4561 \pm 0.0054$ (+0.1 $\sigma$ )
$r$	0.0000	$< 0.0513$ (+0.0 $\sigma$ )	$10^9 A_s$	2.1082	$2.104^{+0.028}_{-0.031}$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7496	$0.7486 \pm 0.0053$ (+0.2 $\sigma$ )
$y_{cal}$	1.00082	$1.0008 \pm 0.0024$ (−0.0 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8825	$1.880 \pm 0.011$ (+0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.47533	$0.4746 \pm 0.0046$ (+0.1 $\sigma$ )
$A_{217}^{CIB}$	45.7	$46 \pm 7$ (−0.2 $\sigma$ )	$D_{40}$	1226.5	$1241^{+12}_{-18}$ (+0.0 $\sigma$ )	$\sigma_8(0.38)$	0.66460	$0.6637 \pm 0.0047$ (+0.2 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.666	$> 0.367$ (+0.1 $\sigma$ )	$D_{220}$	5739.5	$5735 \pm 38$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.47403	$0.4733 \pm 0.0041$ (+0.2 $\sigma$ )
$A_{143}^{tSZ}$	7.06	$5.5 \pm 1.9$ (+0.2 $\sigma$ )	$D_{810}$	2542.8	$2540 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.51)$	0.62199	$0.6212 \pm 0.0044$ (+0.2 $\sigma$ )
$A_{100}^{PS}$	248.2	$258 \pm 28$ (−0.2 $\sigma$ )	$D_{1420}$	819.61	$818.3 \pm 4.7$ (+0.4 $\sigma$ )	$f\sigma_8(0.61)$	0.46911	$0.4684 \pm 0.0038$ (+0.2 $\sigma$ )
$A_{143}^{PS}$	50.2	$45 \pm 8$ (−0.4 $\sigma$ )	$D_{2000}$	231.78	$231.3 \pm 1.5$ (+0.6 $\sigma$ )	$\sigma_8(0.61)$	0.59186	$0.5911 \pm 0.0042$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{PS}$	52.9	$42 \pm 9$ (−0.1 $\sigma$ )	$n_{s,0.002}$	0.96801	$0.9675 \pm 0.0038$ (+0.2 $\sigma$ )	$f\sigma_8(2.33)$	0.29845	$0.2981 \pm 0.0022$ (+0.2 $\sigma$ )
$A_{217}^{PS}$	122.0	$115 \pm 10$ (+0.0 $\sigma$ )	$Y_P$	0.245425	$0.245412^{+0.000055}_{-0.000047}$ (+1.0 $\sigma$ )	$\sigma_8(2.33)$	0.30773	$0.3073 \pm 0.0023$ (+0.2 $\sigma$ )
$A^{kSZ}$	0.01	$< 3.99$ (−0.2 $\sigma$ )	$Y_P^{BBN}$	0.246752	$0.246739^{+0.000055}_{-0.000047}$ (+1.0 $\sigma$ )	$r_{0.002}$	0.0000	$< 0.0471$ (+0.1 $\sigma$ )
$A_{100}^{dustTT}$	8.82	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$10^5 D/H$	2.5713	$2.577 \pm 0.025$ (−1.1 $\sigma$ )	$r_{0.01}$	0.0000	$< 0.0491$ (+0.0 $\sigma$ )
$A_{143}^{dustTT}$	11.04	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	Age/Gyr	13.7840	$13.787 \pm 0.020$ (−0.8 $\sigma$ )	$\ln(10^{10} A_t)$	−7.83	$−0.60^{+1.4}_{-0.57}$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.21	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$z_*$	1089.760	$1089.79 \pm 0.22$ (−0.9 $\sigma$ )	$r_{10}$	0.0000	$< 0.0241$ (+0.0 $\sigma$ )
$A_{217}^{dustTT}$	95.8	$93.9 \pm 7.4$ (+0.0 $\sigma$ )	$r_*$	144.557	$144.59 \pm 0.22$ (−0.7 $\sigma$ )	$10^9 A_t$	0.000	$< 0.108$ (+0.1 $\sigma$ )
$A_{100}^{dustTE}$	0.1138	$0.114 \pm 0.038$	$100\theta_*$	1.041188	$1.04119 \pm 0.00029$ (+0.0 $\sigma$ )	$10^9 A_t e^{-2\tau}$	0.0000	$< 0.0964$ (+0.0 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1343	$0.135 \pm 0.030$	$D_M(z_*)/\text{Gpc}$	13.8838	$13.887 \pm 0.021$ (−0.7 $\sigma$ )	$f_{2000}^{143}$	28.29	$29.1 \pm 2.7$ (−0.5 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.478	$0.482 \pm 0.085$	$z_{drag}$	1060.047	$1059.99 \pm 0.29$ (+1.1 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.68	$31.9 \pm 1.8$ (−0.7 $\sigma$ )
$A_{143}^{dustTE}$	0.223	$0.226 \pm 0.054$	$r_{drag}$	147.196	$147.24 \pm 0.23$ (−0.9 $\sigma$ )	$f_{2000}^{217}$	106.33	$106.8 \pm 1.7$ (−0.6 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.665	$0.665 \pm 0.080$	$k_D$	0.140817	$0.14075 \pm 0.00028$ (+1.1 $\sigma$ )	$\chi_{lensing}^2$	8.720	$9.14 \pm 0.60$ (−0.2 $\sigma$ )
$A_{217}^{dustTE}$	2.082	$2.08 \pm 0.27$	$100\theta_D$	0.160689	$0.16073 \pm 0.00017$ (−1.1 $\sigma$ )	$\chi_{simall}^2$	396	$1296 \pm 1000$ (+521.0 $\sigma$ )
$c_{100}$	0.99975	$0.99966 \pm 0.00062$ (+0.1 $\sigma$ )	$z_{eq}$	3387.0	$3385 \pm 21$ (+0.4 $\sigma$ )	$\chi_{lowl}^2$	22.95	$24.5 \pm 1.5$ (−0.0 $\sigma$ )
$c_{217}$	0.99818	$0.99819 \pm 0.00062$ (−0.1 $\sigma$ )	$k_{eq}$	0.010337	$0.010332 \pm 0.000065$ (+0.4 $\sigma$ )	$\chi_{plik}^2$	2345	$1461 \pm 1000$ (+132.5 $\sigma$ )
$H_0$	67.698	$67.69 \pm 0.43$ (+0.2 $\sigma$ )	$100\theta_{eq}$	0.81631	$0.8166 \pm 0.0040$ (−0.2 $\sigma$ )	$\chi_{6DF}^2$	0.0294	$0.050 \pm 0.058$ (−0.1 $\sigma$ )
$\Omega_\Lambda$	0.6893	$0.6894 \pm 0.0057$ (+0.0 $\sigma$ )	$100\theta_{s,eq}$	0.45090	$0.4511 \pm 0.0021$ (−0.3 $\sigma$ )	$\chi_{MGS}^2$	1.217	$1.28 \pm 0.40$ (−0.1 $\sigma$ )
$\Omega_m$	0.3107	$0.3106 \pm 0.0057$ (−0.0 $\sigma$ )	$H(0.15)$	72.975	$72.97 \pm 0.37$ (+0.3 $\sigma$ )	$\chi_{DR12BAO}^2$	4.43	$4.8 \pm 1.3$ (−0.0 $\sigma$ )
$\Omega_m h^2$	0.14238	$0.14230 \pm 0.00089$ (+0.4 $\sigma$ )	$D_M(0.15)$	640.44	$640.5 \pm 3.6$ (−0.3 $\sigma$ )	$\chi_{prior}^2$	1.58	$11.6 \pm 4.6$ (+1.2 $\sigma$ )
$\Omega_m h^3$	0.096388	$0.09632 \pm 0.00029$ (+1.0 $\sigma$ )	$H(0.38)$	83.081	$83.07 \pm 0.27$ (+0.4 $\sigma$ )	$\chi_{CMB}^2$	2773.4	$2790.4 \pm 5.9$ (+283.4 $\sigma$ )
$\sigma_8$	0.8112	$0.8101 \pm 0.0059$ (+0.2 $\sigma$ )	$D_M(0.38)$	1527.6	$1527.8 \pm 7.3$ (−0.3 $\sigma$ )	$\chi_{BAO}^2$	5.68	$6.1 \pm 1.0$ (−0.0 $\sigma$ )
$S_8$	0.8255	$0.824 \pm 0.011$ (+0.1 $\sigma$ )	$H(0.51)$	89.795	$89.78 \pm 0.22$ (+0.5 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 2780.69$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.97$ ;  $\bar{\chi}_{\text{eff}}^2 = 2808.06$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1592.07$ ;  $R - 1 = 0.01525$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.03 ( $\Delta$  -0.00) MGS: 1.22 ( $\Delta$  0.00) DR12BAO: 4.43 ( $\Delta$  0.04) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.72 ( $\Delta$  -0.09) simall\_100x143\_offlike5\_EE\_Aplanck 396.49 ( $\Delta$  0.31) commander\_dx12\_v3\_2.29: 22.95 ( $\Delta$  -0.07) plik\_rd12\_HM\_v22b.TTTEEE: 2345.28



17.35 base\_r\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02238 \pm 0.00014 \quad (+1.1\sigma)$	$S_8$	$0.831 \pm 0.013 \quad (-0.1\sigma)$	$D_M(0.38)$	$1532.4 \pm 9.1 \quad (-0.4\sigma)$
$\Omega_c h^2$	$0.1198 \pm 0.0012 \quad (-0.1\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4549 \pm 0.0070 \quad (-0.1\sigma)$	$H(0.51)$	$89.65 \pm 0.27 \quad (+0.6\sigma)$
$100\theta_{MC}$	$1.04093 \pm 0.00030 \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6075 \pm 0.0063 \quad (-0.1\sigma)$	$D_M(0.51)$	$1985 \pm 11 \quad (-0.4\sigma)$
$\tau$	$0.0552^{+0.0053}_{-0.0079} \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.9882 \pm 0.0089 \quad (-0.1\sigma)$	$H(0.61)$	$95.30 \pm 0.22 \quad (+0.7\sigma)$
$\ln(10^{10} A_s)$	$3.045^{+0.011}_{-0.014} \quad (+0.2\sigma)$	$r_{\text{drag}} h$	$99.20 \pm 0.92 \quad (+0.2\sigma)$	$D_M(0.61)$	$2309 \pm 12 \quad (-0.4\sigma)$
$n_s$	$0.9661 \pm 0.0041 \quad (+0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.443 \pm 0.021 \quad (-0.1\sigma)$	$H(2.33)$	$236.45 \pm 0.70 \quad (+0.2\sigma)$
$r$	$< 0.0493 \quad (+0.0\sigma)$	$z_{\text{re}}$	$7.76^{+0.58}_{-0.76} \quad (+0.1\sigma)$	$D_M(2.33)$	$5763 \pm 10 \quad (-0.8\sigma)$
$y_{\text{cal}}$	$1.0006 \pm 0.0024 \quad (+0.0\sigma)$	$10^9 A_s$	$2.102^{+0.023}_{-0.031} \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4592 \pm 0.0065 \quad (-0.1\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_s e^{-2\tau}$	$1.882 \pm 0.011 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7495^{+0.0047}_{-0.0052} \quad (+0.1\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{40}$	$1243^{+13}_{-17} \quad (-0.0\sigma)$	$f\sigma_8(0.38)$	$0.4770 \pm 0.0052 \quad (-0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$D_{220}$	$5730 \pm 38 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6641^{+0.0039}_{-0.0047} \quad (+0.2\sigma)$
$A_{100}^{\text{PS}}$	$258 \pm 28 \quad (-0.2\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4752 \pm 0.0045 \quad (-0.1\sigma)$
$A_{143}^{\text{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{1420}$	$817.6 \pm 4.7 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.6213^{+0.0036}_{-0.0044} \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9 \quad (-0.1\sigma)$	$D_{2000}$	$231.0 \pm 1.6 \quad (+0.7\sigma)$	$f\sigma_8(0.61)$	$0.4700 \pm 0.0041 \quad (-0.0\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$n_{s,0.002}$	$0.9661 \pm 0.0041 \quad (+0.3\sigma)$	$\sigma_8(0.61)$	$0.5911^{+0.0034}_{-0.0043} \quad (+0.2\sigma)$
$A^{\text{kSZ}}$	$< 4.07 \quad (-0.2\sigma)$	$Y_P$	$0.245396^{+0.000059}_{-0.000052} \quad (+1.0\sigma)$	$f\sigma_8(2.33)$	$0.2979^{+0.0017}_{-0.0022} \quad (+0.3\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_P^{\text{BBN}}$	$0.246722^{+0.000060}_{-0.000052} \quad (+1.0\sigma)$	$\sigma_8(2.33)$	$0.3071^{+0.0019}_{-0.0024} \quad (+0.3\sigma)$
$A_{143}^{\text{dustTT}}$	$10.8 \pm 1.8 \quad (+0.1\sigma)$	$10^5 D/H$	$2.585 \pm 0.026 \quad (-1.1\sigma)$	$r_{0.002}$	$< 0.0451 \quad (+0.0\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$\text{Age}/\text{Gyr}$	$13.796 \pm 0.023 \quad (-0.8\sigma)$	$r_{0.01}$	$< 0.0472 \quad (+0.0\sigma)$
$A_{217}^{\text{dustTT}}$	$93.8 \pm 7.3 \quad (+0.0\sigma)$	$z_*$	$1089.90 \pm 0.25 \quad (-0.9\sigma)$	$\ln(10^{10} A_t)$	$-0.65^{+1.4}_{-0.57} \quad (+0.0\sigma)$
$A_{100}^{\text{dustTE}}$	$0.115 \pm 0.038$	$r_*$	$144.47 \pm 0.26 \quad (-0.4\sigma)$	$r_{10}$	$< 0.0231 \quad (+0.0\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$100\theta_*$	$1.04111 \pm 0.00030 \quad (+0.2\sigma)$	$10^9 A_t$	$< 0.104 \quad (+0.0\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.482 \pm 0.084$	$D_M(z_*)/\text{Gpc}$	$13.877 \pm 0.025 \quad (-0.5\sigma)$	$10^9 A_t e^{-2\tau}$	$< 0.0927 \quad (+0.0\sigma)$
$A_{143}^{\text{dustTE}}$	$0.226 \pm 0.054$	$z_{\text{drag}}$	$1059.94 \pm 0.29 \quad (+1.1\sigma)$	$f_{2000}^{143}$	$29.3 \pm 2.7 \quad (-0.6\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.667 \pm 0.081$	$r_{\text{drag}}$	$147.13 \pm 0.26 \quad (-0.6\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 1.8 \quad (-0.7\sigma)$
$A_{217}^{\text{dustTE}}$	$2.09 \pm 0.27$	$k_D$	$0.14083 \pm 0.00030 \quad (+0.9\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.8 \quad (-0.6\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_D$	$0.16076 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{\text{lensing}}^2$	$9.22 \pm 0.65 \quad (-0.3\sigma)$
$c_{217}$	$0.99819 \pm 0.00063 \quad (-0.1\sigma)$	$z_{\text{eq}}$	$3398 \pm 26 \quad (+0.1\sigma)$	$\chi_{\text{small}}^2$	$397.2 \pm 1.8 \quad (+0.1\sigma)$
$H_0$	$67.42 \pm 0.53 \quad (+0.4\sigma)$	$k_{\text{eq}}$	$0.010372 \pm 0.000081 \quad (+0.1\sigma)$	$\chi_{\text{lowl}}^2$	$24.7 \pm 1.5 \quad (-0.1\sigma)$
$\Omega_\Lambda$	$0.6857 \pm 0.0073 \quad (+0.2\sigma)$	$100\theta_{\text{eq}}$	$0.8141 \pm 0.0050 \quad (+0.0\sigma)$	$\chi_{\text{plik}}^2$	$2359.1 \pm 5.6 \quad (+304.5\sigma)$
$\Omega_m$	$0.3143 \pm 0.0073 \quad (-0.2\sigma)$	$100\theta_{s,\text{eq}}$	$0.4498 \pm 0.0026 \quad (-0.0\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_m h^2$	$0.1428 \pm 0.0011 \quad (+0.1\sigma)$	$H(0.15)$	$72.74 \pm 0.46 \quad (+0.4\sigma)$	$\chi_{\text{CMB}}^2$	$2790.2 \pm 5.9 \quad (+282.1\sigma)$
$\Omega_m h^3$	$0.09631 \pm 0.00029 \quad (+1.0\sigma)$	$D_M(0.15)$	$642.8 \pm 4.6 \quad (-0.4\sigma)$		
$\sigma_8$	$0.8114 \pm 0.0056 \quad (+0.1\sigma)$	$H(0.38)$	$82.90 \pm 0.33 \quad (+0.5\sigma)$		

$\bar{\chi}_{\text{eff}}^2 = 2801.72$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1592.08$ ;  $R - 1 = 0.00705$



17.36 base\_r\_plikHM\_TTTEEE\_lowl\_lowE\_lensing\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02242 \pm 0.00013 \quad (+1.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4516 \pm 0.0057 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1979.1 \pm 8.6 \quad (-0.3\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.11922 \pm 0.00093 \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6049 \pm 0.0055 \quad (+0.1\sigma)$	$H(0.61)$	$95.40 \pm 0.18 \quad (+0.6\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04101 \pm 0.00029 \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9850 \pm 0.0081 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2303.1 \pm 9.3 \quad (-0.3\sigma)$
$\tau$	$0.0566^{+0.0058}_{-0.0078} \quad (+0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.69 \pm 0.73 \quad (-0.0\sigma)$	$H(2.33)$	$236.10 \pm 0.57 \quad (+0.5\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.047^{+0.012}_{-0.015} \quad (+0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.436 \pm 0.020 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5758.5 \pm 8.8 \quad (-0.7\sigma)$
$n_{\mathrm{s}}$	$0.9676 \pm 0.0038 \quad (+0.2\sigma)$	$z_{\mathrm{re}}$	$7.88^{+0.62}_{-0.76} \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4562 \pm 0.0054 \quad (+0.1\sigma)$
$r$	$< 0.0511 \quad (+0.0\sigma)$	$10^9A_{\mathrm{s}}$	$2.106^{+0.024}_{-0.031} \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.7490^{+0.0048}_{-0.0054} \quad (+0.2\sigma)$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0024 \quad (-0.0\sigma)$	$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.880 \pm 0.010 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4748 \pm 0.0045 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7 \quad (-0.2\sigma)$	$D_{40}$	$1241^{+12}_{-18} \quad (+0.0\sigma)$	$\sigma_8(0.38)$	$0.6640^{+0.0041}_{-0.0048} \quad (+0.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	$> 0.367 \quad (+0.1\sigma)$	$D_{220}$	$5734 \pm 38 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4735 \pm 0.0040 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5 \pm 1.9 \quad (+0.2\sigma)$	$D_{810}$	$2540 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6215^{+0.0038}_{-0.0045} \quad (+0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$258 \pm 28 \quad (-0.2\sigma)$	$D_{1420}$	$818.2 \pm 4.7 \quad (+0.4\sigma)$	$f\sigma_8(0.61)$	$0.4686 \pm 0.0038 \quad (+0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.3\sigma)$	$D_{2000}$	$231.3 \pm 1.5 \quad (+0.6\sigma)$	$\sigma_8(0.61)$	$0.5914^{+0.0036}_{-0.0044} \quad (+0.2\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9676 \pm 0.0038 \quad (+0.2\sigma)$	$f\sigma_8(2.33)$	$0.2982^{+0.0018}_{-0.0023} \quad (+0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$Y_{\mathrm{P}}$	$0.245413^{+0.000055}_{-0.000047} \quad (+1.0\sigma)$	$\sigma_8(2.33)$	$0.3075^{+0.0019}_{-0.0024} \quad (+0.2\sigma)$
$A^{\mathrm{kSZ}}$	$< 3.99 \quad (-0.2\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246739^{+0.000055}_{-0.000047} \quad (+1.0\sigma)$	$r_{0.002}$	$< 0.0470 \quad (+0.0\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$10^5\mathrm{D}/\mathrm{H}$	$2.577 \pm 0.025 \quad (-1.0\sigma)$	$r_{0.01}$	$< 0.0490 \quad (+0.0\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.8 \pm 1.8 \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.787 \pm 0.020 \quad (-0.8\sigma)$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.60^{+1.4}_{-0.57} \quad (+0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$z_*$	$1089.79 \pm 0.22 \quad (-0.9\sigma)$	$r_{10}$	$< 0.0240 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.9 \pm 7.4 \quad (+0.0\sigma)$	$r_*$	$144.60 \pm 0.22 \quad (-0.8\sigma)$	$10^9A_{\mathrm{t}}$	$< 0.108 \quad (+0.0\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.114 \pm 0.038$	$100\theta_*$	$1.04119 \pm 0.00029 \quad (+0.0\sigma)$	$10^9A_{\mathrm{t}}e^{-2\tau}$	$< 0.0961 \quad (+0.0\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.030$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.888 \pm 0.021 \quad (-0.7\sigma)$	$f_{2000}^{143}$	$29.1 \pm 2.7 \quad (-0.5\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.482 \pm 0.085$	$z_{\mathrm{drag}}$	$1059.99 \pm 0.29 \quad (+1.1\sigma)$	$f_{2000}^{143 \times 217}$	$31.9 \pm 1.8 \quad (-0.6\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.226 \pm 0.054$	$r_{\mathrm{drag}}$	$147.25 \pm 0.23 \quad (-0.9\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.7 \quad (-0.6\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.665 \pm 0.080$	$k_{\mathrm{D}}$	$0.14074 \pm 0.00028 \quad (+1.1\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.12 \pm 0.55 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.27$	$100\theta_{\mathrm{D}}$	$0.16073 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{\mathrm{small}}^2$	$1291 \pm 1000 \quad (+510.7\sigma)$
$c_{100}$	$0.99966 \pm 0.00062 \quad (+0.1\sigma)$	$z_{\mathrm{eq}}$	$3385 \pm 21 \quad (+0.4\sigma)$	$\chi_{\mathrm{lowl}}^2$	$24.5 \pm 1.5 \quad (-0.0\sigma)$
$c_{217}$	$0.99819 \pm 0.00063 \quad (-0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010330 \pm 0.000064 \quad (+0.4\sigma)$	$\chi_{\mathrm{plik}}^2$	$1466 \pm 1000 \quad (+133.3\sigma)$
$H_0$	$67.70 \pm 0.42 \quad (+0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8167 \pm 0.0040 \quad (-0.3\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.049 \pm 0.057 \quad (-0.1\sigma)$
$\Omega_{\Lambda}$	$0.6895 \pm 0.0057 \quad (+0.0\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4511 \pm 0.0020 \quad (-0.3\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.29 \pm 0.40 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3105 \pm 0.0057 \quad (-0.0\sigma)$	$H(0.15)$	$72.97 \pm 0.37 \quad (+0.3\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.3 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14228 \pm 0.00088 \quad (+0.4\sigma)$	$D_{\mathrm{M}}(0.15)$	$640.5 \pm 3.6 \quad (-0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.6 \pm 4.6 \quad (+1.2\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09632 \pm 0.00029 \quad (+1.0\sigma)$	$H(0.38)$	$83.07 \pm 0.27 \quad (+0.4\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2790.2 \pm 5.9 \quad (+284.0\sigma)$
$\sigma_8$	$0.8104 \pm 0.0056 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.38)$	$1527.7 \pm 7.3 \quad (-0.3\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.05 \pm 0.99 \quad (-0.0\sigma)$
$S_8$	$0.824 \pm 0.010 \quad (+0.1\sigma)$	$H(0.51)$	$89.78 \pm 0.22 \quad (+0.5\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2807.89; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.04; R - 1 = 0.01530$$



17.37    base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022281	$0.02230 \pm 0.00015$	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6059	$0.6051 \pm 0.0065$	$H(0.51)$	89.567	$89.62 \pm 0.27$
$\Omega_{\text{c}}h^2$	0.11978	$0.1195 \pm 0.0012$	$\sigma_8/h^{0.5}$	0.9858	$0.9849 \pm 0.0091$	$D_{\text{M}}(0.51)$	1986.9	$1985 \pm 11$
$100\theta_{\text{MC}}$	1.040852	$1.04088 \pm 0.00031$	$r_{\text{drag}}h$	99.15	$99.36 \pm 0.93$	$H(0.61)$	95.210	$95.25 \pm 0.22$
$\tau$	0.0528	$0.0538 \pm 0.0073$	$\langle d^2 \rangle^{1/2}$	2.4373	$2.433 \pm 0.022$	$D_{\text{M}}(0.61)$	2311.6	$2309 \pm 12$
$\ln(10^{10}A_{\text{s}})$	3.0394	$3.041 \pm 0.014$	$z_{\text{re}}$	7.54	$7.62 \pm 0.74$	$H(2.33)$	236.32	$236.17 \pm 0.73$
$n_{\text{s}}$	0.96541	$0.9669 \pm 0.0043$	$10^9 A_{\text{s}}$	2.0893	$2.092 \pm 0.030$	$D_{\text{M}}(2.33)$	5767.8	$5766 \pm 10$
$r$	0.0020	$< 0.0725$	$10^9 A_{\text{s}}e^{-2\tau}$	1.8800	$1.878 \pm 0.011$	$f\sigma_8(0.15)$	0.4581	$0.4571 \pm 0.0065$
$y_{\text{cal}}$	1.00051	$1.0006 \pm 0.0025$	$D_{40}$	1228.2	$1244^{+15}_{-20}$	$\sigma_8(0.15)$	0.7472	$0.7473 \pm 0.0054$
$A_{100}^{\text{PS}}$	234.2	$238 \pm 25$	$D_{220}$	5719.5	$5715 \pm 39$	$f\sigma_8(0.38)$	0.4757	$0.4750 \pm 0.0053$
$A_{143}^{\text{PS}}$	39.8	$39 \pm 8$	$D_{810}$	2535.9	$2535 \pm 13$	$\sigma_8(0.38)$	0.66197	$0.6622 \pm 0.0047$
$A_{217}^{\text{PS}}$	101.8	$103 \pm 10$	$D_{1420}$	815.83	$816.3 \pm 4.8$	$f\sigma_8(0.51)$	0.47394	$0.4734 \pm 0.0046$
$A_{217}^{\text{CIB}}$	44.7	$39 \pm 7$	$D_{2000}$	230.25	$230.5 \pm 1.6$	$\sigma_8(0.51)$	0.61935	$0.6197 \pm 0.0044$
$A_{143}^{\text{tSZ}}$	6.62	$3.9^{+1.9}_{-2.5}$	$n_{\text{s},0.002}$	0.96541	$0.9669 \pm 0.0043$	$f\sigma_8(0.61)$	0.46872	$0.4683 \pm 0.0042$
$r_{143 \times 217}^{\text{PS}}$	0.597	$0.66 \pm 0.13$	$Y_{\text{P}}$	0.245359	$0.245365^{+0.000065}_{-0.000058}$	$\sigma_8(0.61)$	0.58923	$0.5896 \pm 0.0042$
$r_{143 \times 217}^{\text{CIB}}$	0.776	$0.55^{+0.38}_{-0.20}$	$Y_{\text{P}}^{\text{BBN}}$	0.246686	$0.246691^{+0.000065}_{-0.000058}$	$f\sigma_8(2.33)$	0.29697	$0.2972 \pm 0.0022$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.09	—	$10^5 \text{D}/\text{H}$	2.6025	$2.599 \pm 0.029$	$\sigma_8(2.33)$	0.30602	$0.3063 \pm 0.0024$
$A^{\text{kSZ}}$	0.01	$< 6.08$	$\text{Age}/\text{Gyr}$	13.8075	$13.804 \pm 0.023$	$r_{0.002}$	0.0018	$< 0.0671$
$A_{100}^{\text{dust}}$	1.010	$1.01 \pm 0.19$	$z_*$	1090.015	$1089.97 \pm 0.26$	$r_{0.01}$	0.0019	$< 0.0698$
$A_{143}^{\text{dust}}$	0.973	$0.96 \pm 0.18$	$r_*$	144.556	$144.61 \pm 0.28$	$\ln(10^{10}A_{\text{t}})$	−3.19	$-0.22^{+1.3}_{-0.47}$
$A_{217}^{\text{dust}}$	0.969	$0.98 \pm 0.10$	$100\theta_*$	1.041048	$1.04107 \pm 0.00030$	$r_{10}$	0.0009	$< 0.0344$
$A_{143 \times 217}^{\text{dust}}$	1.007	$1.03 \pm 0.16$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8857	$13.891 \pm 0.026$	$10^9 A_{\text{t}}$	0.004	$< 0.152$
$c_{100}$	0.99766	$0.9975 \pm 0.0011$	$z_{\text{drag}}$	1059.704	$1059.74 \pm 0.33$	$10^9 A_{\text{t}}e^{-2\tau}$	0.004	$< 0.136$
$c_{217}$	1.00131	$1.0011 \pm 0.0016$	$r_{\text{drag}}$	147.250	$147.30 \pm 0.28$	$f_{2000}^{143}$	30.16	$29.4 \pm 2.8$
$c_{TE}$	0.99652	$0.9965 \pm 0.0049$	$k_{\text{D}}$	0.140632	$0.14059 \pm 0.00033$	$f_{2000}^{217}$	106.93	$106.7 \pm 1.9$
$c_{EE}$	0.99231	$0.9921 \pm 0.0050$	$100\theta_{\text{D}}$	0.160879	$0.16087 \pm 0.00019$	$f_{2000}^{143 \times 217}$	32.28	$31.9 \pm 2.0$
$H_0$	67.34	$67.45 \pm 0.54$	$z_{\text{eq}}$	3394.8	$3389 \pm 27$	$\chi_{\text{lensing}}^2$	8.858	$9.38 \pm 0.76$
$\Omega_{\Lambda}$	0.6853	$0.6868 \pm 0.0074$	$k_{\text{eq}}$	0.010361	$0.010343 \pm 0.000083$	$\chi_{\text{small}}^2$	395.87	$397.2 \pm 1.6$
$\Omega_{\text{m}}$	0.3147	$0.3132 \pm 0.0074$	$100\theta_{\text{eq}}$	0.8143	$0.8155 \pm 0.0051$	$\chi_{\text{lowl}}^2$	23.23	$25.0 \pm 1.9$
$\Omega_{\text{m}}h^2$	0.14271	$0.1425 \pm 0.0011$	$100\theta_{\text{s,eq}}$	0.44998	$0.4506 \pm 0.0026$	$\chi_{\text{CamSpec}}^2$	11499.4	$11512.9 \pm 5.5$
$\Omega_{\text{m}}h^3$	0.096092	$0.09609 \pm 0.00032$	$H(0.15)$	72.650	$72.75 \pm 0.46$	$\chi_{\text{prior}}^2$	2.19	$7.8 \pm 3.4$
$\sigma_8$	0.8089	$0.8089 \pm 0.0060$	$D_{\text{M}}(0.15)$	643.60	$642.6 \pm 4.6$	$\chi_{\text{CMB}}^2$	11927.4	$11944.5 \pm 5.9$
$S_8$	0.8286	$0.826 \pm 0.013$	$H(0.38)$	82.818	$82.89 \pm 0.34$			
$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4538	$0.4527 \pm 0.0070$	$D_{\text{M}}(0.38)$	1534.2	$1532.2 \pm 9.2$			

Best-fit  $\chi_{\text{eff}}^2 = 11929.59$ ;  $\bar{\chi}_{\text{eff}}^2 = 11952.27$ ;  $R - 1 = 0.00977$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.86 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 commander\_dx12\_v3.2\_29: 23.23 CamSpec like\_10.7HM\_1400\_unified: 11499.43



17.38 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_lensing\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02234 \pm 0.00014$	$\sigma_8/h^{0.5}$	$0.9823 \pm 0.0084$	$H(0.61)$	$95.34 \pm 0.19$
$\Omega_{\mathrm{c}}h^2$	$0.11898 \pm 0.00096$	$r_{\mathrm{drag}}h$	$99.78 \pm 0.73$	$D_{\mathrm{M}}(0.61)$	$2304.0 \pm 9.3$
$100\theta_{\mathrm{MC}}$	$1.04094 \pm 0.00029$	$\langle d^2 \rangle^{1/2}$	$2.427 \pm 0.021$	$H(2.33)$	$235.86 \pm 0.59$
$\tau$	$0.0552 \pm 0.0072$	$z_{\mathrm{re}}$	$7.75 \pm 0.72$	$D_{\mathrm{M}}(2.33)$	$5762.4 \pm 9.1$
$\ln(10^{10}A_{\mathrm{s}})$	$3.042 \pm 0.014$	$10^9 A_{\mathrm{s}}$	$2.096 \pm 0.030$	$f\sigma_8(0.15)$	$0.4546 \pm 0.0055$
$n_{\mathrm{s}}$	$0.9682 \pm 0.0039$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.010$	$\sigma_8(0.15)$	$0.7470 \pm 0.0054$
$r$	$< 0.0744$	$D_{40}$	$1243^{+15}_{-20}$	$f\sigma_8(0.38)$	$0.4732 \pm 0.0047$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0024$	$D_{220}$	$5719 \pm 38$	$\sigma_8(0.38)$	$0.6623 \pm 0.0047$
$A_{100}^{\mathrm{PS}}$	$238 \pm 25$	$D_{810}$	$2536 \pm 13$	$f\sigma_8(0.51)$	$0.4720 \pm 0.0042$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8$	$D_{1420}$	$816.9 \pm 4.8$	$\sigma_8(0.51)$	$0.6199 \pm 0.0044$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10$	$D_{2000}$	$230.7 \pm 1.6$	$f\sigma_8(0.61)$	$0.4672 \pm 0.0039$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7$	$n_{\mathrm{s},0.002}$	$0.9682 \pm 0.0039$	$\sigma_8(0.61)$	$0.5899 \pm 0.0042$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5}$	$Y_{\mathrm{P}}$	$0.245380 \pm 0.000058$	$f\sigma_8(2.33)$	$0.2975 \pm 0.0022$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.67 \pm 0.13$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246706 \pm 0.000058$	$\sigma_8(2.33)$	$0.3068 \pm 0.0023$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.54^{+0.37}_{-0.21}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.592 \pm 0.027$	$r_{0.002}$	$< 0.0693$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.796 \pm 0.021$	$r_{0.01}$	$< 0.0718$
$A^{\mathrm{kSZ}}$	$< 5.95$	$z_*$	$1089.88 \pm 0.23$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.19^{+1.2}_{-0.47}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$r_*$	$144.72 \pm 0.23$	$r_{10}$	$< 0.0355$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$100\theta_*$	$1.04113 \pm 0.00029$	$10^9 A_{\mathrm{t}}$	$< 0.156$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.900 \pm 0.023$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.140$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$z_{\mathrm{drag}}$	$1059.78 \pm 0.32$	$f_{2000}^{143}$	$29.2 \pm 2.8$
$c_{100}$	$0.9975 \pm 0.0010$	$r_{\mathrm{drag}}$	$147.40 \pm 0.25$	$f_{2000}^{217}$	$106.6 \pm 1.9$
$c_{217}$	$1.0011 \pm 0.0016$	$k_{\mathrm{D}}$	$0.14052 \pm 0.00031$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.0$
$c_{TE}$	$0.9966 \pm 0.0049$	$100\theta_{\mathrm{D}}$	$0.16084 \pm 0.00019$	$\chi_{\mathrm{lensing}}^2$	$9.40 \pm 0.83$
$c_{EE}$	$0.9923 \pm 0.0049$	$z_{\mathrm{eq}}$	$3377 \pm 22$	$\chi_{\mathrm{small}}^2$	$397.3 \pm 1.7$
$H_0$	$67.69 \pm 0.43$	$k_{\mathrm{eq}}$	$0.010307 \pm 0.000067$	$\chi_{\mathrm{lowl}}^2$	$24.8 \pm 1.9$
$\Omega_{\Lambda}$	$0.6901 \pm 0.0057$	$100\theta_{\mathrm{eq}}$	$0.8178 \pm 0.0041$	$\chi_{\mathrm{CamSpec}}^2$	$11512.9 \pm 5.5$
$\Omega_{\mathrm{m}}$	$0.3099 \pm 0.0057$	$100\theta_{\mathrm{s,eq}}$	$0.4517 \pm 0.0021$	$\chi_{6\mathrm{DF}}^2$	$0.043 \pm 0.053$
$\Omega_{\mathrm{m}}h^2$	$0.14197 \pm 0.00091$	$H(0.15)$	$72.95 \pm 0.37$	$\chi_{\mathrm{MGS}}^2$	$1.34 \pm 0.41$
$\Omega_{\mathrm{m}}h^3$	$0.09610 \pm 0.00031$	$D_{\mathrm{M}}(0.15)$	$640.6 \pm 3.6$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.2$
$\sigma_8$	$0.8082 \pm 0.0059$	$H(0.38)$	$83.04 \pm 0.27$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.4$
$S_8$	$0.821 \pm 0.011$	$D_{\mathrm{M}}(0.38)$	$1528.1 \pm 7.3$	$\chi_{\mathrm{CMB}}^2$	$11944.4 \pm 5.8$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4499 \pm 0.0059$	$H(0.51)$	$89.74 \pm 0.22$	$\chi_{\mathrm{BAO}}^2$	$5.95 \pm 0.91$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6030 \pm 0.0057$	$D_{\mathrm{M}}(0.51)$	$1979.8 \pm 8.6$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11958.11; R - 1 = 0.01271$$



**17.39**    **base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_lensing\_post\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02230 \pm 0.00015$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6054 \pm 0.0064$	$H(0.51)$	$89.64 \pm 0.27$
$\Omega_{\mathrm{c}}h^2$	$0.1195 \pm 0.0012$	$\sigma_8/h^{0.5}$	$0.9855 \pm 0.0090$	$D_{\mathrm{M}}(0.51)$	$1984 \pm 11$
$100\theta_{\mathrm{MC}}$	$1.04088 \pm 0.00031$	$r_{\mathrm{drag}}h$	$99.40 \pm 0.92$	$H(0.61)$	$95.26 \pm 0.22$
$\tau$	$0.0549^{+0.0053}_{-0.0077}$	$\langle d^2 \rangle^{1/2}$	$2.434 \pm 0.022$	$D_{\mathrm{M}}(0.61)$	$2309 \pm 12$
$\ln(10^{10}A_{\mathrm{s}})$	$3.042^{+0.011}_{-0.014}$	$z_{\mathrm{re}}$	$7.73^{+0.58}_{-0.74}$	$H(2.33)$	$236.13 \pm 0.72$
$n_{\mathrm{s}}$	$0.9671 \pm 0.0042$	$10^9 A_{\mathrm{s}}$	$2.096^{+0.023}_{-0.030}$	$D_{\mathrm{M}}(2.33)$	$5766 \pm 10$
$r$	$< 0.0727$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878 \pm 0.011$	$f\sigma_8(0.15)$	$0.4572 \pm 0.0065$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{40}$	$1244^{+15}_{-20}$	$\sigma_8(0.15)$	$0.7479^{+0.0047}_{-0.0053}$
$A_{100}^{\mathrm{PS}}$	$238 \pm 25$	$D_{220}$	$5715 \pm 39$	$f\sigma_8(0.38)$	$0.4752 \pm 0.0052$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8$	$D_{810}$	$2535 \pm 13$	$\sigma_8(0.38)$	$0.6628^{+0.0039}_{-0.0047}$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10$	$D_{1420}$	$816.3 \pm 4.8$	$f\sigma_8(0.51)$	$0.4737 \pm 0.0046$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7$	$D_{2000}$	$230.5 \pm 1.6$	$\sigma_8(0.51)$	$0.6202^{+0.0036}_{-0.0044}$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5}$	$n_{\mathrm{s},0.002}$	$0.9671 \pm 0.0042$	$f\sigma_8(0.61)$	$0.4686 \pm 0.0041$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$Y_{\mathrm{P}}$	$0.245367^{+0.000064}_{-0.000057}$	$\sigma_8(0.61)$	$0.5901^{+0.0034}_{-0.0043}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.38}_{-0.20}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246693^{+0.000065}_{-0.000058}$	$f\sigma_8(2.33)$	$0.2975^{+0.0017}_{-0.0022}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.599 \pm 0.029$	$\sigma_8(2.33)$	$0.3066^{+0.0019}_{-0.0024}$
$A^{\mathrm{kSZ}}$	$< 6.05$	$\mathrm{Age}/\mathrm{Gyr}$	$13.803 \pm 0.023$	$r_{0.002}$	$< 0.0673$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$z_*$	$1089.96 \pm 0.26$	$r_{0.01}$	$< 0.0700$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$r_*$	$144.62 \pm 0.27$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.22^{+1.3}_{-0.47}$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$100\theta_*$	$1.04107 \pm 0.00030$	$r_{10}$	$< 0.0345$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.892 \pm 0.026$	$10^9 A_{\mathrm{t}}$	$< 0.152$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.74 \pm 0.33$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.136$
$c_{217}$	$1.0011 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.31 \pm 0.28$	$f_{2000}^{143}$	$29.3 \pm 2.8$
$c_{TE}$	$0.9965 \pm 0.0049$	$k_{\mathrm{D}}$	$0.14058 \pm 0.00033$	$f_{2000}^{217}$	$106.7 \pm 1.9$
$c_{EE}$	$0.9921 \pm 0.0050$	$100\theta_{\mathrm{D}}$	$0.16086 \pm 0.00019$	$f_{2000}^{143 \times 217}$	$31.9 \pm 2.0$
$H_0$	$67.48 \pm 0.53$	$z_{\mathrm{eq}}$	$3388 \pm 27$	$\chi_{\mathrm{lensing}}^2$	$9.32 \pm 0.71$
$\Omega_{\Lambda}$	$0.6872 \pm 0.0073$	$k_{\mathrm{eq}}$	$0.010340 \pm 0.000082$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.6$
$\Omega_{\mathrm{m}}$	$0.3128 \pm 0.0073$	$100\theta_{\mathrm{eq}}$	$0.8157 \pm 0.0051$	$\chi_{\mathrm{lowl}}^2$	$25.0 \pm 1.9$
$\Omega_{\mathrm{m}}h^2$	$0.1424 \pm 0.0011$	$100\theta_{\mathrm{s,eq}}$	$0.4507 \pm 0.0026$	$\chi_{\mathrm{CamSpec}}^2$	$11512.8 \pm 5.5$
$\Omega_{\mathrm{m}}h^3$	$0.09609 \pm 0.00032$	$H(0.15)$	$72.77 \pm 0.46$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.4$
$\sigma_8$	$0.8095 \pm 0.0056$	$D_{\mathrm{M}}(0.15)$	$642.4 \pm 4.5$	$\chi_{\mathrm{CMB}}^2$	$11944.3 \pm 5.8$
$S_8$	$0.827 \pm 0.013$	$H(0.38)$	$82.91 \pm 0.33$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4528 \pm 0.0070$	$D_{\mathrm{M}}(0.38)$	$1531.8 \pm 9.1$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11952.03; R - 1 = 0.00998$$



17.40 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_lensing\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02234 \pm 0.00014$	$\sigma_8/h^{0.5}$	$0.9828 \pm 0.0082$	$H(0.61)$	$95.34 \pm 0.19$
$\Omega_{\mathrm{c}}h^2$	$0.11896 \pm 0.00095$	$r_{\mathrm{drag}}h$	$99.80 \pm 0.73$	$D_{\mathrm{M}}(0.61)$	$2303.7 \pm 9.3$
$100\theta_{\mathrm{MC}}$	$1.04095 \pm 0.00029$	$\langle d^2 \rangle^{1/2}$	$2.428 \pm 0.020$	$H(2.33)$	$235.84 \pm 0.59$
$\tau$	$0.0559^{+0.0058}_{-0.0073}$	$z_{\mathrm{re}}$	$7.82^{+0.62}_{-0.70}$	$D_{\mathrm{M}}(2.33)$	$5762.2 \pm 9.0$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044^{+0.012}_{-0.014}$	$10^9 A_{\mathrm{s}}$	$2.099^{+0.025}_{-0.030}$	$f\sigma_8(0.15)$	$0.4547 \pm 0.0055$
$n_{\mathrm{s}}$	$0.9683 \pm 0.0039$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.876 \pm 0.010$	$\sigma_8(0.15)$	$0.7474^{+0.0047}_{-0.0054}$
$r$	$< 0.0745$	$D_{40}$	$1243^{+15}_{-20}$	$f\sigma_8(0.38)$	$0.4734 \pm 0.0046$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0024$	$D_{220}$	$5719 \pm 38$	$\sigma_8(0.38)$	$0.6627^{+0.0041}_{-0.0048}$
$A_{100}^{\mathrm{PS}}$	$238 \pm 25$	$D_{810}$	$2536 \pm 13$	$f\sigma_8(0.51)$	$0.4722 \pm 0.0041$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8$	$D_{1420}$	$816.8 \pm 4.8$	$\sigma_8(0.51)$	$0.6203^{+0.0038}_{-0.0045}$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10$	$D_{2000}$	$230.7 \pm 1.6$	$f\sigma_8(0.61)$	$0.4674 \pm 0.0038$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7$	$n_{\mathrm{s},0.002}$	$0.9683 \pm 0.0039$	$\sigma_8(0.61)$	$0.5903^{+0.0036}_{-0.0043}$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5}$	$Y_{\mathrm{P}}$	$0.245381 \pm 0.000057$	$f\sigma_8(2.33)$	$0.2977^{+0.0018}_{-0.0022}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.67 \pm 0.13$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246707 \pm 0.000058$	$\sigma_8(2.33)$	$0.3070^{+0.0019}_{-0.0023}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.54^{+0.37}_{-0.22}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.592 \pm 0.027$	$r_{0.002}$	$< 0.0693$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	Age/Gyr	$13.795 \pm 0.021$	$r_{0.01}$	$< 0.0719$
$A^{\mathrm{kSZ}}$	$< 5.95$	$z_*$	$1089.87 \pm 0.23$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.19^{+1.3}_{-0.47}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$r_*$	$144.73 \pm 0.23$	$r_{10}$	$< 0.0356$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$100\theta_*$	$1.04114 \pm 0.00029$	$10^9 A_{\mathrm{t}}$	$< 0.156$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.901 \pm 0.022$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.140$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$z_{\mathrm{drag}}$	$1059.79 \pm 0.32$	$f_{2000}^{143}$	$29.1 \pm 2.8$
$c_{100}$	$0.9975 \pm 0.0010$	$r_{\mathrm{drag}}$	$147.40 \pm 0.25$	$f_{2000}^{217}$	$106.5 \pm 1.9$
$c_{217}$	$1.0011 \pm 0.0016$	$k_{\mathrm{D}}$	$0.14051 \pm 0.00031$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.0$
$c_{TE}$	$0.9966 \pm 0.0049$	$100\theta_{\mathrm{D}}$	$0.16084 \pm 0.00019$	$\chi_{\mathrm{lensing}}^2$	$9.34 \pm 0.75$
$c_{EE}$	$0.9923 \pm 0.0049$	$z_{\mathrm{eq}}$	$3377 \pm 22$	$\chi_{\mathrm{small}}^2$	$397.3 \pm 1.8$
$H_0$	$67.70 \pm 0.42$	$k_{\mathrm{eq}}$	$0.010306 \pm 0.000066$	$\chi_{\mathrm{lowl}}^2$	$24.8 \pm 1.9$
$\Omega_{\Lambda}$	$0.6903 \pm 0.0057$	$100\theta_{\mathrm{eq}}$	$0.8179 \pm 0.0041$	$\chi_{\mathrm{CamSpec}}^2$	$11512.8 \pm 5.5$
$\Omega_{\mathrm{m}}$	$0.3097 \pm 0.0057$	$100\theta_{\mathrm{s,eq}}$	$0.4518 \pm 0.0021$	$\chi_{6\mathrm{DF}}^2$	$0.042 \pm 0.051$
$\Omega_{\mathrm{m}}h^2$	$0.14194 \pm 0.00091$	$H(0.15)$	$72.97 \pm 0.37$	$\chi_{\mathrm{MGS}}^2$	$1.35 \pm 0.41$
$\Omega_{\mathrm{m}}h^3$	$0.09610 \pm 0.00031$	$D_{\mathrm{M}}(0.15)$	$640.5 \pm 3.6$	$\chi_{\mathrm{DR12BAO}}^2$	$4.5 \pm 1.2$
$\sigma_8$	$0.8086^{+0.0053}_{-0.0060}$	$H(0.38)$	$83.04 \pm 0.27$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.4$
$S_8$	$0.822 \pm 0.011$	$D_{\mathrm{M}}(0.38)$	$1527.9 \pm 7.3$	$\chi_{\mathrm{CMB}}^2$	$11944.3 \pm 5.7$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4500 \pm 0.0059$	$H(0.51)$	$89.74 \pm 0.22$	$\chi_{\mathrm{BAO}}^2$	$5.92 \pm 0.88$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6032 \pm 0.0056$	$D_{\mathrm{M}}(0.51)$	$1979.6 \pm 8.6$		

$\bar{\chi}_{\mathrm{eff}}^2 = 11957.91$ ;  $R - 1 = 0.01331$



17.41 base\_r\_CleanedCamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022086	$0.02212 \pm 0.00022$	$\langle d^2 \rangle^{1/2}$	2.4473	$2.441 \pm 0.039$	$D_{\mathrm{M}}(0.51)$	1994.3	$1992 \pm 19$
$\Omega_{\mathrm{c}}h^2$	0.12026	$0.1201 \pm 0.0021$	$z_{\mathrm{re}}$	7.55	$7.45 \pm 0.81$	$H(0.61)$	95.017	$95.07 \pm 0.36$
$100\theta_{\mathrm{MC}}$	1.040816	$1.04082 \pm 0.00048$	$10^9 A_{\mathrm{s}}$	2.0872	$2.083 \pm 0.034$	$D_{\mathrm{M}}(0.61)$	2319.7	$2317 \pm 20$
$\tau$	0.0524	$0.0517 \pm 0.0079$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8796	$1.878 \pm 0.014$	$H(2.33)$	236.44	$236.3 \pm 1.3$
$\ln(10^{10} A_{\mathrm{s}})$	3.0384	$3.036 \pm 0.016$	$D_{40}$	1230.7	$1243_{-19}^{+17}$	$D_{\mathrm{M}}(2.33)$	5777.7	$5776 \pm 16$
$n_{\mathrm{s}}$	0.9629	$0.9637 \pm 0.0059$	$D_{220}$	5703.7	$5704 \pm 42$	$f\sigma_8(0.15)$	0.4612	$0.460 \pm 0.012$
$r$	0.0000	$< 0.0499$	$D_{810}$	2531.5	$2531 \pm 14$	$\sigma_8(0.15)$	0.7479	$0.7466 \pm 0.0076$
$y_{\mathrm{cal}}$	1.00029	$1.0004 \pm 0.0025$	$D_{1420}$	812.7	$813.0 \pm 5.3$	$f\sigma_8(0.38)$	0.4780	$0.4766 \pm 0.0097$
$A_{100}^{\mathrm{PS}}$	253.7	$255 \pm 27$	$D_{2000}$	228.92	$229.0 \pm 1.9$	$\sigma_8(0.38)$	0.6622	$0.6612 \pm 0.0061$
$A_{143}^{\mathrm{tSZ}}$	5.77	$3.8_{-2.7}^{+1.7}$	$n_{\mathrm{s},0.002}$	0.9629	$0.9637 \pm 0.0059$	$f\sigma_8(0.51)$	0.4757	$0.4745 \pm 0.0083$
$A^{\mathrm{kSZ}}$	0.996	$5.3_{-2.2}^{+4.1}$	$Y_{\mathrm{P}}$	0.245278	$0.24529_{-0.000084}^{+0.00010}$	$\sigma_8(0.51)$	0.6194	$0.6185 \pm 0.0055$
$A_{100}^{\mathrm{dust}}$	1.002	$1.00 \pm 0.20$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246604	$0.24661_{-0.000084}^{+0.00011}$	$f\sigma_8(0.61)$	0.4702	$0.4690 \pm 0.0074$
$A_{143}^{\mathrm{power}}$	12.17	$10.3_{-2.5}^{+2.1}$	$10^5 \mathrm{D}/\mathrm{H}$	2.6397	$2.634 \pm 0.042$	$\sigma_8(0.61)$	0.5891	$0.5884 \pm 0.0052$
$A_{217}^{\mathrm{power}}$	11.26	$8.1_{-2.9}^{+1.7}$	Age/Gyr	13.8304	$13.826 \pm 0.037$	$f\sigma_8(2.33)$	0.29677	$0.2964 \pm 0.0025$
$A_{143 \times 217}^{\mathrm{power}}$	7.53	$4.3_{-2.8}^{+1.7}$	$z_*$	1090.305	$1090.25 \pm 0.41$	$\sigma_8(2.33)$	0.30566	$0.3054 \pm 0.0027$
$\gamma_{143}^{\mathrm{power}}$	1.312	$1.34_{-0.54}^{+0.41}$	$r_*$	144.581	$144.61 \pm 0.48$	$r_{0.002}$	0.0000	$< 0.0453$
$\gamma_{217}^{\mathrm{power}}$	1.26	$1.38_{-0.58}^{+0.76}$	$100\theta_*$	1.041025	$1.04103 \pm 0.00047$	$r_{0.01}$	0.0000	$< 0.0475$
$\gamma_{143 \times 217}^{\mathrm{power}}$	1.20	$1.34 \pm 0.59$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8883	$13.891 \pm 0.045$	$\ln(10^{10} A_{\mathrm{t}})$	-7.95	$-0.66_{-0.60}^{+1.4}$
$c_{100}$	0.99802	$0.9978 \pm 0.0011$	$z_{\mathrm{drag}}$	1059.284	$1059.35 \pm 0.45$	$r_{10}$	0.0000	$< 0.0232$
$c_{217}$	0.99913	$0.9994_{-0.0017}^{+0.0012}$	$r_{\mathrm{drag}}$	147.341	$147.36 \pm 0.48$	$10^9 A_{\mathrm{t}}$	0.000	$< 0.104$
$H_0$	66.99	$67.10 \pm 0.93$	$k_{\mathrm{D}}$	0.14039	$0.14038 \pm 0.00052$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	0.0000	$< 0.0936$
$\Omega_{\Lambda}$	0.6814	$0.683 \pm 0.013$	$100\theta_{\mathrm{D}}$	0.161131	$0.16110 \pm 0.00026$	$f_{2000}^{143}$	23.74	$23_{-3}^{+3}$
$\Omega_{\mathrm{m}}$	0.3186	$0.317 \pm 0.013$	$z_{\mathrm{eq}}$	3401.6	$3397 \pm 48$	$f_{2000}^{217}$	17.09	$16.8 \pm 2.0$
$\Omega_{\mathrm{m}} h^2$	0.14299	$0.1428 \pm 0.0020$	$k_{\mathrm{eq}}$	0.010382	$0.01037 \pm 0.00015$	$f_{2000}^{143 \times 217}$	11.56	$11.0 \pm 2.2$
$\Omega_{\mathrm{m}} h^3$	0.095795	$0.09581 \pm 0.00045$	$100\theta_{\mathrm{eq}}$	0.8125	$0.8135 \pm 0.0090$	$\chi_{\mathrm{small}}^2$	395.87	$397.0 \pm 1.6$
$\sigma_8$	0.8101	$0.8086 \pm 0.0091$	$100\theta_{\mathrm{s,eq}}$	0.44920	$0.4497 \pm 0.0046$	$\chi_{\mathrm{lowl}}^2$	23.60	$25.0 \pm 1.8$
$S_8$	0.8348	$0.832 \pm 0.024$	$H(0.15)$	72.34	$72.44 \pm 0.79$	$\chi_{\mathrm{CamSpec}}^2$	6704.38	$6716.7 \pm 5.3$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	0.4572	$0.456 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	646.6	$645.8 \pm 8.0$	$\chi_{\mathrm{prior}}^2$	1.24	$5.3 \pm 3.0$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	0.6086	$0.607 \pm 0.012$	$H(0.38)$	82.57	$82.64 \pm 0.57$	$\chi_{\mathrm{CMB}}^2$	7123.9	$7138.7 \pm 5.5$
$\sigma_8/h^{0.5}$	0.9897	$0.987 \pm 0.016$	$D_{\mathrm{M}}(0.38)$	1540.4	$1539 \pm 16$			
$r_{\mathrm{drag}} h$	98.71	$98.9 \pm 1.6$	$H(0.51)$	89.349	$89.41 \pm 0.45$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 7125.09$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 7144.04$ ;  $R - 1 = 0.00760$

$\chi_{\mathrm{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 commander\_dx12.v3.2\_29: 23.60 CamSpec like\_10.7cleaned: 6704.38



17.42 base\_r\_plikHM\_TT\_lowl\_lowE\_BK15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022093	$0.02208 \pm 0.00021$	$\sigma_8$	0.8156	$0.8141 \pm 0.0086$	$H(0.38)$	82.34	$82.38 \pm 0.55$
$\Omega_{\mathrm{c}}h^2$	0.12135	$0.1212 \pm 0.0021$	$S_8$	0.8490	$0.846 \pm 0.024$	$D_{\mathrm{M}}(0.38)$	1547.3	$1546 \pm 15$
$100\theta_{\mathrm{MC}}$	1.040695	$1.04072 \pm 0.00047$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4650	$0.463 \pm 0.013$	$H(0.51)$	89.189	$89.22 \pm 0.43$
$\tau$	0.0527	$0.0523 \pm 0.0078$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6158	$0.614 \pm 0.011$	$D_{\mathrm{M}}(0.51)$	2002.3	$2001 \pm 18$
$\ln(10^{10}A_{\mathrm{s}})$	3.0439	$3.042 \pm 0.016$	$\sigma_8/h^{0.5}$	0.9996	$0.997 \pm 0.016$	$H(0.61)$	94.908	$94.93 \pm 0.34$
$n_{\mathrm{s}}$	0.9624	$0.9619 \pm 0.0057$	$r_{\mathrm{drag}}h$	97.90	$98.1 \pm 1.6$	$D_{\mathrm{M}}(0.61)$	2328.2	$2327 \pm 19$
$r$	0.0117	$< 0.0310$	$\langle d^2 \rangle^{1/2}$	2.4660	$2.463 \pm 0.037$	$H(2.33)$	237.15	$237.0 \pm 1.3$
$y_{\mathrm{cal}}$	1.00061	$1.0007 \pm 0.0025$	$z_{\mathrm{re}}$	7.60	$7.53 \pm 0.80$	$D_{\mathrm{M}}(2.33)$	5781.5	$5781 \pm 16$
$A_{B,\mathrm{dust}}$	4.63	$4.87_{-1.2}^{+0.81}$	$10^9A_{\mathrm{s}}$	2.0988	$2.096 \pm 0.033$	$f\sigma_8(0.15)$	0.4685	$0.467 \pm 0.012$
$A_{B,\mathrm{sync}}$	1.48	$1.64_{-1.3}^{+0.53}$	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8887	$1.887 \pm 0.013$	$\sigma_8(0.15)$	0.7523	$0.7511 \pm 0.0072$
$\alpha_{B,\mathrm{dust}}$	-0.542	$-0.57_{-0.33}^{+0.20}$	$D_{40}$	1238.6	$1245 \pm 16$	$f\sigma_8(0.38)$	0.4838	$0.4825 \pm 0.0093$
$\beta_{B,\mathrm{dust}}$	1.574	$1.599 \pm 0.096$	$D_{220}$	5707.7	$5711 \pm 41$	$\sigma_8(0.38)$	0.6654	$0.6644 \pm 0.0058$
$\alpha_{B,\mathrm{sync}}$	-0.33	—	$D_{810}$	2539.7	$2538 \pm 14$	$f\sigma_8(0.51)$	0.4808	$0.4796 \pm 0.0079$
$\beta_{B,\mathrm{sync}}$	-3.035	$-3.10 \pm 0.27$	$D_{1420}$	815.7	$814.7 \pm 5.1$	$\sigma_8(0.51)$	0.6221	$0.6212 \pm 0.0053$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	-0.333	$-0.35 \pm 0.28$	$D_{2000}$	230.03	$229.6 \pm 1.8$	$f\sigma_8(0.61)$	0.4748	$0.4736 \pm 0.0070$
$A_{217}^{\mathrm{CIB}}$	48.7	$48 \pm 7$	$n_{\mathrm{s},0.002}$	0.9624	$0.9619 \pm 0.0057$	$\sigma_8(0.61)$	0.59160	$0.5908 \pm 0.0050$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.31	—	$Y_{\mathrm{P}}$	0.245281	$0.24527_{-0.000087}^{+0.00010}$	$f\sigma_8(2.33)$	0.29776	$0.2974 \pm 0.0025$
$A_{143}^{\mathrm{tSZ}}$	7.01	$5.1 \pm 2.0$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246607	$0.24659_{-0.000087}^{+0.00011}$	$\sigma_8(2.33)$	0.30641	$0.3061 \pm 0.0026$
$A_{100}^{\mathrm{PS}}$	254.7	$264 \pm 28$	$10^5\mathrm{D}/\mathrm{H}$	2.6384	$2.642 \pm 0.041$	$r_{0.002}$	0.0104	$< 0.0277$
$A_{143}^{\mathrm{PS}}$	49.4	$49 \pm 8$	$\mathrm{Age}/\mathrm{Gyr}$	13.8378	$13.838 \pm 0.035$	$r_{0.01}$	0.0110	$< 0.0293$
$A_{143 \times 217}^{\mathrm{PS}}$	46.8	$44 \pm 9$	$z_*$	1090.391	$1090.40 \pm 0.40$	$\ln(10^{10}A_{\mathrm{t}})$	-1.40	$-1.01_{-0.43}^{+1.1}$
$A_{217}^{\mathrm{PS}}$	119.5	$116 \pm 10$	$r_*$	144.295	$144.36 \pm 0.47$	$r_{10}$	0.0053	$< 0.0142$
$A^{\mathrm{kSZ}}$	0.00	$< 4.79$	$100\theta_*$	1.040900	$1.04093 \pm 0.00046$	$10^9A_{\mathrm{t}}$	0.0245	$< 0.0649$
$A_{100}^{\mathrm{dust}TT}$	8.79	$8.9 \pm 1.8$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8625	$13.869 \pm 0.044$	$10^9A_{\mathrm{t}}e^{-2\tau}$	0.0221	$< 0.0584$
$A_{143}^{\mathrm{dust}TT}$	10.79	$10.7 \pm 1.8$	$z_{\mathrm{drag}}$	1059.399	$1059.33 \pm 0.45$	$f_{2000}^{143}$	30.38	$31.2 \pm 2.9$
$A_{143 \times 217}^{\mathrm{dust}TT}$	19.34	$18.2 \pm 3.3$	$r_{\mathrm{drag}}$	147.044	$147.12 \pm 0.48$	$f_{2000}^{143 \times 217}$	33.27	$33.6 \pm 2.0$
$A_{217}^{\mathrm{dust}TT}$	94.6	$93.4 \pm 7.4$	$k_{\mathrm{D}}$	0.14070	$0.14061 \pm 0.00052$	$f_{2000}^{217}$	107.76	$108.2 \pm 1.9$
$c_{100}$	0.99964	$0.99960 \pm 0.00062$	$100\theta_{\mathrm{D}}$	0.161070	$0.16111 \pm 0.00026$	$\chi_{\mathrm{BKPLANCK}}^2$	734.86	$739.1 \pm 2.7$
$c_{217}$	0.99825	$0.99825 \pm 0.00062$	$z_{\mathrm{eq}}$	3427.8	$3423 \pm 47$	$\chi_{\mathrm{simall}}^2$	396.01	$397.1 \pm 1.7$
$H_0$	66.58	$66.65 \pm 0.89$	$k_{\mathrm{eq}}$	0.010462	$0.01045 \pm 0.00014$	$\chi_{\mathrm{lowl}}^2$	24.26	$25.0 \pm 1.5$
$\Omega_{\Lambda}$	0.6750	$0.676 \pm 0.013$	$100\theta_{\mathrm{eq}}$	0.8078	$0.8088 \pm 0.0087$	$\chi_{\mathrm{plik}}^2$	758.5	$771.1 \pm 5.3$
$\Omega_{\mathrm{m}}$	0.3250	$0.324 \pm 0.013$	$100\theta_{\mathrm{s,eq}}$	0.44672	$0.4472 \pm 0.0045$	$\chi_{\mathrm{prior}}^2$	1.47	$8.9 \pm 4.0$
$\Omega_{\mathrm{m}}h^2$	0.14409	$0.1439 \pm 0.0020$	$H(0.15)$	72.00	$72.06 \pm 0.76$	$\chi_{\mathrm{CMB}}^2$	1913.6	$1932.3 \pm 6.2$
$\Omega_{\mathrm{m}}h^3$	0.095933	$0.09588 \pm 0.00045$	$D_{\mathrm{M}}(0.15)$	650.2	$649.6 \pm 7.8$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 1915.08$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1941.21$ ;  $R - 1 = 0.00244$

$\chi_{\mathrm{eff}}^2$ : CMB - BK15\_dust: 734.86 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.01 commander\_dx12\_v3\_2\_29: 24.26 plik\_rd12\_HM\_v22\_TT: 758.48



17.43 base\_r\_plikHM\_TT\_lowl\_lowE\_BK15\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022219	$0.02219 \pm 0.00019$	$S_8$	0.8252	$0.824 \pm 0.015$	$H(0.51)$	89.613	$89.61 \pm 0.28$
$\Omega_c h^2$	0.11926	$0.1191 \pm 0.0012$	$\sigma_8 \Omega_m^{0.5}$	0.4520	$0.4514 \pm 0.0081$	$D_M(0.51)$	1983.9	$1984 \pm 11$
$100\theta_{MC}$	1.040960	$1.04097 \pm 0.00042$	$\sigma_8 \Omega_m^{0.25}$	0.6048	$0.6043 \pm 0.0078$	$H(0.61)$	95.232	$95.23 \pm 0.24$
$\tau$	0.0547	$0.0546 \pm 0.0077$	$\sigma_8/h^{0.5}$	0.9850	$0.984 \pm 0.011$	$D_M(0.61)$	2308.5	$2308 \pm 12$
$\ln(10^{10} A_s)$	3.0426	$3.043 \pm 0.016$	$r_{\text{drag}} h$	99.54	$99.62 \pm 0.93$	$H(2.33)$	235.93	$235.82 \pm 0.78$
$n_s$	0.96687	$0.9665 \pm 0.0042$	$\langle d^2 \rangle^{1/2}$	2.4334	$2.433 \pm 0.027$	$D_M(2.33)$	5767.9	$5769 \pm 12$
$r$	0.0175	$< 0.0335$	$z_{\text{re}}$	7.74	$7.72 \pm 0.78$	$f\sigma_8(0.15)$	0.4565	$0.4560 \pm 0.0076$
$y_{\text{cal}}$	1.00036	$1.0009 \pm 0.0025$	$10^9 A_s$	2.0960	$2.096 \pm 0.034$	$\sigma_8(0.15)$	0.7478	$0.7475 \pm 0.0067$
$A_{B,\text{dust}}$	4.59	$4.88_{-1.2}^{+0.80}$	$10^9 A_s e^{-2\tau}$	1.8787	$1.879 \pm 0.011$	$f\sigma_8(0.38)$	0.4748	$0.4743 \pm 0.0064$
$A_{B,\text{sync}}$	1.43	$1.64_{-1.4}^{+0.52}$	$D_{40}$	1230.7	$1236 \pm 14$	$\sigma_8(0.38)$	0.6628	$0.6626 \pm 0.0057$
$\alpha_{B,\text{dust}}$	-0.502	$-0.56_{-0.32}^{+0.22}$	$D_{220}$	5715.4	$5720 \pm 40$	$f\sigma_8(0.51)$	0.4733	$0.4729 \pm 0.0057$
$\beta_{B,\text{dust}}$	1.575	$1.595 \pm 0.095$	$D_{810}$	2536.8	$2537 \pm 14$	$\sigma_8(0.51)$	0.6203	$0.6201 \pm 0.0053$
$\alpha_{B,\text{sync}}$	-0.32	—	$D_{1420}$	816.2	$816.0 \pm 5.1$	$f\sigma_8(0.61)$	0.4683	$0.4679 \pm 0.0053$
$\beta_{B,\text{sync}}$	-3.042	$-3.10 \pm 0.28$	$D_{2000}$	230.26	$230.1 \pm 1.8$	$\sigma_8(0.61)$	0.59019	$0.5900 \pm 0.0050$
$\epsilon_{\text{dust,sync}}$	-0.340	$-0.34 \pm 0.28$	$n_{s,0.002}$	0.96687	$0.9665 \pm 0.0042$	$f\sigma_8(2.33)$	0.29756	$0.2975 \pm 0.0025$
$A_{217}^{\text{CIB}}$	48.7	$48 \pm 7$	$Y_{\text{P}}$	0.245334	$0.245318_{-0.000074}^{+0.000088}$	$\sigma_8(2.33)$	0.30675	$0.3067 \pm 0.0026$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.32	—	$Y_{\text{P}}^{\text{BBN}}$	0.246660	$0.246644_{-0.000075}^{+0.000088}$	$r_{0.002}$	0.0159	$< 0.0305$
$A_{143}^{\text{tSZ}}$	7.04	$5.1 \pm 2.0$	$10^5 \text{D}/\text{H}$	2.6143	$2.620 \pm 0.037$	$r_{0.01}$	0.0167	$< 0.0319$
$A_{100}^{\text{PS}}$	253.4	$263 \pm 28$	$\text{Age}/\text{Gyr}$	13.8084	$13.810 \pm 0.028$	$\ln(10^{10} A_t)$	-1.00	$-0.91_{-0.41}^{+1.1}$
$A_{143}^{\text{PS}}$	49.0	$49 \pm 8$	$z_*$	1090.049	$1090.08 \pm 0.29$	$r_{10}$	0.0081	$< 0.0156$
$A_{143 \times 217}^{\text{PS}}$	46.5	$43 \pm 9$	$r_*$	144.738	$144.79 \pm 0.32$	$10^9 A_t$	0.0367	$< 0.0702$
$A_{217}^{\text{PS}}$	119.0	$115 \pm 10$	$100\theta_*$	1.041162	$1.04118 \pm 0.00042$	$10^9 A_t e^{-2\tau}$	0.0329	$< 0.0629$
$A^{\text{kSZ}}$	0.00	$< 4.79$	$D_M(z_*)/\text{Gpc}$	13.9015	$13.907 \pm 0.031$	$f_{2000}^{143}$	30.10	$30.8 \pm 2.9$
$A_{100}^{\text{dustTT}}$	8.86	$8.9 \pm 1.8$	$z_{\text{drag}}$	1059.513	$1059.45 \pm 0.44$	$f_{2000}^{143 \times 217}$	33.01	$33.3 \pm 2.0$
$A_{143}^{\text{dustTT}}$	10.76	$10.7 \pm 1.8$	$r_{\text{drag}}$	147.457	$147.52 \pm 0.35$	$f_{2000}^{217}$	107.48	$107.9 \pm 1.9$
$A_{143 \times 217}^{\text{dustTT}}$	19.44	$18.2 \pm 3.3$	$k_{\text{D}}$	0.140368	$0.14027 \pm 0.00045$	$\chi_{\text{BKPLANCK}}^2$	735.55	$739.9 \pm 2.7$
$A_{217}^{\text{dustTT}}$	94.7	$93.4 \pm 7.4$	$100\theta_{\text{D}}$	0.160997	$0.16105 \pm 0.00026$	$\chi_{\text{small}}^2$	396.19	$397.2 \pm 1.9$
$c_{100}$	0.99965	$0.99961 \pm 0.00061$	$z_{\text{eq}}$	3381.0	$3377 \pm 28$	$\chi_{\text{lowl}}^2$	23.52	$24.0 \pm 1.1$
$c_{217}$	0.99827	$0.99826 \pm 0.00062$	$k_{\text{eq}}$	0.010319	$0.010308 \pm 0.000087$	$\chi_{\text{plik}}^2$	759.5	$771.7 \pm 5.4$
$H_0$	67.50	$67.53 \pm 0.54$	$100\theta_{\text{eq}}$	0.8167	$0.8173 \pm 0.0052$	$\chi_{6\text{DF}}^2$	0.0375	$0.067 \pm 0.084$
$\Omega_{\Lambda}$	0.6881	$0.6886 \pm 0.0073$	$100\theta_{s,\text{eq}}$	0.45129	$0.4516 \pm 0.0027$	$\chi_{\text{MGS}}^2$	1.156	$1.27 \pm 0.50$
$\Omega_{\text{m}}$	0.3119	$0.3114 \pm 0.0073$	$H(0.15)$	72.784	$72.80 \pm 0.46$	$\chi_{\text{DR12BAO}}^2$	4.56	$5.0 \pm 1.8$
$\Omega_{\text{m}} h^2$	0.14213	$0.1420 \pm 0.0012$	$D_M(0.15)$	642.21	$642.0 \pm 4.6$	$\chi_{\text{prior}}^2$	1.41	$9.0 \pm 4.1$
$\Omega_{\text{m}} h^3$	0.095939	$0.09587 \pm 0.00046$	$H(0.38)$	82.896	$82.90 \pm 0.35$	$\chi_{\text{BAO}}^2$	5.75	$6.3 \pm 1.5$
$\sigma_8$	0.8093	$0.8089 \pm 0.0076$	$D_M(0.38)$	1531.5	$1531.2 \pm 9.3$	$\chi_{\text{CMB}}^2$	1914.8	$1932.8 \pm 6.1$

Best-fit  $\chi_{\text{eff}}^2 = 1921.94$ ;  $\bar{\chi}_{\text{eff}}^2 = 1948.08$ ;  $R - 1 = 0.00580$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.04 MGS: 1.16 DR12BAO: 4.56 CMB - BK15\_dust: 735.55 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.19 commander\_dx12\_v3\_2\_29: 23.52 plik\_rd12\_HM\_v22\_TT: 759.51



17.44 base\_r\_plikHM\_TT\_lowl\_lowE\_BK15\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022122	$0.02211 \pm 0.00021$	$\sigma_8$	0.8122	$0.8115 \pm 0.0062$	$H(0.38)$	82.543	$82.55 \pm 0.44$
$\Omega_c h^2$	0.12047	$0.1204 \pm 0.0016$	$S_8$	0.8385	$0.838 \pm 0.016$	$D_M(0.38)$	1541.3	$1541 \pm 12$
$100\theta_{MC}$	1.040762	$1.04078 \pm 0.00045$	$\sigma_8 \Omega_m^{0.5}$	0.4593	$0.4589 \pm 0.0088$	$H(0.51)$	89.337	$89.34 \pm 0.35$
$\tau$	0.0529	$0.0523 \pm 0.0078$	$\sigma_8 \Omega_m^{0.25}$	0.6107	$0.6102 \pm 0.0076$	$D_M(0.51)$	1995.4	$1995 \pm 14$
$\ln(10^{10} A_s)$	3.0420	$3.041 \pm 0.015$	$\sigma_8/h^{0.5}$	0.9928	$0.992 \pm 0.010$	$H(0.61)$	95.015	$95.02 \pm 0.29$
$n_s$	0.96334	$0.9632 \pm 0.0048$	$r_{\text{drag}} h$	98.55	$98.6 \pm 1.2$	$D_M(0.61)$	2320.8	$2321 \pm 15$
$r$	0.0128	$< 0.0319$	$\langle d^2 \rangle^{1/2}$	2.4528	$2.451 \pm 0.025$	$H(2.33)$	236.61	$236.59 \pm 0.96$
$y_{\text{cal}}$	1.00057	$1.0007 \pm 0.0025$	$z_{\text{re}}$	7.60	$7.52^{+0.80}_{-0.72}$	$D_M(2.33)$	5777.3	$5777 \pm 14$
$A_{B,\text{dust}}$	4.63	$4.87^{+0.80}_{-1.2}$	$10^9 A_s$	2.0948	$2.092 \pm 0.031$	$f\sigma_8(0.15)$	0.4632	$0.4627 \pm 0.0080$
$A_{B,\text{sync}}$	1.42	$1.63^{+0.53}_{-1.4}$	$10^9 A_s e^{-2\tau}$	1.8843	$1.884 \pm 0.011$	$\sigma_8(0.15)$	0.7497	$0.7491 \pm 0.0055$
$\alpha_{B,\text{dust}}$	-0.523	$-0.56^{+0.22}_{-0.32}$	$D_{40}$	1236.8	$1242 \pm 14$	$f\sigma_8(0.38)$	0.4797	$0.4792 \pm 0.0062$
$\beta_{B,\text{dust}}$	1.573	$1.597 \pm 0.095$	$D_{220}$	5713.5	$5714 \pm 41$	$\sigma_8(0.38)$	0.66368	$0.6632 \pm 0.0048$
$\alpha_{B,\text{sync}}$	-0.54	—	$D_{810}$	2537.5	$2537 \pm 13$	$f\sigma_8(0.51)$	0.4773	$0.4769 \pm 0.0053$
$\beta_{B,\text{sync}}$	-3.040	$-3.10^{+0.29}_{-0.26}$	$D_{1420}$	815.0	$814.9 \pm 5.1$	$\sigma_8(0.51)$	0.62072	$0.6202 \pm 0.0045$
$\epsilon_{\text{dust,sync}}$	-0.339	$-0.34 \pm 0.28$	$D_{2000}$	229.76	$229.7 \pm 1.8$	$f\sigma_8(0.61)$	0.47168	$0.4712 \pm 0.0047$
$A_{217}^{\text{CIB}}$	50.8	$48 \pm 7$	$n_{s,0.002}$	0.96334	$0.9632 \pm 0.0048$	$\sigma_8(0.61)$	0.59041	$0.5900 \pm 0.0043$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.05	—	$Y_P$	0.245294	$0.245284^{+0.000098}_{-0.000081}$	$f\sigma_8(2.33)$	0.29737	$0.2971 \pm 0.0023$
$A_{143}^{\text{tSZ}}$	7.20	$5.1 \pm 2.0$	$Y_P^{\text{BBN}}$	0.246620	$0.246610^{+0.000098}_{-0.000081}$	$\sigma_8(2.33)$	0.30622	$0.3060 \pm 0.0025$
$A_{100}^{\text{PS}}$	256.9	$264 \pm 28$	$10^5 D/H$	2.6328	$2.635 \pm 0.039$	$r_{0.002}$	0.0114	$< 0.0287$
$A_{143}^{\text{PS}}$	45.8	$49 \pm 8$	Age/Gyr	13.8292	$13.829 \pm 0.032$	$r_{0.01}$	0.0121	$< 0.0303$
$A_{143 \times 217}^{\text{PS}}$	39.8	$44 \pm 9$	$z_*$	1090.277	$1090.29 \pm 0.34$	$\ln(10^{10} A_t)$	-1.32	$-0.97^{+1.1}_{-0.42}$
$A_{217}^{\text{PS}}$	116.0	$115 \pm 10$	$r_*$	144.499	$144.51 \pm 0.37$	$r_{10}$	0.0059	$< 0.0147$
$A^{\text{kSZ}}$	0.00	$< 4.86$	$100\theta_*$	1.040970	$1.04099 \pm 0.00044$	$10^9 A_t$	0.0268	$< 0.0668$
$A_{100}^{\text{dustTT}}$	8.89	$8.9 \pm 1.8$	$D_M(z_*)/\text{Gpc}$	13.8812	$13.882 \pm 0.035$	$10^9 A_t e^{-2\tau}$	0.0241	$< 0.0600$
$A_{143}^{\text{dustTT}}$	10.76	$10.7 \pm 1.8$	$z_{\text{drag}}$	1059.399	$1059.37 \pm 0.45$	$f_{2000}^{143}$	30.83	$31.2 \pm 2.9$
$A_{143 \times 217}^{\text{dustTT}}$	19.04	$18.3 \pm 3.3$	$r_{\text{drag}}$	147.243	$147.26 \pm 0.38$	$f_{2000}^{143 \times 217}$	33.47	$33.6 \pm 2.0$
$A_{217}^{\text{dustTT}}$	94.0	$93.4 \pm 7.4$	$k_D$	0.140515	$0.14049 \pm 0.00046$	$f_{2000}^{217}$	108.00	$108.2 \pm 1.9$
$c_{100}$	0.99961	$0.99961 \pm 0.00061$	$100\theta_D$	0.161065	$0.16109 \pm 0.00026$	$\chi_{\text{lensing}}^2$	8.98	$9.53 \pm 0.95$
$c_{217}$	0.99827	$0.99826 \pm 0.00062$	$z_{\text{eq}}$	3407.5	$3407 \pm 36$	$\chi_{\text{BKPLANCK}}^2$	735.21	$739.4 \pm 2.6$
$H_0$	66.93	$66.94 \pm 0.70$	$k_{\text{eq}}$	0.010400	$0.01040 \pm 0.00011$	$\chi_{\text{small}}^2$	396.00	$397.0 \pm 1.6$
$\Omega_\Lambda$	0.6803	$0.6803 \pm 0.0098$	$100\theta_{\text{eq}}$	0.8115	$0.8117 \pm 0.0066$	$\chi_{\text{lowl}}^2$	24.07	$24.6 \pm 1.2$
$\Omega_m$	0.3197	$0.3197 \pm 0.0098$	$100\theta_{s,\text{eq}}$	0.44865	$0.4487 \pm 0.0034$	$\chi_{\text{plik}}^2$	758.35	$770.9 \pm 5.2$
$\Omega_m h^2$	0.14324	$0.1432 \pm 0.0015$	$H(0.15)$	72.30	$72.30 \pm 0.60$	$\chi_{\text{prior}}^2$	1.70	$8.9 \pm 4.0$
$\Omega_m h^3$	0.095873	$0.09586 \pm 0.00045$	$D_M(0.15)$	647.1	$647.1 \pm 6.1$	$\chi_{\text{CMB}}^2$	1922.6	$1941.5 \pm 6.1$

Best-fit  $\chi_{\text{eff}}^2 = 1924.32$ ;  $\bar{\chi}_{\text{eff}}^2 = 1950.36$ ;  $R - 1 = 0.00332$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p.teb\_consext8: 8.98 BK15\_dust: 735.21 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.00 commander\_dx12\_v3.2.29: 24.07  
plik\_rd12\_HM\_v22.TT: 758.35



17.45 base\_r\_plikHM\_TT\_lowl\_lowE\_BK15\_post\_BAO\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022208	$0.02219 \pm 0.00019$	$\sigma_8 \Omega_m^{0.5}$	0.4531	$0.4523 \pm 0.0065$	$H(0.61)$	95.210	$95.22 \pm 0.23$
$\Omega_c h^2$	0.11941	$0.1192 \pm 0.0011$	$\sigma_8 \Omega_m^{0.25}$	0.6059	$0.6053 \pm 0.0061$	$D_M(0.61)$	2309.8	$2309 \pm 11$
$100\theta_{MC}$	1.040959	$1.04096 \pm 0.00042$	$\sigma_8/h^{0.5}$	0.9866	$0.9859 \pm 0.0088$	$H(2.33)$	236.02	$235.87 \pm 0.70$
$\tau$	0.0546	$0.0555 \pm 0.0073$	$r_{\text{drag}} h$	99.42	$99.56 \pm 0.83$	$D_M(2.33)$	5768.7	$5769 \pm 12$
$\ln(10^{10} A_s)$	3.0439	$3.045 \pm 0.014$	$\langle d^2 \rangle^{1/2}$	2.4379	$2.438 \pm 0.021$	$f\sigma_8(0.15)$	0.4576	$0.4569 \pm 0.0060$
$n_s$	0.96623	$0.9661 \pm 0.0041$	$z_{\text{re}}$	7.74	$7.81 \pm 0.73$	$\sigma_8(0.15)$	0.7485	$0.7484 \pm 0.0055$
$r$	0.0155	$< 0.0331$	$10^9 A_s$	2.0988	$2.101 \pm 0.030$	$f\sigma_8(0.38)$	0.47566	$0.4751 \pm 0.0050$
$y_{\text{cal}}$	1.00089	$1.0010 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8815	$1.880 \pm 0.011$	$\sigma_8(0.38)$	0.66337	$0.6634 \pm 0.0048$
$A_{B,\text{dust}}$	4.60	$4.87_{-1.2}^{+0.79}$	$D_{40}$	1232.9	$1237 \pm 13$	$f\sigma_8(0.51)$	0.47410	$0.4737 \pm 0.0045$
$A_{B,\text{sync}}$	1.43	$1.64_{-1.4}^{+0.51}$	$D_{220}$	5722.8	$5723 \pm 40$	$\sigma_8(0.51)$	0.62074	$0.6208 \pm 0.0045$
$\alpha_{B,\text{dust}}$	-0.503	$-0.56_{-0.33}^{+0.22}$	$D_{810}$	2539.5	$2538 \pm 13$	$f\sigma_8(0.61)$	0.46902	$0.4687 \pm 0.0041$
$\beta_{B,\text{dust}}$	1.574	$1.596 \pm 0.095$	$D_{1420}$	816.8	$816.1 \pm 5.0$	$\sigma_8(0.61)$	0.59061	$0.5907 \pm 0.0043$
$\alpha_{B,\text{sync}}$	-0.35	—	$D_{2000}$	230.41	$230.2 \pm 1.8$	$f\sigma_8(2.33)$	0.29774	$0.2978 \pm 0.0022$
$\beta_{B,\text{sync}}$	-3.039	$-3.10 \pm 0.28$	$n_{s,0.002}$	0.96623	$0.9661 \pm 0.0041$	$\sigma_8(2.33)$	0.30690	$0.3070 \pm 0.0024$
$\epsilon_{\text{dust,sync}}$	-0.346	$-0.34 \pm 0.28$	$Y_P$	0.245329	$0.245320_{-0.000074}^{+0.000088}$	$r_{0.002}$	0.0140	$< 0.0301$
$A_{217}^{\text{CIB}}$	48.9	$48 \pm 7$	$Y_P^{\text{BBN}}$	0.246656	$0.246646_{-0.000074}^{+0.000088}$	$r_{0.01}$	0.0147	$< 0.0316$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.28	—	$10^5 \text{D/H}$	2.6163	$2.619 \pm 0.037$	$\ln(10^{10} A_t)$	-1.12	$-0.92_{-0.40}^{+1.1}$
$A_{143}^{\text{tSZ}}$	7.07	$5.1 \pm 2.0$	Age/Gyr	13.8103	$13.811 \pm 0.027$	$r_{10}$	0.0071	$< 0.0153$
$A_{100}^{\text{PS}}$	255.1	$263 \pm 28$	$z_*$	1090.074	$1090.08 \pm 0.28$	$10^9 A_t$	0.0326	$< 0.0696$
$A_{143}^{\text{PS}}$	48.6	$49 \pm 8$	$r_*$	144.706	$144.77 \pm 0.29$	$10^9 A_t e^{-2\tau}$	0.0292	$< 0.0623$
$A_{143 \times 217}^{\text{PS}}$	45.8	$43 \pm 9$	$100\theta_*$	1.041156	$1.04116 \pm 0.00041$	$f_{2000}^{143}$	30.30	$30.8 \pm 2.9$
$A_{217}^{\text{PS}}$	119.0	$115 \pm 10$	$D_M(z_*)/\text{Gpc}$	13.8986	$13.905 \pm 0.028$	$f_{2000}^{143 \times 217}$	33.18	$33.3 \pm 2.0$
$A^{\text{kSZ}}$	0.02	$< 4.76$	$z_{\text{drag}}$	1059.513	$1059.47 \pm 0.44$	$f_{2000}^{217}$	107.72	$107.9 \pm 1.9$
$A_{100}^{\text{dust}TT}$	8.87	$8.9 \pm 1.8$	$r_{\text{drag}}$	147.428	$147.50 \pm 0.32$	$\chi_{\text{lensing}}^2$	8.806	$9.23 \pm 0.66$
$A_{143}^{\text{dust}TT}$	10.78	$10.7 \pm 1.8$	$k_D$	0.140389	$0.14030 \pm 0.00042$	$\chi_{\text{BKPLANCK}}^2$	735.47	$739.8 \pm 2.6$
$A_{143 \times 217}^{\text{dust}TT}$	19.35	$18.2 \pm 3.3$	$100\theta_D$	0.161007	$0.16104 \pm 0.00025$	$\chi_{\text{simall}}^2$	396.21	$397.3 \pm 1.9$
$A_{217}^{\text{dust}TT}$	94.6	$93.4 \pm 7.4$	$z_{\text{eq}}$	3384.3	$3379 \pm 25$	$\chi_{\text{lowl}}^2$	23.60	$24.1 \pm 1.1$
$c_{100}$	0.99966	$0.99962 \pm 0.00061$	$k_{\text{eq}}$	0.010329	$0.010314 \pm 0.000077$	$\chi_{\text{plik}}^2$	759.2	$771.3 \pm 5.3$
$c_{217}$	0.99825	$0.99826 \pm 0.00062$	$100\theta_{\text{eq}}$	0.81608	$0.8170 \pm 0.0046$	$\chi_{6\text{DF}}^2$	0.0471	$0.065 \pm 0.076$
$H_0$	67.438	$67.50 \pm 0.49$	$100\theta_{s,\text{eq}}$	0.45096	$0.4514 \pm 0.0024$	$\chi_{\text{MGS}}^2$	1.097	$1.23 \pm 0.45$
$\Omega_\Lambda$	0.6872	$0.6881 \pm 0.0065$	$H(0.15)$	72.730	$72.78 \pm 0.43$	$\chi_{\text{DR12BAO}}^2$	4.77	$5.0 \pm 1.6$
$\Omega_m$	0.3128	$0.3119 \pm 0.0065$	$D_M(0.15)$	642.76	$642.3 \pm 4.2$	$\chi_{\text{prior}}^2$	1.55	$8.9 \pm 4.1$
$\Omega_m h^2$	0.14227	$0.1421 \pm 0.0011$	$H(0.38)$	82.858	$82.89 \pm 0.32$	$\chi_{\text{CMB}}^2$	1923.3	$1941.7 \pm 6.1$
$\Omega_m h^3$	0.095942	$0.09588 \pm 0.00045$	$D_M(0.38)$	1532.6	$1531.7 \pm 8.5$	$\chi_{\text{BAO}}^2$	5.92	$6.3 \pm 1.3$
$\sigma_8$	0.8102	$0.8100 \pm 0.0061$	$H(0.51)$	89.584	$89.60 \pm 0.27$			
$S_8$	0.8273	$0.826 \pm 0.012$	$D_M(0.51)$	1985.2	$1984 \pm 10$			

Best-fit  $\chi_{\text{eff}}^2 = 1930.77$ ;  $\bar{\chi}_{\text{eff}}^2 = 1956.87$ ;  $R - 1 = 0.00562$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.05 MGS: 1.10 DR12BAO: 4.78 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.81 BK15\_dust: 735.47 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.21 commander\_dx12\_v3.2.29: 23.60 plik\_rd12\_HM\_v22.TT: 759.22



17.46 base\_r\_plikHM\_TT\_lowl\_lowE\_BK15\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02208 \pm 0.00021$	$\sigma_8$	$0.8151 \pm 0.0082$	$H(0.38)$	$82.40 \pm 0.54$
$\Omega_{\mathrm{c}}h^2$	$0.1211 \pm 0.0021$	$S_8$	$0.847 \pm 0.024$	$D_{\mathrm{M}}(0.38)$	$1546 \pm 15$
$100\theta_{\mathrm{MC}}$	$1.04073 \pm 0.00047$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.464 \pm 0.013$	$H(0.51)$	$89.23 \pm 0.42$
$\tau$	$0.0538^{+0.0049}_{-0.0081}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.615 \pm 0.011$	$D_{\mathrm{M}}(0.51)$	$2000 \pm 18$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.012}_{-0.016}$	$\sigma_8/h^{0.5}$	$0.998 \pm 0.015$	$H(0.61)$	$94.94 \pm 0.34$
$n_{\mathrm{s}}$	$0.9621 \pm 0.0056$	$r_{\mathrm{drag}}h$	$98.1 \pm 1.6$	$D_{\mathrm{M}}(0.61)$	$2326 \pm 19$
$r$	$< 0.0309$	$\langle d^2 \rangle^{1/2}$	$2.466 \pm 0.037$	$H(2.33)$	$237.0 \pm 1.3$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025$	$z_{\mathrm{re}}$	$7.69^{+0.55}_{-0.79}$	$D_{\mathrm{M}}(2.33)$	$5781 \pm 16$
$A_{B,\mathrm{dust}}$	$4.88^{+0.81}_{-1.2}$	$10^9 A_{\mathrm{s}}$	$2.102^{+0.024}_{-0.033}$	$f\sigma_8(0.15)$	$0.467 \pm 0.012$
$A_{B,\mathrm{sync}}$	$1.64^{+0.53}_{-1.3}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.887 \pm 0.013$	$\sigma_8(0.15)$	$0.7520 \pm 0.0068$
$\alpha_{B,\mathrm{dust}}$	$-0.57^{+0.20}_{-0.33}$	$D_{40}$	$1244 \pm 16$	$f\sigma_8(0.38)$	$0.4829 \pm 0.0092$
$\beta_{B,\mathrm{dust}}$	$1.599 \pm 0.096$	$D_{220}$	$5711 \pm 41$	$\sigma_8(0.38)$	$0.6653^{+0.0049}_{-0.0056}$
$\alpha_{B,\mathrm{sync}}$	—	$D_{810}$	$2538 \pm 14$	$f\sigma_8(0.51)$	$0.4800 \pm 0.0079$
$\beta_{B,\mathrm{sync}}$	$-3.10 \pm 0.27$	$D_{1420}$	$814.7 \pm 5.1$	$\sigma_8(0.51)$	$0.6220^{+0.0043}_{-0.0051}$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$-0.35 \pm 0.28$	$D_{2000}$	$229.7 \pm 1.8$	$f\sigma_8(0.61)$	$0.4741 \pm 0.0069$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$n_{\mathrm{s},0.002}$	$0.9621 \pm 0.0056$	$\sigma_8(0.61)$	$0.5916^{+0.0039}_{-0.0048}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.24527^{+0.00010}_{-0.000086}$	$f\sigma_8(2.33)$	$0.2978^{+0.0018}_{-0.0024}$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24660^{+0.00010}_{-0.000086}$	$\sigma_8(2.33)$	$0.3065^{+0.0019}_{-0.0026}$
$A_{100}^{\mathrm{PS}}$	$263 \pm 28$	$10^5 \mathrm{D}/\mathrm{H}$	$2.641 \pm 0.041$	$r_{0.002}$	$< 0.0277$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$\mathrm{Age}/\mathrm{Gyr}$	$13.836 \pm 0.035$	$r_{0.01}$	$< 0.0292$
$A_{143 \times 217}^{\mathrm{PS}}$	$44 \pm 9$	$z_*$	$1090.38 \pm 0.40$	$\ln(10^{10}A_{\mathrm{t}})$	$-1.00^{+1.1}_{-0.43}$
$A_{217}^{\mathrm{PS}}$	$116 \pm 10$	$r_*$	$144.38 \pm 0.47$	$r_{10}$	$< 0.0142$
$A^{\mathrm{kSZ}}$	$< 4.76$	$100\theta_*$	$1.04094 \pm 0.00046$	$10^9 A_{\mathrm{t}}$	$< 0.0649$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.870 \pm 0.044$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.0583$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$z_{\mathrm{drag}}$	$1059.34 \pm 0.45$	$f_{2000}^{143}$	$31.2 \pm 2.9$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.2 \pm 3.3$	$r_{\mathrm{drag}}$	$147.13 \pm 0.48$	$f_{2000}^{143 \times 217}$	$33.6 \pm 2.0$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.4$	$k_{\mathrm{D}}$	$0.14060 \pm 0.00052$	$f_{2000}^{217}$	$108.2 \pm 1.9$
$c_{100}$	$0.99960 \pm 0.00062$	$100\theta_{\mathrm{D}}$	$0.16110 \pm 0.00026$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.1 \pm 2.7$
$c_{217}$	$0.99825 \pm 0.00062$	$z_{\mathrm{eq}}$	$3421 \pm 47$	$\chi_{\mathrm{small}}^2$	$397.0 \pm 1.7$
$H_0$	$66.69 \pm 0.89$	$k_{\mathrm{eq}}$	$0.01044 \pm 0.00014$	$\chi_{\mathrm{lowl}}^2$	$25.0 \pm 1.5$
$\Omega_{\Lambda}$	$0.676 \pm 0.013$	$100\theta_{\mathrm{eq}}$	$0.8091 \pm 0.0087$	$\chi_{\mathrm{plik}}^2$	$771.0 \pm 5.3$
$\Omega_{\mathrm{m}}$	$0.324 \pm 0.013$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4474 \pm 0.0045$	$\chi_{\mathrm{prior}}^2$	$8.9 \pm 4.0$
$\Omega_{\mathrm{m}}h^2$	$0.1438 \pm 0.0020$	$H(0.15)$	$72.09 \pm 0.76$	$\chi_{\mathrm{CMB}}^2$	$1932.0 \pm 6.1$
$\Omega_{\mathrm{m}}h^3$	$0.09588 \pm 0.00046$	$D_{\mathrm{M}}(0.15)$	$649.3 \pm 7.8$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1940.93; R - 1 = 0.00225$$



## 17.47 base\_r\_plikHM\_TT\_lowl\_lowE\_BK15\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00019$	$S_8$	$0.825 \pm 0.015$	$H(0.51)$	$89.62 \pm 0.28$
$\Omega_{\mathrm{c}}h^2$	$0.1191 \pm 0.0012$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4517 \pm 0.0080$	$D_{\mathrm{M}}(0.51)$	$1983 \pm 11$
$100\theta_{\mathrm{MC}}$	$1.04097 \pm 0.00042$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6047 \pm 0.0076$	$H(0.61)$	$95.23 \pm 0.24$
$\tau$	$0.0556^{+0.0055}_{-0.0079}$	$\sigma_8/h^{0.5}$	$0.985 \pm 0.011$	$D_{\mathrm{M}}(0.61)$	$2308 \pm 12$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044^{+0.013}_{-0.016}$	$r_{\mathrm{drag}}h$	$99.63 \pm 0.92$	$H(2.33)$	$235.81 \pm 0.78$
$n_{\mathrm{s}}$	$0.9665 \pm 0.0042$	$\langle d^2 \rangle^{1/2}$	$2.435 \pm 0.026$	$D_{\mathrm{M}}(2.33)$	$5768 \pm 12$
$r$	$< 0.0334$	$z_{\mathrm{re}}$	$7.82^{+0.61}_{-0.77}$	$f\sigma_8(0.15)$	$0.4563 \pm 0.0075$
$y_{\mathrm{cal}}$	$1.0009 \pm 0.0025$	$10^9 A_{\mathrm{s}}$	$2.100^{+0.026}_{-0.034}$	$\sigma_8(0.15)$	$0.7481^{+0.0058}_{-0.0067}$
$A_{B,\mathrm{dust}}$	$4.88^{+0.80}_{-1.2}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879 \pm 0.011$	$f\sigma_8(0.38)$	$0.4747 \pm 0.0062$
$A_{B,\mathrm{sync}}$	$1.64^{+0.52}_{-1.4}$	$D_{40}$	$1236 \pm 14$	$\sigma_8(0.38)$	$0.6632^{+0.0047}_{-0.0057}$
$\alpha_{B,\mathrm{dust}}$	$-0.56^{+0.22}_{-0.33}$	$D_{220}$	$5720 \pm 40$	$f\sigma_8(0.51)$	$0.4733 \pm 0.0055$
$\beta_{B,\mathrm{dust}}$	$1.596 \pm 0.095$	$D_{810}$	$2537 \pm 14$	$\sigma_8(0.51)$	$0.6206^{+0.0043}_{-0.0053}$
$\alpha_{B,\mathrm{sync}}$	—	$D_{1420}$	$815.9 \pm 5.1$	$f\sigma_8(0.61)$	$0.4683 \pm 0.0051$
$\beta_{B,\mathrm{sync}}$	$-3.10 \pm 0.28$	$D_{2000}$	$230.1 \pm 1.8$	$\sigma_8(0.61)$	$0.5906^{+0.0041}_{-0.0050}$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$-0.34 \pm 0.28$	$n_{\mathrm{s},0.002}$	$0.9665 \pm 0.0042$	$f\sigma_8(2.33)$	$0.2978^{+0.0020}_{-0.0025}$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$Y_{\mathrm{P}}$	$0.245319^{+0.000088}_{-0.000074}$	$\sigma_8(2.33)$	$0.3070^{+0.0020}_{-0.0026}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246645^{+0.000088}_{-0.000074}$	$r_{0.002}$	$< 0.0304$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$10^5 \mathrm{D}/\mathrm{H}$	$2.620 \pm 0.037$	$r_{0.01}$	$< 0.0319$
$A_{100}^{\mathrm{PS}}$	$263 \pm 28$	$\mathrm{Age}/\mathrm{Gyr}$	$13.810 \pm 0.028$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.91^{+1.1}_{-0.41}$
$A_{143}^{\mathrm{PS}}$	$48 \pm 8$	$z_*$	$1090.07 \pm 0.29$	$r_{10}$	$< 0.0155$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$r_*$	$144.80 \pm 0.32$	$10^9 A_{\mathrm{t}}$	$< 0.0702$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$100\theta_*$	$1.04118 \pm 0.00042$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.0627$
$A^{\mathrm{kSZ}}$	$< 4.78$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.907 \pm 0.031$	$f_{2000}^{143}$	$30.8 \pm 2.9$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$z_{\mathrm{drag}}$	$1059.46 \pm 0.44$	$f_{2000}^{143 \times 217}$	$33.2 \pm 2.0$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$r_{\mathrm{drag}}$	$147.52 \pm 0.34$	$f_{2000}^{217}$	$107.9 \pm 1.9$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.2 \pm 3.3$	$k_{\mathrm{D}}$	$0.14027 \pm 0.00045$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.8 \pm 2.7$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.4$	$100\theta_{\mathrm{D}}$	$0.16105 \pm 0.00026$	$\chi_{\mathrm{simall}}^2$	$397.2 \pm 1.9$
$c_{100}$	$0.99961 \pm 0.00061$	$z_{\mathrm{eq}}$	$3377 \pm 28$	$\chi_{\mathrm{lowl}}^2$	$24.0 \pm 1.1$
$c_{217}$	$0.99826 \pm 0.00062$	$k_{\mathrm{eq}}$	$0.010307 \pm 0.000086$	$\chi_{\mathrm{plik}}^2$	$771.6 \pm 5.4$
$H_0$	$67.54 \pm 0.53$	$100\theta_{\mathrm{eq}}$	$0.8174 \pm 0.0052$	$\chi_{6\mathrm{DF}}^2$	$0.066 \pm 0.083$
$\Omega_{\Lambda}$	$0.6887 \pm 0.0072$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4517 \pm 0.0027$	$\chi_{\mathrm{MGS}}^2$	$1.28 \pm 0.50$
$\Omega_{\mathrm{m}}$	$0.3113 \pm 0.0072$	$H(0.15)$	$72.81 \pm 0.46$	$\chi_{\mathrm{DR12BAO}}^2$	$5.0 \pm 1.8$
$\Omega_{\mathrm{m}}h^2$	$0.1420 \pm 0.0012$	$D_{\mathrm{M}}(0.15)$	$642.0 \pm 4.6$	$\chi_{\mathrm{prior}}^2$	$8.9 \pm 4.0$
$\Omega_{\mathrm{m}}h^3$	$0.09587 \pm 0.00046$	$H(0.38)$	$82.91 \pm 0.34$	$\chi_{\mathrm{BAO}}^2$	$6.3 \pm 1.5$
$\sigma_8$	$0.8096^{+0.0067}_{-0.0075}$	$D_{\mathrm{M}}(0.38)$	$1531.1 \pm 9.2$	$\chi_{\mathrm{CMB}}^2$	$1932.6 \pm 6.1$

$$\bar{\chi}_{\mathrm{eff}}^2 = 1947.86; R - 1 = 0.00560$$



17.48 base\_r\_plikHM\_TT\_lowl\_lowE\_BK15\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02212 \pm 0.00020$	$\sigma_8$	$0.8122 \pm 0.0059$	$H(0.38)$	$82.59 \pm 0.43$
$\Omega_{\mathrm{c}}h^2$	$0.1203 \pm 0.0015$	$S_8$	$0.837 \pm 0.016$	$D_{\mathrm{M}}(0.38)$	$1540 \pm 12$
$100\theta_{\mathrm{MC}}$	$1.04079 \pm 0.00045$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4586 \pm 0.0088$	$H(0.51)$	$89.37 \pm 0.35$
$\tau$	$0.0538^{+0.0049}_{-0.0081}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6103 \pm 0.0076$	$D_{\mathrm{M}}(0.51)$	$1994 \pm 14$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.011}_{-0.014}$	$\sigma_8/h^{0.5}$	$0.992 \pm 0.010$	$H(0.61)$	$95.04 \pm 0.29$
$n_{\mathrm{s}}$	$0.9636 \pm 0.0047$	$r_{\mathrm{drag}}h$	$98.7 \pm 1.2$	$D_{\mathrm{M}}(0.61)$	$2319 \pm 15$
$r$	$< 0.0319$	$\langle d^2 \rangle^{1/2}$	$2.452 \pm 0.024$	$H(2.33)$	$236.51 \pm 0.93$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025$	$z_{\mathrm{re}}$	$7.67^{+0.55}_{-0.77}$	$D_{\mathrm{M}}(2.33)$	$5776 \pm 14$
$A_{B,\mathrm{dust}}$	$4.88^{+0.80}_{-1.2}$	$10^9 A_{\mathrm{s}}$	$2.098^{+0.022}_{-0.030}$	$f\sigma_8(0.15)$	$0.4626 \pm 0.0080$
$A_{B,\mathrm{sync}}$	$1.64^{+0.53}_{-1.4}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.884 \pm 0.011$	$\sigma_8(0.15)$	$0.7498 \pm 0.0051$
$\alpha_{B,\mathrm{dust}}$	$-0.57^{+0.21}_{-0.33}$	$D_{40}$	$1241 \pm 13$	$f\sigma_8(0.38)$	$0.4793 \pm 0.0062$
$\beta_{B,\mathrm{dust}}$	$1.598 \pm 0.095$	$D_{220}$	$5714 \pm 41$	$\sigma_8(0.38)$	$0.6639^{+0.0039}_{-0.0046}$
$\alpha_{B,\mathrm{sync}}$	—	$D_{810}$	$2537 \pm 13$	$f\sigma_8(0.51)$	$0.4770 \pm 0.0053$
$\beta_{B,\mathrm{sync}}$	$-3.10 \pm 0.28$	$D_{1420}$	$814.9 \pm 5.1$	$\sigma_8(0.51)$	$0.6210^{+0.0036}_{-0.0044}$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$-0.34 \pm 0.28$	$D_{2000}$	$229.7 \pm 1.8$	$f\sigma_8(0.61)$	$0.4715 \pm 0.0046$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$n_{\mathrm{s},0.002}$	$0.9636 \pm 0.0047$	$\sigma_8(0.61)$	$0.5907^{+0.0034}_{-0.0042}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.245289^{+0.000096}_{-0.000080}$	$f\sigma_8(2.33)$	$0.2975^{+0.0017}_{-0.0023}$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246615^{+0.000097}_{-0.000080}$	$\sigma_8(2.33)$	$0.3064^{+0.0019}_{-0.0025}$
$A_{100}^{\mathrm{PS}}$	$264 \pm 28$	$10^5 \mathrm{D}/\mathrm{H}$	$2.633 \pm 0.039$	$r_{0.002}$	$< 0.0288$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$\mathrm{Age}/\mathrm{Gyr}$	$13.827 \pm 0.031$	$r_{0.01}$	$< 0.0303$
$A_{143 \times 217}^{\mathrm{PS}}$	$44 \pm 9$	$z_*$	$1090.26 \pm 0.34$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.96^{+1.1}_{-0.42}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$r_*$	$144.54 \pm 0.36$	$r_{10}$	$< 0.0147$
$A^{\mathrm{kSZ}}$	$< 4.85$	$100\theta_*$	$1.04100 \pm 0.00044$	$10^9 A_{\mathrm{t}}$	$< 0.0670$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.885 \pm 0.034$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.0601$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$z_{\mathrm{drag}}$	$1059.38 \pm 0.44$	$f_{2000}^{143}$	$31.1 \pm 2.9$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$r_{\mathrm{drag}}$	$147.29 \pm 0.38$	$f_{2000}^{143 \times 217}$	$33.5 \pm 2.0$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.4$	$k_{\mathrm{D}}$	$0.14047 \pm 0.00045$	$f_{2000}^{217}$	$108.1 \pm 1.9$
$c_{100}$	$0.99961 \pm 0.00061$	$100\theta_{\mathrm{D}}$	$0.16108 \pm 0.00026$	$\chi_{\mathrm{lensing}}^2$	$9.52 \pm 0.96$
$c_{217}$	$0.99826 \pm 0.00062$	$z_{\mathrm{eq}}$	$3404 \pm 35$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.4 \pm 2.6$
$H_0$	$67.00 \pm 0.68$	$k_{\mathrm{eq}}$	$0.01039 \pm 0.00011$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.6$
$\Omega_{\Lambda}$	$0.6811 \pm 0.0095$	$100\theta_{\mathrm{eq}}$	$0.8123 \pm 0.0064$	$\chi_{\mathrm{lowl}}^2$	$24.6 \pm 1.2$
$\Omega_{\mathrm{m}}$	$0.3189 \pm 0.0095$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4490 \pm 0.0033$	$\chi_{\mathrm{plik}}^2$	$770.8 \pm 5.2$
$\Omega_{\mathrm{m}}h^2$	$0.1431 \pm 0.0015$	$H(0.15)$	$72.36 \pm 0.58$	$\chi_{\mathrm{prior}}^2$	$8.9 \pm 4.0$
$\Omega_{\mathrm{m}}h^3$	$0.09586 \pm 0.00045$	$D_{\mathrm{M}}(0.15)$	$646.6 \pm 5.9$	$\chi_{\mathrm{CMB}}^2$	$1941.2 \pm 6.1$

$\bar{\chi}_{\mathrm{eff}}^2 = 1950.10$ ;  $R - 1 = 0.00351$



## 17.49 base\_r\_plikHM\_TT\_lowl\_lowE\_BK15\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00019$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4524 \pm 0.0064$	$H(0.61)$	$95.22 \pm 0.23$
$\Omega_{\mathrm{c}}h^2$	$0.1192 \pm 0.0011$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6054 \pm 0.0061$	$D_{\mathrm{M}}(0.61)$	$2308 \pm 11$
$100\theta_{\mathrm{MC}}$	$1.04096 \pm 0.00042$	$\sigma_8/h^{0.5}$	$0.9862 \pm 0.0087$	$H(2.33)$	$235.85 \pm 0.69$
$\tau$	$0.0561^{+0.0059}_{-0.0073}$	$r_{\mathrm{drag}}h$	$99.58 \pm 0.82$	$D_{\mathrm{M}}(2.33)$	$5769 \pm 12$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046^{+0.012}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	$2.438 \pm 0.021$	$f\sigma_8(0.15)$	$0.4569 \pm 0.0060$
$n_{\mathrm{s}}$	$0.9662 \pm 0.0040$	$z_{\mathrm{re}}$	$7.88^{+0.62}_{-0.71}$	$\sigma_8(0.15)$	$0.7488 \pm 0.0052$
$r$	$< 0.0331$	$10^9 A_{\mathrm{s}}$	$2.103^{+0.025}_{-0.030}$	$f\sigma_8(0.38)$	$0.4752 \pm 0.0049$
$y_{\mathrm{cal}}$	$1.0010 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.880 \pm 0.011$	$\sigma_8(0.38)$	$0.6637^{+0.0042}_{-0.0049}$
$A_{B,\mathrm{dust}}$	$4.88^{+0.80}_{-1.2}$	$D_{40}$	$1237 \pm 13$	$f\sigma_8(0.51)$	$0.4738 \pm 0.0044$
$A_{B,\mathrm{sync}}$	$1.64^{+0.51}_{-1.4}$	$D_{220}$	$5723 \pm 40$	$\sigma_8(0.51)$	$0.6211^{+0.0039}_{-0.0046}$
$\alpha_{B,\mathrm{dust}}$	$-0.56^{+0.22}_{-0.33}$	$D_{810}$	$2538 \pm 13$	$f\sigma_8(0.61)$	$0.4688 \pm 0.0040$
$\beta_{B,\mathrm{dust}}$	$1.596 \pm 0.095$	$D_{1420}$	$816.1 \pm 5.0$	$\sigma_8(0.61)$	$0.5910^{+0.0037}_{-0.0044}$
$\alpha_{B,\mathrm{sync}}$	—	$D_{2000}$	$230.2 \pm 1.7$	$f\sigma_8(2.33)$	$0.2980^{+0.0019}_{-0.0022}$
$\beta_{B,\mathrm{sync}}$	$-3.10 \pm 0.28$	$n_{\mathrm{s},0.002}$	$0.9662 \pm 0.0040$	$\sigma_8(2.33)$	$0.3072^{+0.0020}_{-0.0024}$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$-0.34 \pm 0.28$	$Y_{\mathrm{P}}$	$0.245321^{+0.000087}_{-0.000073}$	$r_{0.002}$	$< 0.0301$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246647^{+0.000088}_{-0.000074}$	$r_{0.01}$	$< 0.0316$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.619 \pm 0.037$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.92^{+1.1}_{-0.40}$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$\mathrm{Age}/\mathrm{Gyr}$	$13.810 \pm 0.027$	$r_{10}$	$< 0.0153$
$A_{100}^{\mathrm{PS}}$	$263 \pm 28$	$z_*$	$1090.07 \pm 0.28$	$10^9 A_{\mathrm{t}}$	$< 0.0697$
$A_{143}^{\mathrm{PS}}$	$48 \pm 8$	$r_*$	$144.78 \pm 0.28$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.0623$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$100\theta_*$	$1.04117 \pm 0.00042$	$f_{2000}^{143}$	$30.8 \pm 2.9$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.905 \pm 0.028$	$f_{2000}^{143 \times 217}$	$33.2 \pm 2.0$
$A^{\mathrm{kSZ}}$	$< 4.76$	$z_{\mathrm{drag}}$	$1059.47 \pm 0.44$	$f_{2000}^{217}$	$107.9 \pm 1.9$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$r_{\mathrm{drag}}$	$147.50 \pm 0.32$	$\chi_{\mathrm{lensing}}^2$	$9.20 \pm 0.63$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$k_{\mathrm{D}}$	$0.14030 \pm 0.00042$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.8 \pm 2.6$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.2 \pm 3.3$	$100\theta_{\mathrm{D}}$	$0.16104 \pm 0.00025$	$\chi_{\mathrm{simall}}^2$	$397.3 \pm 1.9$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.4$	$z_{\mathrm{eq}}$	$3379 \pm 25$	$\chi_{\mathrm{lowl}}^2$	$24.1 \pm 1.1$
$c_{100}$	$0.99962 \pm 0.00061$	$k_{\mathrm{eq}}$	$0.010312 \pm 0.000076$	$\chi_{\mathrm{plik}}^2$	$771.2 \pm 5.3$
$c_{217}$	$0.99826 \pm 0.00062$	$100\theta_{\mathrm{eq}}$	$0.8171 \pm 0.0046$	$\chi_{6\mathrm{DF}}^2$	$0.062 \pm 0.074$
$H_0$	$67.51 \pm 0.49$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4515 \pm 0.0024$	$\chi_{\mathrm{MGS}}^2$	$1.24 \pm 0.45$
$\Omega_{\Lambda}$	$0.6883 \pm 0.0065$	$H(0.15)$	$72.79 \pm 0.42$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 \pm 1.6$
$\Omega_{\mathrm{m}}$	$0.3117 \pm 0.0065$	$D_{\mathrm{M}}(0.15)$	$642.2 \pm 4.2$	$\chi_{\mathrm{prior}}^2$	$8.9 \pm 4.0$
$\Omega_{\mathrm{m}}h^2$	$0.1420 \pm 0.0010$	$H(0.38)$	$82.90 \pm 0.32$	$\chi_{\mathrm{CMB}}^2$	$1941.6 \pm 6.1$
$\Omega_{\mathrm{m}}h^3$	$0.09588 \pm 0.00045$	$D_{\mathrm{M}}(0.38)$	$1531.5 \pm 8.5$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.3$
$\sigma_8$	$0.8103 \pm 0.0058$	$H(0.51)$	$89.61 \pm 0.27$		
$S_8$	$0.826 \pm 0.012$	$D_{\mathrm{M}}(0.51)$	$1984 \pm 10$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1956.72; R - 1 = 0.00561$$



17.50 base\_r\_plikHM\_TTTEEE\_lowl\_lowE\_BK15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022344	$0.02234 \pm 0.00015$ (+1.2 $\sigma$ )	$\Omega_\Lambda$	0.6818	$0.6822 \pm 0.0084$ (+0.5 $\sigma$ )	$H(0.15)$	72.51	$72.53 \pm 0.52$ (+0.6 $\sigma$ )
$\Omega_c h^2$	0.12048	$0.1204 \pm 0.0014$ (−0.4 $\sigma$ )	$\Omega_m$	0.3182	$0.3178 \pm 0.0084$ (−0.5 $\sigma$ )	$D_M(0.15)$	645.1	$644.9 \pm 5.2$ (−0.6 $\sigma$ )
$100\theta_{MC}$	1.040882	$1.04088 \pm 0.00031$ (+0.4 $\sigma$ )	$\Omega_m h^2$	0.14347	$0.1434 \pm 0.0013$ (−0.2 $\sigma$ )	$H(0.38)$	82.743	$82.76 \pm 0.37$ (+0.7 $\sigma$ )
$\tau$	0.0545	$0.0551 \pm 0.0077$ (+0.4 $\sigma$ )	$\Omega_m h^3$	0.096343	$0.09632 \pm 0.00029$ (+1.0 $\sigma$ )	$D_M(0.38)$	1537.0	$1537 \pm 10$ (−0.6 $\sigma$ )
$\ln(10^{10} A_s)$	3.0467	$3.047 \pm 0.016$ (+0.3 $\sigma$ )	$\sigma_8$	0.8138	$0.8137 \pm 0.0073$ (−0.1 $\sigma$ )	$H(0.51)$	89.533	$89.55 \pm 0.29$ (+0.8 $\sigma$ )
$n_s$	0.96484	$0.9647 \pm 0.0043$ (+0.5 $\sigma$ )	$S_8$	0.8381	$0.837 \pm 0.016$ (−0.4 $\sigma$ )	$D_M(0.51)$	1990.0	$1989 \pm 12$ (−0.6 $\sigma$ )
$r$	0.0147	$< 0.0333$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4590	$0.4587 \pm 0.0088$ (−0.4 $\sigma$ )	$H(0.61)$	95.207	$95.22 \pm 0.24$ (+0.9 $\sigma$ )
$y_{cal}$	1.00104	$1.0009 \pm 0.0025$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6112	$0.6109 \pm 0.0082$ (−0.3 $\sigma$ )	$D_M(0.61)$	2314.7	$2314 \pm 13$ (−0.7 $\sigma$ )
$A_{B,dust}$	4.62	$4.87^{+0.81}_{-1.2}$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9931	$0.993 \pm 0.012$ (−0.3 $\sigma$ )	$H(2.33)$	236.85	$236.79 \pm 0.81$ (−0.2 $\sigma$ )
$A_{B,sync}$	1.44	$1.63^{+0.53}_{-1.3}$ (−0.0 $\sigma$ )	$r_{drag} h$	98.71	$98.8 \pm 1.0$ (+0.5 $\sigma$ )	$D_M(2.33)$	5766.4	$5766 \pm 11$ (−1.0 $\sigma$ )
$\alpha_{B,dust}$	−0.515	$−0.57^{+0.21}_{-0.32}$ (+0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4538	$2.454 \pm 0.028$ (−0.3 $\sigma$ )	$f\sigma_8(0.15)$	0.4631	$0.4627 \pm 0.0081$ (−0.4 $\sigma$ )
$\beta_{B,dust}$	1.575	$1.597 \pm 0.095$ (−0.0 $\sigma$ )	$z_{re}$	7.71	$7.75 \pm 0.78$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7513	$0.7512 \pm 0.0065$ (+0.0 $\sigma$ )
$\alpha_{B,sync}$	−0.44	—	$10^9 A_s$	2.1047	$2.106 \pm 0.033$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4800	$0.4797 \pm 0.0066$ (−0.3 $\sigma$ )
$\beta_{B,sync}$	−3.051	$−3.10 \pm 0.27$ (+0.0 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8874	$1.886 \pm 0.012$ (−0.1 $\sigma$ )	$\sigma_8(0.38)$	0.6653	$0.6652 \pm 0.0055$ (+0.1 $\sigma$ )
$\epsilon_{dust,sync}$	−0.337	$−0.35 \pm 0.28$ (−0.0 $\sigma$ )	$D_{40}$	1237.9	$1242 \pm 13$ (−0.1 $\sigma$ )	$f\sigma_8(0.51)$	0.4778	$0.4776 \pm 0.0058$ (−0.3 $\sigma$ )
$A_{217}^{CIB}$	48.3	$47 \pm 7$ (−0.2 $\sigma$ )	$D_{220}$	5733.8	$5733 \pm 39$ (+0.5 $\sigma$ )	$\sigma_8(0.51)$	0.62229	$0.6223 \pm 0.0051$ (+0.2 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.28	—	$D_{810}$	2543.1	$2541 \pm 13$ (+0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.4723	$0.4721 \pm 0.0053$ (−0.2 $\sigma$ )
$A_{143}^{tSZ}$	7.28	$5.5^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$D_{1420}$	818.52	$817.8 \pm 4.8$ (+0.6 $\sigma$ )	$\sigma_8(0.61)$	0.59194	$0.5919 \pm 0.0048$ (+0.2 $\sigma$ )
$A_{100}^{PS}$	251.1	$258 \pm 28$ (−0.2 $\sigma$ )	$D_{2000}$	231.30	$231.1 \pm 1.6$ (+0.8 $\sigma$ )	$f\sigma_8(2.33)$	0.29820	$0.2982 \pm 0.0024$ (+0.3 $\sigma$ )
$A_{143}^{PS}$	45.8	$46 \pm 8$ (−0.4 $\sigma$ )	$n_{s,0.002}$	0.96484	$0.9647 \pm 0.0043$ (+0.5 $\sigma$ )	$\sigma_8(2.33)$	0.30714	$0.3072 \pm 0.0025$ (+0.4 $\sigma$ )
$A_{143 \times 217}^{PS}$	43.9	$43 \pm 9$ (−0.1 $\sigma$ )	$Y_P$	0.245385	$0.245382 \pm 0.000059$ (+1.2 $\sigma$ )	$r_{0.002}$	0.0132	$< 0.0301$ (+0.1 $\sigma$ )
$A_{217}^{PS}$	118.3	$116 \pm 10$ (+0.0 $\sigma$ )	$Y_P^{BBN}$	0.246712	$0.246709 \pm 0.000059$ (+1.2 $\sigma$ )	$r_{0.01}$	0.0139	$< 0.0316$ (+0.1 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.13$ (−0.2 $\sigma$ )	$10^5 D/H$	2.5903	$2.591 \pm 0.028$ (−1.2 $\sigma$ )	$\ln(10^{10} A_t)$	−1.17	$−0.90^{+1.1}_{-0.39}$ (+0.1 $\sigma$ )
$A_{100}^{dustTT}$	8.79	$8.8 \pm 1.8$ (−0.0 $\sigma$ )	Age/Gyr	13.8032	$13.803 \pm 0.024$ (−1.0 $\sigma$ )	$r_{10}$	0.0067	$< 0.0154$ (+0.1 $\sigma$ )
$A_{143}^{dustTT}$	10.90	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	$z_*$	1089.995	$1089.99 \pm 0.27$ (−1.0 $\sigma$ )	$10^9 A_t$	0.0309	$0.056^{+0.014}_{-0.056}$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.52	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$r_*$	144.327	$144.35 \pm 0.30$ (−0.0 $\sigma$ )	$10^9 A_t e^{-2\tau}$	0.0277	$0.050^{+0.012}_{-0.050}$ (+0.1 $\sigma$ )
$A_{217}^{dustTT}$	94.7	$93.8 \pm 7.3$ (+0.1 $\sigma$ )	$100\theta_*$	1.041065	$1.04107 \pm 0.00031$ (+0.3 $\sigma$ )	$f_{2000}^{143}$	29.16	$29.4 \pm 2.7$ (−0.6 $\sigma$ )
$A_{100}^{dustTE}$	0.1126	$0.115 \pm 0.038$	$D_M(z_*)/\text{Gpc}$	13.8634	$13.866 \pm 0.028$ (−0.1 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.18	$32.2 \pm 1.8$ (−0.7 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1350	$0.135 \pm 0.029$	$z_{drag}$	1059.895	$1059.90 \pm 0.30$ (+1.3 $\sigma$ )	$f_{2000}^{217}$	106.95	$107.1 \pm 1.8$ (−0.6 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.484	$0.481 \pm 0.085$	$r_{drag}$	146.994	$147.02 \pm 0.30$ (−0.2 $\sigma$ )	$\chi_{BKPLANCK}^2$	735.20	$739.4 \pm 2.6$ (+0.1 $\sigma$ )
$A_{143}^{dustTE}$	0.227	$0.227 \pm 0.054$	$k_D$	0.140952	$0.14092 \pm 0.00032$ (+0.6 $\sigma$ )	$\chi_{simall}^2$	396.18	$397.4 \pm 2.0$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.667	$0.667 \pm 0.081$	$100\theta_D$	0.160772	$0.16078 \pm 0.00018$ (−1.2 $\sigma$ )	$\chi_{lowl}^2$	23.97	$24.5 \pm 1.2$ (−0.3 $\sigma$ )
$A_{217}^{dustTE}$	2.098	$2.09 \pm 0.27$	$z_{eq}$	3413.1	$3411 \pm 31$ (−0.2 $\sigma$ )	$\chi_{plik}^2$	2344.1	$2359.2 \pm 5.8$ (+298.7 $\sigma$ )
$c_{100}$	0.99968	$0.99966 \pm 0.00061$ (+0.1 $\sigma$ )	$k_{eq}$	0.010417	$0.010411 \pm 0.000093$ (−0.2 $\sigma$ )	$\chi_{prior}^2$	2.09	$13.2 \pm 4.9$ (+1.1 $\sigma$ )
$c_{217}$	0.99820	$0.99819 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_{eq}$	0.8113	$0.8117 \pm 0.0057$ (+0.3 $\sigma$ )	$\chi_{CMB}^2$	3499.4	$3520.5 \pm 6.4$ (+257.5 $\sigma$ )
$H_0$	67.15	$67.18 \pm 0.60$ (+0.6 $\sigma$ )	$100\theta_{s,eq}$	0.44833	$0.4485 \pm 0.0029$ (+0.3 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 3501.51$ ;  $\Delta\chi_{\text{eff}}^2 = 1586.44$ ;  $\bar{\chi}_{\text{eff}}^2 = 3533.72$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1592.51$ ;  $R - 1 = 0.00500$   
 $\chi_{\text{eff}}^2$ : CMB - BK15\_dust: 735.20 ( $\Delta$  0.33) simall.100x143\_offlike5\_EE\_Aplanck\_B: 396.18 ( $\Delta$  0.17) commander\_dx12.v3.2.29: 23.97 ( $\Delta$  -0.29) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.08



17.51 base\_r\_plikHM\_TTTEEE\_lowl\_lowE\_BK15\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022418	$0.02241 \pm 0.00014$ (+1.1 $\sigma$ )	$\Omega_m$	0.3117	$0.3117 \pm 0.0061$ (+0.0 $\sigma$ )	$H(0.38)$	83.025	$83.02 \pm 0.29$ (+0.3 $\sigma$ )
$\Omega_c h^2$	0.11944	$0.1194 \pm 0.0010$ (+0.2 $\sigma$ )	$\Omega_m h^2$	0.14250	$0.14248 \pm 0.00096$ (+0.4 $\sigma$ )	$D_M(0.38)$	1529.1	$1529.1 \pm 7.7$ (−0.2 $\sigma$ )
$100\theta_{MC}$	1.040993	$1.04100 \pm 0.00030$ (+0.1 $\sigma$ )	$\Omega_m h^3$	0.096351	$0.09634 \pm 0.00030$ (+1.0 $\sigma$ )	$H(0.51)$	89.749	$89.75 \pm 0.23$ (+0.5 $\sigma$ )
$\tau$	0.0562	$0.0565 \pm 0.0077$ (+0.2 $\sigma$ )	$\sigma_8$	0.8113	$0.8113 \pm 0.0071$ (+0.3 $\sigma$ )	$D_M(0.51)$	1980.7	$1980.8 \pm 9.1$ (−0.3 $\sigma$ )
$\ln(10^{10} A_s)$	3.0476	$3.048 \pm 0.016$ (+0.3 $\sigma$ )	$S_8$	0.8269	$0.827 \pm 0.013$ (+0.2 $\sigma$ )	$H(0.61)$	95.374	$95.37 \pm 0.19$ (+0.6 $\sigma$ )
$n_s$	0.96741	$0.9670 \pm 0.0037$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4529	$0.4530 \pm 0.0069$ (+0.2 $\sigma$ )	$D_M(0.61)$	2304.8	$2304.9 \pm 9.8$ (−0.3 $\sigma$ )
$r$	0.0175	$0.0282^{+0.0082}_{-0.027}$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6062	$0.6062 \pm 0.0069$ (+0.2 $\sigma$ )	$H(2.33)$	236.24	$236.23 \pm 0.61$ (+0.5 $\sigma$ )
$y_{cal}$	1.00086	$1.0010 \pm 0.0025$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9866	$0.987 \pm 0.010$ (+0.2 $\sigma$ )	$D_M(2.33)$	5759.4	$5759.6 \pm 9.1$ (−0.7 $\sigma$ )
$A_{B,dust}$	4.62	$4.89^{+0.80}_{-1.2}$ (+0.0 $\sigma$ )	$r_{drag} h$	99.52	$99.53 \pm 0.78$ (−0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4575	$0.4575 \pm 0.0065$ (+0.2 $\sigma$ )
$A_{B,sync}$	1.44	$1.61^{+0.54}_{-1.3}$ (−0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4386	$2.440 \pm 0.025$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7496	$0.7497 \pm 0.0064$ (+0.3 $\sigma$ )
$\alpha_{B,dust}$	−0.512	$−0.57^{+0.21}_{-0.32}$ (−0.0 $\sigma$ )	$z_{re}$	7.85	$7.86 \pm 0.77$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.4758	$0.4758 \pm 0.0056$ (+0.2 $\sigma$ )
$\beta_{B,dust}$	1.577	$1.597 \pm 0.095$ (+0.0 $\sigma$ )	$10^9 A_s$	2.1064	$2.107 \pm 0.034$ (+0.3 $\sigma$ )	$\sigma_8(0.38)$	0.6645	$0.6645 \pm 0.0055$ (+0.3 $\sigma$ )
$\alpha_{B,sync}$	−0.33	—	$10^9 A_s e^{-2\tau}$	1.8825	$1.882 \pm 0.011$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.4744	$0.4744 \pm 0.0051$ (+0.3 $\sigma$ )
$\beta_{B,sync}$	−3.035	$−3.10 \pm 0.28$ (+0.0 $\sigma$ )	$D_{40}$	1233.2	$1238 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.51)$	0.6218	$0.6218 \pm 0.0051$ (+0.3 $\sigma$ )
$\epsilon_{dust,sync}$	−0.353	$−0.35 \pm 0.28$ (−0.0 $\sigma$ )	$D_{220}$	5736.5	$5738 \pm 39$ (+0.4 $\sigma$ )	$f\sigma_8(0.61)$	0.46939	$0.4694 \pm 0.0047$ (+0.3 $\sigma$ )
$A_{217}^{CIB}$	47.1	$46 \pm 7$ (−0.2 $\sigma$ )	$D_{810}$	2541.9	$2541 \pm 13$ (+0.3 $\sigma$ )	$\sigma_8(0.61)$	0.59167	$0.5917 \pm 0.0048$ (+0.3 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.43	—	$D_{1420}$	819.00	$818.5 \pm 4.8$ (+0.5 $\sigma$ )	$f\sigma_8(2.33)$	0.29831	$0.2983 \pm 0.0024$ (+0.3 $\sigma$ )
$A_{143}^{tSZ}$	7.25	$5.5^{+2.1}_{-1.8}$ (+0.2 $\sigma$ )	$D_{2000}$	231.54	$231.4 \pm 1.6$ (+0.7 $\sigma$ )	$\sigma_8(2.33)$	0.30754	$0.3076 \pm 0.0025$ (+0.3 $\sigma$ )
$A_{100}^{PS}$	249.4	$258 \pm 28$ (−0.2 $\sigma$ )	$n_{s,0.002}$	0.96741	$0.9670 \pm 0.0037$ (+0.1 $\sigma$ )	$r_{0.002}$	0.0159	$0.0257^{+0.0069}_{-0.025}$ (+0.1 $\sigma$ )
$A_{143}^{PS}$	47.0	$45 \pm 8$ (−0.4 $\sigma$ )	$Y_P$	0.245414	$0.245408 \pm 0.000053$ (+1.1 $\sigma$ )	$r_{0.01}$	0.0167	$0.0269^{+0.0076}_{-0.026}$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{PS}$	47.3	$42 \pm 9$ (−0.1 $\sigma$ )	$Y_P^{BBN}$	0.246741	$0.246735 \pm 0.000053$ (+1.1 $\sigma$ )	$\ln(10^{10} A_t)$	−0.999	$−0.84^{+1.0}_{-0.38}$ (+0.1 $\sigma$ )
$A_{217}^{PS}$	119.8	$115 \pm 10$ (+0.0 $\sigma$ )	$10^5 D/H$	2.5766	$2.579 \pm 0.025$ (−1.1 $\sigma$ )	$r_{10}$	0.0081	$0.0131^{+0.0035}_{-0.013}$ (+0.1 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.10$ (−0.2 $\sigma$ )	Age/Gyr	13.7881	$13.789 \pm 0.021$ (−0.8 $\sigma$ )	$10^9 A_t$	0.0368	$0.059^{+0.017}_{-0.056}$ (+0.1 $\sigma$ )
$A_{100}^{dustTT}$	8.83	$8.9 \pm 1.9$ (−0.0 $\sigma$ )	$z_*$	1089.810	$1089.82 \pm 0.23$ (−0.9 $\sigma$ )	$10^9 A_t e^{-2\tau}$	0.0329	$0.053^{+0.015}_{-0.050}$ (+0.1 $\sigma$ )
$A_{143}^{dustTT}$	10.97	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	$r_*$	144.540	$144.55 \pm 0.24$ (−0.8 $\sigma$ )	$f_{2000}^{143}$	28.65	$29.1 \pm 2.7$ (−0.6 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.75	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$100\theta_*$	1.041172	$1.04119 \pm 0.00029$ (+0.0 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.88	$31.9 \pm 1.8$ (−0.7 $\sigma$ )
$A_{217}^{dustTT}$	95.1	$93.8 \pm 7.3$ (+0.1 $\sigma$ )	$D_M(z_*)/\text{Gpc}$	13.8824	$13.883 \pm 0.023$ (−0.8 $\sigma$ )	$f_{2000}^{217}$	106.62	$106.9 \pm 1.7$ (−0.6 $\sigma$ )
$A_{100}^{dustTE}$	0.1157	$0.115 \pm 0.038$	$z_{drag}$	1060.009	$1059.98 \pm 0.30$ (+1.2 $\sigma$ )	$\chi_{BKPLANCK}^2$	735.50	$739.8 \pm 2.6$ (−0.0 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1351	$0.135 \pm 0.029$	$r_{drag}$	147.187	$147.20 \pm 0.24$ (−0.9 $\sigma$ )	$\chi_{small}^2$	396.48	$397.6 \pm 2.2$ (+0.2 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.481	$0.481 \pm 0.085$	$k_D$	0.140802	$0.14078 \pm 0.00029$ (+1.1 $\sigma$ )	$\chi_{lowl}^2$	23.56	$24.1 \pm 1.1$ (+0.1 $\sigma$ )
$A_{143}^{dustTE}$	0.224	$0.227 \pm 0.054$	$100\theta_D$	0.160722	$0.16074 \pm 0.00017$ (−1.2 $\sigma$ )	$\chi_{plik}^2$	2344.7	$2359.2 \pm 5.8$ (+292.7 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.666	$0.665 \pm 0.082$	$z_{eq}$	3389.9	$3390 \pm 23$ (+0.4 $\sigma$ )	$\chi_{6DF}^2$	0.0392	$0.064 \pm 0.071$ (−0.0 $\sigma$ )
$A_{217}^{dustTE}$	2.084	$2.08 \pm 0.27$	$k_{eq}$	0.010346	$0.010345 \pm 0.000070$ (+0.4 $\sigma$ )	$\chi_{MGS}^2$	1.156	$1.21 \pm 0.42$ (−0.1 $\sigma$ )
$c_{100}$	0.99972	$0.99966 \pm 0.00061$ (+0.1 $\sigma$ )	$100\theta_{eq}$	0.81569	$0.8158 \pm 0.0043$ (−0.3 $\sigma$ )	$\chi_{DR12BAO}^2$	4.66	$5.0 \pm 1.5$ (+0.0 $\sigma$ )
$c_{217}$	0.99820	$0.99818 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_{s,eq}$	0.45060	$0.4506 \pm 0.0022$ (−0.4 $\sigma$ )	$\chi_{prior}^2$	1.86	$13.3 \pm 4.9$ (+1.1 $\sigma$ )
$H_0$	67.615	$67.61 \pm 0.45$ (+0.2 $\sigma$ )	$H(0.15)$	72.902	$72.90 \pm 0.39$ (+0.2 $\sigma$ )	$\chi_{BAO}^2$	5.85	$6.3 \pm 1.3$ (−0.0 $\sigma$ )
$\Omega_\Lambda$	0.6883	$0.6883 \pm 0.0061$ (−0.0 $\sigma$ )	$D_M(0.15)$	641.16	$641.2 \pm 3.9$ (−0.2 $\sigma$ )	$\chi_{CMB}^2$	3500.2	$3520.7 \pm 6.5$ (+258.8 $\sigma$ )

Best-fit  $\chi_{\text{eff}}^2 = 3507.90$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.96$ ;  $\bar{\chi}_{\text{eff}}^2 = 3540.30$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1592.22$ ;  $R - 1 = 0.00604$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.04 ( $\Delta$  0.00) MGS: 1.16 ( $\Delta$  0.00) DR12BAO: 4.66 ( $\Delta$  0.09) CMB - BK15.dust: 735.50 ( $\Delta$  -0.05) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.48 ( $\Delta$  0.29) commander\_dx12\_v3\_2\_29: 23.56 ( $\Delta$  0.04) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.65



17.52 base\_r\_plikHM\_TTTEEE\_lowl\_lowE\_BK15\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02234 \pm 0.00015 \quad (+1.2\sigma)$	$\Omega_{\Lambda}$	$0.6824 \pm 0.0084 \quad (+0.5\sigma)$	$H(0.15)$	$72.54 \pm 0.51 \quad (+0.6\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1204 \pm 0.0014 \quad (-0.3\sigma)$	$\Omega_{\mathrm{m}}$	$0.3176 \pm 0.0084 \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.15)$	$644.8 \pm 5.2 \quad (-0.6\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04089 \pm 0.00031 \quad (+0.3\sigma)$	$\Omega_{\mathrm{m}}h^2$	$0.1434 \pm 0.0013 \quad (-0.2\sigma)$	$H(0.38)$	$82.77 \pm 0.37 \quad (+0.7\sigma)$
$\tau$	$0.0559^{+0.0057}_{-0.0081} \quad (+0.3\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09633 \pm 0.00029 \quad (+1.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1536 \pm 10 \quad (-0.6\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.049^{+0.012}_{-0.016} \quad (+0.3\sigma)$	$\sigma_8$	$0.8142 \pm 0.0070 \quad (-0.1\sigma)$	$H(0.51)$	$89.55 \pm 0.29 \quad (+0.8\sigma)$
$n_{\mathrm{s}}$	$0.9648 \pm 0.0043 \quad (+0.5\sigma)$	$S_8$	$0.838 \pm 0.016 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.51)$	$1989 \pm 12 \quad (-0.6\sigma)$
$r$	$< 0.0332 \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4589 \pm 0.0087 \quad (-0.4\sigma)$	$H(0.61)$	$95.22 \pm 0.24 \quad (+0.8\sigma)$
$y_{\mathrm{cal}}$	$1.0009 \pm 0.0025 \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6113 \pm 0.0080 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.61)$	$2314 \pm 13 \quad (-0.6\sigma)$
$A_{B,\mathrm{dust}}$	$4.87^{+0.81}_{-1.2} \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.993 \pm 0.011 \quad (-0.3\sigma)$	$H(2.33)$	$236.78 \pm 0.81 \quad (-0.2\sigma)$
$A_{B,\mathrm{sync}}$	$1.63^{+0.53}_{-1.3} \quad (-0.0\sigma)$	$r_{\mathrm{drag}}h$	$98.8 \pm 1.0 \quad (+0.4\sigma)$	$D_{\mathrm{M}}(2.33)$	$5766 \pm 11 \quad (-0.9\sigma)$
$\alpha_{B,\mathrm{dust}}$	$-0.57^{+0.21}_{-0.32} \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.456 \pm 0.027 \quad (-0.3\sigma)$	$f\sigma_8(0.15)$	$0.4630 \pm 0.0081 \quad (-0.4\sigma)$
$\beta_{B,\mathrm{dust}}$	$1.598 \pm 0.095 \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.84^{+0.61}_{-0.79} \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.7518^{+0.0056}_{-0.0064} \quad (-0.0\sigma)$
$\alpha_{B,\mathrm{sync}}$	—	$10^9A_{\mathrm{s}}$	$2.109^{+0.026}_{-0.034} \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4800 \pm 0.0066 \quad (-0.3\sigma)$
$\beta_{B,\mathrm{sync}}$	$-3.10 \pm 0.27 \quad (+0.0\sigma)$	$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.886 \pm 0.011 \quad (-0.1\sigma)$	$\sigma_8(0.38)$	$0.6658^{+0.0046}_{-0.0055} \quad (+0.1\sigma)$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$-0.35 \pm 0.28 \quad (-0.0\sigma)$	$D_{40}$	$1242 \pm 13 \quad (-0.1\sigma)$	$f\sigma_8(0.51)$	$0.4779 \pm 0.0057 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$D_{220}$	$5733 \pm 39 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.6228^{+0.0042}_{-0.0051} \quad (+0.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2541 \pm 13 \quad (+0.3\sigma)$	$f\sigma_8(0.61)$	$0.4724 \pm 0.0052 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$D_{1420}$	$817.8 \pm 4.8 \quad (+0.6\sigma)$	$\sigma_8(0.61)$	$0.5924^{+0.0039}_{-0.0048} \quad (+0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$258 \pm 28 \quad (-0.2\sigma)$	$D_{2000}$	$231.1 \pm 1.6 \quad (+0.8\sigma)$	$f\sigma_8(2.33)$	$0.2985^{+0.0019}_{-0.0025} \quad (+0.3\sigma)$
$A_{143}^{\mathrm{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$n_{\mathrm{s},0.002}$	$0.9648 \pm 0.0043 \quad (+0.5\sigma)$	$\sigma_8(2.33)$	$0.3074^{+0.0020}_{-0.0026} \quad (+0.4\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9 \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245383 \pm 0.000059 \quad (+1.2\sigma)$	$r_{0.002}$	$< 0.0301 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$116 \pm 10 \quad (+0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246710 \pm 0.000059 \quad (+1.2\sigma)$	$r_{0.01}$	$< 0.0316 \quad (+0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.11 \quad (-0.2\sigma)$	$10^5\mathrm{D}/\mathrm{H}$	$2.591 \pm 0.028 \quad (-1.2\sigma)$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.90^{+1.1}_{-0.39} \quad (+0.1\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.8 \pm 1.8 \quad (-0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.802 \pm 0.024 \quad (-1.0\sigma)$	$r_{10}$	$< 0.0154 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.8 \quad (+0.1\sigma)$	$z_*$	$1089.99 \pm 0.27 \quad (-1.0\sigma)$	$10^9A_{\mathrm{t}}$	$< 0.0701 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.3 \quad (+0.1\sigma)$	$r_*$	$144.36 \pm 0.30 \quad (-0.0\sigma)$	$10^9A_{\mathrm{t}}e^{-2\tau}$	$< 0.0627 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.8 \pm 7.3 \quad (+0.1\sigma)$	$100\theta_*$	$1.04107 \pm 0.00031 \quad (+0.3\sigma)$	$f_{2000}^{143}$	$29.4 \pm 2.7 \quad (-0.6\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.115 \pm 0.038$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.866 \pm 0.028 \quad (-0.1\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 1.8 \quad (-0.7\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.029$	$z_{\mathrm{drag}}$	$1059.90 \pm 0.30 \quad (+1.2\sigma)$	$f_{2000}^{217}$	$107.0 \pm 1.8 \quad (-0.6\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.481 \pm 0.085$	$r_{\mathrm{drag}}$	$147.02 \pm 0.30 \quad (-0.2\sigma)$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.4 \pm 2.6 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.227 \pm 0.054$	$k_{\mathrm{D}}$	$0.14092 \pm 0.00032 \quad (+0.6\sigma)$	$\chi_{\mathrm{simall}}^2$	$397.4 \pm 2.1 \quad (+0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.667 \pm 0.081$	$100\theta_{\mathrm{D}}$	$0.16078 \pm 0.00018 \quad (-1.2\sigma)$	$\chi_{\mathrm{lowl}}^2$	$24.5 \pm 1.2 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.09 \pm 0.27$	$z_{\mathrm{eq}}$	$3410 \pm 30 \quad (-0.2\sigma)$	$\chi_{\mathrm{plik}}^2$	$2359.0 \pm 5.8 \quad (+299.6\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010409 \pm 0.000093 \quad (-0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$13.2 \pm 4.9 \quad (+1.1\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8118 \pm 0.0057 \quad (+0.3\sigma)$	$\chi_{\mathrm{CMB}}^2$	$3520.3 \pm 6.4 \quad (+260.4\sigma)$
$H_0$	$67.20 \pm 0.60 \quad (+0.6\sigma)$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4486 \pm 0.0029 \quad (+0.3\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 3533.51; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.58; R - 1 = 0.00462$$



17.53 base\_r\_plikHM\_TTTEEE\_lowl\_lowE\_BK15\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02241 \pm 0.00014 \quad (+1.1\sigma)$	$\Omega_{\mathrm{m}}$	$0.3116 \pm 0.0061 \quad (+0.0\sigma)$	$H(0.38)$	$83.03 \pm 0.29 \quad (+0.3\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1194 \pm 0.0010 \quad (+0.2\sigma)$	$\Omega_{\mathrm{m}}h^2$	$0.14247 \pm 0.00096 \quad (+0.4\sigma)$	$D_{\mathrm{M}}(0.38)$	$1529.0 \pm 7.7 \quad (-0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04101 \pm 0.00030 \quad (+0.1\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09634 \pm 0.00030 \quad (+1.0\sigma)$	$H(0.51)$	$89.75 \pm 0.23 \quad (+0.5\sigma)$
$\tau$	$0.0571^{+0.0060}_{-0.0080} \quad (+0.2\sigma)$	$\sigma_8$	$0.8118^{+0.0062}_{-0.0071} \quad (+0.3\sigma)$	$D_{\mathrm{M}}(0.51)$	$1980.7 \pm 9.1 \quad (-0.3\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.049^{+0.013}_{-0.016} \quad (+0.3\sigma)$	$S_8$	$0.827 \pm 0.012 \quad (+0.2\sigma)$	$H(0.61)$	$95.37 \pm 0.19 \quad (+0.6\sigma)$
$n_{\mathrm{s}}$	$0.9670 \pm 0.0037 \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4532 \pm 0.0068 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.61)$	$2304.8 \pm 9.8 \quad (-0.3\sigma)$
$r$	$0.0281^{+0.0082}_{-0.027} \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6065 \pm 0.0068 \quad (+0.2\sigma)$	$H(2.33)$	$236.22 \pm 0.61 \quad (+0.5\sigma)$
$y_{\mathrm{cal}}$	$1.0010 \pm 0.0025 \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9872 \pm 0.0099 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5759.5 \pm 9.1 \quad (-0.7\sigma)$
$A_{B,\mathrm{dust}}$	$4.89^{+0.80}_{-1.2} \quad (+0.0\sigma)$	$r_{\mathrm{drag}}h$	$99.54 \pm 0.78 \quad (-0.1\sigma)$	$f\sigma_8(0.15)$	$0.4578 \pm 0.0064 \quad (+0.2\sigma)$
$A_{B,\mathrm{sync}}$	$1.61^{+0.54}_{-1.3} \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.441 \pm 0.024 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.7501^{+0.0055}_{-0.0064} \quad (+0.3\sigma)$
$\alpha_{B,\mathrm{dust}}$	$-0.57^{+0.21}_{-0.32} \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.93^{+0.64}_{-0.78} \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4761 \pm 0.0055 \quad (+0.2\sigma)$
$\beta_{B,\mathrm{dust}}$	$1.598 \pm 0.095 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.110^{+0.027}_{-0.035} \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6649^{+0.0046}_{-0.0055} \quad (+0.3\sigma)$
$\alpha_{B,\mathrm{sync}}$	—	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.882 \pm 0.011 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4747 \pm 0.0049 \quad (+0.3\sigma)$
$\beta_{B,\mathrm{sync}}$	$-3.10 \pm 0.28 \quad (+0.0\sigma)$	$D_{40}$	$1238 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6222^{+0.0043}_{-0.0052} \quad (+0.3\sigma)$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$-0.34 \pm 0.29 \quad (-0.0\sigma)$	$D_{220}$	$5738 \pm 39 \quad (+0.5\sigma)$	$f\sigma_8(0.61)$	$0.4697 \pm 0.0046 \quad (+0.3\sigma)$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7 \quad (-0.2\sigma)$	$D_{810}$	$2541 \pm 13 \quad (+0.3\sigma)$	$\sigma_8(0.61)$	$0.5921^{+0.0040}_{-0.0049} \quad (+0.3\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$818.5 \pm 4.8 \quad (+0.5\sigma)$	$f\sigma_8(2.33)$	$0.2985^{+0.0020}_{-0.0025} \quad (+0.3\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.1}_{-1.8} \quad (+0.2\sigma)$	$D_{2000}$	$231.4 \pm 1.6 \quad (+0.7\sigma)$	$\sigma_8(2.33)$	$0.3078^{+0.0021}_{-0.0026} \quad (+0.3\sigma)$
$A_{100}^{\mathrm{PS}}$	$258 \pm 28 \quad (-0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.9670 \pm 0.0037 \quad (+0.1\sigma)$	$r_{0.002}$	$0.0257^{+0.0069}_{-0.025} \quad (+0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.4\sigma)$	$Y_{\mathrm{P}}$	$0.245409 \pm 0.000053 \quad (+1.1\sigma)$	$r_{0.01}$	$0.0269^{+0.0075}_{-0.026} \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246735 \pm 0.000053 \quad (+1.1\sigma)$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.84^{+1.0}_{-0.38} \quad (+0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.579 \pm 0.025 \quad (-1.1\sigma)$	$r_{10}$	$0.0131^{+0.0034}_{-0.013} \quad (+0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.07 \quad (-0.2\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.788 \pm 0.021 \quad (-0.8\sigma)$	$10^9 A_{\mathrm{t}}$	$0.059^{+0.017}_{-0.056} \quad (+0.1\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.9 \quad (-0.0\sigma)$	$z_*$	$1089.82 \pm 0.22 \quad (-0.9\sigma)$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$0.053^{+0.015}_{-0.050} \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.8 \quad (+0.1\sigma)$	$r_*$	$144.55 \pm 0.24 \quad (-0.8\sigma)$	$f_{2000}^{143}$	$29.1 \pm 2.7 \quad (-0.6\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.3 \quad (+0.1\sigma)$	$100\theta_*$	$1.04119 \pm 0.00029 \quad (+0.0\sigma)$	$f_{2000}^{143 \times 217}$	$31.9 \pm 1.8 \quad (-0.7\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.8 \pm 7.3 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.883 \pm 0.023 \quad (-0.8\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.7 \quad (-0.6\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.115 \pm 0.038$	$z_{\mathrm{drag}}$	$1059.98 \pm 0.29 \quad (+1.2\sigma)$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.8 \pm 2.6 \quad (-0.0\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.029$	$r_{\mathrm{drag}}$	$147.20 \pm 0.24 \quad (-0.9\sigma)$	$\chi_{\mathrm{small}}^2$	$397.6 \pm 2.2 \quad (+0.2\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.481 \pm 0.085$	$k_{\mathrm{D}}$	$0.14078 \pm 0.00029 \quad (+1.1\sigma)$	$\chi_{\mathrm{lowl}}^2$	$24.1 \pm 1.1 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.227 \pm 0.054$	$100\theta_{\mathrm{D}}$	$0.16074 \pm 0.00017 \quad (-1.2\sigma)$	$\chi_{\mathrm{plik}}^2$	$2359.1 \pm 5.8 \quad (+293.3\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.665 \pm 0.082$	$z_{\mathrm{eq}}$	$3389 \pm 23 \quad (+0.4\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.063 \pm 0.071 \quad (-0.0\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.08 \pm 0.27$	$k_{\mathrm{eq}}$	$0.010344 \pm 0.000070 \quad (+0.4\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.21 \pm 0.42 \quad (-0.1\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8158 \pm 0.0043 \quad (-0.3\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$5.0 \pm 1.5 \quad (+0.0\sigma)$
$c_{217}$	$0.99818 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4507 \pm 0.0022 \quad (-0.4\sigma)$	$\chi_{\mathrm{prior}}^2$	$13.3 \pm 4.9 \quad (+1.1\sigma)$
$H_0$	$67.62 \pm 0.45 \quad (+0.2\sigma)$	$H(0.15)$	$72.91 \pm 0.39 \quad (+0.2\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.3 \pm 1.2 \quad (-0.0\sigma)$
$\Omega_{\Lambda}$	$0.6884 \pm 0.0061 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.15)$	$641.1 \pm 3.9 \quad (-0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$3520.5 \pm 6.4 \quad (+260.6\sigma)$

$\bar{\chi}_{\mathrm{eff}}^2 = 3540.14$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.28$ ;  $R - 1 = 0.00660$



17.54 base\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022078	$0.02209 \pm 0.00022$	$\Omega_{\mathrm{m}}h^3$	0.095901	$0.09591 \pm 0.00046$	$D_{\mathrm{M}}(0.15)$	649.4	$649.0 \pm 8.0$
$\Omega_{\mathrm{c}}h^2$	0.12113	$0.1210 \pm 0.0021$	$\sigma_8$	0.8143	$0.8137 \pm 0.0088$	$H(0.38)$	82.39	$82.43 \pm 0.56$
$100\theta_{\mathrm{MC}}$	1.040754	$1.04078 \pm 0.00048$	$S_8$	0.8458	$0.844 \pm 0.024$	$D_{\mathrm{M}}(0.38)$	1545.8	$1545 \pm 16$
$\tau$	0.0528	$0.0526 \pm 0.0079$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4632	$0.463 \pm 0.013$	$H(0.51)$	89.222	$89.26 \pm 0.44$
$\ln(10^{10}A_{\mathrm{s}})$	3.0420	$3.042 \pm 0.016$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6142	$0.613 \pm 0.012$	$D_{\mathrm{M}}(0.51)$	2000.6	$1999 \pm 19$
$n_{\mathrm{s}}$	0.9626	$0.9628 \pm 0.0058$	$\sigma_8/h^{0.5}$	0.9973	$0.996 \pm 0.016$	$H(0.61)$	94.930	$94.96 \pm 0.35$
$r$	0.0132	$< 0.0316$	$r_{\mathrm{drag}}h$	98.08	$98.2 \pm 1.6$	$D_{\mathrm{M}}(0.61)$	2326.4	$2325 \pm 20$
$y_{\mathrm{cal}}$	1.00060	$1.0007 \pm 0.0025$	$\langle d^2 \rangle^{1/2}$	2.4611	$2.459 \pm 0.038$	$H(2.33)$	237.00	$236.9 \pm 1.3$
$A_{B,\mathrm{dust}}$	4.60	$4.87_{-1.2}^{+0.81}$	$z_{\mathrm{re}}$	7.60	$7.56 \pm 0.82$	$D_{\mathrm{M}}(2.33)$	5780.7	$5779 \pm 16$
$A_{B,\mathrm{sync}}$	1.48	$1.64_{-1.4}^{+0.52}$	$10^9 A_{\mathrm{s}}$	2.0947	$2.094 \pm 0.034$	$f\sigma_8(0.15)$	0.4668	$0.466 \pm 0.012$
$\alpha_{B,\mathrm{dust}}$	-0.522	$-0.57_{-0.32}^{+0.21}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8849	$1.885 \pm 0.014$	$\sigma_8(0.15)$	0.7512	$0.7507 \pm 0.0074$
$\beta_{B,\mathrm{dust}}$	1.573	$1.597 \pm 0.096$	$D_{40}$	1237.0	$1241 \pm 16$	$f\sigma_8(0.38)$	0.4825	$0.4818 \pm 0.0095$
$\alpha_{B,\mathrm{sync}}$	-0.31	—	$D_{220}$	5699.9	$5702 \pm 41$	$\sigma_8(0.38)$	0.6646	$0.6642 \pm 0.0060$
$\beta_{B,\mathrm{sync}}$	-3.032	$-3.10 \pm 0.27$	$D_{810}$	2535.5	$2536 \pm 14$	$f\sigma_8(0.51)$	0.4797	$0.4791 \pm 0.0081$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	-0.338	$-0.35 \pm 0.28$	$D_{1420}$	814.2	$814.4 \pm 5.2$	$\sigma_8(0.51)$	0.6214	$0.6211 \pm 0.0054$
$A_{100}^{\mathrm{PS}}$	237.4	$242 \pm 25$	$D_{2000}$	229.52	$229.6 \pm 1.8$	$f\sigma_8(0.61)$	0.4737	$0.4732 \pm 0.0072$
$A_{143}^{\mathrm{PS}}$	40.8	$41 \pm 8$	$n_{\mathrm{s},0.002}$	0.9626	$0.9628 \pm 0.0058$	$\sigma_8(0.61)$	0.59095	$0.5907 \pm 0.0051$
$A_{217}^{\mathrm{PS}}$	100.4	$102 \pm 10$	$Y_{\mathrm{P}}$	0.245274	$0.24527_{-0.000087}^{+0.00011}$	$f\sigma_8(2.33)$	0.29749	$0.2974 \pm 0.0025$
$A_{217}^{\mathrm{CIB}}$	46.1	$41 \pm 7$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246601	$0.24660_{-0.000087}^{+0.00011}$	$\sigma_8(2.33)$	0.30619	$0.3061 \pm 0.0027$
$A_{143}^{\mathrm{tSZ}}$	6.47	$3.7_{-2.6}^{+1.7}$	$10^5 \mathrm{D}/\mathrm{H}$	2.6414	$2.639 \pm 0.042$	$r_{0.002}$	0.0117	$< 0.0284$
$r_{143 \times 217}^{\mathrm{PS}}$	0.565	$0.65 \pm 0.13$	$\mathrm{Age}/\mathrm{Gyr}$	13.8364	$13.834 \pm 0.037$	$r_{0.01}$	0.0124	$< 0.0300$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.806	$0.58_{-0.14}^{+0.41}$	$z_*$	1090.391	$1090.37 \pm 0.41$	$\ln(10^{10}A_{\mathrm{t}})$	-1.29	$-0.97_{-0.42}^{+1.1}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.02	—	$r_*$	144.364	$144.38 \pm 0.48$	$r_{10}$	0.0060	$< 0.0146$
$A^{\mathrm{kSZ}}$	0.2	—	$100\theta_*$	1.040973	$1.04099 \pm 0.00047$	$10^9 A_{\mathrm{t}}$	0.0276	$< 0.0662$
$A_{100}^{\mathrm{dust}}$	1.011	$1.01 \pm 0.19$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8682	$13.870 \pm 0.044$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	0.0248	$< 0.0595$
$A_{143}^{\mathrm{dust}}$	0.985	$0.97 \pm 0.18$	$z_{\mathrm{drag}}$	1059.322	$1059.36 \pm 0.46$	$f_{2000}^{143}$	31.32	$30.8 \pm 3.0$
$A_{217}^{\mathrm{dust}}$	0.963	$0.97 \pm 0.10$	$r_{\mathrm{drag}}$	147.121	$147.14 \pm 0.48$	$f_{2000}^{217}$	107.68	$107.7 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	0.996	$1.03 \pm 0.16$	$k_{\mathrm{D}}$	0.14061	$0.14060 \pm 0.00052$	$f_{2000}^{143 \times 217}$	33.07	$33.1 \pm 2.2$
$c_{100}$	0.99756	$0.9975 \pm 0.0011$	$100\theta_{\mathrm{D}}$	0.161109	$0.16110 \pm 0.00027$	$\chi_{\mathrm{BKPLANCK}}^2$	734.95	$739.3 \pm 2.7$
$c_{217}$	1.00141	$1.0012 \pm 0.0016$	$z_{\mathrm{eq}}$	3422.2	$3420 \pm 48$	$\chi_{\mathrm{small}}^2$	396.01	$397.1 \pm 1.8$
$H_0$	66.67	$66.73 \pm 0.92$	$k_{\mathrm{eq}}$	0.010445	$0.01044 \pm 0.00015$	$\chi_{\mathrm{lowl}}^2$	24.16	$24.7 \pm 1.5$
$\Omega_{\Lambda}$	0.6763	$0.677 \pm 0.013$	$100\theta_{\mathrm{eq}}$	0.8088	$0.8094 \pm 0.0088$	$\chi_{\mathrm{CamSpec}}^2$	7049.9	$7063.0 \pm 5.3$
$\Omega_{\mathrm{m}}$	0.3237	$0.323 \pm 0.013$	$100\theta_{\mathrm{s},\mathrm{eq}}$	0.44726	$0.4475 \pm 0.0046$	$\chi_{\mathrm{prior}}^2$	2.29	$9.2 \pm 3.8$
$\Omega_{\mathrm{m}}h^2$	0.14385	$0.1438 \pm 0.0020$	$H(0.15)$	72.07	$72.13 \pm 0.78$	$\chi_{\mathrm{CMB}}^2$	8205.0	$8224.0 \pm 6.1$

Best-fit  $\chi_{\mathrm{eff}}^2 = 8207.30$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 8233.28$ ;  $R - 1 = 0.00244$

$\chi_{\mathrm{eff}}^2$ : CMB - BK15\_dust: 734.95 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.00 commander\_dx12\_v3\_2\_29: 24.16 CamSpec like\_10.7HM: 7049.91



17.55 base\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022205	$0.02220 \pm 0.00020$	$S_8$	0.8233	$0.823 \pm 0.015$	$D_M(0.51)$	1983.0	$1983 \pm 11$
$\Omega_c h^2$	0.11915	$0.1191 \pm 0.0012$	$\sigma_8 \Omega_m^{0.5}$	0.4510	$0.4509 \pm 0.0081$	$H(0.61)$	95.246	$95.25 \pm 0.25$
$100\theta_{MC}$	1.041025	$1.04104 \pm 0.00041$	$\sigma_8 \Omega_m^{0.25}$	0.6038	$0.6038 \pm 0.0079$	$D_M(0.61)$	2307.5	$2307 \pm 12$
$\tau$	0.0547	$0.0547 \pm 0.0077$	$\sigma_8/h^{0.5}$	0.9836	$0.984 \pm 0.011$	$H(2.33)$	235.85	$235.82 \pm 0.78$
$\ln(10^{10} A_s)$	3.0410	$3.041 \pm 0.016$	$r_{\text{drag}} h$	99.64	$99.68 \pm 0.93$	$D_M(2.33)$	5767.4	$5767 \pm 12$
$n_s$	0.96676	$0.9672 \pm 0.0043$	$\langle d^2 \rangle^{1/2}$	2.4305	$2.430 \pm 0.027$	$f\sigma_8(0.15)$	0.4556	$0.4555 \pm 0.0076$
$r$	0.0188	$0.0276^{+0.0073}_{-0.027}$	$z_{\text{re}}$	7.74	$7.72 \pm 0.78$	$\sigma_8(0.15)$	0.7470	$0.7472 \pm 0.0067$
$y_{\text{cal}}$	1.00052	$1.0008 \pm 0.0025$	$10^9 A_s$	2.0927	$2.094 \pm 0.034$	$f\sigma_8(0.38)$	0.4739	$0.4739 \pm 0.0064$
$A_{B,\text{dust}}$	4.62	$4.87^{+0.83}_{-1.2}$	$10^9 A_s e^{-2\tau}$	1.8758	$1.877 \pm 0.012$	$\sigma_8(0.38)$	0.6622	$0.6624 \pm 0.0057$
$A_{B,\text{sync}}$	1.44	$1.64^{+0.52}_{-1.4}$	$D_{40}$	1229.8	$1233 \pm 14$	$f\sigma_8(0.51)$	0.4726	$0.4726 \pm 0.0058$
$\alpha_{B,\text{dust}}$	-0.504	$-0.56^{+0.22}_{-0.31}$	$D_{220}$	5708.8	$5710 \pm 41$	$\sigma_8(0.51)$	0.6197	$0.6199 \pm 0.0053$
$\beta_{B,\text{dust}}$	1.578	$1.595 \pm 0.096$	$D_{810}$	2533.2	$2535 \pm 14$	$f\sigma_8(0.61)$	0.4676	$0.4676 \pm 0.0053$
$\alpha_{B,\text{sync}}$	-0.29	—	$D_{1420}$	814.9	$815.5 \pm 5.1$	$\sigma_8(0.61)$	0.58970	$0.5899 \pm 0.0050$
$\beta_{B,\text{sync}}$	-3.044	$-3.10 \pm 0.27$	$D_{2000}$	229.82	$230.0 \pm 1.8$	$f\sigma_8(2.33)$	0.29734	$0.2974 \pm 0.0025$
$\epsilon_{\text{dust,sync}}$	-0.343	$-0.35 \pm 0.28$	$n_{s,0.002}$	0.96676	$0.9672 \pm 0.0043$	$\sigma_8(2.33)$	0.30656	$0.3067 \pm 0.0026$
$A_{100}^{\text{PS}}$	240.3	$242 \pm 25$	$Y_{\text{P}}$	0.245328	$0.245324^{+0.000087}_{-0.000075}$	$r_{0.002}$	0.0171	$0.0253^{+0.0061}_{-0.025}$
$A_{143}^{\text{PS}}$	39.2	$40 \pm 8$	$Y_{\text{P}}^{\text{BBN}}$	0.246654	$0.246650^{+0.000087}_{-0.000075}$	$r_{0.01}$	0.0179	$0.0264^{+0.0067}_{-0.026}$
$A_{217}^{\text{PS}}$	99.8	$102 \pm 10$	$10^5 \text{D/H}$	2.6170	$2.618 \pm 0.037$	$\ln(10^{10} A_t)$	-0.93	$-0.87^{+1.1}_{-0.41}$
$A_{217}^{\text{CIB}}$	44.8	$40 \pm 7$	Age/Gyr	13.8074	$13.807 \pm 0.028$	$r_{10}$	0.0087	$0.0129^{+0.0031}_{-0.013}$
$A_{143}^{\text{tSZ}}$	5.62	$3.8^{+1.8}_{-2.6}$	$z_*$	1090.057	$1090.05 \pm 0.29$	$10^9 A_t$	0.0394	$0.058^{+0.015}_{-0.056}$
$r_{143 \times 217}^{\text{PS}}$	0.569	$0.65 \pm 0.13$	$r_*$	144.777	$144.79 \pm 0.31$	$10^9 A_t e^{-2\tau}$	0.0353	$0.052^{+0.014}_{-0.050}$
$r_{143 \times 217}^{\text{CIB}}$	0.735	$0.57^{+0.39}_{-0.16}$	$100\theta_*$	1.041228	$1.04124 \pm 0.00041$	$f_{2000}^{143}$	30.98	$30.4 \pm 3.0$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.04	—	$D_M(z_*)/\text{Gpc}$	13.9044	$13.906 \pm 0.031$	$f_{2000}^{217}$	107.48	$107.4 \pm 2.0$
$A^{\text{kSZ}}$	1.6	—	$z_{\text{drag}}$	1059.475	$1059.48 \pm 0.44$	$f_{2000}^{143 \times 217}$	32.87	$32.7 \pm 2.1$
$A_{100}^{\text{dust}}$	1.005	$1.01 \pm 0.19$	$r_{\text{drag}}$	147.502	$147.52 \pm 0.34$	$\chi_{\text{BKPLANCK}}^2$	735.63	$740.0 \pm 2.7$
$A_{143}^{\text{dust}}$	0.992	$0.97 \pm 0.18$	$k_{\text{D}}$	0.140310	$0.14029 \pm 0.00044$	$\chi_{\text{simall}}^2$	396.19	$397.3 \pm 1.9$
$A_{217}^{\text{dust}}$	0.966	$0.97 \pm 0.10$	$100\theta_{\text{D}}$	0.161031	$0.16104 \pm 0.00026$	$\chi_{\text{lowl}}^2$	23.47	$23.7 \pm 1.1$
$A_{143 \times 217}^{\text{dust}}$	1.011	$1.03 \pm 0.16$	$z_{\text{eq}}$	3378.0	$3377 \pm 28$	$\chi_{\text{CamSpec}}^2$	7050.82	$7063.3 \pm 5.2$
$c_{100}$	0.99750	$0.9975 \pm 0.0011$	$k_{\text{eq}}$	0.010310	$0.010307 \pm 0.000086$	$\chi_{6\text{DF}}^2$	0.0298	$0.064 \pm 0.081$
$c_{217}$	1.00140	$1.0012 \pm 0.0016$	$100\theta_{\text{eq}}$	0.8173	$0.8175 \pm 0.0052$	$\chi_{\text{MGS}}^2$	1.22	$1.30 \pm 0.51$
$H_0$	67.55	$67.57 \pm 0.54$	$100\theta_{s,\text{eq}}$	0.45158	$0.4517 \pm 0.0027$	$\chi_{\text{DR12BAO}}^2$	4.37	$4.9 \pm 1.7$
$\Omega_{\Lambda}$	0.6888	$0.6890 \pm 0.0073$	$H(0.15)$	72.825	$72.84 \pm 0.47$	$\chi_{\text{prior}}^2$	2.30	$9.2 \pm 3.8$
$\Omega_{\text{m}}$	0.3112	$0.3110 \pm 0.0073$	$D_M(0.15)$	641.80	$641.7 \pm 4.6$	$\chi_{\text{BAO}}^2$	5.62	$6.3 \pm 1.4$
$\Omega_{\text{m}} h^2$	0.14200	$0.1420 \pm 0.0012$	$H(0.38)$	82.924	$82.94 \pm 0.35$	$\chi_{\text{CMB}}^2$	8206.1	$8224.3 \pm 6.0$
$\Omega_{\text{m}} h^3$	0.095925	$0.09592 \pm 0.00045$	$D_M(0.38)$	1530.7	$1530.4 \pm 9.4$			
$\sigma_8$	0.8084	$0.8085 \pm 0.0076$	$H(0.51)$	89.633	$89.64 \pm 0.29$			

Best-fit  $\chi_{\text{eff}}^2 = 8214.03$ ;  $\bar{\chi}_{\text{eff}}^2 = 8239.80$ ;  $R - 1 = 0.00717$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.03 MGS: 1.22 DR12BAO: 4.37 CMB - BK15\_dust: 735.63 simall.100x143\_offlike5\_EE\_Aplanck\_B: 396.19 commander\_dx12\_v3\_2\_29: 23.46 CamSpec like\_10.7HM: 7050.82



17.56 base\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022111	$0.02212 \pm 0.00021$	$\sigma_8$	0.8124	$0.8118 \pm 0.0062$	$D_M(0.38)$	1542.3	$1541 \pm 12$
$\Omega_c h^2$	0.12065	$0.1205 \pm 0.0016$	$S_8$	0.8399	$0.838 \pm 0.016$	$H(0.51)$	89.316	$89.36 \pm 0.36$
$100\theta_{MC}$	1.040806	$1.04083 \pm 0.00045$	$\sigma_8 \Omega_m^{0.5}$	0.4601	$0.4589 \pm 0.0089$	$D_M(0.51)$	1996.5	$1995 \pm 15$
$\tau$	0.0529	$0.0528 \pm 0.0078$	$\sigma_8 \Omega_m^{0.25}$	0.6114	$0.6103 \pm 0.0077$	$H(0.61)$	95.002	$95.04 \pm 0.30$
$\ln(10^{10} A_s)$	3.0410	$3.041 \pm 0.015$	$\sigma_8/h^{0.5}$	0.9935	$0.992 \pm 0.010$	$D_M(0.61)$	2322.0	$2320 \pm 16$
$n_s$	0.96325	$0.9638 \pm 0.0050$	$r_{\text{drag}} h$	98.44	$98.6 \pm 1.2$	$H(2.33)$	236.72	$236.62 \pm 0.96$
$r$	0.0132	$< 0.0323$	$\langle d^2 \rangle^{1/2}$	2.4535	$2.450 \pm 0.025$	$D_M(2.33)$	5777.7	$5776 \pm 14$
$y_{\text{cal}}$	1.00056	$1.0007 \pm 0.0025$	$z_{\text{re}}$	7.61	$7.56 \pm 0.79$	$f\sigma_8(0.15)$	0.4639	$0.4628 \pm 0.0081$
$A_{B,\text{dust}}$	4.61	$4.87_{-1.2}^{+0.83}$	$10^9 A_s$	2.0926	$2.092 \pm 0.031$	$\sigma_8(0.15)$	0.7498	$0.7493 \pm 0.0055$
$A_{B,\text{sync}}$	1.47	$1.64_{-1.4}^{+0.53}$	$10^9 A_s e^{-2\tau}$	1.8824	$1.882 \pm 0.011$	$f\sigma_8(0.38)$	0.4802	$0.4793 \pm 0.0063$
$\alpha_{B,\text{dust}}$	-0.518	$-0.57_{-0.32}^{+0.21}$	$D_{40}$	1235.3	$1239 \pm 14$	$\sigma_8(0.38)$	0.66367	$0.6633 \pm 0.0048$
$\beta_{B,\text{dust}}$	1.576	$1.596 \pm 0.096$	$D_{220}$	5702.9	$5705 \pm 41$	$f\sigma_8(0.51)$	0.4777	$0.4770 \pm 0.0053$
$\alpha_{B,\text{sync}}$	-0.27	—	$D_{810}$	2534.3	$2535 \pm 13$	$\sigma_8(0.51)$	0.62068	$0.6204 \pm 0.0045$
$\beta_{B,\text{sync}}$	-3.037	$-3.10 \pm 0.27$	$D_{1420}$	814.0	$814.5 \pm 5.2$	$f\sigma_8(0.61)$	0.47201	$0.4713 \pm 0.0047$
$\epsilon_{\text{dust,sync}}$	-0.338	$-0.35 \pm 0.28$	$D_{2000}$	229.47	$229.6 \pm 1.8$	$\sigma_8(0.61)$	0.59034	$0.5901 \pm 0.0044$
$A_{100}^{\text{PS}}$	240.5	$242 \pm 25$	$n_{s,0.002}$	0.96325	$0.9638 \pm 0.0050$	$f\sigma_8(2.33)$	0.29730	$0.2972 \pm 0.0023$
$A_{143}^{\text{PS}}$	39.3	$41 \pm 8$	$Y_{\text{P}}$	0.245289	$0.24529_{-0.000081}^{+0.00010}$	$\sigma_8(2.33)$	0.30611	$0.3061 \pm 0.0026$
$A_{217}^{\text{PS}}$	99.6	$102 \pm 10$	$Y_{\text{P}}^{\text{BBN}}$	0.246615	$0.24661_{-0.000081}^{+0.00010}$	$r_{0.002}$	0.0118	$< 0.0291$
$A_{217}^{\text{CIB}}$	45.3	$41 \pm 7$	$10^5 D/H$	2.6350	$2.633 \pm 0.040$	$r_{0.01}$	0.0125	$< 0.0306$
$A_{143}^{\text{tSZ}}$	5.64	$3.7_{-2.6}^{+1.7}$	Age/Gyr	13.8298	$13.827 \pm 0.033$	$\ln(10^{10} A_t)$	-1.29	$-0.95_{-0.42}^{+1.1}$
$r_{143 \times 217}^{\text{PS}}$	0.562	$0.65 \pm 0.13$	$z_*$	1090.309	$1090.28 \pm 0.35$	$r_{10}$	0.0060	$< 0.0149$
$r_{143 \times 217}^{\text{CIB}}$	0.746	$0.58_{-0.15}^{+0.39}$	$r_*$	144.461	$144.50 \pm 0.36$	$10^9 A_t$	0.0276	$< 0.0676$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.01	—	$100\theta_*$	1.041012	$1.04104 \pm 0.00045$	$10^9 A_t e^{-2\tau}$	0.0248	$< 0.0607$
$A^{\text{kSZ}}$	1.6	—	$D_M(z_*)/\text{Gpc}$	13.8770	$13.880 \pm 0.034$	$f_{2000}^{143}$	31.30	$30.8 \pm 3.0$
$A_{100}^{\text{dust}}$	1.003	$1.01 \pm 0.19$	$z_{\text{drag}}$	1059.399	$1059.39 \pm 0.45$	$f_{2000}^{217}$	107.83	$107.7 \pm 2.0$
$A_{143}^{\text{dust}}$	0.986	$0.97 \pm 0.18$	$r_{\text{drag}}$	147.207	$147.25 \pm 0.38$	$f_{2000}^{143 \times 217}$	33.19	$33.0 \pm 2.2$
$A_{217}^{\text{dust}}$	0.961	$0.97 \pm 0.10$	$k_{\text{D}}$	0.140542	$0.14051 \pm 0.00045$	$\chi_{\text{lensing}}^2$	9.00	$9.56 \pm 0.92$
$A_{143 \times 217}^{\text{dust}}$	0.999	$1.03 \pm 0.16$	$100\theta_{\text{D}}$	0.161082	$0.16108 \pm 0.00026$	$\chi_{\text{BKPLANCK}}^2$	735.17	$739.4 \pm 2.6$
$c_{100}$	0.99746	$0.9975 \pm 0.0011$	$z_{\text{eq}}$	3411.6	$3408 \pm 36$	$\chi_{\text{small}}^2$	396.01	$397.0 \pm 1.6$
$c_{217}$	1.00143	$1.0012 \pm 0.0016$	$k_{\text{eq}}$	0.010412	$0.01040 \pm 0.00011$	$\chi_{\text{lowl}}^2$	23.99	$24.4 \pm 1.2$
$H_0$	66.87	$66.96 \pm 0.71$	$100\theta_{\text{eq}}$	0.8108	$0.8117 \pm 0.0067$	$\chi_{\text{CamSpec}}^2$	7049.83	$7062.6 \pm 5.1$
$\Omega_{\Lambda}$	0.6793	$0.6804 \pm 0.0099$	$100\theta_{s,\text{eq}}$	0.44828	$0.4487 \pm 0.0034$	$\chi_{\text{prior}}^2$	2.43	$9.2 \pm 3.8$
$\Omega_{\text{m}}$	0.3207	$0.3196 \pm 0.0099$	$H(0.15)$	72.25	$72.32 \pm 0.61$	$\chi_{\text{CMB}}^2$	8214.0	$8233.0 \pm 6.1$
$\Omega_{\text{m}} h^2$	0.14341	$0.1432 \pm 0.0015$	$D_M(0.15)$	647.6	$646.9 \pm 6.2$			
$\Omega_{\text{m}} h^3$	0.095902	$0.09590 \pm 0.00045$	$H(0.38)$	82.512	$82.57 \pm 0.45$			

Best-fit  $\chi_{\text{eff}}^2 = 8216.43$ ;  $\bar{\chi}_{\text{eff}}^2 = 8242.24$ ;  $R - 1 = 0.00337$   
 $\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb\_consext8: 9.00 BK15\_dust: 735.17 small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.01 commander\_dx12\_v3\_2.29: 23.99  
CamSpec like\_10.7HM: 7049.83



17.57 base\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_BAO\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022189	$0.02221 \pm 0.00019$	$S_8$	0.8268	$0.826 \pm 0.012$	$D_M(0.51)$	1985.4	$1984 \pm 10$
$\Omega_c h^2$	0.11942	$0.1193 \pm 0.0011$	$\sigma_8 \Omega_m^{0.5}$	0.4529	$0.4524 \pm 0.0065$	$H(0.61)$	95.200	$95.24 \pm 0.24$
$100\theta_{MC}$	1.040976	$1.04102 \pm 0.00041$	$\sigma_8 \Omega_m^{0.25}$	0.6055	$0.6054 \pm 0.0062$	$D_M(0.61)$	2310.1	$2308 \pm 11$
$\tau$	0.0546	$0.0559 \pm 0.0073$	$\sigma_8/h^{0.5}$	0.9860	$0.9860 \pm 0.0089$	$H(2.33)$	236.00	$235.91 \pm 0.70$
$\ln(10^{10} A_s)$	3.0425	$3.045 \pm 0.014$	$r_{\text{drag}} h$	99.42	$99.57 \pm 0.84$	$D_M(2.33)$	5769.3	$5768 \pm 12$
$n_s$	0.96584	$0.9667 \pm 0.0042$	$\langle d^2 \rangle^{1/2}$	2.4370	$2.436 \pm 0.021$	$f\sigma_8(0.15)$	0.4573	$0.4569 \pm 0.0061$
$r$	0.0130	$< 0.0337$	$z_{\text{re}}$	7.74	$7.85 \pm 0.72$	$\sigma_8(0.15)$	0.7480	$0.7486 \pm 0.0055$
$y_{\text{cal}}$	1.00083	$1.0009 \pm 0.0025$	$10^9 A_s$	2.0957	$2.101 \pm 0.030$	$f\sigma_8(0.38)$	0.4754	$0.4752 \pm 0.0050$
$A_{B,\text{dust}}$	4.59	$4.87_{-1.2}^{+0.83}$	$10^9 A_s e^{-2\tau}$	1.8789	$1.878 \pm 0.011$	$\sigma_8(0.38)$	0.66288	$0.6636 \pm 0.0048$
$A_{B,\text{sync}}$	1.46	$1.64_{-1.4}^{+0.53}$	$D_{40}$	1231.2	$1235 \pm 13$	$f\sigma_8(0.51)$	0.47379	$0.4738 \pm 0.0045$
$\alpha_{B,\text{dust}}$	-0.501	$-0.56_{-0.31}^{+0.22}$	$D_{220}$	5714.9	$5714 \pm 40$	$\sigma_8(0.51)$	0.62029	$0.6210 \pm 0.0045$
$\beta_{B,\text{dust}}$	1.573	$1.595 \pm 0.096$	$D_{810}$	2535.6	$2536 \pm 13$	$f\sigma_8(0.61)$	0.46871	$0.4688 \pm 0.0041$
$\alpha_{B,\text{sync}}$	-0.41	—	$D_{1420}$	815.3	$815.8 \pm 5.0$	$\sigma_8(0.61)$	0.59018	$0.5909 \pm 0.0043$
$\beta_{B,\text{sync}}$	-3.034	$-3.10 \pm 0.27$	$D_{2000}$	229.91	$230.1 \pm 1.8$	$f\sigma_8(2.33)$	0.29752	$0.2979 \pm 0.0022$
$\epsilon_{\text{dust,sync}}$	-0.325	$-0.35 \pm 0.28$	$n_{s,0.002}$	0.96584	$0.9667 \pm 0.0042$	$\sigma_8(2.33)$	0.30666	$0.3071 \pm 0.0024$
$A_{100}^{\text{PS}}$	239.7	$242 \pm 25$	$Y_{\text{P}}$	0.245321	$0.245326_{-0.000074}^{+0.000085}$	$r_{0.002}$	0.0117	$< 0.0307$
$A_{143}^{\text{PS}}$	40.7	$41 \pm 8$	$Y_{\text{P}}^{\text{BBN}}$	0.246648	$0.246652_{-0.000075}^{+0.000086}$	$r_{0.01}$	0.0123	$< 0.0322$
$A_{217}^{\text{PS}}$	100.5	$102 \pm 10$	$10^5 \text{D/H}$	2.6200	$2.617 \pm 0.037$	$\ln(10^{10} A_t)$	-1.30	$-0.89_{-0.41}^{+1.1}$
$A_{217}^{\text{CIB}}$	44.9	$40 \pm 7$	Age/Gyr	13.8115	$13.808 \pm 0.027$	$r_{10}$	0.0060	$< 0.0157$
$A_{143}^{\text{tSZ}}$	5.78	$3.8_{-2.6}^{+1.8}$	$z_*$	1090.099	$1090.06 \pm 0.29$	$10^9 A_t$	0.0272	$< 0.0707$
$r_{143 \times 217}^{\text{PS}}$	0.583	$0.65 \pm 0.13$	$r_*$	144.719	$144.75 \pm 0.28$	$10^9 A_t e^{-2\tau}$	0.0244	$< 0.0633$
$r_{143 \times 217}^{\text{CIB}}$	0.761	$0.57_{-0.16}^{+0.38}$	$100\theta_*$	1.041182	$1.04122 \pm 0.00041$	$f_{2000}^{143}$	30.98	$30.4 \pm 3.0$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.10	—	$D_M(z_*)/\text{Gpc}$	13.8995	$13.902 \pm 0.028$	$f_{2000}^{217}$	107.56	$107.4 \pm 2.0$
$A^{\text{kSZ}}$	1.3	—	$z_{\text{drag}}$	1059.475	$1059.50 \pm 0.44$	$f_{2000}^{143 \times 217}$	32.87	$32.7 \pm 2.1$
$A_{100}^{\text{dust}}$	1.011	$1.01 \pm 0.19$	$r_{\text{drag}}$	147.446	$147.47 \pm 0.31$	$\chi_{\text{lensing}}^2$	8.896	$9.33 \pm 0.73$
$A_{143}^{\text{dust}}$	0.977	$0.97 \pm 0.18$	$k_{\text{D}}$	0.140354	$0.14034 \pm 0.00042$	$\chi_{\text{BKPLANCK}}^2$	735.61	$739.8 \pm 2.6$
$A_{217}^{\text{dust}}$	0.966	$0.97 \pm 0.10$	$100\theta_{\text{D}}$	0.161037	$0.16103 \pm 0.00025$	$\chi_{\text{simall}}^2$	396.19	$397.4 \pm 1.9$
$A_{143 \times 217}^{\text{dust}}$	1.002	$1.03 \pm 0.16$	$z_{\text{eq}}$	3384.1	$3380 \pm 25$	$\chi_{\text{lowl}}^2$	23.50	$23.9 \pm 1.1$
$c_{100}$	0.99759	$0.9975 \pm 0.0011$	$k_{\text{eq}}$	0.010329	$0.010317 \pm 0.000077$	$\chi_{\text{CamSpec}}^2$	7050.59	$7062.9 \pm 5.1$
$c_{217}$	1.00142	$1.0012 \pm 0.0016$	$100\theta_{\text{eq}}$	0.81609	$0.8169 \pm 0.0047$	$\chi_{6\text{DF}}^2$	0.0474	$0.064 \pm 0.076$
$H_0$	67.43	$67.52 \pm 0.50$	$100\theta_{s,\text{eq}}$	0.45098	$0.4514 \pm 0.0024$	$\chi_{\text{MGS}}^2$	1.097	$1.24 \pm 0.45$
$\Omega_{\Lambda}$	0.6871	$0.6882 \pm 0.0066$	$H(0.15)$	72.719	$72.80 \pm 0.43$	$\chi_{\text{DR12BAO}}^2$	4.77	$5.0 \pm 1.6$
$\Omega_{\text{m}}$	0.3129	$0.3118 \pm 0.0066$	$D_M(0.15)$	642.86	$642.1 \pm 4.3$	$\chi_{\text{prior}}^2$	2.30	$9.2 \pm 3.8$
$\Omega_{\text{m}} h^2$	0.14226	$0.1421 \pm 0.0011$	$H(0.38)$	82.848	$82.91 \pm 0.33$	$\chi_{\text{CMB}}^2$	8214.8	$8233.2 \pm 6.1$
$\Omega_{\text{m}} h^3$	0.095920	$0.09594 \pm 0.00045$	$D_M(0.38)$	1532.8	$1531.3 \pm 8.6$	$\chi_{\text{BAO}}^2$	5.92	$6.3 \pm 1.3$
$\sigma_8$	0.8096	$0.8102 \pm 0.0061$	$H(0.51)$	89.574	$89.62 \pm 0.27$			

Best-fit  $\chi_{\text{eff}}^2 = 8223.00$ ;  $\bar{\chi}_{\text{eff}}^2 = 8248.72$ ;  $R - 1 = 0.00847$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.05 MGS: 1.10 DR12BAO: 4.77 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.90 BK15\_dust: 735.61 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.19 commander\_dx12\_v3.2.29: 23.50 CamSpec like\_10.7HM: 7050.59



17.58 base\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02210 \pm 0.00022$	$\Omega_{\mathrm{m}}h^3$	$0.09592 \pm 0.00046$	$D_{\mathrm{M}}(0.15)$	$648.6 \pm 7.9$
$\Omega_{\mathrm{c}}h^2$	$0.1209 \pm 0.0021$	$\sigma_8$	$0.8146 \pm 0.0085$	$H(0.38)$	$82.46 \pm 0.56$
$100\theta_{\mathrm{MC}}$	$1.04079 \pm 0.00047$	$S_8$	$0.845 \pm 0.024$	$D_{\mathrm{M}}(0.38)$	$1544 \pm 16$
$\tau$	$0.0540^{+0.0049}_{-0.0083}$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.463 \pm 0.013$	$H(0.51)$	$89.28 \pm 0.44$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044^{+0.012}_{-0.016}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.614 \pm 0.012$	$D_{\mathrm{M}}(0.51)$	$1999 \pm 18$
$n_{\mathrm{s}}$	$0.9631 \pm 0.0058$	$\sigma_8/h^{0.5}$	$0.997 \pm 0.016$	$H(0.61)$	$94.98 \pm 0.35$
$r$	$< 0.0317$	$r_{\mathrm{drag}}h$	$98.2 \pm 1.6$	$D_{\mathrm{M}}(0.61)$	$2324 \pm 20$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025$	$\langle d^2 \rangle^{1/2}$	$2.461 \pm 0.037$	$H(2.33)$	$236.9 \pm 1.3$
$A_{B,\mathrm{dust}}$	$4.86^{+0.81}_{-1.2}$	$z_{\mathrm{re}}$	$7.72^{+0.55}_{-0.81}$	$D_{\mathrm{M}}(2.33)$	$5779 \pm 16$
$A_{B,\mathrm{sync}}$	$1.64^{+0.52}_{-1.4}$	$10^9 A_{\mathrm{s}}$	$2.100^{+0.025}_{-0.033}$	$f\sigma_8(0.15)$	$0.466 \pm 0.012$
$\alpha_{B,\mathrm{dust}}$	$-0.57^{+0.21}_{-0.32}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.884 \pm 0.014$	$\sigma_8(0.15)$	$0.7516 \pm 0.0070$
$\beta_{B,\mathrm{dust}}$	$1.598 \pm 0.096$	$D_{40}$	$1241 \pm 16$	$f\sigma_8(0.38)$	$0.4822 \pm 0.0095$
$\alpha_{B,\mathrm{sync}}$	—	$D_{220}$	$5702 \pm 41$	$\sigma_8(0.38)$	$0.6651^{+0.0051}_{-0.0057}$
$\beta_{B,\mathrm{sync}}$	$-3.10 \pm 0.27$	$D_{810}$	$2536 \pm 14$	$f\sigma_8(0.51)$	$0.4795 \pm 0.0081$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$-0.35 \pm 0.28$	$D_{1420}$	$814.4 \pm 5.2$	$\sigma_8(0.51)$	$0.6219^{+0.0044}_{-0.0052}$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25$	$D_{2000}$	$229.6 \pm 1.8$	$f\sigma_8(0.61)$	$0.4736 \pm 0.0071$
$A_{143}^{\mathrm{PS}}$	$41 \pm 8$	$n_{\mathrm{s},0.002}$	$0.9631 \pm 0.0058$	$\sigma_8(0.61)$	$0.5915^{+0.0041}_{-0.0049}$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$Y_{\mathrm{P}}$	$0.24528^{+0.00011}_{-0.000086}$	$f\sigma_8(2.33)$	$0.2978^{+0.0019}_{-0.0025}$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.24660^{+0.00011}_{-0.000086}$	$\sigma_8(2.33)$	$0.3066^{+0.0020}_{-0.0026}$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.8}_{-2.6}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.638 \pm 0.042$	$r_{0.002}$	$< 0.0285$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$\mathrm{Age}/\mathrm{Gyr}$	$13.832 \pm 0.036$	$r_{0.01}$	$< 0.0300$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.58^{+0.40}_{-0.14}$	$z_*$	$1090.35 \pm 0.41$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.97^{+1.1}_{-0.42}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$r_*$	$144.40 \pm 0.48$	$r_{10}$	$< 0.0146$
$A^{\mathrm{kSZ}}$	$4.9 \pm 2.7$	$100\theta_*$	$1.04100 \pm 0.00046$	$10^9 A_{\mathrm{t}}$	$< 0.0665$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.871 \pm 0.044$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.0596$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.18$	$z_{\mathrm{drag}}$	$1059.37 \pm 0.45$	$f_{2000}^{143}$	$30.8 \pm 3.0$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$r_{\mathrm{drag}}$	$147.15 \pm 0.48$	$f_{2000}^{217}$	$107.6 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$k_{\mathrm{D}}$	$0.14059 \pm 0.00052$	$f_{2000}^{143 \times 217}$	$33.0 \pm 2.2$
$c_{100}$	$0.9975 \pm 0.0011$	$100\theta_{\mathrm{D}}$	$0.16110 \pm 0.00026$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.2 \pm 2.7$
$c_{217}$	$1.0012 \pm 0.0016$	$z_{\mathrm{eq}}$	$3418 \pm 48$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.8$
$H_0$	$66.77 \pm 0.91$	$k_{\mathrm{eq}}$	$0.01043 \pm 0.00015$	$\chi_{\mathrm{lowl}}^2$	$24.7 \pm 1.5$
$\Omega_{\Lambda}$	$0.677 \pm 0.013$	$100\theta_{\mathrm{eq}}$	$0.8097 \pm 0.0088$	$\chi_{\mathrm{CamSpec}}^2$	$7062.9 \pm 5.3$
$\Omega_{\mathrm{m}}$	$0.323 \pm 0.013$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4477 \pm 0.0045$	$\chi_{\mathrm{prior}}^2$	$9.2 \pm 3.8$
$\Omega_{\mathrm{m}}h^2$	$0.1437 \pm 0.0020$	$H(0.15)$	$72.16 \pm 0.78$	$\chi_{\mathrm{CMB}}^2$	$8223.8 \pm 6.1$

$$\bar{\chi}_{\mathrm{eff}}^2 = 8233.01; R - 1 = 0.00318$$



17.59 base\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02221 \pm 0.00019$	$S_8$	$0.824 \pm 0.015$	$D_{\mathrm{M}}(0.51)$	$1982 \pm 11$
$\Omega_{\mathrm{c}}h^2$	$0.1191 \pm 0.0012$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4512 \pm 0.0080$	$H(0.61)$	$95.26 \pm 0.24$
$100\theta_{\mathrm{MC}}$	$1.04104 \pm 0.00041$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6042 \pm 0.0077$	$D_{\mathrm{M}}(0.61)$	$2307 \pm 12$
$\tau$	$0.0556^{+0.0055}_{-0.0080}$	$\sigma_8/h^{0.5}$	$0.984 \pm 0.011$	$H(2.33)$	$235.81 \pm 0.78$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.013}_{-0.016}$	$r_{\mathrm{drag}}h$	$99.70 \pm 0.93$	$D_{\mathrm{M}}(2.33)$	$5767 \pm 12$
$n_{\mathrm{s}}$	$0.9673 \pm 0.0043$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.026$	$f\sigma_8(0.15)$	$0.4558 \pm 0.0075$
$r$	$0.0276^{+0.0071}_{-0.027}$	$z_{\mathrm{re}}$	$7.82^{+0.60}_{-0.78}$	$\sigma_8(0.15)$	$0.7478^{+0.0058}_{-0.0067}$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0025$	$10^9 A_{\mathrm{s}}$	$2.098^{+0.026}_{-0.034}$	$f\sigma_8(0.38)$	$0.4742 \pm 0.0063$
$A_{B,\mathrm{dust}}$	$4.87^{+0.82}_{-1.2}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.012$	$\sigma_8(0.38)$	$0.6630^{+0.0048}_{-0.0057}$
$A_{B,\mathrm{sync}}$	$1.64^{+0.52}_{-1.4}$	$D_{40}$	$1233 \pm 14$	$f\sigma_8(0.51)$	$0.4729 \pm 0.0056$
$\alpha_{B,\mathrm{dust}}$	$-0.56^{+0.22}_{-0.31}$	$D_{220}$	$5710 \pm 41$	$\sigma_8(0.51)$	$0.6205^{+0.0044}_{-0.0053}$
$\beta_{B,\mathrm{dust}}$	$1.595 \pm 0.096$	$D_{810}$	$2535 \pm 14$	$f\sigma_8(0.61)$	$0.4680 \pm 0.0051$
$\alpha_{B,\mathrm{sync}}$	—	$D_{1420}$	$815.5 \pm 5.1$	$\sigma_8(0.61)$	$0.5904^{+0.0041}_{-0.0050}$
$\beta_{B,\mathrm{sync}}$	$-3.10 \pm 0.27$	$D_{2000}$	$230.1 \pm 1.8$	$f\sigma_8(2.33)$	$0.2977^{+0.0020}_{-0.0025}$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$-0.35 \pm 0.28$	$n_{\mathrm{s},0.002}$	$0.9673 \pm 0.0043$	$\sigma_8(2.33)$	$0.3070^{+0.0021}_{-0.0026}$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25$	$Y_{\mathrm{P}}$	$0.245325^{+0.000086}_{-0.000075}$	$r_{0.002}$	$< 0.0313$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246652^{+0.000087}_{-0.000075}$	$r_{0.01}$	$0.0265^{+0.0065}_{-0.026}$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.617 \pm 0.037$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.87^{+1.1}_{-0.41}$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7$	$\mathrm{Age}/\mathrm{Gyr}$	$13.807 \pm 0.028$	$r_{10}$	$< 0.0160$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$z_*$	$1090.05 \pm 0.29$	$10^9 A_{\mathrm{t}}$	$0.058^{+0.015}_{-0.057}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$r_*$	$144.79 \pm 0.31$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$0.052^{+0.013}_{-0.051}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.57^{+0.39}_{-0.16}$	$100\theta_*$	$1.04124 \pm 0.00041$	$f_{2000}^{143}$	$30.4 \pm 3.0$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.906 \pm 0.031$	$f_{2000}^{217}$	$107.4 \pm 2.0$
$A^{\mathrm{kSZ}}$	—	$z_{\mathrm{drag}}$	$1059.49 \pm 0.44$	$f_{2000}^{143 \times 217}$	$32.7 \pm 2.1$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$r_{\mathrm{drag}}$	$147.52 \pm 0.34$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.9 \pm 2.7$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.18$	$k_{\mathrm{D}}$	$0.14029 \pm 0.00044$	$\chi_{\mathrm{simall}}^2$	$397.2 \pm 1.9$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_{\mathrm{D}}$	$0.16104 \pm 0.00026$	$\chi_{\mathrm{lowl}}^2$	$23.8 \pm 1.1$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$z_{\mathrm{eq}}$	$3376 \pm 28$	$\chi_{\mathrm{CamSpec}}^2$	$7063.2 \pm 5.2$
$c_{100}$	$0.9975 \pm 0.0011$	$k_{\mathrm{eq}}$	$0.010305 \pm 0.000086$	$\chi_{6\mathrm{DF}}^2$	$0.062 \pm 0.080$
$c_{217}$	$1.0012 \pm 0.0016$	$100\theta_{\mathrm{eq}}$	$0.8176 \pm 0.0052$	$\chi_{\mathrm{MGS}}^2$	$1.31 \pm 0.51$
$H_0$	$67.58 \pm 0.54$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4517 \pm 0.0027$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 \pm 1.7$
$\Omega_{\Lambda}$	$0.6891 \pm 0.0073$	$H(0.15)$	$72.85 \pm 0.47$	$\chi_{\mathrm{prior}}^2$	$9.2 \pm 3.8$
$\Omega_{\mathrm{m}}$	$0.3109 \pm 0.0073$	$D_{\mathrm{M}}(0.15)$	$641.6 \pm 4.6$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.4$
$\Omega_{\mathrm{m}}h^2$	$0.1419 \pm 0.0012$	$H(0.38)$	$82.94 \pm 0.35$	$\chi_{\mathrm{CMB}}^2$	$8224.1 \pm 5.9$
$\Omega_{\mathrm{m}}h^3$	$0.09592 \pm 0.00045$	$D_{\mathrm{M}}(0.38)$	$1530.2 \pm 9.3$		
$\sigma_8$	$0.8092^{+0.0067}_{-0.0075}$	$H(0.51)$	$89.65 \pm 0.29$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 8239.57; R - 1 = 0.00860$$



17.60 base\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02213 \pm 0.00021$	$\sigma_8$	$0.8124 \pm 0.0059$	$D_{\mathrm{M}}(0.38)$	$1540 \pm 12$
$\Omega_{\mathrm{c}}h^2$	$0.1203 \pm 0.0015$	$S_8$	$0.837 \pm 0.016$	$H(0.51)$	$89.39 \pm 0.35$
$100\theta_{\mathrm{MC}}$	$1.04085 \pm 0.00045$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4587 \pm 0.0089$	$D_{\mathrm{M}}(0.51)$	$1994 \pm 14$
$\tau$	$0.0541^{+0.0050}_{-0.0081}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6104 \pm 0.0077$	$H(0.61)$	$95.06 \pm 0.29$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.011}_{-0.014}$	$\sigma_8/h^{0.5}$	$0.992 \pm 0.010$	$D_{\mathrm{M}}(0.61)$	$2319 \pm 15$
$n_{\mathrm{s}}$	$0.9642 \pm 0.0049$	$r_{\mathrm{drag}}h$	$98.7 \pm 1.2$	$H(2.33)$	$236.54 \pm 0.93$
$r$	$< 0.0324$	$\langle d^2 \rangle^{1/2}$	$2.451 \pm 0.025$	$D_{\mathrm{M}}(2.33)$	$5775 \pm 14$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025$	$z_{\mathrm{re}}$	$7.71^{+0.56}_{-0.78}$	$f\sigma_8(0.15)$	$0.4627 \pm 0.0081$
$A_{B,\mathrm{dust}}$	$4.87^{+0.82}_{-1.2}$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.023}_{-0.031}$	$\sigma_8(0.15)$	$0.7500 \pm 0.0051$
$A_{B,\mathrm{sync}}$	$1.64^{+0.53}_{-1.4}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.882 \pm 0.011$	$f\sigma_8(0.38)$	$0.4794 \pm 0.0063$
$\alpha_{B,\mathrm{dust}}$	$-0.57^{+0.21}_{-0.32}$	$D_{40}$	$1239 \pm 14$	$\sigma_8(0.38)$	$0.6640^{+0.0040}_{-0.0047}$
$\beta_{B,\mathrm{dust}}$	$1.597 \pm 0.096$	$D_{220}$	$5705 \pm 41$	$f\sigma_8(0.51)$	$0.4771 \pm 0.0053$
$\alpha_{B,\mathrm{sync}}$	—	$D_{810}$	$2535 \pm 13$	$\sigma_8(0.51)$	$0.6211^{+0.0037}_{-0.0044}$
$\beta_{B,\mathrm{sync}}$	$-3.10 \pm 0.27$	$D_{1420}$	$814.6 \pm 5.2$	$f\sigma_8(0.61)$	$0.4715 \pm 0.0047$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$-0.35 \pm 0.28$	$D_{2000}$	$229.7 \pm 1.8$	$\sigma_8(0.61)$	$0.5908^{+0.0035}_{-0.0043}$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25$	$n_{\mathrm{s},0.002}$	$0.9642 \pm 0.0049$	$f\sigma_8(2.33)$	$0.2976^{+0.0018}_{-0.0023}$
$A_{143}^{\mathrm{PS}}$	$41 \pm 8$	$Y_{\mathrm{P}}$	$0.245293^{+0.000097}_{-0.000081}$	$\sigma_8(2.33)$	$0.3065^{+0.0019}_{-0.0025}$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246619^{+0.000098}_{-0.000081}$	$r_{0.002}$	$< 0.0293$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$10^5 \mathrm{D}/\mathrm{H}$	$2.631 \pm 0.040$	$r_{0.01}$	$< 0.0308$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.6}$	$\mathrm{Age}/\mathrm{Gyr}$	$13.825 \pm 0.032$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.94^{+1.1}_{-0.42}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$z_*$	$1090.25 \pm 0.35$	$r_{10}$	$< 0.0150$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.58^{+0.39}_{-0.15}$	$r_*$	$144.53 \pm 0.36$	$10^9 A_{\mathrm{t}}$	$< 0.0679$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$100\theta_*$	$1.04105 \pm 0.00044$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.0609$
$A^{\mathrm{kSZ}}$	—	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.883 \pm 0.034$	$f_{2000}^{143}$	$30.7 \pm 3.0$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$z_{\mathrm{drag}}$	$1059.41 \pm 0.45$	$f_{2000}^{217}$	$107.6 \pm 2.0$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.18$	$r_{\mathrm{drag}}$	$147.27 \pm 0.37$	$f_{2000}^{143 \times 217}$	$33.0 \pm 2.2$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$k_{\mathrm{D}}$	$0.14050 \pm 0.00045$	$\chi_{\mathrm{lensing}}^2$	$9.54 \pm 0.92$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_{\mathrm{D}}$	$0.16107 \pm 0.00026$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.4 \pm 2.6$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{eq}}$	$3405 \pm 35$	$\chi_{\mathrm{small}}^2$	$397.0 \pm 1.6$
$c_{217}$	$1.0012 \pm 0.0016$	$k_{\mathrm{eq}}$	$0.01039 \pm 0.00011$	$\chi_{\mathrm{lowl}}^2$	$24.4 \pm 1.2$
$H_0$	$67.02 \pm 0.69$	$100\theta_{\mathrm{eq}}$	$0.8122 \pm 0.0065$	$\chi_{\mathrm{CamSpec}}^2$	$7062.5 \pm 5.1$
$\Omega_{\Lambda}$	$0.6812 \pm 0.0096$	$100\theta_{\mathrm{s,eq}}$	$0.4490 \pm 0.0033$	$\chi_{\mathrm{prior}}^2$	$9.2 \pm 3.8$
$\Omega_{\mathrm{m}}$	$0.3188 \pm 0.0096$	$H(0.15)$	$72.37 \pm 0.60$	$\chi_{\mathrm{CMB}}^2$	$8232.8 \pm 6.0$
$\Omega_{\mathrm{m}}h^2$	$0.1431 \pm 0.0014$	$D_{\mathrm{M}}(0.15)$	$646.4 \pm 6.0$		
$\Omega_{\mathrm{m}}h^3$	$0.09591 \pm 0.00045$	$H(0.38)$	$82.60 \pm 0.44$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 8241.99; R - 1 = 0.00437$$



17.61 base\_r\_CamSpecHM\_TT\_lowl\_lowE\_BK15\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02221 \pm 0.00019$	$S_8$	$0.826 \pm 0.012$	$D_{\mathrm{M}}(0.51)$	$1983 \pm 10$
$\Omega_{\mathrm{c}}h^2$	$0.1192 \pm 0.0011$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4524 \pm 0.0065$	$H(0.61)$	$95.25 \pm 0.23$
$100\theta_{\mathrm{MC}}$	$1.04102 \pm 0.00041$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6055 \pm 0.0061$	$D_{\mathrm{M}}(0.61)$	$2308 \pm 11$
$\tau$	$0.0564^{+0.0058}_{-0.0076}$	$\sigma_8/h^{0.5}$	$0.9863 \pm 0.0087$	$H(2.33)$	$235.90 \pm 0.69$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046^{+0.012}_{-0.014}$	$r_{\mathrm{drag}}h$	$99.60 \pm 0.83$	$D_{\mathrm{M}}(2.33)$	$5767 \pm 12$
$n_{\mathrm{s}}$	$0.9668 \pm 0.0042$	$\langle d^2 \rangle^{1/2}$	$2.437 \pm 0.021$	$f\sigma_8(0.15)$	$0.4570 \pm 0.0061$
$r$	$< 0.0338$	$z_{\mathrm{re}}$	$7.91^{+0.62}_{-0.73}$	$\sigma_8(0.15)$	$0.7489 \pm 0.0053$
$y_{\mathrm{cal}}$	$1.0009 \pm 0.0025$	$10^9 A_{\mathrm{s}}$	$2.103^{+0.025}_{-0.031}$	$f\sigma_8(0.38)$	$0.4753 \pm 0.0050$
$A_{B,\mathrm{dust}}$	$4.87^{+0.82}_{-1.2}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878 \pm 0.011$	$\sigma_8(0.38)$	$0.6639^{+0.0043}_{-0.0049}$
$A_{B,\mathrm{sync}}$	$1.64^{+0.53}_{-1.4}$	$D_{40}$	$1235 \pm 13$	$f\sigma_8(0.51)$	$0.4739 \pm 0.0044$
$\alpha_{B,\mathrm{dust}}$	$-0.56^{+0.22}_{-0.31}$	$D_{220}$	$5714 \pm 41$	$\sigma_8(0.51)$	$0.6213^{+0.0040}_{-0.0046}$
$\beta_{B,\mathrm{dust}}$	$1.595 \pm 0.096$	$D_{810}$	$2536 \pm 13$	$f\sigma_8(0.61)$	$0.4689 \pm 0.0041$
$\alpha_{B,\mathrm{sync}}$	—	$D_{1420}$	$815.7 \pm 5.0$	$\sigma_8(0.61)$	$0.5911^{+0.0038}_{-0.0044}$
$\beta_{B,\mathrm{sync}}$	$-3.10 \pm 0.27$	$D_{2000}$	$230.1 \pm 1.8$	$f\sigma_8(2.33)$	$0.2981^{+0.0019}_{-0.0023}$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$-0.35 \pm 0.28$	$n_{\mathrm{s},0.002}$	$0.9668 \pm 0.0042$	$\sigma_8(2.33)$	$0.3073^{+0.0020}_{-0.0024}$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25$	$Y_{\mathrm{P}}$	$0.245327^{+0.000085}_{-0.000075}$	$r_{0.002}$	$< 0.0307$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246653^{+0.000085}_{-0.000075}$	$r_{0.01}$	$< 0.0322$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.616 \pm 0.037$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.89^{+1.1}_{-0.41}$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7$	$\mathrm{Age}/\mathrm{Gyr}$	$13.807 \pm 0.027$	$r_{10}$	$< 0.0157$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$z_*$	$1090.06 \pm 0.28$	$10^9 A_{\mathrm{t}}$	$< 0.0709$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$r_*$	$144.76 \pm 0.28$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$< 0.0634$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.57^{+0.38}_{-0.16}$	$100\theta_*$	$1.04123 \pm 0.00041$	$f_{2000}^{143}$	$30.3 \pm 3.0$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.902 \pm 0.028$	$f_{2000}^{217}$	$107.4 \pm 2.0$
$A^{\mathrm{kSZ}}$	—	$z_{\mathrm{drag}}$	$1059.51 \pm 0.44$	$f_{2000}^{143 \times 217}$	$32.6 \pm 2.1$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$r_{\mathrm{drag}}$	$147.48 \pm 0.31$	$\chi_{\mathrm{lensing}}^2$	$9.30 \pm 0.69$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.18$	$k_{\mathrm{D}}$	$0.14034 \pm 0.00042$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.8 \pm 2.6$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_{\mathrm{D}}$	$0.16103 \pm 0.00025$	$\chi_{\mathrm{simall}}^2$	$397.4 \pm 1.9$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$z_{\mathrm{eq}}$	$3380 \pm 25$	$\chi_{\mathrm{lowl}}^2$	$23.9 \pm 1.1$
$c_{100}$	$0.9975 \pm 0.0011$	$k_{\mathrm{eq}}$	$0.010315 \pm 0.000076$	$\chi_{\mathrm{CamSpec}}^2$	$7062.8 \pm 5.1$
$c_{217}$	$1.0011 \pm 0.0016$	$100\theta_{\mathrm{eq}}$	$0.8170 \pm 0.0046$	$\chi_{6\mathrm{DF}}^2$	$0.062 \pm 0.073$
$H_0$	$67.53 \pm 0.49$	$100\theta_{\mathrm{s,eq}}$	$0.4514 \pm 0.0024$	$\chi_{\mathrm{MGS}}^2$	$1.25 \pm 0.45$
$\Omega_{\Lambda}$	$0.6884 \pm 0.0065$	$H(0.15)$	$72.81 \pm 0.43$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 \pm 1.6$
$\Omega_{\mathrm{m}}$	$0.3116 \pm 0.0065$	$D_{\mathrm{M}}(0.15)$	$642.0 \pm 4.2$	$\chi_{\mathrm{prior}}^2$	$9.2 \pm 3.8$
$\Omega_{\mathrm{m}}h^2$	$0.1421 \pm 0.0010$	$H(0.38)$	$82.92 \pm 0.32$	$\chi_{\mathrm{CMB}}^2$	$8233.1 \pm 6.0$
$\Omega_{\mathrm{m}}h^3$	$0.09594 \pm 0.00045$	$D_{\mathrm{M}}(0.38)$	$1531.1 \pm 8.6$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.3$
$\sigma_8$	$0.8105 \pm 0.0059$	$H(0.51)$	$89.63 \pm 0.27$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 8248.57; R - 1 = 0.00954$$



# 17.62 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_BK15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022276	$0.02228 \pm 0.00016$ (+0.8 $\sigma$ )	$\Omega_{\mathrm{m}}h^2$	0.14281	$0.1427 \pm 0.0013$ (−0.5 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	644.0	$643.6 \pm 5.3$ (−0.7 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11989	$0.1198 \pm 0.0014$ (−0.6 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.096098	$0.09608 \pm 0.00032$ (+0.4 $\sigma$ )	$H(0.38)$	82.792	$82.82 \pm 0.38$ (+0.7 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.040845	$1.04086 \pm 0.00032$ (+0.2 $\sigma$ )	$\sigma_8$	0.8095	$0.8096 \pm 0.0076$ (−0.5 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1534.9	$1534 \pm 11$ (−0.7 $\sigma$ )
$\tau$	0.0530	$0.0535 \pm 0.0080$ (+0.1 $\sigma$ )	$S_8$	0.8300	$0.829 \pm 0.016$ (−0.6 $\sigma$ )	$H(0.51)$	89.548	$89.57 \pm 0.30$ (+0.7 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0398	$3.041 \pm 0.016$ (−0.0 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4546	$0.4542 \pm 0.0089$ (−0.6 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1987.7	$1987 \pm 12$ (−0.7 $\sigma$ )
$n_{\mathrm{s}}$	0.96560	$0.9660 \pm 0.0045$ (+0.6 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6066	$0.6064 \pm 0.0084$ (−0.6 $\sigma$ )	$H(0.61)$	95.196	$95.21 \pm 0.24$ (+0.7 $\sigma$ )
$r$	0.0194	$0.032^{+0.012}_{-0.027}$ (+0.4 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9868	$0.987 \pm 0.012$ (−0.6 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2312.5	$2311 \pm 13$ (−0.7 $\sigma$ )
$y_{\mathrm{cal}}$	1.00054	$1.0007 \pm 0.0025$ (+0.0 $\sigma$ )	$r_{\mathrm{drag}}h$	99.07	$99.2 \pm 1.1$ (+0.6 $\sigma$ )	$H(2.33)$	236.38	$236.30 \pm 0.84$ (−0.5 $\sigma$ )
$A_{B,\mathrm{dust}}$	4.60	$4.87^{+0.81}_{-1.2}$ (−0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4385	$2.438 \pm 0.029$ (−0.6 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5768.3	$5768 \pm 11$ (−0.7 $\sigma$ )
$A_{B,\mathrm{sync}}$	1.49	$1.62^{+0.52}_{-1.4}$ (−0.0 $\sigma$ )	$z_{\mathrm{re}}$	7.56	$7.60 \pm 0.81$ (+0.0 $\sigma$ )	$f\sigma_8(0.15)$	0.4589	$0.4585 \pm 0.0083$ (−0.6 $\sigma$ )
$\alpha_{B,\mathrm{dust}}$	−0.503	$−0.56^{+0.21}_{-0.33}$ (+0.0 $\sigma$ )	$10^9A_{\mathrm{s}}$	2.0901	$2.092 \pm 0.034$ (−0.0 $\sigma$ )	$\sigma_8(0.15)$	0.7477	$0.7478 \pm 0.0067$ (−0.4 $\sigma$ )
$\beta_{B,\mathrm{dust}}$	1.580	$1.600 \pm 0.096$ (+0.0 $\sigma$ )	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8801	$1.880 \pm 0.012$ (−0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4763	$0.4761 \pm 0.0068$ (−0.6 $\sigma$ )
$\alpha_{B,\mathrm{sync}}$	−0.23	—	$D_{40}$	1233.5	$1237 \pm 14$ (−0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6623	$0.6625 \pm 0.0057$ (−0.3 $\sigma$ )
$\beta_{B,\mathrm{sync}}$	−3.040	$−3.10 \pm 0.27$ (+0.0 $\sigma$ )	$D_{220}$	5716.1	$5716 \pm 39$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.4745	$0.4743 \pm 0.0060$ (−0.6 $\sigma$ )
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	−0.349	$−0.36 \pm 0.28$ (−0.0 $\sigma$ )	$D_{810}$	2535.9	$2536 \pm 14$ (+0.0 $\sigma$ )	$\sigma_8(0.51)$	0.6196	$0.6199 \pm 0.0053$ (−0.2 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	235.0	$239 \pm 24$ (−0.1 $\sigma$ )	$D_{1420}$	815.94	$816.1 \pm 4.9$ (+0.3 $\sigma$ )	$f\sigma_8(0.61)$	0.4692	$0.4690 \pm 0.0055$ (−0.6 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	39.6	$39 \pm 8$ (−0.2 $\sigma$ )	$D_{2000}$	230.31	$230.4 \pm 1.7$ (+0.4 $\sigma$ )	$\sigma_8(0.61)$	0.58950	$0.5897 \pm 0.0050$ (−0.2 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	102.6	$103 \pm 10$ (+0.1 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.96560	$0.9660 \pm 0.0045$ (+0.6 $\sigma$ )	$f\sigma_8(2.33)$	0.29708	$0.2972 \pm 0.0025$ (−0.1 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	44.2	$40 \pm 7$ (−0.2 $\sigma$ )	$Y_{\mathrm{P}}$	0.245357	$0.245356^{+0.000069}_{-0.000061}$ (+0.8 $\sigma$ )	$\sigma_8(2.33)$	0.30611	$0.3063 \pm 0.0026$ (+0.1 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	6.51	$3.9^{+1.9}_{-2.5}$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246684	$0.246682^{+0.000069}_{-0.000061}$ (+0.8 $\sigma$ )	$r_{0.002}$	0.0175	$0.029^{+0.010}_{-0.026}$ (+0.4 $\sigma$ )
$r_{143 \times 217}^{\mathrm{PS}}$	0.601	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$10^5\mathrm{D}/\mathrm{H}$	2.6034	$2.604 \pm 0.030$ (−0.8 $\sigma$ )	$r_{0.01}$	0.0184	$0.031^{+0.011}_{-0.026}$ (+0.4 $\sigma$ )
$r_{143 \times 217}^{\mathrm{CIB}}$	0.758	$0.56^{+0.38}_{-0.19}$ (−0.1 $\sigma$ )	Age/Gyr	13.8086	$13.808 \pm 0.025$ (−0.7 $\sigma$ )	$\ln(10^{10}A_{\mathrm{t}})$	−0.90	$−0.69^{+1.0}_{-0.38}$ (+0.3 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.09	—	$z_*$	1090.030	$1090.02 \pm 0.28$ (−0.9 $\sigma$ )	$r_{10}$	0.0089	$0.0150^{+0.0051}_{-0.013}$ (+0.4 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.14	$4.7^{+2.0}_{-4.1}$ (−0.1 $\sigma$ )	$r_*$	144.533	$144.57 \pm 0.31$ (+0.4 $\sigma$ )	$10^9A_{\mathrm{t}}$	0.0405	$0.067^{+0.024}_{-0.057}$ (+0.4 $\sigma$ )
$A_{100}^{\mathrm{dust}}$	1.004	$1.00 \pm 0.20$ (−0.0 $\sigma$ )	$100\theta_*$	1.041042	$1.04105 \pm 0.00031$ (+0.1 $\sigma$ )	$10^9A_{\mathrm{t}}e^{-2\tau}$	0.0364	$0.060^{+0.022}_{-0.051}$ (+0.4 $\sigma$ )
$A_{143}^{\mathrm{dust}}$	0.972	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8835	$13.887 \pm 0.029$ (+0.4 $\sigma$ )	$f_{2000}^{143}$	30.08	$29.6 \pm 2.9$ (−0.4 $\sigma$ )
$A_{217}^{\mathrm{dust}}$	0.971	$0.98 \pm 0.10$ (+0.1 $\sigma$ )	$z_{\mathrm{drag}}$	1059.704	$1059.70 \pm 0.33$ (+0.8 $\sigma$ )	$f_{2000}^{217}$	106.92	$106.9 \pm 1.9$ (−0.4 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dust}}$	1.009	$1.03 \pm 0.16$ (−0.0 $\sigma$ )	$r_{\mathrm{drag}}$	147.227	$147.26 \pm 0.32$ (+0.3 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.25	$32.1 \pm 2.0$ (−0.4 $\sigma$ )
$c_{100}$	0.99764	$0.9975 \pm 0.0011$ (+0.0 $\sigma$ )	$k_{\mathrm{D}}$	0.140652	$0.14062 \pm 0.00035$ (+0.0 $\sigma$ )	$\chi_{\mathrm{BKPLANCK}}^2$	735.45	$739.9 \pm 2.7$ (+0.2 $\sigma$ )
$c_{217}$	1.00126	$1.0011 \pm 0.0016$ (−0.0 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160882	$0.16089 \pm 0.00020$ (−0.8 $\sigma$ )	$\chi_{\mathrm{simall}}^2$	395.96	$397.2 \pm 1.8$ (+0.0 $\sigma$ )
$c_{TE}$	0.99660	$0.9967 \pm 0.0049$	$z_{\mathrm{eq}}$	3397.2	$3394 \pm 31$ (−0.5 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	23.74	$24.2 \pm 1.2$ (−0.3 $\sigma$ )
$c_{EE}$	0.99213	$0.9921 \pm 0.0049$	$k_{\mathrm{eq}}$	0.010369	$0.010359 \pm 0.000096$ (−0.5 $\sigma$ )	$\chi_{\mathrm{CamSpec}}^2$	11498.9	$11513.5 \pm 5.6$ (+838.8 $\sigma$ )
$H_0$	67.29	$67.34 \pm 0.62$ (+0.7 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8139	$0.8145 \pm 0.0059$ (+0.6 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	2.23	$9.5 \pm 3.8$ (+0.1 $\sigma$ )
$\Omega_{\Lambda}$	0.6846	$0.6853 \pm 0.0085$ (+0.6 $\sigma$ )	$100\theta_{\mathrm{s},\mathrm{eq}}$	0.44975	$0.4501 \pm 0.0030$ (+0.6 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	12654.1	$12674.8 \pm 6.4$ (+725.0 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3154	$0.3147 \pm 0.0085$ (−0.6 $\sigma$ )	$H(0.15)$	72.61	$72.66 \pm 0.53$ (+0.7 $\sigma$ )			

Best-fit  $\chi_{\mathrm{eff}}^2 = 12656.30$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 4449.00$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 12684.27$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 4451.00$ ;  $R - 1 = 0.00430$   
 $\chi_{\mathrm{eff}}^2$ : CMB - BK15\_dust: 735.45 ( $\Delta$  0.50) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.96 ( $\Delta$  -0.04) commander\_dx12\_v3\_2.29: 23.74 ( $\Delta$  -0.41) CamSpec like\_10.7HM\_1400\_unified: 11498.91



17.63 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_BK15\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022330	$0.02233 \pm 0.00015$ (+0.6 $\sigma$ )	$\Omega_m h^3$	0.096093	$0.09608 \pm 0.00032$ (+0.4 $\sigma$ )	$D_M(0.38)$	1528.3	$1528.4 \pm 7.8$ (-0.2 $\sigma$ )
$\Omega_c h^2$	0.11901	$0.1190 \pm 0.0010$ (-0.1 $\sigma$ )	$\sigma_8$	0.8079	$0.8078 \pm 0.0073$ (-0.1 $\sigma$ )	$H(0.51)$	89.727	$89.73 \pm 0.23$ (+0.3 $\sigma$ )
$100\theta_{MC}$	1.040953	$1.04095 \pm 0.00030$ (-0.2 $\sigma$ )	$S_8$	0.8213	$0.821 \pm 0.013$ (-0.1 $\sigma$ )	$D_M(0.51)$	1980.1	$1980.2 \pm 9.1$ (-0.2 $\sigma$ )
$\tau$	0.0548	$0.0546 \pm 0.0080$ (-0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4498	$0.4498 \pm 0.0070$ (-0.1 $\sigma$ )	$H(0.61)$	95.333	$95.33 \pm 0.19$ (+0.3 $\sigma$ )
$\ln(10^{10} A_s)$	3.0415	$3.041 \pm 0.017$ (-0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6028	$0.6027 \pm 0.0071$ (-0.1 $\sigma$ )	$D_M(0.61)$	2304.3	$2304.4 \pm 9.9$ (-0.2 $\sigma$ )
$n_s$	0.96809	$0.9678 \pm 0.0040$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9821	$0.982 \pm 0.010$ (-0.2 $\sigma$ )	$H(2.33)$	235.87	$235.87 \pm 0.63$ (+0.1 $\sigma$ )
$r$	0.0213	$0.033_{-0.027}^{+0.013}$ (+0.3 $\sigma$ )	$r_{drag} h$	99.76	$99.76 \pm 0.78$ (+0.1 $\sigma$ )	$D_M(2.33)$	5762.7	$5762.8 \pm 9.4$ (-0.4 $\sigma$ )
$y_{cal}$	1.00068	$1.0008 \pm 0.0025$ (-0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4264	$2.427 \pm 0.025$ (-0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4545	$0.4545 \pm 0.0066$ (-0.1 $\sigma$ )
$A_{B,dust}$	4.57	$4.87_{-1.2}^{+0.82}$ (-0.0 $\sigma$ )	$z_{re}$	7.72	$7.68 \pm 0.81$ (-0.0 $\sigma$ )	$\sigma_8(0.15)$	0.7467	$0.7466 \pm 0.0066$ (-0.1 $\sigma$ )
$A_{B,sync}$	1.40	$1.61_{-1.3}^{+0.52}$ (-0.0 $\sigma$ )	$10^9 A_s$	2.0938	$2.094 \pm 0.035$ (-0.0 $\sigma$ )	$f\sigma_8(0.38)$	0.4731	$0.4731 \pm 0.0057$ (-0.1 $\sigma$ )
$\alpha_{B,dust}$	-0.491	$-0.56_{-0.32}^{+0.22}$ (-0.0 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8765	$1.877 \pm 0.011$ (+0.0 $\sigma$ )	$\sigma_8(0.38)$	0.6621	$0.6619 \pm 0.0057$ (-0.1 $\sigma$ )
$\beta_{B,dust}$	1.580	$1.600 \pm 0.096$ (+0.1 $\sigma$ )	$D_{40}$	1229.1	$1234 \pm 13$ (+0.1 $\sigma$ )	$f\sigma_8(0.51)$	0.4719	$0.4718 \pm 0.0052$ (-0.1 $\sigma$ )
$\alpha_{B,sync}$	-0.35	—	$D_{220}$	5718.0	$5720 \pm 39$ (+0.2 $\sigma$ )	$\sigma_8(0.51)$	0.6197	$0.6195 \pm 0.0053$ (-0.1 $\sigma$ )
$\beta_{B,sync}$	-3.042	$-3.10 \pm 0.27$ (+0.0 $\sigma$ )	$D_{810}$	2535.9	$2536 \pm 14$ (+0.1 $\sigma$ )	$f\sigma_8(0.61)$	0.46709	$0.4670 \pm 0.0049$ (-0.1 $\sigma$ )
$\epsilon_{dust,sync}$	-0.352	$-0.36 \pm 0.28$ (-0.0 $\sigma$ )	$D_{1420}$	816.79	$816.6 \pm 4.9$ (+0.2 $\sigma$ )	$\sigma_8(0.61)$	0.58966	$0.5895 \pm 0.0051$ (-0.1 $\sigma$ )
$A_{100}^{PS}$	232.9	$239 \pm 24$ (-0.1 $\sigma$ )	$D_{2000}$	230.66	$230.6 \pm 1.6$ (+0.3 $\sigma$ )	$f\sigma_8(2.33)$	0.29737	$0.2973 \pm 0.0025$ (-0.1 $\sigma$ )
$A_{143}^{PS}$	38.7	$39 \pm 8$ (-0.2 $\sigma$ )	$n_{s,0.002}$	0.96809	$0.9678 \pm 0.0040$ (+0.1 $\sigma$ )	$\sigma_8(2.33)$	0.30664	$0.3066 \pm 0.0026$ (-0.0 $\sigma$ )
$A_{217}^{PS}$	102.6	$103 \pm 10$ (+0.1 $\sigma$ )	$Y_P$	0.245379	$0.245376_{-0.000055}^{+0.000062}$ (+0.6 $\sigma$ )	$r_{0.002}$	0.0194	$0.030_{-0.026}^{+0.011}$ (+0.3 $\sigma$ )
$A_{217}^{CIB}$	44.1	$39_{-8}^{+7}$ (-0.1 $\sigma$ )	$Y_P^{BBN}$	0.246706	$0.246702_{-0.000055}^{+0.000062}$ (+0.6 $\sigma$ )	$r_{0.01}$	0.0204	$0.032_{-0.027}^{+0.012}$ (+0.3 $\sigma$ )
$A_{143}^{tSZ}$	6.61	$3.9_{-2.5}^{+1.9}$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5931	$2.594 \pm 0.028$ (-0.6 $\sigma$ )	$\ln(10^{10} A_t)$	-0.81	$-0.64_{-0.38}^{+0.96}$ (+0.2 $\sigma$ )
$r_{143 \times 217}^{PS}$	0.594	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	Age/Gyr	13.7965	$13.797 \pm 0.021$ (-0.4 $\sigma$ )	$r_{10}$	0.0099	$0.0156_{-0.013}^{+0.0056}$ (+0.3 $\sigma$ )
$r_{143 \times 217}^{CIB}$	0.769	$0.55_{-0.19}^{+0.39}$ (-0.1 $\sigma$ )	$z_*$	1089.883	$1089.89 \pm 0.23$ (-0.6 $\sigma$ )	$10^9 A_t$	0.0447	$0.069_{-0.057}^{+0.026}$ (+0.3 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.08	—	$r_*$	144.718	$144.72 \pm 0.25$ (-0.2 $\sigma$ )	$10^9 A_t e^{-2\tau}$	0.0400	$0.062_{-0.051}^{+0.024}$ (+0.3 $\sigma$ )
$A^{kSZ}$	0.01	$4.6_{-4.3}^{+1.9}$ (-0.1 $\sigma$ )	$100\theta_*$	1.041140	$1.04114 \pm 0.00029$ (-0.2 $\sigma$ )	$f_{2000}^{143}$	29.67	$29.4 \pm 2.8$ (-0.3 $\sigma$ )
$A_{100}^{dust}$	1.009	$1.00 \pm 0.20$ (-0.0 $\sigma$ )	$D_M(z_*)/\text{Gpc}$	13.9000	$13.900 \pm 0.024$ (-0.2 $\sigma$ )	$f_{2000}^{217}$	106.70	$106.8 \pm 1.9$ (-0.3 $\sigma$ )
$A_{143}^{dust}$	0.968	$0.96 \pm 0.18$ (-0.1 $\sigma$ )	$z_{drag}$	1059.780	$1059.76 \pm 0.32$ (+0.6 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.86	$31.9 \pm 2.0$ (-0.4 $\sigma$ )
$A_{217}^{dust}$	0.972	$0.98 \pm 0.10$ (+0.1 $\sigma$ )	$r_{drag}$	147.398	$147.40 \pm 0.26$ (-0.3 $\sigma$ )	$\chi_{BKPLANCK}^2$	735.72	$740.2 \pm 2.7$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{dust}$	1.004	$1.03 \pm 0.16$ (+0.0 $\sigma$ )	$k_D$	0.140512	$0.14050 \pm 0.00032$ (+0.5 $\sigma$ )	$\chi_{simall}^2$	396.16	$397.3 \pm 2.0$ (+0.0 $\sigma$ )
$c_{100}$	0.99763	$0.9975 \pm 0.0011$ (+0.0 $\sigma$ )	$100\theta_D$	0.160851	$0.16086 \pm 0.00019$ (-0.7 $\sigma$ )	$\chi_{lowl}^2$	23.32	$23.8 \pm 1.1$ (+0.1 $\sigma$ )
$c_{217}$	1.00128	$1.0011 \pm 0.0016$ (-0.0 $\sigma$ )	$z_{eq}$	3377.6	$3378 \pm 23$ (+0.0 $\sigma$ )	$\chi_{CamSpec}^2$	11499.2	$11513.4 \pm 5.6$ (+848.2 $\sigma$ )
$c_{TE}$	0.99659	$0.9968 \pm 0.0049$	$k_{eq}$	0.010309	$0.010308 \pm 0.000071$ (+0.0 $\sigma$ )	$\chi_{6DF}^2$	0.0223	$0.048 \pm 0.060$ (-0.2 $\sigma$ )
$c_{EE}$	0.99226	$0.9924 \pm 0.0049$	$100\theta_{eq}$	0.81763	$0.8177 \pm 0.0044$ (+0.0 $\sigma$ )	$\chi_{MGS}^2$	1.279	$1.33 \pm 0.44$ (+0.1 $\sigma$ )
$H_0$	67.678	$67.68 \pm 0.45$ (+0.2 $\sigma$ )	$100\theta_{s,eq}$	0.45167	$0.4517 \pm 0.0023$ (-0.0 $\sigma$ )	$\chi_{DR12BAO}^2$	4.23	$4.6 \pm 1.3$ (-0.1 $\sigma$ )
$\Omega_\Lambda$	0.6900	$0.6899 \pm 0.0061$ (+0.1 $\sigma$ )	$H(0.15)$	72.942	$72.94 \pm 0.39$ (+0.2 $\sigma$ )	$\chi_{prior}^2$	2.28	$9.5 \pm 3.8$ (+0.1 $\sigma$ )
$\Omega_m$	0.3100	$0.3101 \pm 0.0061$ (-0.1 $\sigma$ )	$D_M(0.15)$	640.68	$640.7 \pm 3.9$ (-0.2 $\sigma$ )	$\chi_{BAO}^2$	5.536	$6.0 \pm 1.0$ (-0.2 $\sigma$ )
$\Omega_m h^2$	0.14199	$0.14198 \pm 0.00098$ (+0.0 $\sigma$ )	$H(0.38)$	83.026	$83.02 \pm 0.29$ (+0.2 $\sigma$ )	$\chi_{CMB}^2$	12654.4	$12674.7 \pm 6.3$ (+739.7 $\sigma$ )

Best-fit  $\chi_{\text{eff}}^2 = 12662.21$ ;  $\Delta\chi_{\text{eff}}^2 = 4448.18$ ;  $\bar{\chi}_{\text{eff}}^2 = 12690.24$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4450.44$ ;  $R - 1 = 0.00669$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.02 ( $\Delta$  -0.01) MGS: 1.28 ( $\Delta$  0.06) DR12BAO: 4.24 ( $\Delta$  -0.14) CMB - BK15\_dust: 735.72 ( $\Delta$  0.09) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.17 ( $\Delta$  -0.02) commander\_dx12.v3.2.29: 23.32 ( $\Delta$  -0.15) CamSpec like\_10.7HM.1400\_unified: 11499.19



17.64 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_BK15\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022288	$0.02228 \pm 0.00016$ (+0.7 $\sigma$ )	$\Omega_m h^2$	0.14281	$0.1427 \pm 0.0011$ (−0.4 $\sigma$ )	$D_M(0.15)$	643.81	$643.6 \pm 4.7$ (−0.5 $\sigma$ )
$\Omega_c h^2$	0.11988	$0.1198 \pm 0.0012$ (−0.4 $\sigma$ )	$\Omega_m h^3$	0.096126	$0.09608 \pm 0.00032$ (+0.4 $\sigma$ )	$H(0.38)$	82.807	$82.82 \pm 0.34$ (+0.6 $\sigma$ )
$100\theta_{MC}$	1.040861	$1.04085 \pm 0.00031$ (+0.0 $\sigma$ )	$\sigma_8$	0.8100	$0.8102 \pm 0.0060$ (−0.2 $\sigma$ )	$D_M(0.38)$	1534.5	$1534.1 \pm 9.4$ (−0.5 $\sigma$ )
$\tau$	0.0534	$0.0542 \pm 0.0076$ (+0.2 $\sigma$ )	$S_8$	0.8303	$0.830 \pm 0.013$ (−0.5 $\sigma$ )	$H(0.51)$	89.562	$89.57 \pm 0.28$ (+0.6 $\sigma$ )
$\ln(10^{10} A_s)$	3.0412	$3.042 \pm 0.015$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4548	$0.4545 \pm 0.0070$ (−0.5 $\sigma$ )	$D_M(0.51)$	1987.3	$1987 \pm 11$ (−0.5 $\sigma$ )
$n_s$	0.96574	$0.9658 \pm 0.0043$ (+0.4 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6070	$0.6068 \pm 0.0064$ (−0.5 $\sigma$ )	$H(0.61)$	95.210	$95.21 \pm 0.23$ (+0.6 $\sigma$ )
$r$	0.0192	$0.032^{+0.011}_{-0.027}$ (+0.3 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9873	$0.9874 \pm 0.0091$ (−0.5 $\sigma$ )	$D_M(0.61)$	2312.0	$2312 \pm 12$ (−0.6 $\sigma$ )
$y_{cal}$	1.00074	$1.0008 \pm 0.0025$ (+0.0 $\sigma$ )	$r_{drag} h$	99.09	$99.16 \pm 0.94$ (+0.5 $\sigma$ )	$H(2.33)$	236.39	$236.31 \pm 0.73$ (−0.3 $\sigma$ )
$A_{B,dust}$	4.62	$4.87^{+0.82}_{-1.2}$ (−0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4397	$2.440 \pm 0.022$ (−0.4 $\sigma$ )	$D_M(2.33)$	5767.6	$5768 \pm 11$ (−0.6 $\sigma$ )
$A_{B,sync}$	1.43	$1.62^{+0.52}_{-1.4}$ (−0.0 $\sigma$ )	$z_{re}$	7.60	$7.67 \pm 0.76$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4591	$0.4588 \pm 0.0065$ (−0.5 $\sigma$ )
$\alpha_{B,dust}$	−0.506	$−0.56^{+0.22}_{-0.32}$ (+0.0 $\sigma$ )	$10^9 A_s$	2.0930	$2.096 \pm 0.031$ (+0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7482	$0.7484 \pm 0.0054$ (−0.2 $\sigma$ )
$\beta_{B,dust}$	1.580	$1.600 \pm 0.096$ (+0.0 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8811	$1.880 \pm 0.011$ (−0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.4766	$0.4764 \pm 0.0052$ (−0.5 $\sigma$ )
$\alpha_{B,sync}$	−0.35	—	$D_{40}$	1234.0	$1238 \pm 13$ (−0.0 $\sigma$ )	$\sigma_8(0.38)$	0.66278	$0.6630 \pm 0.0048$ (−0.1 $\sigma$ )
$\beta_{B,sync}$	−3.036	$−3.10 \pm 0.27$ (+0.0 $\sigma$ )	$D_{220}$	5719.7	$5719 \pm 39$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.47473	$0.4747 \pm 0.0046$ (−0.4 $\sigma$ )
$\epsilon_{dust,sync}$	−0.357	$−0.36 \pm 0.28$ (−0.0 $\sigma$ )	$D_{810}$	2537.4	$2537 \pm 13$ (+0.1 $\sigma$ )	$\sigma_8(0.51)$	0.62009	$0.6203 \pm 0.0045$ (−0.0 $\sigma$ )
$A_{100}^{PS}$	233.7	$240 \pm 24$ (−0.1 $\sigma$ )	$D_{1420}$	816.52	$816.2 \pm 4.9$ (+0.3 $\sigma$ )	$f\sigma_8(0.61)$	0.46946	$0.4694 \pm 0.0042$ (−0.4 $\sigma$ )
$A_{143}^{PS}$	42.9	$40 \pm 8$ (−0.2 $\sigma$ )	$D_{2000}$	230.52	$230.4 \pm 1.7$ (+0.4 $\sigma$ )	$\sigma_8(0.61)$	0.58992	$0.5902 \pm 0.0043$ (+0.0 $\sigma$ )
$A_{217}^{PS}$	102.9	$103 \pm 10$ (+0.1 $\sigma$ )	$n_{s,0.002}$	0.96574	$0.9658 \pm 0.0043$ (+0.4 $\sigma$ )	$f\sigma_8(2.33)$	0.29730	$0.2974 \pm 0.0023$ (+0.1 $\sigma$ )
$A_{217}^{CIB}$	44.0	$40 \pm 7$ (−0.2 $\sigma$ )	$Y_P$	0.245362	$0.245357 \pm 0.000064$ (+0.7 $\sigma$ )	$\sigma_8(2.33)$	0.30634	$0.3065 \pm 0.0024$ (+0.2 $\sigma$ )
$A_{143}^{tSZ}$	6.56	$3.9^{+1.9}_{-2.5}$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246689	$0.246683 \pm 0.000064$ (+0.7 $\sigma$ )	$r_{0.002}$	0.0173	$0.0289^{+0.0099}_{-0.025}$ (+0.3 $\sigma$ )
$r_{143 \times 217}^{PS}$	0.632	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$10^5 D/H$	2.6010	$2.603 \pm 0.030$ (−0.8 $\sigma$ )	$r_{0.01}$	0.0182	$0.030^{+0.011}_{-0.026}$ (+0.3 $\sigma$ )
$r_{143 \times 217}^{CIB}$	0.820	$0.56^{+0.39}_{-0.18}$ (−0.1 $\sigma$ )	Age/Gyr	13.8069	$13.808 \pm 0.024$ (−0.6 $\sigma$ )	$\ln(10^{10} A_t)$	−0.91	$−0.70^{+0.99}_{-0.38}$ (+0.2 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.29	—	$z_*$	1090.013	$1090.02 \pm 0.27$ (−0.7 $\sigma$ )	$r_{10}$	0.0088	$0.0148^{+0.0050}_{-0.013}$ (+0.3 $\sigma$ )
$A^{kSZ}$	0.03	$4.6^{+2.0}_{-4.2}$ (−0.1 $\sigma$ )	$r_*$	144.525	$144.56 \pm 0.28$ (+0.2 $\sigma$ )	$10^9 A_t$	0.0401	$0.066^{+0.024}_{-0.057}$ (+0.3 $\sigma$ )
$A_{100}^{dust}$	1.003	$1.00 \pm 0.20$ (−0.0 $\sigma$ )	$100\theta_*$	1.041053	$1.04104 \pm 0.00031$ (+0.0 $\sigma$ )	$10^9 A_t e^{-2\tau}$	0.0360	$0.060^{+0.022}_{-0.051}$ (+0.3 $\sigma$ )
$A_{143}^{dust}$	0.981	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	$D_M(z_*)/\text{Gpc}$	13.8826	$13.886 \pm 0.026$ (+0.2 $\sigma$ )	$f_{2000}^{143}$	30.05	$29.7 \pm 2.8$ (−0.4 $\sigma$ )
$A_{217}^{dust}$	0.973	$0.98 \pm 0.10$ (+0.1 $\sigma$ )	$z_{drag}$	1059.742	$1059.71 \pm 0.33$ (+0.7 $\sigma$ )	$f_{2000}^{217}$	106.80	$106.9 \pm 2.0$ (−0.4 $\sigma$ )
$A_{143 \times 217}^{dust}$	1.001	$1.03 \pm 0.16$ (−0.0 $\sigma$ )	$r_{drag}$	147.215	$147.25 \pm 0.28$ (+0.0 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.13	$32.1 \pm 2.0$ (−0.4 $\sigma$ )
$c_{100}$	0.99768	$0.9975 \pm 0.0010$ (+0.0 $\sigma$ )	$k_D$	0.140675	$0.14062 \pm 0.00033$ (+0.3 $\sigma$ )	$\chi_{lensing}^2$	8.845	$9.29 \pm 0.67$ (−0.3 $\sigma$ )
$c_{217}$	1.00130	$1.0011 \pm 0.0016$ (−0.0 $\sigma$ )	$100\theta_D$	0.160866	$0.16088 \pm 0.00019$ (−0.8 $\sigma$ )	$\chi_{BKPLANCK}^2$	735.41	$739.9 \pm 2.7$ (+0.2 $\sigma$ )
$c_{TE}$	0.99639	$0.9966 \pm 0.0049$	$z_{eq}$	3397.3	$3394 \pm 27$ (−0.4 $\sigma$ )	$\chi_{small}^2$	396.01	$397.2 \pm 1.8$ (+0.1 $\sigma$ )
$c_{EE}$	0.99192	$0.9922 \pm 0.0049$	$k_{eq}$	0.010369	$0.010360 \pm 0.000083$ (−0.4 $\sigma$ )	$\chi_{lowl}^2$	23.74	$24.2 \pm 1.1$ (−0.1 $\sigma$ )
$H_0$	67.31	$67.34 \pm 0.55$ (+0.5 $\sigma$ )	$100\theta_{eq}$	0.8139	$0.8144 \pm 0.0051$ (+0.4 $\sigma$ )	$\chi_{CamSpec}^2$	11498.9	$11513.1 \pm 5.5$ (+866.7 $\sigma$ )
$\Omega_\Lambda$	0.6848	$0.6852 \pm 0.0075$ (+0.5 $\sigma$ )	$100\theta_{s,eq}$	0.44976	$0.4500 \pm 0.0026$ (+0.4 $\sigma$ )	$\chi_{prior}^2$	2.25	$9.4 \pm 3.8$ (+0.1 $\sigma$ )
$\Omega_m$	0.3152	$0.3148 \pm 0.0075$ (−0.5 $\sigma$ )	$H(0.15)$	72.630	$72.65 \pm 0.47$ (+0.5 $\sigma$ )	$\chi_{CMB}^2$	12662.9	$12683.6 \pm 6.4$ (+727.0 $\sigma$ )

Best-fit  $\chi_{eff}^2 = 12665.14$ ;  $\Delta\chi_{eff}^2 = 4448.71$ ;  $\bar{\chi}_{eff}^2 = 12693.08$ ;  $\Delta\bar{\chi}_{eff}^2 = 4450.84$ ;  $R - 1 = 0.00549$

$\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.85 ( $\Delta$  -0.16) BK15\_dust: 735.41 ( $\Delta$  0.24) small\_100x143.offlike5\_EE\_Aplanck\_B: 396.01 ( $\Delta$  0.00) com-mander\_dx12\_v3\_2.29: 23.74 ( $\Delta$  -0.25) CamSpec like.10.7HM.1400.unified: 11498.88



17.65 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_BK15\_post\_BAO\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022314	$0.02233 \pm 0.00015$ (+0.6 $\sigma$ )	$\sigma_8$	0.8091	$0.8095 \pm 0.0060$ (−0.1 $\sigma$ )	$D_M(0.51)$	1982.5	$1981.0 \pm 8.7$ (−0.3 $\sigma$ )
$\Omega_c h^2$	0.11928	$0.11912 \pm 0.00095$ (−0.1 $\sigma$ )	$S_8$	0.8247	$0.824 \pm 0.011$ (−0.2 $\sigma$ )	$H(0.61)$	95.288	$95.32 \pm 0.19$ (+0.3 $\sigma$ )
$100\theta_{MC}$	1.040908	$1.04094 \pm 0.00030$ (−0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4517	$0.4512 \pm 0.0058$ (−0.2 $\sigma$ )	$D_M(0.61)$	2306.9	$2305.2 \pm 9.4$ (−0.3 $\sigma$ )
$\tau$	0.0547	$0.0560 \pm 0.0074$ (+0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6046	$0.6043 \pm 0.0057$ (−0.2 $\sigma$ )	$H(2.33)$	236.03	$235.94 \pm 0.59$ (+0.0 $\sigma$ )
$\ln(10^{10} A_s)$	3.0431	$3.045 \pm 0.015$ (+0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9845	$0.9843 \pm 0.0084$ (−0.2 $\sigma$ )	$D_M(2.33)$	5764.5	$5763.2 \pm 9.2$ (−0.4 $\sigma$ )
$n_s$	0.96699	$0.9674 \pm 0.0039$ (+0.2 $\sigma$ )	$r_{drag} h$	99.54	$99.67 \pm 0.73$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4563	$0.4558 \pm 0.0054$ (−0.2 $\sigma$ )
$r$	0.0197	$0.033_{-0.027}^{+0.012}$ (+0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4334	$2.433 \pm 0.021$ (−0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7477	$0.7481 \pm 0.0055$ (−0.1 $\sigma$ )
$y_{cal}$	1.00104	$1.0009 \pm 0.0025$ (−0.0 $\sigma$ )	$z_{re}$	7.72	$7.83 \pm 0.74$ (−0.0 $\sigma$ )	$f\sigma_8(0.38)$	0.47457	$0.4743 \pm 0.0046$ (−0.2 $\sigma$ )
$A_{B,dust}$	4.62	$4.87_{-1.1}^{+0.82}$ (−0.0 $\sigma$ )	$10^9 A_s$	2.0970	$2.101_{-0.032}^{+0.029}$ (+0.0 $\sigma$ )	$\sigma_8(0.38)$	0.66274	$0.6632 \pm 0.0049$ (−0.1 $\sigma$ )
$A_{B,sync}$	1.48	$1.62_{-1.3}^{+0.52}$ (−0.0 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8796	$1.878 \pm 0.011$ (−0.0 $\sigma$ )	$f\sigma_8(0.51)$	0.47315	$0.4730 \pm 0.0042$ (−0.2 $\sigma$ )
$\alpha_{B,dust}$	−0.504	$−0.56_{-0.32}^{+0.22}$ (−0.0 $\sigma$ )	$D_{40}$	1232.4	$1236 \pm 13$ (+0.1 $\sigma$ )	$\sigma_8(0.51)$	0.62020	$0.6207 \pm 0.0046$ (−0.1 $\sigma$ )
$\beta_{B,dust}$	1.579	$1.601 \pm 0.096$ (+0.1 $\sigma$ )	$D_{220}$	5725.2	$5724 \pm 39$ (+0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.46817	$0.4681 \pm 0.0039$ (−0.2 $\sigma$ )
$\alpha_{B,sync}$	−0.22	—	$D_{810}$	2538.2	$2537 \pm 13$ (+0.1 $\sigma$ )	$\sigma_8(0.61)$	0.59013	$0.5906 \pm 0.0044$ (−0.1 $\sigma$ )
$\beta_{B,sync}$	−3.045	$−3.10 \pm 0.27$ (+0.0 $\sigma$ )	$D_{1420}$	817.11	$816.9 \pm 4.8$ (+0.2 $\sigma$ )	$f\sigma_8(2.33)$	0.29754	$0.2978 \pm 0.0023$ (−0.0 $\sigma$ )
$\epsilon_{dust,sync}$	−0.339	$−0.36 \pm 0.28$ (−0.0 $\sigma$ )	$D_{2000}$	230.72	$230.7 \pm 1.6$ (+0.3 $\sigma$ )	$\sigma_8(2.33)$	0.30674	$0.3071 \pm 0.0024$ (−0.0 $\sigma$ )
$A_{100}^{PS}$	233.6	$239 \pm 24$ (−0.1 $\sigma$ )	$n_{s,0.002}$	0.96699	$0.9674 \pm 0.0039$ (+0.2 $\sigma$ )	$r_{0.002}$	0.0179	$0.030_{-0.025}^{+0.011}$ (+0.3 $\sigma$ )
$A_{143}^{PS}$	40.5	$39 \pm 8$ (−0.2 $\sigma$ )	$Y_P$	0.245373	$0.245376_{-0.000055}^{+0.000061}$ (+0.6 $\sigma$ )	$r_{0.01}$	0.0188	$0.031_{-0.026}^{+0.011}$ (+0.3 $\sigma$ )
$A_{217}^{PS}$	103.0	$103 \pm 10$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246699	$0.246702_{-0.000055}^{+0.000062}$ (+0.6 $\sigma$ )	$\ln(10^{10} A_t)$	−0.88	$−0.66_{-0.38}^{+0.97}$ (+0.2 $\sigma$ )
$A_{217}^{CIB}$	44.1	$39 \pm 7$ (−0.1 $\sigma$ )	$10^5 D/H$	2.5960	$2.594 \pm 0.028$ (−0.6 $\sigma$ )	$r_{10}$	0.0091	$0.0152_{-0.013}^{+0.0054}$ (+0.3 $\sigma$ )
$A_{143}^{tSZ}$	6.54	$3.9_{-2.5}^{+1.9}$ (+0.1 $\sigma$ )	Age/Gyr	13.8005	$13.798 \pm 0.021$ (−0.4 $\sigma$ )	$10^9 A_t$	0.0414	$0.068_{-0.057}^{+0.026}$ (+0.3 $\sigma$ )
$r_{143 \times 217}^{PS}$	0.609	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$z_*$	1089.927	$1089.90 \pm 0.23$ (−0.6 $\sigma$ )	$10^9 A_t e^{-2\tau}$	0.0371	$0.061_{-0.051}^{+0.023}$ (+0.3 $\sigma$ )
$r_{143 \times 217}^{CIB}$	0.785	$0.55_{-0.19}^{+0.39}$ (−0.1 $\sigma$ )	$r_*$	144.660	$144.69 \pm 0.23$ (−0.2 $\sigma$ )	$f_{2000}^{143}$	29.89	$29.4 \pm 2.8$ (−0.3 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.16	—	$100\theta_*$	1.041098	$1.04113 \pm 0.00029$ (−0.2 $\sigma$ )	$f_{2000}^{217}$	106.89	$106.8 \pm 1.9$ (−0.3 $\sigma$ )
$A^{kSZ}$	0.04	$4.6_{-4.3}^{+1.7}$ (−0.1 $\sigma$ )	$D_M(z_*)/\text{Gpc}$	13.8949	$13.898 \pm 0.022$ (−0.2 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.05	$31.9 \pm 2.0$ (−0.3 $\sigma$ )
$A_{100}^{dust}$	1.007	$1.00 \pm 0.20$ (−0.0 $\sigma$ )	$z_{drag}$	1059.742	$1059.77 \pm 0.32$ (+0.6 $\sigma$ )	$\chi_{lensing}^2$	8.869	$9.25 \pm 0.69$ (−0.1 $\sigma$ )
$A_{143}^{dust}$	0.972	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	$r_{drag}$	147.345	$147.37 \pm 0.25$ (−0.3 $\sigma$ )	$\chi_{BKPLANCK}^2$	735.58	$740.0 \pm 2.6$ (+0.1 $\sigma$ )
$A_{217}^{dust}$	0.973	$0.98 \pm 0.10$ (+0.1 $\sigma$ )	$k_D$	0.140558	$0.14053 \pm 0.00031$ (+0.5 $\sigma$ )	$\chi_{simall}^2$	396.18	$397.4 \pm 2.0$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{dust}$	1.003	$1.03 \pm 0.16$ (+0.0 $\sigma$ )	$100\theta_D$	0.160857	$0.16085 \pm 0.00019$ (−0.7 $\sigma$ )	$\chi_{lowl}^2$	23.52	$24.0 \pm 1.1$ (+0.1 $\sigma$ )
$c_{100}$	0.99766	$0.9975 \pm 0.0010$ (+0.0 $\sigma$ )	$z_{eq}$	3383.7	$3380 \pm 22$ (−0.0 $\sigma$ )	$\chi_{CamSpec}^2$	11498.9	$11512.9 \pm 5.5$ (+867.9 $\sigma$ )
$c_{217}$	1.00128	$1.0011 \pm 0.0016$ (−0.0 $\sigma$ )	$k_{eq}$	0.010327	$0.010317 \pm 0.000066$ (−0.0 $\sigma$ )	$\chi_{6DF}^2$	0.0375	$0.050 \pm 0.058$ (−0.2 $\sigma$ )
$c_{TE}$	0.99658	$0.9966 \pm 0.0049$	$100\theta_{eq}$	0.81645	$0.8172 \pm 0.0040$ (+0.1 $\sigma$ )	$\chi_{MGS}^2$	1.156	$1.28 \pm 0.40$ (+0.1 $\sigma$ )
$c_{EE}$	0.99248	$0.9924 \pm 0.0049$	$100\theta_{s,eq}$	0.45107	$0.4514 \pm 0.0021$ (+0.0 $\sigma$ )	$\chi_{DR12BAO}^2$	4.60	$4.7 \pm 1.3$ (−0.1 $\sigma$ )
$H_0$	67.556	$67.63 \pm 0.43$ (+0.2 $\sigma$ )	$H(0.15)$	72.837	$72.90 \pm 0.37$ (+0.2 $\sigma$ )	$\chi_{prior}^2$	2.32	$9.4 \pm 3.8$ (+0.1 $\sigma$ )
$\Omega_\Lambda$	0.6883	$0.6893 \pm 0.0057$ (+0.2 $\sigma$ )	$D_M(0.15)$	641.72	$641.1 \pm 3.7$ (−0.2 $\sigma$ )	$\chi_{CMB}^2$	12663.0	$12683.6 \pm 6.4$ (+734.6 $\sigma$ )
$\Omega_m$	0.3117	$0.3107 \pm 0.0057$ (−0.2 $\sigma$ )	$H(0.38)$	82.951	$83.00 \pm 0.28$ (+0.3 $\sigma$ )	$\chi_{BAO}^2$	5.79	$6.1 \pm 1.0$ (−0.2 $\sigma$ )
$\Omega_m h^2$	0.14224	$0.14209 \pm 0.00090$ (−0.0 $\sigma$ )	$D_M(0.38)$	1530.4	$1529.1 \pm 7.4$ (−0.2 $\sigma$ )			
$\Omega_m h^3$	0.096092	$0.09610 \pm 0.00032$ (+0.3 $\sigma$ )	$H(0.51)$	89.669	$89.71 \pm 0.23$ (+0.3 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 12671.15$ ;  $\Delta\chi_{\text{eff}}^2 = 4448.15$ ;  $\bar{\chi}_{\text{eff}}^2 = 12699.13$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4450.41$ ;  $R - 1 = 0.00878$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.04 ( $\Delta$  -0.01) MGS: 1.16 ( $\Delta$  0.06) DR12BAO: 4.59 ( $\Delta$  -0.18) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp-p-teb\_consext8: 8.87 ( $\Delta$  -0.03) BK15\_dust: 735.58 ( $\Delta$  -0.03) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.18 ( $\Delta$  -0.01) commander\_dx12\_v3.2.29: 23.52 ( $\Delta$  0.02) CamSpec like\_10.7HM\_1400\_unified: 11498.90



17.66 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_BK15\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02228 \pm 0.00016 \quad (+0.8\sigma)$	$\Omega_{\mathrm{m}}h^2$	$0.1426 \pm 0.0013 \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.15)$	$643.4 \pm 5.3 \quad (-0.7\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1197 \pm 0.0014 \quad (-0.6\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09608 \pm 0.00032 \quad (+0.4\sigma)$	$H(0.38)$	$82.84 \pm 0.38 \quad (+0.7\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04086 \pm 0.00032 \quad (+0.1\sigma)$	$\sigma_8$	$0.8105^{+0.0066}_{-0.0075} \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.38)$	$1534 \pm 11 \quad (-0.7\sigma)$
$\tau$	$0.0548^{+0.0051}_{-0.0084} \quad (+0.1\sigma)$	$S_8$	$0.830 \pm 0.016 \quad (-0.6\sigma)$	$H(0.51)$	$89.58 \pm 0.30 \quad (+0.7\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.012}_{-0.016} \quad (-0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4545 \pm 0.0088 \quad (-0.6\sigma)$	$D_{\mathrm{M}}(0.51)$	$1986 \pm 12 \quad (-0.7\sigma)$
$n_{\mathrm{s}}$	$0.9662 \pm 0.0045 \quad (+0.5\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6069 \pm 0.0082 \quad (-0.6\sigma)$	$H(0.61)$	$95.22 \pm 0.24 \quad (+0.7\sigma)$
$r$	$0.032^{+0.012}_{-0.027} \quad (+0.4\sigma)$	$\sigma_8/h^{0.5}$	$0.988 \pm 0.011 \quad (-0.6\sigma)$	$D_{\mathrm{M}}(0.61)$	$2311 \pm 13 \quad (-0.7\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (+0.0\sigma)$	$r_{\mathrm{drag}}h$	$99.2 \pm 1.1 \quad (+0.6\sigma)$	$H(2.33)$	$236.28 \pm 0.83 \quad (-0.5\sigma)$
$A_{B,\mathrm{dust}}$	$4.87^{+0.81}_{-1.2} \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.440 \pm 0.028 \quad (-0.6\sigma)$	$D_{\mathrm{M}}(2.33)$	$5767 \pm 11 \quad (-0.7\sigma)$
$A_{B,\mathrm{sync}}$	$1.62^{+0.53}_{-1.4} \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.74^{+0.56}_{-0.82} \quad (+0.0\sigma)$	$f\sigma_8(0.15)$	$0.4588 \pm 0.0082 \quad (-0.6\sigma)$
$\alpha_{B,\mathrm{dust}}$	$-0.57^{+0.21}_{-0.33} \quad (+0.0\sigma)$	$10^9A_{\mathrm{s}}$	$2.098^{+0.024}_{-0.035} \quad (-0.1\sigma)$	$\sigma_8(0.15)$	$0.7487^{+0.0056}_{-0.0066} \quad (-0.4\sigma)$
$\beta_{B,\mathrm{dust}}$	$1.600 \pm 0.096 \quad (+0.0\sigma)$	$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.880 \pm 0.012 \quad (-0.4\sigma)$	$f\sigma_8(0.38)$	$0.4765 \pm 0.0067 \quad (-0.6\sigma)$
$\alpha_{B,\mathrm{sync}}$	—	$D_{40}$	$1237 \pm 14 \quad (-0.2\sigma)$	$\sigma_8(0.38)$	$0.6633^{+0.0044}_{-0.0057} \quad (-0.3\sigma)$
$\beta_{B,\mathrm{sync}}$	$-3.10 \pm 0.27 \quad (+0.0\sigma)$	$D_{220}$	$5716 \pm 39 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4747 \pm 0.0058 \quad (-0.6\sigma)$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$-0.36 \pm 0.28 \quad (-0.0\sigma)$	$D_{810}$	$2536 \pm 14 \quad (+0.0\sigma)$	$\sigma_8(0.51)$	$0.6206^{+0.0040}_{-0.0053} \quad (-0.3\sigma)$
$A_{100}^{\mathrm{PS}}$	$239 \pm 24 \quad (-0.1\sigma)$	$D_{1420}$	$816.1 \pm 4.9 \quad (+0.3\sigma)$	$f\sigma_8(0.61)$	$0.4695 \pm 0.0053 \quad (-0.6\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$D_{2000}$	$230.4 \pm 1.7 \quad (+0.4\sigma)$	$\sigma_8(0.61)$	$0.5905^{+0.0037}_{-0.0050} \quad (-0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9662 \pm 0.0045 \quad (+0.5\sigma)$	$f\sigma_8(2.33)$	$0.2976^{+0.0018}_{-0.0025} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7 \quad (-0.2\sigma)$	$Y_{\mathrm{P}}$	$0.245357^{+0.000068}_{-0.000061} \quad (+0.8\sigma)$	$\sigma_8(2.33)$	$0.3067^{+0.0019}_{-0.0027} \quad (+0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5} \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246684^{+0.000068}_{-0.000061} \quad (+0.8\sigma)$	$r_{0.002}$	$0.029^{+0.010}_{-0.026} \quad (+0.4\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$10^5\mathrm{D}/\mathrm{H}$	$2.603 \pm 0.030 \quad (-0.8\sigma)$	$r_{0.01}$	$0.031^{+0.011}_{-0.026} \quad (+0.4\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.38}_{-0.19} \quad (-0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.807 \pm 0.025 \quad (-0.7\sigma)$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.69^{+1.0}_{-0.38} \quad (+0.3\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$z_*$	$1090.01 \pm 0.28 \quad (-0.8\sigma)$	$r_{10}$	$0.0150^{+0.0051}_{-0.013} \quad (+0.4\sigma)$
$A^{\mathrm{kSZ}}$	$4.6^{+1.9}_{-4.2} \quad (-0.1\sigma)$	$r_*$	$144.57 \pm 0.31 \quad (+0.4\sigma)$	$10^9A_{\mathrm{t}}$	$0.067^{+0.024}_{-0.057} \quad (+0.4\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.00 \pm 0.20 \quad (-0.0\sigma)$	$100\theta_*$	$1.04105 \pm 0.00031 \quad (+0.1\sigma)$	$10^9A_{\mathrm{t}}e^{-2\tau}$	$0.060^{+0.022}_{-0.051} \quad (+0.4\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.887 \pm 0.029 \quad (+0.4\sigma)$	$f_{2000}^{143}$	$29.6 \pm 2.8 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$z_{\mathrm{drag}}$	$1059.71 \pm 0.33 \quad (+0.7\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.9 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$r_{\mathrm{drag}}$	$147.27 \pm 0.32 \quad (+0.2\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 2.0 \quad (-0.4\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$k_{\mathrm{D}}$	$0.14061 \pm 0.00035 \quad (+0.0\sigma)$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.9 \pm 2.7 \quad (+0.2\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$100\theta_{\mathrm{D}}$	$0.16088 \pm 0.00019 \quad (-0.8\sigma)$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.8 \quad (+0.0\sigma)$
$c_{TE}$	$0.9966 \pm 0.0049$	$z_{\mathrm{eq}}$	$3393 \pm 31 \quad (-0.5\sigma)$	$\chi_{\mathrm{lowl}}^2$	$24.2 \pm 1.2 \quad (-0.3\sigma)$
$c_{EE}$	$0.9921 \pm 0.0049$	$k_{\mathrm{eq}}$	$0.010357 \pm 0.000095 \quad (-0.5\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11513.4 \pm 5.6 \quad (+842.8\sigma)$
$H_0$	$67.36 \pm 0.61 \quad (+0.7\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8146 \pm 0.0059 \quad (+0.6\sigma)$	$\chi_{\mathrm{prior}}^2$	$9.5 \pm 3.8 \quad (+0.1\sigma)$
$\Omega_{\Lambda}$	$0.6855 \pm 0.0085 \quad (+0.6\sigma)$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4501 \pm 0.0030 \quad (+0.5\sigma)$	$\chi_{\mathrm{CMB}}^2$	$12674.6 \pm 6.3 \quad (+734.6\sigma)$
$\Omega_{\mathrm{m}}$	$0.3145 \pm 0.0085 \quad (-0.6\sigma)$	$H(0.15)$	$72.67 \pm 0.52 \quad (+0.7\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 12684.04; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4451.03; R - 1 = 0.00482$$



17.67 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_BK15\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02233 \pm 0.00015 \quad (+0.6\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09609 \pm 0.00032 \quad (+0.4\sigma)$	$D_{\mathrm{M}}(0.38)$	$1528.3 \pm 7.8 \quad (-0.2\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1190 \pm 0.0010 \quad (-0.1\sigma)$	$\sigma_8$	$0.8086^{+0.0059}_{-0.0074} \quad (-0.1\sigma)$	$H(0.51)$	$89.73 \pm 0.23 \quad (+0.3\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04095 \pm 0.00030 \quad (-0.2\sigma)$	$S_8$	$0.822 \pm 0.012 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1980.0 \pm 9.1 \quad (-0.2\sigma)$
$\tau$	$0.0557^{+0.0054}_{-0.0084} \quad (+0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4502 \pm 0.0068 \quad (-0.1\sigma)$	$H(0.61)$	$95.34 \pm 0.19 \quad (+0.3\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044^{+0.012}_{-0.017} \quad (+0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6033 \pm 0.0068 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2304.2 \pm 9.8 \quad (-0.2\sigma)$
$n_{\mathrm{s}}$	$0.9679 \pm 0.0040 \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9829^{+0.0092}_{-0.010} \quad (-0.1\sigma)$	$H(2.33)$	$235.86 \pm 0.63 \quad (+0.1\sigma)$
$r$	$0.033^{+0.013}_{-0.027} \quad (+0.3\sigma)$	$r_{\mathrm{drag}}h$	$99.77 \pm 0.78 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5762.7 \pm 9.4 \quad (-0.4\sigma)$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0025 \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.429 \pm 0.024 \quad (-0.1\sigma)$	$f\sigma_8(0.15)$	$0.4549 \pm 0.0064 \quad (-0.1\sigma)$
$A_{B,\mathrm{dust}}$	$4.87^{+0.82}_{-1.2} \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.81^{+0.60}_{-0.82} \quad (-0.0\sigma)$	$\sigma_8(0.15)$	$0.7474^{+0.0052}_{-0.0066} \quad (-0.1\sigma)$
$A_{B,\mathrm{sync}}$	$1.61^{+0.52}_{-1.3} \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.098^{+0.025}_{-0.036} \quad (+0.0\sigma)$	$f\sigma_8(0.38)$	$0.4735 \pm 0.0055 \quad (-0.1\sigma)$
$\alpha_{B,\mathrm{dust}}$	$-0.56^{+0.22}_{-0.32} \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.011 \quad (+0.0\sigma)$	$\sigma_8(0.38)$	$0.6627^{+0.0043}_{-0.0058} \quad (-0.1\sigma)$
$\beta_{B,\mathrm{dust}}$	$1.601 \pm 0.096 \quad (+0.1\sigma)$	$D_{40}$	$1234 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.51)$	$0.4723 \pm 0.0050 \quad (-0.1\sigma)$
$\alpha_{B,\mathrm{sync}}$	—	$D_{220}$	$5720 \pm 39 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6202^{+0.0040}_{-0.0054} \quad (-0.1\sigma)$
$\beta_{B,\mathrm{sync}}$	$-3.10 \pm 0.27 \quad (+0.0\sigma)$	$D_{810}$	$2536 \pm 14 \quad (+0.1\sigma)$	$f\sigma_8(0.61)$	$0.4675^{+0.0043}_{-0.0048} \quad (-0.1\sigma)$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$-0.36 \pm 0.28 \quad (-0.0\sigma)$	$D_{1420}$	$816.6 \pm 4.9 \quad (+0.2\sigma)$	$\sigma_8(0.61)$	$0.5902^{+0.0038}_{-0.0051} \quad (-0.0\sigma)$
$A_{100}^{\mathrm{PS}}$	$239 \pm 24 \quad (-0.1\sigma)$	$D_{2000}$	$230.6 \pm 1.6 \quad (+0.3\sigma)$	$f\sigma_8(2.33)$	$0.2976^{+0.0019}_{-0.0026} \quad (-0.0\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.9679 \pm 0.0040 \quad (+0.1\sigma)$	$\sigma_8(2.33)$	$0.3069^{+0.0019}_{-0.0027} \quad (-0.0\sigma)$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245377^{+0.000061}_{-0.000055} \quad (+0.6\sigma)$	$r_{0.002}$	$0.030^{+0.011}_{-0.026} \quad (+0.3\sigma)$
$A_{217}^{\mathrm{CIB}}$	$39^{+7}_{-8} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246703^{+0.000062}_{-0.000055} \quad (+0.6\sigma)$	$r_{0.01}$	$0.032^{+0.012}_{-0.027} \quad (+0.3\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5} \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.594 \pm 0.027 \quad (-0.6\sigma)$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.64^{+0.96}_{-0.38} \quad (+0.2\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.797 \pm 0.021 \quad (-0.4\sigma)$	$r_{10}$	$0.0156^{+0.0056}_{-0.013} \quad (+0.3\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.39}_{-0.19} \quad (-0.1\sigma)$	$z_*$	$1089.89 \pm 0.23 \quad (-0.6\sigma)$	$10^9 A_{\mathrm{t}}$	$0.069^{+0.027}_{-0.057} \quad (+0.3\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$r_*$	$144.72 \pm 0.25 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{t}}e^{-2\tau}$	$0.062^{+0.024}_{-0.051} \quad (+0.3\sigma)$
$A^{\mathrm{kSZ}}$	$4.6^{+1.8}_{-4.3} \quad (-0.1\sigma)$	$100\theta_*$	$1.04114 \pm 0.00030 \quad (-0.2\sigma)$	$f_{2000}^{143}$	$29.4 \pm 2.8 \quad (-0.3\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.00 \pm 0.20 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.901 \pm 0.024 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$106.7 \pm 1.9 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$z_{\mathrm{drag}}$	$1059.76 \pm 0.32 \quad (+0.6\sigma)$	$f_{2000}^{143 \times 217}$	$31.9 \pm 2.0 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$r_{\mathrm{drag}}$	$147.41 \pm 0.26 \quad (-0.3\sigma)$	$\chi_{\mathrm{BKPLANCK}}^2$	$740.1 \pm 2.7 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (+0.0\sigma)$	$k_{\mathrm{D}}$	$0.14050 \pm 0.00032 \quad (+0.5\sigma)$	$\chi_{\mathrm{simall}}^2$	$397.3 \pm 2.0 \quad (+0.0\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$100\theta_{\mathrm{D}}$	$0.16086 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.9 \pm 1.1 \quad (+0.1\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$z_{\mathrm{eq}}$	$3377 \pm 23 \quad (+0.0\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11513.3 \pm 5.6 \quad (+855.2\sigma)$
$c_{TE}$	$0.9967 \pm 0.0049$	$k_{\mathrm{eq}}$	$0.010308 \pm 0.000071 \quad (+0.0\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.047 \pm 0.059 \quad (-0.2\sigma)$
$c_{EE}$	$0.9923 \pm 0.0049$	$100\theta_{\mathrm{eq}}$	$0.8177 \pm 0.0044 \quad (+0.0\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.34 \pm 0.44 \quad (+0.1\sigma)$
$H_0$	$67.68 \pm 0.45 \quad (+0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4517 \pm 0.0022 \quad (-0.0\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.3 \quad (-0.1\sigma)$
$\Omega_{\Lambda}$	$0.6900 \pm 0.0061 \quad (+0.1\sigma)$	$H(0.15)$	$72.95 \pm 0.39 \quad (+0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$9.5 \pm 3.8 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3100 \pm 0.0061 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$640.6 \pm 3.9 \quad (-0.2\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.0 \quad (-0.2\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14197 \pm 0.00097 \quad (+0.0\sigma)$	$H(0.38)$	$83.03 \pm 0.29 \quad (+0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$12674.5 \pm 6.3 \quad (+749.0\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 12690.02; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.45; R - 1 = 0.00713$$



17.68 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_BK15\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02228 \pm 0.00016 \quad (+0.7\sigma)$	$\Omega_{\mathrm{m}} h^2$	$0.1426 \pm 0.0011 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.15)$	$643.4 \pm 4.6 \quad (-0.5\sigma)$
$\Omega_{\mathrm{c}} h^2$	$0.1197 \pm 0.0012 \quad (-0.4\sigma)$	$\Omega_{\mathrm{m}} h^3$	$0.09608 \pm 0.00032 \quad (+0.4\sigma)$	$H(0.38)$	$82.84 \pm 0.34 \quad (+0.5\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04086 \pm 0.00031 \quad (+0.0\sigma)$	$\sigma_8$	$0.8108 \pm 0.0057 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.38)$	$1533.7 \pm 9.3 \quad (-0.5\sigma)$
$\tau$	$0.0552^{+0.0054}_{-0.0080} \quad (+0.2\sigma)$	$S_8$	$0.830 \pm 0.013 \quad (-0.5\sigma)$	$H(0.51)$	$89.58 \pm 0.27 \quad (+0.6\sigma)$
$\ln(10^{10} A_{\mathrm{s}})$	$3.044^{+0.011}_{-0.015} \quad (+0.1\sigma)$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4546 \pm 0.0070 \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.51)$	$1986 \pm 11 \quad (-0.5\sigma)$
$n_{\mathrm{s}}$	$0.9660 \pm 0.0043 \quad (+0.4\sigma)$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.6071 \pm 0.0064 \quad (-0.4\sigma)$	$H(0.61)$	$95.22 \pm 0.22 \quad (+0.6\sigma)$
$r$	$0.032^{+0.011}_{-0.027} \quad (+0.3\sigma)$	$\sigma_8/h^{0.5}$	$0.9878 \pm 0.0089 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.61)$	$2311 \pm 12 \quad (-0.5\sigma)$
$y_{\mathrm{cal}}$	$1.0008 \pm 0.0025 \quad (+0.0\sigma)$	$r_{\mathrm{drag}} h$	$99.21 \pm 0.93 \quad (+0.4\sigma)$	$H(2.33)$	$236.28 \pm 0.72 \quad (-0.3\sigma)$
$A_{B,\mathrm{dust}}$	$4.87^{+0.82}_{-1.2} \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.441 \pm 0.022 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(2.33)$	$5767 \pm 11 \quad (-0.6\sigma)$
$A_{B,\mathrm{sync}}$	$1.63^{+0.52}_{-1.4} \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.77^{+0.59}_{-0.77} \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4589 \pm 0.0065 \quad (-0.5\sigma)$
$\alpha_{B,\mathrm{dust}}$	$-0.56^{+0.21}_{-0.32} \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.100^{+0.023}_{-0.032} \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7489^{+0.0047}_{-0.0054} \quad (-0.2\sigma)$
$\beta_{B,\mathrm{dust}}$	$1.601 \pm 0.096 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.880 \pm 0.011 \quad (-0.1\sigma)$	$f\sigma_8(0.38)$	$0.4766 \pm 0.0052 \quad (-0.4\sigma)$
$\alpha_{B,\mathrm{sync}}$	—	$D_{40}$	$1238 \pm 13 \quad (-0.0\sigma)$	$\sigma_8(0.38)$	$0.6635^{+0.0040}_{-0.0048} \quad (-0.1\sigma)$
$\beta_{B,\mathrm{sync}}$	$-3.10 \pm 0.27 \quad (+0.0\sigma)$	$D_{220}$	$5719 \pm 39 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4749 \pm 0.0045 \quad (-0.4\sigma)$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$-0.36 \pm 0.28 \quad (-0.0\sigma)$	$D_{810}$	$2536 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.51)$	$0.6208^{+0.0036}_{-0.0046} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$239 \pm 24 \quad (-0.1\sigma)$	$D_{1420}$	$816.2 \pm 4.9 \quad (+0.3\sigma)$	$f\sigma_8(0.61)$	$0.4697 \pm 0.0041 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$D_{2000}$	$230.4 \pm 1.7 \quad (+0.4\sigma)$	$\sigma_8(0.61)$	$0.5907^{+0.0035}_{-0.0044} \quad (-0.0\sigma)$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9660 \pm 0.0043 \quad (+0.4\sigma)$	$f\sigma_8(2.33)$	$0.2977^{+0.0018}_{-0.0023} \quad (+0.0\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7 \quad (-0.2\sigma)$	$Y_{\mathrm{P}}$	$0.245359 \pm 0.000064 \quad (+0.7\sigma)$	$\sigma_8(2.33)$	$0.3068^{+0.0019}_{-0.0025} \quad (+0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5} \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246685 \pm 0.000064 \quad (+0.7\sigma)$	$r_{0.002}$	$0.0290^{+0.0099}_{-0.025} \quad (+0.3\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.602 \pm 0.029 \quad (-0.7\sigma)$	$r_{0.01}$	$0.030^{+0.011}_{-0.026} \quad (+0.3\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.40}_{-0.18} \quad (-0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.807 \pm 0.024 \quad (-0.6\sigma)$	$\ln(10^{10} A_{\mathrm{t}})$	$-0.69^{+0.99}_{-0.38} \quad (+0.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$z_*$	$1090.00 \pm 0.26 \quad (-0.7\sigma)$	$r_{10}$	$0.0148^{+0.0050}_{-0.013} \quad (+0.3\sigma)$
$A^{\mathrm{kSZ}}$	$4.6^{+1.9}_{-4.2} \quad (-0.1\sigma)$	$r_*$	$144.57 \pm 0.27 \quad (+0.1\sigma)$	$10^9 A_{\mathrm{t}}$	$0.067^{+0.024}_{-0.057} \quad (+0.3\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.00 \pm 0.20 \quad (-0.0\sigma)$	$100\theta_*$	$1.04105 \pm 0.00031 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{t}} e^{-2\tau}$	$0.060^{+0.022}_{-0.051} \quad (+0.3\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.887 \pm 0.026 \quad (+0.1\sigma)$	$f_{2000}^{143}$	$29.6 \pm 2.8 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$z_{\mathrm{drag}}$	$1059.71 \pm 0.33 \quad (+0.7\sigma)$	$f_{2000}^{217}$	$106.9 \pm 2.0 \quad (-0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$r_{\mathrm{drag}}$	$147.27 \pm 0.28 \quad (-0.0\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 2.0 \quad (-0.4\sigma)$
$c_{100}$	$0.9975 \pm 0.0010 \quad (+0.0\sigma)$	$k_{\mathrm{D}}$	$0.14062 \pm 0.00033 \quad (+0.3\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.25 \pm 0.63 \quad (-0.3\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$100\theta_{\mathrm{D}}$	$0.16088 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.8 \pm 2.7 \quad (+0.2\sigma)$
$c_{TE}$	$0.9966 \pm 0.0049$	$z_{\mathrm{eq}}$	$3393 \pm 27 \quad (-0.3\sigma)$	$\chi_{\mathrm{small}}^2$	$397.1 \pm 1.8 \quad (+0.1\sigma)$
$c_{EE}$	$0.9921 \pm 0.0049$	$k_{\mathrm{eq}}$	$0.010356 \pm 0.000082 \quad (-0.3\sigma)$	$\chi_{\mathrm{lowl}}^2$	$24.2 \pm 1.1 \quad (-0.1\sigma)$
$H_0$	$67.37 \pm 0.54 \quad (+0.5\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8147 \pm 0.0051 \quad (+0.4\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11513.0 \pm 5.5 \quad (+871.3\sigma)$
$\Omega_{\Lambda}$	$0.6856 \pm 0.0074 \quad (+0.5\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4502 \pm 0.0026 \quad (+0.4\sigma)$	$\chi_{\mathrm{prior}}^2$	$9.4 \pm 3.8 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3144 \pm 0.0074 \quad (-0.5\sigma)$	$H(0.15)$	$72.68 \pm 0.46 \quad (+0.5\sigma)$	$\chi_{\mathrm{CMB}}^2$	$12683.5 \pm 6.3 \quad (+737.1\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 12692.90; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.91; R - 1 = 0.00651$$



17.69 base\_r\_CamSpecHM\_TTTEE\_lowl\_lowE\_BK15\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02233 \pm 0.00015 \quad (+0.6\sigma)$	$\sigma_8$	$0.8098^{+0.0053}_{-0.0062} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1980.8 \pm 8.6 \quad (-0.3\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.11910 \pm 0.00094 \quad (-0.1\sigma)$	$S_8$	$0.824 \pm 0.011 \quad (-0.2\sigma)$	$H(0.61)$	$95.32 \pm 0.19 \quad (+0.3\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04094 \pm 0.00030 \quad (-0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4513 \pm 0.0058 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.61)$	$2305.0 \pm 9.3 \quad (-0.3\sigma)$
$\tau$	$0.0566^{+0.0059}_{-0.0079} \quad (+0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6045 \pm 0.0056 \quad (-0.2\sigma)$	$H(2.33)$	$235.93 \pm 0.58 \quad (+0.0\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046^{+0.012}_{-0.015} \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.9847 \pm 0.0082 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5763.1 \pm 9.2 \quad (-0.4\sigma)$
$n_{\mathrm{s}}$	$0.9674 \pm 0.0039 \quad (+0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.69 \pm 0.73 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4559 \pm 0.0054 \quad (-0.2\sigma)$
$r$	$0.033^{+0.012}_{-0.027} \quad (+0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.434 \pm 0.020 \quad (-0.1\sigma)$	$\sigma_8(0.15)$	$0.7484^{+0.0048}_{-0.0057} \quad (-0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0009 \pm 0.0025 \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.89^{+0.63}_{-0.76} \quad (-0.0\sigma)$	$f\sigma_8(0.38)$	$0.4745 \pm 0.0046 \quad (-0.2\sigma)$
$A_{B,\mathrm{dust}}$	$4.87^{+0.82}_{-1.1} \quad (+0.0\sigma)$	$10^9A_{\mathrm{s}}$	$2.103^{+0.025}_{-0.032} \quad (+0.0\sigma)$	$\sigma_8(0.38)$	$0.6635^{+0.0041}_{-0.0050} \quad (-0.1\sigma)$
$A_{B,\mathrm{sync}}$	$1.62^{+0.52}_{-1.3} \quad (-0.0\sigma)$	$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.878 \pm 0.010 \quad (-0.0\sigma)$	$f\sigma_8(0.51)$	$0.4732 \pm 0.0041 \quad (-0.2\sigma)$
$\alpha_{B,\mathrm{dust}}$	$-0.56^{+0.22}_{-0.32} \quad (-0.0\sigma)$	$D_{40}$	$1236 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.51)$	$0.6210^{+0.0038}_{-0.0047} \quad (-0.1\sigma)$
$\beta_{B,\mathrm{dust}}$	$1.601 \pm 0.096 \quad (+0.1\sigma)$	$D_{220}$	$5724 \pm 38 \quad (+0.2\sigma)$	$f\sigma_8(0.61)$	$0.4683 \pm 0.0038 \quad (-0.2\sigma)$
$\alpha_{B,\mathrm{sync}}$	—	$D_{810}$	$2537 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.61)$	$0.5909^{+0.0036}_{-0.0045} \quad (-0.1\sigma)$
$\beta_{B,\mathrm{sync}}$	$-3.10 \pm 0.27 \quad (+0.0\sigma)$	$D_{1420}$	$816.8 \pm 4.8 \quad (+0.2\sigma)$	$f\sigma_8(2.33)$	$0.2980^{+0.0019}_{-0.0023} \quad (-0.0\sigma)$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$-0.36 \pm 0.28 \quad (-0.0\sigma)$	$D_{2000}$	$230.7 \pm 1.6 \quad (+0.3\sigma)$	$\sigma_8(2.33)$	$0.3073^{+0.0020}_{-0.0025} \quad (-0.0\sigma)$
$A_{100}^{\mathrm{PS}}$	$239 \pm 24 \quad (-0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9674 \pm 0.0039 \quad (+0.1\sigma)$	$r_{0.002}$	$0.030^{+0.011}_{-0.025} \quad (+0.3\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$Y_{\mathrm{P}}$	$0.245377^{+0.000061}_{-0.000055} \quad (+0.6\sigma)$	$r_{0.01}$	$0.031^{+0.011}_{-0.026} \quad (+0.3\sigma)$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246703^{+0.000062}_{-0.000055} \quad (+0.6\sigma)$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.66^{+0.97}_{-0.38} \quad (+0.2\sigma)$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7 \quad (-0.1\sigma)$	$10^5\mathrm{D}/\mathrm{H}$	$2.594 \pm 0.027 \quad (-0.6\sigma)$	$r_{10}$	$0.0153^{+0.0054}_{-0.013} \quad (+0.3\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5} \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.797 \pm 0.021 \quad (-0.4\sigma)$	$10^9A_{\mathrm{t}}$	$0.068^{+0.026}_{-0.057} \quad (+0.3\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$z_*$	$1089.90 \pm 0.23 \quad (-0.6\sigma)$	$10^9A_{\mathrm{t}}e^{-2\tau}$	$0.061^{+0.023}_{-0.051} \quad (+0.3\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.39}_{-0.19} \quad (-0.1\sigma)$	$r_*$	$144.70 \pm 0.23 \quad (-0.2\sigma)$	$f_{2000}^{143}$	$29.4 \pm 2.8 \quad (-0.3\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$100\theta_*$	$1.04113 \pm 0.00029 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.9 \quad (-0.3\sigma)$
$A^{\mathrm{kSZ}}$	$4.6^{+1.7}_{-4.3} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.898 \pm 0.022 \quad (-0.2\sigma)$	$f_{2000}^{143 \times 217}$	$31.9 \pm 2.0 \quad (-0.3\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.00 \pm 0.20 \quad (-0.0\sigma)$	$z_{\mathrm{drag}}$	$1059.77 \pm 0.32 \quad (+0.6\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.21 \pm 0.64 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$r_{\mathrm{drag}}$	$147.38 \pm 0.25 \quad (-0.3\sigma)$	$\chi_{\mathrm{BKPLANCK}}^2$	$740.0 \pm 2.6 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.14053 \pm 0.00031 \quad (+0.5\sigma)$	$\chi_{\mathrm{simall}}^2$	$397.4 \pm 2.0 \quad (+0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (+0.0\sigma)$	$100\theta_{\mathrm{D}}$	$0.16085 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{\mathrm{lowl}}^2$	$24.0 \pm 1.1 \quad (+0.1\sigma)$
$c_{100}$	$0.9975 \pm 0.0010 \quad (+0.0\sigma)$	$z_{\mathrm{eq}}$	$3380 \pm 21 \quad (-0.0\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11512.9 \pm 5.5 \quad (+871.3\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$k_{\mathrm{eq}}$	$0.010315 \pm 0.000065 \quad (-0.0\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.049 \pm 0.057 \quad (-0.2\sigma)$
$c_{TE}$	$0.9966 \pm 0.0049$	$100\theta_{\mathrm{eq}}$	$0.8173 \pm 0.0040 \quad (+0.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.29 \pm 0.40 \quad (+0.1\sigma)$
$c_{EE}$	$0.9924 \pm 0.0049$	$100\theta_{\mathrm{s,eq}}$	$0.4515 \pm 0.0021 \quad (+0.0\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.3 \quad (-0.1\sigma)$
$H_0$	$67.64 \pm 0.43 \quad (+0.2\sigma)$	$H(0.15)$	$72.91 \pm 0.37 \quad (+0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$9.4 \pm 3.8 \quad (+0.1\sigma)$
$\Omega_{\Lambda}$	$0.6894 \pm 0.0057 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$641.0 \pm 3.6 \quad (-0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$12683.5 \pm 6.3 \quad (+740.0\sigma)$
$\Omega_{\mathrm{m}}$	$0.3106 \pm 0.0057 \quad (-0.2\sigma)$	$H(0.38)$	$83.01 \pm 0.27 \quad (+0.3\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.03 \pm 0.99 \quad (-0.2\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14207 \pm 0.00090 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1528.9 \pm 7.3 \quad (-0.2\sigma)$		
$\Omega_{\mathrm{m}}h^3$	$0.09610 \pm 0.00032 \quad (+0.3\sigma)$	$H(0.51)$	$89.71 \pm 0.22 \quad (+0.3\sigma)$		
$\bar{\chi}_{\mathrm{eff}}^2 = 12699.00; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.43; R - 1 = 0.00924$					



# 17.70 base\_r\_plikHM\_TTTEEE\_lowl\_lowE\_BK15\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022382	$0.02236 \pm 0.00014$ (+1.2 $\sigma$ )	$\Omega_{\Lambda}$	0.6841	$0.6839 \pm 0.0074$ (+0.4 $\sigma$ )	$H(0.15)$	72.649	$72.63 \pm 0.46$ (+0.5 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.12011	$0.1201 \pm 0.0012$ (−0.2 $\sigma$ )	$\Omega_{\mathrm{m}}$	0.3159	$0.3161 \pm 0.0074$ (−0.4 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	643.69	$643.9 \pm 4.6$ (−0.5 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.040889	$1.04091 \pm 0.00031$ (+0.3 $\sigma$ )	$\Omega_{\mathrm{m}}h^2$	0.14313	$0.1431 \pm 0.0011$ (−0.1 $\sigma$ )	$H(0.38)$	82.845	$82.83 \pm 0.34$ (+0.6 $\sigma$ )
$\tau$	0.0546	$0.0546 \pm 0.0074$ (+0.3 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.096354	$0.09632 \pm 0.00029$ (+1.0 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1534.1	$1534.5 \pm 9.2$ (−0.6 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0456	$3.046 \pm 0.014$ (+0.3 $\sigma$ )	$\sigma_8$	0.8123	$0.8122 \pm 0.0059$ (+0.1 $\sigma$ )	$H(0.51)$	89.611	$89.60 \pm 0.27$ (+0.7 $\sigma$ )
$n_{\mathrm{s}}$	0.96585	$0.9651 \pm 0.0041$ (+0.4 $\sigma$ )	$S_8$	0.8334	$0.834 \pm 0.013$ (−0.3 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1986.6	$1987 \pm 11$ (−0.6 $\sigma$ )
$r$	0.0153	$0.0270^{+0.0065}_{-0.027}$ (+0.1 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4565	$0.4566 \pm 0.0070$ (−0.3 $\sigma$ )	$H(0.61)$	95.269	$95.26 \pm 0.22$ (+0.8 $\sigma$ )
$y_{\mathrm{cal}}$	1.00057	$1.0009 \pm 0.0025$ (+0.1 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6089	$0.6090 \pm 0.0063$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2311.1	$2312 \pm 12$ (−0.6 $\sigma$ )
$A_{B,\mathrm{dust}}$	4.62	$4.86^{+0.81}_{-1.2}$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9900	$0.9901 \pm 0.0090$ (−0.2 $\sigma$ )	$H(2.33)$	236.64	$236.63 \pm 0.71$ (+0.0 $\sigma$ )
$A_{B,\mathrm{sync}}$	1.44	$1.64^{+0.53}_{-1.3}$ (+0.0 $\sigma$ )	$r_{\mathrm{drag}}h$	98.99	$98.98 \pm 0.92$ (+0.3 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5763.7	$5765 \pm 10$ (−0.9 $\sigma$ )
$\alpha_{B,\mathrm{dust}}$	−0.510	$−0.56^{+0.22}_{-0.32}$ (+0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4463	$2.448 \pm 0.022$ (−0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4607	$0.4608 \pm 0.0064$ (−0.2 $\sigma$ )
$\beta_{B,\mathrm{dust}}$	1.576	$1.597 \pm 0.096$ (−0.0 $\sigma$ )	$z_{\mathrm{re}}$	7.71	$7.70 \pm 0.74$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7501	$0.7501 \pm 0.0053$ (+0.2 $\sigma$ )
$\alpha_{B,\mathrm{sync}}$	−0.39	—	$10^9A_{\mathrm{s}}$	2.1022	$2.103 \pm 0.030$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4781	$0.4782 \pm 0.0052$ (−0.2 $\sigma$ )
$\beta_{B,\mathrm{sync}}$	−3.032	$−3.10 \pm 0.28$ (−0.0 $\sigma$ )	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8846	$1.885 \pm 0.011$ (+0.0 $\sigma$ )	$\sigma_8(0.38)$	0.66447	$0.6644 \pm 0.0047$ (+0.3 $\sigma$ )
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	−0.345	$−0.34 \pm 0.29$ (+0.0 $\sigma$ )	$D_{40}$	1235.1	$1241 \pm 13$ (−0.0 $\sigma$ )	$f\sigma_8(0.51)$	0.47621	$0.4762 \pm 0.0045$ (−0.1 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	46.8	$47 \pm 7$ (−0.2 $\sigma$ )	$D_{220}$	5732.1	$5735 \pm 38$ (+0.5 $\sigma$ )	$\sigma_8(0.51)$	0.62163	$0.6215 \pm 0.0044$ (+0.3 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.48	—	$D_{810}$	2541.4	$2541 \pm 13$ (+0.3 $\sigma$ )	$f\sigma_8(0.61)$	0.47088	$0.4709 \pm 0.0041$ (−0.1 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	7.15	$5.5^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$D_{1420}$	818.39	$817.7 \pm 4.7$ (+0.6 $\sigma$ )	$\sigma_8(0.61)$	0.59138	$0.5913 \pm 0.0042$ (+0.3 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	250.1	$259 \pm 28$ (−0.2 $\sigma$ )	$D_{2000}$	231.31	$231.0 \pm 1.6$ (+0.8 $\sigma$ )	$f\sigma_8(2.33)$	0.29800	$0.2980 \pm 0.0022$ (+0.4 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	48.2	$46 \pm 8$ (−0.4 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.96585	$0.9651 \pm 0.0041$ (+0.4 $\sigma$ )	$\sigma_8(2.33)$	0.30704	$0.3070 \pm 0.0024$ (+0.4 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	48.7	$42 \pm 9$ (−0.1 $\sigma$ )	$Y_{\mathrm{P}}$	0.245400	$0.245388^{+0.000060}_{-0.000053}$ (+1.1 $\sigma$ )	$r_{0.002}$	0.0138	$< 0.0303$ (+0.1 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	120.4	$115 \pm 10$ (+0.0 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246727	$0.246715^{+0.000060}_{-0.000053}$ (+1.1 $\sigma$ )	$r_{0.01}$	0.0145	$< 0.0318$ (+0.1 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.00	$< 4.22$ (−0.2 $\sigma$ )	$10^5\mathrm{D}/\mathrm{H}$	2.5832	$2.588 \pm 0.027$ (−1.2 $\sigma$ )	$\ln(10^{10}A_{\mathrm{t}})$	−1.14	$−0.89^{+1.1}_{-0.42}$ (+0.1 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.76	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	Age/Gyr	13.7975	$13.799 \pm 0.023$ (−0.9 $\sigma$ )	$r_{10}$	0.0070	$< 0.0155$ (+0.1 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	10.97	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$z_{*}$	1089.914	$1089.95 \pm 0.25$ (−1.0 $\sigma$ )	$10^9A_{\mathrm{t}}$	0.0321	$0.057^{+0.014}_{-0.057}$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.84	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$r_{*}$	144.395	$144.41 \pm 0.26$ (−0.3 $\sigma$ )	$10^9A_{\mathrm{t}}e^{-2\tau}$	0.0288	$0.051^{+0.012}_{-0.051}$ (+0.1 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	95.2	$93.7 \pm 7.3$ (+0.0 $\sigma$ )	$100\theta_{*}$	1.041074	$1.04110 \pm 0.00030$ (+0.2 $\sigma$ )	$f_{2000}^{143}$	28.76	$29.5 \pm 2.7$ (−0.6 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1156	$0.115 \pm 0.038$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	13.8698	$13.871 \pm 0.025$ (−0.3 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.95	$32.2 \pm 1.8$ (−0.7 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1348	$0.135 \pm 0.029$	$z_{\mathrm{drag}}$	1059.971	$1059.91 \pm 0.30$ (+1.2 $\sigma$ )	$f_{2000}^{217}$	106.59	$107.1 \pm 1.8$ (−0.6 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.481	$0.482 \pm 0.085$	$r_{\mathrm{drag}}$	147.050	$147.08 \pm 0.26$ (−0.5 $\sigma$ )	$\chi_{\mathrm{lensing}}^2$	8.863	$9.28 \pm 0.73$ (−0.3 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.223	$0.226 \pm 0.054$	$k_{\mathrm{D}}$	0.140921	$0.14087 \pm 0.00029$ (+0.8 $\sigma$ )	$\chi_{\mathrm{BKPLANCK}}^2$	735.35	$739.6 \pm 2.6$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.664	$0.667 \pm 0.080$	$100\theta_{\mathrm{D}}$	0.160733	$0.16077 \pm 0.00017$ (−1.2 $\sigma$ )	$\chi_{\mathrm{small}}^2$	396.18	$397.2 \pm 1.8$ (+0.1 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.083	$2.09 \pm 0.27$	$z_{\mathrm{eq}}$	3405.0	$3405 \pm 27$ (−0.1 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	23.79	$24.4 \pm 1.1$ (−0.2 $\sigma$ )
$c_{100}$	0.99971	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$k_{\mathrm{eq}}$	0.010392	$0.010392 \pm 0.000081$ (−0.1 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2344.5	$2359.0 \pm 5.6$ (+303.9 $\sigma$ )
$c_{217}$	0.99818	$0.99819 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.81281	$0.8128 \pm 0.0050$ (+0.2 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.72	$13.2 \pm 4.8$ (+1.1 $\sigma$ )
$H_0$	67.32	$67.30 \pm 0.53$ (+0.5 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.44912	$0.4491 \pm 0.0026$ (+0.1 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	3508.7	$3529.5 \pm 6.5$ (+258.4 $\sigma$ )

Best-fit  $\chi_{\mathrm{eff}}^2 = 3510.40$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1586.09$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 3542.67$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.32$ ;  $R - 1 = 0.00459$   
 $\chi_{\mathrm{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.86 ( $\Delta$  -0.12) BK15\_dust: 735.35 ( $\Delta$  0.14) small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.18 ( $\Delta$  0.18) com-  
mander\_dx12\_v3\_2\_29: 23.79 ( $\Delta$  -0.28) plik\_rd12\_HM\_v22b.TTTEEE: 2344.50



17.71 base\_r\_plikHM\_TTTEEE\_lowl\_lowE\_BK15\_lensing\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022426	$0.02241 \pm 0.00013$ (+1.1 $\sigma$ )	$\Omega_m h^2$	0.14249	$0.14245 \pm 0.00089$ (+0.4 $\sigma$ )	$H(0.51)$	89.760	$89.75 \pm 0.22$ (+0.6 $\sigma$ )
$\Omega_c h^2$	0.11941	$0.11940 \pm 0.00094$ (+0.2 $\sigma$ )	$\Omega_m h^3$	0.096367	$0.09633 \pm 0.00029$ (+1.0 $\sigma$ )	$D_M(0.51)$	1980.4	$1980.5 \pm 8.6$ (−0.4 $\sigma$ )
$100\theta_{MC}$	1.041001	$1.04100 \pm 0.00030$ (+0.1 $\sigma$ )	$\sigma_8$	0.8111	$0.8112 \pm 0.0059$ (+0.2 $\sigma$ )	$H(0.61)$	95.384	$95.38 \pm 0.18$ (+0.7 $\sigma$ )
$\tau$	0.0560	$0.0566 \pm 0.0072$ (+0.2 $\sigma$ )	$S_8$	0.8265	$0.827 \pm 0.011$ (+0.1 $\sigma$ )	$D_M(0.61)$	2304.4	$2304.6 \pm 9.2$ (−0.4 $\sigma$ )
$\ln(10^{10} A_s)$	3.0474	$3.048 \pm 0.014$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4527	$0.4528 \pm 0.0058$ (+0.1 $\sigma$ )	$H(2.33)$	236.24	$236.21 \pm 0.57$ (+0.5 $\sigma$ )
$n_s$	0.96753	$0.9668 \pm 0.0037$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6060	$0.6061 \pm 0.0057$ (+0.1 $\sigma$ )	$D_M(2.33)$	5758.9	$5759.4 \pm 8.8$ (−0.8 $\sigma$ )
$r$	0.0181	$< 0.0346$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9863	$0.9865 \pm 0.0083$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4573	$0.4574 \pm 0.0055$ (+0.1 $\sigma$ )
$y_{cal}$	1.00105	$1.0010 \pm 0.0025$ (+0.0 $\sigma$ )	$r_{drag}h$	99.54	$99.55 \pm 0.73$ (−0.0 $\sigma$ )	$\sigma_8(0.15)$	0.7495	$0.7496 \pm 0.0054$ (+0.2 $\sigma$ )
$A_{B,dust}$	4.61	$4.86^{+0.82}_{-1.2}$ (−0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4378	$2.440 \pm 0.020$ (+0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.47564	$0.4757 \pm 0.0046$ (+0.1 $\sigma$ )
$A_{B,sync}$	1.44	$1.62^{+0.53}_{-1.4}$ (−0.0 $\sigma$ )	$z_{re}$	7.83	$7.88 \pm 0.71$ (+0.1 $\sigma$ )	$\sigma_8(0.38)$	0.66437	$0.6645 \pm 0.0047$ (+0.2 $\sigma$ )
$\alpha_{B,dust}$	−0.503	$−0.56^{+0.22}_{-0.32}$ (−0.0 $\sigma$ )	$10^9 A_s$	2.1060	$2.108 \pm 0.030$ (+0.2 $\sigma$ )	$f\sigma_8(0.51)$	0.47424	$0.4743 \pm 0.0042$ (+0.1 $\sigma$ )
$\beta_{B,dust}$	1.578	$1.596 \pm 0.097$ (−0.0 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8829	$1.882 \pm 0.011$ (+0.2 $\sigma$ )	$\sigma_8(0.51)$	0.62174	$0.6219 \pm 0.0045$ (+0.2 $\sigma$ )
$\alpha_{B,sync}$	−0.34	—	$D_{40}$	1233.5	$1239 \pm 12$ (+0.1 $\sigma$ )	$f\sigma_8(0.61)$	0.46926	$0.4693 \pm 0.0039$ (+0.2 $\sigma$ )
$\beta_{B,sync}$	−3.036	$−3.10 \pm 0.28$ (+0.0 $\sigma$ )	$D_{220}$	5738.5	$5740 \pm 38$ (+0.4 $\sigma$ )	$\sigma_8(0.61)$	0.59160	$0.5917 \pm 0.0043$ (+0.2 $\sigma$ )
$\epsilon_{dust,sync}$	−0.344	$−0.34 \pm 0.29$ (−0.0 $\sigma$ )	$D_{810}$	2542.6	$2541 \pm 13$ (+0.2 $\sigma$ )	$f\sigma_8(2.33)$	0.29829	$0.2983 \pm 0.0022$ (+0.2 $\sigma$ )
$A_{217}^{CIB}$	47.4	$47 \pm 7$ (−0.2 $\sigma$ )	$D_{1420}$	819.32	$818.4 \pm 4.7$ (+0.5 $\sigma$ )	$\sigma_8(2.33)$	0.30752	$0.3076 \pm 0.0023$ (+0.2 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.40	—	$D_{2000}$	231.65	$231.3 \pm 1.5$ (+0.7 $\sigma$ )	$r_{0.002}$	0.0164	$< 0.0315$ (+0.1 $\sigma$ )
$A_{143}^{tSZ}$	7.24	$5.5^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$n_{s,0.002}$	0.96753	$0.9668 \pm 0.0037$ (+0.2 $\sigma$ )	$r_{0.01}$	0.0173	$< 0.0330$ (+0.1 $\sigma$ )
$A_{100}^{PS}$	250.6	$258 \pm 28$ (−0.2 $\sigma$ )	$Y_P$	0.245417	$0.245409^{+0.000055}_{-0.000047}$ (+1.1 $\sigma$ )	$\ln(10^{10} A_t)$	−0.96	$−0.86^{+1.1}_{-0.42}$ (+0.1 $\sigma$ )
$A_{143}^{PS}$	46.7	$45 \pm 8$ (−0.4 $\sigma$ )	$Y_P^{BBN}$	0.246744	$0.246736^{+0.000055}_{-0.000047}$ (+1.1 $\sigma$ )	$r_{10}$	0.0084	$< 0.0161$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{PS}$	46.4	$42 \pm 9$ (−0.1 $\sigma$ )	$10^5 D/H$	2.5751	$2.579 \pm 0.025$ (−1.1 $\sigma$ )	$10^9 A_t$	0.0382	$< 0.0728$ (+0.1 $\sigma$ )
$A_{217}^{PS}$	119.4	$115 \pm 10$ (+0.0 $\sigma$ )	Age/Gyr	13.7870	$13.788 \pm 0.020$ (−0.8 $\sigma$ )	$10^9 A_t e^{-2\tau}$	0.0341	$< 0.0650$ (+0.1 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.15$ (−0.2 $\sigma$ )	$z_*$	1089.797	$1089.82 \pm 0.22$ (−0.9 $\sigma$ )	$f_{2000}^{143}$	28.74	$29.2 \pm 2.7$ (−0.5 $\sigma$ )
$A_{100}^{dustTT}$	8.84	$8.9 \pm 1.8$ (+0.0 $\sigma$ )	$r_*$	144.540	$144.56 \pm 0.22$ (−0.7 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.89	$32.0 \pm 1.8$ (−0.6 $\sigma$ )
$A_{143}^{dustTT}$	11.04	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$100\theta_*$	1.041180	$1.04118 \pm 0.00029$ (+0.1 $\sigma$ )	$f_{2000}^{217}$	106.69	$106.9 \pm 1.8$ (−0.6 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.76	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$D_M(z_*)/\text{Gpc}$	13.8823	$13.884 \pm 0.021$ (−0.7 $\sigma$ )	$\chi_{lensing}^2$	8.739	$9.10 \pm 0.56$ (−0.2 $\sigma$ )
$A_{217}^{dustTT}$	95.0	$93.7 \pm 7.4$ (+0.0 $\sigma$ )	$z_{drag}$	1060.009	$1059.98 \pm 0.29$ (+1.2 $\sigma$ )	$\chi_{BKPLANCK}^2$	735.50	$739.8 \pm 2.6$ (+0.0 $\sigma$ )
$A_{100}^{dustTE}$	0.1147	$0.115 \pm 0.038$	$r_{drag}$	147.185	$147.21 \pm 0.23$ (−0.9 $\sigma$ )	$\chi_{simall}^2$	396.42	$397.5 \pm 2.0$ (+0.1 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1352	$0.135 \pm 0.029$	$k_D$	0.140812	$0.14077 \pm 0.00028$ (+1.1 $\sigma$ )	$\chi_{lowl}^2$	23.54	$24.1 \pm 1.0$ (+0.0 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.479	$0.482 \pm 0.085$	$100\theta_D$	0.160713	$0.16074 \pm 0.00017$ (−1.2 $\sigma$ )	$\chi_{plik}^2$	2344.7	$2359.0 \pm 5.6$ (+299.2 $\sigma$ )
$A_{143}^{dustTE}$	0.226	$0.226 \pm 0.054$	$z_{eq}$	3389.6	$3389 \pm 21$ (+0.4 $\sigma$ )	$\chi_{6DF}^2$	0.0372	$0.058 \pm 0.064$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.666	$0.666 \pm 0.080$	$k_{eq}$	0.010345	$0.010343 \pm 0.000065$ (+0.4 $\sigma$ )	$\chi_{MGS}^2$	1.156	$1.22 \pm 0.39$ (−0.0 $\sigma$ )
$A_{217}^{dustTE}$	2.075	$2.08 \pm 0.27$	$100\theta_{eq}$	0.81578	$0.8159 \pm 0.0040$ (−0.2 $\sigma$ )	$\chi_{DR12BAO}^2$	4.61	$4.9 \pm 1.4$ (−0.0 $\sigma$ )
$c_{100}$	0.99969	$0.99967 \pm 0.00062$ (+0.1 $\sigma$ )	$100\theta_{s,eq}$	0.45064	$0.4507 \pm 0.0021$ (−0.3 $\sigma$ )	$\chi_{prior}^2$	1.96	$13.3 \pm 4.8$ (+1.1 $\sigma$ )
$c_{217}$	0.99818	$0.99819 \pm 0.00062$ (−0.1 $\sigma$ )	$H(0.15)$	72.917	$72.91 \pm 0.37$ (+0.3 $\sigma$ )	$\chi_{CMB}^2$	3508.9	$3529.5 \pm 6.4$ (+258.6 $\sigma$ )
$H_0$	67.632	$67.63 \pm 0.42$ (+0.3 $\sigma$ )	$D_M(0.15)$	641.01	$641.1 \pm 3.6$ (−0.3 $\sigma$ )	$\chi_{BAO}^2$	5.80	$6.2 \pm 1.1$ (−0.0 $\sigma$ )
$\Omega_\Lambda$	0.6885	$0.6885 \pm 0.0057$ (+0.1 $\sigma$ )	$H(0.38)$	83.038	$83.03 \pm 0.27$ (+0.4 $\sigma$ )			
$\Omega_m$	0.3115	$0.3115 \pm 0.0057$ (−0.1 $\sigma$ )	$D_M(0.38)$	1528.8	$1528.9 \pm 7.3$ (−0.3 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 3516.64$ ;  $\Delta\chi_{eff}^2 = 1585.87$ ;  $\bar{\chi}_{eff}^2 = 3549.03$ ;  $\Delta\bar{\chi}_{eff}^2 = 1592.16$ ;  $R - 1 = 0.00581$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.04 ( $\Delta$  -0.01) MGS: 1.16 ( $\Delta$  0.06) DR12BAO: 4.61 ( $\Delta$  -0.17) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.74 ( $\Delta$  -0.07) BK15\_dust: 735.50 ( $\Delta$  0.03) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.42 ( $\Delta$  0.22) commander\_dx12\_v3.2.29: 23.54 ( $\Delta$  -0.06) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.67



17.72 base\_r\_plikHM\_TTTEEE\_lowl\_lowE\_BK15\_lensing\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02236 \pm 0.00014 \quad (+1.2\sigma)$	$\Omega_{\Lambda}$	$0.6842 \pm 0.0072 \quad (+0.3\sigma)$	$H(0.15)$	$72.65 \pm 0.45 \quad (+0.5\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1201 \pm 0.0012 \quad (-0.2\sigma)$	$\Omega_{\mathrm{m}}$	$0.3158 \pm 0.0072 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.15)$	$643.7 \pm 4.5 \quad (-0.5\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04092 \pm 0.00031 \quad (+0.3\sigma)$	$\Omega_{\mathrm{m}}h^2$	$0.1431 \pm 0.0011 \quad (-0.0\sigma)$	$H(0.38)$	$82.84 \pm 0.33 \quad (+0.6\sigma)$
$\tau$	$0.0554^{+0.0054}_{-0.0078} \quad (+0.3\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09632 \pm 0.00029 \quad (+1.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1534.1 \pm 9.1 \quad (-0.5\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.047^{+0.011}_{-0.015} \quad (+0.3\sigma)$	$\sigma_8$	$0.8126 \pm 0.0056 \quad (+0.1\sigma)$	$H(0.51)$	$89.61 \pm 0.26 \quad (+0.7\sigma)$
$n_{\mathrm{s}}$	$0.9652 \pm 0.0040 \quad (+0.3\sigma)$	$S_8$	$0.834 \pm 0.013 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1987 \pm 11 \quad (-0.5\sigma)$
$r$	$0.0270^{+0.0065}_{-0.027} \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4566 \pm 0.0069 \quad (-0.2\sigma)$	$H(0.61)$	$95.26 \pm 0.21 \quad (+0.8\sigma)$
$y_{\mathrm{cal}}$	$1.0009 \pm 0.0025 \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6092 \pm 0.0063 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.61)$	$2311 \pm 11 \quad (-0.6\sigma)$
$A_{B,\mathrm{dust}}$	$4.86^{+0.81}_{-1.2} \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.9905 \pm 0.0088 \quad (-0.2\sigma)$	$H(2.33)$	$236.60 \pm 0.70 \quad (+0.1\sigma)$
$A_{B,\mathrm{sync}}$	$1.64^{+0.53}_{-1.3} \quad (+0.0\sigma)$	$r_{\mathrm{drag}}h$	$99.02 \pm 0.91 \quad (+0.3\sigma)$	$D_{\mathrm{M}}(2.33)$	$5764 \pm 10 \quad (-0.9\sigma)$
$\alpha_{B,\mathrm{dust}}$	$-0.56^{+0.22}_{-0.32} \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.449 \pm 0.021 \quad (-0.1\sigma)$	$f\sigma_8(0.15)$	$0.4609 \pm 0.0064 \quad (-0.2\sigma)$
$\beta_{B,\mathrm{dust}}$	$1.597 \pm 0.096 \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.79^{+0.59}_{-0.75} \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.7505^{+0.0046}_{-0.0053} \quad (+0.1\sigma)$
$\alpha_{B,\mathrm{sync}}$	—	$10^9A_{\mathrm{s}}$	$2.106^{+0.024}_{-0.031} \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4783 \pm 0.0051 \quad (-0.2\sigma)$
$\beta_{B,\mathrm{sync}}$	$-3.10 \pm 0.28 \quad (-0.0\sigma)$	$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.884 \pm 0.011 \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.6648^{+0.0039}_{-0.0047} \quad (+0.2\sigma)$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$-0.34 \pm 0.29 \quad (+0.0\sigma)$	$D_{40}$	$1241 \pm 13 \quad (-0.0\sigma)$	$f\sigma_8(0.51)$	$0.4764 \pm 0.0045 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$D_{220}$	$5734 \pm 38 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.6220^{+0.0036}_{-0.0045} \quad (+0.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2541 \pm 13 \quad (+0.3\sigma)$	$f\sigma_8(0.61)$	$0.4711 \pm 0.0040 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$D_{1420}$	$817.7 \pm 4.7 \quad (+0.6\sigma)$	$\sigma_8(0.61)$	$0.5917^{+0.0034}_{-0.0043} \quad (+0.3\sigma)$
$A_{100}^{\mathrm{PS}}$	$259 \pm 28 \quad (-0.2\sigma)$	$D_{2000}$	$231.0 \pm 1.6 \quad (+0.7\sigma)$	$f\sigma_8(2.33)$	$0.2982^{+0.0018}_{-0.0022} \quad (+0.3\sigma)$
$A_{143}^{\mathrm{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$n_{\mathrm{s},0.002}$	$0.9652 \pm 0.0040 \quad (+0.3\sigma)$	$\sigma_8(2.33)$	$0.3072^{+0.0019}_{-0.0024} \quad (+0.4\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245390^{+0.000060}_{-0.000052} \quad (+1.1\sigma)$	$r_{0.002}$	$< 0.0303 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246716^{+0.000060}_{-0.000053} \quad (+1.1\sigma)$	$r_{0.01}$	$< 0.0318 \quad (+0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.20 \quad (-0.2\sigma)$	$10^5\mathrm{D}/\mathrm{H}$	$2.588 \pm 0.027 \quad (-1.2\sigma)$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.89^{+1.1}_{-0.42} \quad (+0.1\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8 \quad (+0.0\sigma)$	Age/Gyr	$13.799 \pm 0.023 \quad (-0.9\sigma)$	$r_{10}$	$< 0.0155 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$z_*$	$1089.94 \pm 0.25 \quad (-1.0\sigma)$	$10^9A_{\mathrm{t}}$	$0.057^{+0.014}_{-0.057} \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.3 \quad (+0.1\sigma)$	$r_*$	$144.42 \pm 0.26 \quad (-0.3\sigma)$	$10^9A_{\mathrm{t}}e^{-2\tau}$	$0.051^{+0.012}_{-0.051} \quad (+0.1\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.7 \pm 7.3 \quad (+0.0\sigma)$	$100\theta_*$	$1.04110 \pm 0.00030 \quad (+0.2\sigma)$	$f_{2000}^{143}$	$29.5 \pm 2.7 \quad (-0.6\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.115 \pm 0.038$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.872 \pm 0.024 \quad (-0.4\sigma)$	$f_{2000}^{143 \times 217}$	$32.2 \pm 1.8 \quad (-0.7\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.029$	$z_{\mathrm{drag}}$	$1059.92 \pm 0.29 \quad (+1.2\sigma)$	$f_{2000}^{217}$	$107.0 \pm 1.8 \quad (-0.6\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.482 \pm 0.085$	$r_{\mathrm{drag}}$	$147.08 \pm 0.26 \quad (-0.5\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.27 \pm 0.73 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.226 \pm 0.054$	$k_{\mathrm{D}}$	$0.14087 \pm 0.00029 \quad (+0.9\sigma)$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.6 \pm 2.6 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.667 \pm 0.080$	$100\theta_{\mathrm{D}}$	$0.16077 \pm 0.00017 \quad (-1.2\sigma)$	$\chi_{\mathrm{small}}^2$	$397.2 \pm 1.8 \quad (+0.2\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.09 \pm 0.27$	$z_{\mathrm{eq}}$	$3404 \pm 26 \quad (-0.0\sigma)$	$\chi_{\mathrm{lowl}}^2$	$24.4 \pm 1.1 \quad (-0.1\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010388 \pm 0.000080 \quad (-0.0\sigma)$	$\chi_{\mathrm{plik}}^2$	$2358.9 \pm 5.6 \quad (+303.3\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8130 \pm 0.0050 \quad (+0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$13.2 \pm 4.8 \quad (+1.1\sigma)$
$H_0$	$67.32 \pm 0.53 \quad (+0.5\sigma)$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4493 \pm 0.0025 \quad (+0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$3529.3 \pm 6.4 \quad (+260.3\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 3542.49; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.38; R - 1 = 0.00477$$



17.73 base\_r\_plikHM\_TTTEEE\_lowl\_lowE\_BK15\_lensing\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02241 \pm 0.00013 \quad (+1.1\sigma)$	$\Omega_{\mathrm{m}}h^2$	$0.14244 \pm 0.00089 \quad (+0.4\sigma)$	$H(0.51)$	$89.76 \pm 0.22 \quad (+0.6\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.11938 \pm 0.00093 \quad (+0.2\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09633 \pm 0.00029 \quad (+1.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1980.4 \pm 8.5 \quad (-0.3\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04101 \pm 0.00030 \quad (+0.1\sigma)$	$\sigma_8$	$0.8115^{+0.0053}_{-0.0060} \quad (+0.2\sigma)$	$H(0.61)$	$95.38 \pm 0.18 \quad (+0.7\sigma)$
$\tau$	$0.0571^{+0.0059}_{-0.0075} \quad (+0.1\sigma)$	$S_8$	$0.827 \pm 0.011 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2304.5 \pm 9.2 \quad (-0.4\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.049^{+0.012}_{-0.014} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4529 \pm 0.0058 \quad (+0.1\sigma)$	$H(2.33)$	$236.20 \pm 0.57 \quad (+0.5\sigma)$
$n_{\mathrm{s}}$	$0.9668 \pm 0.0036 \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6062 \pm 0.0056 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5759.3 \pm 8.8 \quad (-0.8\sigma)$
$r$	$< 0.0346 \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9868 \pm 0.0082 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4575 \pm 0.0054 \quad (+0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0010 \pm 0.0025 \quad (+0.0\sigma)$	$r_{\mathrm{drag}}h$	$99.57 \pm 0.72 \quad (-0.0\sigma)$	$\sigma_8(0.15)$	$0.7499^{+0.0047}_{-0.0055} \quad (+0.2\sigma)$
$A_{B,\mathrm{dust}}$	$4.86^{+0.82}_{-1.2} \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.441 \pm 0.020 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4758 \pm 0.0045 \quad (+0.1\sigma)$
$A_{B,\mathrm{sync}}$	$1.62^{+0.53}_{-1.4} \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.93^{+0.62}_{-0.72} \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.6648^{+0.0041}_{-0.0048} \quad (+0.2\sigma)$
$\alpha_{B,\mathrm{dust}}$	$-0.56^{+0.21}_{-0.32} \quad (-0.0\sigma)$	$10^9A_{\mathrm{s}}$	$2.110^{+0.025}_{-0.031} \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4745 \pm 0.0041 \quad (+0.1\sigma)$
$\beta_{B,\mathrm{dust}}$	$1.596 \pm 0.097 \quad (-0.0\sigma)$	$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.882 \pm 0.010 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6221^{+0.0038}_{-0.0046} \quad (+0.2\sigma)$
$\alpha_{B,\mathrm{sync}}$	—	$D_{40}$	$1239 \pm 12 \quad (+0.1\sigma)$	$f\sigma_8(0.61)$	$0.4695 \pm 0.0038 \quad (+0.2\sigma)$
$\beta_{B,\mathrm{sync}}$	$-3.10 \pm 0.28 \quad (+0.0\sigma)$	$D_{220}$	$5740 \pm 38 \quad (+0.4\sigma)$	$\sigma_8(0.61)$	$0.5920^{+0.0036}_{-0.0044} \quad (+0.2\sigma)$
$\epsilon_{\mathrm{dust},\mathrm{sync}}$	$-0.34 \pm 0.29 \quad (-0.0\sigma)$	$D_{810}$	$2541 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(2.33)$	$0.2985^{+0.0019}_{-0.0022} \quad (+0.2\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$D_{1420}$	$818.4 \pm 4.7 \quad (+0.5\sigma)$	$\sigma_8(2.33)$	$0.3077^{+0.0020}_{-0.0024} \quad (+0.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{2000}$	$231.3 \pm 1.5 \quad (+0.7\sigma)$	$r_{0.002}$	$< 0.0315 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.9668 \pm 0.0036 \quad (+0.2\sigma)$	$r_{0.01}$	$< 0.0330 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$258 \pm 28 \quad (-0.2\sigma)$	$Y_{\mathrm{P}}$	$0.245410^{+0.000054}_{-0.000047} \quad (+1.1\sigma)$	$\ln(10^{10}A_{\mathrm{t}})$	$-0.86^{+1.1}_{-0.42} \quad (+0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.4\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246736^{+0.000055}_{-0.000047} \quad (+1.1\sigma)$	$r_{10}$	$< 0.0161 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$10^5\mathrm{D}/\mathrm{H}$	$2.578 \pm 0.024 \quad (-1.1\sigma)$	$10^9A_{\mathrm{t}}$	$0.059^{+0.014}_{-0.059} \quad (+0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.788 \pm 0.020 \quad (-0.8\sigma)$	$10^9A_{\mathrm{t}}e^{-2\tau}$	$0.052^{+0.013}_{-0.052} \quad (+0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.15 \quad (-0.2\sigma)$	$z_*$	$1089.81 \pm 0.21 \quad (-0.9\sigma)$	$f_{2000}^{143}$	$29.2 \pm 2.7 \quad (-0.5\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$r_*$	$144.56 \pm 0.22 \quad (-0.8\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 1.8 \quad (-0.6\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$100\theta_*$	$1.04119 \pm 0.00029 \quad (+0.0\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.8 \quad (-0.5\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.884 \pm 0.021 \quad (-0.7\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.08 \pm 0.54 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.7 \pm 7.4 \quad (+0.0\sigma)$	$z_{\mathrm{drag}}$	$1059.99 \pm 0.29 \quad (+1.2\sigma)$	$\chi_{\mathrm{BKPLANCK}}^2$	$739.8 \pm 2.6 \quad (+0.0\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.115 \pm 0.038$	$r_{\mathrm{drag}}$	$147.21 \pm 0.23 \quad (-0.9\sigma)$	$\chi_{\mathrm{simall}}^2$	$397.5 \pm 2.0 \quad (+0.1\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.029$	$k_{\mathrm{D}}$	$0.14077 \pm 0.00028 \quad (+1.1\sigma)$	$\chi_{\mathrm{lowl}}^2$	$24.1 \pm 1.0 \quad (+0.0\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.482 \pm 0.085$	$100\theta_{\mathrm{D}}$	$0.16074 \pm 0.00017 \quad (-1.2\sigma)$	$\chi_{\mathrm{plik}}^2$	$2358.9 \pm 5.6 \quad (+298.9\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.226 \pm 0.054$	$z_{\mathrm{eq}}$	$3388 \pm 21 \quad (+0.4\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.057 \pm 0.063 \quad (-0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.666 \pm 0.080$	$k_{\mathrm{eq}}$	$0.010342 \pm 0.000065 \quad (+0.4\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.22 \pm 0.39 \quad (-0.0\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.08 \pm 0.27$	$100\theta_{\mathrm{eq}}$	$0.8160 \pm 0.0040 \quad (-0.2\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 \pm 1.4 \quad (-0.0\sigma)$
$c_{100}$	$0.99967 \pm 0.00062 \quad (+0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4508 \pm 0.0020 \quad (-0.3\sigma)$	$\chi_{\mathrm{prior}}^2$	$13.3 \pm 4.8 \quad (+1.1\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$H(0.15)$	$72.92 \pm 0.36 \quad (+0.3\sigma)$	$\chi_{\mathrm{CMB}}^2$	$3529.4 \pm 6.4 \quad (+259.4\sigma)$
$H_0$	$67.64 \pm 0.42 \quad (+0.3\sigma)$	$D_{\mathrm{M}}(0.15)$	$641.0 \pm 3.6 \quad (-0.3\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.1 \quad (-0.0\sigma)$
$\Omega_{\Lambda}$	$0.6886 \pm 0.0057 \quad (+0.0\sigma)$	$H(0.38)$	$83.04 \pm 0.27 \quad (+0.4\sigma)$		
$\Omega_{\mathrm{m}}$	$0.3114 \pm 0.0057 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1528.8 \pm 7.2 \quad (-0.3\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 3548.89; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.17; R - 1 = 0.00600$$



# 18 w

## 18.1 base\_w\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022222	$0.02215 \pm 0.00022$	$\sigma_8 \Omega_m^{0.5}$	0.4077	$0.431^{+0.016}_{-0.023}$	$100\theta_{s,eq}$	0.44903	$0.4487 \pm 0.0046$
$\Omega_c h^2$	0.12025	$0.1205 \pm 0.0021$	$\sigma_8 \Omega_m^{0.25}$	0.6626	$0.643^{+0.023}_{-0.018}$	$H(0.15)$	88.71	$81.8^{+6.6}_{-2.8}$
$100\theta_{MC}$	1.040876	$1.04080 \pm 0.00047$	$\sigma_8/h^{0.5}$	1.0772	$1.045^{+0.037}_{-0.026}$	$D_M(0.15)$	480.8	$547^{+20}_{-65}$
$\tau$	0.0523	$0.0516 \pm 0.0079$	$r_{drag}h$	147.1	$125^{+20}_{-8}$	$H(0.38)$	84.31	$84.0^{+1.1}_{-0.89}$
$w_0$	-1.971	$-1.56^{+0.19}_{-0.39}$	$\langle d^2 \rangle^{1/2}$	2.5278	$2.504^{+0.048}_{-0.042}$	$D_M(0.38)$	1288	$1386^{+34}_{-98}$
$\ln(10^{10} A_s)$	3.0403	$3.039 \pm 0.016$	$z_{re}$	7.44	$7.38^{+0.83}_{-0.72}$	$H(0.51)$	86.62	$88.1^{+1.4}_{-0.86}$
$n_s$	0.9647	$0.9630 \pm 0.0057$	$10^9 A_s$	2.0912	$2.088 \pm 0.034$	$D_M(0.51)$	1745	$1840^{+35}_{-97}$
$y_{cal}$	1.00031	$1.0004 \pm 0.0024$	$10^9 A_s e^{-2\tau}$	1.8835	$1.884 \pm 0.013$	$H(0.61)$	90.06	$92.4^{+1.6}_{-1.9}$
$A_{217}^{CIB}$	48.3	$48 \pm 7$	$D_{40}$	1225.0	$1230 \pm 15$	$D_M(0.61)$	2085	$2172^{+34}_{-92}$
$\xi^{tSZ \times CIB}$	0.38	—	$D_{220}$	5717.3	$5716 \pm 41$	$H(2.33)$	230.54	$232.3^{+1.4}_{-2.7}$
$A_{143}^{tSZ}$	6.98	$5.1 \pm 2.0$	$D_{810}$	2537.0	$2535 \pm 13$	$D_M(2.33)$	5737.5	$5750^{+18}_{-23}$
$A_{100}^{PS}$	253.0	$263 \pm 28$	$D_{1420}$	815.4	$814.0 \pm 5.0$	$f\sigma_8(0.15)$	0.5108	$0.491 \pm 0.021$
$A_{143}^{PS}$	49.1	$49 \pm 8$	$D_{2000}$	230.40	$229.7 \pm 1.8$	$\sigma_8(0.15)$	1.015	$0.901^{+0.11}_{-0.052}$
$A_{143 \times 217}^{PS}$	47.5	$43 \pm 9$	$n_{s,0.002}$	0.9647	$0.9630 \pm 0.0057$	$f\sigma_8(0.38)$	0.648	$0.574^{+0.066}_{-0.045}$
$A_{217}^{PS}$	119.3	$115 \pm 10$	$Y_P$	0.245335	$0.24530^{+0.00010}_{-0.000082}$	$\sigma_8(0.38)$	0.908	$0.803^{+0.099}_{-0.046}$
$A^{kSZ}$	0.00	$< 4.73$	$Y_P^{BBN}$	0.246661	$0.24663^{+0.00010}_{-0.000082}$	$f\sigma_8(0.51)$	0.680	$0.590^{+0.080}_{-0.049}$
$A_{100}^{dustTT}$	8.88	$8.9 \pm 1.8$	$10^5 D/H$	2.6136	$2.627 \pm 0.042$	$\sigma_8(0.51)$	0.849	$0.751^{+0.092}_{-0.042}$
$A_{143}^{dustTT}$	10.76	$10.7 \pm 1.8$	Age/Gyr	13.451	$13.592^{+0.055}_{-0.15}$	$f\sigma_8(0.61)$	0.685	$0.591^{+0.086}_{-0.048}$
$A_{143 \times 217}^{dustTT}$	19.35	$18.2 \pm 3.3$	$z_*$	1090.128	$1090.24 \pm 0.40$	$\sigma_8(0.61)$	0.805	$0.713^{+0.087}_{-0.039}$
$A_{217}^{dustTT}$	94.5	$93.3 \pm 7.3$	$r_*$	144.479	$144.48 \pm 0.48$	$f\sigma_8(2.33)$	0.4006	$0.357^{+0.041}_{-0.017}$
$c_{100}$	0.99965	$0.99961 \pm 0.00062$	$100\theta_*$	1.041078	$1.04101 \pm 0.00046$	$\sigma_8(2.33)$	0.4011	$0.360^{+0.039}_{-0.017}$
$c_{217}$	0.99823	$0.99825 \pm 0.00063$	$D_M(z_*)/\text{Gpc}$	13.8778	$13.879 \pm 0.044$	$f_{2000}^{143}$	29.71	$30.9 \pm 2.9$
$H_0$	99.9	$> 80.4$	$z_{drag}$	1059.628	$1059.46 \pm 0.45$	$f_{2000}^{143 \times 217}$	32.74	$33.4 \pm 2.0$
$\Omega_\Lambda$	0.8566	$0.792^{+0.065}_{-0.017}$	$r_{drag}$	147.188	$147.22 \pm 0.48$	$f_{2000}^{217}$	107.21	$107.9 \pm 1.9$
$\Omega_m$	0.1434	$0.208^{+0.017}_{-0.065}$	$k_D$	0.14065	$0.14056 \pm 0.00053$	$\chi_{small}^2$	395.73	$396.8 \pm 1.6$
$\Omega_m h^2$	0.14312	$0.1433 \pm 0.0020$	$100\theta_D$	0.160950	$0.16104 \pm 0.00026$	$\chi_{lowl}^2$	22.64	$23.2 \pm 1.2$
$\Omega_m h^3$	0.1430	$0.122^{+0.019}_{-0.0092}$	$z_{eq}$	3404.7	$3408 \pm 47$	$\chi_{plik}^2$	756.6	$770.0 \pm 5.4$
$\sigma_8$	1.077	$0.963^{+0.11}_{-0.053}$	$k_{eq}$	0.010392	$0.01040 \pm 0.00014$	$\chi_{prior}^2$	1.29	$7.2 \pm 3.6$
$S_8$	0.7444	$0.787^{+0.030}_{-0.042}$	$100\theta_{eq}$	0.8124	$0.8117 \pm 0.0089$	$\chi_{CMB}^2$	1175.0	$1190.0 \pm 5.7$

Best-fit  $\chi_{eff}^2 = 1176.30$ ;  $\bar{\chi}_{eff}^2 = 1197.21$ ;  $R - 1 = 0.00888$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.73 commander\_dx12.v3.2\_29: 22.64 plik\_rd12\_HM.v22\_TT: 756.63



## 18.2 base\_w\_plikHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022274	$0.02221 \pm 0.00021$	$\sigma_8 \Omega_m^{0.25}$	0.6517	$0.635^{+0.018}_{-0.013}$	$D_M(0.15)$	479.2	$543^{+20}_{-63}$
$\Omega_c h^2$	0.11880	$0.1193 \pm 0.0016$	$\sigma_8/h^{0.5}$	1.0622	$1.034^{+0.029}_{-0.019}$	$H(0.38)$	84.97	$84.4^{+1.0}_{-0.69}$
$100\theta_{MC}$	1.040976	$1.04092 \pm 0.00045$	$r_{drag}h$	147.4	$126^{+20}_{-8}$	$D_M(0.38)$	1280	$1378^{+33}_{-97}$
$\tau$	0.0519	$0.0508 \pm 0.0078$	$\langle d^2 \rangle^{1/2}$	2.5004	$2.482^{+0.031}_{-0.028}$	$H(0.51)$	87.18	$88.5^{+1.1}_{-0.73}$
$w_0$	-1.928	$-1.54^{+0.17}_{-0.37}$	$z_{re}$	7.37	$7.27^{+0.84}_{-0.70}$	$D_M(0.51)$	1734	$1829^{+34}_{-96}$
$\ln(10^{10} A_s)$	3.0353	$3.034^{+0.015}_{-0.014}$	$10^9 A_s$	2.0807	$2.079 \pm 0.031$	$H(0.61)$	90.51	$92.7^{+1.4}_{-1.7}$
$n_s$	0.96759	$0.9654 \pm 0.0049$	$10^9 A_s e^{-2\tau}$	1.8757	$1.878 \pm 0.011$	$D_M(0.61)$	2072	$2161^{+33}_{-91}$
$y_{cal}$	1.00002	$1.0002 \pm 0.0024$	$D_{40}$	1217.1	$1223 \pm 13$	$H(2.33)$	229.51	$231.5^{+1.1}_{-2.6}$
$A_{217}^{CIB}$	48.5	$48 \pm 7$	$D_{220}$	5717.8	$5718 \pm 40$	$D_M(2.33)$	5729.4	$5743^{+15}_{-22}$
$\xi^{tSZ \times CIB}$	0.32	—	$D_{810}$	2533.5	$2533 \pm 13$	$f\sigma_8(0.15)$	0.4978	$0.482 \pm 0.015$
$A_{143}^{tSZ}$	7.03	$5.1 \pm 2.0$	$D_{1420}$	815.05	$814.1 \pm 5.0$	$\sigma_8(0.15)$	1.001	$0.893^{+0.10}_{-0.046}$
$A_{100}^{PS}$	253.3	$263 \pm 28$	$D_{2000}$	230.24	$229.7 \pm 1.8$	$f\sigma_8(0.38)$	0.6319	$0.564^{+0.059}_{-0.037}$
$A_{143}^{PS}$	48.2	$48 \pm 8$	$n_{s,0.002}$	0.96759	$0.9654 \pm 0.0049$	$\sigma_8(0.38)$	0.898	$0.798^{+0.093}_{-0.042}$
$A_{143 \times 217}^{PS}$	46.0	$43 \pm 9$	$Y_P$	0.245357	$0.245326^{+0.000094}_{-0.000079}$	$f\sigma_8(0.51)$	0.664	$0.581^{+0.073}_{-0.042}$
$A_{217}^{PS}$	118.6	$115 \pm 10$	$Y_P^{BBN}$	0.246683	$0.246652^{+0.000095}_{-0.000079}$	$\sigma_8(0.51)$	0.839	$0.746^{+0.087}_{-0.038}$
$A^{kSZ}$	0.01	$< 4.85$	$10^5 D/H$	2.6037	$2.617 \pm 0.040$	$f\sigma_8(0.61)$	0.671	$0.583^{+0.079}_{-0.042}$
$A_{100}^{dustTT}$	8.97	$9.0 \pm 1.8$	Age/Gyr	13.437	$13.576^{+0.056}_{-0.14}$	$\sigma_8(0.61)$	0.797	$0.709^{+0.082}_{-0.036}$
$A_{143}^{dustTT}$	10.84	$10.7 \pm 1.8$	$z_*$	1089.935	$1090.07 \pm 0.35$	$f\sigma_8(2.33)$	0.3973	$0.356^{+0.039}_{-0.016}$
$A_{143 \times 217}^{dustTT}$	19.40	$18.3 \pm 3.3$	$r_*$	144.816	$144.73 \pm 0.38$	$\sigma_8(2.33)$	0.3980	$0.359^{+0.036}_{-0.016}$
$A_{217}^{dustTT}$	94.5	$93.2 \pm 7.3$	$100\theta_*$	1.041175	$1.04112 \pm 0.00044$	$f_{2000}^{143}$	29.77	$30.9 \pm 2.9$
$c_{100}$	0.99967	$0.99962 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	13.9089	$13.901 \pm 0.035$	$f_{2000}^{143 \times 217}$	32.73	$33.3 \pm 2.0$
$c_{217}$	0.99825	$0.99825 \pm 0.00064$	$z_{drag}$	1059.628	$1059.51 \pm 0.45$	$f_{2000}^{217}$	107.17	$107.8 \pm 1.9$
$H_0$	99.9	$> 81.1$	$r_{drag}$	147.518	$147.45 \pm 0.39$	$\chi_{lensing}^2$	8.41	$9.0 \pm 1.2$
$\Omega_\Lambda$	0.8581	$0.796^{+0.062}_{-0.016}$	$k_D$	0.140344	$0.14036 \pm 0.00046$	$\chi_{small}^2$	395.65	$396.6 \pm 1.3$
$\Omega_m$	0.1419	$0.204^{+0.016}_{-0.062}$	$100\theta_D$	0.160939	$0.16101 \pm 0.00026$	$\chi_{lowl}^2$	22.16	$22.74 \pm 0.94$
$\Omega_m h^2$	0.14172	$0.1422 \pm 0.0015$	$z_{eq}$	3371.1	$3382 \pm 36$	$\chi_{plik}^2$	757.7	$770.3 \pm 5.3$
$\Omega_m h^3$	0.1416	$0.121^{+0.019}_{-0.0087}$	$k_{eq}$	0.010289	$0.01032 \pm 0.00011$	$\chi_{prior}^2$	1.32	$7.3 \pm 3.7$
$\sigma_8$	1.062	$0.955^{+0.098}_{-0.047}$	$100\theta_{eq}$	0.8187	$0.8165 \pm 0.0069$	$\chi_{CMB}^2$	1183.9	$1198.7 \pm 5.6$
$S_8$	0.7303	$0.774^{+0.025}_{-0.042}$	$100\theta_{s,eq}$	0.45226	$0.4512 \pm 0.0035$			
$\sigma_8 \Omega_m^{0.5}$	0.4000	$0.424^{+0.014}_{-0.023}$	$H(0.15)$	89.23	$82.3^{+6.6}_{-2.8}$			

Best-fit  $\chi_{eff}^2 = 1185.20$ ;  $\bar{\chi}_{eff}^2 = 1205.98$ ;  $R - 1 = 0.01136$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.41 simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.65 commander\_dx12\_v3.2.29: 22.16 plik\_rd12\_HM.v22.TT: 757.66



### 18.3 base\_w\_plikHM\_TT\_lowl\_lowE\_post\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022155	$0.02212 \pm 0.00021$	$\sigma_8 \Omega_m^{0.25}$	0.6270	$0.626 \pm 0.014$	$D_M(0.15)$	601.1	$602 \pm 10$
$\Omega_c h^2$	0.12060	$0.1206 \pm 0.0020$	$\sigma_8/h^{0.5}$	1.0189	$1.017 \pm 0.020$	$H(0.38)$	83.57	$83.51 \pm 0.55$
$100\theta_{MC}$	1.040794	$1.04076 \pm 0.00046$	$r_{drag}h$	108.44	$108.4 \pm 2.5$	$D_M(0.38)$	1467.9	$1469 \pm 17$
$\tau$	0.0524	$0.0512 \pm 0.0079$	$\langle d^2 \rangle^{1/2}$	2.4817	$2.481 \pm 0.042$	$H(0.51)$	89.24	$89.18 \pm 0.55$
$w_0$	-1.225	$-1.227 \pm 0.067$	$z_{re}$	7.51	$7.37^{+0.79}_{-0.71}$	$D_M(0.51)$	1919.5	$1921 \pm 19$
$\ln(10^{10} A_s)$	3.0411	$3.038 \pm 0.016$	$10^9 A_s$	2.0927	$2.087 \pm 0.034$	$H(0.61)$	94.25	$94.20 \pm 0.58$
$n_s$	0.9638	$0.9626 \pm 0.0058$	$10^9 A_s e^{-2\tau}$	1.8846	$1.884 \pm 0.013$	$D_M(0.61)$	2246.5	$2248 \pm 19$
$y_{cal}$	1.00029	$1.0003 \pm 0.0024$	$D_{40}$	1229.2	$1231 \pm 15$	$H(2.33)$	234.03	$234.0 \pm 1.1$
$A_{217}^{CIB}$	48.5	$48 \pm 7$	$D_{220}$	5711.3	$5712 \pm 38$	$D_M(2.33)$	5758.2	$5760 \pm 15$
$\xi^{tSZ \times CIB}$	0.35	—	$D_{810}$	2537.2	$2535 \pm 13$	$f\sigma_8(0.15)$	0.4756	$0.475 \pm 0.015$
$A_{143}^{tSZ}$	6.98	$5.1 \pm 2.0$	$D_{1420}$	815.2	$813.9 \pm 5.0$	$\sigma_8(0.15)$	0.8120	$0.811 \pm 0.021$
$A_{100}^{PS}$	254.4	$262 \pm 28$	$D_{2000}$	230.06	$229.5^{+1.7}_{-1.9}$	$f\sigma_8(0.38)$	0.5164	$0.516 \pm 0.018$
$A_{143}^{PS}$	49.6	$49^{+8}_{-8}$	$n_{s,0.002}$	0.9638	$0.9626 \pm 0.0058$	$\sigma_8(0.38)$	0.7213	$0.720 \pm 0.018$
$A_{143 \times 217}^{PS}$	47.6	$44 \pm 9$	$Y_P$	0.245307	$0.245286 \pm 0.000094$	$f\sigma_8(0.51)$	0.5212	$0.521 \pm 0.019$
$A_{217}^{PS}$	119.6	$115 \pm 10$	$Y_P^{BBN}$	0.246633	$0.246613 \pm 0.000094$	$\sigma_8(0.51)$	0.6747	$0.673 \pm 0.017$
$A^{kSZ}$	0.02	$< 4.77$	$10^5 D/H$	2.6266	$2.634 \pm 0.041$	$f\sigma_8(0.61)$	0.5185	$0.518 \pm 0.018$
$A_{100}^{dustTT}$	8.90	$8.9 \pm 1.8$	Age/Gyr	13.7052	$13.711 \pm 0.035$	$\sigma_8(0.61)$	0.6415	$0.640 \pm 0.016$
$A_{143}^{dustTT}$	10.82	$10.8 \pm 1.8$	$z_*$	1090.247	$1090.30 \pm 0.39$	$f\sigma_8(2.33)$	0.3232	$0.3225 \pm 0.0074$
$A_{143 \times 217}^{dustTT}$	19.30	$18.3^{+3.4}_{-3.0}$	$r_*$	144.440	$144.47 \pm 0.47$	$\sigma_8(2.33)$	0.3286	$0.3280 \pm 0.0065$
$A_{217}^{dustTT}$	94.4	$93.3 \pm 7.1$	$100\theta_*$	1.041004	$1.04097 \pm 0.00045$	$f_{2000}^{143}$	30.16	$31.1 \pm 2.9$
$c_{100}$	0.99967	$0.99963 \pm 0.00063$	$D_M(z_*)/Gpc$	13.8750	$13.878 \pm 0.044$	$f_{2000}^{143 \times 217}$	33.14	$33.6 \pm 2.0$
$c_{217}$	0.99824	$0.99828 \pm 0.00063$	$z_{drag}$	1059.475	$1059.39 \pm 0.45$	$f_{2000}^{217}$	107.55	$108.1 \pm 2.0$
$H_0$	73.68	$73.7 \pm 1.7$	$r_{drag}$	147.172	$147.21 \pm 0.48$	$\chi_{small}^2$	395.82	$396.8 \pm 1.7$
$\Omega_\Lambda$	0.7358	$0.735 \pm 0.012$	$k_D$	0.14062	$0.14054 \pm 0.00052$	$\chi_{lowl}^2$	23.23	$23.5 \pm 1.2$
$\Omega_m$	0.2642	$0.265 \pm 0.012$	$100\theta_D$	0.161022	$0.16107 \pm 0.00026$	$\chi_{plik}^2$	757.77	$770.5 \pm 5.4$
$\Omega_m h^2$	0.14340	$0.1434 \pm 0.0020$	$z_{eq}$	3411.5	$3411 \pm 47$	$\chi_{H073p45}^2$	0.019	$1.0 \pm 1.4$
$\Omega_m h^3$	0.10566	$0.1056 \pm 0.0028$	$k_{eq}$	0.010412	$0.01041 \pm 0.00014$	$\chi_{prior}^2$	1.28	$7.2 \pm 3.6$
$\sigma_8$	0.8746	$0.873 \pm 0.022$	$100\theta_{eq}$	0.8110	$0.8111 \pm 0.0087$	$\chi_{CMB}^2$	1176.8	$1190.8 \pm 5.6$
$S_8$	0.8207	$0.820 \pm 0.021$	$100\theta_{s,eq}$	0.44832	$0.4484 \pm 0.0045$			
$\sigma_8 \Omega_m^{0.5}$	0.4495	$0.449 \pm 0.012$	$H(0.15)$	76.27	$76.21 \pm 0.97$			

Best-fit  $\chi_{eff}^2 = 1178.12$ ;  $\bar{\chi}_{eff}^2 = 1198.92$ ;  $R - 1 = 0.05017$

$\chi_{eff}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.82 commander\_dx12\_v3.2\_29: 23.23 plik\_rd12\_HM\_v22\_TT: 757.77 Hubble - H073p45: 0.02



## 18.4 base\_w\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02216 \pm 0.00022$	$\sigma_8 \Omega_m^{0.5}$	$0.431^{+0.016}_{-0.023}$	$100\theta_{s,eq}$	$0.4489 \pm 0.0045$
$\Omega_c h^2$	$0.1204 \pm 0.0021$	$\sigma_8 \Omega_m^{0.25}$	$0.644^{+0.023}_{-0.018}$	$H(0.15)$	$81.8^{+6.6}_{-2.8}$
$100\theta_{MC}$	$1.04082 \pm 0.00047$	$\sigma_8/h^{0.5}$	$1.046^{+0.037}_{-0.025}$	$D_M(0.15)$	$546^{+20}_{-65}$
$\tau$	$0.0535^{+0.0044}_{-0.0079}$	$r_{drag}h$	$125^{+20}_{-8}$	$H(0.38)$	$84.0^{+1.1}_{-0.88}$
$w_0$	$-1.56^{+0.19}_{-0.39}$	$\langle d^2 \rangle^{1/2}$	$2.507^{+0.046}_{-0.041}$	$D_M(0.38)$	$1385^{+34}_{-98}$
$\ln(10^{10} A_s)$	$3.043^{+0.011}_{-0.015}$	$z_{re}$	$7.59^{+0.48}_{-0.79}$	$H(0.51)$	$88.1^{+1.4}_{-0.86}$
$n_s$	$0.9633 \pm 0.0056$	$10^9 A_s$	$2.096^{+0.023}_{-0.032}$	$D_M(0.51)$	$1839^{+35}_{-96}$
$y_{cal}$	$1.0004 \pm 0.0024$	$10^9 A_s e^{-2\tau}$	$1.883 \pm 0.013$	$H(0.61)$	$92.4^{+1.6}_{-1.9}$
$A_{217}^{CIB}$	$48 \pm 7$	$D_{40}$	$1230 \pm 15$	$D_M(0.61)$	$2171^{+34}_{-91}$
$\xi^{tSZ \times CIB}$	—	$D_{220}$	$5716 \pm 41$	$H(2.33)$	$232.3^{+1.4}_{-2.7}$
$A_{143}^{tSZ}$	$5.1 \pm 2.0$	$D_{810}$	$2535 \pm 13$	$D_M(2.33)$	$5750^{+17}_{-23}$
$A_{100}^{PS}$	$262 \pm 28$	$D_{1420}$	$814.1 \pm 5.0$	$f\sigma_8(0.15)$	$0.492 \pm 0.021$
$A_{143}^{PS}$	$49 \pm 8$	$D_{2000}$	$229.8 \pm 1.8$	$\sigma_8(0.15)$	$0.902^{+0.11}_{-0.052}$
$A_{143 \times 217}^{PS}$	$43 \pm 9$	$n_{s,0.002}$	$0.9633 \pm 0.0056$	$f\sigma_8(0.38)$	$0.574^{+0.066}_{-0.045}$
$A_{217}^{PS}$	$115 \pm 10$	$Y_P$	$0.24530^{+0.00010}_{-0.000082}$	$\sigma_8(0.38)$	$0.805^{+0.099}_{-0.046}$
$A^{kSZ}$	$< 4.69$	$Y_P^{BBN}$	$0.24663^{+0.00010}_{-0.000082}$	$f\sigma_8(0.51)$	$0.591^{+0.080}_{-0.049}$
$A_{100}^{dustTT}$	$8.9 \pm 1.8$	$10^5 D/H$	$2.626 \pm 0.041$	$\sigma_8(0.51)$	$0.752^{+0.092}_{-0.042}$
$A_{143}^{dustTT}$	$10.7 \pm 1.8$	Age/Gyr	$13.590^{+0.055}_{-0.15}$	$f\sigma_8(0.61)$	$0.592^{+0.086}_{-0.049}$
$A_{143 \times 217}^{dustTT}$	$18.2 \pm 3.3$	$z_*$	$1090.22 \pm 0.40$	$\sigma_8(0.61)$	$0.714^{+0.087}_{-0.038}$
$A_{217}^{dustTT}$	$93.3 \pm 7.3$	$r_*$	$144.50 \pm 0.48$	$f\sigma_8(2.33)$	$0.358^{+0.041}_{-0.017}$
$c_{100}$	$0.99961 \pm 0.00062$	$100\theta_*$	$1.04102 \pm 0.00046$	$\sigma_8(2.33)$	$0.361^{+0.038}_{-0.017}$
$c_{217}$	$0.99825 \pm 0.00063$	$D_M(z_*)/\text{Gpc}$	$13.880 \pm 0.044$	$f_{2000}^{143}$	$30.8 \pm 2.9$
$H_0$	$> 80.5$	$z_{drag}$	$1059.47 \pm 0.45$	$f_{2000}^{143 \times 217}$	$33.3 \pm 2.0$
$\Omega_\Lambda$	$0.792^{+0.065}_{-0.017}$	$r_{drag}$	$147.23 \pm 0.48$	$f_{2000}^{217}$	$107.9 \pm 1.9$
$\Omega_m$	$0.208^{+0.017}_{-0.065}$	$k_D$	$0.14056 \pm 0.00052$	$\chi_{simall}^2$	$396.6 \pm 1.5$
$\Omega_m h^2$	$0.1432 \pm 0.0020$	$100\theta_D$	$0.16103 \pm 0.00026$	$\chi_{lowl}^2$	$23.2 \pm 1.2$
$\Omega_m h^3$	$0.122^{+0.019}_{-0.0092}$	$z_{eq}$	$3406 \pm 47$	$\chi_{plik}^2$	$769.8 \pm 5.4$
$\sigma_8$	$0.964^{+0.11}_{-0.053}$	$k_{eq}$	$0.01040 \pm 0.00014$	$\chi_{prior}^2$	$7.2 \pm 3.6$
$S_8$	$0.787^{+0.029}_{-0.042}$	$100\theta_{eq}$	$0.8120 \pm 0.0088$	$\chi_{CMB}^2$	$1189.7 \pm 5.6$

$\bar{\chi}_{eff}^2 = 1196.88; R - 1 = 0.00979$



# 18.5 base\_w\_plikHM\_TT\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02222 \pm 0.00021$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.635^{+0.018}_{-0.013}$	$D_{\mathrm{M}}(0.15)$	$544^{+20}_{-64}$
$\Omega_{\mathrm{c}}h^2$	$0.1191 \pm 0.0015$	$\sigma_8/h^{0.5}$	$1.034^{+0.029}_{-0.019}$	$H(0.38)$	$84.5^{+1.1}_{-0.67}$
$100\theta_{\mathrm{MC}}$	$1.04094 \pm 0.00045$	$r_{\mathrm{drag}}h$	$126^{+20}_{-8}$	$D_{\mathrm{M}}(0.38)$	$1378^{+34}_{-99}$
$\tau$	$0.0530^{+0.0042}_{-0.0075}$	$\langle d^2 \rangle^{1/2}$	$2.483^{+0.031}_{-0.027}$	$H(0.51)$	$88.6^{+1.1}_{-0.70}$
$w_0$	$-1.53^{+0.17}_{-0.37}$	$z_{\mathrm{re}}$	$7.51^{+0.43}_{-0.78}$	$D_{\mathrm{M}}(0.51)$	$1830^{+35}_{-98}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.038^{+0.010}_{-0.013}$	$10^9 A_{\mathrm{s}}$	$2.087^{+0.021}_{-0.028}$	$H(0.61)$	$92.8^{+1.5}_{-1.7}$
$n_{\mathrm{s}}$	$0.9659 \pm 0.0049$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.011$	$D_{\mathrm{M}}(0.61)$	$2161^{+33}_{-93}$
$y_{\mathrm{cal}}$	$1.0002 \pm 0.0024$	$D_{40}$	$1223 \pm 13$	$H(2.33)$	$231.4^{+1.0}_{-2.6}$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{220}$	$5718 \pm 40$	$D_{\mathrm{M}}(2.33)$	$5742^{+15}_{-23}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2533 \pm 13$	$f\sigma_8(0.15)$	$0.481 \pm 0.015$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{1420}$	$814.2 \pm 5.0$	$\sigma_8(0.15)$	$0.893^{+0.10}_{-0.047}$
$A_{100}^{\mathrm{PS}}$	$262 \pm 28$	$D_{2000}$	$229.8 \pm 1.8$	$f\sigma_8(0.38)$	$0.563^{+0.059}_{-0.038}$
$A_{143}^{\mathrm{PS}}$	$48 \pm 8$	$n_{\mathrm{s},0.002}$	$0.9659 \pm 0.0049$	$\sigma_8(0.38)$	$0.797^{+0.095}_{-0.042}$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}$	$0.245330^{+0.000092}_{-0.000079}$	$f\sigma_8(0.51)$	$0.580^{+0.074}_{-0.042}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246657^{+0.000093}_{-0.000080}$	$\sigma_8(0.51)$	$0.746^{+0.089}_{-0.038}$
$A^{\mathrm{kSZ}}$	$< 4.81$	$10^5 \mathrm{D}/\mathrm{H}$	$2.615 \pm 0.039$	$f\sigma_8(0.61)$	$0.582^{+0.080}_{-0.043}$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$\mathrm{Age}/\mathrm{Gyr}$	$13.576^{+0.057}_{-0.15}$	$\sigma_8(0.61)$	$0.709^{+0.084}_{-0.036}$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$z_*$	$1090.04 \pm 0.34$	$f\sigma_8(2.33)$	$0.356^{+0.040}_{-0.016}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$r_*$	$144.77 \pm 0.37$	$\sigma_8(2.33)$	$0.359^{+0.037}_{-0.016}$
$A_{217}^{\mathrm{dust}TT}$	$93.3 \pm 7.3$	$100\theta_*$	$1.04114 \pm 0.00044$	$f_{2000}^{143}$	$30.8 \pm 3.0$
$c_{100}$	$0.99961 \pm 0.00063$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.905 \pm 0.034$	$f_{2000}^{143 \times 217}$	$33.2 \pm 2.0$
$c_{217}$	$0.99825 \pm 0.00064$	$z_{\mathrm{drag}}$	$1059.52 \pm 0.45$	$f_{2000}^{217}$	$107.8 \pm 1.9$
$H_0$	$> 80.8$	$r_{\mathrm{drag}}$	$147.49 \pm 0.38$	$\chi_{\mathrm{lensing}}^2$	$9.1 \pm 1.2$
$\Omega_{\Lambda}$	$0.795^{+0.063}_{-0.016}$	$k_{\mathrm{D}}$	$0.14033 \pm 0.00045$	$\chi_{\mathrm{simall}}^2$	$396.4 \pm 1.2$
$\Omega_{\mathrm{m}}$	$0.205^{+0.016}_{-0.063}$	$100\theta_{\mathrm{D}}$	$0.16100 \pm 0.00026$	$\chi_{\mathrm{lowl}}^2$	$22.70 \pm 0.95$
$\Omega_{\mathrm{m}}h^2$	$0.1420 \pm 0.0015$	$z_{\mathrm{eq}}$	$3378 \pm 35$	$\chi_{\mathrm{plik}}^2$	$770.2 \pm 5.3$
$\Omega_{\mathrm{m}}h^3$	$0.121^{+0.019}_{-0.0087}$	$k_{\mathrm{eq}}$	$0.01031 \pm 0.00011$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8$	$0.954^{+0.10}_{-0.047}$	$100\theta_{\mathrm{eq}}$	$0.8173 \pm 0.0067$	$\chi_{\mathrm{CMB}}^2$	$1198.3 \pm 5.5$
$S_8$	$0.774^{+0.025}_{-0.042}$	$100\theta_{\mathrm{s,eq}}$	$0.4516 \pm 0.0034$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.424^{+0.014}_{-0.023}$	$H(0.15)$	$82.2^{+6.8}_{-2.8}$		
$\bar{\chi}_{\mathrm{eff}}^2 = 1205.67; R - 1 = 0.01511$					



## 18.6 base\_w\_plikHM\_TT\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02212^{+0.00020}_{-0.00022}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.627 \pm 0.014$	$D_{\mathrm{M}}(0.15)$	$602 \pm 10$
$\Omega_{\mathrm{c}}h^2$	$0.1205 \pm 0.0020$	$\sigma_8/h^{0.5}$	$1.019 \pm 0.020$	$H(0.38)$	$83.53 \pm 0.54$
$100\theta_{\mathrm{MC}}$	$1.04076 \pm 0.00046$	$r_{\mathrm{drag}}h$	$108.4 \pm 2.5$	$D_{\mathrm{M}}(0.38)$	$1469 \pm 17$
$\tau$	$0.0531^{+0.0045}_{-0.0071}$	$\langle d^2 \rangle^{1/2}$	$2.484 \pm 0.041$	$H(0.51)$	$89.20 \pm 0.54$
$w_0$	$-1.225 \pm 0.066$	$z_{\mathrm{re}}$	$7.58^{+0.45}_{-0.76}$	$D_{\mathrm{M}}(0.51)$	$1921 \pm 18$
$\ln(10^{10}A_{\mathrm{s}})$	$3.042^{+0.010}_{-0.015}$	$10^9 A_{\mathrm{s}}$	$2.095^{+0.021}_{-0.032}$	$H(0.61)$	$94.22 \pm 0.57$
$n_{\mathrm{s}}$	$0.9630 \pm 0.0056$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.883 \pm 0.013$	$D_{\mathrm{M}}(0.61)$	$2248 \pm 19$
$y_{\mathrm{cal}}$	$1.0003 \pm 0.0024$	$D_{40}$	$1231 \pm 15$	$H(2.33)$	$234.0 \pm 1.1$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{220}$	$5712 \pm 38$	$D_{\mathrm{M}}(2.33)$	$5760 \pm 15$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2535 \pm 13$	$f\sigma_8(0.15)$	$0.476 \pm 0.015$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{1420}$	$813.9 \pm 5.0$	$\sigma_8(0.15)$	$0.812 \pm 0.021$
$A_{100}^{\mathrm{PS}}$	$262 \pm 28$	$D_{2000}$	$229.6^{+1.6}_{-1.9}$	$f\sigma_8(0.38)$	$0.516 \pm 0.018$
$A_{143}^{\mathrm{PS}}$	$49^{+8}_{-8}$	$n_{\mathrm{s},0.002}$	$0.9630 \pm 0.0056$	$\sigma_8(0.38)$	$0.721 \pm 0.018$
$A_{143 \times 217}^{\mathrm{PS}}$	$44 \pm 9$	$Y_{\mathrm{P}}$	$0.245289 \pm 0.000092$	$f\sigma_8(0.51)$	$0.521 \pm 0.018$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246616 \pm 0.000092$	$\sigma_8(0.51)$	$0.674 \pm 0.017$
$A^{\mathrm{kSZ}}$	$< 4.74$	$10^5 \mathrm{D}/\mathrm{H}$	$2.633 \pm 0.040$	$f\sigma_8(0.61)$	$0.518 \pm 0.018$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$\mathrm{Age}/\mathrm{Gyr}$	$13.710 \pm 0.035$	$\sigma_8(0.61)$	$0.641 \pm 0.015$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$z_*$	$1090.28 \pm 0.38$	$f\sigma_8(2.33)$	$0.3230 \pm 0.0073$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3^{+3.4}_{-3.0}$	$r_*$	$144.49 \pm 0.47$	$\sigma_8(2.33)$	$0.3285 \pm 0.0064$
$A_{217}^{\mathrm{dust}TT}$	$93.3 \pm 7.1$	$100\theta_*$	$1.04097 \pm 0.00045$	$f_{2000}^{143}$	$31.1 \pm 2.9$
$c_{100}$	$0.99963 \pm 0.00063$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.880 \pm 0.043$	$f_{2000}^{143 \times 217}$	$33.5 \pm 2.0$
$c_{217}$	$0.99828 \pm 0.00063$	$z_{\mathrm{drag}}$	$1059.40 \pm 0.44$	$f_{2000}^{217}$	$108.0 \pm 1.9$
$H_0$	$73.7 \pm 1.7$	$r_{\mathrm{drag}}$	$147.23 \pm 0.47$	$\chi_{\mathrm{small}}^2$	$396.6 \pm 1.6$
$\Omega_{\Lambda}$	$0.735 \pm 0.012$	$k_{\mathrm{D}}$	$0.14053 \pm 0.00052$	$\chi_{\mathrm{lowl}}^2$	$23.5 \pm 1.2$
$\Omega_{\mathrm{m}}$	$0.265 \pm 0.012$	$100\theta_{\mathrm{D}}$	$0.16107 \pm 0.00025$	$\chi_{\mathrm{plik}}^2$	$770.2 \pm 5.3$
$\Omega_{\mathrm{m}}h^2$	$0.1433 \pm 0.0019$	$z_{\mathrm{eq}}$	$3409 \pm 46$	$\chi_{\mathrm{H073p45}}^2$	$1.0 \pm 1.4$
$\Omega_{\mathrm{m}}h^3$	$0.1055 \pm 0.0028$	$k_{\mathrm{eq}}$	$0.01040 \pm 0.00014$	$\chi_{\mathrm{prior}}^2$	$7.1 \pm 3.6$
$\sigma_8$	$0.874 \pm 0.022$	$100\theta_{\mathrm{eq}}$	$0.8114 \pm 0.0086$	$\chi_{\mathrm{CMB}}^2$	$1190.3 \pm 5.5$
$S_8$	$0.820 \pm 0.021$	$100\theta_{\mathrm{s,eq}}$	$0.4486 \pm 0.0044$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.449 \pm 0.011$	$H(0.15)$	$76.23 \pm 0.97$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1198.47$ ;  $R - 1 = 0.05306$



## 18.7 base\_w\_plikHM\_TTTEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022434	$0.02239 \pm 0.00015$ (+1.1 $\sigma$ )	$\Omega_m h^2$	0.14291	$0.1430 \pm 0.0013$ (-0.1 $\sigma$ )	$k_{\text{eq}}$	0.010376	$0.010380 \pm 0.000093$ (-0.1 $\sigma$ )
$\Omega_c h^2$	0.11983	$0.1199 \pm 0.0014$ (-0.3 $\sigma$ )	$\Omega_m h^3$	0.1427	$0.124^{+0.018}_{-0.0077}$ (+0.2 $\sigma$ )	$100\theta_{\text{eq}}$	0.8140	$0.8136 \pm 0.0058$ (+0.2 $\sigma$ )
$100\theta_{\text{MC}}$	1.040967	$1.04094 \pm 0.00032$ (+0.3 $\sigma$ )	$\sigma_8$	1.072	$0.972^{+0.094}_{-0.044}$ (+0.1 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.44969	$0.4495 \pm 0.0030$ (+0.2 $\sigma$ )
$\tau$	0.0540	$0.0539 \pm 0.0079$ (+0.3 $\sigma$ )	$S_8$	0.7409	$0.777^{+0.022}_{-0.036}$ (-0.3 $\sigma$ )	$H(0.15)$	88.98	$82.9^{+5.9}_{-2.3}$ (+0.2 $\sigma$ )
$w_0$	-1.947	$-1.58^{+0.16}_{-0.35}$ (-0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4058	$0.426^{+0.012}_{-0.020}$ (-0.3 $\sigma$ )	$D_{\text{M}}(0.15)$	480.1	$537^{+17}_{-56}$ (-0.2 $\sigma$ )
$\ln(10^{10} A_s)$	3.0435	$3.043 \pm 0.016$ (+0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6596	$0.643^{+0.019}_{-0.013}$ (-0.0 $\sigma$ )	$H(0.38)$	84.72	$84.49^{+0.81}_{-0.58}$ (+0.5 $\sigma$ )
$n_s$	0.96668	$0.9654 \pm 0.0043$ (+0.4 $\sigma$ )	$\sigma_8/h^{0.5}$	1.0728	$1.045^{+0.030}_{-0.019}$ (-0.0 $\sigma$ )	$D_{\text{M}}(0.38)$	1284	$1368^{+28}_{-84}$ (-0.2 $\sigma$ )
$y_{\text{cal}}$	1.00030	$1.0005 \pm 0.0025$ (+0.1 $\sigma$ )	$r_{\text{drag}} h$	146.9	$127^{+20}_{-7}$ (+0.2 $\sigma$ )	$H(0.51)$	87.01	$88.4^{+1.2}_{-0.82}$ (+0.2 $\sigma$ )
$A_{217}^{\text{CIB}}$	45.5	$46 \pm 7$ (-0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.5215	$2.501^{+0.037}_{-0.031}$ (-0.1 $\sigma$ )	$D_{\text{M}}(0.51)$	1739	$1820^{+28}_{-82}$ (-0.3 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.67	—	$z_{\text{re}}$	7.57	$7.57 \pm 0.80$ (+0.2 $\sigma$ )	$H(0.61)$	90.41	$92.5^{+1.2}_{-1.9}$ (+0.1 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.02	$5.5^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$10^9 A_s$	2.0978	$2.098 \pm 0.034$ (+0.3 $\sigma$ )	$D_{\text{M}}(0.61)$	2077	$2151^{+27}_{-77}$ (-0.3 $\sigma$ )
$A_{100}^{\text{PS}}$	247.5	$257 \pm 28$ (-0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8831	$1.883 \pm 0.012$ (-0.0 $\sigma$ )	$H(2.33)$	230.42	$231.86^{+0.89}_{-2.1}$ (-0.2 $\sigma$ )
$A_{143}^{\text{PS}}$	49.8	$46 \pm 8$ (-0.4 $\sigma$ )	$D_{40}$	1223.0	$1227 \pm 13$ (-0.2 $\sigma$ )	$D_{\text{M}}(2.33)$	5726.0	$5735^{+12}_{-16}$ (-0.7 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	52.9	$43 \pm 9$ (-0.1 $\sigma$ )	$D_{220}$	5733.8	$5735 \pm 39$ (+0.5 $\sigma$ )	$f\sigma_8(0.15)$	0.5064	$0.489^{+0.017}_{-0.015}$ (-0.1 $\sigma$ )
$A_{217}^{\text{PS}}$	122.0	$116 \pm 10$ (+0.0 $\sigma$ )	$D_{810}$	2539.6	$2539 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	1.011	$0.911^{+0.095}_{-0.043}$ (+0.1 $\sigma$ )
$A^{\text{kSZ}}$	0.01	$< 4.00$ (-0.2 $\sigma$ )	$D_{1420}$	817.83	$816.9 \pm 4.8$ (+0.6 $\sigma$ )	$f\sigma_8(0.38)$	0.6421	$0.576^{+0.059}_{-0.035}$ (+0.1 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.80	$8.9 \pm 1.8$ (-0.0 $\sigma$ )	$D_{2000}$	231.54	$231.1 \pm 1.6$ (+0.8 $\sigma$ )	$\sigma_8(0.38)$	0.905	$0.813^{+0.088}_{-0.039}$ (+0.1 $\sigma$ )
$A_{143}^{\text{dustTT}}$	10.97	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$n_{\text{s},0.002}$	0.96668	$0.9654 \pm 0.0043$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.674	$0.595^{+0.072}_{-0.039}$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	19.99	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\text{P}}$	0.245420	$0.245402 \pm 0.000057$ (+1.1 $\sigma$ )	$\sigma_8(0.51)$	0.846	$0.760^{+0.082}_{-0.035}$ (+0.1 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.4	$93.7 \pm 7.3$ (+0.1 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.246747	$0.246729 \pm 0.000058$ (+1.1 $\sigma$ )	$f\sigma_8(0.61)$	0.680	$0.597^{+0.077}_{-0.039}$ (+0.1 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1150	$0.114 \pm 0.038$	$10^5 \text{D/H}$	2.5737	$2.582 \pm 0.027$ (-1.1 $\sigma$ )	$\sigma_8(0.61)$	0.803	$0.722^{+0.077}_{-0.033}$ (+0.1 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1341	$0.135 \pm 0.029$	Age/Gyr	13.427	$13.544^{+0.043}_{-0.12}$ (-0.4 $\sigma$ )	$f\sigma_8(2.33)$	0.3998	$0.362^{+0.036}_{-0.015}$ (+0.2 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.480	$0.482 \pm 0.085$	$z_*$	1089.824	$1089.89 \pm 0.27$ (-0.9 $\sigma$ )	$\sigma_8(2.33)$	0.4004	$0.365^{+0.034}_{-0.015}$ (+0.2 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.225	$0.225 \pm 0.054$	$r_*$	144.427	$144.43 \pm 0.30$ (-0.1 $\sigma$ )	$f_{2000}^{143}$	28.05	$29.1 \pm 2.7$ (-0.6 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.665	$0.665 \pm 0.080$	$100\theta_*$	1.041140	$1.04112 \pm 0.00031$ (+0.2 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.50	$31.9 \pm 1.9$ (-0.7 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.084	$2.08 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8720	$13.873 \pm 0.028$ (-0.1 $\sigma$ )	$f_{2000}^{217}$	106.10	$106.8 \pm 1.8$ (-0.6 $\sigma$ )
$c_{100}$	0.99973	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$z_{\text{drag}}$	1060.085	$1059.98 \pm 0.30$ (+1.1 $\sigma$ )	$\chi_{\text{small}}^2$	395.85	$397.0 \pm 1.8$ (+0.1 $\sigma$ )
$c_{217}$	0.99819	$0.99818 \pm 0.00063$ (-0.1 $\sigma$ )	$r_{\text{drag}}$	147.065	$147.09 \pm 0.30$ (-0.3 $\sigma$ )	$\chi_{\text{lowl}}^2$	22.44	$22.87 \pm 0.85$ (-0.3 $\sigma$ )
$H_0$	99.9	$> 82.6$ (+0.2 $\sigma$ )	$k_{\text{D}}$	0.140942	$0.14089 \pm 0.00032$ (+0.6 $\sigma$ )	$\chi_{\text{plik}}^2$	2341.6	$2357.3 \pm 5.8$ (+293.0 $\sigma$ )
$\Omega_{\Lambda}$	0.8567	$0.802^{+0.055}_{-0.014}$ (+0.2 $\sigma$ )	$100\theta_{\text{D}}$	0.160683	$0.16073 \pm 0.00017$ (-1.1 $\sigma$ )	$\chi_{\text{prior}}^2$	1.51	$11.5 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_{\text{m}}$	0.1433	$0.198^{+0.014}_{-0.055}$ (-0.2 $\sigma$ )	$z_{\text{eq}}$	3399.6	$3401 \pm 31$ (-0.1 $\sigma$ )	$\chi_{\text{CMB}}^2$	2759.9	$2777.1 \pm 5.9$ (+280.8 $\sigma$ )

Best-fit  $\chi_{\text{eff}}^2 = 2761.37$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.07$ ;  $\bar{\chi}_{\text{eff}}^2 = 2788.65$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.44$ ;  $R - 1 = 0.00965$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.85 ( $\Delta$  0.12) commander\_dx12\_v3.2.29: 22.45 ( $\Delta$  -0.20) plik\_rd12\_HM\_v22b\_TTTEE: 2341.57



## 18.8 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022465	$0.02243 \pm 0.00015$ (+1.0 $\sigma$ )	$\Omega_m h^3$	0.1420	$0.123^{+0.017}_{-0.0081}$ (+0.1 $\sigma$ )	$100\theta_{s,eq}$	0.45136	$0.4508 \pm 0.0026$ (−0.1 $\sigma$ )
$\Omega_c h^2$	0.11907	$0.1193 \pm 0.0012$ (+0.0 $\sigma$ )	$\sigma_8$	1.062	$0.964^{+0.090}_{-0.044}$ (+0.1 $\sigma$ )	$H(0.15)$	89.25	$83.0^{+5.9}_{-2.5}$ (+0.1 $\sigma$ )
$100\theta_{MC}$	1.040998	$1.04099 \pm 0.00031$ (+0.2 $\sigma$ )	$S_8$	0.7324	$0.771^{+0.021}_{-0.036}$ (−0.1 $\sigma$ )	$D_M(0.15)$	479.3	$537^{+18}_{-56}$ (−0.1 $\sigma$ )
$\tau$	0.0523	$0.0523 \pm 0.0074$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4011	$0.422^{+0.012}_{-0.020}$ (−0.1 $\sigma$ )	$H(0.38)$	85.07	$84.72^{+0.81}_{-0.53}$ (+0.3 $\sigma$ )
$w_0$	−1.925	$-1.57^{+0.16}_{-0.33}$ (−0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6528	$0.637^{+0.016}_{-0.011}$ (+0.1 $\sigma$ )	$D_M(0.38)$	1280	$1366^{+30}_{-84}$ (−0.2 $\sigma$ )
$\ln(10^{10} A_s)$	3.0373	$3.038 \pm 0.014$ (+0.3 $\sigma$ )	$\sigma_8/h^{0.5}$	1.0631	$1.037^{+0.027}_{-0.016}$ (+0.1 $\sigma$ )	$H(0.51)$	87.31	$88.6^{+1.1}_{-0.70}$ (+0.1 $\sigma$ )
$n_s$	0.96834	$0.9666 \pm 0.0041$ (+0.2 $\sigma$ )	$r_{drag} h$	147.0	$127^{+20}_{-8}$ (+0.1 $\sigma$ )	$D_M(0.51)$	1733	$1816^{+31}_{-82}$ (−0.2 $\sigma$ )
$y_{cal}$	1.00007	$1.0003 \pm 0.0025$ (+0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.5024	$2.485^{+0.028}_{-0.024}$ (+0.1 $\sigma$ )	$H(0.61)$	90.65	$92.7^{+1.3}_{-1.7}$ (+0.0 $\sigma$ )
$A_{217}^{CIB}$	46.3	$47 \pm 7$ (−0.2 $\sigma$ )	$z_{re}$	7.37	$7.39 \pm 0.76$ (+0.1 $\sigma$ )	$D_M(0.61)$	2071	$2147^{+29}_{-77}$ (−0.2 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.57	—	$10^9 A_s$	2.0849	$2.087 \pm 0.030$ (+0.3 $\sigma$ )	$H(2.33)$	229.89	$231.49^{+0.81}_{-2.1}$ (−0.0 $\sigma$ )
$A_{143}^{tSZ}$	7.18	$5.5 \pm 2.0$ (+0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8779	$1.879 \pm 0.011$ (+0.1 $\sigma$ )	$D_M(2.33)$	5721.7	$5731^{+12}_{-16}$ (−0.5 $\sigma$ )
$A_{100}^{PS}$	248.4	$257 \pm 28$ (−0.2 $\sigma$ )	$D_{40}$	1217.3	$1223 \pm 12$ (−0.0 $\sigma$ )	$f\sigma_8(0.15)$	0.4987	$0.483^{+0.014}_{-0.013}$ (+0.1 $\sigma$ )
$A_{143}^{PS}$	48.5	$45 \pm 8$ (−0.4 $\sigma$ )	$D_{220}$	5730.0	$5734 \pm 39$ (+0.4 $\sigma$ )	$\sigma_8(0.15)$	1.002	$0.903^{+0.091}_{-0.043}$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{PS}$	50.3	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{810}$	2536.5	$2536 \pm 13$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.6323	$0.569^{+0.055}_{-0.034}$ (+0.1 $\sigma$ )
$A_{217}^{PS}$	120.5	$115 \pm 10$ (+0.1 $\sigma$ )	$D_{1420}$	817.35	$816.6 \pm 4.7$ (+0.5 $\sigma$ )	$\sigma_8(0.38)$	0.898	$0.806^{+0.084}_{-0.039}$ (+0.1 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.17$ (−0.2 $\sigma$ )	$D_{2000}$	231.36	$230.9 \pm 1.6$ (+0.7 $\sigma$ )	$f\sigma_8(0.51)$	0.664	$0.587^{+0.068}_{-0.039}$ (+0.1 $\sigma$ )
$A_{100}^{dustTT}$	8.81	$9.0 \pm 1.8$ (−0.0 $\sigma$ )	$n_{s,0.002}$	0.96834	$0.9666 \pm 0.0041$ (+0.2 $\sigma$ )	$\sigma_8(0.51)$	0.840	$0.755^{+0.079}_{-0.036}$ (+0.1 $\sigma$ )
$A_{143}^{dustTT}$	11.06	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P$	0.245432	$0.245415 \pm 0.000056$ (+1.0 $\sigma$ )	$f\sigma_8(0.61)$	0.671	$0.590^{+0.072}_{-0.039}$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.06	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246758	$0.246742 \pm 0.000057$ (+1.0 $\sigma$ )	$\sigma_8(0.61)$	0.797	$0.717^{+0.074}_{-0.034}$ (+0.1 $\sigma$ )
$A_{217}^{dustTT}$	95.3	$93.7 \pm 7.4$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5681	$2.576 \pm 0.027$ (−1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.3974	$0.360^{+0.035}_{-0.015}$ (+0.1 $\sigma$ )
$A_{100}^{dustTE}$	0.1142	$0.114 \pm 0.038$	Age/Gyr	13.420	$13.539^{+0.047}_{-0.12}$ (−0.3 $\sigma$ )	$\sigma_8(2.33)$	0.3981	$0.362^{+0.033}_{-0.015}$ (+0.1 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1348	$0.135 \pm 0.029$	$z_*$	1089.720	$1089.79 \pm 0.26$ (−0.8 $\sigma$ )	$f_{2000}^{143}$	28.30	$29.2 \pm 2.8$ (−0.6 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.484	$0.483 \pm 0.085$	$r_*$	144.599	$144.56 \pm 0.27$ (−0.5 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.58	$31.9 \pm 1.9$ (−0.7 $\sigma$ )
$A_{143}^{dustTE}$	0.223	$0.225 \pm 0.054$	$100\theta_*$	1.041180	$1.04117 \pm 0.00030$ (+0.1 $\sigma$ )	$f_{2000}^{217}$	106.15	$106.8 \pm 1.8$ (−0.6 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.665	$0.664 \pm 0.081$	$D_M(z_*)/\text{Gpc}$	13.8880	$13.885 \pm 0.025$ (−0.5 $\sigma$ )	$\chi_{lensing}^2$	8.68	$9.0 \pm 1.1$ (−0.0 $\sigma$ )
$A_{217}^{dustTE}$	2.076	$2.07 \pm 0.27$	$z_{drag}$	1060.085	$1060.02 \pm 0.30$ (+1.1 $\sigma$ )	$\chi_{simall}^2$	396	$1325 \pm 1000$ (+689.8 $\sigma$ )
$c_{100}$	0.99972	$0.99966 \pm 0.00061$ (+0.1 $\sigma$ )	$r_{drag}$	147.232	$147.21 \pm 0.26$ (−0.6 $\sigma$ )	$\chi_{lowl}^2$	22.13	$22.59 \pm 0.76$ (−0.2 $\sigma$ )
$c_{217}$	0.99818	$0.99819 \pm 0.00063$ (−0.1 $\sigma$ )	$k_D$	0.140791	$0.14079 \pm 0.00029$ (+0.9 $\sigma$ )	$\chi_{plik}^2$	2342	$1430 \pm 1000$ (+125.0 $\sigma$ )
$H_0$	99.9	$> 82.4$ (+0.1 $\sigma$ )	$100\theta_D$	0.160670	$0.16072 \pm 0.00017$ (−1.1 $\sigma$ )	$\chi_{prior}^2$	1.61	$11.6 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_\Lambda$	0.8574	$0.803^{+0.055}_{-0.015}$ (+0.1 $\sigma$ )	$z_{eq}$	3382.2	$3388 \pm 27$ (+0.1 $\sigma$ )	$\chi_{CMB}^2$	2768.9	$2786.1 \pm 6.0$ (+283.3 $\sigma$ )
$\Omega_m$	0.1426	$0.197^{+0.015}_{-0.055}$ (−0.1 $\sigma$ )	$k_{eq}$	0.010323	$0.010339 \pm 0.000082$ (+0.1 $\sigma$ )			
$\Omega_m h^2$	0.14218	$0.1424 \pm 0.0011$ (+0.1 $\sigma$ )	$100\theta_{eq}$	0.8172	$0.8162 \pm 0.0051$ (−0.1 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2770.54$ ;  $\Delta\chi_{eff}^2 = 1585.34$ ;  $\bar{\chi}_{eff}^2 = 2797.72$ ;  $\Delta\bar{\chi}_{eff}^2 = 1591.74$ ;  $R - 1 = 0.01426$   
 $\chi_{eff}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp.p\_teb\_consext8: 8.68 ( $\Delta$  0.27) simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.65 ( $\Delta$  0.00) commander\_dx12\_v3\_2\_29: 22.13 ( $\Delta$  -0.03) plik\_rd12\_HM\_v22b\_TTTEEE: 2342.46



## 18.9 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_post\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022388	$0.02236 \pm 0.00014$ (+1.2 $\sigma$ )	$\Omega_{\text{m}}h^2$	0.14309	$0.1432 \pm 0.0013$ (−0.1 $\sigma$ )	$k_{\text{eq}}$	0.010389	$0.010400 \pm 0.000095$ (−0.1 $\sigma$ )
$\Omega_{\text{c}}h^2$	0.12006	$0.1202 \pm 0.0014$ (−0.2 $\sigma$ )	$\Omega_{\text{m}}h^3$	0.10551	$0.1055 \pm 0.0025$ (−0.0 $\sigma$ )	$100\theta_{\text{eq}}$	0.8130	$0.8124 \pm 0.0058$ (+0.2 $\sigma$ )
$100\theta_{\text{MC}}$	1.040929	$1.04092 \pm 0.00032$ (+0.3 $\sigma$ )	$\sigma_8$	0.8704	$0.870 \pm 0.018$ (−0.1 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.44923	$0.4489 \pm 0.0030$ (+0.1 $\sigma$ )
$\tau$	0.0545	$0.0538 \pm 0.0082$ (+0.3 $\sigma$ )	$S_8$	0.8153	$0.816 \pm 0.016$ (−0.2 $\sigma$ )	$H(0.15)$	76.46	$76.39 \pm 0.94$ (+0.2 $\sigma$ )
$w_0$	−1.209	$−1.211 \pm 0.056$ (+0.2 $\sigma$ )	$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4465	$0.4472 \pm 0.0085$ (−0.2 $\sigma$ )	$D_{\text{M}}(0.15)$	600.1	$601 \pm 10$ (−0.1 $\sigma$ )
$\ln(10^{10}A_{\text{s}})$	3.0447	$3.044 \pm 0.017$ (+0.3 $\sigma$ )	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6234	$0.624 \pm 0.010$ (−0.2 $\sigma$ )	$H(0.38)$	83.871	$83.80 \pm 0.41$ (+0.5 $\sigma$ )
$n_{\text{s}}$	0.96621	$0.9647 \pm 0.0044$ (+0.4 $\sigma$ )	$\sigma_8/h^{0.5}$	1.0136	$1.014 \pm 0.015$ (−0.2 $\sigma$ )	$D_{\text{M}}(0.38)$	1464.1	$1466^{+15}_{-17}$ (−0.2 $\sigma$ )
$y_{\text{cal}}$	1.00035	$1.0006 \pm 0.0025$ (+0.1 $\sigma$ )	$r_{\text{drag}}h$	108.43	$108.3 \pm 2.4$ (−0.0 $\sigma$ )	$H(0.51)$	89.561	$89.50 \pm 0.37$ (+0.6 $\sigma$ )
$A_{217}^{\text{CIB}}$	46.7	$46 \pm 7$ (−0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4724	$2.476 \pm 0.032$ (−0.1 $\sigma$ )	$D_{\text{M}}(0.51)$	1914.1	$1916^{+16}_{-18}$ (−0.3 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.50	—	$z_{\text{re}}$	7.67	$7.58 \pm 0.83$ (+0.3 $\sigma$ )	$H(0.61)$	94.577	$94.53 \pm 0.40$ (+0.6 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.11	$5.5 \pm 1.9$ (+0.2 $\sigma$ )	$10^9 A_{\text{s}}$	2.1003	$2.099^{+0.033}_{-0.036}$ (+0.3 $\sigma$ )	$D_{\text{M}}(0.61)$	2240.0	$2242^{+16}_{-18}$ (−0.3 $\sigma$ )
$A_{100}^{\text{PS}}$	249.6	$258 \pm 27$ (−0.2 $\sigma$ )	$10^9 A_{\text{s}}e^{-2\tau}$	1.8835	$1.885 \pm 0.012$ (+0.1 $\sigma$ )	$H(2.33)$	234.02	$234.14 \pm 0.85$ (+0.1 $\sigma$ )
$A_{143}^{\text{PS}}$	48.2	$46 \pm 8$ (−0.4 $\sigma$ )	$D_{40}$	1226.4	$1231 \pm 13$ (−0.1 $\sigma$ )	$D_{\text{M}}(2.33)$	5745.8	$5748 \pm 10$ (−0.9 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	49.0	$43 \pm 10$ (−0.1 $\sigma$ )	$D_{220}$	5728.1	$5734^{+36}_{-41}$ (+0.6 $\sigma$ )	$f\sigma_8(0.15)$	0.4714	$0.472 \pm 0.010$ (−0.2 $\sigma$ )
$A_{217}^{\text{PS}}$	120.4	$116 \pm 10$ (+0.0 $\sigma$ )	$D_{810}$	2539.7	$2540^{+13}_{-14}$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.8083	$0.808 \pm 0.018$ (−0.1 $\sigma$ )
$A^{\text{kSZ}}$	0.01	$< 4.09$ (−0.2 $\sigma$ )	$D_{1420}$	817.83	$817.1 \pm 4.7$ (+0.6 $\sigma$ )	$f\sigma_8(0.38)$	0.5116	$0.512 \pm 0.013$ (−0.2 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.76	$9.0 \pm 1.8$ (+0.0 $\sigma$ )	$D_{2000}$	231.31	$231.0 \pm 1.5$ (+0.8 $\sigma$ )	$\sigma_8(0.38)$	0.7185	$0.718 \pm 0.016$ (−0.1 $\sigma$ )
$A_{143}^{\text{dustTT}}$	10.92	$11.0 \pm 1.9$ (+0.1 $\sigma$ )	$n_{\text{s},0.002}$	0.96621	$0.9647 \pm 0.0044$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.5166	$0.517 \pm 0.014$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	19.75	$18.7 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\text{P}}$	0.245402	$0.245391^{+0.000059}_{-0.000051}$ (+1.1 $\sigma$ )	$\sigma_8(0.51)$	0.6723	$0.672 \pm 0.015$ (−0.1 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.1	$94.1 \pm 7.2$ (+0.1 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.246729	$0.246718^{+0.000059}_{-0.000052}$ (+1.1 $\sigma$ )	$f\sigma_8(0.61)$	0.5142	$0.515 \pm 0.015$ (−0.2 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1143	$0.114^{+0.035}_{-0.040}$	$10^5 \text{D/H}$	2.5822	$2.587 \pm 0.026$ (−1.1 $\sigma$ )	$\sigma_8(0.61)$	0.6394	$0.639 \pm 0.014$ (−0.1 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1339	$0.135 \pm 0.029$	Age/Gyr	13.6815	$13.685 \pm 0.030$ (−0.7 $\sigma$ )	$f\sigma_8(2.33)$	0.3224	$0.3222 \pm 0.0067$ (−0.0 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.481	$0.484 \pm 0.086$	$z_*$	1089.903	$1089.95 \pm 0.26$ (−0.9 $\sigma$ )	$\sigma_8(2.33)$	0.3282	$0.3279 \pm 0.0060$ (−0.0 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.223	$0.225 \pm 0.055$	$r_*$	144.403	$144.38 \pm 0.31$ (−0.2 $\sigma$ )	$\chi_{\text{simall}}^2$	396	$1288 \pm 1000$ (+539.1 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.669	$0.665 \pm 0.078$	$100\theta_*$	1.041108	$1.04110 \pm 0.00032$ (+0.3 $\sigma$ )	$\chi_{\text{lowl}}^2$	22.91	$23.25 \pm 0.92$ (−0.2 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.096	$2.08 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8701	$13.868 \pm 0.029$ (−0.2 $\sigma$ )	$\chi_{\text{plik}}^2$	2343	$1468 \pm 1000$ (+130.3 $\sigma$ )
$c_{100}$	0.99971	$0.99967 \pm 0.00063$ (+0.1 $\sigma$ )	$z_{\text{drag}}$	1059.971	$1059.94 \pm 0.29$ (+1.2 $\sigma$ )	$\chi_{\text{H073p45}}^2$	0.029	$0.97 \pm 1.4$ (−0.0 $\sigma$ )
$c_{217}$	0.99818	$0.99820^{+0.00057}_{-0.00064}$ (−0.1 $\sigma$ )	$r_{\text{drag}}$	147.057	$147.04 \pm 0.31$ (−0.4 $\sigma$ )	$\chi_{\text{prior}}^2$	1.58	$11.6 \pm 4.6$ (+1.2 $\sigma$ )
$H_0$	73.73	$73.7 \pm 1.6$ (+0.0 $\sigma$ )	$k_{\text{D}}$	0.140918	$0.14092 \pm 0.00033$ (+0.7 $\sigma$ )	$\chi_{\text{CMB}}^2$	2762.3	$2778.8 \pm 6.0$ (+285.9 $\sigma$ )
$\Omega_{\Lambda}$	0.7368	$0.736^{+0.013}_{-0.011}$ (+0.0 $\sigma$ )	$100\theta_{\text{D}}$	0.160733	$0.16076 \pm 0.00017$ (−1.2 $\sigma$ )			
$\Omega_{\text{m}}$	0.2632	$0.264^{+0.011}_{-0.013}$ (−0.0 $\sigma$ )	$z_{\text{eq}}$	3404.0	$3408 \pm 31$ (−0.1 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 2763.89$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.78$ ;  $\bar{\chi}_{\text{eff}}^2 = 2791.33$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1592.41$ ;  $R - 1 = 0.07272$   
 $\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck.B: 396.04 ( $\Delta$  0.22) commander\_dx12\_v3.2.29: 22.91 ( $\Delta$  -0.32) plik\_rd12\_HM\_v22b\_TTTEEE: 2343.33 Hubble - H073p45: 0.03 ( $\Delta$  0.01)



18.10 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02240 \pm 0.00015 \quad (+1.1\sigma)$	$\Omega_{\text{m}}h^2$	$0.1429 \pm 0.0013 \quad (-0.1\sigma)$	$k_{\text{eq}}$	$0.010377 \pm 0.000093 \quad (-0.1\sigma)$
$\Omega_{\text{c}}h^2$	$0.1199 \pm 0.0013 \quad (-0.2\sigma)$	$\Omega_{\text{m}}h^3$	$0.124^{+0.018}_{-0.0078} \quad (+0.1\sigma)$	$100\theta_{\text{eq}}$	$0.8138 \pm 0.0057 \quad (+0.2\sigma)$
$100\theta_{\text{MC}}$	$1.04094 \pm 0.00032 \quad (+0.3\sigma)$	$\sigma_8$	$0.973^{+0.094}_{-0.044} \quad (+0.1\sigma)$	$100\theta_{\text{s,eq}}$	$0.4496 \pm 0.0029 \quad (+0.2\sigma)$
$\tau$	$0.0553^{+0.0049}_{-0.0083} \quad (+0.3\sigma)$	$S_8$	$0.778^{+0.022}_{-0.037} \quad (-0.3\sigma)$	$H(0.15)$	$82.9^{+5.9}_{-2.3} \quad (+0.2\sigma)$
$w_0$	$-1.58^{+0.16}_{-0.34} \quad (-0.1\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.426^{+0.012}_{-0.020} \quad (-0.3\sigma)$	$D_{\text{M}}(0.15)$	$537^{+18}_{-56} \quad (-0.2\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.046^{+0.012}_{-0.016} \quad (+0.3\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.643^{+0.019}_{-0.013} \quad (-0.0\sigma)$	$H(0.38)$	$84.51^{+0.81}_{-0.57} \quad (+0.5\sigma)$
$n_{\text{s}}$	$0.9656 \pm 0.0043 \quad (+0.4\sigma)$	$\sigma_8/h^{0.5}$	$1.046^{+0.030}_{-0.019} \quad (-0.0\sigma)$	$D_{\text{M}}(0.38)$	$1368^{+28}_{-84} \quad (-0.2\sigma)$
$y_{\text{cal}}$	$1.0005 \pm 0.0025 \quad (+0.1\sigma)$	$r_{\text{drag}}h$	$127^{+20}_{-7} \quad (+0.2\sigma)$	$H(0.51)$	$88.4^{+1.2}_{-0.81} \quad (+0.2\sigma)$
$A_{217}^{\text{CIB}}$	$46 \pm 7 \quad (-0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.504^{+0.036}_{-0.030} \quad (-0.1\sigma)$	$D_{\text{M}}(0.51)$	$1819^{+28}_{-82} \quad (-0.2\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$z_{\text{re}}$	$7.72^{+0.55}_{-0.82} \quad (+0.2\sigma)$	$H(0.61)$	$92.5^{+1.2}_{-1.9} \quad (+0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$10^9 A_{\text{s}}$	$2.103^{+0.024}_{-0.035} \quad (+0.3\sigma)$	$D_{\text{M}}(0.61)$	$2151^{+27}_{-77} \quad (-0.3\sigma)$
$A_{100}^{\text{PS}}$	$257 \pm 28 \quad (-0.2\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.883 \pm 0.012 \quad (-0.0\sigma)$	$H(2.33)$	$231.84^{+0.88}_{-2.1} \quad (-0.2\sigma)$
$A_{143}^{\text{PS}}$	$45 \pm 8 \quad (-0.4\sigma)$	$D_{40}$	$1227 \pm 13 \quad (-0.2\sigma)$	$D_{\text{M}}(2.33)$	$5735^{+12}_{-16} \quad (-0.7\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9 \quad (-0.1\sigma)$	$D_{220}$	$5735 \pm 38 \quad (+0.5\sigma)$	$f\sigma_8(0.15)$	$0.489^{+0.017}_{-0.015} \quad (-0.1\sigma)$
$A_{217}^{\text{PS}}$	$116 \pm 10 \quad (+0.0\sigma)$	$D_{810}$	$2538 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.911^{+0.095}_{-0.043} \quad (+0.1\sigma)$
$A^{\text{kSZ}}$	$< 3.96 \quad (-0.2\sigma)$	$D_{1420}$	$816.9 \pm 4.7 \quad (+0.6\sigma)$	$f\sigma_8(0.38)$	$0.577^{+0.059}_{-0.035} \quad (+0.0\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$D_{2000}$	$231.1 \pm 1.6 \quad (+0.8\sigma)$	$\sigma_8(0.38)$	$0.814^{+0.088}_{-0.039} \quad (+0.1\sigma)$
$A_{143}^{\text{dustTT}}$	$10.8 \pm 1.8 \quad (+0.1\sigma)$	$n_{\text{s},0.002}$	$0.9656 \pm 0.0043 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.595^{+0.072}_{-0.039} \quad (+0.1\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.245404 \pm 0.000057 \quad (+1.1\sigma)$	$\sigma_8(0.51)$	$0.761^{+0.082}_{-0.036} \quad (+0.1\sigma)$
$A_{217}^{\text{dustTT}}$	$93.7 \pm 7.3 \quad (+0.0\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246731 \pm 0.000057 \quad (+1.1\sigma)$	$f\sigma_8(0.61)$	$0.597^{+0.077}_{-0.039} \quad (+0.1\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$10^5 \text{D/H}$	$2.581 \pm 0.027 \quad (-1.1\sigma)$	$\sigma_8(0.61)$	$0.723^{+0.077}_{-0.033} \quad (+0.1\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.029$	Age/Gyr	$13.544^{+0.044}_{-0.12} \quad (-0.4\sigma)$	$f\sigma_8(2.33)$	$0.362^{+0.036}_{-0.015} \quad (+0.1\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.482 \pm 0.085$	$z_*$	$1089.88 \pm 0.27 \quad (-0.9\sigma)$	$\sigma_8(2.33)$	$0.365^{+0.034}_{-0.015} \quad (+0.1\sigma)$
$A_{143}^{\text{dustTE}}$	$0.225 \pm 0.054$	$r_*$	$144.44 \pm 0.30 \quad (-0.1\sigma)$	$f_{2000}^{143}$	$29.0 \pm 2.7 \quad (-0.6\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.665 \pm 0.081$	$100\theta_*$	$1.04113 \pm 0.00031 \quad (+0.2\sigma)$	$f_{2000}^{143 \times 217}$	$31.8 \pm 1.8 \quad (-0.7\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.874 \pm 0.028 \quad (-0.1\sigma)$	$f_{2000}^{217}$	$106.7 \pm 1.8 \quad (-0.6\sigma)$
$c_{100}$	$0.99967 \pm 0.00062 \quad (+0.1\sigma)$	$z_{\text{drag}}$	$1059.99 \pm 0.30 \quad (+1.1\sigma)$	$\chi_{\text{small}}^2$	$396.9 \pm 1.8 \quad (+0.2\sigma)$
$c_{217}$	$0.99818 \pm 0.00063 \quad (-0.1\sigma)$	$r_{\text{drag}}$	$147.09 \pm 0.29 \quad (-0.3\sigma)$	$\chi_{\text{lowl}}^2$	$22.87 \pm 0.85 \quad (-0.3\sigma)$
$H_0$	$> 82.6 \quad (+0.2\sigma)$	$k_{\text{D}}$	$0.14088 \pm 0.00032 \quad (+0.6\sigma)$	$\chi_{\text{plik}}^2$	$2357.1 \pm 5.7 \quad (+293.5\sigma)$
$\Omega_{\Lambda}$	$0.802^{+0.055}_{-0.014} \quad (+0.2\sigma)$	$100\theta_{\text{D}}$	$0.16073 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\text{m}}$	$0.198^{+0.014}_{-0.055} \quad (-0.2\sigma)$	$z_{\text{eq}}$	$3400 \pm 30 \quad (-0.1\sigma)$	$\chi_{\text{CMB}}^2$	$2776.9 \pm 5.9 \quad (+285.3\sigma)$

$\bar{\chi}_{\text{eff}}^2 = 2788.38$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1591.50$ ;  $R - 1 = 0.01060$



## 18.11 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02243 \pm 0.00015 \quad (+1.0\sigma)$	$\Omega_{\text{m}}h^3$	$0.123^{+0.017}_{-0.0083} \quad (+0.1\sigma)$	$100\theta_{\text{s,eq}}$	$0.4510 \pm 0.0026 \quad (-0.2\sigma)$
$\Omega_{\text{c}}h^2$	$0.1192 \pm 0.0012 \quad (+0.1\sigma)$	$\sigma_8$	$0.963^{+0.090}_{-0.045} \quad (+0.1\sigma)$	$H(0.15)$	$82.9^{+6.0}_{-2.6} \quad (+0.1\sigma)$
$100\theta_{\text{MC}}$	$1.04100 \pm 0.00031 \quad (+0.1\sigma)$	$S_8$	$0.771^{+0.022}_{-0.036} \quad (-0.1\sigma)$	$D_{\text{M}}(0.15)$	$537^{+19}_{-57} \quad (-0.1\sigma)$
$\tau$	$0.0540^{+0.0044}_{-0.0076} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.422^{+0.012}_{-0.020} \quad (-0.1\sigma)$	$H(0.38)$	$84.75^{+0.82}_{-0.51} \quad (+0.3\sigma)$
$w_0$	$-1.56^{+0.16}_{-0.33} \quad (-0.1\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.637^{+0.016}_{-0.011} \quad (+0.1\sigma)$	$D_{\text{M}}(0.38)$	$1367^{+31}_{-86} \quad (-0.1\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.041^{+0.010}_{-0.014} \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$1.037^{+0.027}_{-0.016} \quad (+0.1\sigma)$	$H(0.51)$	$88.7^{+1.1}_{-0.67} \quad (+0.1\sigma)$
$n_{\text{s}}$	$0.9669 \pm 0.0040 \quad (+0.2\sigma)$	$r_{\text{drag}}h$	$127^{+20}_{-8} \quad (+0.1\sigma)$	$D_{\text{M}}(0.51)$	$1817^{+31}_{-83} \quad (-0.2\sigma)$
$y_{\text{cal}}$	$1.0002 \pm 0.0024 \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.487^{+0.028}_{-0.024} \quad (+0.1\sigma)$	$H(0.61)$	$92.8^{+1.3}_{-1.7} \quad (+0.0\sigma)$
$A_{217}^{\text{CIB}}$	$46 \pm 7 \quad (-0.2\sigma)$	$z_{\text{re}}$	$7.56^{+0.47}_{-0.77} \quad (+0.1\sigma)$	$D_{\text{M}}(0.61)$	$2148^{+29}_{-78} \quad (-0.2\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_{\text{s}}$	$2.093^{+0.021}_{-0.030} \quad (+0.2\sigma)$	$H(2.33)$	$231.47^{+0.78}_{-2.1} \quad (+0.0\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5 \pm 2.0 \quad (+0.2\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.879 \pm 0.010 \quad (+0.1\sigma)$	$D_{\text{M}}(2.33)$	$5731^{+11}_{-16} \quad (-0.5\sigma)$
$A_{100}^{\text{PS}}$	$257 \pm 28 \quad (-0.2\sigma)$	$D_{40}$	$1223 \pm 12 \quad (-0.0\sigma)$	$f\sigma_8(0.15)$	$0.483 \pm 0.013 \quad (+0.1\sigma)$
$A_{143}^{\text{PS}}$	$45 \pm 8 \quad (-0.4\sigma)$	$D_{220}$	$5733 \pm 38 \quad (+0.4\sigma)$	$\sigma_8(0.15)$	$0.902^{+0.091}_{-0.045} \quad (+0.1\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{810}$	$2536 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.568^{+0.055}_{-0.035} \quad (+0.1\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.1\sigma)$	$D_{1420}$	$816.5 \pm 4.7 \quad (+0.5\sigma)$	$\sigma_8(0.38)$	$0.806^{+0.085}_{-0.040} \quad (+0.1\sigma)$
$A^{\text{kSZ}}$	$< 4.12 \quad (-0.2\sigma)$	$D_{2000}$	$231.0 \pm 1.6 \quad (+0.7\sigma)$	$f\sigma_8(0.51)$	$0.586^{+0.068}_{-0.040} \quad (+0.1\sigma)$
$A_{100}^{\text{dustTT}}$	$9.0 \pm 1.8 \quad (+0.0\sigma)$	$n_{\text{s},0.002}$	$0.9669 \pm 0.0040 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.754^{+0.079}_{-0.037} \quad (+0.1\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.245418 \pm 0.000056 \quad (+1.0\sigma)$	$f\sigma_8(0.61)$	$0.589^{+0.072}_{-0.040} \quad (+0.1\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246745 \pm 0.000056 \quad (+1.0\sigma)$	$\sigma_8(0.61)$	$0.716^{+0.074}_{-0.035} \quad (+0.1\sigma)$
$A_{217}^{\text{dustTT}}$	$93.7 \pm 7.4 \quad (+0.1\sigma)$	$10^5 \text{D/H}$	$2.574 \pm 0.027 \quad (-1.0\sigma)$	$f\sigma_8(2.33)$	$0.359^{+0.036}_{-0.016} \quad (+0.1\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$\text{Age/Gyr}$	$13.540^{+0.048}_{-0.12} \quad (-0.3\sigma)$	$\sigma_8(2.33)$	$0.362^{+0.033}_{-0.015} \quad (+0.1\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.029$	$z_*$	$1089.78 \pm 0.25 \quad (-0.8\sigma)$	$f_{2000}^{143}$	$29.1 \pm 2.8 \quad (-0.6\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.483 \pm 0.085$	$r_*$	$144.58 \pm 0.26 \quad (-0.5\sigma)$	$f_{2000}^{143 \times 217}$	$31.9 \pm 1.8 \quad (-0.7\sigma)$
$A_{143}^{\text{dustTE}}$	$0.225 \pm 0.054$	$100\theta_*$	$1.04118 \pm 0.00030 \quad (+0.1\sigma)$	$f_{2000}^{217}$	$106.7 \pm 1.8 \quad (-0.6\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.664 \pm 0.081$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.886 \pm 0.024 \quad (-0.5\sigma)$	$\chi_{\text{lensing}}^2$	$9.0 \pm 1.1 \quad (-0.0\sigma)$
$A_{217}^{\text{dustTE}}$	$2.07 \pm 0.27$	$z_{\text{drag}}$	$1060.03 \pm 0.30 \quad (+1.1\sigma)$	$\chi_{\text{small}}^2$	$1339 \pm 1000 \quad (+814.7\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$r_{\text{drag}}$	$147.22 \pm 0.26 \quad (-0.7\sigma)$	$\chi_{\text{lowl}}^2$	$22.58 \pm 0.76 \quad (-0.1\sigma)$
$c_{217}$	$0.99819 \pm 0.00064 \quad (-0.1\sigma)$	$k_{\text{D}}$	$0.14077 \pm 0.00029 \quad (+1.0\sigma)$	$\chi_{\text{plik}}^2$	$1416 \pm 1000 \quad (+121.3\sigma)$
$H_0$	$> 82.2 \quad (+0.1\sigma)$	$100\theta_{\text{D}}$	$0.16071 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{\text{prior}}^2$	$11.6 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\Lambda}$	$0.802^{+0.056}_{-0.015} \quad (+0.1\sigma)$	$z_{\text{eq}}$	$3385 \pm 26 \quad (+0.2\sigma)$	$\chi_{\text{CMB}}^2$	$2785.8 \pm 5.9 \quad (+286.8\sigma)$
$\Omega_{\text{m}}$	$0.198^{+0.015}_{-0.056} \quad (-0.1\sigma)$	$k_{\text{eq}}$	$0.010333 \pm 0.000080 \quad (+0.2\sigma)$		
$\Omega_{\text{m}}h^2$	$0.1423 \pm 0.0011 \quad (+0.2\sigma)$	$100\theta_{\text{eq}}$	$0.8166 \pm 0.0050 \quad (-0.1\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2797.43; \Delta\bar{\chi}_{\text{eff}}^2 = 1591.76; R - 1 = 0.01516$$



## 18.12 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02236 \pm 0.00014 \quad (+1.1\sigma)$	$\Omega_{\text{m}}h^3$	$0.1055 \pm 0.0025 \quad (-0.0\sigma)$	$100\theta_{\text{s,eq}}$	$0.4490 \pm 0.0030 \quad (+0.1\sigma)$
$\Omega_{\text{c}}h^2$	$0.1202 \pm 0.0014 \quad (-0.2\sigma)$	$\sigma_8$	$0.872 \pm 0.018 \quad (-0.1\sigma)$	$H(0.15)$	$76.39 \pm 0.94 \quad (+0.2\sigma)$
$100\theta_{\text{MC}}$	$1.04092 \pm 0.00032 \quad (+0.3\sigma)$	$S_8$	$0.817 \pm 0.015 \quad (-0.1\sigma)$	$D_{\text{M}}(0.15)$	$600.7^{+9.4}_{-11} \quad (-0.1\sigma)$
$\tau$	$0.0552^{+0.0060}_{-0.0082} \quad (+0.3\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4477 \pm 0.0084 \quad (-0.1\sigma)$	$H(0.38)$	$83.80 \pm 0.40 \quad (+0.5\sigma)$
$w_0$	$-1.211 \pm 0.057 \quad (+0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.625 \pm 0.010 \quad (-0.2\sigma)$	$D_{\text{M}}(0.38)$	$1466^{+15}_{-17} \quad (-0.2\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.047^{+0.012}_{-0.017} \quad (+0.4\sigma)$	$\sigma_8/h^{0.5}$	$1.015 \pm 0.015 \quad (-0.2\sigma)$	$H(0.51)$	$89.50 \pm 0.37 \quad (+0.6\sigma)$
$n_{\text{s}}$	$0.9648 \pm 0.0044 \quad (+0.3\sigma)$	$r_{\text{drag}}h$	$108.4 \pm 2.4 \quad (-0.0\sigma)$	$D_{\text{M}}(0.51)$	$1916^{+16}_{-18} \quad (-0.3\sigma)$
$y_{\text{cal}}$	$1.0006 \pm 0.0024 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.479 \pm 0.030 \quad (-0.1\sigma)$	$H(0.61)$	$94.53 \pm 0.41 \quad (+0.5\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$z_{\text{re}}$	$7.74^{+0.57}_{-0.91} \quad (+0.3\sigma)$	$D_{\text{M}}(0.61)$	$2242^{+16}_{-18} \quad (-0.3\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_{\text{s}}$	$2.105^{+0.025}_{-0.035} \quad (+0.4\sigma)$	$H(2.33)$	$234.13 \pm 0.85 \quad (+0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5 \pm 1.9 \quad (+0.2\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.884 \pm 0.012 \quad (+0.1\sigma)$	$D_{\text{M}}(2.33)$	$5748 \pm 10 \quad (-0.8\sigma)$
$A_{100}^{\text{PS}}$	$257 \pm 27 \quad (-0.2\sigma)$	$D_{40}$	$1231 \pm 13 \quad (-0.0\sigma)$	$f\sigma_8(0.15)$	$0.473 \pm 0.010 \quad (-0.2\sigma)$
$A_{143}^{\text{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{220}$	$5733 \pm 38 \quad (+0.6\sigma)$	$\sigma_8(0.15)$	$0.809 \pm 0.018 \quad (-0.1\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 10 \quad (-0.1\sigma)$	$D_{810}$	$2539^{+12}_{-14} \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.513 \pm 0.013 \quad (-0.2\sigma)$
$A_{217}^{\text{PS}}$	$116 \pm 10 \quad (+0.1\sigma)$	$D_{1420}$	$817.0 \pm 4.7 \quad (+0.6\sigma)$	$\sigma_8(0.38)$	$0.719 \pm 0.016 \quad (-0.1\sigma)$
$A^{\text{kSZ}}$	$< 4.04 \quad (-0.2\sigma)$	$D_{2000}$	$231.0 \pm 1.5 \quad (+0.8\sigma)$	$f\sigma_8(0.51)$	$0.518 \pm 0.014 \quad (-0.2\sigma)$
$A_{100}^{\text{dustTT}}$	$9.0 \pm 1.8 \quad (+0.0\sigma)$	$n_{\text{s},0.002}$	$0.9648 \pm 0.0044 \quad (+0.3\sigma)$	$\sigma_8(0.51)$	$0.673 \pm 0.015 \quad (-0.1\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.245391^{+0.000058}_{-0.000051} \quad (+1.1\sigma)$	$f\sigma_8(0.61)$	$0.515 \pm 0.015 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.7 \pm 3.2 \quad (+0.1\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.246718^{+0.000058}_{-0.000052} \quad (+1.1\sigma)$	$\sigma_8(0.61)$	$0.640 \pm 0.014 \quad (-0.1\sigma)$
$A_{217}^{\text{dustTT}}$	$93.9 \pm 7.2 \quad (+0.1\sigma)$	$10^5 \text{D/H}$	$2.587 \pm 0.026 \quad (-1.1\sigma)$	$f\sigma_8(2.33)$	$0.3226 \pm 0.0066 \quad (-0.1\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114^{+0.035}_{-0.040}$	Age/Gyr	$13.685 \pm 0.030 \quad (-0.7\sigma)$	$\sigma_8(2.33)$	$0.3284 \pm 0.0059 \quad (-0.0\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134 \pm 0.029$	$z_*$	$1089.95 \pm 0.26 \quad (-0.9\sigma)$	$f_{2000}^{143}$	$29.4 \pm 2.8 \quad (-0.6\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.485 \pm 0.085$	$r_*$	$144.38 \pm 0.31 \quad (-0.2\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 1.8 \quad (-0.7\sigma)$
$A_{143}^{\text{dustTE}}$	$0.225 \pm 0.056$	$100\theta_*$	$1.04110 \pm 0.00032 \quad (+0.3\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.8 \quad (-0.6\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.664 \pm 0.079$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.868 \pm 0.029 \quad (-0.3\sigma)$	$\chi_{\text{small}}^2$	$1305 \pm 1000 \quad (+577.4\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.27$	$z_{\text{drag}}$	$1059.94 \pm 0.29 \quad (+1.2\sigma)$	$\chi_{\text{lowl}}^2$	$23.28 \pm 0.93 \quad (-0.2\sigma)$
$c_{100}$	$0.99966^{+0.00060}_{-0.00068} \quad (+0.0\sigma)$	$r_{\text{drag}}$	$147.05 \pm 0.31 \quad (-0.4\sigma)$	$\chi_{\text{plik}}^2$	$1450 \pm 1000 \quad (+127.5\sigma)$
$c_{217}$	$0.99820^{+0.00056}_{-0.00064} \quad (-0.1\sigma)$	$k_{\text{D}}$	$0.14091 \pm 0.00033 \quad (+0.7\sigma)$	$\chi_{\text{H073p45}}^2$	$0.97 \pm 1.4 \quad (-0.0\sigma)$
$H_0$	$73.7 \pm 1.6 \quad (+0.0\sigma)$	$100\theta_{\text{D}}$	$0.16076 \pm 0.00017 \quad (-1.2\sigma)$	$\chi_{\text{prior}}^2$	$11.6 \pm 4.5 \quad (+1.3\sigma)$
$\Omega_{\Lambda}$	$0.736^{+0.013}_{-0.011} \quad (+0.0\sigma)$	$z_{\text{eq}}$	$3407 \pm 31 \quad (-0.0\sigma)$	$\chi_{\text{CMB}}^2$	$2778.4 \pm 6.0 \quad (+290.6\sigma)$
$\Omega_{\text{m}}$	$0.264^{+0.011}_{-0.013} \quad (-0.0\sigma)$	$k_{\text{eq}}$	$0.010399 \pm 0.000095 \quad (-0.0\sigma)$		
$\Omega_{\text{m}}h^2$	$0.1432 \pm 0.0013 \quad (-0.0\sigma)$	$100\theta_{\text{eq}}$	$0.8125 \pm 0.0058 \quad (+0.1\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2791.00; \Delta\bar{\chi}_{\text{eff}}^2 = 1592.53; R - 1 = 0.07585$$



### 18.13 base\_w\_CamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022221	$0.02217 \pm 0.00022$	$\sigma_8 \Omega_m^{0.5}$	0.4063	$0.430^{+0.016}_{-0.023}$	$H(0.15)$	88.72	$81.6^{+6.7}_{-2.9}$
$\Omega_c h^2$	0.11998	$0.1202 \pm 0.0020$	$\sigma_8 \Omega_m^{0.25}$	0.6599	$0.641^{+0.023}_{-0.018}$	$D_M(0.15)$	481.3	$548^{+21}_{-66}$
$100\theta_{MC}$	1.040963	$1.04088 \pm 0.00047$	$\sigma_8/h^{0.5}$	1.0733	$1.042^{+0.037}_{-0.026}$	$H(0.38)$	84.46	$84.1^{+1.1}_{-0.87}$
$\tau$	0.0524	$0.0523 \pm 0.0082$	$r_{\text{drag}} h$	146.8	$125^{+20}_{-9}$	$D_M(0.38)$	1288	$1388^{+36}_{-100}$
$w_0$	-1.956	$-1.54^{+0.20}_{-0.39}$	$\langle d^2 \rangle^{1/2}$	2.5205	$2.498^{+0.047}_{-0.041}$	$H(0.51)$	86.77	$88.2^{+1.3}_{-0.85}$
$\ln(10^{10} A_s)$	3.0381	$3.039 \pm 0.017$	$z_{\text{re}}$	7.45	$7.45 \pm 0.85$	$D_M(0.51)$	1744	$1841^{+36}_{-99}$
$n_s$	0.9653	$0.9643 \pm 0.0056$	$10^9 A_s$	2.0866	$2.088 \pm 0.035$	$H(0.61)$	90.19	$92.5 \pm 1.6$
$y_{\text{cal}}$	1.00015	$1.0004 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8790	$1.881 \pm 0.013$	$D_M(0.61)$	2083	$2173^{+35}_{-93}$
$A_{100}^{\text{PS}}$	234.9	$241 \pm 25$	$D_{40}$	1221.3	$1226 \pm 15$	$H(2.33)$	230.35	$232.3^{+1.4}_{-2.7}$
$A_{143}^{\text{PS}}$	42.9	$40 \pm 8$	$D_{220}$	5706.6	$5707 \pm 41$	$D_M(2.33)$	5735.6	$5748^{+18}_{-23}$
$A_{217}^{\text{PS}}$	101.3	$102 \pm 10$	$D_{810}$	2532.2	$2533 \pm 14$	$f\sigma_8(0.15)$	0.5076	$0.489 \pm 0.021$
$A_{217}^{\text{CIB}}$	45.1	$40 \pm 7$	$D_{1420}$	814.0	$813.8 \pm 5.1$	$\sigma_8(0.15)$	1.010	$0.896^{+0.11}_{-0.053}$
$A_{143}^{\text{tSZ}}$	6.50	$3.8^{+1.8}_{-2.6}$	$D_{2000}$	229.96	$229.7 \pm 1.8$	$f\sigma_8(0.38)$	0.644	$0.570^{+0.065}_{-0.046}$
$r_{143 \times 217}^{\text{PS}}$	0.610	$0.65 \pm 0.13$	$n_{s,0.002}$	0.9653	$0.9643 \pm 0.0056$	$\sigma_8(0.38)$	0.904	$0.799^{+0.10}_{-0.047}$
$r_{143 \times 217}^{\text{CIB}}$	0.838	$0.57^{+0.41}_{-0.14}$	$Y_P$	0.245335	$0.24531^{+0.00010}_{-0.000081}$	$f\sigma_8(0.51)$	0.675	$0.586^{+0.080}_{-0.051}$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.24	—	$Y_P^{\text{BBN}}$	0.246661	$0.24664^{+0.00010}_{-0.000082}$	$\sigma_8(0.51)$	0.845	$0.747^{+0.093}_{-0.043}$
$A^{\text{kSZ}}$	0.1	—	$10^5 D/H$	2.6139	$2.624 \pm 0.042$	$f\sigma_8(0.61)$	0.681	$0.587^{+0.086}_{-0.050}$
$A_{100}^{\text{dust}}$	1.010	$1.01 \pm 0.20$	Age/Gyr	13.449	$13.592^{+0.057}_{-0.15}$	$\sigma_8(0.61)$	0.802	$0.710^{+0.088}_{-0.040}$
$A_{143}^{\text{dust}}$	0.991	$0.97 \pm 0.18$	$z_*$	1090.106	$1090.20 \pm 0.40$	$f\sigma_8(2.33)$	0.3991	$0.356^{+0.042}_{-0.018}$
$A_{217}^{\text{dust}}$	0.967	$0.97 \pm 0.10$	$r_*$	144.551	$144.52 \pm 0.47$	$\sigma_8(2.33)$	0.3997	$0.359^{+0.039}_{-0.017}$
$A_{143 \times 217}^{\text{dust}}$	0.993	$1.03 \pm 0.16$	$100\theta_*$	1.041162	$1.04108 \pm 0.00047$	$f_{2000}^{143}$	30.54	$30.5 \pm 3.0$
$c_{100}$	0.99763	$0.9975 \pm 0.0011$	$D_M(z_*)/\text{Gpc}$	13.8836	$13.882 \pm 0.043$	$f_{2000}^{217}$	107.03	$107.3 \pm 2.0$
$c_{217}$	1.00138	$1.0011 \pm 0.0016$	$z_{\text{drag}}$	1059.589	$1059.49 \pm 0.45$	$f_{2000}^{143 \times 217}$	32.41	$32.7 \pm 2.2$
$H_0$	99.7	$> 79.9$	$r_{\text{drag}}$	147.264	$147.25 \pm 0.47$	$\chi_{\text{small}}^2$	395.72	$396.9 \pm 1.7$
$\Omega_\Lambda$	0.8562	$0.790^{+0.067}_{-0.017}$	$k_D$	0.14057	$0.14054 \pm 0.00051$	$\chi_{\text{lowl}}^2$	22.46	$23.0 \pm 1.1$
$\Omega_m$	0.1438	$0.210^{+0.017}_{-0.067}$	$100\theta_D$	0.160973	$0.16103 \pm 0.00026$	$\chi_{\text{CamSpec}}^2$	7048.6	$7062.0 \pm 5.3$
$\Omega_m h^2$	0.14284	$0.1431 \pm 0.0019$	$z_{\text{eq}}$	3398.1	$3403 \pm 46$	$\chi_{\text{prior}}^2$	2.03	$7.6 \pm 3.4$
$\Omega_m h^3$	0.1424	$0.121^{+0.020}_{-0.0095}$	$k_{\text{eq}}$	0.010371	$0.01039 \pm 0.00014$	$\chi_{\text{CMB}}^2$	7466.8	$7481.8 \pm 5.5$
$\sigma_8$	1.072	$0.958^{+0.11}_{-0.055}$	$100\theta_{\text{eq}}$	0.8137	$0.8126 \pm 0.0087$			
$S_8$	0.7418	$0.786^{+0.030}_{-0.042}$	$100\theta_{s,\text{eq}}$	0.44968	$0.4492 \pm 0.0045$			

Best-fit  $\chi_{\text{eff}}^2 = 7468.79$ ;  $\bar{\chi}_{\text{eff}}^2 = 7489.40$ ;  $R - 1 = 0.00889$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.72 commander\_dx12\_v3.2\_29: 22.46 CamSpec like\_10.7HM: 7048.57



18.14 base\_w\_CamSpecHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02222 \pm 0.00021$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.424^{+0.014}_{-0.023}$	$H(0.15)$	$82.2^{+6.5}_{-2.8}$
$\Omega_{\mathrm{c}}h^2$	$0.1193 \pm 0.0016$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.635^{+0.017}_{-0.013}$	$D_{\mathrm{M}}(0.15)$	$544^{+21}_{-62}$
$100\theta_{\mathrm{MC}}$	$1.04097 \pm 0.00046$	$\sigma_8/h^{0.5}$	$1.034^{+0.028}_{-0.019}$	$H(0.38)$	$84.5^{+1.0}_{-0.73}$
$\tau$	$0.0517 \pm 0.0081$	$r_{\mathrm{drag}}h$	$126^{+20}_{-9}$	$D_{\mathrm{M}}(0.38)$	$1378^{+35}_{-95}$
$w_0$	$-1.53^{+0.19}_{-0.35}$	$\langle d^2 \rangle^{1/2}$	$2.481^{+0.030}_{-0.027}$	$H(0.51)$	$88.5^{+1.1}_{-0.70}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.035 \pm 0.015$	$z_{\mathrm{re}}$	$7.37 \pm 0.83$	$D_{\mathrm{M}}(0.51)$	$1829^{+35}_{-94}$
$n_{\mathrm{s}}$	$0.9661 \pm 0.0050$	$10^9 A_{\mathrm{s}}$	$2.081 \pm 0.032$	$H(0.61)$	$92.7 \pm 1.4$
$y_{\mathrm{cal}}$	$1.0003 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.876 \pm 0.011$	$D_{\mathrm{M}}(0.61)$	$2161^{+34}_{-89}$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25$	$D_{40}$	$1221 \pm 13$	$H(2.33)$	$231.5^{+1.1}_{-2.6}$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8$	$D_{220}$	$5709 \pm 41$	$D_{\mathrm{M}}(2.33)$	$5742^{+16}_{-22}$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{810}$	$2531 \pm 13$	$f\sigma_8(0.15)$	$0.482 \pm 0.015$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{1420}$	$813.8 \pm 5.2$	$\sigma_8(0.15)$	$0.893^{+0.097}_{-0.049}$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$D_{2000}$	$229.7 \pm 1.8$	$f\sigma_8(0.38)$	$0.563^{+0.057}_{-0.039}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9661 \pm 0.0050$	$\sigma_8(0.38)$	$0.797^{+0.091}_{-0.044}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.451$	$Y_{\mathrm{P}}$	$0.245330^{+0.000096}_{-0.000079}$	$f\sigma_8(0.51)$	$0.580^{+0.071}_{-0.045}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246656^{+0.000097}_{-0.000080}$	$\sigma_8(0.51)$	$0.746^{+0.085}_{-0.041}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.615 \pm 0.040$	$f\sigma_8(0.61)$	$0.583^{+0.076}_{-0.045}$
$A_{100}^{\mathrm{dust}}$	$1.02 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.574^{+0.057}_{-0.14}$	$\sigma_8(0.61)$	$0.709^{+0.080}_{-0.038}$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.18$	$z_*$	$1090.05 \pm 0.36$	$f\sigma_8(2.33)$	$0.356^{+0.038}_{-0.017}$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$r_*$	$144.73 \pm 0.37$	$\sigma_8(2.33)$	$0.359^{+0.036}_{-0.017}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04117 \pm 0.00045$	$f_{2000}^{143}$	$30.5 \pm 3.0$
$c_{100}$	$0.9975 \pm 0.0010$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.900 \pm 0.035$	$f_{2000}^{217}$	$107.3 \pm 2.0$
$c_{217}$	$1.0012 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.53 \pm 0.45$	$f_{2000}^{143 \times 217}$	$32.7 \pm 2.2$
$H_0$	$> 80.6$	$r_{\mathrm{drag}}$	$147.45 \pm 0.38$	$\chi_{\mathrm{lensing}}^2$	$9.0 \pm 1.1$
$\Omega_{\Lambda}$	$0.796^{+0.062}_{-0.018}$	$k_{\mathrm{D}}$	$0.14038 \pm 0.00045$	$\chi_{\mathrm{simall}}^2$	$396.8 \pm 1.5$
$\Omega_{\mathrm{m}}$	$0.204^{+0.018}_{-0.062}$	$100\theta_{\mathrm{D}}$	$0.16100 \pm 0.00026$	$\chi_{\mathrm{lowl}}^2$	$22.56 \pm 0.89$
$\Omega_{\mathrm{m}}h^2$	$0.1422 \pm 0.0015$	$z_{\mathrm{eq}}$	$3382 \pm 36$	$\chi_{\mathrm{CamSpec}}^2$	$7062.1 \pm 5.1$
$\Omega_{\mathrm{m}}h^3$	$0.121^{+0.018}_{-0.0094}$	$k_{\mathrm{eq}}$	$0.01032 \pm 0.00011$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.4$
$\sigma_8$	$0.954^{+0.096}_{-0.050}$	$100\theta_{\mathrm{eq}}$	$0.8166 \pm 0.0069$	$\chi_{\mathrm{CMB}}^2$	$7490.4 \pm 5.5$
$S_8$	$0.774^{+0.025}_{-0.041}$	$100\theta_{\mathrm{s,eq}}$	$0.4512 \pm 0.0035$		
$\bar{\chi}_{\mathrm{eff}}^2 = 7497.94; R - 1 = 0.01572$					



18.15 base\_w\_CamSpecHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02218 \pm 0.00022$	$\sigma_8 \Omega_m^{0.5}$	$0.431^{+0.016}_{-0.023}$	$H(0.15)$	$81.6^{+6.7}_{-2.9}$
$\Omega_c h^2$	$0.1201 \pm 0.0020$	$\sigma_8 \Omega_m^{0.25}$	$0.641^{+0.023}_{-0.018}$	$D_M(0.15)$	$548^{+22}_{-67}$
$100\theta_{MC}$	$1.04089 \pm 0.00047$	$\sigma_8/h^{0.5}$	$1.043^{+0.037}_{-0.026}$	$H(0.38)$	$84.1^{+1.1}_{-0.87}$
$\tau$	$0.0542^{+0.0045}_{-0.0086}$	$r_{\text{drag}} h$	$124^{+20}_{-9}$	$D_M(0.38)$	$1388^{+36}_{-100}$
$w_0$	$-1.53^{+0.20}_{-0.39}$	$\langle d^2 \rangle^{1/2}$	$2.500^{+0.047}_{-0.041}$	$H(0.51)$	$88.3^{+1.3}_{-0.84}$
$\ln(10^{10} A_s)$	$3.042^{+0.012}_{-0.016}$	$z_{\text{re}}$	$7.66^{+0.52}_{-0.84}$	$D_M(0.51)$	$1841^{+37}_{-99}$
$n_s$	$0.9646 \pm 0.0056$	$10^9 A_s$	$2.095^{+0.024}_{-0.034}$	$H(0.61)$	$92.6 \pm 1.6$
$y_{\text{cal}}$	$1.0004 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	$1.880 \pm 0.013$	$D_M(0.61)$	$2173^{+35}_{-94}$
$A_{100}^{\text{PS}}$	$241 \pm 25$	$D_{40}$	$1225 \pm 15$	$H(2.33)$	$232.2^{+1.4}_{-2.7}$
$A_{143}^{\text{PS}}$	$40 \pm 8$	$D_{220}$	$5707 \pm 41$	$D_M(2.33)$	$5748^{+18}_{-23}$
$A_{217}^{\text{PS}}$	$102 \pm 10$	$D_{810}$	$2533 \pm 14$	$f\sigma_8(0.15)$	$0.489 \pm 0.021$
$A_{217}^{\text{CIB}}$	$40 \pm 7$	$D_{1420}$	$813.8 \pm 5.1$	$\sigma_8(0.15)$	$0.896^{+0.11}_{-0.054}$
$A_{143}^{\text{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$D_{2000}$	$229.8 \pm 1.8$	$f\sigma_8(0.38)$	$0.569^{+0.065}_{-0.046}$
$r_{143 \times 217}^{\text{PS}}$	$0.65 \pm 0.13$	$n_{s,0.002}$	$0.9646 \pm 0.0056$	$\sigma_8(0.38)$	$0.799^{+0.10}_{-0.048}$
$r_{143 \times 217}^{\text{CIB}}$	$0.57^{+0.41}_{-0.15}$	$Y_P$	$0.24531^{+0.00010}_{-0.000081}$	$f\sigma_8(0.51)$	$0.585^{+0.079}_{-0.051}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.24664^{+0.00010}_{-0.000081}$	$\sigma_8(0.51)$	$0.748^{+0.093}_{-0.043}$
$A^{\text{kSZ}}$	—	$10^5 \text{D}/\text{H}$	$2.622 \pm 0.041$	$f\sigma_8(0.61)$	$0.587^{+0.085}_{-0.051}$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.20$	$\text{Age}/\text{Gyr}$	$13.591^{+0.057}_{-0.15}$	$\sigma_8(0.61)$	$0.710^{+0.088}_{-0.040}$
$A_{143}^{\text{dust}}$	$0.97 \pm 0.18$	$z_*$	$1090.18 \pm 0.40$	$f\sigma_8(2.33)$	$0.356^{+0.042}_{-0.018}$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$r_*$	$144.54 \pm 0.46$	$\sigma_8(2.33)$	$0.359^{+0.039}_{-0.017}$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.16$	$100\theta_*$	$1.04109 \pm 0.00047$	$f_{2000}^{143}$	$30.4 \pm 3.0$
$c_{100}$	$0.9975 \pm 0.0011$	$D_M(z_*)/\text{Gpc}$	$13.884 \pm 0.043$	$f_{2000}^{217}$	$107.3 \pm 2.0$
$c_{217}$	$1.0011 \pm 0.0016$	$z_{\text{drag}}$	$1059.50 \pm 0.45$	$f_{2000}^{143 \times 217}$	$32.6 \pm 2.2$
$H_0$	$> 79.8$	$r_{\text{drag}}$	$147.27 \pm 0.47$	$\chi_{\text{simall}}^2$	$396.8 \pm 1.6$
$\Omega_\Lambda$	$0.790^{+0.067}_{-0.018}$	$k_D$	$0.14053 \pm 0.00051$	$\chi_{\text{lowl}}^2$	$22.9 \pm 1.1$
$\Omega_m$	$0.210^{+0.018}_{-0.067}$	$100\theta_D$	$0.16102 \pm 0.00026$	$\chi_{\text{CamSpec}}^2$	$7061.9 \pm 5.3$
$\Omega_m h^2$	$0.1430 \pm 0.0019$	$z_{\text{eq}}$	$3401 \pm 46$	$\chi_{\text{prior}}^2$	$7.6 \pm 3.4$
$\Omega_m h^3$	$0.121^{+0.019}_{-0.0097}$	$k_{\text{eq}}$	$0.01038 \pm 0.00014$	$\chi_{\text{CMB}}^2$	$7481.6 \pm 5.4$
$\sigma_8$	$0.959^{+0.11}_{-0.055}$	$100\theta_{\text{eq}}$	$0.8131 \pm 0.0086$		
$S_8$	$0.787^{+0.030}_{-0.042}$	$100\theta_{s,\text{eq}}$	$0.4494 \pm 0.0045$		
$\bar{\chi}_{\text{eff}}^2 = 7489.13; R - 1 = 0.01149$					



18.16 base\_w\_CamSpecHM\_TT\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02223 \pm 0.00021$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.424^{+0.014}_{-0.023}$	$H(0.15)$	$82.2^{+6.6}_{-2.9}$
$\Omega_{\mathrm{c}} h^2$	$0.1191 \pm 0.0016$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.635^{+0.017}_{-0.013}$	$D_{\mathrm{M}}(0.15)$	$544^{+22}_{-63}$
$100\theta_{\mathrm{MC}}$	$1.04099 \pm 0.00046$	$\sigma_8/h^{0.5}$	$1.034^{+0.028}_{-0.020}$	$H(0.38)$	$84.5^{+1.1}_{-0.70}$
$\tau$	$0.0538^{+0.0043}_{-0.0084}$	$r_{\mathrm{drag}} h$	$125^{+20}_{-9}$	$D_{\mathrm{M}}(0.38)$	$1379^{+36}_{-97}$
$w_0$	$-1.52^{+0.19}_{-0.35}$	$\langle d^2 \rangle^{1/2}$	$2.482^{+0.030}_{-0.027}$	$H(0.51)$	$88.6^{+1.1}_{-0.67}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.039^{+0.011}_{-0.015}$	$z_{\mathrm{re}}$	$7.59^{+0.45}_{-0.87}$	$D_{\mathrm{M}}(0.51)$	$1830^{+36}_{-96}$
$n_{\mathrm{s}}$	$0.9666 \pm 0.0048$	$10^9 A_{\mathrm{s}}$	$2.088^{+0.022}_{-0.031}$	$H(0.61)$	$92.8 \pm 1.4$
$y_{\mathrm{cal}}$	$1.0003 \pm 0.0025$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.875 \pm 0.011$	$D_{\mathrm{M}}(0.61)$	$2161^{+34}_{-91}$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25$	$D_{40}$	$1220 \pm 13$	$H(2.33)$	$231.5^{+1.1}_{-2.6}$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8$	$D_{220}$	$5709 \pm 41$	$D_{\mathrm{M}}(2.33)$	$5740^{+16}_{-22}$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{810}$	$2531 \pm 13$	$f\sigma_8(0.15)$	$0.481 \pm 0.015$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{1420}$	$813.9 \pm 5.1$	$\sigma_8(0.15)$	$0.892^{+0.098}_{-0.051}$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$D_{2000}$	$229.8 \pm 1.8$	$f\sigma_8(0.38)$	$0.562^{+0.056}_{-0.040}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9666 \pm 0.0048$	$\sigma_8(0.38)$	$0.796^{+0.091}_{-0.045}$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.450$	$Y_{\mathrm{P}}$	$0.245336^{+0.000094}_{-0.000079}$	$f\sigma_8(0.51)$	$0.579^{+0.070}_{-0.046}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246662^{+0.000094}_{-0.000080}$	$\sigma_8(0.51)$	$0.745^{+0.085}_{-0.042}$
$A^{\mathrm{kSZ}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.612 \pm 0.040$	$f\sigma_8(0.61)$	$0.581^{+0.076}_{-0.046}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.574^{+0.057}_{-0.14}$	$\sigma_8(0.61)$	$0.708^{+0.081}_{-0.039}$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.18$	$z_*$	$1090.02 \pm 0.35$	$f\sigma_8(2.33)$	$0.355^{+0.039}_{-0.017}$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$r_*$	$144.76 \pm 0.36$	$\sigma_8(2.33)$	$0.359^{+0.036}_{-0.017}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04119 \pm 0.00045$	$f_{2000}^{143}$	$30.4 \pm 3.0$
$c_{100}$	$0.9975 \pm 0.0010$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.904 \pm 0.034$	$f_{2000}^{217}$	$107.2 \pm 2.1$
$c_{217}$	$1.0012 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.55 \pm 0.45$	$f_{2000}^{143 \times 217}$	$32.6 \pm 2.2$
$H_0$	$> 80.4$	$r_{\mathrm{drag}}$	$147.48 \pm 0.37$	$\chi_{\mathrm{lensing}}^2$	$9.0 \pm 1.1$
$\Omega_{\Lambda}$	$0.795^{+0.063}_{-0.018}$	$k_{\mathrm{D}}$	$0.14035 \pm 0.00045$	$\chi_{\mathrm{simall}}^2$	$396.6 \pm 1.4$
$\Omega_{\mathrm{m}}$	$0.205^{+0.018}_{-0.063}$	$100\theta_{\mathrm{D}}$	$0.16099 \pm 0.00026$	$\chi_{\mathrm{lowl}}^2$	$22.52 \pm 0.88$
$\Omega_{\mathrm{m}} h^2$	$0.1420 \pm 0.0015$	$z_{\mathrm{eq}}$	$3378 \pm 35$	$\chi_{\mathrm{CamSpec}}^2$	$7062.0 \pm 5.2$
$\Omega_{\mathrm{m}} h^3$	$0.121^{+0.018}_{-0.0096}$	$k_{\mathrm{eq}}$	$0.01031 \pm 0.00011$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.4$
$\sigma_8$	$0.953^{+0.096}_{-0.052}$	$100\theta_{\mathrm{eq}}$	$0.8174 \pm 0.0067$	$\chi_{\mathrm{CMB}}^2$	$7490.1 \pm 5.4$
$S_8$	$0.775^{+0.025}_{-0.042}$	$100\theta_{\mathrm{s,eq}}$	$0.4516 \pm 0.0034$		
$\bar{\chi}_{\mathrm{eff}}^2 = 7497.68; R - 1 = 0.02078$					



# 18.17 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022361	$0.02233 \pm 0.00016$ (+0.7 $\sigma$ )	$\sigma_8$	1.060	$0.952^{+0.11}_{-0.051}$ (−0.1 $\sigma$ )	$100\theta_{\text{eq}}$	0.8166	$0.8160 \pm 0.0058$ (+0.4 $\sigma$ )
$\Omega_c h^2$	0.11924	$0.1194 \pm 0.0014$ (−0.4 $\sigma$ )	$S_8$	0.7367	$0.776^{+0.025}_{-0.039}$ (−0.3 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.45110	$0.4508 \pm 0.0030$ (+0.4 $\sigma$ )
$100\theta_{\text{MC}}$	1.040932	$1.04091 \pm 0.00032$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4035	$0.425^{+0.014}_{-0.021}$ (−0.3 $\sigma$ )	$H(0.15)$	88.79	$82.1^{+6.7}_{-2.8}$ (+0.1 $\sigma$ )
$\tau$	0.0528	$0.0523 \pm 0.0077$ (+0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6540	$0.635^{+0.021}_{-0.014}$ (−0.3 $\sigma$ )	$D_{\text{M}}(0.15)$	482.4	$546^{+21}_{-65}$ (−0.1 $\sigma$ )
$w_0$	−1.916	$-1.52^{+0.18}_{-0.39}$ (+0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	1.0650	$1.034^{+0.034}_{-0.021}$ (−0.3 $\sigma$ )	$H(0.38)$	84.89	$84.46^{+0.97}_{-0.54}$ (+0.4 $\sigma$ )
$\ln(10^{10} A_s)$	3.0380	$3.037 \pm 0.016$ (−0.1 $\sigma$ )	$r_{\text{drag}} h$	146.0	$125^{+20}_{-9}$ (+0.0 $\sigma$ )	$D_{\text{M}}(0.38)$	1286	$1381^{+34}_{-98}$ (−0.1 $\sigma$ )
$n_s$	0.96761	$0.9665 \pm 0.0044$ (+0.4 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.5066	$2.481^{+0.041}_{-0.032}$ (−0.4 $\sigma$ )	$H(0.51)$	87.21	$88.6^{+1.2}_{-0.74}$ (+0.3 $\sigma$ )
$y_{\text{cal}}$	1.00017	$1.0003 \pm 0.0025$ (−0.0 $\sigma$ )	$z_{\text{re}}$	7.45	$7.41^{+0.80}_{-0.70}$ (−0.1 $\sigma$ )	$D_{\text{M}}(0.51)$	1740	$1832^{+33}_{-97}$ (−0.1 $\sigma$ )
$A_{100}^{\text{PS}}$	230.4	$238 \pm 25$ (−0.1 $\sigma$ )	$10^9 A_s$	2.0863	$2.085 \pm 0.033$ (−0.1 $\sigma$ )	$H(0.61)$	90.60	$92.8^{+1.8}_{-2.0}$ (+0.2 $\sigma$ )
$A_{143}^{\text{PS}}$	43.8	$39 \pm 8$ (−0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8772	$1.877 \pm 0.012$ (−0.2 $\sigma$ )	$D_{\text{M}}(0.61)$	2078	$2163^{+31}_{-91}$ (−0.1 $\sigma$ )
$A_{217}^{\text{PS}}$	105.9	$103 \pm 10$ (+0.1 $\sigma$ )	$D_{40}$	1217.6	$1221 \pm 13$ (−0.3 $\sigma$ )	$H(2.33)$	229.95	$231.83^{+0.87}_{-2.5}$ (−0.2 $\sigma$ )
$A_{217}^{\text{CIB}}$	40.9	$39 \pm 7$ (−0.2 $\sigma$ )	$D_{220}$	5718.9	$5719 \pm 38$ (+0.3 $\sigma$ )	$D_{\text{M}}(2.33)$	5727.8	$5739^{+11}_{-19}$ (−0.4 $\sigma$ )
$A_{143}^{\text{tSZ}}$	6.01	$3.9^{+1.9}_{-2.5}$ (+0.1 $\sigma$ )	$D_{810}$	2534.2	$2534 \pm 14$ (+0.0 $\sigma$ )	$f\sigma_8(0.15)$	0.5003	$0.482^{+0.018}_{-0.016}$ (−0.3 $\sigma$ )
$r_{143 \times 217}^{\text{PS}}$	0.718	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$D_{1420}$	815.93	$815.3 \pm 4.8$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.999	$0.891^{+0.11}_{-0.050}$ (−0.1 $\sigma$ )
$r_{143 \times 217}^{\text{CIB}}$	0.692	$0.55^{+0.38}_{-0.20}$ (−0.1 $\sigma$ )	$D_{2000}$	230.76	$230.4 \pm 1.6$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.632	$0.562^{+0.065}_{-0.040}$ (−0.1 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.53	—	$n_{\text{s},0.002}$	0.96761	$0.9665 \pm 0.0044$ (+0.4 $\sigma$ )	$\sigma_8(0.38)$	0.895	$0.795^{+0.098}_{-0.045}$ (−0.0 $\sigma$ )
$A^{\text{kSZ}}$	0.84	$4.6^{+1.7}_{-4.4}$ (−0.1 $\sigma$ )	$Y_{\text{P}}$	0.245392	$0.245378^{+0.000065}_{-0.000058}$ (+0.7 $\sigma$ )	$f\sigma_8(0.51)$	0.663	$0.579^{+0.079}_{-0.045}$ (−0.1 $\sigma$ )
$A_{100}^{\text{dust}}$	1.001	$1.01 \pm 0.20$ (−0.0 $\sigma$ )	$Y_{\text{P}}^{\text{BBN}}$	0.246719	$0.246705^{+0.000065}_{-0.000059}$ (+0.7 $\sigma$ )	$\sigma_8(0.51)$	0.837	$0.744^{+0.092}_{-0.041}$ (−0.0 $\sigma$ )
$A_{143}^{\text{dust}}$	0.943	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	$10^5 \text{D}/\text{H}$	2.5871	$2.593 \pm 0.029$ (−0.7 $\sigma$ )	$f\sigma_8(0.61)$	0.670	$0.581^{+0.085}_{-0.045}$ (−0.1 $\sigma$ )
$A_{217}^{\text{dust}}$	0.977	$0.98 \pm 0.10$ (+0.1 $\sigma$ )	Age/Gyr	13.437	$13.571^{+0.049}_{-0.14}$ (−0.2 $\sigma$ )	$\sigma_8(0.61)$	0.794	$0.707^{+0.086}_{-0.039}$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{\text{dust}}$	1.037	$1.03 \pm 0.16$ (+0.0 $\sigma$ )	$z_*$	1089.863	$1089.92 \pm 0.27$ (−0.7 $\sigma$ )	$f\sigma_8(2.33)$	0.3961	$0.355^{+0.041}_{-0.018}$ (−0.0 $\sigma$ )
$c_{100}$	0.99782	$0.9975 \pm 0.0011$ (+0.0 $\sigma$ )	$r_*$	144.635	$144.62 \pm 0.31$ (+0.2 $\sigma$ )	$\sigma_8(2.33)$	0.3968	$0.358^{+0.038}_{-0.017}$ (−0.0 $\sigma$ )
$c_{217}$	1.00110	$1.0011 \pm 0.0016$ (−0.1 $\sigma$ )	$100\theta_*$	1.041112	$1.04110 \pm 0.00031$ (+0.0 $\sigma$ )	$f_{2000}^{143}$	28.86	$29.3 \pm 2.8$ (−0.4 $\sigma$ )
$c_{TE}$	0.99588	$0.9958 \pm 0.0049$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8924	$13.891 \pm 0.029$ (+0.2 $\sigma$ )	$f_{2000}^{217}$	105.98	$106.6 \pm 1.9$ (−0.4 $\sigma$ )
$c_{EE}$	0.99188	$0.9917 \pm 0.0050$	$z_{\text{drag}}$	1059.856	$1059.81 \pm 0.32$ (+0.7 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.53	$31.8 \pm 2.0$ (−0.4 $\sigma$ )
$H_0$	99.1	$> 80.2$ (+0.0 $\sigma$ )	$r_{\text{drag}}$	147.303	$147.29 \pm 0.31$ (+0.1 $\sigma$ )	$\chi_{\text{simall}}^2$	395.73	$396.7 \pm 1.5$ (−0.1 $\sigma$ )
$\Omega_{\Lambda}$	0.8551	$0.793^{+0.064}_{-0.017}$ (+0.1 $\sigma$ )	$k_{\text{D}}$	0.140636	$0.14062 \pm 0.00035$ (+0.2 $\sigma$ )	$\chi_{\text{lowl}}^2$	22.18	$22.57 \pm 0.82$ (−0.4 $\sigma$ )
$\Omega_{\text{m}}$	0.1449	$0.207^{+0.017}_{-0.064}$ (−0.1 $\sigma$ )	$100\theta_{\text{D}}$	0.160796	$0.16083 \pm 0.00019$ (−0.7 $\sigma$ )	$\chi_{\text{CamSpec}}^2$	11498.2	$11513.3 \pm 5.6$ (+840.4 $\sigma$ )
$\Omega_{\text{m}} h^2$	0.14224	$0.1424 \pm 0.0013$ (−0.4 $\sigma$ )	$z_{\text{eq}}$	3383.8	$3387 \pm 31$ (−0.4 $\sigma$ )	$\chi_{\text{prior}}^2$	1.93	$7.8 \pm 3.4$ (+0.1 $\sigma$ )
$\Omega_{\text{m}} h^3$	0.1409	$0.121^{+0.019}_{-0.0090}$ (−0.0 $\sigma$ )	$k_{\text{eq}}$	0.010328	$0.010337 \pm 0.000094$ (−0.4 $\sigma$ )	$\chi_{\text{CMB}}^2$	11916.1	$11932.6 \pm 5.8$ (+811.5 $\sigma$ )

Best-fit  $\chi_{\text{eff}}^2 = 11918.08$ ;  $\Delta\chi_{\text{eff}}^2 = 4449.29$ ;  $\bar{\chi}_{\text{eff}}^2 = 11940.42$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4451.01$ ;  $R - 1 = 0.01476$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.73 ( $\Delta$  0.01) commander\_dx12\_v3.2.29: 22.18 ( $\Delta$  -0.28) CamSpec like\_10.7HM\_1400\_unified: 11498.24



## 18.18 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02235 \pm 0.00015 \quad (+0.6\sigma)$	$S_8$	$0.770^{+0.022}_{-0.039} \quad (-0.1\sigma)$	$H(0.15)$	$82.6^{+6.3}_{-2.8} \quad (+0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1191 \pm 0.0012 \quad (-0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.422^{+0.012}_{-0.021} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$541^{+22}_{-60} \quad (-0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04093 \pm 0.00031 \quad (-0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.634^{+0.017}_{-0.012} \quad (-0.1\sigma)$	$H(0.38)$	$84.65^{+0.88}_{-0.51} \quad (+0.2\sigma)$
$\tau$	$0.0516 \pm 0.0073 \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$1.032^{+0.028}_{-0.018} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1372^{+34}_{-90} \quad (-0.1\sigma)$
$w_0$	$-1.54^{+0.17}_{-0.35} \quad (-0.0\sigma)$	$r_{\mathrm{drag}}h$	$126^{+20}_{-10} \quad (+0.0\sigma)$	$H(0.51)$	$88.7^{+1.1}_{-0.71} \quad (+0.1\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.035 \pm 0.014 \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.476^{+0.030}_{-0.025} \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1823^{+34}_{-89} \quad (-0.1\sigma)$
$n_{\mathrm{s}}$	$0.9671 \pm 0.0041 \quad (+0.2\sigma)$	$z_{\mathrm{re}}$	$7.33^{+0.77}_{-0.67} \quad (-0.0\sigma)$	$H(0.61)$	$92.8^{+1.4}_{-1.8} \quad (+0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0002 \pm 0.0025 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.080 \pm 0.030 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2154^{+32}_{-84} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$239 \pm 25 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.875 \pm 0.011 \quad (-0.0\sigma)$	$H(2.33)$	$231.41^{+0.85}_{-2.3} \quad (-0.0\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$D_{40}$	$1219 \pm 12 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5735^{+11}_{-17} \quad (-0.3\sigma)$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$D_{220}$	$5719 \pm 38 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.480^{+0.015}_{-0.013} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7 \quad (-0.2\sigma)$	$D_{810}$	$2532 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.894^{+0.096}_{-0.048} \quad (+0.0\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5} \quad (+0.1\sigma)$	$D_{1420}$	$815.1 \pm 4.8 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.563^{+0.058}_{-0.036} \quad (-0.0\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$D_{2000}$	$230.3 \pm 1.6 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.799^{+0.089}_{-0.043} \quad (+0.0\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.38}_{-0.19} \quad (-0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9671 \pm 0.0041 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.580^{+0.072}_{-0.041} \quad (-0.0\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.245385^{+0.000063}_{-0.000057} \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.747^{+0.083}_{-0.040} \quad (+0.0\sigma)$
$A^{\mathrm{kSZ}}$	$4.7^{+2.3}_{-3.9} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246711^{+0.000063}_{-0.000057} \quad (+0.6\sigma)$	$f\sigma_8(0.61)$	$0.583^{+0.077}_{-0.042} \quad (+0.0\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.590 \pm 0.029 \quad (-0.6\sigma)$	$\sigma_8(0.61)$	$0.710^{+0.078}_{-0.037} \quad (+0.0\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.557^{+0.050}_{-0.13} \quad (-0.1\sigma)$	$f\sigma_8(2.33)$	$0.356^{+0.037}_{-0.017} \quad (+0.0\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$z_*$	$1089.87 \pm 0.26 \quad (-0.5\sigma)$	$\sigma_8(2.33)$	$0.359^{+0.035}_{-0.017} \quad (+0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (+0.0\sigma)$	$r_*$	$144.68 \pm 0.28 \quad (-0.1\sigma)$	$f_{2000}^{143}$	$29.4 \pm 2.8 \quad (-0.4\sigma)$
$c_{100}$	$0.9975 \pm 0.0010 \quad (+0.1\sigma)$	$100\theta_*$	$1.04112 \pm 0.00031 \quad (-0.1\sigma)$	$f_{2000}^{217}$	$106.6 \pm 1.9 \quad (-0.3\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.897 \pm 0.026 \quad (-0.1\sigma)$	$f_{2000}^{143 \times 217}$	$31.9 \pm 2.0 \quad (-0.4\sigma)$
$c_{TE}$	$0.9960 \pm 0.0049$	$z_{\mathrm{drag}}$	$1059.82 \pm 0.33 \quad (+0.6\sigma)$	$\chi_{\mathrm{lensing}}^2$	$8.75 \pm 0.84 \quad (-0.2\sigma)$
$c_{EE}$	$0.9918 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.36 \pm 0.28 \quad (-0.2\sigma)$	$\chi_{\mathrm{small}}^2$	$396.6 \pm 1.3 \quad (-0.1\sigma)$
$H_0$	$> 81.0 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.14057 \pm 0.00033 \quad (+0.4\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.42 \pm 0.74 \quad (-0.2\sigma)$
$\Omega_{\Lambda}$	$0.799^{+0.059}_{-0.021} \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16082 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11513.1 \pm 5.4 \quad (+867.6\sigma)$
$\Omega_{\mathrm{m}}$	$0.201^{+0.021}_{-0.059} \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3380 \pm 27 \quad (-0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1421 \pm 0.0011 \quad (-0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010316 \pm 0.000083 \quad (-0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11940.9 \pm 5.8 \quad (+815.2\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.122^{+0.018}_{-0.0087} \quad (+0.0\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8173 \pm 0.0052 \quad (+0.1\sigma)$		
$\sigma_8$	$0.955^{+0.095}_{-0.048} \quad (+0.0\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4515 \pm 0.0026 \quad (+0.1\sigma)$		

 $\bar{\chi}_{\mathrm{eff}}^2 = 11948.65; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.71; R - 1 = 0.02333$



18.19 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Riess18

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02232 \pm 0.00014$	$S_8$	$0.809 \pm 0.015$	$H(0.15)$	$76.36 \pm 0.98$
$\Omega_c h^2$	$0.1196 \pm 0.0014$	$\sigma_8 \Omega_m^{0.5}$	$0.4434 \pm 0.0085$	$D_M(0.15)$	$601 \pm 11$
$100\theta_{MC}$	$1.04089 \pm 0.00032$	$\sigma_8 \Omega_m^{0.25}$	$0.619 \pm 0.010$	$H(0.38)$	$83.85 \pm 0.41$
$\tau$	$0.0522 \pm 0.0073$	$\sigma_8/h^{0.5}$	$1.007 \pm 0.015$	$D_M(0.38)$	$1466 \pm 17$
$w_0$	$-1.199^{+0.063}_{-0.055}$	$r_{\text{drag}} h$	$108.3 \pm 2.5$	$H(0.51)$	$89.56 \pm 0.36$
$\ln(10^{10} A_s)$	$3.038^{+0.016}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	$2.460 \pm 0.031$	$D_M(0.51)$	$1916 \pm 18$
$n_s$	$0.9659 \pm 0.0043$	$z_{\text{re}}$	$7.42^{+0.79}_{-0.69}$	$H(0.61)$	$94.59^{+0.43}_{-0.38}$
$y_{\text{cal}}$	$1.0006 \pm 0.0024$	$10^9 A_s$	$2.086^{+0.034}_{-0.031}$	$D_M(0.61)$	$2242 \pm 18$
$A_{100}^{\text{PS}}$	$239 \pm 24$	$10^9 A_s e^{-2\tau}$	$1.879 \pm 0.012$	$H(2.33)$	$233.79 \pm 0.89$
$A_{143}^{\text{PS}}$	$39^{+8}_{-9}$	$D_{40}$	$1225 \pm 13$	$D_M(2.33)$	$5749 \pm 10$
$A_{217}^{\text{PS}}$	$103 \pm 10$	$D_{220}$	$5721 \pm 38$	$f\sigma_8(0.15)$	$0.467 \pm 0.010$
$A_{217}^{\text{CIB}}$	$39 \pm 7$	$D_{810}$	$2535 \pm 13$	$\sigma_8(0.15)$	$0.802 \pm 0.018$
$A_{143}^{\text{tSZ}}$	$3.9^{+1.8}_{-2.5}$	$D_{1420}$	$815.8^{+4.5}_{-5.0}$	$f\sigma_8(0.38)$	$0.507 \pm 0.014$
$r_{143 \times 217}^{\text{PS}}$	$0.66 \pm 0.12$	$D_{2000}$	$230.4^{+1.5}_{-1.7}$	$\sigma_8(0.38)$	$0.713 \pm 0.016$
$r_{143 \times 217}^{\text{CIB}}$	$0.55^{+0.39}_{-0.19}$	$n_{s,0.002}$	$0.9659 \pm 0.0043$	$f\sigma_8(0.51)$	$0.512 \pm 0.014$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.245372 \pm 0.000058$	$\sigma_8(0.51)$	$0.667 \pm 0.015$
$A^{\text{kSZ}}$	$4.8^{+2.3}_{-4.0}$	$Y_P^{\text{BBN}}$	$0.246699 \pm 0.000058$	$f\sigma_8(0.61)$	$0.509 \pm 0.015$
$A_{100}^{\text{dust}}$	$1.00^{+0.21}_{-0.18}$	$10^5 \text{D/H}$	$2.596 \pm 0.027$	$\sigma_8(0.61)$	$0.634 \pm 0.014$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.17$	$\text{Age/Gyr}$	$13.693 \pm 0.031$	$f\sigma_8(2.33)$	$0.3200 \pm 0.0068$
$A_{217}^{\text{dust}}$	$0.98 \pm 0.10$	$z_*$	$1089.96 \pm 0.26$	$\sigma_8(2.33)$	$0.3260 \pm 0.0060$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16$	$r_*$	$144.57 \pm 0.32$	$f_{2000}^{143}$	$29.6 \pm 2.8$
$c_{100}$	$0.9975 \pm 0.0010$	$100\theta_*$	$1.04108 \pm 0.00032$	$f_{2000}^{217}$	$106.8 \pm 2.0$
$c_{217}$	$1.0011 \pm 0.0015$	$D_M(z_*)/\text{Gpc}$	$13.887 \pm 0.030$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.0$
$c_{TE}$	$0.9961 \pm 0.0049$	$z_{\text{drag}}$	$1059.78 \pm 0.30$	$\chi_{\text{small}}^2$	$396.7 \pm 1.3$
$c_{EE}$	$0.9918 \pm 0.0049$	$r_{\text{drag}}$	$147.25 \pm 0.33$	$\chi_{\text{lowl}}^2$	$22.85 \pm 0.85$
$H_0$	$73.5 \pm 1.7$	$k_D$	$0.14066 \pm 0.00036$	$\chi_{\text{CamSpec}}^2$	$11513.7 \pm 5.3$
$\Omega_\Lambda$	$0.736 \pm 0.012$	$100\theta_D$	$0.16084 \pm 0.00018$	$\chi_{\text{H073p45}}^2$	$1.0 \pm 1.4$
$\Omega_m$	$0.264 \pm 0.012$	$z_{\text{eq}}$	$3392 \pm 32$	$\chi_{\text{prior}}^2$	$7.7 \pm 3.4$
$\Omega_m h^2$	$0.1426 \pm 0.0013$	$k_{\text{eq}}$	$0.010352 \pm 0.000097$	$\chi_{\text{CMB}}^2$	$11933.2 \pm 5.5$
$\Omega_m h^3$	$0.1049 \pm 0.0026$	$100\theta_{\text{eq}}$	$0.8150 \pm 0.0060$		
$\sigma_8$	$0.863 \pm 0.019$	$100\theta_{s,\text{eq}}$	$0.4503 \pm 0.0031$		

$\bar{\chi}_{\text{eff}}^2 = 11941.94$ ;  $R - 1 = 0.08175$



**18.20 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02234 \pm 0.00015 \quad (+0.7\sigma)$	$\sigma_8$	$0.953^{+0.11}_{-0.052} \quad (-0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8161 \pm 0.0058 \quad (+0.4\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1194 \pm 0.0013 \quad (-0.4\sigma)$	$S_8$	$0.777^{+0.025}_{-0.039} \quad (-0.3\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4509 \pm 0.0030 \quad (+0.3\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04092 \pm 0.00031 \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.426^{+0.014}_{-0.021} \quad (-0.3\sigma)$	$H(0.15)$	$82.0^{+6.8}_{-2.8} \quad (+0.1\sigma)$
$\tau$	$0.0540^{+0.0045}_{-0.0076} \quad (-0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.636^{+0.021}_{-0.014} \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.15)$	$546^{+22}_{-65} \quad (-0.0\sigma)$
$w_0$	$-1.52^{+0.18}_{-0.39} \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$1.035^{+0.035}_{-0.021} \quad (-0.3\sigma)$	$H(0.38)$	$84.47^{+0.98}_{-0.54} \quad (+0.3\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.040^{+0.011}_{-0.015} \quad (-0.1\sigma)$	$r_{\mathrm{drag}}h$	$125^{+20}_{-9} \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1381^{+34}_{-99} \quad (-0.1\sigma)$
$n_{\mathrm{s}}$	$0.9667 \pm 0.0044 \quad (+0.4\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.484^{+0.040}_{-0.031} \quad (-0.3\sigma)$	$H(0.51)$	$88.6^{+1.2}_{-0.74} \quad (+0.3\sigma)$
$y_{\mathrm{cal}}$	$1.0003 \pm 0.0025 \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.60^{+0.51}_{-0.76} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1833^{+33}_{-97} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$238 \pm 25 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}}$	$2.092^{+0.023}_{-0.032} \quad (-0.1\sigma)$	$H(0.61)$	$92.8 \pm 1.5 \quad (+0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.012 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.61)$	$2164^{+31}_{-92} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$D_{40}$	$1221 \pm 13 \quad (-0.3\sigma)$	$H(2.33)$	$231.84^{+0.86}_{-2.6} \quad (-0.2\sigma)$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7 \quad (-0.2\sigma)$	$D_{220}$	$5719 \pm 38 \quad (+0.3\sigma)$	$D_{\mathrm{M}}(2.33)$	$5738^{+11}_{-19} \quad (-0.4\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5} \quad (+0.1\sigma)$	$D_{810}$	$2533 \pm 14 \quad (+0.0\sigma)$	$f\sigma_8(0.15)$	$0.482^{+0.019}_{-0.016} \quad (-0.3\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$D_{1420}$	$815.3 \pm 4.8 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.891^{+0.11}_{-0.051} \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.38}_{-0.20} \quad (-0.1\sigma)$	$D_{2000}$	$230.4 \pm 1.6 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.563^{+0.065}_{-0.040} \quad (-0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.9667 \pm 0.0044 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.796^{+0.099}_{-0.046} \quad (-0.0\sigma)$
$A^{\mathrm{kSZ}}$	$4.6^{+1.7}_{-4.4} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245381 \pm 0.000061 \quad (+0.7\sigma)$	$f\sigma_8(0.51)$	$0.579^{+0.080}_{-0.045} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246707 \pm 0.000062 \quad (+0.7\sigma)$	$\sigma_8(0.51)$	$0.744^{+0.092}_{-0.042} \quad (-0.0\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.592 \pm 0.029 \quad (-0.7\sigma)$	$f\sigma_8(0.61)$	$0.581^{+0.085}_{-0.046} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.571^{+0.049}_{-0.15} \quad (-0.2\sigma)$	$\sigma_8(0.61)$	$0.707^{+0.087}_{-0.039} \quad (-0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (+0.0\sigma)$	$z_*$	$1089.91 \pm 0.27 \quad (-0.7\sigma)$	$f\sigma_8(2.33)$	$0.355^{+0.041}_{-0.018} \quad (-0.0\sigma)$
$c_{100}$	$0.9975 \pm 0.0010 \quad (+0.0\sigma)$	$r_*$	$144.62 \pm 0.31 \quad (+0.2\sigma)$	$\sigma_8(2.33)$	$0.358^{+0.038}_{-0.017} \quad (-0.0\sigma)$
$c_{217}$	$1.0010 \pm 0.0016 \quad (-0.1\sigma)$	$100\theta_*$	$1.04111 \pm 0.00031 \quad (+0.0\sigma)$	$f_{2000}^{143}$	$29.2 \pm 2.8 \quad (-0.4\sigma)$
$c_{TE}$	$0.9957 \pm 0.0049$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.891 \pm 0.029 \quad (+0.2\sigma)$	$f_{2000}^{217}$	$106.5 \pm 1.9 \quad (-0.4\sigma)$
$c_{EE}$	$0.9916 \pm 0.0050$	$z_{\mathrm{drag}}$	$1059.82 \pm 0.32 \quad (+0.7\sigma)$	$f_{2000}^{143 \times 217}$	$31.8 \pm 2.0 \quad (-0.4\sigma)$
$H_0$	$> 80.1 \quad (+0.0\sigma)$	$r_{\mathrm{drag}}$	$147.30 \pm 0.31 \quad (+0.1\sigma)$	$\chi_{\mathrm{small}}^2$	$396.6 \pm 1.4 \quad (-0.1\sigma)$
$\Omega_{\Lambda}$	$0.793^{+0.065}_{-0.018} \quad (+0.0\sigma)$	$k_{\mathrm{D}}$	$0.14063 \pm 0.00035 \quad (+0.2\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.57 \pm 0.83 \quad (-0.3\sigma)$
$\Omega_{\mathrm{m}}$	$0.207^{+0.018}_{-0.065} \quad (-0.0\sigma)$	$100\theta_{\mathrm{D}}$	$0.16082 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11513.1 \pm 5.6 \quad (+839.3\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1423 \pm 0.0013 \quad (-0.3\sigma)$	$z_{\mathrm{eq}}$	$3386 \pm 31 \quad (-0.3\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.121^{+0.019}_{-0.0092} \quad (-0.0\sigma)$	$k_{\mathrm{eq}}$	$0.010335 \pm 0.000093 \quad (-0.3\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11932.3 \pm 5.7 \quad (+820.7\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 11940.09; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.96; R - 1 = 0.01385$$



18.21 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02236 \pm 0.00015 \quad (+0.6\sigma)$	$S_8$	$0.771^{+0.023}_{-0.039} \quad (-0.1\sigma)$	$H(0.15)$	$82.5^{+6.4}_{-2.9} \quad (+0.1\sigma)$
$\Omega_c h^2$	$0.1190 \pm 0.0012 \quad (-0.1\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.422^{+0.012}_{-0.021} \quad (-0.1\sigma)$	$D_M(0.15)$	$542^{+23}_{-61} \quad (-0.1\sigma)$
$100\theta_{MC}$	$1.04095 \pm 0.00030 \quad (-0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.634^{+0.018}_{-0.012} \quad (-0.1\sigma)$	$H(0.38)$	$84.67^{+0.90}_{-0.50} \quad (+0.1\sigma)$
$\tau$	$0.0534^{+0.0042}_{-0.0073} \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$1.032^{+0.029}_{-0.018} \quad (-0.1\sigma)$	$D_M(0.38)$	$1374^{+36}_{-92} \quad (-0.1\sigma)$
$w_0$	$-1.53^{+0.17}_{-0.36} \quad (-0.0\sigma)$	$r_{\text{drag}} h$	$126^{+20}_{-10} \quad (+0.0\sigma)$	$H(0.51)$	$88.7^{+1.1}_{-0.70} \quad (+0.1\sigma)$
$\ln(10^{10} A_s)$	$3.038^{+0.010}_{-0.014} \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.478^{+0.029}_{-0.024} \quad (-0.1\sigma)$	$D_M(0.51)$	$1824^{+35}_{-91} \quad (-0.1\sigma)$
$n_s$	$0.9674 \pm 0.0041 \quad (+0.1\sigma)$	$z_{\text{re}}$	$7.52^{+0.45}_{-0.74} \quad (-0.1\sigma)$	$H(0.61)$	$92.9^{+1.5}_{-1.8} \quad (+0.0\sigma)$
$y_{\text{cal}}$	$1.0002 \pm 0.0025 \quad (-0.0\sigma)$	$10^9 A_s$	$2.086^{+0.021}_{-0.029} \quad (-0.1\sigma)$	$D_M(0.61)$	$2155^{+32}_{-86} \quad (-0.1\sigma)$
$A_{100}^{\text{PS}}$	$238 \pm 25 \quad (-0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.875 \pm 0.011 \quad (-0.0\sigma)$	$H(2.33)$	$231.41^{+0.85}_{-2.4} \quad (-0.0\sigma)$
$A_{143}^{\text{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$D_{40}$	$1219 \pm 12 \quad (-0.1\sigma)$	$D_M(2.33)$	$5735^{+11}_{-18} \quad (-0.3\sigma)$
$A_{217}^{\text{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{220}$	$5719 \pm 37 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.480^{+0.015}_{-0.013} \quad (-0.1\sigma)$
$A_{217}^{\text{CIB}}$	$39 \pm 7 \quad (-0.2\sigma)$	$D_{810}$	$2532 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.893^{+0.097}_{-0.049} \quad (+0.0\sigma)$
$A_{143}^{\text{tSZ}}$	$3.9^{+1.9}_{-2.5} \quad (+0.1\sigma)$	$D_{1420}$	$815.0 \pm 4.8 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.562^{+0.059}_{-0.037} \quad (-0.0\sigma)$
$r_{143 \times 217}^{\text{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$D_{2000}$	$230.3 \pm 1.6 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.798^{+0.090}_{-0.044} \quad (+0.0\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	$0.55^{+0.38}_{-0.19} \quad (-0.1\sigma)$	$n_{s,0.002}$	$0.9674 \pm 0.0041 \quad (+0.1\sigma)$	$f\sigma_8(0.51)$	$0.579^{+0.072}_{-0.042} \quad (+0.0\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P$	$0.245388^{+0.000063}_{-0.000057} \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.746^{+0.084}_{-0.041} \quad (+0.0\sigma)$
$A^{\text{kSZ}}$	$4.7^{+2.3}_{-3.9} \quad (-0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.246715^{+0.000063}_{-0.000057} \quad (+0.6\sigma)$	$f\sigma_8(0.61)$	$0.582^{+0.077}_{-0.043} \quad (+0.0\sigma)$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$10^5 D/H$	$2.588 \pm 0.028 \quad (-0.6\sigma)$	$\sigma_8(0.61)$	$0.709^{+0.079}_{-0.038} \quad (+0.0\sigma)$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$\text{Age}/\text{Gyr}$	$13.559^{+0.051}_{-0.13} \quad (-0.1\sigma)$	$f\sigma_8(2.33)$	$0.356^{+0.038}_{-0.017} \quad (+0.0\sigma)$
$A_{217}^{\text{dust}}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$z_*$	$1089.85 \pm 0.26 \quad (-0.5\sigma)$	$\sigma_8(2.33)$	$0.359^{+0.035}_{-0.017} \quad (+0.0\sigma)$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16 \quad (+0.0\sigma)$	$r_*$	$144.70 \pm 0.27 \quad (-0.2\sigma)$	$f_{2000}^{143}$	$29.3 \pm 2.8 \quad (-0.4\sigma)$
$c_{100}$	$0.9975 \pm 0.0010 \quad (+0.0\sigma)$	$100\theta_*$	$1.04113 \pm 0.00030 \quad (-0.1\sigma)$	$f_{2000}^{217}$	$106.5 \pm 1.9 \quad (-0.3\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$D_M(z_*)/\text{Gpc}$	$13.898 \pm 0.026 \quad (-0.2\sigma)$	$f_{2000}^{143 \times 217}$	$31.8 \pm 2.0 \quad (-0.4\sigma)$
$c_{TE}$	$0.9958 \pm 0.0049$	$z_{\text{drag}}$	$1059.83 \pm 0.32 \quad (+0.6\sigma)$	$\chi_{\text{lensing}}^2$	$8.76 \pm 0.85 \quad (-0.2\sigma)$
$c_{EE}$	$0.9917 \pm 0.0049$	$r_{\text{drag}}$	$147.37 \pm 0.28 \quad (-0.3\sigma)$	$\chi_{\text{small}}^2$	$396.4 \pm 1.2 \quad (-0.1\sigma)$
$H_0$	$> 80.7 \quad (+0.0\sigma)$	$k_D$	$0.14056 \pm 0.00033 \quad (+0.5\sigma)$	$\chi_{\text{lowl}}^2$	$22.41 \pm 0.75 \quad (-0.1\sigma)$
$\Omega_\Lambda$	$0.797^{+0.060}_{-0.019} \quad (+0.0\sigma)$	$100\theta_D$	$0.16081 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{\text{CamSpec}}^2$	$11513.0 \pm 5.4 \quad (+863.6\sigma)$
$\Omega_m$	$0.203^{+0.019}_{-0.060} \quad (-0.0\sigma)$	$z_{\text{eq}}$	$3378 \pm 27 \quad (-0.0\sigma)$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_m h^2$	$0.1420 \pm 0.0011 \quad (-0.0\sigma)$	$k_{\text{eq}}$	$0.010310 \pm 0.000082 \quad (-0.0\sigma)$	$\chi_{\text{CMB}}^2$	$11940.6 \pm 5.7 \quad (+824.4\sigma)$
$\Omega_m h^3$	$0.121^{+0.018}_{-0.0090} \quad (+0.0\sigma)$	$100\theta_{\text{eq}}$	$0.8177 \pm 0.0051 \quad (+0.0\sigma)$		
$\sigma_8$	$0.954^{+0.096}_{-0.049} \quad (+0.0\sigma)$	$100\theta_{s,\text{eq}}$	$0.4517 \pm 0.0026 \quad (+0.0\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 11948.34; \Delta\bar{\chi}_{\text{eff}}^2 = 4450.66; R - 1 = 0.02464$$



**18.22**    **base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Riess18\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02232 \pm 0.00014$	$S_8$	$0.810 \pm 0.015$	$H(0.15)$	$76.35 \pm 0.98$
$\Omega_{\mathrm{c}}h^2$	$0.1196 \pm 0.0014$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4438 \pm 0.0082$	$D_{\mathrm{M}}(0.15)$	$602 \pm 11$
$100\theta_{\mathrm{MC}}$	$1.04090 \pm 0.00032$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6192 \pm 0.0099$	$H(0.38)$	$83.86 \pm 0.40$
$\tau$	$0.0537^{+0.0052}_{-0.0068}$	$\sigma_8/h^{0.5}$	$1.008 \pm 0.014$	$D_{\mathrm{M}}(0.38)$	$1466 \pm 17$
$w_0$	$-1.198^{+0.062}_{-0.053}$	$r_{\mathrm{drag}}h$	$108.3 \pm 2.5$	$H(0.51)$	$89.58 \pm 0.35$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.012}_{-0.014}$	$\langle d^2 \rangle^{1/2}$	$2.462 \pm 0.029$	$D_{\mathrm{M}}(0.51)$	$1916 \pm 18$
$n_{\mathrm{s}}$	$0.9661 \pm 0.0041$	$z_{\mathrm{re}}$	$7.59^{+0.52}_{-0.75}$	$H(0.61)$	$94.60 \pm 0.40$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0024$	$10^9 A_{\mathrm{s}}$	$2.092^{+0.025}_{-0.030}$	$D_{\mathrm{M}}(0.61)$	$2242 \pm 18$
$A_{100}^{\mathrm{PS}}$	$238 \pm 24$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879 \pm 0.011$	$H(2.33)$	$233.77 \pm 0.88$
$A_{143}^{\mathrm{PS}}$	$39^{+8}_{-9}$	$D_{40}$	$1225 \pm 12$	$D_{\mathrm{M}}(2.33)$	$5749 \pm 10$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10$	$D_{220}$	$5722^{+40}_{-36}$	$f\sigma_8(0.15)$	$0.4676 \pm 0.0098$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7$	$D_{810}$	$2535 \pm 13$	$\sigma_8(0.15)$	$0.802 \pm 0.018$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.8}_{-2.5}$	$D_{1420}$	$815.8^{+4.5}_{-5.0}$	$f\sigma_8(0.38)$	$0.507 \pm 0.013$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.12$	$D_{2000}$	$230.4^{+1.4}_{-1.7}$	$\sigma_8(0.38)$	$0.713 \pm 0.016$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.40}_{-0.18}$	$n_{\mathrm{s},0.002}$	$0.9661 \pm 0.0041$	$f\sigma_8(0.51)$	$0.512 \pm 0.014$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.245374 \pm 0.000056$	$\sigma_8(0.51)$	$0.668 \pm 0.015$
$A^{\mathrm{kSZ}}$	$4.8^{+2.2}_{-4.1}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246700 \pm 0.000056$	$f\sigma_8(0.61)$	$0.509 \pm 0.014$
$A_{100}^{\mathrm{dust}}$	$0.995^{+0.20}_{-0.18}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.595 \pm 0.026$	$\sigma_8(0.61)$	$0.635 \pm 0.014$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$\mathrm{Age}/\mathrm{Gyr}$	$13.693 \pm 0.031$	$f\sigma_8(2.33)$	$0.3203 \pm 0.0067$
$A_{217}^{\mathrm{dust}}$	$0.981^{+0.094}_{-0.11}$	$z_*$	$1089.95 \pm 0.25$	$\sigma_8(2.33)$	$0.3263 \pm 0.0059$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.15$	$r_*$	$144.58 \pm 0.32$	$f_{2000}^{143}$	$29.5 \pm 2.8$
$c_{100}$	$0.9975 \pm 0.0010$	$100\theta_*$	$1.04109 \pm 0.00032$	$f_{2000}^{217}$	$106.8 \pm 1.9$
$c_{217}$	$1.0011 \pm 0.0015$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.887 \pm 0.029$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.0$
$c_{TE}$	$0.9959 \pm 0.0049$	$z_{\mathrm{drag}}$	$1059.79 \pm 0.29$	$\chi_{\mathrm{small}}^2$	$396.6 \pm 1.3$
$c_{EE}$	$0.9918 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.26 \pm 0.32$	$\chi_{\mathrm{lowl}}^2$	$22.86 \pm 0.82$
$H_0$	$73.5 \pm 1.7$	$k_{\mathrm{D}}$	$0.14065 \pm 0.00035$	$\chi_{\mathrm{CamSpec}}^2$	$11513.4 \pm 5.3$
$\Omega_{\Lambda}$	$0.736 \pm 0.012$	$100\theta_{\mathrm{D}}$	$0.16084 \pm 0.00017$	$\chi_{\mathrm{H073p45}}^2$	$1.0 \pm 1.4$
$\Omega_{\mathrm{m}}$	$0.264 \pm 0.012$	$z_{\mathrm{eq}}$	$3391 \pm 31$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.5$
$\Omega_{\mathrm{m}}h^2$	$0.1425 \pm 0.0013$	$k_{\mathrm{eq}}$	$0.010349 \pm 0.000095$	$\chi_{\mathrm{CMB}}^2$	$11932.9 \pm 5.4$
$\Omega_{\mathrm{m}}h^3$	$0.1048 \pm 0.0025$	$100\theta_{\mathrm{eq}}$	$0.8152 \pm 0.0058$		
$\sigma_8$	$0.864 \pm 0.018$	$100\theta_{\mathrm{s},\mathrm{eq}}$	$0.4504 \pm 0.0030$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11941.58; R - 1 = 0.09840$$



### 18.23 base\_w\_plikHM\_TT\_lowl\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022173	$0.02217 \pm 0.00020$	$\sigma_8/h^{0.5}$	0.9895	$0.992 \pm 0.020$	$D_M(0.38)$	1524.8	$1522 \pm 17$
$\Omega_c h^2$	0.11961	$0.1197 \pm 0.0018$	$r_{\text{drag}} h$	100.45	$100.9^{+1.9}_{-2.3}$	$H(0.51)$	89.543	$89.50^{+0.39}_{-0.34}$
$100\theta_{\text{MC}}$	1.040921	$1.04090 \pm 0.00044$	$\langle d^2 \rangle^{1/2}$	2.4411	$2.445 \pm 0.040$	$D_M(0.51)$	1977.2	$1974 \pm 17$
$\tau$	0.0528	$0.0531 \pm 0.0080$	$z_{\text{re}}$	7.56	$7.57 \pm 0.82$	$H(0.61)$	95.092	$95.02^{+0.49}_{-0.40}$
$w_0$	-1.027	$-1.041^{+0.074}_{-0.060}$	$10^9 A_s$	2.0905	$2.091 \pm 0.034$	$D_M(0.61)$	2302.2	$2299 \pm 17$
$\ln(10^{10} A_s)$	3.0400	$3.040 \pm 0.016$	$10^9 A_s e^{-2\tau}$	1.8811	$1.880 \pm 0.013$	$H(2.33)$	235.70	$235.65 \pm 0.80$
$n_s$	0.9655	$0.9649 \pm 0.0051$	$D_{40}$	1227.4	$1228 \pm 14$	$D_M(2.33)$	5768.2	$5768 \pm 12$
$y_{\text{cal}}$	1.00058	$1.0005 \pm 0.0025$	$D_{220}$	5717.3	$5716 \pm 40$	$f\sigma_8(0.15)$	0.4594	$0.461 \pm 0.013$
$A_{217}^{\text{CIB}}$	49.6	$48 \pm 7$	$D_{810}$	2537.6	$2536 \pm 14$	$\sigma_8(0.15)$	0.7551	$0.759 \pm 0.022$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.21	—	$D_{1420}$	815.8	$815.0 \pm 5.1$	$f\sigma_8(0.38)$	0.4799	$0.483^{+0.016}_{-0.018}$
$A_{143}^{\text{tSZ}}$	6.99	$5.1 \pm 2.0$	$D_{2000}$	230.04	$229.8 \pm 1.8$	$\sigma_8(0.38)$	0.6694	$0.673 \pm 0.020$
$A_{100}^{\text{PS}}$	256.8	$263 \pm 28$	$n_{s,0.002}$	0.9655	$0.9649 \pm 0.0051$	$f\sigma_8(0.51)$	0.4791	$0.482^{+0.017}_{-0.019}$
$A_{143}^{\text{PS}}$	48.2	$49 \pm 8$	$Y_{\text{P}}$	0.245315	$0.245310^{+0.000091}_{-0.000077}$	$\sigma_8(0.51)$	0.6263	$0.629 \pm 0.018$
$A_{143 \times 217}^{\text{PS}}$	43.9	$43 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	0.246641	$0.246636^{+0.000092}_{-0.000078}$	$f\sigma_8(0.61)$	0.4743	$0.477^{+0.017}_{-0.019}$
$A_{217}^{\text{PS}}$	117.7	$115 \pm 10$	$10^5 \text{D}/\text{H}$	2.6231	$2.624 \pm 0.038$	$\sigma_8(0.61)$	0.5959	$0.599 \pm 0.017$
$A^{\text{kSZ}}$	0.12	$< 4.72$	$\text{Age}/\text{Gyr}$	13.7989	$13.794 \pm 0.035$	$f\sigma_8(2.33)$	0.3004	$0.3018 \pm 0.0084$
$A_{100}^{\text{dustTT}}$	8.86	$9.0 \pm 1.8$	$z_*$	1090.135	$1090.15 \pm 0.35$	$\sigma_8(2.33)$	0.3090	$0.3102 \pm 0.0071$
$A_{143}^{\text{dustTT}}$	10.82	$10.7 \pm 1.8$	$r_*$	144.683	$144.66 \pm 0.42$	$f_{2000}^{143}$	30.67	$31.0 \pm 2.9$
$A_{143 \times 217}^{\text{dustTT}}$	19.34	$18.3 \pm 3.3$	$100\theta_*$	1.041129	$1.04110 \pm 0.00044$	$f_{2000}^{143 \times 217}$	33.38	$33.4 \pm 2.0$
$A_{217}^{\text{dustTT}}$	94.5	$93.3 \pm 7.3$	$D_M(z_*)/\text{Gpc}$	13.8967	$13.895 \pm 0.039$	$f_{2000}^{217}$	107.87	$108.0 \pm 1.9$
$c_{100}$	0.99965	$0.99960 \pm 0.00062$	$z_{\text{drag}}$	1059.437	$1059.45 \pm 0.43$	$\chi_{\text{small}}^2$	395.86	$397.0 \pm 1.8$
$c_{217}$	0.99829	$0.99826 \pm 0.00062$	$r_{\text{drag}}$	147.416	$147.40 \pm 0.43$	$\chi_{\text{lowl}}^2$	23.15	$23.3 \pm 1.0$
$H_0$	68.14	$68.5^{+1.4}_{-1.7}$	$k_{\text{D}}$	0.140374	$0.14039 \pm 0.00049$	$\chi_{\text{plik}}^2$	759.1	$771.5 \pm 5.6$
$\Omega_\Lambda$	0.6933	$0.696 \pm 0.012$	$100\theta_{\text{D}}$	0.161047	$0.16105 \pm 0.00025$	$\chi_{6\text{DF}}^2$	0.002	$0.13 \pm 0.19$
$\Omega_{\text{m}}$	0.3067	$0.304 \pm 0.012$	$z_{\text{eq}}$	3388.2	$3390 \pm 41$	$\chi_{\text{MGS}}^2$	1.54	$1.9 \pm 1.0$
$\Omega_{\text{m}} h^2$	0.14243	$0.1425 \pm 0.0017$	$k_{\text{eq}}$	0.010341	$0.01035 \pm 0.00012$	$\chi_{\text{DR12BAO}}^2$	4.36	$5.2 \pm 1.5$
$\Omega_{\text{m}} h^3$	0.09705	$0.0976^{+0.0027}_{-0.0031}$	$100\theta_{\text{eq}}$	0.8153	$0.8149 \pm 0.0076$	$\chi_{\text{prior}}^2$	1.47	$7.3 \pm 3.7$
$\sigma_8$	0.8168	$0.821 \pm 0.024$	$100\theta_{s,\text{eq}}$	0.45056	$0.4504 \pm 0.0039$	$\chi_{\text{BAO}}^2$	5.90	$7.2 \pm 1.9$
$S_8$	0.8260	$0.826 \pm 0.017$	$H(0.15)$	73.14	$73.31 \pm 0.87$	$\chi_{\text{CMB}}^2$	1178.1	$1191.8 \pm 5.6$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4524	$0.4524 \pm 0.0094$	$D_M(0.15)$	637.7	$636 \pm 11$			
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6079	$0.609 \pm 0.014$	$H(0.38)$	82.945	$82.96 \pm 0.35$			

Best-fit  $\chi_{\text{eff}}^2 = 1185.52$ ;  $\bar{\chi}_{\text{eff}}^2 = 1206.32$ ;  $R - 1 = 0.00799$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.54 DR12BAO: 4.36 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.86 commander\_dx12\_v3.2.29: 23.15 plik\_rd12\_HM\_v22\_TT: 759.14



## 18.24 base\_w\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022205	$0.02217 \pm 0.00020$	$\sigma_8/h^{0.5}$	0.9908	$0.992 \pm 0.014$	$D_M(0.38)$	1523.4	$1521 \pm 16$
$\Omega_c h^2$	0.11959	$0.1197 \pm 0.0014$	$r_{\text{drag}} h$	100.60	$101.0^{+1.9}_{-2.2}$	$H(0.51)$	89.554	$89.52 \pm 0.31$
$100\theta_{\text{MC}}$	1.040857	$1.04090 \pm 0.00042$	$\langle d^2 \rangle^{1/2}$	2.4444	$2.445 \pm 0.027$	$D_M(0.51)$	1975.7	$1973 \pm 17$
$\tau$	0.0542	$0.0533 \pm 0.0078$	$z_{\text{re}}$	7.70	$7.59 \pm 0.79$	$H(0.61)$	95.092	$95.03^{+0.40}_{-0.34}$
$w_0$	-1.031	$-1.042^{+0.062}_{-0.052}$	$10^9 A_s$	2.0957	$2.092 \pm 0.031$	$D_M(0.61)$	2300.6	$2298 \pm 17$
$\ln(10^{10} A_s)$	3.0425	$3.041 \pm 0.015$	$10^9 A_s e^{-2\tau}$	1.8805	$1.880 \pm 0.011$	$H(2.33)$	235.66	$235.59 \pm 0.79$
$n_s$	0.96550	$0.9649 \pm 0.0045$	$D_{40}$	1227.6	$1229 \pm 12$	$D_M(2.33)$	5767.3	$5768 \pm 12$
$y_{\text{cal}}$	1.00028	$1.0005 \pm 0.0024$	$D_{220}$	5718.5	$5718 \pm 40$	$f\sigma_8(0.15)$	0.4600	$0.4605 \pm 0.0091$
$A_{217}^{\text{CIB}}$	48.6	$48 \pm 7$	$D_{810}$	2536.8	$2536 \pm 13$	$\sigma_8(0.15)$	0.7568	$0.759 \pm 0.017$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.32	—	$D_{1420}$	815.6	$815.0 \pm 5.0$	$f\sigma_8(0.38)$	0.4809	$0.483^{+0.012}_{-0.013}$
$A_{143}^{\text{tSZ}}$	7.02	$5.1^{+2.2}_{-2.0}$	$D_{2000}$	230.08	$229.8 \pm 1.7$	$\sigma_8(0.38)$	0.6709	$0.673 \pm 0.015$
$A_{100}^{\text{PS}}$	254.1	$263 \pm 28$	$n_{s,0.002}$	0.96550	$0.9649 \pm 0.0045$	$f\sigma_8(0.51)$	0.4802	$0.482^{+0.013}_{-0.014}$
$A_{143}^{\text{PS}}$	49.2	$49 \pm 8$	$Y_{\text{P}}$	0.245328	$0.245312^{+0.000090}_{-0.000074}$	$\sigma_8(0.51)$	0.6278	$0.630 \pm 0.014$
$A_{143 \times 217}^{\text{PS}}$	46.9	$43 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	0.246654	$0.246638^{+0.000091}_{-0.000074}$	$f\sigma_8(0.61)$	0.4754	$0.477^{+0.013}_{-0.015}$
$A_{217}^{\text{PS}}$	119.5	$115 \pm 10$	$10^5 \text{D}/\text{H}$	2.6170	$2.623 \pm 0.037$	$\sigma_8(0.61)$	0.5973	$0.599 \pm 0.013$
$A^{\text{kSZ}}$	0.01	$< 4.72$	Age/Gyr	13.7956	$13.793 \pm 0.034$	$f\sigma_8(2.33)$	0.3012	$0.3020 \pm 0.0066$
$A_{100}^{\text{dustTT}}$	8.88	$8.9 \pm 1.9$	$z_*$	1090.093	$1090.14 \pm 0.31$	$\sigma_8(2.33)$	0.3097	$0.3104 \pm 0.0056$
$A_{143}^{\text{dustTT}}$	10.80	$10.7 \pm 1.8$	$r_*$	144.663	$144.67 \pm 0.33$	$f_{2000}^{143}$	30.19	$31.0 \pm 2.9$
$A_{143 \times 217}^{\text{dustTT}}$	19.36	$18.3 \pm 3.2$	$100\theta_*$	1.041056	$1.04110 \pm 0.00042$	$f_{2000}^{143 \times 217}$	33.12	$33.4 \pm 2.0$
$A_{217}^{\text{dustTT}}$	94.5	$93.2 \pm 7.2$	$D_M(z_*)/\text{Gpc}$	13.8958	$13.896 \pm 0.032$	$f_{2000}^{217}$	107.58	$108.0 \pm 1.9$
$c_{100}$	0.99966	$0.99960 \pm 0.00061$	$z_{\text{drag}}$	1059.513	$1059.46 \pm 0.44$	$\chi^2_{\text{lensing}}$	8.734	$9.35 \pm 0.86$
$c_{217}$	0.99823	$0.99826 \pm 0.00062$	$r_{\text{drag}}$	147.385	$147.40 \pm 0.35$	$\chi^2_{\text{small}}$	396.05	$397.0 \pm 1.7$
$H_0$	68.25	$68.5^{+1.3}_{-1.5}$	$k_{\text{D}}$	0.140431	$0.14039 \pm 0.00044$	$\chi^2_{\text{lowl}}$	23.21	$23.32 \pm 0.89$
$\Omega_\Lambda$	0.6943	$0.696 \pm 0.012$	$100\theta_{\text{D}}$	0.160992	$0.16104 \pm 0.00025$	$\chi^2_{\text{plik}}$	759.0	$770.9 \pm 5.3$
$\Omega_{\text{m}}$	0.3057	$0.304 \pm 0.012$	$z_{\text{eq}}$	3388.5	$3389 \pm 31$	$\chi^2_{6\text{DF}}$	0.000	$0.13 \pm 0.18$
$\Omega_{\text{m}} h^2$	0.14244	$0.1425 \pm 0.0013$	$k_{\text{eq}}$	0.010342	$0.010345 \pm 0.000095$	$\chi^2_{\text{MGS}}$	1.61	$1.92 \pm 0.99$
$\Omega_{\text{m}} h^3$	0.09722	$0.0977^{+0.0023}_{-0.0026}$	$100\theta_{\text{eq}}$	0.8152	$0.8151 \pm 0.0058$	$\chi^2_{\text{DR12BAO}}$	4.33	$5.1 \pm 1.4$
$\sigma_8$	0.8186	$0.821 \pm 0.018$	$100\theta_{s,\text{eq}}$	0.45052	$0.4505 \pm 0.0030$	$\chi^2_{\text{prior}}$	1.31	$7.2 \pm 3.6$
$S_8$	0.8264	$0.825 \pm 0.012$	$H(0.15)$	73.21	$73.36 \pm 0.85$	$\chi^2_{\text{CMB}}$	1187.0	$1200.6 \pm 5.6$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4526	$0.4521 \pm 0.0067$	$D_M(0.15)$	636.9	$635 \pm 10$	$\chi^2_{\text{BAO}}$	5.94	$7.2 \pm 1.8$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6087	$0.6092 \pm 0.0095$	$H(0.38)$	82.973	$82.98 \pm 0.34$			

Best-fit  $\chi^2_{\text{eff}} = 1194.29$ ;  $\bar{\chi}^2_{\text{eff}} = 1214.98$ ;  $R - 1 = 0.01126$

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.00 MGS: 1.61 DR12BAO: 4.33 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.73 small\_100x143.offlike5\_EE\_Aplanck\_B: 396.05 commander\_dx12.v3.2.29: 23.21 plik\_rd12\_HM.v22\_TT: 759.05



18.25 base\_w\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02217 \pm 0.00020$	$\sigma_8/h^{0.5}$	$0.992 \pm 0.020$	$D_M(0.38)$	$1522 \pm 17$
$\Omega_c h^2$	$0.1197 \pm 0.0018$	$r_{\text{drag}} h$	$100.9^{+1.9}_{-2.3}$	$H(0.51)$	$89.51^{+0.39}_{-0.34}$
$100\theta_{\text{MC}}$	$1.04091 \pm 0.00044$	$\langle d^2 \rangle^{1/2}$	$2.447 \pm 0.040$	$D_M(0.51)$	$1974 \pm 17$
$\tau$	$0.0545^{+0.0050}_{-0.0082}$	$z_{\text{re}}$	$7.72^{+0.56}_{-0.82}$	$H(0.61)$	$95.03^{+0.49}_{-0.39}$
$w_0$	$-1.040^{+0.074}_{-0.060}$	$10^9 A_s$	$2.097^{+0.025}_{-0.034}$	$D_M(0.61)$	$2299 \pm 17$
$\ln(10^{10} A_s)$	$3.043^{+0.012}_{-0.016}$	$10^9 A_s e^{-2\tau}$	$1.880 \pm 0.013$	$H(2.33)$	$235.64 \pm 0.81$
$n_s$	$0.9651 \pm 0.0051$	$D_{40}$	$1229 \pm 14$	$D_M(2.33)$	$5768 \pm 12$
$y_{\text{cal}}$	$1.0005 \pm 0.0025$	$D_{220}$	$5716 \pm 40$	$f\sigma_8(0.15)$	$0.461 \pm 0.013$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{810}$	$2536 \pm 14$	$\sigma_8(0.15)$	$0.759 \pm 0.022$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$815.0 \pm 5.1$	$f\sigma_8(0.38)$	$0.483^{+0.016}_{-0.018}$
$A_{143}^{\text{tSZ}}$	$5.1 \pm 2.0$	$D_{2000}$	$229.8 \pm 1.8$	$\sigma_8(0.38)$	$0.673 \pm 0.020$
$A_{100}^{\text{PS}}$	$263 \pm 28$	$n_{s,0.002}$	$0.9651 \pm 0.0051$	$f\sigma_8(0.51)$	$0.482^{+0.017}_{-0.019}$
$A_{143}^{\text{PS}}$	$49 \pm 8$	$Y_{\text{P}}$	$0.245312^{+0.000090}_{-0.000077}$	$\sigma_8(0.51)$	$0.630 \pm 0.018$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	$0.246638^{+0.000090}_{-0.000077}$	$f\sigma_8(0.61)$	$0.478^{+0.017}_{-0.020}$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$10^5 \text{D}/\text{H}$	$2.623 \pm 0.038$	$\sigma_8(0.61)$	$0.599 \pm 0.017$
$A^{\text{kSZ}}$	$< 4.68$	$\text{Age}/\text{Gyr}$	$13.794 \pm 0.035$	$f\sigma_8(2.33)$	$0.3021 \pm 0.0084$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$z_*$	$1090.14 \pm 0.35$	$\sigma_8(2.33)$	$0.3106 \pm 0.0070$
$A_{143}^{\text{dustTT}}$	$10.7 \pm 1.8$	$r_*$	$144.67 \pm 0.42$	$f_{2000}^{143}$	$30.9 \pm 2.9$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04111 \pm 0.00044$	$f_{2000}^{143 \times 217}$	$33.3 \pm 2.0$
$A_{217}^{\text{dustTT}}$	$93.3 \pm 7.3$	$D_M(z_*)/\text{Gpc}$	$13.896 \pm 0.040$	$f_{2000}^{217}$	$107.9 \pm 1.9$
$c_{100}$	$0.99960 \pm 0.00062$	$z_{\text{drag}}$	$1059.46 \pm 0.43$	$\chi_{\text{small}}^2$	$396.9 \pm 1.8$
$c_{217}$	$0.99825 \pm 0.00062$	$r_{\text{drag}}$	$147.40 \pm 0.43$	$\chi_{\text{lowl}}^2$	$23.3 \pm 1.0$
$H_0$	$68.5^{+1.4}_{-1.6}$	$k_{\text{D}}$	$0.14039 \pm 0.00049$	$\chi_{\text{plik}}^2$	$771.3 \pm 5.6$
$\Omega_\Lambda$	$0.696 \pm 0.012$	$100\theta_{\text{D}}$	$0.16104 \pm 0.00025$	$\chi_{6\text{DF}}^2$	$0.13 \pm 0.19$
$\Omega_{\text{m}}$	$0.304 \pm 0.012$	$z_{\text{eq}}$	$3389 \pm 41$	$\chi_{\text{MGS}}^2$	$1.88 \pm 0.99$
$\Omega_{\text{m}} h^2$	$0.1425 \pm 0.0017$	$k_{\text{eq}}$	$0.01034 \pm 0.00012$	$\chi_{\text{DR12BAO}}^2$	$5.2 \pm 1.5$
$\Omega_{\text{m}} h^3$	$0.0976^{+0.0027}_{-0.0031}$	$100\theta_{\text{eq}}$	$0.8151 \pm 0.0076$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8$	$0.821 \pm 0.024$	$100\theta_{\text{s,eq}}$	$0.4505 \pm 0.0039$	$\chi_{\text{BAO}}^2$	$7.2 \pm 1.9$
$S_8$	$0.827 \pm 0.017$	$H(0.15)$	$73.31 \pm 0.87$	$\chi_{\text{CMB}}^2$	$1191.6 \pm 5.5$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4527 \pm 0.0094$	$D_M(0.15)$	$636 \pm 11$		
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.610 \pm 0.014$	$H(0.38)$	$82.96 \pm 0.35$		

$\bar{\chi}_{\text{eff}}^2 = 1206.07$ ;  $R - 1 = 0.00764$



18.26 base\_w\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02218 \pm 0.00020$	$\sigma_8/h^{0.5}$	$0.992 \pm 0.014$	$D_M(0.38)$	$1521 \pm 16$
$\Omega_c h^2$	$0.1196 \pm 0.0013$	$r_{\text{drag}} h$	$101.0^{+1.9}_{-2.2}$	$H(0.51)$	$89.54 \pm 0.31$
$100\theta_{\text{MC}}$	$1.04091 \pm 0.00042$	$\langle d^2 \rangle^{1/2}$	$2.446 \pm 0.027$	$D_M(0.51)$	$1973 \pm 17$
$\tau$	$0.0546^{+0.0052}_{-0.0079}$	$z_{\text{re}}$	$7.73^{+0.56}_{-0.79}$	$H(0.61)$	$95.05^{+0.39}_{-0.33}$
$w_0$	$-1.039^{+0.060}_{-0.052}$	$10^9 A_s$	$2.097^{+0.023}_{-0.031}$	$D_M(0.61)$	$2298 \pm 17$
$\ln(10^{10} A_s)$	$3.043^{+0.011}_{-0.015}$	$10^9 A_s e^{-2\tau}$	$1.880 \pm 0.011$	$H(2.33)$	$235.57 \pm 0.79$
$n_s$	$0.9651 \pm 0.0044$	$D_{40}$	$1229 \pm 12$	$D_M(2.33)$	$5767 \pm 12$
$y_{\text{cal}}$	$1.0005 \pm 0.0024$	$D_{220}$	$5718 \pm 40$	$f\sigma_8(0.15)$	$0.4604 \pm 0.0091$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{810}$	$2536 \pm 13$	$\sigma_8(0.15)$	$0.759^{+0.016}_{-0.018}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$815.1 \pm 5.0$	$f\sigma_8(0.38)$	$0.482^{+0.012}_{-0.013}$
$A_{143}^{\text{tSZ}}$	$5.1^{+2.2}_{-1.9}$	$D_{2000}$	$229.9 \pm 1.7$	$\sigma_8(0.38)$	$0.673 \pm 0.015$
$A_{100}^{\text{PS}}$	$262 \pm 28$	$n_{s,0.002}$	$0.9651 \pm 0.0044$	$f\sigma_8(0.51)$	$0.482^{+0.013}_{-0.014}$
$A_{143}^{\text{PS}}$	$49 \pm 8$	$Y_{\text{P}}$	$0.245315^{+0.000089}_{-0.000073}$	$\sigma_8(0.51)$	$0.630 \pm 0.014$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	$0.246641^{+0.000089}_{-0.000074}$	$f\sigma_8(0.61)$	$0.477^{+0.013}_{-0.015}$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$10^5 \text{D}/\text{H}$	$2.622 \pm 0.037$	$\sigma_8(0.61)$	$0.599 \pm 0.013$
$A^{\text{kSZ}}$	$< 4.65$	$\text{Age}/\text{Gyr}$	$13.793 \pm 0.034$	$f\sigma_8(2.33)$	$0.3021 \pm 0.0066$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.9$	$z_*$	$1090.12 \pm 0.31$	$\sigma_8(2.33)$	$0.3105 \pm 0.0055$
$A_{143}^{\text{dustTT}}$	$10.7 \pm 1.8$	$r_*$	$144.69 \pm 0.33$	$f_{2000}^{143}$	$30.9 \pm 2.9$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3 \pm 3.2$	$100\theta_*$	$1.04111 \pm 0.00042$	$f_{2000}^{143 \times 217}$	$33.3 \pm 2.0$
$A_{217}^{\text{dustTT}}$	$93.3 \pm 7.2$	$D_M(z_*)/\text{Gpc}$	$13.898 \pm 0.032$	$f_{2000}^{217}$	$107.9 \pm 1.9$
$c_{100}$	$0.99960 \pm 0.00061$	$z_{\text{drag}}$	$1059.47 \pm 0.43$	$\chi_{\text{lensing}}^2$	$9.33 \pm 0.85$
$c_{217}$	$0.99826 \pm 0.00062$	$r_{\text{drag}}$	$147.42 \pm 0.35$	$\chi_{\text{simall}}^2$	$396.9 \pm 1.8$
$H_0$	$68.5^{+1.3}_{-1.5}$	$k_{\text{D}}$	$0.14038 \pm 0.00044$	$\chi_{\text{lowl}}^2$	$23.31 \pm 0.89$
$\Omega_{\Lambda}$	$0.696 \pm 0.012$	$100\theta_{\text{D}}$	$0.16104 \pm 0.00025$	$\chi_{\text{plik}}^2$	$770.9 \pm 5.3$
$\Omega_{\text{m}}$	$0.304 \pm 0.012$	$z_{\text{eq}}$	$3387 \pm 31$	$\chi_{6\text{DF}}^2$	$0.13 \pm 0.18$
$\Omega_{\text{m}} h^2$	$0.1424 \pm 0.0013$	$k_{\text{eq}}$	$0.010338 \pm 0.000094$	$\chi_{\text{MGS}}^2$	$1.91 \pm 0.98$
$\Omega_{\text{m}} h^3$	$0.0975^{+0.0023}_{-0.0026}$	$100\theta_{\text{eq}}$	$0.8155 \pm 0.0057$	$\chi_{\text{DR12BAO}}^2$	$5.1 \pm 1.4$
$\sigma_8$	$0.821 \pm 0.018$	$100\theta_{\text{s,eq}}$	$0.4507 \pm 0.0029$	$\chi_{\text{prior}}^2$	$7.2 \pm 3.6$
$S_8$	$0.826 \pm 0.012$	$H(0.15)$	$73.35 \pm 0.85$	$\chi_{\text{CMB}}^2$	$1200.4 \pm 5.6$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4522 \pm 0.0067$	$D_M(0.15)$	$635 \pm 10$	$\chi_{\text{BAO}}^2$	$7.1 \pm 1.7$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.6092 \pm 0.0095$	$H(0.38)$	$83.00 \pm 0.34$		

$\bar{\chi}_{\text{eff}}^2 = 1214.74$ ;  $R - 1 = 0.01087$



# 18.27 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022384	$0.02238 \pm 0.00015$ (+1.1 $\sigma$ )	$\sigma_8$	0.8230	$0.822 \pm 0.019$ (+0.1 $\sigma$ )	$D_M(0.15)$	634.2	$634 \pm 10$ (−0.1 $\sigma$ )
$\Omega_c h^2$	0.11994	$0.1199 \pm 0.0013$ (+0.1 $\sigma$ )	$S_8$	0.8281	$0.827 \pm 0.013$ (+0.1 $\sigma$ )	$H(0.38)$	83.119	$83.11 \pm 0.31$ (+0.5 $\sigma$ )
$100\theta_{MC}$	1.040916	$1.04095 \pm 0.00031$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4536	$0.4530 \pm 0.0071$ (+0.1 $\sigma$ )	$D_M(0.38)$	1518.4	$1519 \pm 16$ (−0.2 $\sigma$ )
$\tau$	0.0544	$0.0546 \pm 0.0078$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6110	$0.610 \pm 0.011$ (+0.1 $\sigma$ )	$H(0.51)$	89.664	$89.66^{+0.29}_{-0.25}$ (+0.4 $\sigma$ )
$w_0$	−1.041	$-1.041^{+0.060}_{-0.053}$ (+0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9936	$0.993 \pm 0.015$ (+0.0 $\sigma$ )	$D_M(0.51)$	1970.1	$1970 \pm 17$ (−0.2 $\sigma$ )
$\ln(10^{10} A_s)$	3.0443	$3.044 \pm 0.016$ (+0.3 $\sigma$ )	$r_{drag} h$	100.92	$101.0^{+1.9}_{-2.2}$ (+0.0 $\sigma$ )	$H(0.61)$	95.183	$95.18^{+0.37}_{-0.31}$ (+0.4 $\sigma$ )
$n_s$	0.96630	$0.9654 \pm 0.0042$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4486	$2.449 \pm 0.031$ (+0.1 $\sigma$ )	$D_M(0.61)$	2294.7	$2295 \pm 17$ (−0.3 $\sigma$ )
$y_{cal}$	1.00033	$1.0006 \pm 0.0025$ (+0.0 $\sigma$ )	$z_{re}$	7.68	$7.68 \pm 0.79$ (+0.1 $\sigma$ )	$H(2.33)$	235.93	$235.95 \pm 0.71$ (+0.4 $\sigma$ )
$A_{217}^{CIB}$	46.4	$47 \pm 7$ (−0.2 $\sigma$ )	$10^9 A_s$	2.0995	$2.100 \pm 0.034$ (+0.3 $\sigma$ )	$D_M(2.33)$	5758.7	$5758.7 \pm 9.1$ (−0.8 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.56	—	$10^9 A_s e^{-2\tau}$	1.8829	$1.883 \pm 0.012$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4618	$0.4613 \pm 0.0097$ (+0.0 $\sigma$ )
$A_{143}^{tSZ}$	7.10	$5.5^{+2.2}_{-1.9}$ (+0.2 $\sigma$ )	$D_{40}$	1227.5	$1230 \pm 12$ (+0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7610	$0.760 \pm 0.018$ (+0.1 $\sigma$ )
$A_{100}^{PS}$	249.3	$259 \pm 28$ (−0.1 $\sigma$ )	$D_{220}$	5728.7	$5734 \pm 39$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4838	$0.483^{+0.013}_{-0.014}$ (+0.0 $\sigma$ )
$A_{143}^{PS}$	49.5	$46 \pm 8$ (−0.4 $\sigma$ )	$D_{810}$	2540.0	$2539 \pm 14$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6747	$0.674 \pm 0.016$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{PS}$	50.8	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{1420}$	818.02	$817.3 \pm 4.8$ (+0.5 $\sigma$ )	$f\sigma_8(0.51)$	0.4833	$0.483^{+0.013}_{-0.015}$ (+0.0 $\sigma$ )
$A_{217}^{PS}$	121.1	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	231.23	$231.0 \pm 1.6$ (+0.6 $\sigma$ )	$\sigma_8(0.51)$	0.6313	$0.631 \pm 0.015$ (+0.1 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.23$ (−0.1 $\sigma$ )	$n_{s,0.002}$	0.96630	$0.9654 \pm 0.0042$ (+0.1 $\sigma$ )	$f\sigma_8(0.61)$	0.4786	$0.478^{+0.014}_{-0.015}$ (+0.0 $\sigma$ )
$A_{100}^{dustTT}$	8.81	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P$	0.245401	$0.245399^{+0.000060}_{-0.000053}$ (+1.0 $\sigma$ )	$\sigma_8(0.61)$	0.6006	$0.600 \pm 0.014$ (+0.1 $\sigma$ )
$A_{143}^{dustTT}$	11.04	$10.9 \pm 1.7$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246728	$0.246725^{+0.000060}_{-0.000053}$ (+1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.3028	$0.3025 \pm 0.0072$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.03	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5828	$2.584 \pm 0.027$ (−1.1 $\sigma$ )	$\sigma_8(2.33)$	0.3112	$0.3110 \pm 0.0061$ (+0.1 $\sigma$ )
$A_{217}^{dustTT}$	95.4	$93.7 \pm 7.3$ (+0.1 $\sigma$ )	Age/Gyr	13.7710	$13.772 \pm 0.031$ (−0.7 $\sigma$ )	$f_{2000}^{143}$	28.75	$29.4 \pm 2.7$ (−0.5 $\sigma$ )
$A_{100}^{dustTE}$	0.1143	$0.115 \pm 0.038$	$z_*$	1089.897	$1089.89 \pm 0.26$ (−0.7 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.98	$32.1 \pm 1.8$ (−0.6 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1359	$0.135 \pm 0.029$	$r_*$	144.435	$144.46 \pm 0.28$ (−0.5 $\sigma$ )	$f_{2000}^{217}$	106.51	$107.0 \pm 1.8$ (−0.5 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.480	$0.481 \pm 0.086$	$100\theta_*$	1.041097	$1.04113 \pm 0.00031$ (+0.1 $\sigma$ )	$\chi_{small}^2$	396.06	$397.1 \pm 1.9$ (+0.1 $\sigma$ )
$A_{143}^{dustTE}$	0.227	$0.224 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	13.8734	$13.875 \pm 0.026$ (−0.5 $\sigma$ )	$\chi_{lowl}^2$	23.12	$23.35 \pm 0.89$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.666	$0.665 \pm 0.080$	$z_{drag}$	1059.971	$1059.96 \pm 0.30$ (+1.2 $\sigma$ )	$\chi_{plik}^2$	2344.5	$2359.4 \pm 5.9$ (+284.0 $\sigma$ )
$A_{217}^{dustTE}$	2.093	$2.08 \pm 0.27$	$r_{drag}$	147.090	$147.11 \pm 0.28$ (−0.7 $\sigma$ )	$\chi_{6DF}^2$	0.001	$0.13 \pm 0.19$ (−0.0 $\sigma$ )
$c_{100}$	0.99970	$0.99967 \pm 0.00062$ (+0.1 $\sigma$ )	$k_D$	0.140879	$0.14086 \pm 0.00031$ (+0.9 $\sigma$ )	$\chi_{MGS}^2$	1.75	$1.89 \pm 0.99$ (+0.0 $\sigma$ )
$c_{217}$	0.99819	$0.99819 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_D$	0.160740	$0.16075 \pm 0.00017$ (−1.2 $\sigma$ )	$\chi_{DR12BAO}^2$	4.40	$5.2 \pm 1.4$ (−0.0 $\sigma$ )
$H_0$	68.61	$68.6^{+1.3}_{-1.5}$ (+0.1 $\sigma$ )	$z_{eq}$	3401.2	$3399 \pm 28$ (+0.2 $\sigma$ )	$\chi_{prior}^2$	1.66	$11.5 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_\Lambda$	0.6963	$0.696 \pm 0.012$ (+0.0 $\sigma$ )	$k_{eq}$	0.010381	$0.010376 \pm 0.000086$ (+0.2 $\sigma$ )	$\chi_{BAO}^2$	6.15	$7.2 \pm 1.7$ (−0.0 $\sigma$ )
$\Omega_m$	0.3037	$0.304 \pm 0.012$ (−0.0 $\sigma$ )	$100\theta_{eq}$	0.8135	$0.8139 \pm 0.0053$ (−0.1 $\sigma$ )	$\chi_{CMB}^2$	2763.7	$2779.9 \pm 5.9$ (+286.0 $\sigma$ )
$\Omega_m h^2$	0.14297	$0.1429 \pm 0.0012$ (+0.2 $\sigma$ )	$100\theta_{s,eq}$	0.44949	$0.4497 \pm 0.0027$ (−0.2 $\sigma$ )			
$\Omega_m h^3$	0.09809	$0.0981^{+0.0023}_{-0.0026}$ (+0.2 $\sigma$ )	$H(0.15)$	73.46	$73.46 \pm 0.85$ (+0.2 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2771.48$ ;  $\Delta\chi_{eff}^2 = 1585.96$ ;  $\bar{\chi}_{eff}^2 = 2798.61$ ;  $\Delta\bar{\chi}_{eff}^2 = 1592.29$ ;  $R - 1 = 0.00736$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.00 ( $\Delta$  -0.00) MGS: 1.75 ( $\Delta$  0.21) DR12BAO: 4.40 ( $\Delta$  0.04) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.06 ( $\Delta$  0.20) commander\_dx12\_v3\_2\_29: 23.12 ( $\Delta$  -0.03) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.49



18.28 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022391	$0.02239 \pm 0.00014$ (+1.1 $\sigma$ )	$\sigma_8$	0.8220	$0.821 \pm 0.016$ (+0.0 $\sigma$ )	$D_M(0.15)$	634.3	$634.3 \pm 9.8$ (−0.1 $\sigma$ )
$\Omega_c h^2$	0.11983	$0.1198 \pm 0.0011$ (+0.1 $\sigma$ )	$S_8$	0.8271	$0.826 \pm 0.010$ (+0.0 $\sigma$ )	$H(0.38)$	83.137	$83.14 \pm 0.31$ (+0.5 $\sigma$ )
$100\theta_{MC}$	1.040936	$1.04095 \pm 0.00030$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4530	$0.4522 \pm 0.0057$ (+0.0 $\sigma$ )	$D_M(0.38)$	1518.5	$1518 \pm 16$ (−0.1 $\sigma$ )
$\tau$	0.0545	$0.0545 \pm 0.0075$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6102	$0.6093 \pm 0.0081$ (+0.0 $\sigma$ )	$H(0.51)$	89.688	$89.69^{+0.26}_{-0.23}$ (+0.5 $\sigma$ )
$w_0$	−1.038	$-1.038^{+0.055}_{-0.048}$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9926	$0.991 \pm 0.012$ (−0.0 $\sigma$ )	$D_M(0.51)$	1970.0	$1970 \pm 16$ (−0.2 $\sigma$ )
$\ln(10^{10} A_s)$	3.0448	$3.044 \pm 0.015$ (+0.2 $\sigma$ )	$r_{drag} h$	100.89	$101.0^{+1.9}_{-2.1}$ (−0.0 $\sigma$ )	$H(0.61)$	95.211	$95.21^{+0.33}_{-0.27}$ (+0.5 $\sigma$ )
$n_s$	0.96622	$0.9656 \pm 0.0039$ (+0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4477	$2.447 \pm 0.024$ (+0.1 $\sigma$ )	$D_M(0.61)$	2294.5	$2294 \pm 16$ (−0.2 $\sigma$ )
$y_{cal}$	1.00062	$1.0006 \pm 0.0025$ (+0.0 $\sigma$ )	$z_{re}$	7.68	$7.67 \pm 0.75$ (+0.1 $\sigma$ )	$H(2.33)$	235.90	$235.91 \pm 0.71$ (+0.4 $\sigma$ )
$A_{217}^{CIB}$	46.4	$47 \pm 7$ (−0.2 $\sigma$ )	$10^9 A_s$	2.1005	$2.099 \pm 0.031$ (+0.2 $\sigma$ )	$D_M(2.33)$	5758.1	$5758.0 \pm 9.0$ (−0.8 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.58	—	$10^9 A_s e^{-2\tau}$	1.8837	$1.882 \pm 0.011$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4611	$0.4603 \pm 0.0075$ (−0.0 $\sigma$ )
$A_{143}^{tSZ}$	7.12	$5.4^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$D_{40}$	1228.7	$1230 \pm 11$ (+0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7601	$0.759 \pm 0.016$ (+0.0 $\sigma$ )
$A_{100}^{PS}$	249.0	$259 \pm 28$ (−0.1 $\sigma$ )	$D_{220}$	5734.9	$5736 \pm 39$ (+0.5 $\sigma$ )	$f\sigma_8(0.38)$	0.4829	$0.482^{+0.010}_{-0.012}$ (−0.0 $\sigma$ )
$A_{143}^{PS}$	50.1	$46 \pm 8$ (−0.4 $\sigma$ )	$D_{810}$	2541.3	$2539 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6739	$0.673 \pm 0.014$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{PS}$	51.5	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{1420}$	818.39	$817.4 \pm 4.8$ (+0.5 $\sigma$ )	$f\sigma_8(0.51)$	0.4824	$0.482^{+0.011}_{-0.013}$ (−0.0 $\sigma$ )
$A_{217}^{PS}$	121.4	$115 \pm 10$ (−0.0 $\sigma$ )	$D_{2000}$	231.32	$231.0 \pm 1.6$ (+0.7 $\sigma$ )	$\sigma_8(0.51)$	0.6306	$0.630 \pm 0.013$ (+0.0 $\sigma$ )
$A^{kSZ}$	0.01	$< 4.24$ (−0.1 $\sigma$ )	$n_{s,0.002}$	0.96622	$0.9656 \pm 0.0039$ (+0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.4777	$0.477^{+0.011}_{-0.013}$ (−0.0 $\sigma$ )
$A_{100}^{dustTT}$	8.80	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P$	0.245404	$0.245403^{+0.000059}_{-0.000050}$ (+1.1 $\sigma$ )	$\sigma_8(0.61)$	0.5999	$0.599 \pm 0.012$ (+0.0 $\sigma$ )
$A_{143}^{dustTT}$	11.00	$10.9 \pm 1.7$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246730	$0.246730^{+0.000059}_{-0.000051}$ (+1.1 $\sigma$ )	$f\sigma_8(2.33)$	0.3025	$0.3022 \pm 0.0062$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.14	$18.6 \pm 3.2$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5815	$2.582 \pm 0.026$ (−1.1 $\sigma$ )	$\sigma_8(2.33)$	0.3109	$0.3107 \pm 0.0053$ (+0.0 $\sigma$ )
$A_{217}^{dustTT}$	95.6	$93.6 \pm 7.3$ (+0.1 $\sigma$ )	Age/Gyr	13.7708	$13.771 \pm 0.030$ (−0.6 $\sigma$ )	$f_{2000}^{143}$	28.88	$29.5 \pm 2.7$ (−0.5 $\sigma$ )
$A_{100}^{dustTE}$	0.1141	$0.114 \pm 0.038$	$z_*$	1089.878	$1089.87 \pm 0.24$ (−0.9 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.09	$32.1 \pm 1.8$ (−0.6 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1350	$0.135 \pm 0.029$	$r_*$	144.459	$144.48 \pm 0.24$ (−0.6 $\sigma$ )	$f_{2000}^{217}$	106.64	$107.0 \pm 1.7$ (−0.5 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.482	$0.481 \pm 0.085$	$100\theta_*$	1.041116	$1.04113 \pm 0.00030$ (+0.1 $\sigma$ )	$\chi^2_{lensing}$	8.752	$9.16 \pm 0.68$ (−0.2 $\sigma$ )
$A_{143}^{dustTE}$	0.226	$0.225 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	13.8754	$13.877 \pm 0.023$ (−0.6 $\sigma$ )	$\chi^2_{small}$	396	$226 \pm 200$ (−98.8 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.663	$0.664 \pm 0.079$	$z_{drag}$	1059.971	$1059.97 \pm 0.30$ (+1.2 $\sigma$ )	$\chi^2_{lowl}$	23	$194 \pm 200$ (+192.7 $\sigma$ )
$A_{217}^{dustTE}$	2.078	$2.08 \pm 0.27$	$r_{drag}$	147.114	$147.13 \pm 0.25$ (−0.8 $\sigma$ )	$\chi^2_{plik}$	2344.6	$2359.2 \pm 5.8$ (+300.0 $\sigma$ )
$c_{100}$	0.99973	$0.99968 \pm 0.00061$ (+0.1 $\sigma$ )	$k_D$	0.140860	$0.14084 \pm 0.00029$ (+1.0 $\sigma$ )	$\chi^2_{6DF}$	0.00	$0.9 \pm 1.1$ (+4.4 $\sigma$ )
$c_{217}$	0.99818	$0.99819 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_D$	0.160737	$0.16074 \pm 0.00017$ (−1.2 $\sigma$ )	$\chi^2_{MGS}$	1.75	$1.1 \pm 1.1$ (−0.9 $\sigma$ )
$H_0$	68.58	$68.6^{+1.3}_{-1.4}$ (+0.1 $\sigma$ )	$z_{eq}$	3398.6	$3397 \pm 24$ (+0.2 $\sigma$ )	$\chi^2_{DR12BAO}$	4.32	$5.1 \pm 1.3$ (−0.0 $\sigma$ )
$\Omega_\Lambda$	0.6962	$0.696 \pm 0.012$ (+0.0 $\sigma$ )	$k_{eq}$	0.010373	$0.010368 \pm 0.000074$ (+0.2 $\sigma$ )	$\chi^2_{prior}$	1.64	$11.5 \pm 4.4$ (+1.2 $\sigma$ )
$\Omega_m$	0.3038	$0.304 \pm 0.012$ (−0.0 $\sigma$ )	$100\theta_{eq}$	0.81401	$0.8144 \pm 0.0046$ (−0.1 $\sigma$ )	$\chi^2_{CMB}$	2772.5	$2788.7 \pm 5.9$ (+284.1 $\sigma$ )
$\Omega_m h^2$	0.14286	$0.1428 \pm 0.0010$ (+0.2 $\sigma$ )	$100\theta_{s,eq}$	0.44974	$0.4499 \pm 0.0023$ (−0.2 $\sigma$ )	$\chi^2_{BAO}$	6.07	$7.1 \pm 1.6$ (−0.1 $\sigma$ )
$\Omega_m h^3$	0.09798	$0.0980^{+0.0021}_{-0.0024}$ (+0.1 $\sigma$ )	$H(0.15)$	73.46	$73.47 \pm 0.83$ (+0.1 $\sigma$ )			

Best-fit  $\chi^2_{eff} = 2780.22$ ;  $\Delta\chi^2_{eff} = 1585.93$ ;  $\bar{\chi}^2_{eff} = 2807.23$ ;  $\Delta\bar{\chi}^2_{eff} = 1592.25$ ;  $R - 1 = 0.01456$   
 $\chi^2_{eff}$ : BAO - 6DF: 0.00 ( $\Delta$  0.00) MGS: 1.75 ( $\Delta$  0.14) DR12BAO: 4.32 ( $\Delta$  -0.01) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.75 ( $\Delta$  0.02) small\_100x143\_offlike5\_EE\_Aplanck: 396.04 ( $\Delta$  -0.01) commander\_dx12\_v3.2\_29: 23.15 ( $\Delta$  -0.06) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.57



18.29 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02239 \pm 0.00015 \quad (+1.1\sigma)$	$\sigma_8$	$0.823 \pm 0.019 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$634 \pm 10 \quad (-0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1198 \pm 0.0013 \quad (+0.1\sigma)$	$S_8$	$0.828 \pm 0.013 \quad (+0.1\sigma)$	$H(0.38)$	$83.12 \pm 0.31 \quad (+0.4\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04095 \pm 0.00031 \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4533 \pm 0.0070 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1519 \pm 16 \quad (-0.2\sigma)$
$\tau$	$0.0556^{+0.0053}_{-0.0081} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.611 \pm 0.010 \quad (+0.1\sigma)$	$H(0.51)$	$89.67^{+0.29}_{-0.25} \quad (+0.4\sigma)$
$w_0$	$-1.040^{+0.060}_{-0.053} \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.993 \pm 0.015 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1970 \pm 17 \quad (-0.2\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046^{+0.013}_{-0.016} \quad (+0.2\sigma)$	$r_{\mathrm{drag}}h$	$100.9^{+1.9}_{-2.2} \quad (+0.0\sigma)$	$H(0.61)$	$95.19^{+0.37}_{-0.31} \quad (+0.4\sigma)$
$n_{\mathrm{s}}$	$0.9656 \pm 0.0042 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.451 \pm 0.031 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2295 \pm 17 \quad (-0.3\sigma)$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.79^{+0.59}_{-0.79} \quad (+0.1\sigma)$	$H(2.33)$	$235.95 \pm 0.71 \quad (+0.4\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.104^{+0.026}_{-0.034} \quad (+0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5758.5 \pm 9.1 \quad (-0.8\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.883 \pm 0.012 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4615 \pm 0.0097 \quad (+0.0\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.2}_{-1.9} \quad (+0.2\sigma)$	$D_{40}$	$1230 \pm 12 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.761 \pm 0.018 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$258 \pm 28 \quad (-0.1\sigma)$	$D_{220}$	$5734 \pm 39 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.483 \pm 0.013 \quad (+0.0\sigma)$
$A_{143}^{\mathrm{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2539 \pm 14 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.675 \pm 0.016 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$817.4 \pm 4.8 \quad (+0.5\sigma)$	$f\sigma_8(0.51)$	$0.483^{+0.014}_{-0.015} \quad (+0.0\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$231.0 \pm 1.6 \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.631 \pm 0.015 \quad (+0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.21 \quad (-0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9656 \pm 0.0042 \quad (+0.1\sigma)$	$f\sigma_8(0.61)$	$0.478^{+0.014}_{-0.015} \quad (+0.0\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.245400^{+0.000059}_{-0.000053} \quad (+1.0\sigma)$	$\sigma_8(0.61)$	$0.600 \pm 0.014 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246726^{+0.000060}_{-0.000053} \quad (+1.0\sigma)$	$f\sigma_8(2.33)$	$0.3027 \pm 0.0072 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.583 \pm 0.027 \quad (-1.1\sigma)$	$\sigma_8(2.33)$	$0.3112 \pm 0.0061 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.7 \pm 7.3 \quad (+0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.772 \pm 0.031 \quad (-0.6\sigma)$	$f_{2000}^{143}$	$29.4 \pm 2.7 \quad (-0.5\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.115 \pm 0.038$	$z_*$	$1089.89 \pm 0.26 \quad (-0.7\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 1.8 \quad (-0.6\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.029$	$r_*$	$144.46 \pm 0.28 \quad (-0.5\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.7 \quad (-0.5\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.481 \pm 0.086$	$100\theta_*$	$1.04114 \pm 0.00031 \quad (+0.1\sigma)$	$\chi_{\mathrm{small}}^2$	$397.1 \pm 1.9 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.224 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.875 \pm 0.026 \quad (-0.5\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.36 \pm 0.89 \quad (+0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.664 \pm 0.080$	$z_{\mathrm{drag}}$	$1059.96 \pm 0.30 \quad (+1.2\sigma)$	$\chi_{\mathrm{plik}}^2$	$2359.2 \pm 5.9 \quad (+285.4\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.08 \pm 0.27$	$r_{\mathrm{drag}}$	$147.12 \pm 0.28 \quad (-0.7\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.13 \pm 0.19 \quad (-0.0\sigma)$
$c_{100}$	$0.99967 \pm 0.00062 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.14085 \pm 0.00031 \quad (+0.9\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.88 \pm 0.98 \quad (+0.0\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16075 \pm 0.00017 \quad (-1.2\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$5.1 \pm 1.4 \quad (-0.0\sigma)$
$H_0$	$68.6^{+1.3}_{-1.5} \quad (+0.1\sigma)$	$z_{\mathrm{eq}}$	$3399 \pm 28 \quad (+0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.5 \quad (+1.1\sigma)$
$\Omega_{\Lambda}$	$0.696 \pm 0.012 \quad (+0.0\sigma)$	$k_{\mathrm{eq}}$	$0.010374 \pm 0.000086 \quad (+0.2\sigma)$	$\chi_{\mathrm{BAO}}^2$	$7.2 \pm 1.7 \quad (-0.0\sigma)$
$\Omega_{\mathrm{m}}$	$0.304 \pm 0.012 \quad (-0.0\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8140 \pm 0.0053 \quad (-0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2779.7 \pm 5.9 \quad (+288.9\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1429 \pm 0.0012 \quad (+0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4497 \pm 0.0027 \quad (-0.2\sigma)$		
$\Omega_{\mathrm{m}}h^3$	$0.0980^{+0.0023}_{-0.0026} \quad (+0.2\sigma)$	$H(0.15)$	$73.46 \pm 0.85 \quad (+0.2\sigma)$		

$\bar{\chi}_{\mathrm{eff}}^2 = 2798.36$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.29$ ;  $R - 1 = 0.00833$



## 18.30 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02240 \pm 0.00014 \quad (+1.1\sigma)$	$\sigma_8$	$0.821 \pm 0.016 \quad (+0.0\sigma)$	$D_M(0.15)$	$634.4 \pm 9.7 \quad (-0.1\sigma)$
$\Omega_c h^2$	$0.1197 \pm 0.0011 \quad (+0.1\sigma)$	$S_8$	$0.826 \pm 0.010 \quad (+0.0\sigma)$	$H(0.38)$	$83.14 \pm 0.31 \quad (+0.4\sigma)$
$100\theta_{MC}$	$1.04096 \pm 0.00030 \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4524 \pm 0.0057 \quad (+0.0\sigma)$	$D_M(0.38)$	$1519 \pm 16 \quad (-0.1\sigma)$
$\tau$	$0.0554^{+0.0054}_{-0.0077} \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6094 \pm 0.0081 \quad (+0.0\sigma)$	$H(0.51)$	$89.70 \pm 0.24 \quad (+0.5\sigma)$
$w_0$	$-1.036^{+0.055}_{-0.048} \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.991 \pm 0.012 \quad (-0.0\sigma)$	$D_M(0.51)$	$1970 \pm 16 \quad (-0.2\sigma)$
$\ln(10^{10} A_s)$	$3.046^{+0.012}_{-0.015} \quad (+0.2\sigma)$	$r_{\text{drag}} h$	$100.9^{+1.9}_{-2.1} \quad (-0.0\sigma)$	$H(0.61)$	$95.22^{+0.32}_{-0.27} \quad (+0.5\sigma)$
$n_s$	$0.9657 \pm 0.0039 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.448 \pm 0.023 \quad (+0.1\sigma)$	$D_M(0.61)$	$2295 \pm 16 \quad (-0.2\sigma)$
$y_{\text{cal}}$	$1.0006 \pm 0.0025 \quad (+0.0\sigma)$	$z_{\text{re}}$	$7.76^{+0.58}_{-0.76} \quad (+0.1\sigma)$	$H(2.33)$	$235.90 \pm 0.70 \quad (+0.4\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_s$	$2.103^{+0.024}_{-0.032} \quad (+0.2\sigma)$	$D_M(2.33)$	$5757.8 \pm 9.0 \quad (-0.8\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.882 \pm 0.011 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4603 \pm 0.0075 \quad (-0.0\sigma)$
$A_{143}^{\text{tSZ}}$	$5.4^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$D_{40}$	$1230 \pm 11 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.759 \pm 0.015 \quad (+0.0\sigma)$
$A_{100}^{\text{PS}}$	$259 \pm 28 \quad (-0.1\sigma)$	$D_{220}$	$5736 \pm 39 \quad (+0.5\sigma)$	$f\sigma_8(0.38)$	$0.482^{+0.010}_{-0.012} \quad (-0.0\sigma)$
$A_{143}^{\text{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.673 \pm 0.014 \quad (+0.0\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$817.4 \pm 4.8 \quad (+0.5\sigma)$	$f\sigma_8(0.51)$	$0.482^{+0.011}_{-0.013} \quad (-0.0\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (-0.0\sigma)$	$D_{2000}$	$231.0 \pm 1.6 \quad (+0.7\sigma)$	$\sigma_8(0.51)$	$0.630 \pm 0.013 \quad (+0.0\sigma)$
$A^{\text{kSZ}}$	$< 4.23 \quad (-0.1\sigma)$	$n_{s,0.002}$	$0.9657 \pm 0.0039 \quad (+0.1\sigma)$	$f\sigma_8(0.61)$	$0.477^{+0.011}_{-0.013} \quad (-0.0\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_P$	$0.245404^{+0.000058}_{-0.000050} \quad (+1.1\sigma)$	$\sigma_8(0.61)$	$0.599 \pm 0.012 \quad (+0.0\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.7 \quad (+0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.246731^{+0.000058}_{-0.000051} \quad (+1.1\sigma)$	$f\sigma_8(2.33)$	$0.3022 \pm 0.0062 \quad (+0.0\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \text{D/H}$	$2.581 \pm 0.026 \quad (-1.1\sigma)$	$\sigma_8(2.33)$	$0.3108 \pm 0.0052 \quad (+0.0\sigma)$
$A_{217}^{\text{dustTT}}$	$93.6 \pm 7.3 \quad (+0.0\sigma)$	$\text{Age/Gyr}$	$13.771 \pm 0.030 \quad (-0.6\sigma)$	$f_{2000}^{143}$	$29.4 \pm 2.7 \quad (-0.5\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$z_*$	$1089.86 \pm 0.24 \quad (-0.9\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 1.8 \quad (-0.6\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.029$	$r_*$	$144.49 \pm 0.24 \quad (-0.6\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.7 \quad (-0.5\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.481 \pm 0.085$	$100\theta_*$	$1.04114 \pm 0.00030 \quad (+0.1\sigma)$	$\chi_{\text{lensing}}^2$	$9.15 \pm 0.68 \quad (-0.2\sigma)$
$A_{143}^{\text{dustTE}}$	$0.225 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	$13.878 \pm 0.023 \quad (-0.6\sigma)$	$\chi_{\text{small}}^2$	$227 \pm 200 \quad (-97.0\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.663 \pm 0.079$	$z_{\text{drag}}$	$1059.98 \pm 0.30 \quad (+1.2\sigma)$	$\chi_{\text{lowl}}^2$	$193 \pm 200 \quad (+191.6\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.27$	$r_{\text{drag}}$	$147.14 \pm 0.25 \quad (-0.8\sigma)$	$\chi_{\text{plik}}^2$	$2359.1 \pm 5.8 \quad (+299.7\sigma)$
$c_{100}$	$0.99968 \pm 0.00062 \quad (+0.1\sigma)$	$k_D$	$0.14084 \pm 0.00029 \quad (+1.0\sigma)$	$\chi_{6\text{DF}}^2$	$0.9 \pm 1.1 \quad (+4.4\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_D$	$0.16074 \pm 0.00017 \quad (-1.2\sigma)$	$\chi_{\text{MGS}}^2$	$1.1 \pm 1.1 \quad (-0.9\sigma)$
$H_0$	$68.6^{+1.3}_{-1.4} \quad (+0.1\sigma)$	$z_{\text{eq}}$	$3396 \pm 24 \quad (+0.3\sigma)$	$\chi_{\text{DR12BAO}}^2$	$5.0 \pm 1.3 \quad (-0.0\sigma)$
$\Omega_\Lambda$	$0.696 \pm 0.012 \quad (-0.0\sigma)$	$k_{\text{eq}}$	$0.010364 \pm 0.000073 \quad (+0.3\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.4 \quad (+1.2\sigma)$
$\Omega_m$	$0.304 \pm 0.012 \quad (+0.0\sigma)$	$100\theta_{\text{eq}}$	$0.8146 \pm 0.0045 \quad (-0.2\sigma)$	$\chi_{\text{CMB}}^2$	$2788.5 \pm 5.9 \quad (+285.2\sigma)$
$\Omega_m h^2$	$0.1427 \pm 0.0010 \quad (+0.3\sigma)$	$100\theta_{s,\text{eq}}$	$0.4500 \pm 0.0023 \quad (-0.2\sigma)$	$\chi_{\text{BAO}}^2$	$7.0 \pm 1.6 \quad (-0.0\sigma)$
$\Omega_m h^3$	$0.0979^{+0.0021}_{-0.0023} \quad (+0.1\sigma)$	$H(0.15)$	$73.46 \pm 0.83 \quad (+0.1\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2807.01; \Delta\bar{\chi}_{\text{eff}}^2 = 1592.27; R - 1 = 0.01536$$



### 18.31 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022331	$0.02232 \pm 0.00015$	$\sigma_8 \Omega_m^{0.5}$	0.4490	$0.4493 \pm 0.0073$	$H(0.38)$	83.108	$83.08 \pm 0.32$
$\Omega_c h^2$	0.11915	$0.1193 \pm 0.0013$	$\sigma_8 \Omega_m^{0.25}$	0.6039	$0.605 \pm 0.011$	$D_M(0.38)$	1522.4	$1522 \pm 17$
$100\theta_{MC}$	1.040919	$1.04092 \pm 0.00031$	$\sigma_8/h^{0.5}$	0.9835	$0.984 \pm 0.016$	$H(0.51)$	89.718	$89.68 \pm 0.26$
$\tau$	0.0534	$0.0529 \pm 0.0079$	$r_{\text{drag}} h$	100.49	$100.6^{+1.9}_{-2.2}$	$D_M(0.51)$	1973.9	$1974 \pm 17$
$w_0$	-1.019	$-1.024^{+0.059}_{-0.051}$	$\langle d^2 \rangle^{1/2}$	2.4295	$2.431 \pm 0.032$	$H(0.61)$	95.270	$95.22^{+0.35}_{-0.29}$
$\ln(10^{10} A_s)$	3.0385	$3.038 \pm 0.016$	$z_{\text{re}}$	7.58	$7.51 \pm 0.81$	$D_M(0.61)$	2298.3	$2298 \pm 17$
$n_s$	0.96691	$0.9668 \pm 0.0042$	$10^9 A_s$	2.0873	$2.087 \pm 0.034$	$H(2.33)$	235.67	$235.71 \pm 0.75$
$y_{\text{cal}}$	1.00030	$1.0005 \pm 0.0026$	$10^9 A_s e^{-2\tau}$	1.8758	$1.877 \pm 0.012$	$D_M(2.33)$	5761.2	$5762.0 \pm 9.3$
$A_{100}^{\text{PS}}$	241.5	$240 \pm 24$	$D_{40}$	1223.2	$1224 \pm 13$	$f\sigma_8(0.15)$	0.4555	$0.4562 \pm 0.0097$
$A_{143}^{\text{PS}}$	42.1	$39 \pm 8$	$D_{220}$	5718.5	$5719 \pm 40$	$\sigma_8(0.15)$	0.7510	$0.752 \pm 0.018$
$A_{217}^{\text{PS}}$	102.2	$102 \pm 10$	$D_{810}$	2533.6	$2535 \pm 14$	$f\sigma_8(0.38)$	0.4759	$0.477 \pm 0.013$
$A_{217}^{\text{CIB}}$	39.1	$40 \pm 7$	$D_{1420}$	815.6	$815.9 \pm 5.0$	$\sigma_8(0.38)$	0.6660	$0.667 \pm 0.016$
$A_{143}^{\text{tSZ}}$	3.40	$3.9^{+1.9}_{-2.5}$	$D_{2000}$	230.26	$230.3 \pm 1.7$	$f\sigma_8(0.51)$	0.4752	$0.476 \pm 0.014$
$r_{143 \times 217}^{\text{PS}}$	0.669	$0.66 \pm 0.13$	$n_{s,0.002}$	0.96691	$0.9668 \pm 0.0042$	$\sigma_8(0.51)$	0.6233	$0.624 \pm 0.015$
$r_{143 \times 217}^{\text{CIB}}$	0.605	$0.56^{+0.39}_{-0.18}$	$Y_P$	0.245380	$0.245373 \pm 0.000061$	$f\sigma_8(0.61)$	0.4705	$0.472 \pm 0.015$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.69	—	$Y_P^{\text{BBN}}$	0.246706	$0.246700 \pm 0.000061$	$\sigma_8(0.61)$	0.5931	$0.594 \pm 0.014$
$A^{\text{kSZ}}$	5.16	$4.7^{+2.1}_{-4.1}$	$10^5 D/H$	2.5929	$2.596 \pm 0.028$	$f\sigma_8(2.33)$	0.2992	$0.2995 \pm 0.0072$
$A_{100}^{\text{dust}}$	1.018	$1.01 \pm 0.20$	Age/Gyr	13.7859	$13.786 \pm 0.032$	$\sigma_8(2.33)$	0.3080	$0.3084 \pm 0.0062$
$A_{143}^{\text{dust}}$	0.972	$0.96 \pm 0.18$	$z_*$	1089.895	$1089.92 \pm 0.26$	$f_{2000}^{143}$	29.88	$29.7 \pm 2.8$
$A_{217}^{\text{dust}}$	0.983	$0.97 \pm 0.10$	$r_*$	144.681	$144.66 \pm 0.30$	$f_{2000}^{217}$	106.82	$106.8 \pm 1.9$
$A_{143 \times 217}^{\text{dust}}$	1.024	$1.03 \pm 0.16$	$100\theta_*$	1.041113	$1.04111 \pm 0.00030$	$f_{2000}^{143 \times 217}$	32.13	$32.1 \pm 2.0$
$c_{100}$	0.99750	$0.9975 \pm 0.0011$	$D_M(z_*)/\text{Gpc}$	13.8967	$13.895 \pm 0.028$	$\chi_{\text{small}}^2$	395.90	$396.9 \pm 1.7$
$c_{217}$	1.00129	$1.0011 \pm 0.0016$	$z_{\text{drag}}$	1059.780	$1059.76 \pm 0.32$	$\chi_{\text{lowl}}^2$	22.84	$22.91 \pm 0.85$
$c_{TE}$	0.99648	$0.9967 \pm 0.0049$	$r_{\text{drag}}$	147.360	$147.35 \pm 0.30$	$\chi_{\text{CamSpec}}^2$	11499.9	$11514.7 \pm 5.7$
$c_{EE}$	0.99203	$0.9921 \pm 0.0049$	$k_D$	0.140553	$0.14056 \pm 0.00035$	$\chi_{6\text{DF}}^2$	0.001	$0.13 \pm 0.20$
$H_0$	68.20	$68.3^{+1.3}_{-1.5}$	$100\theta_D$	0.160841	$0.16085 \pm 0.00019$	$\chi_{\text{MGS}}^2$	1.61	$1.78 \pm 0.99$
$\Omega_\Lambda$	0.6944	$0.695 \pm 0.012$	$z_{\text{eq}}$	3381.0	$3383 \pm 29$	$\chi_{\text{DR12BAO}}^2$	4.04	$4.9 \pm 1.4$
$\Omega_m$	0.3056	$0.305 \pm 0.012$	$k_{\text{eq}}$	0.010319	$0.010326 \pm 0.000088$	$\chi_{\text{prior}}^2$	2.37	$7.9 \pm 3.4$
$\Omega_m h^2$	0.14213	$0.1422 \pm 0.0012$	$100\theta_{\text{eq}}$	0.8170	$0.8166 \pm 0.0054$	$\chi_{\text{BAO}}^2$	5.65	$6.9 \pm 1.8$
$\Omega_m h^3$	0.09693	$0.0971^{+0.0023}_{-0.0025}$	$100\theta_{s,\text{eq}}$	0.45134	$0.4512 \pm 0.0028$	$\chi_{\text{CMB}}^2$	11918.6	$11934.5 \pm 5.8$
$\sigma_8$	0.8122	$0.814 \pm 0.019$	$H(0.15)$	73.25	$73.28 \pm 0.87$			
$S_8$	0.8198	$0.820 \pm 0.013$	$D_M(0.15)$	636.9	$637 \pm 10$			

Best-fit  $\chi_{\text{eff}}^2 = 11926.60$ ;  $\bar{\chi}_{\text{eff}}^2 = 11949.21$ ;  $R - 1 = 0.01464$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.61 DR12BAO: 4.04 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.90 commander\_dx12\_v3\_2\_29: 22.84 CamSpec like\_10.7HM\_1400\_unified: 11499.85



**18.32**    **base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02232 \pm 0.00015$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4505 \pm 0.0059$	$H(0.38)$	$83.09 \pm 0.31$
$\Omega_{\mathrm{c}}h^2$	$0.1194 \pm 0.0011$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6067 \pm 0.0081$	$D_{\mathrm{M}}(0.38)$	$1520 \pm 16$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00031$	$\sigma_8/h^{0.5}$	$0.988 \pm 0.012$	$H(0.51)$	$89.66 \pm 0.24$
$\tau$	$0.0538^{+0.0070}_{-0.0078}$	$r_{\mathrm{drag}}h$	$100.8^{+1.9}_{-2.1}$	$D_{\mathrm{M}}(0.51)$	$1972 \pm 17$
$w_0$	$-1.032^{+0.055}_{-0.049}$	$\langle d^2 \rangle^{1/2}$	$2.438 \pm 0.024$	$H(0.61)$	$95.18^{+0.32}_{-0.27}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041 \pm 0.015$	$z_{\mathrm{re}}$	$7.61 \pm 0.76$	$D_{\mathrm{M}}(0.61)$	$2297 \pm 17$
$n_{\mathrm{s}}$	$0.9662 \pm 0.0040$	$10^9 A_{\mathrm{s}}$	$2.092 \pm 0.031$	$H(2.33)$	$235.70 \pm 0.75$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0026$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878 \pm 0.011$	$D_{\mathrm{M}}(2.33)$	$5761.9 \pm 9.2$
$A_{100}^{\mathrm{PS}}$	$240 \pm 25$	$D_{40}$	$1226 \pm 12$	$f\sigma_8(0.15)$	$0.4581 \pm 0.0075$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8$	$D_{220}$	$5722 \pm 39$	$\sigma_8(0.15)$	$0.756 \pm 0.016$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10$	$D_{810}$	$2536 \pm 14$	$f\sigma_8(0.38)$	$0.480 \pm 0.011$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7$	$D_{1420}$	$816.0 \pm 5.0$	$\sigma_8(0.38)$	$0.670 \pm 0.014$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5}$	$D_{2000}$	$230.4 \pm 1.7$	$f\sigma_8(0.51)$	$0.479 \pm 0.012$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9662 \pm 0.0040$	$\sigma_8(0.51)$	$0.627 \pm 0.013$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.39}_{-0.18}$	$Y_{\mathrm{P}}$	$0.245372 \pm 0.000060$	$f\sigma_8(0.61)$	$0.474 \pm 0.012$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246698 \pm 0.000060$	$\sigma_8(0.61)$	$0.597 \pm 0.012$
$A^{\mathrm{kSZ}}$	$4.6^{+1.8}_{-4.3}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.596 \pm 0.028$	$f\sigma_8(2.33)$	$0.3009 \pm 0.0063$
$A_{100}^{\mathrm{dust}}$	$1.00 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.783 \pm 0.031$	$\sigma_8(2.33)$	$0.3095 \pm 0.0053$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$z_*$	$1089.94 \pm 0.24$	$f_{2000}^{143}$	$29.7 \pm 2.8$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$r_*$	$144.62 \pm 0.26$	$f_{2000}^{217}$	$106.8 \pm 1.9$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04110 \pm 0.00030$	$f_{2000}^{143 \times 217}$	$32.1 \pm 2.0$
$c_{100}$	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.892 \pm 0.024$	$\chi_{\mathrm{lensing}}^2$	$9.26 \pm 0.77$
$c_{217}$	$1.0011 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.77 \pm 0.32$	$\chi_{\mathrm{small}}^2$	$396.9 \pm 1.7$
$c_{TE}$	$0.9966 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.31 \pm 0.27$	$\chi_{\mathrm{lowl}}^2$	$23.05 \pm 0.80$
$c_{EE}$	$0.9922 \pm 0.0050$	$k_{\mathrm{D}}$	$0.14060 \pm 0.00032$	$\chi_{\mathrm{CamSpec}}^2$	$11514.0 \pm 5.5$
$H_0$	$68.5^{+1.3}_{-1.5}$	$100\theta_{\mathrm{D}}$	$0.16085 \pm 0.00019$	$\chi_{6\mathrm{DF}}^2$	$0.13 \pm 0.20$
$\Omega_{\Lambda}$	$0.696 \pm 0.012$	$z_{\mathrm{eq}}$	$3387 \pm 25$	$\chi_{\mathrm{MGS}}^2$	$1.87 \pm 0.99$
$\Omega_{\mathrm{m}}$	$0.304 \pm 0.012$	$k_{\mathrm{eq}}$	$0.010338 \pm 0.000076$	$\chi_{\mathrm{DR12BAO}}^2$	$5.0 \pm 1.3$
$\Omega_{\mathrm{m}}h^2$	$0.1424 \pm 0.0010$	$100\theta_{\mathrm{eq}}$	$0.8159 \pm 0.0047$	$\chi_{\mathrm{prior}}^2$	$7.9 \pm 3.5$
$\Omega_{\mathrm{m}}h^3$	$0.0975 \pm 0.0023$	$100\theta_{\mathrm{s,eq}}$	$0.4508 \pm 0.0024$	$\chi_{\mathrm{CMB}}^2$	$11943.2 \pm 5.8$
$\sigma_8$	$0.817 \pm 0.016$	$H(0.15)$	$73.37 \pm 0.85$	$\chi_{\mathrm{BAO}}^2$	$7.0 \pm 1.7$
$S_8$	$0.822 \pm 0.011$	$D_{\mathrm{M}}(0.15)$	$635 \pm 10$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11958.08; R - 1 = 0.01812$$



### 18.33 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02232 \pm 0.00015$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4498 \pm 0.0071$	$H(0.38)$	$83.09 \pm 0.32$
$\Omega_{\mathrm{c}}h^2$	$0.1192 \pm 0.0013$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.605 \pm 0.010$	$D_{\mathrm{M}}(0.38)$	$1522 \pm 17$
$100\theta_{\mathrm{MC}}$	$1.04093 \pm 0.00031$	$\sigma_8/h^{0.5}$	$0.986 \pm 0.015$	$H(0.51)$	$89.68 \pm 0.26$
$\tau$	$0.0544^{+0.0047}_{-0.0084}$	$r_{\mathrm{drag}}h$	$100.6^{+1.9}_{-2.2}$	$D_{\mathrm{M}}(0.51)$	$1974 \pm 17$
$w_0$	$-1.024^{+0.059}_{-0.051}$	$\langle d^2 \rangle^{1/2}$	$2.433 \pm 0.031$	$H(0.61)$	$95.23^{+0.35}_{-0.29}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.011}_{-0.016}$	$z_{\mathrm{re}}$	$7.67^{+0.53}_{-0.84}$	$D_{\mathrm{M}}(0.61)$	$2298 \pm 17$
$n_{\mathrm{s}}$	$0.9669 \pm 0.0042$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.024}_{-0.034}$	$H(2.33)$	$235.71 \pm 0.75$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0026$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.012$	$D_{\mathrm{M}}(2.33)$	$5761.8 \pm 9.3$
$A_{100}^{\mathrm{PS}}$	$240 \pm 24$	$D_{40}$	$1224 \pm 12$	$f\sigma_8(0.15)$	$0.4567 \pm 0.0096$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8$	$D_{220}$	$5719 \pm 40$	$\sigma_8(0.15)$	$0.753 \pm 0.018$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{810}$	$2535 \pm 14$	$f\sigma_8(0.38)$	$0.478 \pm 0.013$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7$	$D_{1420}$	$815.9 \pm 5.0$	$\sigma_8(0.38)$	$0.668 \pm 0.016$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5}$	$D_{2000}$	$230.4 \pm 1.7$	$f\sigma_8(0.51)$	$0.477 \pm 0.014$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9669 \pm 0.0042$	$\sigma_8(0.51)$	$0.625 \pm 0.015$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.39}_{-0.18}$	$Y_{\mathrm{P}}$	$0.245375 \pm 0.000060$	$f\sigma_8(0.61)$	$0.472 \pm 0.015$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246701 \pm 0.000060$	$\sigma_8(0.61)$	$0.595 \pm 0.014$
$A^{\mathrm{kSZ}}$	$4.7^{+2.0}_{-4.1}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.595 \pm 0.028$	$f\sigma_8(2.33)$	$0.2999 \pm 0.0072$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.786 \pm 0.032$	$\sigma_8(2.33)$	$0.3088 \pm 0.0061$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$z_*$	$1089.91 \pm 0.26$	$f_{2000}^{143}$	$29.6 \pm 2.8$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$r_*$	$144.67 \pm 0.30$	$f_{2000}^{217}$	$106.8 \pm 1.9$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04112 \pm 0.00031$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.0$
$c_{100}$	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.896 \pm 0.028$	$\chi_{\mathrm{simall}}^2$	$396.8 \pm 1.7$
$c_{217}$	$1.0011 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.77 \pm 0.32$	$\chi_{\mathrm{lowl}}^2$	$22.93 \pm 0.85$
$c_{TE}$	$0.9966 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.35 \pm 0.30$	$\chi_{\mathrm{CamSpec}}^2$	$11514.5 \pm 5.7$
$c_{EE}$	$0.9921 \pm 0.0049$	$k_{\mathrm{D}}$	$0.14056 \pm 0.00035$	$\chi_{6\mathrm{DF}}^2$	$0.13 \pm 0.20$
$H_0$	$68.3^{+1.3}_{-1.5}$	$100\theta_{\mathrm{D}}$	$0.16085 \pm 0.00019$	$\chi_{\mathrm{MGS}}^2$	$1.78 \pm 0.99$
$\Omega_{\Lambda}$	$0.695 \pm 0.012$	$z_{\mathrm{eq}}$	$3382 \pm 29$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 \pm 1.4$
$\Omega_{\mathrm{m}}$	$0.305 \pm 0.012$	$k_{\mathrm{eq}}$	$0.010324 \pm 0.000088$	$\chi_{\mathrm{prior}}^2$	$7.9 \pm 3.4$
$\Omega_{\mathrm{m}}h^2$	$0.1422 \pm 0.0012$	$100\theta_{\mathrm{eq}}$	$0.8167 \pm 0.0054$	$\chi_{\mathrm{BAO}}^2$	$6.8 \pm 1.8$
$\Omega_{\mathrm{m}}h^3$	$0.0971^{+0.0023}_{-0.0025}$	$100\theta_{\mathrm{s,eq}}$	$0.4512 \pm 0.0028$	$\chi_{\mathrm{CMB}}^2$	$11934.2 \pm 5.7$
$\sigma_8$	$0.815 \pm 0.019$	$H(0.15)$	$73.28 \pm 0.87$		
$S_8$	$0.821 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$637 \pm 10$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11948.94; R - 1 = 0.01259$$



18.34 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02232 \pm 0.00015$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4507 \pm 0.0058$	$H(0.38)$	$83.10 \pm 0.31$
$\Omega_{\mathrm{c}}h^2$	$0.1194 \pm 0.0011$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6069 \pm 0.0081$	$D_{\mathrm{M}}(0.38)$	$1521 \pm 16$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00031$	$\sigma_8/h^{0.5}$	$0.988 \pm 0.012$	$H(0.51)$	$89.67 \pm 0.24$
$\tau$	$0.0548^{+0.0050}_{-0.0080}$	$r_{\mathrm{drag}}h$	$100.8^{+1.9}_{-2.1}$	$D_{\mathrm{M}}(0.51)$	$1972 \pm 17$
$w_0$	$-1.030^{+0.054}_{-0.049}$	$\langle d^2 \rangle^{1/2}$	$2.439 \pm 0.023$	$H(0.61)$	$95.20^{+0.31}_{-0.27}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.011}_{-0.015}$	$z_{\mathrm{re}}$	$7.72^{+0.56}_{-0.80}$	$D_{\mathrm{M}}(0.61)$	$2297 \pm 17$
$n_{\mathrm{s}}$	$0.9664 \pm 0.0040$	$10^9 A_{\mathrm{s}}$	$2.096^{+0.024}_{-0.032}$	$H(2.33)$	$235.69 \pm 0.74$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0026$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878 \pm 0.011$	$D_{\mathrm{M}}(2.33)$	$5761.7 \pm 9.1$
$A_{100}^{\mathrm{PS}}$	$240 \pm 25$	$D_{40}$	$1226 \pm 11$	$f\sigma_8(0.15)$	$0.4581 \pm 0.0075$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8$	$D_{220}$	$5722 \pm 39$	$\sigma_8(0.15)$	$0.756 \pm 0.016$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10$	$D_{810}$	$2535 \pm 14$	$f\sigma_8(0.38)$	$0.479 \pm 0.011$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7$	$D_{1420}$	$816.0 \pm 5.0$	$\sigma_8(0.38)$	$0.670 \pm 0.014$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5}$	$D_{2000}$	$230.4 \pm 1.7$	$f\sigma_8(0.51)$	$0.479^{+0.011}_{-0.012}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9664 \pm 0.0040$	$\sigma_8(0.51)$	$0.627 \pm 0.013$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.39}_{-0.18}$	$Y_{\mathrm{P}}$	$0.245373 \pm 0.000059$	$f\sigma_8(0.61)$	$0.474 \pm 0.012$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246700 \pm 0.000059$	$\sigma_8(0.61)$	$0.597 \pm 0.012$
$A^{\mathrm{kSZ}}$	$4.6^{+1.7}_{-4.3}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.596 \pm 0.028$	$f\sigma_8(2.33)$	$0.3010 \pm 0.0063$
$A_{100}^{\mathrm{dust}}$	$1.00 \pm 0.20$	$\mathrm{Age}/\mathrm{Gyr}$	$13.783 \pm 0.031$	$\sigma_8(2.33)$	$0.3096 \pm 0.0053$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$z_*$	$1089.93 \pm 0.24$	$f_{2000}^{143}$	$29.7 \pm 2.8$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$r_*$	$144.63 \pm 0.26$	$f_{2000}^{217}$	$106.8 \pm 1.9$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04110 \pm 0.00030$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.0$
$c_{100}$	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.892 \pm 0.024$	$\chi_{\mathrm{lensing}}^2$	$9.22 \pm 0.72$
$c_{217}$	$1.0011 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.77 \pm 0.32$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.7$
$c_{TE}$	$0.9965 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.32 \pm 0.27$	$\chi_{\mathrm{lowl}}^2$	$23.04 \pm 0.79$
$c_{EE}$	$0.9921 \pm 0.0050$	$k_{\mathrm{D}}$	$0.14059 \pm 0.00032$	$\chi_{\mathrm{CamSpec}}^2$	$11513.9 \pm 5.6$
$H_0$	$68.4^{+1.3}_{-1.5}$	$100\theta_{\mathrm{D}}$	$0.16085 \pm 0.00019$	$\chi_{6\mathrm{DF}}^2$	$0.13 \pm 0.20$
$\Omega_{\Lambda}$	$0.696 \pm 0.012$	$z_{\mathrm{eq}}$	$3386 \pm 24$	$\chi_{\mathrm{MGS}}^2$	$1.86 \pm 0.99$
$\Omega_{\mathrm{m}}$	$0.304 \pm 0.012$	$k_{\mathrm{eq}}$	$0.010334 \pm 0.000075$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 \pm 1.3$
$\Omega_{\mathrm{m}}h^2$	$0.1423 \pm 0.0010$	$100\theta_{\mathrm{eq}}$	$0.8161 \pm 0.0046$	$\chi_{\mathrm{prior}}^2$	$7.9 \pm 3.5$
$\Omega_{\mathrm{m}}h^3$	$0.0974 \pm 0.0023$	$100\theta_{\mathrm{s,eq}}$	$0.4509 \pm 0.0024$	$\chi_{\mathrm{CMB}}^2$	$11943.0 \pm 5.8$
$\sigma_8$	$0.817 \pm 0.016$	$H(0.15)$	$73.36 \pm 0.85$	$\chi_{\mathrm{BAO}}^2$	$6.9 \pm 1.7$
$S_8$	$0.823 \pm 0.011$	$D_{\mathrm{M}}(0.15)$	$636 \pm 10$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11957.86; R - 1 = 0.01772$$



### 18.35 base\_w\_plikHM\_TT\_lowl\_lowE\_BAO\_Riess18\_JLA

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022194	$0.02218 \pm 0.00020$	$\sigma_8 \Omega_m^{0.25}$	0.6142	$0.613 \pm 0.011$	$D_M(0.38)$	1507.0	$1507 \pm 11$
$\Omega_c h^2$	0.12001	$0.1199 \pm 0.0016$	$\sigma_8/h^{0.5}$	0.9991	$0.998 \pm 0.016$	$H(0.51)$	89.513	$89.51 \pm 0.36$
$100\theta_{MC}$	1.040912	$1.04090 \pm 0.00044$	$r_{\text{drag}} h$	102.71	$102.7 \pm 1.3$	$D_M(0.51)$	1958.9	$1959 \pm 11$
$\tau$	0.0527	$0.0525 \pm 0.0080$	$\langle d^2 \rangle^{1/2}$	2.4545	$2.454 \pm 0.035$	$H(0.61)$	94.902	$94.90 \pm 0.39$
$w_0$	-1.0848	$-1.084 \pm 0.043$	$z_{\text{re}}$	7.55	$7.51 \pm 0.82$	$D_M(0.61)$	2284.3	$2285 \pm 12$
$\ln(10^{10} A_s)$	3.0406	$3.040 \pm 0.017$	$10^9 A_s$	2.0917	$2.090 \pm 0.035$	$H(2.33)$	235.20	$235.18 \pm 0.77$
$n_s$	0.96520	$0.9645 \pm 0.0048$	$10^9 A_s e^{-2\tau}$	1.8824	$1.881 \pm 0.012$	$D_M(2.33)$	5763.0	$5764 \pm 12$
$\alpha_{JLA}$	0.1420	$0.1420 \pm 0.0066$	$D_{40}$	1227.4	$1229 \pm 14$	$f\sigma_8(0.15)$	0.4646	$0.464 \pm 0.011$
$\beta_{JLA}$	3.116	$3.118 \pm 0.081$	$D_{220}$	5714.9	$5717 \pm 41$	$\sigma_8(0.15)$	0.7723	$0.771 \pm 0.015$
$y_{\text{cal}}$	1.00044	$1.0004 \pm 0.0025$	$D_{810}$	2537.8	$2536 \pm 14$	$f\sigma_8(0.38)$	0.4908	$0.490 \pm 0.013$
$A_{217}^{\text{CIB}}$	49.1	$48 \pm 7$	$D_{1420}$	816.0	$815.0 \pm 5.1$	$\sigma_8(0.38)$	0.6850	$0.684 \pm 0.013$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.25	—	$D_{2000}$	230.24	$229.9 \pm 1.8$	$f\sigma_8(0.51)$	0.4916	$0.491 \pm 0.013$
$A_{143}^{\text{tSZ}}$	7.01	$5.1 \pm 2.0$	$n_{s,0.002}$	0.96520	$0.9645 \pm 0.0048$	$\sigma_8(0.51)$	0.6409	$0.640 \pm 0.012$
$A_{100}^{\text{PS}}$	254.9	$263 \pm 28$	$Y_P$	0.245323	$0.245316^{+0.000092}_{-0.000076}$	$f\sigma_8(0.61)$	0.4874	$0.487 \pm 0.013$
$A_{143}^{\text{PS}}$	48.1	$49 \pm 8$	$Y_P^{\text{BBN}}$	0.246649	$0.246642^{+0.000092}_{-0.000077}$	$\sigma_8(0.61)$	0.6097	$0.609 \pm 0.011$
$A_{143 \times 217}^{\text{PS}}$	44.8	$43 \pm 9$	$10^5 D/H$	2.6191	$2.621 \pm 0.038$	$f\sigma_8(2.33)$	0.3074	$0.3069 \pm 0.0055$
$A_{217}^{\text{PS}}$	118.4	$115 \pm 10$	Age/Gyr	13.7656	$13.768 \pm 0.028$	$\sigma_8(2.33)$	0.31497	$0.3145 \pm 0.0047$
$A^{\text{kSZ}}$	0.00	$< 4.76$	$z_*$	1090.143	$1090.15 \pm 0.33$	$f_{2000}^{143}$	30.22	$30.9 \pm 2.9$
$A_{100}^{\text{dustTT}}$	8.92	$8.9 \pm 1.8$	$r_*$	144.565	$144.60 \pm 0.38$	$f_{2000}^{143 \times 217}$	33.03	$33.3 \pm 2.0$
$A_{143}^{\text{dustTT}}$	10.76	$10.7 \pm 1.8$	$100\theta_*$	1.041115	$1.04111 \pm 0.00044$	$f_{2000}^{217}$	107.53	$107.9 \pm 1.9$
$A_{143 \times 217}^{\text{dustTT}}$	19.15	$18.3 \pm 3.3$	$D_M(z_*)/\text{Gpc}$	13.8855	$13.889 \pm 0.036$	$\chi_{\text{small}}^2$	395.87	$396.9 \pm 1.7$
$A_{217}^{\text{dustTT}}$	94.2	$93.5 \pm 7.4$	$z_{\text{drag}}$	1059.513	$1059.50 \pm 0.44$	$\chi_{\text{lowl}}^2$	23.12	$23.3 \pm 1.0$
$c_{100}$	0.99963	$0.99960 \pm 0.00062$	$r_{\text{drag}}$	147.288	$147.32 \pm 0.40$	$\chi_{\text{plik}}^2$	758.6	$771.0 \pm 5.4$
$c_{217}$	0.99825	$0.99825 \pm 0.00062$	$k_D$	0.140524	$0.14048 \pm 0.00047$	$\chi_{\text{H073p45}}^2$	5.01	$5.4 \pm 2.5$
$H_0$	69.73	$69.71 \pm 0.93$	$100\theta_D$	0.161004	$0.16102 \pm 0.00026$	$\chi_{\text{JLA}}^2$	696.56	$699.0 \pm 2.6$
$\Omega_\Lambda$	0.7063	$0.7062 \pm 0.0078$	$z_{\text{eq}}$	3398.1	$3396 \pm 36$	$\chi_{6\text{DF}}^2$	0.118	$0.17 \pm 0.18$
$\Omega_m$	0.2937	$0.2938 \pm 0.0078$	$k_{\text{eq}}$	0.010371	$0.01036 \pm 0.00011$	$\chi_{\text{MGS}}^2$	2.67	$2.73 \pm 0.74$
$\Omega_m h^2$	0.14284	$0.1427 \pm 0.0015$	$100\theta_{\text{eq}}$	0.8135	$0.8140 \pm 0.0067$	$\chi_{\text{DR12BAO}}^2$	4.52	$5.1 \pm 1.0$
$\Omega_m h^3$	0.09961	$0.0995 \pm 0.0018$	$100\theta_{s,\text{eq}}$	0.44964	$0.4499 \pm 0.0035$	$\chi_{\text{prior}}^2$	1.41	$7.3 \pm 3.7$
$\sigma_8$	0.8343	$0.833 \pm 0.016$	$H(0.15)$	74.08	$74.06 \pm 0.56$	$\chi_{\text{BAO}}^2$	7.31	$8.0 \pm 1.6$
$S_8$	0.8256	$0.824 \pm 0.016$	$D_M(0.15)$	626.5	$626.8 \pm 6.4$	$\chi_{\text{CMB}}^2$	1177.6	$1191.3 \pm 5.4$
$\sigma_8 \Omega_m^{0.5}$	0.4522	$0.4515 \pm 0.0089$	$H(0.38)$	83.185	$83.17 \pm 0.35$			

Best-fit  $\chi_{\text{eff}}^2 = 1887.89$ ;  $\bar{\chi}_{\text{eff}}^2 = 1910.92$ ;  $R - 1 = 0.00727$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.12 MGS: 2.67 DR12BAO: 4.52 CMB - small-100x143\_offlike5\_EE\_Aplanck\_B: 395.87 commander\_dx12\_v3.2.29: 23.12 plik\_rd12\_HM\_v22.TT: 758.61  
Hubble - H073p45: 5.01 SN - JLA December\_2013: 696.56



18.36 base\_w\_plikHM\_TT\_lowl\_lowE\_BAO\_Riess18\_JLA\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022209	$0.02220 \pm 0.00020$	$\sigma_8 \Omega_m^{0.25}$	0.6129	$0.6119 \pm 0.0083$	$D_M(0.38)$	1506.3	$1507 \pm 11$
$\Omega_c h^2$	0.11977	$0.1197 \pm 0.0013$	$\sigma_8/h^{0.5}$	0.9973	$0.996 \pm 0.012$	$H(0.51)$	89.545	$89.54 \pm 0.32$
$100\theta_{MC}$	1.040854	$1.04090 \pm 0.00044$	$r_{drag}h$	102.79	$102.7 \pm 1.3$	$D_M(0.51)$	1958.0	$1959 \pm 11$
$\tau$	0.0529	$0.0525 \pm 0.0077$	$\langle d^2 \rangle^{1/2}$	2.4511	$2.450 \pm 0.025$	$H(0.61)$	94.928	$94.93 \pm 0.34$
$w_0$	-1.0830	$-1.081 \pm 0.038$	$z_{re}$	7.55	$7.49 \pm 0.79$	$D_M(0.61)$	2283.2	$2284 \pm 12$
$\ln(10^{10} A_s)$	3.0404	$3.039 \pm 0.015$	$10^9 A_s$	2.0914	$2.089 \pm 0.031$	$H(2.33)$	235.07	$235.10 \pm 0.69$
$n_s$	0.96558	$0.9647 \pm 0.0043$	$10^9 A_s e^{-2\tau}$	1.8815	$1.880 \pm 0.011$	$D_M(2.33)$	5762.6	$5763 \pm 12$
$y_{cal}$	1.00047	$1.0004 \pm 0.0025$	$D_{40}$	1226.7	$1229 \pm 12$	$f\sigma_8(0.15)$	0.4632	$0.4625 \pm 0.0082$
$\alpha_{JLA}$	0.1421	$0.1420 \pm 0.0066$	$D_{220}$	5717.4	$5719 \pm 41$	$\sigma_8(0.15)$	0.7711	$0.770 \pm 0.012$
$\beta_{JLA}$	3.113	$3.117 \pm 0.082$	$D_{810}$	2537.7	$2536 \pm 14$	$f\sigma_8(0.38)$	0.4895	$0.4886 \pm 0.0099$
$A_{217}^{CIB}$	48.3	$48 \pm 7$	$D_{1420}$	816.1	$814.9 \pm 5.1$	$\sigma_8(0.38)$	0.6842	$0.683 \pm 0.011$
$\xi^{tSZ \times CIB}$	0.37	—	$D_{2000}$	230.26	$229.8 \pm 1.8$	$f\sigma_8(0.51)$	0.4904	$0.489 \pm 0.010$
$A_{143}^{tSZ}$	7.07	$5.1 \pm 2.0$	$n_{s,0.002}$	0.96558	$0.9647 \pm 0.0043$	$\sigma_8(0.51)$	0.6402	$0.6390 \pm 0.0097$
$A_{100}^{PS}$	253.2	$263 \pm 28$	$Y_P$	0.245330	$0.245321^{+0.000089}_{-0.000075}$	$f\sigma_8(0.61)$	0.4863	$0.485 \pm 0.010$
$A_{143}^{PS}$	49.7	$49 \pm 8$	$Y_P^{BBN}$	0.246656	$0.246647^{+0.000089}_{-0.000075}$	$\sigma_8(0.61)$	0.6090	$0.6078 \pm 0.0091$
$A_{143 \times 217}^{PS}$	48.0	$43 \pm 9$	$10^5 D/H$	2.6162	$2.619 \pm 0.037$	$f\sigma_8(2.33)$	0.30713	$0.3065 \pm 0.0045$
$A_{217}^{PS}$	119.7	$115 \pm 10$	Age/Gyr	13.7654	$13.767 \pm 0.028$	$\sigma_8(2.33)$	0.31475	$0.3142 \pm 0.0039$
$A^{kSZ}$	0.01	$< 4.83$	$z_*$	1090.103	$1090.12 \pm 0.31$	$f_{2000}^{143}$	30.08	$30.9 \pm 2.9$
$A_{100}^{dustTT}$	8.84	$8.9 \pm 1.8$	$r_*$	144.615	$144.63 \pm 0.32$	$f_{2000}^{143 \times 217}$	33.04	$33.3 \pm 2.0$
$A_{143}^{dustTT}$	10.75	$10.7 \pm 1.8$	$100\theta_*$	1.041063	$1.04110 \pm 0.00043$	$f_{2000}^{217}$	107.47	$107.9 \pm 1.9$
$A_{143 \times 217}^{dustTT}$	19.49	$18.3 \pm 3.3$	$D_M(z_*)/\text{Gpc}$	13.8910	$13.892 \pm 0.031$	$\chi_{lensing}^2$	8.717	$9.22 \pm 0.78$
$A_{217}^{dustTT}$	94.7	$93.4 \pm 7.3$	$z_{drag}$	1059.551	$1059.51 \pm 0.44$	$\chi_{small}^2$	395.86	$396.8 \pm 1.6$
$c_{100}$	0.99966	$0.99961 \pm 0.00061$	$r_{drag}$	147.332	$147.36 \pm 0.34$	$\chi_{lowl}^2$	23.06	$23.27 \pm 0.87$
$c_{217}$	0.99823	$0.99825 \pm 0.00062$	$k_D$	0.140488	$0.14045 \pm 0.00044$	$\chi_{plik}^2$	758.81	$770.9 \pm 5.2$
$H_0$	69.77	$69.72 \pm 0.91$	$100\theta_D$	0.160982	$0.16101 \pm 0.00026$	$\chi_{H073p45}^2$	4.92	$5.4 \pm 2.5$
$\Omega_\Lambda$	0.7070	$0.7065 \pm 0.0078$	$z_{eq}$	3392.8	$3392 \pm 30$	$\chi_{JLA}^2$	696.55	$698.9 \pm 2.6$
$\Omega_m$	0.2930	$0.2935 \pm 0.0078$	$k_{eq}$	0.010355	$0.010352 \pm 0.000091$	$\chi_{6DF}^2$	0.131	$0.18 \pm 0.18$
$\Omega_m h^2$	0.14262	$0.1426 \pm 0.0012$	$100\theta_{eq}$	0.8145	$0.8147 \pm 0.0055$	$\chi_{MGS}^2$	2.76	$2.77 \pm 0.75$
$\Omega_m h^3$	0.09951	$0.0994 \pm 0.0017$	$100\theta_{s,eq}$	0.45013	$0.4502 \pm 0.0029$	$\chi_{DR12BAO}^2$	4.50	$4.96 \pm 0.90$
$\sigma_8$	0.8330	$0.832 \pm 0.013$	$H(0.15)$	74.12	$74.08 \pm 0.56$	$\chi_{prior}^2$	1.34	$7.2 \pm 3.6$
$S_8$	0.8232	$0.822 \pm 0.012$	$D_M(0.15)$	626.2	$626.6 \pm 6.3$	$\chi_{CMB}^2$	1186.4	$1200.3 \pm 5.4$
$\sigma_8 \Omega_m^{0.5}$	0.4509	$0.4504 \pm 0.0066$	$H(0.38)$	83.222	$83.21 \pm 0.32$	$\chi_{BAO}^2$	7.38	$7.9 \pm 1.6$

Best-fit  $\chi_{eff}^2 = 1896.64$ ;  $\bar{\chi}_{eff}^2 = 1919.63$ ;  $R - 1 = 0.00916$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.13 MGS: 2.76 DR12BAO: 4.50 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.72 small\_100x143.offlike5\_EE\_Aplanck\_B: 395.86 comman-  
der\_dx12\_v3\_2\_29: 23.05 plik\_rd12\_HM\_v22\_TT: 758.81 Hubble - H073p45: 4.92 SN - JLA December\_2013: 696.55



18.37 base\_w\_plikHM\_TT\_lowl\_lowE\_BAO\_Riess18\_JLA\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00020$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.614 \pm 0.011$	$D_{\mathrm{M}}(0.38)$	$1507 \pm 11$
$\Omega_{\mathrm{c}}h^2$	$0.1199 \pm 0.0016$	$\sigma_8/h^{0.5}$	$0.999 \pm 0.016$	$H(0.51)$	$89.52 \pm 0.36$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00044$	$r_{\mathrm{drag}}h$	$102.7 \pm 1.3$	$D_{\mathrm{M}}(0.51)$	$1959 \pm 11$
$\tau$	$0.0542^{+0.0047}_{-0.0082}$	$\langle d^2 \rangle^{1/2}$	$2.456 \pm 0.034$	$H(0.61)$	$94.91 \pm 0.39$
$w_0$	$-1.083 \pm 0.043$	$z_{\mathrm{re}}$	$7.68^{+0.52}_{-0.82}$	$D_{\mathrm{M}}(0.61)$	$2285 \pm 12$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.012}_{-0.016}$	$10^9 A_{\mathrm{s}}$	$2.096^{+0.024}_{-0.035}$	$H(2.33)$	$235.16 \pm 0.77$
$n_{\mathrm{s}}$	$0.9647 \pm 0.0048$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.881 \pm 0.012$	$D_{\mathrm{M}}(2.33)$	$5763 \pm 12$
$\alpha_{JLA}$	$0.1420 \pm 0.0066$	$D_{40}$	$1229 \pm 14$	$f\sigma_8(0.15)$	$0.464 \pm 0.011$
$\beta_{JLA}$	$3.118 \pm 0.081$	$D_{220}$	$5717 \pm 41$	$\sigma_8(0.15)$	$0.772 \pm 0.015$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0026$	$D_{810}$	$2536 \pm 14$	$f\sigma_8(0.38)$	$0.490 \pm 0.013$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$D_{1420}$	$815.0 \pm 5.1$	$\sigma_8(0.38)$	$0.685 \pm 0.013$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{2000}$	$229.9 \pm 1.8$	$f\sigma_8(0.51)$	$0.491 \pm 0.013$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$n_{\mathrm{s},0.002}$	$0.9647 \pm 0.0048$	$\sigma_8(0.51)$	$0.641 \pm 0.012$
$A_{100}^{\mathrm{PS}}$	$262 \pm 28$	$Y_{\mathrm{P}}$	$0.245318^{+0.000091}_{-0.000076}$	$f\sigma_8(0.61)$	$0.487 \pm 0.013$
$A_{143}^{\mathrm{PS}}$	$48 \pm 8$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246644^{+0.000091}_{-0.000076}$	$\sigma_8(0.61)$	$0.609 \pm 0.011$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$10^5 \mathrm{D}/\mathrm{H}$	$2.620 \pm 0.038$	$f\sigma_8(2.33)$	$0.3073 \pm 0.0055$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$\mathrm{Age}/\mathrm{Gyr}$	$13.767 \pm 0.028$	$\sigma_8(2.33)$	$0.3149 \pm 0.0046$
$A^{\mathrm{kSZ}}$	$< 4.72$	$z_*$	$1090.14 \pm 0.33$	$f_{2000}^{143}$	$30.8 \pm 2.9$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$r_*$	$144.61 \pm 0.38$	$f_{2000}^{143 \times 217}$	$33.2 \pm 2.0$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$100\theta_*$	$1.04112 \pm 0.00043$	$f_{2000}^{217}$	$107.9 \pm 1.9$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.890 \pm 0.036$	$\chi_{\mathrm{simall}}^2$	$396.8 \pm 1.8$
$A_{217}^{\mathrm{dust}TT}$	$93.5 \pm 7.3$	$z_{\mathrm{drag}}$	$1059.51 \pm 0.44$	$\chi_{\mathrm{lowl}}^2$	$23.3 \pm 1.0$
$c_{100}$	$0.99960 \pm 0.00061$	$r_{\mathrm{drag}}$	$147.33 \pm 0.40$	$\chi_{\mathrm{plik}}^2$	$770.9 \pm 5.3$
$c_{217}$	$0.99825 \pm 0.00062$	$k_{\mathrm{D}}$	$0.14047 \pm 0.00047$	$\chi_{\mathrm{H073p45}}^2$	$5.4 \pm 2.5$
$H_0$	$69.71 \pm 0.93$	$100\theta_{\mathrm{D}}$	$0.16102 \pm 0.00026$	$\chi_{\mathrm{JLA}}^2$	$698.9 \pm 2.6$
$\Omega_{\Lambda}$	$0.7062 \pm 0.0078$	$z_{\mathrm{eq}}$	$3395 \pm 36$	$\chi_{6\mathrm{DF}}^2$	$0.17 \pm 0.18$
$\Omega_{\mathrm{m}}$	$0.2938 \pm 0.0078$	$k_{\mathrm{eq}}$	$0.01036 \pm 0.00011$	$\chi_{\mathrm{MGS}}^2$	$2.74 \pm 0.74$
$\Omega_{\mathrm{m}}h^2$	$0.1427 \pm 0.0015$	$100\theta_{\mathrm{eq}}$	$0.8142 \pm 0.0067$	$\chi_{\mathrm{DR12BAO}}^2$	$5.1 \pm 1.0$
$\Omega_{\mathrm{m}}h^3$	$0.0995 \pm 0.0018$	$100\theta_{\mathrm{s,eq}}$	$0.4500 \pm 0.0035$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8$	$0.834 \pm 0.016$	$H(0.15)$	$74.06 \pm 0.56$	$\chi_{\mathrm{BAO}}^2$	$8.0 \pm 1.6$
$S_8$	$0.825 \pm 0.016$	$D_{\mathrm{M}}(0.15)$	$626.8 \pm 6.4$	$\chi_{\mathrm{CMB}}^2$	$1191.0 \pm 5.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4519 \pm 0.0089$	$H(0.38)$	$83.19 \pm 0.35$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 1910.63; R - 1 = 0.00797$$



18.38 base\_w\_plikHM\_TT\_lowl\_lowE\_BAO\_Riess18\_JLA\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00020$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6121 \pm 0.0083$	$D_{\mathrm{M}}(0.38)$	$1507 \pm 11$
$\Omega_{\mathrm{c}}h^2$	$0.1196 \pm 0.0013$	$\sigma_8/h^{0.5}$	$0.996 \pm 0.012$	$H(0.51)$	$89.56 \pm 0.31$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00043$	$r_{\mathrm{drag}}h$	$102.7 \pm 1.3$	$D_{\mathrm{M}}(0.51)$	$1959 \pm 11$
$\tau$	$0.0540^{+0.0046}_{-0.0079}$	$\langle d^2 \rangle^{1/2}$	$2.452 \pm 0.025$	$H(0.61)$	$94.95 \pm 0.34$
$w_0$	$-1.079 \pm 0.038$	$z_{\mathrm{re}}$	$7.65^{+0.51}_{-0.79}$	$D_{\mathrm{M}}(0.61)$	$2284 \pm 12$
$\ln(10^{10}A_{\mathrm{s}})$	$3.042^{+0.011}_{-0.015}$	$10^9 A_{\mathrm{s}}$	$2.094^{+0.022}_{-0.031}$	$H(2.33)$	$235.06 \pm 0.69$
$n_{\mathrm{s}}$	$0.9650 \pm 0.0043$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.880 \pm 0.011$	$D_{\mathrm{M}}(2.33)$	$5762 \pm 12$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$D_{40}$	$1228 \pm 12$	$f\sigma_8(0.15)$	$0.4625 \pm 0.0082$
$\alpha_{JLA}$	$0.1419 \pm 0.0066$	$D_{220}$	$5719 \pm 41$	$\sigma_8(0.15)$	$0.770 \pm 0.012$
$\beta_{JLA}$	$3.116 \pm 0.082$	$D_{810}$	$2535 \pm 14$	$f\sigma_8(0.38)$	$0.4885 \pm 0.0099$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{1420}$	$814.9 \pm 5.1$	$\sigma_8(0.38)$	$0.683 \pm 0.011$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{2000}$	$229.9 \pm 1.8$	$f\sigma_8(0.51)$	$0.489 \pm 0.010$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$n_{\mathrm{s},0.002}$	$0.9650 \pm 0.0043$	$\sigma_8(0.51)$	$0.6393 \pm 0.0097$
$A_{100}^{\mathrm{PS}}$	$263 \pm 28$	$Y_{\mathrm{P}}$	$0.245323^{+0.000088}_{-0.000075}$	$f\sigma_8(0.61)$	$0.485 \pm 0.010$
$A_{143}^{\mathrm{PS}}$	$48 \pm 8$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246650^{+0.000088}_{-0.000075}$	$\sigma_8(0.61)$	$0.6081 \pm 0.0091$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$10^5 \mathrm{D}/\mathrm{H}$	$2.618 \pm 0.037$	$f\sigma_8(2.33)$	$0.3067 \pm 0.0045$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$\mathrm{Age}/\mathrm{Gyr}$	$13.767 \pm 0.028$	$\sigma_8(2.33)$	$0.3145 \pm 0.0038$
$A^{\mathrm{kSZ}}$	$< 4.81$	$z_*$	$1090.10 \pm 0.30$	$f_{2000}^{143}$	$30.8 \pm 2.9$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$r_*$	$144.65 \pm 0.32$	$f_{2000}^{143 \times 217}$	$33.3 \pm 2.0$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$100\theta_*$	$1.04111 \pm 0.00043$	$f_{2000}^{217}$	$107.9 \pm 1.9$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.894 \pm 0.030$	$\chi_{\mathrm{lensing}}^2$	$9.20 \pm 0.78$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.3$	$z_{\mathrm{drag}}$	$1059.52 \pm 0.44$	$\chi_{\mathrm{simall}}^2$	$396.7 \pm 1.6$
$c_{100}$	$0.99961 \pm 0.00061$	$r_{\mathrm{drag}}$	$147.38 \pm 0.34$	$\chi_{\mathrm{lowl}}^2$	$23.26 \pm 0.87$
$c_{217}$	$0.99825 \pm 0.00062$	$k_{\mathrm{D}}$	$0.14044 \pm 0.00043$	$\chi_{\mathrm{plik}}^2$	$770.8 \pm 5.2$
$H_0$	$69.70 \pm 0.91$	$100\theta_{\mathrm{D}}$	$0.16101 \pm 0.00026$	$\chi_{\mathrm{H073p45}}^2$	$5.4 \pm 2.5$
$\Omega_{\Lambda}$	$0.7066 \pm 0.0078$	$z_{\mathrm{eq}}$	$3389 \pm 29$	$\chi_{\mathrm{JLA}}^2$	$698.8 \pm 2.6$
$\Omega_{\mathrm{m}}$	$0.2934 \pm 0.0078$	$k_{\mathrm{eq}}$	$0.010345 \pm 0.000089$	$\chi_{6\mathrm{DF}}^2$	$0.18 \pm 0.18$
$\Omega_{\mathrm{m}}h^2$	$0.1425 \pm 0.0012$	$100\theta_{\mathrm{eq}}$	$0.8151 \pm 0.0054$	$\chi_{\mathrm{MGS}}^2$	$2.78 \pm 0.75$
$\Omega_{\mathrm{m}}h^3$	$0.0993 \pm 0.0016$	$100\theta_{\mathrm{s,eq}}$	$0.4505 \pm 0.0028$	$\chi_{\mathrm{DR12BAO}}^2$	$4.92 \pm 0.89$
$\sigma_8$	$0.832 \pm 0.013$	$H(0.15)$	$74.09 \pm 0.56$	$\chi_{\mathrm{prior}}^2$	$7.2 \pm 3.6$
$S_8$	$0.822 \pm 0.012$	$D_{\mathrm{M}}(0.15)$	$626.7 \pm 6.4$	$\chi_{\mathrm{CMB}}^2$	$1200.0 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4505 \pm 0.0067$	$H(0.38)$	$83.23 \pm 0.32$	$\chi_{\mathrm{BAO}}^2$	$7.9 \pm 1.6$

$$\bar{\chi}_{\mathrm{eff}}^2 = 1919.34; R - 1 = 0.00910$$



## 18.39 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_JLA

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022407	$0.02239 \pm 0.00014$ (+1.0 $\sigma$ )	$\Omega_m h^3$	0.10004	$0.0999 \pm 0.0017$ (+0.2 $\sigma$ )	$D_M(0.15)$	624.9	$625.5 \pm 6.5$ (−0.2 $\sigma$ )
$\Omega_c h^2$	0.12001	$0.1199 \pm 0.0012$ (+0.0 $\sigma$ )	$\sigma_8$	0.8358	$0.834 \pm 0.014$ (+0.1 $\sigma$ )	$H(0.38)$	83.366	$83.34 \pm 0.29$ (+0.5 $\sigma$ )
$100\theta_{MC}$	1.040974	$1.04095 \pm 0.00030$ (+0.1 $\sigma$ )	$S_8$	0.8254	$0.824 \pm 0.013$ (+0.0 $\sigma$ )	$D_M(0.38)$	1503.3	$1504 \pm 11$ (−0.3 $\sigma$ )
$\tau$	0.0545	$0.0544 \pm 0.0080$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4521	$0.4515 \pm 0.0072$ (+0.0 $\sigma$ )	$H(0.51)$	89.690	$89.67 \pm 0.28$ (+0.5 $\sigma$ )
$w_0$	−1.0843	$−1.082 \pm 0.038$ (+0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6147	$0.6137 \pm 0.0093$ (+0.0 $\sigma$ )	$D_M(0.51)$	1954.2	$1955 \pm 11$ (−0.3 $\sigma$ )
$\ln(10^{10} A_s)$	3.0450	$3.045 \pm 0.016$ (+0.3 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9995	$0.998 \pm 0.014$ (+0.0 $\sigma$ )	$H(0.61)$	95.077	$95.07 \pm 0.30$ (+0.4 $\sigma$ )
$n_s$	0.96665	$0.9654 \pm 0.0041$ (+0.2 $\sigma$ )	$r_{drag} h$	102.83	$102.8 \pm 1.4$ (+0.0 $\sigma$ )	$D_M(0.61)$	2279.0	$2280 \pm 12$ (−0.4 $\sigma$ )
$\alpha_{JLA}$	0.1420	$0.1420 \pm 0.0066$ (+0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4555	$2.456 \pm 0.029$ (+0.1 $\sigma$ )	$H(2.33)$	235.42	$235.41 \pm 0.62$ (+0.3 $\sigma$ )
$\beta_{JLA}$	3.117	$3.119 \pm 0.081$ (+0.0 $\sigma$ )	$z_{re}$	7.68	$7.65 \pm 0.81$ (+0.2 $\sigma$ )	$D_M(2.33)$	5753.2	$5754.4 \pm 9.0$ (−0.8 $\sigma$ )
$y_{cal}$	1.00045	$1.0007 \pm 0.0025$ (+0.1 $\sigma$ )	$10^9 A_s$	2.1011	$2.100 \pm 0.034$ (+0.3 $\sigma$ )	$f\sigma_8(0.15)$	0.4646	$0.4638 \pm 0.0088$ (−0.0 $\sigma$ )
$A_{217}^{CIB}$	45.4	$47 \pm 7$ (−0.1 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8842	$1.884 \pm 0.012$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7737	$0.772 \pm 0.013$ (+0.1 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.72	—	$D_{40}$	1227.0	$1230 \pm 12$ (+0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.4911	$0.490 \pm 0.011$ (+0.0 $\sigma$ )
$A_{143}^{tSZ}$	7.07	$5.5^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$D_{220}$	5730.6	$5737 \pm 39$ (+0.5 $\sigma$ )	$\sigma_8(0.38)$	0.6865	$0.685 \pm 0.012$ (+0.1 $\sigma$ )
$A_{100}^{PS}$	247.7	$258 \pm 28$ (−0.2 $\sigma$ )	$D_{810}$	2541.6	$2540 \pm 14$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.4920	$0.491 \pm 0.011$ (+0.0 $\sigma$ )
$A_{143}^{PS}$	51.2	$46 \pm 8$ (−0.4 $\sigma$ )	$D_{1420}$	818.77	$817.6 \pm 4.7$ (+0.5 $\sigma$ )	$\sigma_8(0.51)$	0.6423	$0.641 \pm 0.011$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{PS}$	54.7	$43 \pm 9$ (−0.1 $\sigma$ )	$D_{2000}$	231.56	$231.1 \pm 1.5$ (+0.7 $\sigma$ )	$f\sigma_8(0.61)$	0.4879	$0.487 \pm 0.011$ (+0.0 $\sigma$ )
$A_{217}^{PS}$	122.7	$115 \pm 10$ (+0.0 $\sigma$ )	$n_{s,0.002}$	0.96665	$0.9654 \pm 0.0041$ (+0.2 $\sigma$ )	$\sigma_8(0.61)$	0.6110	$0.610 \pm 0.010$ (+0.1 $\sigma$ )
$A^{kSZ}$	0.01	$< 4.15$ (−0.2 $\sigma$ )	$Y_P$	0.245410	$0.245401 \pm 0.000055$ (+1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.3082	$0.3075 \pm 0.0050$ (+0.1 $\sigma$ )
$A_{100}^{dustTT}$	8.80	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P^{BBN}$	0.246736	$0.246728 \pm 0.000055$ (+1.0 $\sigma$ )	$\sigma_8(2.33)$	0.31579	$0.3152 \pm 0.0044$ (+0.1 $\sigma$ )
$A_{143}^{dustTT}$	11.08	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5787	$2.582 \pm 0.026$ (−1.0 $\sigma$ )	$f_{2000}^{143}$	28.37	$29.3 \pm 2.7$ (−0.5 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.27	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	Age/Gyr	13.7426	$13.747 \pm 0.023$ (−0.8 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.79	$32.1 \pm 1.8$ (−0.6 $\sigma$ )
$A_{217}^{dustTT}$	95.7	$93.7 \pm 7.3$ (+0.0 $\sigma$ )	$z_*$	1089.874	$1089.89 \pm 0.25$ (−0.8 $\sigma$ )	$f_{2000}^{217}$	106.31	$106.9 \pm 1.8$ (−0.5 $\sigma$ )
$A_{100}^{dustTE}$	0.1140	$0.115 \pm 0.038$	$r_*$	144.400	$144.43 \pm 0.27$ (−0.4 $\sigma$ )	$\chi_{small}^2$	396.06	$397.1 \pm 2.0$ (+0.1 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1348	$0.135 \pm 0.029$	$100\theta_*$	1.041149	$1.04113 \pm 0.00030$ (+0.1 $\sigma$ )	$\chi_{lowl}^2$	23.01	$23.29 \pm 0.87$ (−0.0 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.480	$0.481 \pm 0.086$	$D_M(z_*)/\text{Gpc}$	13.8693	$13.873 \pm 0.025$ (−0.4 $\sigma$ )	$\chi_{plik}^2$	2344.3	$2358.9 \pm 5.9$ (+296.3 $\sigma$ )
$A_{143}^{dustTE}$	0.226	$0.225 \pm 0.053$	$z_{drag}$	1060.009	$1059.97 \pm 0.29$ (+1.1 $\sigma$ )	$\chi_{H073p45}^2$	4.50	$5.0 \pm 2.5$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.665	$0.666 \pm 0.080$	$r_{drag}$	147.049	$147.09 \pm 0.27$ (−0.6 $\sigma$ )	$\chi_{JLA}^2$	696.62	$698.9 \pm 2.6$ (−0.0 $\sigma$ )
$A_{217}^{dustTE}$	2.085	$2.08 \pm 0.27$	$k_D$	0.140941	$0.14088 \pm 0.00031$ (+0.9 $\sigma$ )	$\chi_{6DF}^2$	0.135	$0.18 \pm 0.19$ (+0.1 $\sigma$ )
$c_{100}$	0.99973	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$100\theta_D$	0.160715	$0.16074 \pm 0.00017$ (−1.1 $\sigma$ )	$\chi_{MGS}^2$	2.76	$2.77 \pm 0.76$ (+0.1 $\sigma$ )
$c_{217}$	0.99817	$0.99819 \pm 0.00062$ (−0.1 $\sigma$ )	$z_{eq}$	3403.4	$3401 \pm 27$ (+0.1 $\sigma$ )	$\chi_{DR12BAO}^2$	4.54	$4.98 \pm 0.87$ (−0.1 $\sigma$ )
$H_0$	69.93	$69.86 \pm 0.94$ (+0.2 $\sigma$ )	$k_{eq}$	0.010387	$0.010380 \pm 0.000082$ (+0.1 $\sigma$ )	$\chi_{prior}^2$	1.56	$11.6 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_\Lambda$	0.7074	$0.7069 \pm 0.0079$ (+0.1 $\sigma$ )	$100\theta_{eq}$	0.8132	$0.8136 \pm 0.0051$ (−0.1 $\sigma$ )	$\chi_{BAO}^2$	7.44	$7.9 \pm 1.6$ (−0.0 $\sigma$ )
$\Omega_m$	0.2926	$0.2931 \pm 0.0079$ (−0.1 $\sigma$ )	$100\theta_{s,eq}$	0.44932	$0.4495 \pm 0.0026$ (−0.1 $\sigma$ )	$\chi_{CMB}^2$	2763.3	$2779.3 \pm 5.9$ (+294.6 $\sigma$ )
$\Omega_m h^2$	0.14306	$0.1430 \pm 0.0011$ (+0.1 $\sigma$ )	$H(0.15)$	74.27	$74.22 \pm 0.57$ (+0.3 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 3473.47$ ;  $\Delta\chi_{eff}^2 = 1585.58$ ;  $\bar{\chi}_{eff}^2 = 3502.78$ ;  $\Delta\bar{\chi}_{eff}^2 = 1591.86$ ;  $R - 1 = 0.01464$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.14 ( $\Delta$  0.02) MGS: 2.76 ( $\Delta$  0.08) DR12BAO: 4.54 ( $\Delta$  0.02) CMB - simall\_100x143.offlike5\_EE\_Aplanck\_B: 396.06 ( $\Delta$  0.19) commander\_dx12.v3.2.29: 23.01 ( $\Delta$  -0.11) plik\_rd12\_HM.v22b\_TTTEEE: 2344.29 Hubble - H073p45: 4.50 ( $\Delta$  -0.51) SN - JLA December\_2013: 696.62 ( $\Delta$  0.06)



## 18.40 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_JLA\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022427	$0.02240 \pm 0.00014$ (+1.0 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.09975	$0.0998 \pm 0.0015$ (+0.2 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	625.2	$625.3 \pm 6.4$ (−0.2 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11970	$0.1197 \pm 0.0010$ (+0.0 $\sigma$ )	$\sigma_8$	0.8329	$0.832 \pm 0.012$ (+0.1 $\sigma$ )	$H(0.38)$	83.408	$83.38 \pm 0.28$ (+0.5 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.040957	$1.04096 \pm 0.00030$ (+0.1 $\sigma$ )	$S_8$	0.8225	$0.822 \pm 0.010$ (−0.0 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1503.4	$1504 \pm 11$ (−0.3 $\sigma$ )
$\tau$	0.0545	$0.0540 \pm 0.0076$ (+0.2 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4505	$0.4502 \pm 0.0057$ (−0.0 $\sigma$ )	$H(0.51)$	89.747	$89.71 \pm 0.25$ (+0.5 $\sigma$ )
$w_0$	−1.0777	$−1.079 \pm 0.036$ (+0.1 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6126	$0.6121 \pm 0.0072$ (+0.0 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1954.1	$1955 \pm 11$ (−0.3 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0454	$3.043 \pm 0.015$ (+0.3 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9965	$0.996 \pm 0.011$ (−0.0 $\sigma$ )	$H(0.61)$	95.138	$95.10 \pm 0.28$ (+0.5 $\sigma$ )
$n_{\mathrm{s}}$	0.96658	$0.9657 \pm 0.0038$ (+0.2 $\sigma$ )	$r_{\mathrm{drag}}h$	102.77	$102.8 \pm 1.4$ (+0.0 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2278.6	$2279 \pm 12$ (−0.4 $\sigma$ )
$y_{\mathrm{cal}}$	1.00089	$1.0006 \pm 0.0025$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4520	$2.452 \pm 0.023$ (+0.1 $\sigma$ )	$H(2.33)$	235.32	$235.33 \pm 0.58$ (+0.3 $\sigma$ )
$\alpha_{JLA}$	0.1420	$0.1419 \pm 0.0066$ (−0.0 $\sigma$ )	$z_{\mathrm{re}}$	7.68	$7.61 \pm 0.77$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5752.3	$5753.6 \pm 8.8$ (−0.8 $\sigma$ )
$\beta_{JLA}$	3.115	$3.119 \pm 0.080$ (+0.0 $\sigma$ )	$10^9 A_{\mathrm{s}}$	2.1018	$2.097^{+0.028}_{-0.032}$ (+0.3 $\sigma$ )	$f\sigma_8(0.15)$	0.4625	$0.4623 \pm 0.0069$ (−0.0 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	46.3	$47 \pm 7$ (−0.1 $\sigma$ )	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8846	$1.883 \pm 0.011$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7711	$0.771 \pm 0.011$ (+0.1 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.58	—	$D_{40}$	1228.6	$1229 \pm 11$ (+0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.4887	$0.4885 \pm 0.0087$ (−0.0 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	7.13	$5.5 \pm 1.9$ (+0.2 $\sigma$ )	$D_{220}$	5741.6	$5737 \pm 39$ (+0.4 $\sigma$ )	$\sigma_8(0.38)$	0.6843	$0.684 \pm 0.010$ (+0.1 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	249.2	$257 \pm 28$ (−0.2 $\sigma$ )	$D_{810}$	2543.1	$2539 \pm 14$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.4896	$0.4894 \pm 0.0091$ (−0.0 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	49.4	$46 \pm 8$ (−0.4 $\sigma$ )	$D_{1420}$	819.15	$817.5 \pm 4.7$ (+0.5 $\sigma$ )	$\sigma_8(0.51)$	0.6404	$0.6398 \pm 0.0094$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	51.2	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{2000}$	231.63	$231.0 \pm 1.5$ (+0.7 $\sigma$ )	$f\sigma_8(0.61)$	0.4856	$0.4854 \pm 0.0092$ (+0.0 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	121.3	$115 \pm 10$ (−0.0 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.96658	$0.9657 \pm 0.0038$ (+0.2 $\sigma$ )	$\sigma_8(0.61)$	0.6092	$0.6087 \pm 0.0088$ (+0.1 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.01	$< 4.27$ (−0.2 $\sigma$ )	$Y_{\mathrm{P}}$	0.245418	$0.245405 \pm 0.000054$ (+1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.30734	$0.3070 \pm 0.0044$ (+0.1 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.80	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246744	$0.246732 \pm 0.000054$ (+1.0 $\sigma$ )	$\sigma_8(2.33)$	0.31513	$0.3148 \pm 0.0039$ (+0.1 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	11.03	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$10^5 \mathrm{D}/\mathrm{H}$	2.5749	$2.580 \pm 0.026$ (−1.0 $\sigma$ )	$f_{2000}^{143}$	28.56	$29.4 \pm 2.7$ (−0.5 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	20.09	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	Age/Gyr	13.7430	$13.746 \pm 0.023$ (−0.8 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.86	$32.1 \pm 1.9$ (−0.6 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	95.6	$93.6 \pm 7.2$ (+0.0 $\sigma$ )	$z_*$	1089.821	$1089.86 \pm 0.23$ (−0.9 $\sigma$ )	$f_{2000}^{217}$	106.52	$106.9 \pm 1.8$ (−0.5 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1134	$0.114 \pm 0.038$	$r_*$	144.465	$144.47 \pm 0.24$ (−0.5 $\sigma$ )	$\chi_{\mathrm{lensing}}^2$	8.709	$9.10 \pm 0.68$ (−0.2 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1347	$0.135 \pm 0.029$	$100\theta_*$	1.041138	$1.04114 \pm 0.00030$ (+0.1 $\sigma$ )	$\chi_{\mathrm{simall}}^2$	396.06	$397.0 \pm 1.8$ (+0.1 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.483	$0.481 \pm 0.086$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8757	$13.876 \pm 0.022$ (−0.5 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	23.04	$23.21 \pm 0.78$ (−0.1 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.224	$0.224 \pm 0.052$	$z_{\mathrm{drag}}$	1060.047	$1059.99 \pm 0.29$ (+1.1 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2344.2	$2358.8 \pm 5.8$ (+302.9 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.664	$0.667 \pm 0.080$	$r_{\mathrm{drag}}$	147.107	$147.13 \pm 0.24$ (−0.7 $\sigma$ )	$\chi_{\mathrm{H073p45}}^2$	4.67	$5.0 \pm 2.5$ (−0.1 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.081	$2.09 \pm 0.27$	$k_{\mathrm{D}}$	0.140894	$0.14085 \pm 0.00029$ (+0.9 $\sigma$ )	$\chi_{\mathrm{JLA}}^2$	696.43	$698.8 \pm 2.5$ (−0.0 $\sigma$ )
$c_{100}$	0.99973	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160696	$0.16073 \pm 0.00017$ (−1.1 $\sigma$ )	$\chi_{6\mathrm{DF}}^2$	0.133	$0.19 \pm 0.19$ (+0.1 $\sigma$ )
$c_{217}$	0.99820	$0.99819 \pm 0.00062$ (−0.1 $\sigma$ )	$z_{\mathrm{eq}}$	3396.5	$3397 \pm 23$ (+0.2 $\sigma$ )	$\chi_{\mathrm{MGS}}^2$	2.76	$2.81 \pm 0.76$ (+0.1 $\sigma$ )
$H_0$	69.86	$69.86 \pm 0.93$ (+0.2 $\sigma$ )	$k_{\mathrm{eq}}$	0.010366	$0.010368 \pm 0.000072$ (+0.2 $\sigma$ )	$\chi_{\mathrm{DR12BAO}}^2$	4.45	$4.91 \pm 0.84$ (−0.1 $\sigma$ )
$\Omega_{\Lambda}$	0.7075	$0.7072 \pm 0.0079$ (+0.1 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.81451	$0.8144 \pm 0.0044$ (−0.1 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.74	$11.6 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.2925	$0.2928 \pm 0.0079$ (−0.1 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.44998	$0.4499 \pm 0.0023$ (−0.1 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	2772.0	$2788.1 \pm 6.0$ (+291.8 $\sigma$ )
$\Omega_{\mathrm{m}}h^2$	0.14277	$0.14279 \pm 0.00098$ (+0.2 $\sigma$ )	$H(0.15)$	74.26	$74.24 \pm 0.57$ (+0.3 $\sigma$ )	$\chi_{\mathrm{BAO}}^2$	7.34	$7.9 \pm 1.6$ (−0.0 $\sigma$ )

Best-fit  $\chi_{\mathrm{eff}}^2 = 3482.22$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1585.59$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 3511.42$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.78$ ;  $R - 1 = 0.02202$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.13 ( $\Delta$  0.00) MGS: 2.76 ( $\Delta$  0.00) DR12BAO: 4.45 ( $\Delta$  -0.05) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.71 ( $\Delta$  -0.01) simall\_100x143\_offlike5\_EE\_Aplanck 396.06 ( $\Delta$  0.20) commander\_dx12\_v3.2.29: 23.04 ( $\Delta$  -0.02) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.24 Hubble - H073p45: 4.67 ( $\Delta$  -0.25) SN - JLA December.2013: 696.43 ( $\Delta$  -0.12)



## 18.41 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_JLA\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02239 \pm 0.00014 \quad (+1.0\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.0999 \pm 0.0017 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$625.5 \pm 6.5 \quad (-0.2\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1199 \pm 0.0012 \quad (+0.0\sigma)$	$\sigma_8$	$0.835 \pm 0.014 \quad (+0.1\sigma)$	$H(0.38)$	$83.34 \pm 0.29 \quad (+0.5\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04095 \pm 0.00030 \quad (+0.1\sigma)$	$S_8$	$0.825 \pm 0.013 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1504 \pm 11 \quad (-0.3\sigma)$
$\tau$	$0.0556^{+0.0053}_{-0.0083} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4519 \pm 0.0071 \quad (+0.0\sigma)$	$H(0.51)$	$89.68 \pm 0.28 \quad (+0.4\sigma)$
$w_0$	$-1.081 \pm 0.038 \quad (+0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6142 \pm 0.0091 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1955 \pm 11 \quad (-0.3\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.047^{+0.012}_{-0.016} \quad (+0.3\sigma)$	$\sigma_8/h^{0.5}$	$0.999 \pm 0.013 \quad (+0.0\sigma)$	$H(0.61)$	$95.07 \pm 0.30 \quad (+0.4\sigma)$
$n_{\mathrm{s}}$	$0.9655 \pm 0.0040 \quad (+0.2\sigma)$	$r_{\mathrm{drag}}h$	$102.8 \pm 1.4 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2280 \pm 12 \quad (-0.4\sigma)$
$\alpha_{JLA}$	$0.1420 \pm 0.0066 \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.459 \pm 0.028 \quad (+0.1\sigma)$	$H(2.33)$	$235.40 \pm 0.61 \quad (+0.3\sigma)$
$\beta_{JLA}$	$3.119 \pm 0.081 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.78^{+0.58}_{-0.82} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5754.2 \pm 9.0 \quad (-0.7\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$10^9 A_{\mathrm{s}}$	$2.105^{+0.025}_{-0.035} \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4642 \pm 0.0087 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.883 \pm 0.012 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.773 \pm 0.013 \quad (+0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{40}$	$1230 \pm 12 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.490 \pm 0.011 \quad (+0.0\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5 \pm 1.9 \quad (+0.2\sigma)$	$D_{220}$	$5736 \pm 39 \quad (+0.5\sigma)$	$\sigma_8(0.38)$	$0.686 \pm 0.012 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$257 \pm 28 \quad (-0.2\sigma)$	$D_{810}$	$2540 \pm 14 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.491 \pm 0.011 \quad (+0.0\sigma)$
$A_{143}^{\mathrm{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{1420}$	$817.5 \pm 4.7 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.642 \pm 0.011 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{2000}$	$231.1 \pm 1.5 \quad (+0.7\sigma)$	$f\sigma_8(0.61)$	$0.487 \pm 0.011 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$n_{\mathrm{s},0.002}$	$0.9655 \pm 0.0040 \quad (+0.2\sigma)$	$\sigma_8(0.61)$	$0.610 \pm 0.010 \quad (+0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.13 \quad (-0.2\sigma)$	$Y_{\mathrm{P}}$	$0.245402^{+0.000057}_{-0.000052} \quad (+1.0\sigma)$	$f\sigma_8(2.33)$	$0.3078 \pm 0.0050 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246729^{+0.000058}_{-0.000052} \quad (+1.0\sigma)$	$\sigma_8(2.33)$	$0.3156 \pm 0.0043 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.582 \pm 0.026 \quad (-1.0\sigma)$	$f_{2000}^{143}$	$29.3 \pm 2.7 \quad (-0.5\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.746 \pm 0.023 \quad (-0.8\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 1.8 \quad (-0.6\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.7 \pm 7.3 \quad (+0.0\sigma)$	$z_*$	$1089.89 \pm 0.25 \quad (-0.8\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.8 \quad (-0.5\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.115 \pm 0.038$	$r_*$	$144.44 \pm 0.27 \quad (-0.4\sigma)$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 2.0 \quad (+0.1\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.029$	$100\theta_*$	$1.04113 \pm 0.00030 \quad (+0.0\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.31 \pm 0.87 \quad (-0.0\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.481 \pm 0.086$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.873 \pm 0.025 \quad (-0.5\sigma)$	$\chi_{\mathrm{plik}}^2$	$2358.7 \pm 5.9 \quad (+297.5\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.225 \pm 0.053$	$z_{\mathrm{drag}}$	$1059.98 \pm 0.29 \quad (+1.1\sigma)$	$\chi_{\mathrm{H073p45}}^2$	$5.0 \pm 2.5 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.666 \pm 0.080$	$r_{\mathrm{drag}}$	$147.09 \pm 0.27 \quad (-0.6\sigma)$	$\chi_{\mathrm{JLA}}^2$	$698.9 \pm 2.6 \quad (-0.0\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.27$	$k_{\mathrm{D}}$	$0.14088 \pm 0.00031 \quad (+0.9\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.18 \pm 0.19 \quad (+0.1\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16074 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$2.78 \pm 0.76 \quad (+0.1\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3401 \pm 27 \quad (+0.2\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.97 \pm 0.87 \quad (-0.1\sigma)$
$H_0$	$69.86 \pm 0.94 \quad (+0.2\sigma)$	$k_{\mathrm{eq}}$	$0.010379 \pm 0.000082 \quad (+0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.6 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\Lambda}$	$0.7069 \pm 0.0079 \quad (+0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8137 \pm 0.0050 \quad (-0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$7.9 \pm 1.6 \quad (-0.0\sigma)$
$\Omega_{\mathrm{m}}$	$0.2931 \pm 0.0079 \quad (-0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4496 \pm 0.0026 \quad (-0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2779.1 \pm 5.8 \quad (+298.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1429 \pm 0.0011 \quad (+0.2\sigma)$	$H(0.15)$	$74.22 \pm 0.57 \quad (+0.3\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 3502.55; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.92; R - 1 = 0.01555$$



18.42 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_JLA\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02240 \pm 0.00014 \quad (+1.0\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.0997 \pm 0.0015 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$625.4 \pm 6.4 \quad (-0.2\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1197 \pm 0.0010 \quad (+0.1\sigma)$	$\sigma_8$	$0.833 \pm 0.012 \quad (+0.1\sigma)$	$H(0.38)$	$83.39 \pm 0.28 \quad (+0.5\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04097 \pm 0.00030 \quad (+0.1\sigma)$	$S_8$	$0.822 \pm 0.010 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1504 \pm 11 \quad (-0.3\sigma)$
$\tau$	$0.0551^{+0.0051}_{-0.0079} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4504 \pm 0.0057 \quad (-0.0\sigma)$	$H(0.51)$	$89.72 \pm 0.25 \quad (+0.5\sigma)$
$w_0$	$-1.078 \pm 0.036 \quad (+0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6124 \pm 0.0072 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1955 \pm 11 \quad (-0.3\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.011}_{-0.015} \quad (+0.3\sigma)$	$\sigma_8/h^{0.5}$	$0.996 \pm 0.010 \quad (+0.0\sigma)$	$H(0.61)$	$95.12 \pm 0.27 \quad (+0.5\sigma)$
$n_{\mathrm{s}}$	$0.9658 \pm 0.0038 \quad (+0.2\sigma)$	$r_{\mathrm{drag}}h$	$102.8 \pm 1.4 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2279 \pm 12 \quad (-0.4\sigma)$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.453 \pm 0.022 \quad (+0.1\sigma)$	$H(2.33)$	$235.31 \pm 0.58 \quad (+0.4\sigma)$
$\alpha_{JLA}$	$0.1419 \pm 0.0066 \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.72^{+0.56}_{-0.79} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5753.3 \pm 8.7 \quad (-0.8\sigma)$
$\beta_{JLA}$	$3.118 \pm 0.080 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.101^{+0.023}_{-0.032} \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4624 \pm 0.0069 \quad (-0.0\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.882 \pm 0.011 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.771 \pm 0.011 \quad (+0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{40}$	$1229 \pm 11 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4886 \pm 0.0087 \quad (+0.0\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.6 \pm 1.9 \quad (+0.2\sigma)$	$D_{220}$	$5736 \pm 39 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.684 \pm 0.010 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$257 \pm 28 \quad (-0.2\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4895 \pm 0.0091 \quad (+0.0\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.4\sigma)$	$D_{1420}$	$817.4 \pm 4.7 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.6401 \pm 0.0093 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{2000}$	$231.0 \pm 1.5 \quad (+0.7\sigma)$	$f\sigma_8(0.61)$	$0.4855 \pm 0.0092 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (-0.0\sigma)$	$n_{\mathrm{s},0.002}$	$0.9658 \pm 0.0038 \quad (+0.2\sigma)$	$\sigma_8(0.61)$	$0.6090 \pm 0.0087 \quad (+0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.27 \quad (-0.2\sigma)$	$Y_{\mathrm{P}}$	$0.245407 \pm 0.000054 \quad (+1.0\sigma)$	$f\sigma_8(2.33)$	$0.3072 \pm 0.0044 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246733 \pm 0.000054 \quad (+1.0\sigma)$	$\sigma_8(2.33)$	$0.3150 \pm 0.0038 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.580 \pm 0.026 \quad (-1.0\sigma)$	$f_{2000}^{143}$	$29.4 \pm 2.7 \quad (-0.5\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.746 \pm 0.023 \quad (-0.8\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 1.8 \quad (-0.6\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.6 \pm 7.2 \quad (+0.0\sigma)$	$z_*$	$1089.85 \pm 0.23 \quad (-0.8\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.8 \quad (-0.5\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.038$	$r_*$	$144.48 \pm 0.24 \quad (-0.5\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.09 \pm 0.68 \quad (-0.1\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.029$	$100\theta_*$	$1.04115 \pm 0.00029 \quad (+0.1\sigma)$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.8 \quad (+0.1\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.481 \pm 0.086$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.877 \pm 0.022 \quad (-0.6\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.21 \pm 0.78 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.224 \pm 0.052$	$z_{\mathrm{drag}}$	$1059.99 \pm 0.30 \quad (+1.1\sigma)$	$\chi_{\mathrm{plik}}^2$	$2358.7 \pm 5.8 \quad (+303.5\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.667 \pm 0.080$	$r_{\mathrm{drag}}$	$147.13 \pm 0.24 \quad (-0.7\sigma)$	$\chi_{\mathrm{H073p45}}^2$	$5.0 \pm 2.5 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.09 \pm 0.27$	$k_{\mathrm{D}}$	$0.14085 \pm 0.00029 \quad (+1.0\sigma)$	$\chi_{\mathrm{JLA}}^2$	$698.8 \pm 2.5 \quad (-0.0\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16073 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.19 \pm 0.19 \quad (+0.0\sigma)$
$c_{217}$	$0.99818 \pm 0.00062 \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3396 \pm 23 \quad (+0.2\sigma)$	$\chi_{\mathrm{MGS}}^2$	$2.81 \pm 0.76 \quad (+0.0\sigma)$
$H_0$	$69.85 \pm 0.93 \quad (+0.2\sigma)$	$k_{\mathrm{eq}}$	$0.010365 \pm 0.000071 \quad (+0.2\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.89 \pm 0.84 \quad (-0.0\sigma)$
$\Omega_{\Lambda}$	$0.7073 \pm 0.0079 \quad (+0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8146 \pm 0.0044 \quad (-0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.6 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.2927 \pm 0.0079 \quad (-0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4500 \pm 0.0022 \quad (-0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2787.9 \pm 5.9 \quad (+295.3\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14275 \pm 0.00097 \quad (+0.2\sigma)$	$H(0.15)$	$74.24 \pm 0.57 \quad (+0.3\sigma)$	$\chi_{\mathrm{BAO}}^2$	$7.9 \pm 1.6 \quad (+0.0\sigma)$

$\bar{\chi}_{\mathrm{eff}}^2 = 3511.18$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.84$ ;  $R - 1 = 0.02300$



18.43 base\_w\_plikHM\_TT\_lowl\_lowE\_BAO\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022184	$0.02218 \pm 0.00020$	$\sigma_8/h^{0.5}$	0.9902	$0.989 \pm 0.016$	$D_{\mathrm{M}}(0.38)$	1524.9	$1525 \pm 10$
$\Omega_{\mathrm{c}}h^2$	0.11970	$0.1195 \pm 0.0015$	$r_{\mathrm{drag}}h$	100.43	$100.5 \pm 1.2$	$H(0.51)$	89.531	$89.55 \pm 0.34$
$100\theta_{\mathrm{MC}}$	1.040889	$1.04092 \pm 0.00043$	$\langle d^2 \rangle^{1/2}$	2.4422	$2.441 \pm 0.034$	$D_{\mathrm{M}}(0.51)$	1977.4	$1977 \pm 12$
$\tau$	0.0527	$0.0531 \pm 0.0081$	$z_{\mathrm{re}}$	7.54	$7.57 \pm 0.83$	$H(0.61)$	95.080	$95.10 \pm 0.35$
$w_0$	-1.0287	$-1.027 \pm 0.037$	$10^9 A_{\mathrm{s}}$	2.0903	$2.091 \pm 0.035$	$D_{\mathrm{M}}(0.61)$	2302.4	$2302 \pm 12$
$\ln(10^{10} A_{\mathrm{s}})$	3.0399	$3.040 \pm 0.017$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8813	$1.880 \pm 0.012$	$H(2.33)$	235.75	$235.66 \pm 0.75$
$n_{\mathrm{s}}$	0.96541	$0.9651 \pm 0.0047$	$D_{40}$	1227.5	$1228 \pm 13$	$D_{\mathrm{M}}(2.33)$	5768.3	$5768 \pm 12$
$y_{\mathrm{cal}}$	1.00054	$1.0005 \pm 0.0025$	$D_{220}$	5717.4	$5719 \pm 41$	$f\sigma_8(0.15)$	0.4599	$0.459 \pm 0.011$
$A_{217}^{\mathrm{CIB}}$	49.7	$48 \pm 7$	$D_{810}$	2537.7	$2536 \pm 14$	$\sigma_8(0.15)$	0.7556	$0.754 \pm 0.014$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.17	—	$D_{1420}$	815.9	$815.0 \pm 5.1$	$f\sigma_8(0.38)$	0.4805	$0.479 \pm 0.012$
$A_{143}^{\mathrm{tSZ}}$	7.09	$5.1 \pm 2.0$	$D_{2000}$	230.10	$229.8 \pm 1.8$	$\sigma_8(0.38)$	0.6698	$0.669 \pm 0.012$
$A_{100}^{\mathrm{PS}}$	257.4	$263 \pm 28$	$n_{\mathrm{s},0.002}$	0.96541	$0.9651 \pm 0.0047$	$f\sigma_8(0.51)$	0.4796	$0.479 \pm 0.012$
$A_{143}^{\mathrm{PS}}$	47.0	$49 \pm 8$	$Y_{\mathrm{P}}$	0.245319	$0.245312_{-0.000077}^{+0.000095}$	$\sigma_8(0.51)$	0.6267	$0.626 \pm 0.011$
$A_{143 \times 217}^{\mathrm{PS}}$	42.9	$43 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246646	$0.246638_{-0.000077}^{+0.000095}$	$f\sigma_8(0.61)$	0.4748	$0.474 \pm 0.012$
$A_{217}^{\mathrm{PS}}$	117.5	$115 \pm 10$	$10^5 D/\mathrm{H}$	2.6209	$2.623 \pm 0.039$	$\sigma_8(0.61)$	0.5962	$0.595 \pm 0.010$
$A^{\mathrm{kSZ}}$	0.04	$< 4.88$	$\mathrm{Age}/\mathrm{Gyr}$	13.7985	$13.799 \pm 0.029$	$f\sigma_8(2.33)$	0.3006	$0.3002 \pm 0.0051$
$A_{100}^{\mathrm{dustTT}}$	8.84	$8.9 \pm 1.8$	$z_*$	1090.128	$1090.12 \pm 0.33$	$\sigma_8(2.33)$	0.30912	$0.3089 \pm 0.0044$
$A_{143}^{\mathrm{dustTT}}$	10.75	$10.7 \pm 1.8$	$r_*$	144.651	$144.71 \pm 0.37$	$f_{2000}^{143}$	30.40	$31.1 \pm 2.9$
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.02	$18.3 \pm 3.3$	$100\theta_*$	1.041087	$1.04112 \pm 0.00043$	$f_{2000}^{143 \times 217}$	33.24	$33.5 \pm 2.0$
$A_{217}^{\mathrm{dustTT}}$	94.1	$93.4 \pm 7.4$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8942	$13.899 \pm 0.036$	$f_{2000}^{217}$	107.71	$108.0 \pm 1.9$
$c_{100}$	0.99967	$0.99962 \pm 0.00061$	$z_{\mathrm{drag}}$	1059.475	$1059.45 \pm 0.45$	$\chi_{\mathrm{small}}^2$	395.85	$397.0 \pm 1.8$
$c_{217}$	0.99827	$0.99826 \pm 0.00063$	$r_{\mathrm{drag}}$	147.379	$147.44 \pm 0.39$	$\chi_{\mathrm{lowl}}^2$	23.15	$23.3 \pm 1.0$
$H_0$	68.15	$68.16 \pm 0.83$	$k_{\mathrm{D}}$	0.140421	$0.14035 \pm 0.00047$	$\chi_{\mathrm{plik}}^2$	759.1	$771.6 \pm 5.4$
$\Omega_{\Lambda}$	0.6931	$0.6935 \pm 0.0078$	$100\theta_{\mathrm{D}}$	0.161022	$0.16105 \pm 0.00026$	$\chi_{\mathrm{JLA}}^2$	1034.715	$1035.4 \pm 1.0$
$\Omega_{\mathrm{m}}$	0.3069	$0.3065 \pm 0.0078$	$z_{\mathrm{eq}}$	3390.6	$3386 \pm 35$	$\chi_{6\mathrm{DF}}^2$	0.0022	$0.049 \pm 0.068$
$\Omega_{\mathrm{m}}h^2$	0.14253	$0.1423 \pm 0.0015$	$k_{\mathrm{eq}}$	0.010348	$0.01033 \pm 0.00011$	$\chi_{\mathrm{MGS}}^2$	1.54	$1.64 \pm 0.61$
$\Omega_{\mathrm{m}}h^3$	0.09713	$0.0970 \pm 0.0016$	$100\theta_{\mathrm{eq}}$	0.8148	$0.8158 \pm 0.0066$	$\chi_{\mathrm{DR12BAO}}^2$	4.45	$4.9 \pm 1.5$
$\sigma_8$	0.8174	$0.816 \pm 0.015$	$100\theta_{\mathrm{s,eq}}$	0.45032	$0.4508 \pm 0.0034$	$\chi_{\mathrm{prior}}^2$	1.44	$7.3 \pm 3.7$
$S_8$	0.8267	$0.825 \pm 0.017$	$H(0.15)$	73.13	$73.15 \pm 0.54$	$\chi_{\mathrm{BAO}}^2$	6.00	$6.6 \pm 1.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4528	$0.4517 \pm 0.0090$	$D_{\mathrm{M}}(0.15)$	637.7	$637.6 \pm 6.1$	$\chi_{\mathrm{CMB}}^2$	1178.1	$1191.9 \pm 5.5$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6084	$0.607 \pm 0.011$	$H(0.38)$	82.933	$82.95 \pm 0.34$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 2220.25$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2241.16$ ;  $R - 1 = 0.00635$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.54 DR12BAO: 4.45 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.85 commander\_dx12\_v3.2.29: 23.15 plik\_rd12\_HM\_v22\_TT: 759.09  
SN - JLA Pantheon18: 1034.71



18.44 base\_w\_plikHM\_TT\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022206	$0.02218 \pm 0.00020$	$\sigma_8 \Omega_m^{0.25}$	0.6081	$0.6079 \pm 0.0080$	$D_M(0.15)$	637.6	$637.3 \pm 6.1$
$\Omega_c h^2$	0.11964	$0.1195 \pm 0.0013$	$\sigma_8/h^{0.5}$	0.9897	$0.990 \pm 0.011$	$H(0.38)$	82.971	$82.96 \pm 0.32$
$100\theta_{MC}$	1.040966	$1.04090 \pm 0.00043$	$r_{drag}h$	100.44	$100.6 \pm 1.2$	$D_M(0.38)$	1524.4	$1524 \pm 10$
$\tau$	0.0529	$0.0536 \pm 0.0077$	$\langle d^2 \rangle^{1/2}$	2.4416	$2.443 \pm 0.024$	$H(0.51)$	89.573	$89.55 \pm 0.30$
$w_0$	-1.0268	$-1.029 \pm 0.034$	$z_{re}$	7.57	$7.62 \pm 0.78$	$D_M(0.51)$	1976.6	$1977 \pm 11$
$\ln(10^{10} A_s)$	3.0408	$3.041 \pm 0.015$	$10^9 A_s$	2.0921	$2.093 \pm 0.031$	$H(0.61)$	95.124	$95.09 \pm 0.31$
$n_s$	0.96562	$0.9649 \pm 0.0043$	$10^9 A_s e^{-2\tau}$	1.8819	$1.880 \pm 0.011$	$D_M(0.61)$	2301.5	$2301 \pm 12$
$y_{cal}$	1.00071	$1.0006 \pm 0.0025$	$D_{40}$	1227.9	$1229 \pm 12$	$H(2.33)$	235.77	$235.66 \pm 0.68$
$A_{217}^{CIB}$	49.4	$48 \pm 7$	$D_{220}$	5721.3	$5721 \pm 40$	$D_M(2.33)$	5766.4	$5768 \pm 12$
$\xi^{tSZ \times CIB}$	0.23	—	$D_{810}$	2538.9	$2536 \pm 13$	$f\sigma_8(0.15)$	0.4595	$0.4593 \pm 0.0078$
$A_{143}^{tSZ}$	7.00	$5.1 \pm 2.0$	$D_{1420}$	816.4	$815.1 \pm 5.1$	$\sigma_8(0.15)$	0.7553	$0.756 \pm 0.011$
$A_{100}^{PS}$	257.6	$263 \pm 28$	$D_{2000}$	230.30	$229.8 \pm 1.8$	$f\sigma_8(0.38)$	0.4800	$0.4801 \pm 0.0090$
$A_{143}^{PS}$	48.0	$49 \pm 8$	$n_{s,0.002}$	0.96562	$0.9649 \pm 0.0043$	$\sigma_8(0.38)$	0.6696	$0.6698 \pm 0.0097$
$A_{143 \times 217}^{PS}$	44.2	$43 \pm 9$	$Y_P$	0.245328	$0.245314_{-0.000076}^{+0.000093}$	$f\sigma_8(0.51)$	0.4792	$0.4793 \pm 0.0092$
$A_{217}^{PS}$	118.1	$115 \pm 10$	$Y_P^{BBN}$	0.246654	$0.246640_{-0.000076}^{+0.000093}$	$\sigma_8(0.51)$	0.6265	$0.6268 \pm 0.0089$
$A^{kSZ}$	0.03	$< 4.90$	$10^5 D/H$	2.6168	$2.622 \pm 0.038$	$f\sigma_8(0.61)$	0.4744	$0.4746 \pm 0.0092$
$A_{100}^{dustTT}$	8.81	$8.9 \pm 1.8$	Age/Gyr	13.7949	$13.798 \pm 0.029$	$\sigma_8(0.61)$	0.5961	$0.5963 \pm 0.0084$
$A_{143}^{dustTT}$	10.80	$10.7 \pm 1.8$	$z_*$	1090.097	$1090.12 \pm 0.31$	$f\sigma_8(2.33)$	0.30054	$0.3006 \pm 0.0042$
$A_{143 \times 217}^{dustTT}$	19.22	$18.3 \pm 3.3$	$r_*$	144.649	$144.69 \pm 0.31$	$\sigma_8(2.33)$	0.30915	$0.3092 \pm 0.0036$
$A_{217}^{dustTT}$	94.3	$93.3 \pm 7.4$	$100\theta_*$	1.041162	$1.04110 \pm 0.00042$	$\chi_{lensing}^2$	8.770	$9.26 \pm 0.76$
$c_{100}$	0.99967	$0.99962 \pm 0.00062$	$D_M(z_*)/Gpc$	13.8931	$13.898 \pm 0.030$	$\chi_{small}^2$	395.89	$397.0 \pm 1.7$
$c_{217}$	0.99823	$0.99825 \pm 0.00063$	$z_{drag}$	1059.513	$1059.46 \pm 0.45$	$\chi_{lowl}^2$	23.14	$23.35 \pm 0.88$
$H_0$	68.16	$68.21 \pm 0.83$	$r_{drag}$	147.371	$147.42 \pm 0.34$	$\chi_{plik}^2$	759.25	$771.2 \pm 5.2$
$\Omega_\Lambda$	0.6933	$0.6938 \pm 0.0077$	$k_D$	0.140447	$0.14037 \pm 0.00043$	$\chi_{JLA}^2$	1034.712	$1035.40 \pm 0.96$
$\Omega_m$	0.3067	$0.3062 \pm 0.0077$	$100\theta_D$	0.161005	$0.16104 \pm 0.00026$	$\chi_{6DF}^2$	0.0018	$0.048 \pm 0.067$
$\Omega_m h^2$	0.14249	$0.1424 \pm 0.0012$	$z_{eq}$	3389.7	$3387 \pm 29$	$\chi_{MGS}^2$	1.54	$1.66 \pm 0.60$
$\Omega_m h^3$	0.09712	$0.0971 \pm 0.0015$	$k_{eq}$	0.010346	$0.010337 \pm 0.000088$	$\chi_{DR12BAO}^2$	4.36	$4.8 \pm 1.2$
$\sigma_8$	0.8171	$0.817 \pm 0.012$	$100\theta_{eq}$	0.8151	$0.8156 \pm 0.0054$	$\chi_{prior}^2$	1.36	$7.3 \pm 3.7$
$S_8$	0.8262	$0.825 \pm 0.012$	$100\theta_{s,eq}$	0.45045	$0.4507 \pm 0.0028$	$\chi_{CMB}^2$	1187.1	$1200.8 \pm 5.4$
$\sigma_8 \Omega_m^{0.5}$	0.4525	$0.4521 \pm 0.0067$	$H(0.15)$	73.16	$73.18 \pm 0.54$	$\chi_{BAO}^2$	5.90	$6.5 \pm 1.1$

Best-fit  $\chi_{eff}^2 = 2229.02$ ;  $\bar{\chi}_{eff}^2 = 2249.95$ ;  $R - 1 = 0.00823$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.00 MGS: 1.54 DR12BAO: 4.36 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.77 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.89 comman-  
der\_dx12\_v3\_2\_29: 23.14 plik\_rd12\_HM\_v22\_TT: 759.25 SN - JLA Pantheon18: 1034.71



18.45 base\_w\_plikHM\_TT\_lowl\_lowE\_BAO\_Pantheon18\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02218 \pm 0.00020$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.016$	$D_{\mathrm{M}}(0.38)$	$1524 \pm 10$
$\Omega_{\mathrm{c}} h^2$	$0.1195 \pm 0.0015$	$r_{\mathrm{drag}} h$	$100.5 \pm 1.2$	$H(0.51)$	$89.56 \pm 0.33$
$100\theta_{\mathrm{MC}}$	$1.04092 \pm 0.00043$	$\langle d^2 \rangle^{1/2}$	$2.443 \pm 0.033$	$D_{\mathrm{M}}(0.51)$	$1977 \pm 12$
$\tau$	$0.0546^{+0.0048}_{-0.0084}$	$z_{\mathrm{re}}$	$7.72^{+0.55}_{-0.83}$	$H(0.61)$	$95.11 \pm 0.35$
$w_0$	$-1.026 \pm 0.037$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.024}_{-0.034}$	$D_{\mathrm{M}}(0.61)$	$2302 \pm 12$
$\ln(10^{10} A_{\mathrm{s}})$	$3.043^{+0.012}_{-0.016}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.880 \pm 0.012$	$H(2.33)$	$235.65 \pm 0.75$
$n_{\mathrm{s}}$	$0.9653 \pm 0.0047$	$D_{40}$	$1228 \pm 13$	$D_{\mathrm{M}}(2.33)$	$5768 \pm 12$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{220}$	$5719 \pm 41$	$f\sigma_8(0.15)$	$0.459 \pm 0.011$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2536 \pm 14$	$\sigma_8(0.15)$	$0.755 \pm 0.014$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815.0 \pm 5.1$	$f\sigma_8(0.38)$	$0.480 \pm 0.012$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{2000}$	$229.8 \pm 1.8$	$\sigma_8(0.38)$	$0.670 \pm 0.012$
$A_{100}^{\mathrm{PS}}$	$263 \pm 28$	$n_{\mathrm{s},0.002}$	$0.9653 \pm 0.0047$	$f\sigma_8(0.51)$	$0.479 \pm 0.012$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}$	$0.245315^{+0.000094}_{-0.000076}$	$\sigma_8(0.51)$	$0.627 \pm 0.011$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246641^{+0.000094}_{-0.000076}$	$f\sigma_8(0.61)$	$0.474 \pm 0.012$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.622 \pm 0.038$	$\sigma_8(0.61)$	$0.596 \pm 0.010$
$A^{\mathrm{kSZ}}$	$< 4.83$	$\mathrm{Age}/\mathrm{Gyr}$	$13.799 \pm 0.029$	$f\sigma_8(2.33)$	$0.3006 \pm 0.0050$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$z_*$	$1090.11 \pm 0.33$	$\sigma_8(2.33)$	$0.3092 \pm 0.0043$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$r_*$	$144.72 \pm 0.37$	$f_{2000}^{143}$	$31.0 \pm 2.9$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04113 \pm 0.00043$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.0$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.4$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.900 \pm 0.035$	$f_{2000}^{217}$	$108.0 \pm 1.9$
$c_{100}$	$0.99962 \pm 0.00061$	$z_{\mathrm{drag}}$	$1059.46 \pm 0.45$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.8$
$c_{217}$	$0.99825 \pm 0.00063$	$r_{\mathrm{drag}}$	$147.45 \pm 0.39$	$\chi_{\mathrm{lowl}}^2$	$23.3 \pm 1.0$
$H_0$	$68.16 \pm 0.83$	$k_{\mathrm{D}}$	$0.14035 \pm 0.00047$	$\chi_{\mathrm{plik}}^2$	$771.4 \pm 5.4$
$\Omega_{\Lambda}$	$0.6936 \pm 0.0078$	$100\theta_{\mathrm{D}}$	$0.16104 \pm 0.00026$	$\chi_{\mathrm{JLA}}^2$	$1035.42 \pm 0.99$
$\Omega_{\mathrm{m}}$	$0.3064 \pm 0.0078$	$z_{\mathrm{eq}}$	$3385 \pm 35$	$\chi_{6\mathrm{DF}}^2$	$0.049 \pm 0.068$
$\Omega_{\mathrm{m}} h^2$	$0.1423 \pm 0.0015$	$k_{\mathrm{eq}}$	$0.01033 \pm 0.00011$	$\chi_{\mathrm{MGS}}^2$	$1.65 \pm 0.61$
$\Omega_{\mathrm{m}} h^3$	$0.0970 \pm 0.0016$	$100\theta_{\mathrm{eq}}$	$0.8160 \pm 0.0066$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.4$
$\sigma_8$	$0.817 \pm 0.015$	$100\theta_{\mathrm{s,eq}}$	$0.4509 \pm 0.0034$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$S_8$	$0.825 \pm 0.016$	$H(0.15)$	$73.16 \pm 0.54$	$\chi_{\mathrm{BAO}}^2$	$6.5 \pm 1.3$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4521 \pm 0.0090$	$D_{\mathrm{M}}(0.15)$	$637.6 \pm 6.1$	$\chi_{\mathrm{CMB}}^2$	$1191.6 \pm 5.4$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.608 \pm 0.011$	$H(0.38)$	$82.96 \pm 0.34$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2240.85; R - 1 = 0.00444$$



18.46 base\_w\_plikHM\_TT\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00020$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.011$	$D_{\mathrm{M}}(0.38)$	$1524 \pm 10$
$\Omega_{\mathrm{c}}h^2$	$0.1195 \pm 0.0012$	$r_{\mathrm{drag}}h$	$100.6 \pm 1.2$	$H(0.51)$	$89.56 \pm 0.30$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00043$	$\langle d^2 \rangle^{1/2}$	$2.444 \pm 0.024$	$D_{\mathrm{M}}(0.51)$	$1976 \pm 11$
$\tau$	$0.0548^{+0.0051}_{-0.0080}$	$z_{\mathrm{re}}$	$7.74^{+0.56}_{-0.79}$	$H(0.61)$	$95.11 \pm 0.31$
$w_0$	$-1.028 \pm 0.033$	$10^9 A_{\mathrm{s}}$	$2.098^{+0.023}_{-0.031}$	$D_{\mathrm{M}}(0.61)$	$2301 \pm 12$
$\ln(10^{10} A_{\mathrm{s}})$	$3.043^{+0.011}_{-0.015}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.880 \pm 0.011$	$H(2.33)$	$235.64 \pm 0.67$
$n_{\mathrm{s}}$	$0.9651 \pm 0.0043$	$D_{40}$	$1229 \pm 12$	$D_{\mathrm{M}}(2.33)$	$5768 \pm 12$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{220}$	$5721 \pm 40$	$f\sigma_8(0.15)$	$0.4593 \pm 0.0078$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2536 \pm 13$	$\sigma_8(0.15)$	$0.756 \pm 0.011$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815.1 \pm 5.1$	$f\sigma_8(0.38)$	$0.4801 \pm 0.0091$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{2000}$	$229.8 \pm 1.8$	$\sigma_8(0.38)$	$0.6701 \pm 0.0097$
$A_{100}^{\mathrm{PS}}$	$263 \pm 28$	$n_{\mathrm{s},0.002}$	$0.9651 \pm 0.0043$	$f\sigma_8(0.51)$	$0.4793 \pm 0.0093$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}$	$0.245317^{+0.000092}_{-0.000075}$	$\sigma_8(0.51)$	$0.6270 \pm 0.0089$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246643^{+0.000092}_{-0.000075}$	$f\sigma_8(0.61)$	$0.4745 \pm 0.0092$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.621 \pm 0.038$	$\sigma_8(0.61)$	$0.5966 \pm 0.0083$
$A^{\mathrm{kSZ}}$	$< 4.90$	$\mathrm{Age}/\mathrm{Gyr}$	$13.798 \pm 0.029$	$f\sigma_8(2.33)$	$0.3008 \pm 0.0042$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$z_*$	$1090.11 \pm 0.31$	$\sigma_8(2.33)$	$0.3094 \pm 0.0036$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$r_*$	$144.71 \pm 0.31$	$f_{2000}^{143}$	$31.0 \pm 2.9$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04111 \pm 0.00042$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.0$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.900 \pm 0.030$	$f_{2000}^{217}$	$108.0 \pm 1.9$
$c_{100}$	$0.99962 \pm 0.00062$	$z_{\mathrm{drag}}$	$1059.47 \pm 0.44$	$\chi_{\mathrm{lensing}}^2$	$9.24 \pm 0.74$
$c_{217}$	$0.99825 \pm 0.00062$	$r_{\mathrm{drag}}$	$147.44 \pm 0.33$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.7$
$H_0$	$68.20 \pm 0.82$	$k_{\mathrm{D}}$	$0.14036 \pm 0.00043$	$\chi_{\mathrm{lowl}}^2$	$23.34 \pm 0.88$
$\Omega_{\Lambda}$	$0.6939 \pm 0.0077$	$100\theta_{\mathrm{D}}$	$0.16103 \pm 0.00026$	$\chi_{\mathrm{plik}}^2$	$771.1 \pm 5.2$
$\Omega_{\mathrm{m}}$	$0.3061 \pm 0.0077$	$z_{\mathrm{eq}}$	$3385 \pm 28$	$\chi_{\mathrm{JLA}}^2$	$1035.38 \pm 0.93$
$\Omega_{\mathrm{m}}h^2$	$0.1423 \pm 0.0012$	$k_{\mathrm{eq}}$	$0.010332 \pm 0.000087$	$\chi_{6\mathrm{DF}}^2$	$0.047 \pm 0.065$
$\Omega_{\mathrm{m}}h^3$	$0.0970 \pm 0.0015$	$100\theta_{\mathrm{eq}}$	$0.8159 \pm 0.0053$	$\chi_{\mathrm{MGS}}^2$	$1.67 \pm 0.60$
$\sigma_8$	$0.818 \pm 0.012$	$100\theta_{\mathrm{s,eq}}$	$0.4509 \pm 0.0027$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.2$
$S_8$	$0.826 \pm 0.012$	$H(0.15)$	$73.18 \pm 0.53$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4522 \pm 0.0067$	$D_{\mathrm{M}}(0.15)$	$637.3 \pm 6.1$	$\chi_{\mathrm{CMB}}^2$	$1200.6 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6080 \pm 0.0080$	$H(0.38)$	$82.97 \pm 0.32$	$\chi_{\mathrm{BAO}}^2$	$6.5 \pm 1.1$

$\bar{\chi}_{\mathrm{eff}}^2 = 2249.69$ ;  $R - 1 = 0.00980$



18.47 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022402	$0.02239 \pm 0.00014$ (+1.1 $\sigma$ )	$\sigma_8$	0.8195	$0.819 \pm 0.013$ (+0.2 $\sigma$ )	$D_M(0.15)$	635.7	$636.3 \pm 6.0$ (−0.2 $\sigma$ )
$\Omega_c h^2$	0.11974	$0.1197 \pm 0.0012$ (+0.2 $\sigma$ )	$S_8$	0.8269	$0.827 \pm 0.013$ (+0.1 $\sigma$ )	$H(0.38)$	83.118	$83.09 \pm 0.28$ (+0.4 $\sigma$ )
$100\theta_{MC}$	1.040938	$1.04096 \pm 0.00030$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4529	$0.4529 \pm 0.0072$ (+0.1 $\sigma$ )	$D_M(0.38)$	1520.7	$1522 \pm 10$ (−0.3 $\sigma$ )
$\tau$	0.0545	$0.0549 \pm 0.0078$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6092	$0.6089 \pm 0.0090$ (+0.2 $\sigma$ )	$H(0.51)$	89.707	$89.69 \pm 0.25$ (+0.4 $\sigma$ )
$w_0$	−1.0300	$−1.028 \pm 0.033$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9911	$0.991 \pm 0.013$ (+0.1 $\sigma$ )	$D_M(0.51)$	1972.2	$1973 \pm 11$ (−0.3 $\sigma$ )
$\ln(10^{10} A_s)$	3.0451	$3.045 \pm 0.016$ (+0.3 $\sigma$ )	$r_{drag} h$	100.60	$100.5 \pm 1.2$ (+0.0 $\sigma$ )	$H(0.61)$	95.250	$95.25 \pm 0.27$ (+0.4 $\sigma$ )
$n_s$	0.96644	$0.9660 \pm 0.0040$ (+0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4455	$2.446 \pm 0.028$ (+0.2 $\sigma$ )	$D_M(0.61)$	2296.6	$2298 \pm 11$ (−0.3 $\sigma$ )
$y_{cal}$	1.00092	$1.0006 \pm 0.0025$ (+0.0 $\sigma$ )	$z_{re}$	7.68	$7.71 \pm 0.79$ (+0.2 $\sigma$ )	$H(2.33)$	235.98	$236.01 \pm 0.61$ (+0.5 $\sigma$ )
$A_{217}^{CIB}$	47.2	$47 \pm 7$ (−0.2 $\sigma$ )	$10^9 A_s$	2.1012	$2.101 \pm 0.034$ (+0.3 $\sigma$ )	$D_M(2.33)$	5758.2	$5758.9 \pm 8.8$ (−0.8 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.42	—	$10^9 A_s e^{-2\tau}$	1.8844	$1.882 \pm 0.011$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4602	$0.4600 \pm 0.0084$ (+0.1 $\sigma$ )
$A_{143}^{tSZ}$	7.25	$5.5_{-1.9}^{+2.1}$ (+0.2 $\sigma$ )	$D_{40}$	1229.0	$1229 \pm 12$ (+0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7577	$0.757 \pm 0.012$ (+0.2 $\sigma$ )
$A_{100}^{PS}$	250.0	$258 \pm 28$ (−0.2 $\sigma$ )	$D_{220}$	5738.5	$5734 \pm 38$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4812	$0.4808 \pm 0.0097$ (+0.1 $\sigma$ )
$A_{143}^{PS}$	47.2	$46 \pm 8$ (−0.4 $\sigma$ )	$D_{810}$	2542.6	$2539 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6718	$0.671 \pm 0.011$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{PS}$	47.4	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{1420}$	818.90	$817.5 \pm 4.8$ (+0.5 $\sigma$ )	$f\sigma_8(0.51)$	0.4805	$0.4800 \pm 0.0099$ (+0.1 $\sigma$ )
$A_{217}^{PS}$	119.8	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	231.47	$231.0 \pm 1.6$ (+0.7 $\sigma$ )	$\sigma_8(0.51)$	0.6286	$0.6279 \pm 0.0099$ (+0.2 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.15$ (−0.2 $\sigma$ )	$n_{s,0.002}$	0.96644	$0.9660 \pm 0.0040$ (+0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.4758	$0.4753 \pm 0.0098$ (+0.1 $\sigma$ )
$A_{100}^{dustTT}$	8.82	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P$	0.245408	$0.245401_{-0.000050}^{+0.000057}$ (+1.0 $\sigma$ )	$\sigma_8(0.61)$	0.5981	$0.5974 \pm 0.0093$ (+0.2 $\sigma$ )
$A_{143}^{dustTT}$	10.97	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246735	$0.246728_{-0.000051}^{+0.000058}$ (+1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.30157	$0.3012 \pm 0.0047$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.69	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5796	$2.582 \pm 0.026$ (−1.0 $\sigma$ )	$\sigma_8(2.33)$	0.31016	$0.3098 \pm 0.0041$ (+0.2 $\sigma$ )
$A_{217}^{dustTT}$	95.0	$93.7 \pm 7.3$ (+0.0 $\sigma$ )	Age/Gyr	13.7741	$13.777 \pm 0.022$ (−0.8 $\sigma$ )	$f_{2000}^{143}$	28.75	$29.3 \pm 2.7$ (−0.6 $\sigma$ )
$A_{100}^{dustTE}$	0.1136	$0.114 \pm 0.038$	$z_*$	1089.856	$1089.87 \pm 0.24$ (−0.8 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.96	$32.1 \pm 1.8$ (−0.7 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1353	$0.135 \pm 0.029$	$r_*$	144.474	$144.49 \pm 0.26$ (−0.6 $\sigma$ )	$f_{2000}^{217}$	106.67	$106.9 \pm 1.8$ (−0.6 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.482	$0.481 \pm 0.085$	$100\theta_*$	1.041124	$1.04114 \pm 0.00029$ (+0.0 $\sigma$ )	$\chi_{small}^2$	396.06	$397.2 \pm 2.0$ (+0.1 $\sigma$ )
$A_{143}^{dustTE}$	0.225	$0.225 \pm 0.055$	$D_M(z_*)/\text{Gpc}$	13.8768	$13.878 \pm 0.025$ (−0.6 $\sigma$ )	$\chi_{lowl}^2$	23.11	$23.27 \pm 0.86$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.665	$0.666 \pm 0.080$	$z_{drag}$	1060.009	$1059.96 \pm 0.29$ (+1.1 $\sigma$ )	$\chi_{plik}^2$	2344.5	$2359.3 \pm 5.8$ (+292.3 $\sigma$ )
$A_{217}^{dustTE}$	2.083	$2.08 \pm 0.26$	$r_{drag}$	147.123	$147.14 \pm 0.27$ (−0.8 $\sigma$ )	$\chi_{JLA}^2$	1034.741	$1035.39 \pm 0.96$ (−0.0 $\sigma$ )
$c_{100}$	0.99971	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$k_D$	0.140855	$0.14083 \pm 0.00030$ (+1.0 $\sigma$ )	$\chi_{6DF}^2$	0.0002	$0.048 \pm 0.066$ (−0.0 $\sigma$ )
$c_{217}$	0.99818	$0.99819 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_D$	0.160727	$0.16075 \pm 0.00017$ (−1.2 $\sigma$ )	$\chi_{MGS}^2$	1.61	$1.64 \pm 0.60$ (−0.0 $\sigma$ )
$H_0$	68.38	$68.31 \pm 0.82$ (+0.2 $\sigma$ )	$z_{eq}$	3396.7	$3396 \pm 26$ (+0.3 $\sigma$ )	$\chi_{DR12BAO}^2$	4.35	$4.8 \pm 1.2$ (−0.0 $\sigma$ )
$\Omega_\Lambda$	0.6946	$0.6939 \pm 0.0076$ (+0.0 $\sigma$ )	$k_{eq}$	0.010367	$0.010366 \pm 0.000080$ (+0.3 $\sigma$ )	$\chi_{prior}^2$	1.86	$11.5 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_m$	0.3054	$0.3061 \pm 0.0076$ (−0.0 $\sigma$ )	$100\theta_{eq}$	0.81438	$0.8145 \pm 0.0049$ (−0.2 $\sigma$ )	$\chi_{BAO}^2$	5.96	$6.5 \pm 1.0$ (−0.0 $\sigma$ )
$\Omega_m h^2$	0.14279	$0.1428 \pm 0.0011$ (+0.3 $\sigma$ )	$100\theta_{s,eq}$	0.44992	$0.4500 \pm 0.0025$ (−0.2 $\sigma$ )	$\chi_{CMB}^2$	2763.7	$2779.8 \pm 5.8$ (+291.0 $\sigma$ )
$\Omega_m h^3$	0.09763	$0.0975 \pm 0.0014$ (+0.3 $\sigma$ )	$H(0.15)$	73.34	$73.30 \pm 0.52$ (+0.3 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 3806.25$ ;  $\Delta\chi_{eff}^2 = 1586.00$ ;  $\bar{\chi}_{eff}^2 = 3833.20$ ;  $\Delta\bar{\chi}_{eff}^2 = 1592.04$ ;  $R - 1 = 0.00703$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.00 ( $\Delta$  -0.00) MGS: 1.61 ( $\Delta$  0.07) DR12BAO: 4.35 ( $\Delta$  -0.10) CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.06 ( $\Delta$  0.21) commander\_dx12\_v3\_2\_29: 23.11 ( $\Delta$  -0.04) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.51 SN - JLA Pantheon18: 1034.74 ( $\Delta$  0.03)



## 18.48 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022416	$0.02240 \pm 0.00014$ (+1.1 $\sigma$ )	$\Omega_m h^3$	0.09767	$0.0975 \pm 0.0013$ (+0.3 $\sigma$ )	$100\theta_{s,eq}$	0.45013	$0.4501 \pm 0.0022$ (-0.2 $\sigma$ )
$\Omega_c h^2$	0.11965	$0.1197 \pm 0.0010$ (+0.1 $\sigma$ )	$\sigma_8$	0.8197	$0.818 \pm 0.011$ (+0.1 $\sigma$ )	$H(0.15)$	73.40	$73.32 \pm 0.52$ (+0.3 $\sigma$ )
$100\theta_{MC}$	1.040982	$1.04096 \pm 0.00029$ (+0.1 $\sigma$ )	$S_8$	0.8260	$0.826 \pm 0.010$ (+0.0 $\sigma$ )	$D_M(0.15)$	635.2	$636.1 \pm 5.9$ (-0.2 $\sigma$ )
$\tau$	0.0551	$0.0550 \pm 0.0074$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4524	$0.4524 \pm 0.0057$ (+0.0 $\sigma$ )	$H(0.38)$	83.158	$83.11 \pm 0.27$ (+0.5 $\sigma$ )
$w_0$	-1.0302	$-1.028 \pm 0.031$ (+0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6090	$0.6085 \pm 0.0069$ (+0.1 $\sigma$ )	$D_M(0.38)$	1519.6	$1521.2 \pm 9.9$ (-0.3 $\sigma$ )
$\ln(10^{10} A_s)$	3.0459	$3.045 \pm 0.014$ (+0.2 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9908	$0.990 \pm 0.010$ (+0.0 $\sigma$ )	$H(0.51)$	89.739	$89.71 \pm 0.23$ (+0.5 $\sigma$ )
$n_s$	0.96684	$0.9659 \pm 0.0038$ (+0.2 $\sigma$ )	$r_{drag} h$	100.70	$100.6 \pm 1.2$ (+0.0 $\sigma$ )	$D_M(0.51)$	1970.9	$1973 \pm 11$ (-0.3 $\sigma$ )
$y_{cal}$	1.00070	$1.0006 \pm 0.0025$ (+0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4445	$2.445 \pm 0.022$ (+0.1 $\sigma$ )	$H(0.61)$	95.277	$95.26 \pm 0.25$ (+0.5 $\sigma$ )
$A_{217}^{CIB}$	46.6	$47 \pm 7$ (-0.2 $\sigma$ )	$z_{re}$	7.75	$7.72 \pm 0.74$ (+0.1 $\sigma$ )	$D_M(0.61)$	2295.2	$2297 \pm 11$ (-0.4 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.56	—	$10^9 A_s$	2.1029	$2.101 \pm 0.030$ (+0.2 $\sigma$ )	$H(2.33)$	235.93	$235.97 \pm 0.58$ (+0.5 $\sigma$ )
$A_{143}^{tSZ}$	7.14	$5.5^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8833	$1.882 \pm 0.011$ (+0.1 $\sigma$ )	$D_M(2.33)$	5756.9	$5758.4 \pm 8.6$ (-0.8 $\sigma$ )
$A_{100}^{PS}$	249.5	$258 \pm 28$ (-0.2 $\sigma$ )	$D_{40}$	1227.8	$1229 \pm 11$ (+0.0 $\sigma$ )	$f\sigma_8(0.15)$	0.4598	$0.4596 \pm 0.0066$ (+0.0 $\sigma$ )
$A_{143}^{PS}$	49.4	$46 \pm 8$ (-0.4 $\sigma$ )	$D_{220}$	5736.6	$5735 \pm 38$ (+0.4 $\sigma$ )	$\sigma_8(0.15)$	0.7579	$0.757 \pm 0.010$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{PS}$	50.9	$42 \pm 9$ (-0.1 $\sigma$ )	$D_{810}$	2541.8	$2539 \pm 13$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.4810	$0.4805 \pm 0.0079$ (+0.0 $\sigma$ )
$A_{217}^{PS}$	120.9	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{1420}$	818.80	$817.5 \pm 4.8$ (+0.5 $\sigma$ )	$\sigma_8(0.38)$	0.6721	$0.6709 \pm 0.0091$ (+0.1 $\sigma$ )
$A^{kSZ}$	0.01	$< 4.16$ (-0.2 $\sigma$ )	$D_{2000}$	231.49	$231.0 \pm 1.6$ (+0.7 $\sigma$ )	$f\sigma_8(0.51)$	0.4804	$0.4797 \pm 0.0082$ (+0.0 $\sigma$ )
$A_{100}^{dustTT}$	8.82	$8.9 \pm 1.9$ (-0.0 $\sigma$ )	$n_{s,0.002}$	0.96684	$0.9659 \pm 0.0038$ (+0.2 $\sigma$ )	$\sigma_8(0.51)$	0.6289	$0.6278 \pm 0.0085$ (+0.1 $\sigma$ )
$A_{143}^{dustTT}$	11.04	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P$	0.245413	$0.245404^{+0.000056}_{-0.000050}$ (+1.0 $\sigma$ )	$f\sigma_8(0.61)$	0.4758	$0.4750 \pm 0.0082$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.01	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246740	$0.246730^{+0.000056}_{-0.000050}$ (+1.0 $\sigma$ )	$\sigma_8(0.61)$	0.5984	$0.5973 \pm 0.0080$ (+0.1 $\sigma$ )
$A_{217}^{dustTT}$	95.2	$93.7 \pm 7.4$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5770	$2.581 \pm 0.025$ (-1.1 $\sigma$ )	$f\sigma_8(2.33)$	0.30176	$0.3012 \pm 0.0040$ (+0.1 $\sigma$ )
$A_{100}^{dustTE}$	0.1143	$0.114 \pm 0.038$	Age/Gyr	13.7710	$13.776 \pm 0.022$ (-0.8 $\sigma$ )	$\sigma_8(2.33)$	0.31037	$0.3098 \pm 0.0035$ (+0.2 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1347	$0.135 \pm 0.030$	$z_*$	1089.831	$1089.86 \pm 0.23$ (-0.9 $\sigma$ )	$\chi^2_{lensing}$	8.716	$9.13 \pm 0.63$ (-0.2 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.481	$0.480 \pm 0.086$	$r_*$	144.488	$144.50 \pm 0.23$ (-0.6 $\sigma$ )	$\chi^2_{small}$	396.20	$397.1 \pm 1.8$ (+0.1 $\sigma$ )
$A_{143}^{dustTE}$	0.225	$0.225 \pm 0.055$	$100\theta_*$	1.041160	$1.04114 \pm 0.00029$ (+0.1 $\sigma$ )	$\chi^2_{lowl}$	23.06	$23.27 \pm 0.79$ (-0.1 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.663	$0.664 \pm 0.080$	$D_M(z_*)/\text{Gpc}$	13.8776	$13.879 \pm 0.022$ (-0.6 $\sigma$ )	$\chi^2_{plik}$	2344.7	$2359.1 \pm 5.6$ (+304.9 $\sigma$ )
$A_{217}^{dustTE}$	2.083	$2.08 \pm 0.27$	$z_{drag}$	1060.009	$1059.97 \pm 0.29$ (+1.1 $\sigma$ )	$\chi^2_{JLA}$	1034.757	$1035.36 \pm 0.92$ (-0.0 $\sigma$ )
$c_{100}$	0.99974	$0.99966 \pm 0.00061$ (+0.1 $\sigma$ )	$r_{drag}$	147.135	$147.15 \pm 0.24$ (-0.8 $\sigma$ )	$\chi^2_{6DF}$	0.0000	$0.046 \pm 0.064$ (-0.0 $\sigma$ )
$c_{217}$	0.99819	$0.99819 \pm 0.00061$ (-0.1 $\sigma$ )	$k_D$	0.140856	$0.14082 \pm 0.00029$ (+1.0 $\sigma$ )	$\chi^2_{MGS}$	1.68	$1.67 \pm 0.59$ (+0.0 $\sigma$ )
$H_0$	68.44	$68.34 \pm 0.81$ (+0.2 $\sigma$ )	$100\theta_D$	0.160717	$0.16074 \pm 0.00017$ (-1.1 $\sigma$ )	$\chi^2_{DR12BAO}$	4.23	$4.7 \pm 1.0$ (-0.1 $\sigma$ )
$\Omega_\Lambda$	0.6953	$0.6943 \pm 0.0075$ (+0.1 $\sigma$ )	$z_{eq}$	3394.8	$3395 \pm 23$ (+0.3 $\sigma$ )	$\chi^2_{prior}$	1.67	$11.6 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_m$	0.3047	$0.3057 \pm 0.0075$ (-0.1 $\sigma$ )	$k_{eq}$	0.010361	$0.010362 \pm 0.000071$ (+0.3 $\sigma$ )	$\chi^2_{CMB}$	2772.6	$2788.6 \pm 5.7$ (+291.4 $\sigma$ )
$\Omega_m h^2$	0.14271	$0.14271 \pm 0.00097$ (+0.3 $\sigma$ )	$100\theta_{eq}$	0.81479	$0.8147 \pm 0.0044$ (-0.2 $\sigma$ )	$\chi^2_{BAO}$	5.91	$6.45 \pm 0.92$ (-0.1 $\sigma$ )

Best-fit  $\chi^2_{eff} = 3814.98$ ;  $\Delta\chi^2_{eff} = 1585.96$ ;  $\bar{\chi}^2_{eff} = 3841.96$ ;  $\Delta\bar{\chi}^2_{eff} = 1592.01$ ;  $R - 1 = 0.01118$   
 $\chi^2_{eff}$ : BAO - 6DF: 0.00 ( $\Delta$  -0.00) MGS: 1.68 ( $\Delta$  0.14) DR12BAO: 4.23 ( $\Delta$  -0.12) CMB - smicadx12.Dec5.ftl.mv2.ndclpp-p.teb.consext8: 8.72 ( $\Delta$  -0.05) small\_100x143.offlike5\_EE\_Aplanc  
396.20 ( $\Delta$  0.31) commander\_dx12.v3.2.29: 23.06 ( $\Delta$  -0.08) plik\_rd12\_HM.v22b.TTTEEE: 2344.67 SN - JLA Pantheon18: 1034.76 ( $\Delta$  0.05)



## 18.49 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02239 \pm 0.00014 \quad (+1.0\sigma)$	$\sigma_8$	$0.819 \pm 0.013 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$636.3 \pm 6.0 \quad (-0.2\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1197 \pm 0.0012 \quad (+0.2\sigma)$	$S_8$	$0.827 \pm 0.013 \quad (+0.1\sigma)$	$H(0.38)$	$83.10 \pm 0.28 \quad (+0.4\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04096 \pm 0.00030 \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4532 \pm 0.0071 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1522 \pm 10 \quad (-0.3\sigma)$
$\tau$	$0.0559^{+0.0054}_{-0.0083} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6093 \pm 0.0088 \quad (+0.1\sigma)$	$H(0.51)$	$89.70 \pm 0.25 \quad (+0.4\sigma)$
$w_0$	$-1.028 \pm 0.033 \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.991 \pm 0.013 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1973 \pm 11 \quad (-0.3\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.047^{+0.012}_{-0.016} \quad (+0.3\sigma)$	$r_{\mathrm{drag}}h$	$100.5 \pm 1.2 \quad (+0.0\sigma)$	$H(0.61)$	$95.25 \pm 0.27 \quad (+0.4\sigma)$
$n_{\mathrm{s}}$	$0.9660 \pm 0.0040 \quad (+0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.448 \pm 0.028 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2298 \pm 11 \quad (-0.3\sigma)$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.82^{+0.60}_{-0.81} \quad (+0.1\sigma)$	$H(2.33)$	$236.00 \pm 0.61 \quad (+0.5\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.105^{+0.026}_{-0.035} \quad (+0.3\sigma)$	$D_{\mathrm{M}}(2.33)$	$5758.7 \pm 8.8 \quad (-0.7\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.882 \pm 0.011 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4603 \pm 0.0083 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5 \pm 2.0 \quad (+0.2\sigma)$	$D_{40}$	$1229 \pm 12 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.757 \pm 0.012 \quad (+0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$258 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5734 \pm 38 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4811 \pm 0.0096 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.672 \pm 0.011 \quad (+0.2\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$817.5 \pm 4.8 \quad (+0.5\sigma)$	$f\sigma_8(0.51)$	$0.4804 \pm 0.0098 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$231.0 \pm 1.6 \quad (+0.7\sigma)$	$\sigma_8(0.51)$	$0.6284 \pm 0.0098 \quad (+0.2\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.13 \quad (-0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.9660 \pm 0.0040 \quad (+0.2\sigma)$	$f\sigma_8(0.61)$	$0.4756 \pm 0.0098 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.245402^{+0.000057}_{-0.000050} \quad (+1.0\sigma)$	$\sigma_8(0.61)$	$0.5978 \pm 0.0092 \quad (+0.2\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246729^{+0.000057}_{-0.000050} \quad (+1.0\sigma)$	$f\sigma_8(2.33)$	$0.3014 \pm 0.0046 \quad (+0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.582 \pm 0.026 \quad (-1.0\sigma)$	$\sigma_8(2.33)$	$0.3101 \pm 0.0040 \quad (+0.2\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.7 \pm 7.3 \quad (+0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.776 \pm 0.022 \quad (-0.8\sigma)$	$f_{2000}^{143}$	$29.3 \pm 2.7 \quad (-0.6\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.114 \pm 0.038$	$z_*$	$1089.87 \pm 0.24 \quad (-0.7\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 1.8 \quad (-0.7\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.029$	$r_*$	$144.49 \pm 0.26 \quad (-0.6\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.8 \quad (-0.6\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.481 \pm 0.085$	$100\theta_*$	$1.04114 \pm 0.00029 \quad (+0.0\sigma)$	$\chi_{\mathrm{small}}^2$	$397.2 \pm 2.0 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.225 \pm 0.055$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.878 \pm 0.025 \quad (-0.6\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.28 \pm 0.86 \quad (-0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.666 \pm 0.080$	$z_{\mathrm{drag}}$	$1059.96 \pm 0.29 \quad (+1.1\sigma)$	$\chi_{\mathrm{plik}}^2$	$2359.1 \pm 5.8 \quad (+294.8\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.26$	$r_{\mathrm{drag}}$	$147.14 \pm 0.27 \quad (-0.8\sigma)$	$\chi_{\mathrm{JLA}}^2$	$1035.39 \pm 0.96 \quad (-0.0\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.14083 \pm 0.00030 \quad (+1.0\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.047 \pm 0.066 \quad (-0.0\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16075 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.64 \pm 0.60 \quad (-0.0\sigma)$
$H_0$	$68.31 \pm 0.82 \quad (+0.2\sigma)$	$z_{\mathrm{eq}}$	$3396 \pm 26 \quad (+0.3\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.2 \quad (-0.0\sigma)$
$\Omega_{\Lambda}$	$0.6940 \pm 0.0076 \quad (+0.0\sigma)$	$k_{\mathrm{eq}}$	$0.010365 \pm 0.000080 \quad (+0.3\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.3060 \pm 0.0076 \quad (-0.0\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8146 \pm 0.0049 \quad (-0.2\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.5 \pm 1.0 \quad (-0.0\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1428 \pm 0.0011 \quad (+0.3\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4500 \pm 0.0025 \quad (-0.3\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2779.6 \pm 5.7 \quad (+296.2\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.0975 \pm 0.0014 \quad (+0.3\sigma)$	$H(0.15)$	$73.30 \pm 0.52 \quad (+0.3\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 3832.98; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.13; R - 1 = 0.00746$$



18.50 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02240 \pm 0.00014 \quad (+1.1\sigma)$	$\sigma_8$	$0.819 \pm 0.011 \quad (+0.1\sigma)$	$D_M(0.15)$	$636.1 \pm 5.9 \quad (-0.2\sigma)$
$\Omega_c h^2$	$0.1196 \pm 0.0010 \quad (+0.1\sigma)$	$S_8$	$0.826 \pm 0.010 \quad (+0.1\sigma)$	$H(0.38)$	$83.12 \pm 0.26 \quad (+0.5\sigma)$
$100\theta_{MC}$	$1.04097 \pm 0.00029 \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4526 \pm 0.0057 \quad (+0.1\sigma)$	$D_M(0.38)$	$1521.1 \pm 9.9 \quad (-0.3\sigma)$
$\tau$	$0.0558^{+0.0055}_{-0.0077} \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6087 \pm 0.0069 \quad (+0.1\sigma)$	$H(0.51)$	$89.72 \pm 0.23 \quad (+0.5\sigma)$
$w_0$	$-1.027 \pm 0.031 \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.010 \quad (+0.0\sigma)$	$D_M(0.51)$	$1973 \pm 11 \quad (-0.3\sigma)$
$\ln(10^{10} A_s)$	$3.046^{+0.012}_{-0.015} \quad (+0.2\sigma)$	$r_{drag} h$	$100.6 \pm 1.2 \quad (+0.0\sigma)$	$H(0.61)$	$95.27 \pm 0.24 \quad (+0.5\sigma)$
$n_s$	$0.9661 \pm 0.0038 \quad (+0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.446 \pm 0.022 \quad (+0.1\sigma)$	$D_M(0.61)$	$2297 \pm 11 \quad (-0.4\sigma)$
$y_{cal}$	$1.0006 \pm 0.0025 \quad (+0.0\sigma)$	$z_{re}$	$7.80^{+0.59}_{-0.76} \quad (+0.1\sigma)$	$H(2.33)$	$235.96 \pm 0.58 \quad (+0.5\sigma)$
$A_{217}^{CIB}$	$47 \pm 7 \quad (-0.1\sigma)$	$10^9 A_s$	$2.104^{+0.024}_{-0.031} \quad (+0.2\sigma)$	$D_M(2.33)$	$5758.2 \pm 8.5 \quad (-0.8\sigma)$
$\xi^{tSZ \times CIB}$	—	$10^9 A_s e^{-2\tau}$	$1.882 \pm 0.011 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4597 \pm 0.0066 \quad (+0.0\sigma)$
$A_{143}^{tSZ}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$D_{40}$	$1229 \pm 11 \quad (+0.0\sigma)$	$\sigma_8(0.15)$	$0.757 \pm 0.010 \quad (+0.1\sigma)$
$A_{100}^{PS}$	$258 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5735 \pm 38 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4805 \pm 0.0079 \quad (+0.1\sigma)$
$A_{143}^{PS}$	$45 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6711 \pm 0.0091 \quad (+0.1\sigma)$
$A_{143 \times 217}^{PS}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$817.5 \pm 4.8 \quad (+0.5\sigma)$	$f\sigma_8(0.51)$	$0.4798 \pm 0.0082 \quad (+0.1\sigma)$
$A_{217}^{PS}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$231.0 \pm 1.6 \quad (+0.7\sigma)$	$\sigma_8(0.51)$	$0.6280 \pm 0.0084 \quad (+0.1\sigma)$
$A^{kSZ}$	$< 4.13 \quad (-0.2\sigma)$	$n_{s,0.002}$	$0.9661 \pm 0.0038 \quad (+0.2\sigma)$	$f\sigma_8(0.61)$	$0.4751 \pm 0.0082 \quad (+0.1\sigma)$
$A_{100}^{dustTT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_P$	$0.245405^{+0.000055}_{-0.000050} \quad (+1.0\sigma)$	$\sigma_8(0.61)$	$0.5975 \pm 0.0079 \quad (+0.1\sigma)$
$A_{143}^{dustTT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_P^{BBN}$	$0.246731^{+0.000056}_{-0.000050} \quad (+1.0\sigma)$	$f\sigma_8(2.33)$	$0.3013 \pm 0.0040 \quad (+0.1\sigma)$
$A_{143 \times 217}^{dustTT}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$10^5 D/H$	$2.581 \pm 0.025 \quad (-1.1\sigma)$	$\sigma_8(2.33)$	$0.3100 \pm 0.0035 \quad (+0.2\sigma)$
$A_{217}^{dustTT}$	$93.7 \pm 7.4 \quad (+0.0\sigma)$	Age/Gyr	$13.775 \pm 0.022 \quad (-0.8\sigma)$	$f_{2000}^{143}$	$29.3 \pm 2.7 \quad (-0.6\sigma)$
$A_{100}^{dustTE}$	$0.114 \pm 0.038$	$z_*$	$1089.85 \pm 0.23 \quad (-0.8\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 1.8 \quad (-0.7\sigma)$
$A_{100 \times 143}^{dustTE}$	$0.135 \pm 0.029$	$r_*$	$144.51 \pm 0.23 \quad (-0.7\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.8 \quad (-0.6\sigma)$
$A_{100 \times 217}^{dustTE}$	$0.480 \pm 0.086$	$100\theta_*$	$1.04115 \pm 0.00029 \quad (+0.1\sigma)$	$\chi_{lensing}^2$	$9.11 \pm 0.61 \quad (-0.2\sigma)$
$A_{143}^{dustTE}$	$0.225 \pm 0.055$	$D_M(z_*)/\text{Gpc}$	$13.879 \pm 0.022 \quad (-0.7\sigma)$	$\chi_{small}^2$	$397.1 \pm 1.8 \quad (+0.1\sigma)$
$A_{143 \times 217}^{dustTE}$	$0.664 \pm 0.080$	$z_{drag}$	$1059.98 \pm 0.29 \quad (+1.1\sigma)$	$\chi_{lowl}^2$	$23.27 \pm 0.80 \quad (-0.1\sigma)$
$A_{217}^{dustTE}$	$2.08 \pm 0.27$	$r_{drag}$	$147.16 \pm 0.24 \quad (-0.8\sigma)$	$\chi_{plik}^2$	$2359.0 \pm 5.6 \quad (+305.5\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$k_D$	$0.14082 \pm 0.00029 \quad (+1.1\sigma)$	$\chi_{JLA}^2$	$1035.36 \pm 0.92 \quad (-0.0\sigma)$
$c_{217}$	$0.99819 \pm 0.00061 \quad (-0.1\sigma)$	$100\theta_D$	$0.16074 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{6DF}^2$	$0.046 \pm 0.064 \quad (-0.0\sigma)$
$H_0$	$68.33 \pm 0.81 \quad (+0.2\sigma)$	$z_{eq}$	$3394 \pm 23 \quad (+0.3\sigma)$	$\chi_{MGS}^2$	$1.67 \pm 0.59 \quad (-0.0\sigma)$
$\Omega_\Lambda$	$0.6943 \pm 0.0075 \quad (+0.0\sigma)$	$k_{eq}$	$0.010359 \pm 0.000070 \quad (+0.3\sigma)$	$\chi_{DR12BAO}^2$	$4.7 \pm 1.0 \quad (-0.0\sigma)$
$\Omega_m$	$0.3057 \pm 0.0075 \quad (-0.0\sigma)$	$100\theta_{eq}$	$0.8149 \pm 0.0043 \quad (-0.2\sigma)$	$\chi_{prior}^2$	$11.6 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_m h^2$	$0.14267 \pm 0.00096 \quad (+0.3\sigma)$	$100\theta_{s,eq}$	$0.4502 \pm 0.0022 \quad (-0.2\sigma)$	$\chi_{CMB}^2$	$2788.4 \pm 5.7 \quad (+294.2\sigma)$
$\Omega_m h^3$	$0.0975 \pm 0.0013 \quad (+0.3\sigma)$	$H(0.15)$	$73.32 \pm 0.52 \quad (+0.3\sigma)$	$\chi_{BAO}^2$	$6.42 \pm 0.91 \quad (-0.0\sigma)$

$$\bar{\chi}_{eff}^2 = 3841.79; \Delta\bar{\chi}_{eff}^2 = 1592.10; R - 1 = 0.01215$$



18.51 base\_w\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022151	$0.02219 \pm 0.00020$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6135	$0.606 \pm 0.011$	$H(0.38)$	82.860	$82.98 \pm 0.34$
$\Omega_{\mathrm{c}}h^2$	0.12025	$0.1194 \pm 0.0015$	$\sigma_8/h^{0.5}$	0.9976	$0.987 \pm 0.016$	$D_{\mathrm{M}}(0.38)$	1525.4	$1524 \pm 10$
$100\theta_{\mathrm{MC}}$	1.040924	$1.04098 \pm 0.00043$	$r_{\mathrm{drag}}h$	100.43	$100.5 \pm 1.2$	$H(0.51)$	89.447	$89.59 \pm 0.33$
$\tau$	0.0540	$0.0532 \pm 0.0078$	$\langle d^2 \rangle^{1/2}$	2.4599	$2.436 \pm 0.034$	$D_{\mathrm{M}}(0.51)$	1978.3	$1977 \pm 11$
$w_0$	-1.0374	$-1.024 \pm 0.037$	$z_{\mathrm{re}}$	7.69	$7.57 \pm 0.80$	$H(0.61)$	94.995	$95.14 \pm 0.35$
$\ln(10^{10}A_{\mathrm{s}})$	3.0460	$3.039 \pm 0.016$	$10^9A_{\mathrm{s}}$	2.1031	$2.088 \pm 0.034$	$D_{\mathrm{M}}(0.61)$	2303.6	$2301 \pm 12$
$n_{\mathrm{s}}$	0.96375	$0.9660 \pm 0.0048$	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8880	$1.877 \pm 0.012$	$H(2.33)$	235.96	$235.68 \pm 0.75$
$y_{\mathrm{cal}}$	1.00232	$1.0005 \pm 0.0025$	$D_{40}$	1234.6	$1225 \pm 13$	$D_{\mathrm{M}}(2.33)$	5769.7	$5767 \pm 12$
$A_{100}^{\mathrm{PS}}$	245.2	$243 \pm 25$	$D_{220}$	5730.3	$5709 \pm 41$	$f\sigma_8(0.15)$	0.4646	$0.458 \pm 0.011$
$A_{143}^{\mathrm{PS}}$	38.9	$41 \pm 8$	$D_{810}$	2543.3	$2533 \pm 14$	$\sigma_8(0.15)$	0.7614	$0.753 \pm 0.014$
$A_{217}^{\mathrm{PS}}$	99.3	$101 \pm 10$	$D_{1420}$	817.0	$814.6 \pm 5.2$	$f\sigma_8(0.38)$	0.4855	$0.478 \pm 0.012$
$A_{217}^{\mathrm{CIB}}$	45.0	$41 \pm 7$	$D_{2000}$	230.42	$229.7 \pm 1.8$	$\sigma_8(0.38)$	0.6747	$0.668 \pm 0.012$
$A_{143}^{\mathrm{tSZ}}$	5.17	$3.7_{-2.6}^{+1.8}$	$n_{\mathrm{s},0.002}$	0.96375	$0.9660 \pm 0.0048$	$f\sigma_8(0.51)$	0.4845	$0.478 \pm 0.012$
$r_{143 \times 217}^{\mathrm{PS}}$	0.560	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	0.245306	$0.245319_{-0.000075}^{+0.000092}$	$\sigma_8(0.51)$	0.6311	$0.625 \pm 0.011$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.703	$0.58_{-0.13}^{+0.42}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246632	$0.246646_{-0.000075}^{+0.000092}$	$f\sigma_8(0.61)$	0.4796	$0.473 \pm 0.012$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.00	—	$10^5D/H$	2.6272	$2.620 \pm 0.038$	$\sigma_8(0.61)$	0.6003	$0.595 \pm 0.010$
$A^{\mathrm{kSZ}}$	2.3	—	Age/Gyr	13.7980	$13.797 \pm 0.028$	$f\sigma_8(2.33)$	0.3026	$0.2998 \pm 0.0051$
$A_{100}^{\mathrm{dust}}$	1.029	$1.01 \pm 0.19$	$z_*$	1090.218	$1090.10 \pm 0.33$	$\sigma_8(2.33)$	0.31086	$0.3085 \pm 0.0044$
$A_{143}^{\mathrm{dust}}$	0.987	$0.98 \pm 0.17$	$r_*$	144.535	$144.72 \pm 0.37$	$f_{2000}^{143}$	31.33	$30.7 \pm 3.0$
$A_{217}^{\mathrm{dust}}$	0.965	$0.97 \pm 0.10$	$100\theta_*$	1.041127	$1.04118 \pm 0.00043$	$f_{2000}^{217}$	108.07	$107.5 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	1.017	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8825	$13.899 \pm 0.035$	$f_{2000}^{143 \times 217}$	33.18	$32.9 \pm 2.1$
$c_{100}$	0.99756	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	1059.437	$1059.48 \pm 0.44$	$\chi_{\mathrm{small}}^2$	396.06	$396.9 \pm 1.7$
$c_{217}$	1.00140	$1.0012 \pm 0.0016$	$r_{\mathrm{drag}}$	147.271	$147.44 \pm 0.39$	$\chi_{\mathrm{lowl}}^2$	23.45	$23.05 \pm 0.98$
$H_0$	68.19	$68.14 \pm 0.83$	$k_{\mathrm{D}}$	0.140509	$0.14036 \pm 0.00046$	$\chi_{\mathrm{CamSpec}}^2$	7049.7	$7063.4 \pm 5.4$
$\Omega_{\Lambda}$	0.6924	$0.6935 \pm 0.0078$	$100\theta_{\mathrm{D}}$	0.161057	$0.16104 \pm 0.00026$	$\chi_{\mathrm{JLA}}^2$	1034.747	$1035.42 \pm 0.98$
$\Omega_{\mathrm{m}}$	0.3076	$0.3065 \pm 0.0078$	$z_{\mathrm{eq}}$	3402.9	$3384 \pm 35$	$\chi_{6\mathrm{DF}}^2$	0.0035	$0.049 \pm 0.068$
$\Omega_{\mathrm{m}}h^2$	0.14304	$0.1423 \pm 0.0015$	$k_{\mathrm{eq}}$	0.010386	$0.01033 \pm 0.00011$	$\chi_{\mathrm{MGS}}^2$	1.47	$1.64 \pm 0.61$
$\Omega_{\mathrm{m}}h^3$	0.09754	$0.0969 \pm 0.0016$	$100\theta_{\mathrm{eq}}$	0.8126	$0.8161 \pm 0.0066$	$\chi_{\mathrm{DR12BAO}}^2$	4.86	$4.8 \pm 1.4$
$\sigma_8$	0.8238	$0.815 \pm 0.015$	$100\theta_{\mathrm{s,eq}}$	0.44917	$0.4510 \pm 0.0034$	$\chi_{\mathrm{prior}}^2$	3.04	$7.7 \pm 3.5$
$S_8$	0.8342	$0.824 \pm 0.016$	$H(0.15)$	73.11	$73.16 \pm 0.53$	$\chi_{\mathrm{BAO}}^2$	6.33	$6.5 \pm 1.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4569	$0.4511 \pm 0.0090$	$D_{\mathrm{M}}(0.15)$	637.6	$637.7 \pm 6.1$	$\chi_{\mathrm{CMB}}^2$	7469.2	$7483.4 \pm 5.4$

Best-fit  $\chi_{\mathrm{eff}}^2 = 8513.28$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 8532.92$ ;  $R - 1 = 0.00642$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.47 DR12BAO: 4.86 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.06 commander\_dx12\_v3.2\_29: 23.45 CamSpec like\_10.7HM: 7049.66  
SN - JLA Pantheon18: 1034.75



18.52 base\_w\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00020$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.011$	$H(0.51)$	$89.56 \pm 0.29$
$\Omega_{\mathrm{c}}h^2$	$0.1196 \pm 0.0012$	$r_{\mathrm{drag}}h$	$100.5 \pm 1.2$	$D_{\mathrm{M}}(0.51)$	$1976 \pm 11$
$100\theta_{\mathrm{MC}}$	$1.04096 \pm 0.00043$	$\langle d^2 \rangle^{1/2}$	$2.442 \pm 0.024$	$H(0.61)$	$95.11 \pm 0.31$
$\tau$	$0.0540 \pm 0.0074$	$z_{\mathrm{re}}$	$7.66 \pm 0.75$	$D_{\mathrm{M}}(0.61)$	$2301 \pm 12$
$w_0$	$-1.028 \pm 0.033$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.027}_{-0.031}$	$H(2.33)$	$235.71 \pm 0.68$
$\ln(10^{10} A_{\mathrm{s}})$	$3.041 \pm 0.014$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878 \pm 0.011$	$D_{\mathrm{M}}(2.33)$	$5767 \pm 12$
$n_{\mathrm{s}}$	$0.9655 \pm 0.0044$	$D_{40}$	$1227 \pm 12$	$f\sigma_8(0.15)$	$0.4593 \pm 0.0078$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{220}$	$5712 \pm 41$	$\sigma_8(0.15)$	$0.755 \pm 0.011$
$A_{100}^{\mathrm{PS}}$	$243 \pm 25$	$D_{810}$	$2534 \pm 14$	$f\sigma_8(0.38)$	$0.4800 \pm 0.0090$
$A_{143}^{\mathrm{PS}}$	$41 \pm 8$	$D_{1420}$	$814.7 \pm 5.2$	$\sigma_8(0.38)$	$0.6697 \pm 0.0097$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{2000}$	$229.8 \pm 1.8$	$f\sigma_8(0.51)$	$0.4792 \pm 0.0092$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$n_{\mathrm{s},0.002}$	$0.9655 \pm 0.0044$	$\sigma_8(0.51)$	$0.6267 \pm 0.0090$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.8}_{-2.6}$	$Y_{\mathrm{P}}$	$0.245319^{+0.000088}_{-0.000074}$	$f\sigma_8(0.61)$	$0.4744 \pm 0.0092$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246646^{+0.000089}_{-0.000074}$	$\sigma_8(0.61)$	$0.5962 \pm 0.0084$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.58^{+0.41}_{-0.14}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.620 \pm 0.037$	$f\sigma_8(2.33)$	$0.3006 \pm 0.0042$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	Age/Gyr	$13.796 \pm 0.028$	$\sigma_8(2.33)$	$0.3092 \pm 0.0036$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.11 \pm 0.30$	$f_{2000}^{143}$	$30.6 \pm 3.0$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$r_*$	$144.68 \pm 0.31$	$f_{2000}^{217}$	$107.5 \pm 2.0$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.18$	$100\theta_*$	$1.04116 \pm 0.00042$	$f_{2000}^{143 \times 217}$	$32.9 \pm 2.1$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.896 \pm 0.030$	$\chi_{\mathrm{lensing}}^2$	$9.34 \pm 0.80$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$z_{\mathrm{drag}}$	$1059.49 \pm 0.44$	$\chi_{\mathrm{small}}^2$	$397.0 \pm 1.7$
$c_{100}$	$0.9975 \pm 0.0011$	$r_{\mathrm{drag}}$	$147.40 \pm 0.33$	$\chi_{\mathrm{lowl}}^2$	$23.17 \pm 0.87$
$c_{217}$	$1.0012 \pm 0.0016$	$k_{\mathrm{D}}$	$0.14040 \pm 0.00043$	$\chi_{\mathrm{CamSpec}}^2$	$7062.8 \pm 5.1$
$H_0$	$68.19 \pm 0.82$	$100\theta_{\mathrm{D}}$	$0.16103 \pm 0.00026$	$\chi_{\mathrm{JLA}}^2$	$1035.38 \pm 0.93$
$\Omega_{\Lambda}$	$0.6936 \pm 0.0076$	$z_{\mathrm{eq}}$	$3388 \pm 29$	$\chi_{6\mathrm{DF}}^2$	$0.047 \pm 0.065$
$\Omega_{\mathrm{m}}$	$0.3064 \pm 0.0076$	$k_{\mathrm{eq}}$	$0.010340 \pm 0.000087$	$\chi_{\mathrm{MGS}}^2$	$1.65 \pm 0.60$
$\Omega_{\mathrm{m}}h^2$	$0.1424 \pm 0.0012$	$100\theta_{\mathrm{eq}}$	$0.8155 \pm 0.0053$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.2$
$\Omega_{\mathrm{m}}h^3$	$0.0971 \pm 0.0015$	$100\theta_{\mathrm{s,eq}}$	$0.4506 \pm 0.0027$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.5$
$\sigma_8$	$0.817 \pm 0.012$	$H(0.15)$	$73.18 \pm 0.53$	$\chi_{\mathrm{CMB}}^2$	$7492.3 \pm 5.3$
$S_8$	$0.826 \pm 0.012$	$D_{\mathrm{M}}(0.15)$	$637.4 \pm 6.0$	$\chi_{\mathrm{BAO}}^2$	$6.5 \pm 1.1$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4522 \pm 0.0066$	$H(0.38)$	$82.97 \pm 0.31$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6079 \pm 0.0080$	$D_{\mathrm{M}}(0.38)$	$1524 \pm 10$		

$\bar{\chi}_{\mathrm{eff}}^2 = 8541.75$ ;  $R - 1 = 0.00879$



18.53 base\_w\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Pantheon18\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00020$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.607 \pm 0.011$	$H(0.38)$	$82.99 \pm 0.34$
$\Omega_{\mathrm{c}}h^2$	$0.1194 \pm 0.0015$	$\sigma_8/h^{0.5}$	$0.988 \pm 0.016$	$D_{\mathrm{M}}(0.38)$	$1524 \pm 10$
$100\theta_{\mathrm{MC}}$	$1.04098 \pm 0.00043$	$r_{\mathrm{drag}}h$	$100.5 \pm 1.2$	$H(0.51)$	$89.59 \pm 0.33$
$\tau$	$0.0545^{+0.0048}_{-0.0082}$	$\langle d^2 \rangle^{1/2}$	$2.438 \pm 0.033$	$D_{\mathrm{M}}(0.51)$	$1977 \pm 11$
$w_0$	$-1.024 \pm 0.037$	$z_{\mathrm{re}}$	$7.71^{+0.54}_{-0.80}$	$H(0.61)$	$95.14 \pm 0.35$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.012}_{-0.016}$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.024}_{-0.034}$	$D_{\mathrm{M}}(0.61)$	$2301 \pm 12$
$n_{\mathrm{s}}$	$0.9661 \pm 0.0048$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.012$	$H(2.33)$	$235.67 \pm 0.75$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{40}$	$1225 \pm 13$	$D_{\mathrm{M}}(2.33)$	$5767 \pm 12$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25$	$D_{220}$	$5709 \pm 40$	$f\sigma_8(0.15)$	$0.458 \pm 0.011$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8$	$D_{810}$	$2533 \pm 14$	$\sigma_8(0.15)$	$0.754 \pm 0.014$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{1420}$	$814.6 \pm 5.2$	$f\sigma_8(0.38)$	$0.479 \pm 0.012$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{2000}$	$229.7 \pm 1.8$	$\sigma_8(0.38)$	$0.669 \pm 0.012$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$n_{\mathrm{s},0.002}$	$0.9661 \pm 0.0048$	$f\sigma_8(0.51)$	$0.478 \pm 0.012$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	$0.245321^{+0.000092}_{-0.000075}$	$\sigma_8(0.51)$	$0.626 \pm 0.011$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.58^{+0.41}_{-0.14}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246647^{+0.000092}_{-0.000075}$	$f\sigma_8(0.61)$	$0.473 \pm 0.012$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.619 \pm 0.038$	$\sigma_8(0.61)$	$0.595 \pm 0.010$
$A^{\mathrm{kSZ}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.797 \pm 0.028$	$f\sigma_8(2.33)$	$0.3001 \pm 0.0050$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$z_*$	$1090.09 \pm 0.33$	$\sigma_8(2.33)$	$0.3089 \pm 0.0043$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.17$	$r_*$	$144.72 \pm 0.37$	$f_{2000}^{143}$	$30.6 \pm 3.0$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04118 \pm 0.00043$	$f_{2000}^{217}$	$107.4 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.900 \pm 0.035$	$f_{2000}^{143 \times 217}$	$32.8 \pm 2.1$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.49 \pm 0.44$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.7$
$c_{217}$	$1.0012 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.45 \pm 0.39$	$\chi_{\mathrm{lowl}}^2$	$23.07 \pm 0.98$
$H_0$	$68.14 \pm 0.83$	$k_{\mathrm{D}}$	$0.14036 \pm 0.00046$	$\chi_{\mathrm{CamSpec}}^2$	$7063.2 \pm 5.4$
$\Omega_{\Lambda}$	$0.6935 \pm 0.0078$	$100\theta_{\mathrm{D}}$	$0.16103 \pm 0.00026$	$\chi_{\mathrm{JLA}}^2$	$1035.42 \pm 0.97$
$\Omega_{\mathrm{m}}$	$0.3065 \pm 0.0078$	$z_{\mathrm{eq}}$	$3384 \pm 35$	$\chi_{6\mathrm{DF}}^2$	$0.049 \pm 0.067$
$\Omega_{\mathrm{m}}h^2$	$0.1422 \pm 0.0015$	$k_{\mathrm{eq}}$	$0.01033 \pm 0.00011$	$\chi_{\mathrm{MGS}}^2$	$1.64 \pm 0.61$
$\Omega_{\mathrm{m}}h^3$	$0.0969 \pm 0.0016$	$100\theta_{\mathrm{eq}}$	$0.8162 \pm 0.0066$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.4$
$\sigma_8$	$0.816 \pm 0.015$	$100\theta_{\mathrm{s,eq}}$	$0.4510 \pm 0.0034$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.5$
$S_8$	$0.824 \pm 0.016$	$H(0.15)$	$73.16 \pm 0.53$	$\chi_{\mathrm{BAO}}^2$	$6.5 \pm 1.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4515 \pm 0.0089$	$D_{\mathrm{M}}(0.15)$	$637.7 \pm 6.1$	$\chi_{\mathrm{CMB}}^2$	$7483.1 \pm 5.3$

$\bar{\chi}_{\mathrm{eff}}^2 = 8532.67$ ;  $R - 1 = 0.00753$



18.54 base\_w\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00020$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.011$	$H(0.51)$	$89.57 \pm 0.29$
$\Omega_{\mathrm{c}}h^2$	$0.1195 \pm 0.0012$	$r_{\mathrm{drag}}h$	$100.5 \pm 1.2$	$D_{\mathrm{M}}(0.51)$	$1976 \pm 11$
$100\theta_{\mathrm{MC}}$	$1.04096 \pm 0.00043$	$\langle d^2 \rangle^{1/2}$	$2.443 \pm 0.024$	$H(0.61)$	$95.12 \pm 0.31$
$\tau$	$0.0549^{+0.0052}_{-0.0078}$	$z_{\mathrm{re}}$	$7.76^{+0.57}_{-0.76}$	$D_{\mathrm{M}}(0.61)$	$2301 \pm 12$
$w_0$	$-1.027 \pm 0.033$	$10^9 A_{\mathrm{s}}$	$2.096^{+0.022}_{-0.031}$	$H(2.33)$	$235.70 \pm 0.68$
$\ln(10^{10} A_{\mathrm{s}})$	$3.043^{+0.011}_{-0.015}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878 \pm 0.011$	$D_{\mathrm{M}}(2.33)$	$5767 \pm 12$
$n_{\mathrm{s}}$	$0.9656 \pm 0.0044$	$D_{40}$	$1226 \pm 12$	$f\sigma_8(0.15)$	$0.4594 \pm 0.0078$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{220}$	$5711 \pm 40$	$\sigma_8(0.15)$	$0.756 \pm 0.011$
$A_{100}^{\mathrm{PS}}$	$243 \pm 25$	$D_{810}$	$2534 \pm 14$	$f\sigma_8(0.38)$	$0.4801 \pm 0.0090$
$A_{143}^{\mathrm{PS}}$	$41 \pm 8$	$D_{1420}$	$814.6 \pm 5.2$	$\sigma_8(0.38)$	$0.6700 \pm 0.0096$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{2000}$	$229.8 \pm 1.8$	$f\sigma_8(0.51)$	$0.4793 \pm 0.0092$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$n_{\mathrm{s},0.002}$	$0.9656 \pm 0.0044$	$\sigma_8(0.51)$	$0.6269 \pm 0.0089$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.8}_{-2.6}$	$Y_{\mathrm{P}}$	$0.245321^{+0.000088}_{-0.000074}$	$f\sigma_8(0.61)$	$0.4745 \pm 0.0092$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246647^{+0.000088}_{-0.000074}$	$\sigma_8(0.61)$	$0.5965 \pm 0.0083$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.58^{+0.41}_{-0.14}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.619 \pm 0.037$	$f\sigma_8(2.33)$	$0.3007 \pm 0.0042$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	Age/Gyr	$13.796 \pm 0.028$	$\sigma_8(2.33)$	$0.3094 \pm 0.0036$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.10 \pm 0.30$	$f_{2000}^{143}$	$30.6 \pm 3.0$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$r_*$	$144.69 \pm 0.31$	$f_{2000}^{217}$	$107.4 \pm 2.0$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.18$	$100\theta_*$	$1.04116 \pm 0.00042$	$f_{2000}^{143 \times 217}$	$32.8 \pm 2.1$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.897 \pm 0.030$	$\chi_{\mathrm{lensing}}^2$	$9.30 \pm 0.76$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$z_{\mathrm{drag}}$	$1059.50 \pm 0.44$	$\chi_{\mathrm{small}}^2$	$396.9 \pm 1.7$
$c_{100}$	$0.9975 \pm 0.0011$	$r_{\mathrm{drag}}$	$147.41 \pm 0.33$	$\chi_{\mathrm{lowl}}^2$	$23.16 \pm 0.88$
$c_{217}$	$1.0012 \pm 0.0016$	$k_{\mathrm{D}}$	$0.14039 \pm 0.00043$	$\chi_{\mathrm{CamSpec}}^2$	$7062.8 \pm 5.1$
$H_0$	$68.19 \pm 0.81$	$100\theta_{\mathrm{D}}$	$0.16103 \pm 0.00026$	$\chi_{\mathrm{JLA}}^2$	$1035.37 \pm 0.92$
$\Omega_{\Lambda}$	$0.6937 \pm 0.0076$	$z_{\mathrm{eq}}$	$3387 \pm 28$	$\chi_{6\mathrm{DF}}^2$	$0.047 \pm 0.065$
$\Omega_{\mathrm{m}}$	$0.3063 \pm 0.0076$	$k_{\mathrm{eq}}$	$0.010337 \pm 0.000086$	$\chi_{\mathrm{MGS}}^2$	$1.65 \pm 0.60$
$\Omega_{\mathrm{m}}h^2$	$0.1424 \pm 0.0012$	$100\theta_{\mathrm{eq}}$	$0.8157 \pm 0.0053$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.2$
$\Omega_{\mathrm{m}}h^3$	$0.0971 \pm 0.0014$	$100\theta_{\mathrm{s,eq}}$	$0.4507 \pm 0.0027$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.5$
$\sigma_8$	$0.817 \pm 0.012$	$H(0.15)$	$73.18 \pm 0.53$	$\chi_{\mathrm{CMB}}^2$	$7492.2 \pm 5.3$
$S_8$	$0.826 \pm 0.012$	$D_{\mathrm{M}}(0.15)$	$637.4 \pm 6.0$	$\chi_{\mathrm{BAO}}^2$	$6.5 \pm 1.1$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4523 \pm 0.0066$	$H(0.38)$	$82.98 \pm 0.31$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6081 \pm 0.0079$	$D_{\mathrm{M}}(0.38)$	$1524 \pm 10$		

$\bar{\chi}_{\mathrm{eff}}^2 = 8541.57$ ;  $R - 1 = 0.00916$



18.55 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022333	$0.02232 \pm 0.00015$ (+0.7 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4496	$0.4494 \pm 0.0074$ (−0.2 $\sigma$ )	$H(0.38)$	83.093	$83.09 \pm 0.28$ (+0.3 $\sigma$ )
$\Omega_c h^2$	0.11922	$0.1192 \pm 0.0012$ (−0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6042	$0.6042 \pm 0.0093$ (−0.2 $\sigma$ )	$D_M(0.38)$	1523.4	$1523 \pm 10$ (−0.2 $\sigma$ )
$100\theta_{MC}$	1.040965	$1.04093 \pm 0.00031$ (−0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9839	$0.984 \pm 0.014$ (−0.2 $\sigma$ )	$H(0.51)$	89.720	$89.70 \pm 0.26$ (+0.3 $\sigma$ )
$\tau$	0.0533	$0.0532 \pm 0.0077$ (−0.0 $\sigma$ )	$r_{drag}h$	100.36	$100.5 \pm 1.2$ (+0.0 $\sigma$ )	$D_M(0.51)$	1975.0	$1974 \pm 11$ (−0.2 $\sigma$ )
$w_0$	−1.0166	$−1.020 \pm 0.034$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4297	$2.431 \pm 0.030$ (−0.2 $\sigma$ )	$H(0.61)$	95.282	$95.25 \pm 0.27$ (+0.3 $\sigma$ )
$\ln(10^{10} A_s)$	3.0390	$3.039 \pm 0.016$ (−0.0 $\sigma$ )	$z_{re}$	7.57	$7.54 \pm 0.79$ (−0.0 $\sigma$ )	$D_M(0.61)$	2299.3	$2299 \pm 11$ (−0.2 $\sigma$ )
$n_s$	0.96719	$0.9668 \pm 0.0041$ (+0.2 $\sigma$ )	$10^9 A_s$	2.0884	$2.088 \pm 0.034$ (−0.0 $\sigma$ )	$H(2.33)$	235.76	$235.72 \pm 0.62$ (+0.0 $\sigma$ )
$y_{cal}$	1.00050	$1.0005 \pm 0.0025$ (−0.0 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8774	$1.877 \pm 0.011$ (−0.0 $\sigma$ )	$D_M(2.33)$	5761.0	$5761.7 \pm 9.1$ (−0.4 $\sigma$ )
$A_{100}^{PS}$	233.9	$239 \pm 24$ (−0.1 $\sigma$ )	$D_{40}$	1223.3	$1224 \pm 12$ (−0.0 $\sigma$ )	$f\sigma_8(0.15)$	0.4558	$0.4559 \pm 0.0087$ (−0.2 $\sigma$ )
$A_{143}^{PS}$	39.1	$39 \pm 8$ (−0.2 $\sigma$ )	$D_{220}$	5720.1	$5721 \pm 39$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7508	$0.751 \pm 0.013$ (−0.1 $\sigma$ )
$A_{217}^{PS}$	102.1	$102 \pm 10$ (+0.1 $\sigma$ )	$D_{810}$	2535.6	$2535 \pm 14$ (+0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.4759	$0.476 \pm 0.010$ (−0.2 $\sigma$ )
$A_{217}^{CIB}$	44.4	$40 \pm 7$ (−0.1 $\sigma$ )	$D_{1420}$	816.43	$815.9 \pm 4.9$ (+0.3 $\sigma$ )	$\sigma_8(0.38)$	0.6657	$0.666 \pm 0.011$ (−0.1 $\sigma$ )
$A_{143}^{tSZ}$	6.56	$3.9^{+1.9}_{-2.5}$ (+0.1 $\sigma$ )	$D_{2000}$	230.53	$230.3 \pm 1.6$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.4751	$0.476 \pm 0.010$ (−0.2 $\sigma$ )
$r_{143 \times 217}^{PS}$	0.597	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$n_{s,0.002}$	0.96719	$0.9668 \pm 0.0041$ (+0.2 $\sigma$ )	$\sigma_8(0.51)$	0.6231	$0.623 \pm 0.010$ (−0.1 $\sigma$ )
$r_{143 \times 217}^{CIB}$	0.756	$0.56^{+0.41}_{-0.16}$ (−0.1 $\sigma$ )	$Y_P$	0.245381	$0.245375^{+0.000062}_{-0.000055}$ (+0.6 $\sigma$ )	$f\sigma_8(0.61)$	0.4704	$0.471 \pm 0.010$ (−0.2 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.08	—	$Y_P^{BBN}$	0.246707	$0.246701^{+0.000062}_{-0.000056}$ (+0.6 $\sigma$ )	$\sigma_8(0.61)$	0.5929	$0.5932 \pm 0.0097$ (−0.1 $\sigma$ )
$A^{kSZ}$	0.06	$4.7^{+2.0}_{-4.1}$ (−0.1 $\sigma$ )	$10^5 D/H$	2.5924	$2.595 \pm 0.028$ (−0.7 $\sigma$ )	$f\sigma_8(2.33)$	0.29901	$0.2992 \pm 0.0048$ (−0.1 $\sigma$ )
$A_{100}^{dust}$	1.014	$1.01 \pm 0.19$ (−0.0 $\sigma$ )	Age/Gyr	13.7863	$13.787 \pm 0.023$ (−0.4 $\sigma$ )	$\sigma_8(2.33)$	0.30791	$0.3080 \pm 0.0042$ (−0.1 $\sigma$ )
$A_{143}^{dust}$	0.966	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	$z_*$	1089.897	$1089.91 \pm 0.25$ (−0.6 $\sigma$ )	$f_{2000}^{143}$	29.87	$29.6 \pm 2.8$ (−0.3 $\sigma$ )
$A_{217}^{dust}$	0.967	$0.97 \pm 0.10$ (+0.0 $\sigma$ )	$r_*$	144.662	$144.67 \pm 0.28$ (−0.1 $\sigma$ )	$f_{2000}^{217}$	106.72	$106.8 \pm 1.9$ (−0.3 $\sigma$ )
$A_{143 \times 217}^{dust}$	1.011	$1.03 \pm 0.16$ (−0.0 $\sigma$ )	$100\theta_*$	1.041150	$1.04112 \pm 0.00031$ (−0.2 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.99	$32.1 \pm 2.0$ (−0.4 $\sigma$ )
$c_{100}$	0.99766	$0.9975 \pm 0.0011$ (+0.1 $\sigma$ )	$D_M(z_*)/\text{Gpc}$	13.8945	$13.896 \pm 0.027$ (−0.1 $\sigma$ )	$\chi_{simall}^2$	395.88	$396.9 \pm 1.6$ (−0.0 $\sigma$ )
$c_{217}$	1.00123	$1.0011 \pm 0.0016$ (−0.0 $\sigma$ )	$z_{drag}$	1059.780	$1059.77 \pm 0.32$ (+0.7 $\sigma$ )	$\chi_{lowl}^2$	22.80	$22.94 \pm 0.85$ (−0.1 $\sigma$ )
$c_{TE}$	0.99644	$0.9966 \pm 0.0049$	$r_{drag}$	147.341	$147.35 \pm 0.29$ (−0.2 $\sigma$ )	$\chi_{CamSpec}^2$	11499.9	$11514.5 \pm 5.6$ (+820.2 $\sigma$ )
$c_{EE}$	0.99222	$0.9922 \pm 0.0049$	$k_D$	0.140576	$0.14055 \pm 0.00034$ (+0.4 $\sigma$ )	$\chi_{JLA}^2$	1034.719	$1035.39 \pm 0.94$ (−0.0 $\sigma$ )
$H_0$	68.11	$68.19 \pm 0.83$ (+0.1 $\sigma$ )	$100\theta_D$	0.160841	$0.16085 \pm 0.00019$ (−0.7 $\sigma$ )	$\chi_{6DF}^2$	0.0022	$0.048 \pm 0.065$ (−0.0 $\sigma$ )
$\Omega_\Lambda$	0.6935	$0.6941 \pm 0.0076$ (+0.1 $\sigma$ )	$z_{eq}$	3382.6	$3382 \pm 27$ (−0.1 $\sigma$ )	$\chi_{MGS}^2$	1.54	$1.66 \pm 0.60$ (+0.0 $\sigma$ )
$\Omega_m$	0.3065	$0.3059 \pm 0.0076$ (−0.1 $\sigma$ )	$k_{eq}$	0.010324	$0.010323 \pm 0.000084$ (−0.1 $\sigma$ )	$\chi_{DR12BAO}^2$	4.10	$4.6 \pm 1.1$ (−0.2 $\sigma$ )
$\Omega_m h^2$	0.14219	$0.1422 \pm 0.0012$ (−0.1 $\sigma$ )	$100\theta_{eq}$	0.8167	$0.8168 \pm 0.0052$ (+0.1 $\sigma$ )	$\chi_{prior}^2$	2.16	$7.8 \pm 3.4$ (+0.1 $\sigma$ )
$\Omega_m h^3$	0.09685	$0.0969 \pm 0.0015$ (−0.0 $\sigma$ )	$100\theta_{s,eq}$	0.45121	$0.4512 \pm 0.0027$ (+0.1 $\sigma$ )	$\chi_{BAO}^2$	5.64	$6.26 \pm 0.97$ (−0.2 $\sigma$ )
$\sigma_8$	0.8120	$0.813 \pm 0.014$ (−0.2 $\sigma$ )	$H(0.15)$	73.20	$73.23 \pm 0.53$ (+0.1 $\sigma$ )	$\chi_{CMB}^2$	11918.5	$11934.4 \pm 5.7$ (+824.1 $\sigma$ )
$S_8$	0.8208	$0.820 \pm 0.014$ (−0.2 $\sigma$ )	$D_M(0.15)$	637.5	$637.1 \pm 6.1$ (−0.1 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 12961.06$ ;  $\Delta\chi_{eff}^2 = 4447.77$ ;  $\bar{\chi}_{eff}^2 = 12983.86$ ;  $\Delta\bar{\chi}_{eff}^2 = 4450.94$ ;  $R - 1 = 0.00833$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.00 ( $\Delta$  -0.00) MGS: 1.54 ( $\Delta$  0.07) DR12BAO: 4.10 ( $\Delta$  -0.76) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.88 ( $\Delta$  -0.18) commander\_dx12\_v3\_2\_29: 22.80 ( $\Delta$  -0.65) CamSpec like\_10.7HM\_1400\_unified: 11499.86 SN - JLA Pantheon18: 1034.72 ( $\Delta$  -0.03)



18.56 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02232 \pm 0.00015 \quad (+0.6\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4507 \pm 0.0059 \quad (-0.2\sigma)$	$H(0.38)$	$83.07 \pm 0.27 \quad (+0.3\sigma)$
$\Omega_{\text{c}}h^2$	$0.1194 \pm 0.0011 \quad (-0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6061 \pm 0.0072 \quad (-0.2\sigma)$	$D_{\text{M}}(0.38)$	$1522 \pm 10 \quad (-0.2\sigma)$
$100\theta_{\text{MC}}$	$1.04091 \pm 0.00031 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.987 \pm 0.010 \quad (-0.2\sigma)$	$H(0.51)$	$89.68 \pm 0.24 \quad (+0.4\sigma)$
$\tau$	$0.0542 \pm 0.0071 \quad (+0.0\sigma)$	$r_{\text{drag}}h$	$100.5 \pm 1.2 \quad (+0.0\sigma)$	$D_{\text{M}}(0.51)$	$1974 \pm 11 \quad (-0.2\sigma)$
$w_0$	$-1.024 \pm 0.031 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.437 \pm 0.022 \quad (-0.2\sigma)$	$H(0.61)$	$95.22 \pm 0.25 \quad (+0.4\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.041 \pm 0.014 \quad (+0.0\sigma)$	$z_{\text{re}}$	$7.65 \pm 0.72 \quad (-0.0\sigma)$	$D_{\text{M}}(0.61)$	$2299 \pm 11 \quad (-0.2\sigma)$
$n_{\text{s}}$	$0.9663 \pm 0.0039 \quad (+0.2\sigma)$	$10^9 A_{\text{s}}$	$2.094 \pm 0.030 \quad (+0.0\sigma)$	$H(2.33)$	$235.75 \pm 0.59 \quad (+0.1\sigma)$
$y_{\text{cal}}$	$1.0006 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.878 \pm 0.011 \quad (+0.0\sigma)$	$D_{\text{M}}(2.33)$	$5762.0 \pm 8.8 \quad (-0.4\sigma)$
$A_{100}^{\text{PS}}$	$240 \pm 24 \quad (-0.1\sigma)$	$D_{40}$	$1226 \pm 11 \quad (-0.0\sigma)$	$f\sigma_8(0.15)$	$0.4575 \pm 0.0068 \quad (-0.2\sigma)$
$A_{143}^{\text{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$D_{220}$	$5724 \pm 39 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.754 \pm 0.010 \quad (-0.2\sigma)$
$A_{217}^{\text{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2536 \pm 14 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4782 \pm 0.0081 \quad (-0.2\sigma)$
$A_{217}^{\text{CIB}}$	$40_{-8}^{+7} \quad (-0.1\sigma)$	$D_{1420}$	$816.0 \pm 4.9 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6683 \pm 0.0093 \quad (-0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$3.9_{-2.5}^{+2.0} \quad (+0.1\sigma)$	$D_{2000}$	$230.4 \pm 1.6 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4774 \pm 0.0084 \quad (-0.2\sigma)$
$r_{143 \times 217}^{\text{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$n_{\text{s},0.002}$	$0.9663 \pm 0.0039 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6254 \pm 0.0086 \quad (-0.1\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	$0.56_{-0.15}^{+0.42} \quad (-0.1\sigma)$	$Y_{\text{P}}$	$0.245374_{-0.000055}^{+0.000060} \quad (+0.6\sigma)$	$f\sigma_8(0.61)$	$0.4728 \pm 0.0084 \quad (-0.2\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_{\text{P}}^{\text{BBN}}$	$0.246700_{-0.000055}^{+0.000061} \quad (+0.6\sigma)$	$\sigma_8(0.61)$	$0.5951 \pm 0.0081 \quad (-0.1\sigma)$
$A^{\text{kSZ}}$	$4.6_{-4.3}^{+1.9} \quad (-0.1\sigma)$	$10^5 \text{D}/\text{H}$	$2.595 \pm 0.027 \quad (-0.7\sigma)$	$f\sigma_8(2.33)$	$0.3001 \pm 0.0041 \quad (-0.1\sigma)$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$\text{Age}/\text{Gyr}$	$13.786 \pm 0.023 \quad (-0.4\sigma)$	$\sigma_8(2.33)$	$0.3089 \pm 0.0036 \quad (-0.1\sigma)$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$z_*$	$1089.93 \pm 0.24 \quad (-0.6\sigma)$	$f_{2000}^{143}$	$29.6 \pm 2.9 \quad (-0.3\sigma)$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10 \quad (+0.0\sigma)$	$r_*$	$144.63 \pm 0.25 \quad (-0.1\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.9 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_*$	$1.04110 \pm 0.00030 \quad (-0.1\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.0 \quad (-0.4\sigma)$
$c_{100}$	$0.9976 \pm 0.0011 \quad (+0.1\sigma)$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.892 \pm 0.024 \quad (-0.1\sigma)$	$\chi_{\text{lensing}}^2$	$9.24 \pm 0.74 \quad (-0.1\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$z_{\text{drag}}$	$1059.77 \pm 0.31 \quad (+0.6\sigma)$	$\chi_{\text{small}}^2$	$396.9 \pm 1.6 \quad (-0.0\sigma)$
$c_{TE}$	$0.9966 \pm 0.0049$	$r_{\text{drag}}$	$147.32 \pm 0.26 \quad (-0.3\sigma)$	$\chi_{\text{lowl}}^2$	$23.07 \pm 0.80 \quad (-0.1\sigma)$
$c_{EE}$	$0.9921 \pm 0.0050$	$k_{\text{D}}$	$0.14059 \pm 0.00032 \quad (+0.4\sigma)$	$\chi_{\text{CamSpec}}^2$	$11514.1 \pm 5.5 \quad (+866.1\sigma)$
$H_0$	$68.25 \pm 0.82 \quad (+0.1\sigma)$	$100\theta_{\text{D}}$	$0.16085 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{\text{JLA}}^2$	$1035.35 \pm 0.89 \quad (-0.0\sigma)$
$\Omega_{\Lambda}$	$0.6943 \pm 0.0076 \quad (+0.1\sigma)$	$z_{\text{eq}}$	$3386 \pm 24 \quad (-0.1\sigma)$	$\chi_{6\text{DF}}^2$	$0.047 \pm 0.064 \quad (-0.0\sigma)$
$\Omega_{\text{m}}$	$0.3057 \pm 0.0076 \quad (-0.1\sigma)$	$k_{\text{eq}}$	$0.010334 \pm 0.000074 \quad (-0.1\sigma)$	$\chi_{\text{MGS}}^2$	$1.67 \pm 0.60 \quad (+0.0\sigma)$
$\Omega_{\text{m}}h^2$	$0.1423 \pm 0.0010 \quad (-0.1\sigma)$	$100\theta_{\text{eq}}$	$0.8161 \pm 0.0045 \quad (+0.1\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.60 \pm 0.99 \quad (-0.2\sigma)$
$\Omega_{\text{m}}h^3$	$0.0971 \pm 0.0014 \quad (+0.0\sigma)$	$100\theta_{\text{s,eq}}$	$0.4509 \pm 0.0023 \quad (+0.1\sigma)$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.5 \quad (+0.1\sigma)$
$\sigma_8$	$0.815 \pm 0.011 \quad (-0.2\sigma)$	$H(0.15)$	$73.26 \pm 0.52 \quad (+0.2\sigma)$	$\chi_{\text{CMB}}^2$	$11943.3 \pm 5.7 \quad (+832.6\sigma)$
$S_8$	$0.823 \pm 0.011 \quad (-0.2\sigma)$	$D_{\text{M}}(0.15)$	$636.8 \pm 6.0 \quad (-0.1\sigma)$	$\chi_{\text{BAO}}^2$	$6.32 \pm 0.90 \quad (-0.2\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 12992.76; \Delta\bar{\chi}_{\text{eff}}^2 = 4451.01; R - 1 = 0.01319$$



18.57 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02233 \pm 0.00015 \quad (+0.7\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4498 \pm 0.0073 \quad (-0.2\sigma)$	$H(0.38)$	$83.09 \pm 0.28 \quad (+0.3\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1192 \pm 0.0012 \quad (-0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6049 \pm 0.0091 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.38)$	$1523 \pm 10 \quad (-0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04093 \pm 0.00031 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.985 \pm 0.013 \quad (-0.2\sigma)$	$H(0.51)$	$89.71 \pm 0.26 \quad (+0.3\sigma)$
$\tau$	$0.0546^{+0.0048}_{-0.0079} \quad (+0.0\sigma)$	$r_{\mathrm{drag}}h$	$100.5 \pm 1.2 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1974 \pm 11 \quad (-0.2\sigma)$
$w_0$	$-1.020 \pm 0.033 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.433 \pm 0.028 \quad (-0.2\sigma)$	$H(0.61)$	$95.26 \pm 0.27 \quad (+0.3\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.012}_{-0.016} \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.69^{+0.54}_{-0.78} \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2299 \pm 11 \quad (-0.2\sigma)$
$n_{\mathrm{s}}$	$0.9669 \pm 0.0041 \quad (+0.2\sigma)$	$10^9A_{\mathrm{s}}$	$2.093^{+0.024}_{-0.033} \quad (+0.0\sigma)$	$H(2.33)$	$235.71 \pm 0.62 \quad (+0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025 \quad (+0.0\sigma)$	$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.011 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	$5761.5 \pm 9.0 \quad (-0.4\sigma)$
$A_{100}^{\mathrm{PS}}$	$239 \pm 24 \quad (-0.1\sigma)$	$D_{40}$	$1224 \pm 12 \quad (-0.0\sigma)$	$f\sigma_8(0.15)$	$0.4564 \pm 0.0085 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$D_{220}$	$5721 \pm 39 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.752 \pm 0.012 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2535 \pm 14 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4768 \pm 0.0099 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7 \quad (-0.1\sigma)$	$D_{1420}$	$815.9 \pm 4.9 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.667 \pm 0.011 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5} \quad (+0.1\sigma)$	$D_{2000}$	$230.4 \pm 1.6 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.476 \pm 0.010 \quad (-0.2\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9669 \pm 0.0041 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.624 \pm 0.010 \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.41}_{-0.16} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245376^{+0.000062}_{-0.000055} \quad (+0.6\sigma)$	$f\sigma_8(0.61)$	$0.471 \pm 0.010 \quad (-0.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246703^{+0.000062}_{-0.000055} \quad (+0.6\sigma)$	$\sigma_8(0.61)$	$0.5940 \pm 0.0094 \quad (-0.1\sigma)$
$A^{\mathrm{kSZ}}$	$4.6^{+2.0}_{-4.2} \quad (-0.1\sigma)$	$10^5\mathrm{D}/\mathrm{H}$	$2.594 \pm 0.028 \quad (-0.7\sigma)$	$f\sigma_8(2.33)$	$0.2996 \pm 0.0047 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19 \quad (-0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.787 \pm 0.023 \quad (-0.4\sigma)$	$\sigma_8(2.33)$	$0.3085 \pm 0.0040 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$z_*$	$1089.90 \pm 0.25 \quad (-0.6\sigma)$	$f_{2000}^{143}$	$29.6 \pm 2.8 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10 \quad (+0.0\sigma)$	$r_*$	$144.67 \pm 0.28 \quad (-0.1\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.9 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_*$	$1.04112 \pm 0.00031 \quad (-0.1\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.0 \quad (-0.4\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.896 \pm 0.027 \quad (-0.1\sigma)$	$\chi_{\mathrm{small}}^2$	$396.8 \pm 1.6 \quad (-0.0\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$z_{\mathrm{drag}}$	$1059.78 \pm 0.32 \quad (+0.7\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.96 \pm 0.85 \quad (-0.1\sigma)$
$c_{TE}$	$0.9965 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.36 \pm 0.29 \quad (-0.2\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11514.4 \pm 5.6 \quad (+826.0\sigma)$
$c_{EE}$	$0.9921 \pm 0.0049$	$k_{\mathrm{D}}$	$0.14056 \pm 0.00034 \quad (+0.4\sigma)$	$\chi_{\mathrm{JLA}}^2$	$1035.39 \pm 0.93 \quad (-0.0\sigma)$
$H_0$	$68.19 \pm 0.83 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16085 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.048 \pm 0.065 \quad (-0.0\sigma)$
$\Omega_{\Lambda}$	$0.6941 \pm 0.0076 \quad (+0.1\sigma)$	$z_{\mathrm{eq}}$	$3382 \pm 28 \quad (-0.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.67 \pm 0.60 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}$	$0.3059 \pm 0.0076 \quad (-0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010322 \pm 0.000084 \quad (-0.1\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.5 \pm 1.0 \quad (-0.2\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1422 \pm 0.0012 \quad (-0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8169 \pm 0.0052 \quad (+0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.0969 \pm 0.0015 \quad (+0.0\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4513 \pm 0.0027 \quad (+0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.25 \pm 0.97 \quad (-0.2\sigma)$
$\sigma_8$	$0.814 \pm 0.013 \quad (-0.1\sigma)$	$H(0.15)$	$73.24 \pm 0.53 \quad (+0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11934.1 \pm 5.6 \quad (+834.9\sigma)$
$S_8$	$0.821 \pm 0.013 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$637.1 \pm 6.0 \quad (-0.1\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 12983.61; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.94; R - 1 = 0.00895$$



18.58 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02232 \pm 0.00014 \quad (+0.6\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4508 \pm 0.0059 \quad (-0.2\sigma)$	$H(0.38)$	$83.08 \pm 0.27 \quad (+0.3\sigma)$
$\Omega_c h^2$	$0.1193 \pm 0.0010 \quad (-0.2\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6063 \pm 0.0071 \quad (-0.2\sigma)$	$D_M(0.38)$	$1522 \pm 10 \quad (-0.2\sigma)$
$100\theta_{MC}$	$1.04091 \pm 0.00031 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.987 \pm 0.010 \quad (-0.2\sigma)$	$H(0.51)$	$89.68 \pm 0.24 \quad (+0.4\sigma)$
$\tau$	$0.0550^{+0.0053}_{-0.0074} \quad (+0.0\sigma)$	$r_{drag} h$	$100.5 \pm 1.2 \quad (+0.0\sigma)$	$D_M(0.51)$	$1974 \pm 11 \quad (-0.2\sigma)$
$w_0$	$-1.023 \pm 0.031 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.438 \pm 0.022 \quad (-0.2\sigma)$	$H(0.61)$	$95.23 \pm 0.25 \quad (+0.4\sigma)$
$\ln(10^{10} A_s)$	$3.043^{+0.011}_{-0.014} \quad (+0.0\sigma)$	$z_{re}$	$7.74^{+0.57}_{-0.73} \quad (-0.0\sigma)$	$D_M(0.61)$	$2299 \pm 11 \quad (-0.2\sigma)$
$n_s$	$0.9664 \pm 0.0039 \quad (+0.2\sigma)$	$10^9 A_s$	$2.097^{+0.023}_{-0.030} \quad (+0.0\sigma)$	$H(2.33)$	$235.74 \pm 0.59 \quad (+0.1\sigma)$
$y_{cal}$	$1.0006 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_s e^{-2\tau}$	$1.878 \pm 0.011 \quad (+0.0\sigma)$	$D_M(2.33)$	$5761.8 \pm 8.8 \quad (-0.4\sigma)$
$A_{100}^{PS}$	$240 \pm 24 \quad (-0.1\sigma)$	$D_{40}$	$1226 \pm 11 \quad (-0.0\sigma)$	$f\sigma_8(0.15)$	$0.4576 \pm 0.0068 \quad (-0.2\sigma)$
$A_{143}^{PS}$	$39 \pm 8 \quad (-0.2\sigma)$	$D_{220}$	$5724 \pm 39 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.754 \pm 0.010 \quad (-0.2\sigma)$
$A_{217}^{PS}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2536 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4783 \pm 0.0081 \quad (-0.2\sigma)$
$A_{217}^{CIB}$	$40^{+7}_{-7} \quad (-0.1\sigma)$	$D_{1420}$	$816.0 \pm 4.9 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6686 \pm 0.0092 \quad (-0.1\sigma)$
$A_{143}^{tSZ}$	$3.9^{+2.0}_{-2.5} \quad (+0.1\sigma)$	$D_{2000}$	$230.4 \pm 1.6 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4776 \pm 0.0084 \quad (-0.2\sigma)$
$r_{143 \times 217}^{PS}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$n_{s,0.002}$	$0.9664 \pm 0.0039 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6257 \pm 0.0085 \quad (-0.1\sigma)$
$r_{143 \times 217}^{CIB}$	$0.56^{+0.42}_{-0.15} \quad (-0.1\sigma)$	$Y_P$	$0.245375 \pm 0.000058 \quad (+0.6\sigma)$	$f\sigma_8(0.61)$	$0.4729 \pm 0.0084 \quad (-0.2\sigma)$
$\xi^{tSZ \times CIB}$	—	$Y_P^{BBN}$	$0.246701 \pm 0.000058 \quad (+0.6\sigma)$	$\sigma_8(0.61)$	$0.5954 \pm 0.0080 \quad (-0.1\sigma)$
$A^{kSZ}$	$4.6^{+1.9}_{-4.3} \quad (-0.1\sigma)$	$10^5 D/H$	$2.595 \pm 0.027 \quad (-0.7\sigma)$	$f\sigma_8(2.33)$	$0.3002 \pm 0.0040 \quad (-0.1\sigma)$
$A_{100}^{dust}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	Age/Gyr	$13.786 \pm 0.023 \quad (-0.4\sigma)$	$\sigma_8(2.33)$	$0.3090 \pm 0.0035 \quad (-0.1\sigma)$
$A_{143}^{dust}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$z_*$	$1089.92 \pm 0.23 \quad (-0.6\sigma)$	$f_{2000}^{143}$	$29.6 \pm 2.9 \quad (-0.3\sigma)$
$A_{217}^{dust}$	$0.97 \pm 0.10 \quad (+0.0\sigma)$	$r_*$	$144.64 \pm 0.25 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.9 \quad (-0.3\sigma)$
$A_{143 \times 217}^{dust}$	$1.02 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_*$	$1.04110 \pm 0.00031 \quad (-0.1\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.0 \quad (-0.4\sigma)$
$c_{100}$	$0.9976 \pm 0.0011 \quad (+0.1\sigma)$	$D_M(z_*)/\text{Gpc}$	$13.893 \pm 0.024 \quad (-0.1\sigma)$	$\chi_{lensing}^2$	$9.20 \pm 0.69 \quad (-0.1\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$z_{drag}$	$1059.78 \pm 0.31 \quad (+0.6\sigma)$	$\chi_{small}^2$	$396.9 \pm 1.6 \quad (-0.0\sigma)$
$c_{TE}$	$0.9965 \pm 0.0049$	$r_{drag}$	$147.32 \pm 0.26 \quad (-0.3\sigma)$	$\chi_{lowl}^2$	$23.07 \pm 0.80 \quad (-0.1\sigma)$
$c_{EE}$	$0.9921 \pm 0.0050$	$k_D$	$0.14059 \pm 0.00032 \quad (+0.5\sigma)$	$\chi_{CamSpec}^2$	$11514.0 \pm 5.5 \quad (+867.1\sigma)$
$H_0$	$68.24 \pm 0.82 \quad (+0.1\sigma)$	$100\theta_D$	$0.16084 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{JLA}^2$	$1035.35 \pm 0.88 \quad (-0.0\sigma)$
$\Omega_\Lambda$	$0.6943 \pm 0.0076 \quad (+0.1\sigma)$	$z_{eq}$	$3385 \pm 24 \quad (-0.1\sigma)$	$\chi_{6DF}^2$	$0.047 \pm 0.064 \quad (-0.0\sigma)$
$\Omega_m$	$0.3057 \pm 0.0076 \quad (-0.1\sigma)$	$k_{eq}$	$0.010331 \pm 0.000073 \quad (-0.1\sigma)$	$\chi_{MGS}^2$	$1.68 \pm 0.60 \quad (+0.0\sigma)$
$\Omega_m h^2$	$0.1423 \pm 0.0010 \quad (-0.1\sigma)$	$100\theta_{eq}$	$0.8163 \pm 0.0045 \quad (+0.1\sigma)$	$\chi_{DR12BAO}^2$	$4.58 \pm 0.97 \quad (-0.1\sigma)$
$\Omega_m h^3$	$0.0971 \pm 0.0014 \quad (+0.0\sigma)$	$100\theta_{s,eq}$	$0.4510 \pm 0.0023 \quad (+0.1\sigma)$	$\chi_{prior}^2$	$7.8 \pm 3.5 \quad (+0.1\sigma)$
$\sigma_8$	$0.816 \pm 0.011 \quad (-0.2\sigma)$	$H(0.15)$	$73.26 \pm 0.52 \quad (+0.2\sigma)$	$\chi_{CMB}^2$	$11943.1 \pm 5.6 \quad (+839.2\sigma)$
$S_8$	$0.823 \pm 0.011 \quad (-0.2\sigma)$	$D_M(0.15)$	$636.8 \pm 6.0 \quad (-0.1\sigma)$	$\chi_{BAO}^2$	$6.30 \pm 0.89 \quad (-0.1\sigma)$

$$\bar{\chi}_{eff}^2 = 12992.59; \Delta\bar{\chi}_{eff}^2 = 4451.02; R - 1 = 0.01370$$



18.59     base\_w\_plikHM\_TT\_lowl\_lowE\_BAO\_Riess18\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022206	$0.02220 \pm 0.00020$	$\sigma_8/h^{0.5}$	0.9958	$0.994 \pm 0.016$	$D_{\text{M}}(0.38)$	1511.7	$1511.9 \pm 9.4$
$\Omega_{\text{c}}h^2$	0.11980	$0.1197 \pm 0.0015$	$r_{\text{drag}}h$	102.07	$102.1 \pm 1.1$	$H(0.51)$	89.548	$89.57 \pm 0.35$
$100\theta_{\text{MC}}$	1.040896	$1.04093 \pm 0.00044$	$\langle d^2 \rangle^{1/2}$	2.4495	$2.448 \pm 0.034$	$D_{\text{M}}(0.51)$	1963.6	$1964 \pm 11$
$\tau$	0.0531	$0.0530 \pm 0.0080$	$z_{\text{re}}$	7.58	$7.55 \pm 0.82$	$H(0.61)$	94.981	$95.00 \pm 0.36$
$w_0$	-1.0670	$-1.064 \pm 0.034$	$10^9 A_{\text{s}}$	2.0921	$2.091 \pm 0.035$	$D_{\text{M}}(0.61)$	2288.8	$2289 \pm 11$
$\ln(10^{10} A_{\text{s}})$	3.0408	$3.040 \pm 0.017$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8814	$1.881 \pm 0.012$	$H(2.33)$	235.31	$235.27 \pm 0.76$
$n_{\text{s}}$	0.96558	$0.9650 \pm 0.0047$	$D_{40}$	1226.7	$1229 \pm 13$	$D_{\text{M}}(2.33)$	5763.7	$5764 \pm 12$
$y_{\text{cal}}$	1.00039	$1.0005 \pm 0.0025$	$D_{220}$	5715.9	$5721 \pm 40$	$f\sigma_8(0.15)$	0.4626	$0.461 \pm 0.010$
$A_{217}^{\text{CIB}}$	48.5	$48 \pm 7$	$D_{810}$	2537.5	$2537 \pm 14$	$\sigma_8(0.15)$	0.7670	$0.765 \pm 0.013$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.34	—	$D_{1420}$	816.00	$815.3 \pm 5.0$	$f\sigma_8(0.38)$	0.4872	$0.486 \pm 0.012$
$A_{143}^{\text{tSZ}}$	7.01	$5.1 \pm 2.0$	$D_{2000}$	230.24	$230.0 \pm 1.7$	$\sigma_8(0.38)$	0.6803	$0.679 \pm 0.011$
$A_{100}^{\text{PS}}$	254.0	$262 \pm 28$	$n_{\text{s},0.002}$	0.96558	$0.9650 \pm 0.0047$	$f\sigma_8(0.51)$	0.4875	$0.486 \pm 0.012$
$A_{143}^{\text{PS}}$	49.3	$48 \pm 8$	$Y_{\text{P}}$	0.245328	$0.245323^{+0.000090}_{-0.000073}$	$\sigma_8(0.51)$	0.6365	$0.635 \pm 0.010$
$A_{143 \times 217}^{\text{PS}}$	47.2	$43 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	0.246655	$0.246650^{+0.000091}_{-0.000073}$	$f\sigma_8(0.61)$	0.4832	$0.482 \pm 0.011$
$A_{217}^{\text{PS}}$	119.5	$115 \pm 10$	$10^5 \text{D}/\text{H}$	2.6168	$2.618 \pm 0.037$	$\sigma_8(0.61)$	0.6055	$0.6043 \pm 0.0098$
$A^{\text{kSZ}}$	0.00	$< 4.70$	Age/Gyr	13.7738	$13.775 \pm 0.027$	$f\sigma_8(2.33)$	0.30535	$0.3048 \pm 0.0048$
$A_{100}^{\text{dustTT}}$	8.92	$8.9 \pm 1.8$	$z_*$	1090.110	$1090.11 \pm 0.32$	$\sigma_8(2.33)$	0.31322	$0.3127 \pm 0.0042$
$A_{143}^{\text{dustTT}}$	10.83	$10.7 \pm 1.8$	$r_*$	144.607	$144.65 \pm 0.37$	$f_{2000}^{143}$	30.14	$30.8 \pm 2.9$
$A_{143 \times 217}^{\text{dustTT}}$	19.45	$18.3 \pm 3.3$	$100\theta_*$	1.041101	$1.04113 \pm 0.00043$	$f_{2000}^{143 \times 217}$	33.09	$33.3 \pm 2.0$
$A_{217}^{\text{dustTT}}$	94.8	$93.5 \pm 7.3$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8898	$13.894 \pm 0.035$	$f_{2000}^{217}$	107.53	$107.9 \pm 1.9$
$c_{100}$	0.99965	$0.99960 \pm 0.00062$	$z_{\text{drag}}$	1059.551	$1059.52 \pm 0.43$	$\chi_{\text{small}}^2$	395.89	$397.0 \pm 1.8$
$c_{217}$	0.99826	$0.99825 \pm 0.00062$	$r_{\text{drag}}$	147.326	$147.37 \pm 0.38$	$\chi_{\text{lowl}}^2$	23.08	$23.28 \pm 0.99$
$H_0$	69.28	$69.25 \pm 0.75$	$k_{\text{D}}$	0.140492	$0.14044 \pm 0.00046$	$\chi_{\text{plik}}^2$	758.8	$771.1 \pm 5.3$
$\Omega_{\Lambda}$	0.7028	$0.7028 \pm 0.0070$	$100\theta_{\text{D}}$	0.160991	$0.16101 \pm 0.00025$	$\chi_{\text{H073p45}}^2$	6.30	$6.6 \pm 2.3$
$\Omega_{\text{m}}$	0.2972	$0.2972 \pm 0.0070$	$z_{\text{eq}}$	3393.6	$3390 \pm 35$	$\chi_{\text{JLA}}^2$	1036.11	$1036.6 \pm 1.9$
$\Omega_{\text{m}}h^2$	0.14265	$0.1425 \pm 0.0015$	$k_{\text{eq}}$	0.010358	$0.01035 \pm 0.00011$	$\chi_{6\text{DF}}^2$	0.056	$0.098 \pm 0.11$
$\Omega_{\text{m}}h^3$	0.09884	$0.0987 \pm 0.0015$	$100\theta_{\text{eq}}$	0.8144	$0.8151 \pm 0.0065$	$\chi_{\text{MGS}}^2$	2.35	$2.41 \pm 0.64$
$\sigma_8$	0.8289	$0.827 \pm 0.015$	$100\theta_{\text{s,eq}}$	0.45006	$0.4504 \pm 0.0033$	$\chi_{\text{DR12BAO}}^2$	4.30	$4.78 \pm 0.97$
$S_8$	0.8250	$0.823 \pm 0.016$	$H(0.15)$	73.828	$73.82 \pm 0.49$	$\chi_{\text{prior}}^2$	1.36	$7.3 \pm 3.6$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4519	$0.4509 \pm 0.0089$	$D_{\text{M}}(0.15)$	629.6	$629.8 \pm 5.4$	$\chi_{\text{BAO}}^2$	6.70	$7.3 \pm 1.2$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6120	$0.611 \pm 0.011$	$H(0.38)$	83.142	$83.15 \pm 0.35$	$\chi_{\text{CMB}}^2$	1177.8	$1191.4 \pm 5.4$

Best-fit  $\chi_{\text{eff}}^2 = 2228.28$ ;  $\bar{\chi}_{\text{eff}}^2 = 2249.11$ ;  $R - 1 = 0.00515$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.06 MGS: 2.35 DR12BAO: 4.30 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.89 commander\_dx12\_v3.2.29: 23.08 plik\_rd12\_HM\_v22\_TT: 758.84  
Hubble - H073p45: 6.30 SN - JLA Pantheon18: 1036.11



18.60 base\_w\_plikHM\_TT\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022224	$0.02221 \pm 0.00019$	$\sigma_8/h^{0.5}$	0.9924	$0.993 \pm 0.011$	$D_M(0.38)$	1510.7	$1511.5 \pm 9.3$
$\Omega_c h^2$	0.11947	$0.1196 \pm 0.0013$	$r_{\text{drag}} h$	102.15	$102.1 \pm 1.1$	$H(0.51)$	89.615	$89.58 \pm 0.31$
$100\theta_{\text{MC}}$	1.040930	$1.04093 \pm 0.00043$	$\langle d^2 \rangle^{1/2}$	2.4440	$2.447 \pm 0.024$	$D_M(0.51)$	1962.3	$1963 \pm 10$
$\tau$	0.0529	$0.0532 \pm 0.0076$	$z_{\text{re}}$	7.55	$7.57 \pm 0.77$	$H(0.61)$	95.045	$95.02 \pm 0.32$
$w_0$	-1.0626	$-1.064 \pm 0.031$	$10^9 A_s$	2.0901	$2.092 \pm 0.031$	$D_M(0.61)$	2287.2	$2288 \pm 11$
$\ln(10^{10} A_s)$	3.0398	$3.040 \pm 0.015$	$10^9 A_s e^{-2\tau}$	1.8801	$1.880 \pm 0.011$	$H(2.33)$	235.16	$235.23 \pm 0.68$
$n_s$	0.96567	$0.9650 \pm 0.0043$	$D_{40}$	1226.9	$1229 \pm 12$	$D_M(2.33)$	5762.1	$5763 \pm 12$
$y_{\text{cal}}$	1.00046	$1.0005 \pm 0.0025$	$D_{220}$	5721.3	$5722 \pm 40$	$f\sigma_8(0.15)$	0.4602	$0.4610 \pm 0.0077$
$A_{217}^{\text{CIB}}$	50.3	$48 \pm 7$	$D_{810}$	2537.0	$2536 \pm 13$	$\sigma_8(0.15)$	0.7646	$0.765 \pm 0.010$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.09	—	$D_{1420}$	815.8	$815.3 \pm 5.0$	$f\sigma_8(0.38)$	0.4847	$0.4854 \pm 0.0088$
$A_{143}^{\text{tSZ}}$	7.18	$5.1 \pm 2.0$	$D_{2000}$	230.14	$229.9 \pm 1.7$	$\sigma_8(0.38)$	0.6783	$0.6787 \pm 0.0091$
$A_{100}^{\text{PS}}$	256.1	$263 \pm 28$	$n_{s,0.002}$	0.96567	$0.9650 \pm 0.0043$	$f\sigma_8(0.51)$	0.4852	$0.4858 \pm 0.0090$
$A_{143}^{\text{PS}}$	45.4	$48 \pm 8$	$Y_{\text{P}}$	0.245336	$0.245327^{+0.000088}_{-0.000073}$	$\sigma_8(0.51)$	0.6348	$0.6351 \pm 0.0084$
$A_{143 \times 217}^{\text{PS}}$	40.4	$43 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	0.246662	$0.246653^{+0.000088}_{-0.000073}$	$f\sigma_8(0.61)$	0.4810	$0.4815 \pm 0.0088$
$A_{217}^{\text{PS}}$	116.4	$115 \pm 10$	$10^5 D/H$	2.6133	$2.616 \pm 0.037$	$\sigma_8(0.61)$	0.6039	$0.6042 \pm 0.0079$
$A^{\text{kSZ}}$	0.00	$< 4.70$	Age/Gyr	13.7719	$13.774 \pm 0.027$	$f\sigma_8(2.33)$	0.30462	$0.3047 \pm 0.0039$
$A_{100}^{\text{dustTT}}$	8.84	$8.9 \pm 1.8$	$z_*$	1090.059	$1090.09 \pm 0.30$	$\sigma_8(2.33)$	0.31264	$0.3127 \pm 0.0034$
$A_{143}^{\text{dustTT}}$	10.79	$10.7 \pm 1.8$	$r_*$	144.680	$144.66 \pm 0.31$	$\chi_{\text{lensing}}^2$	8.675	$9.19 \pm 0.74$
$A_{143 \times 217}^{\text{dustTT}}$	18.91	$18.3 \pm 3.3$	$100\theta_*$	1.041131	$1.04113 \pm 0.00042$	$\chi_{\text{small}}^2$	395.85	$396.9 \pm 1.6$
$A_{217}^{\text{dustTT}}$	93.7	$93.5 \pm 7.3$	$D_M(z_*)/\text{Gpc}$	13.8964	$13.895 \pm 0.030$	$\chi_{\text{lowl}}^2$	23.07	$23.27 \pm 0.88$
$c_{100}$	0.99964	$0.99960 \pm 0.00061$	$z_{\text{drag}}$	1059.551	$1059.53 \pm 0.43$	$\chi_{\text{plik}}^2$	758.91	$770.9 \pm 5.1$
$c_{217}$	0.99827	$0.99825 \pm 0.00062$	$r_{\text{drag}}$	147.395	$147.38 \pm 0.33$	$\chi_{\text{H073p45}}^2$	6.23	$6.5 \pm 2.3$
$H_0$	69.31	$69.27 \pm 0.74$	$k_{\text{D}}$	0.140436	$0.14043 \pm 0.00043$	$\chi_{\text{JLA}}^2$	1036.03	$1036.6 \pm 1.8$
$\Omega_{\Lambda}$	0.7037	$0.7031 \pm 0.0069$	$100\theta_{\text{D}}$	0.160979	$0.16100 \pm 0.00025$	$\chi_{6\text{DF}}^2$	0.067	$0.10 \pm 0.11$
$\Omega_{\text{m}}$	0.2963	$0.2969 \pm 0.0069$	$z_{\text{eq}}$	3386.1	$3388 \pm 29$	$\chi_{\text{MGS}}^2$	2.43	$2.44 \pm 0.63$
$\Omega_{\text{m}} h^2$	0.14234	$0.1424 \pm 0.0012$	$k_{\text{eq}}$	0.010335	$0.010341 \pm 0.000088$	$\chi_{\text{DR12BAO}}^2$	4.18	$4.66 \pm 0.78$
$\Omega_{\text{m}} h^3$	0.09865	$0.0987 \pm 0.0014$	$100\theta_{\text{eq}}$	0.8158	$0.8154 \pm 0.0053$	$\chi_{\text{prior}}^2$	1.55	$7.2 \pm 3.6$
$\sigma_8$	0.8261	$0.827 \pm 0.011$	$100\theta_{s,\text{eq}}$	0.45080	$0.4506 \pm 0.0028$	$\chi_{\text{CMB}}^2$	1186.5	$1200.2 \pm 5.3$
$S_8$	0.8211	$0.822 \pm 0.012$	$H(0.15)$	73.877	$73.84 \pm 0.49$	$\chi_{\text{BAO}}^2$	6.68	$7.2 \pm 1.1$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4497	$0.4504 \pm 0.0066$	$D_M(0.15)$	629.3	$629.6 \pm 5.3$			
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6095	$0.6102 \pm 0.0079$	$H(0.38)$	83.209	$83.17 \pm 0.32$			

Best-fit  $\chi_{\text{eff}}^2 = 2237.00$ ;  $\bar{\chi}_{\text{eff}}^2 = 2257.74$ ;  $R - 1 = 0.00918$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.07 MGS: 2.43 DR12BAO: 4.18 CMB - smicadx12\_Dec5.ftl\_mv2.ndclpp\_p.teb\_consext8: 8.68 small\_100x143.offlike5\_EE\_Aplanck\_B: 395.85 commander\_dx12.v3.2.29: 23.07 plik\_rd12\_HM.v22\_TT: 758.91 Hubble - H073p45: 6.23 SN - JLA Pantheon18: 1036.03



18.61 base\_w\_plikHM\_TT\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02221 \pm 0.00020$	$\sigma_8/h^{0.5}$	$0.995 \pm 0.015$	$D_M(0.38)$	$1511.8 \pm 9.4$
$\Omega_c h^2$	$0.1196 \pm 0.0015$	$r_{\text{drag}} h$	$102.1 \pm 1.1$	$H(0.51)$	$89.58 \pm 0.34$
$100\theta_{\text{MC}}$	$1.04094 \pm 0.00044$	$\langle d^2 \rangle^{1/2}$	$2.451 \pm 0.033$	$D_M(0.51)$	$1964 \pm 11$
$\tau$	$0.0545^{+0.0048}_{-0.0082}$	$z_{\text{re}}$	$7.71^{+0.53}_{-0.83}$	$H(0.61)$	$95.01 \pm 0.35$
$w_0$	$-1.064 \pm 0.034$	$10^9 A_s$	$2.097^{+0.024}_{-0.035}$	$D_M(0.61)$	$2289 \pm 11$
$\ln(10^{10} A_s)$	$3.043^{+0.012}_{-0.016}$	$10^9 A_s e^{-2\tau}$	$1.881 \pm 0.012$	$H(2.33)$	$235.26 \pm 0.76$
$n_s$	$0.9651 \pm 0.0047$	$D_{40}$	$1229 \pm 13$	$D_M(2.33)$	$5763 \pm 12$
$y_{\text{cal}}$	$1.0005 \pm 0.0025$	$D_{220}$	$5721 \pm 40$	$f\sigma_8(0.15)$	$0.462 \pm 0.010$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{810}$	$2536 \pm 14$	$\sigma_8(0.15)$	$0.766 \pm 0.013$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$815.3 \pm 5.0$	$f\sigma_8(0.38)$	$0.486 \pm 0.012$
$A_{143}^{\text{tSZ}}$	$5.2 \pm 2.0$	$D_{2000}$	$230.0 \pm 1.7$	$\sigma_8(0.38)$	$0.680 \pm 0.011$
$A_{100}^{\text{PS}}$	$262 \pm 28$	$n_{s,0.002}$	$0.9651 \pm 0.0047$	$f\sigma_8(0.51)$	$0.487 \pm 0.012$
$A_{143}^{\text{PS}}$	$48 \pm 8$	$Y_{\text{P}}$	$0.245326^{+0.000089}_{-0.000073}$	$\sigma_8(0.51)$	$0.636 \pm 0.010$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	$0.246652^{+0.000089}_{-0.000073}$	$f\sigma_8(0.61)$	$0.482 \pm 0.011$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$10^5 \text{D}/\text{H}$	$2.617 \pm 0.037$	$\sigma_8(0.61)$	$0.6050 \pm 0.0096$
$A^{\text{kSZ}}$	$< 4.65$	$\text{Age}/\text{Gyr}$	$13.774 \pm 0.027$	$f\sigma_8(2.33)$	$0.3051 \pm 0.0046$
$A_{100}^{\text{dustTT}}$	$9.0 \pm 1.8$	$z_*$	$1090.09 \pm 0.32$	$\sigma_8(2.33)$	$0.3131 \pm 0.0040$
$A_{143}^{\text{dustTT}}$	$10.7 \pm 1.8$	$r_*$	$144.66 \pm 0.37$	$f_{2000}^{143}$	$30.8 \pm 2.9$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04114 \pm 0.00043$	$f_{2000}^{143 \times 217}$	$33.2 \pm 2.0$
$A_{217}^{\text{dustTT}}$	$93.5 \pm 7.3$	$D_M(z_*)/\text{Gpc}$	$13.894 \pm 0.035$	$f_{2000}^{217}$	$107.8 \pm 1.9$
$c_{100}$	$0.99960 \pm 0.00062$	$z_{\text{drag}}$	$1059.53 \pm 0.43$	$\chi_{\text{simall}}^2$	$396.9 \pm 1.8$
$c_{217}$	$0.99825 \pm 0.00062$	$r_{\text{drag}}$	$147.38 \pm 0.38$	$\chi_{\text{lowl}}^2$	$23.29 \pm 0.99$
$H_0$	$69.25 \pm 0.75$	$k_{\text{D}}$	$0.14044 \pm 0.00046$	$\chi_{\text{plik}}^2$	$770.9 \pm 5.3$
$\Omega_{\Lambda}$	$0.7028 \pm 0.0070$	$100\theta_{\text{D}}$	$0.16100 \pm 0.00025$	$\chi_{\text{H073p45}}^2$	$6.6 \pm 2.3$
$\Omega_{\text{m}}$	$0.2972 \pm 0.0070$	$z_{\text{eq}}$	$3389 \pm 35$	$\chi_{\text{JLA}}^2$	$1036.6 \pm 1.9$
$\Omega_{\text{m}} h^2$	$0.1425 \pm 0.0014$	$k_{\text{eq}}$	$0.01034 \pm 0.00011$	$\chi_{6\text{DF}}^2$	$0.099 \pm 0.11$
$\Omega_{\text{m}} h^3$	$0.0987 \pm 0.0015$	$100\theta_{\text{eq}}$	$0.8153 \pm 0.0065$	$\chi_{\text{MGS}}^2$	$2.42 \pm 0.65$
$\sigma_8$	$0.828 \pm 0.014$	$100\theta_{\text{s,eq}}$	$0.4505 \pm 0.0033$	$\chi_{\text{DR12BAO}}^2$	$4.76 \pm 0.95$
$S_8$	$0.824 \pm 0.016$	$H(0.15)$	$73.82 \pm 0.49$	$\chi_{\text{prior}}^2$	$7.3 \pm 3.6$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4513 \pm 0.0088$	$D_M(0.15)$	$629.8 \pm 5.4$	$\chi_{\text{BAO}}^2$	$7.3 \pm 1.2$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.611 \pm 0.011$	$H(0.38)$	$83.16 \pm 0.35$	$\chi_{\text{CMB}}^2$	$1191.1 \pm 5.3$

$$\bar{\chi}_{\text{eff}}^2 = 2248.83; R - 1 = 0.00554$$



18.62 base\_w\_plikHM\_TT\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02222 \pm 0.00019$	$r_{\text{drag}} h$	$102.1 \pm 1.1$	$D_{\text{M}}(0.51)$	$1963 \pm 10$
$\Omega_c h^2$	$0.1195 \pm 0.0012$	$\langle d^2 \rangle^{1/2}$	$2.449 \pm 0.024$	$H(0.61)$	$95.04 \pm 0.31$
$100\theta_{\text{MC}}$	$1.04094 \pm 0.00043$	$z_{\text{re}}$	$7.69^{+0.52}_{-0.80}$	$D_{\text{M}}(0.61)$	$2288 \pm 11$
$\tau$	$0.0544^{+0.0048}_{-0.0079}$	$10^9 A_{\text{s}}$	$2.096^{+0.022}_{-0.031}$	$H(2.33)$	$235.20 \pm 0.67$
$w_0$	$-1.062 \pm 0.031$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.880 \pm 0.011$	$D_{\text{M}}(2.33)$	$5763 \pm 12$
$\ln(10^{10} A_{\text{s}})$	$3.043^{+0.011}_{-0.015}$	$D_{40}$	$1228 \pm 12$	$f\sigma_8(0.15)$	$0.4609 \pm 0.0077$
$n_{\text{s}}$	$0.9652 \pm 0.0042$	$D_{220}$	$5722 \pm 40$	$\sigma_8(0.15)$	$0.765 \pm 0.010$
$y_{\text{cal}}$	$1.0005 \pm 0.0025$	$D_{810}$	$2536 \pm 13$	$f\sigma_8(0.38)$	$0.4854 \pm 0.0088$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{1420}$	$815.3 \pm 5.0$	$\sigma_8(0.38)$	$0.6790 \pm 0.0091$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{2000}$	$230.0 \pm 1.7$	$f\sigma_8(0.51)$	$0.4858 \pm 0.0089$
$A_{143}^{\text{tSZ}}$	$5.2 \pm 2.0$	$n_{\text{s},0.002}$	$0.9652 \pm 0.0042$	$\sigma_8(0.51)$	$0.6354 \pm 0.0083$
$A_{100}^{\text{PS}}$	$262 \pm 28$	$Y_{\text{P}}$	$0.245330^{+0.000086}_{-0.000072}$	$f\sigma_8(0.61)$	$0.4815 \pm 0.0088$
$A_{143}^{\text{PS}}$	$48 \pm 8$	$Y_{\text{P}}^{\text{BBN}}$	$0.246656^{+0.000087}_{-0.000073}$	$\sigma_8(0.61)$	$0.6045 \pm 0.0078$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9$	$10^5 \text{D}/\text{H}$	$2.615 \pm 0.036$	$f\sigma_8(2.33)$	$0.3049 \pm 0.0039$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$\text{Age}/\text{Gyr}$	$13.773 \pm 0.027$	$\sigma_8(2.33)$	$0.3129 \pm 0.0034$
$A^{\text{kSZ}}$	$< 4.65$	$z_*$	$1090.07 \pm 0.30$	$f_{2000}^{143}$	$30.8 \pm 2.9$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$r_*$	$144.68 \pm 0.31$	$f_{2000}^{143 \times 217}$	$33.3 \pm 2.0$
$A_{143}^{\text{dustTT}}$	$10.7 \pm 1.8$	$100\theta_*$	$1.04114 \pm 0.00043$	$f_{2000}^{217}$	$107.9 \pm 1.9$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3 \pm 3.3$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.896 \pm 0.030$	$\chi_{\text{lensing}}^2$	$9.17 \pm 0.72$
$A_{217}^{\text{dustTT}}$	$93.5 \pm 7.3$	$z_{\text{drag}}$	$1059.54 \pm 0.43$	$\chi_{\text{simall}}^2$	$396.8 \pm 1.7$
$c_{100}$	$0.99960 \pm 0.00061$	$r_{\text{drag}}$	$147.40 \pm 0.33$	$\chi_{\text{lowl}}^2$	$23.26 \pm 0.88$
$c_{217}$	$0.99825 \pm 0.00062$	$k_{\text{D}}$	$0.14042 \pm 0.00042$	$\chi_{\text{plik}}^2$	$770.7 \pm 5.1$
$H_0$	$69.27 \pm 0.75$	$100\theta_{\text{D}}$	$0.16099 \pm 0.00025$	$\chi_{\text{H073p45}}^2$	$6.5 \pm 2.3$
$\Omega_{\Lambda}$	$0.7032 \pm 0.0069$	$z_{\text{eq}}$	$3386 \pm 28$	$\chi_{\text{JLA}}^2$	$1036.5 \pm 1.8$
$\Omega_{\text{m}}$	$0.2968 \pm 0.0069$	$k_{\text{eq}}$	$0.010336 \pm 0.000086$	$\chi_{6\text{DF}}^2$	$0.10 \pm 0.12$
$\Omega_{\text{m}} h^2$	$0.1424 \pm 0.0012$	$100\theta_{\text{eq}}$	$0.8158 \pm 0.0052$	$\chi_{\text{MGS}}^2$	$2.46 \pm 0.63$
$\Omega_{\text{m}} h^3$	$0.0986 \pm 0.0013$	$100\theta_{\text{s,eq}}$	$0.4508 \pm 0.0027$	$\chi_{\text{DR12BAO}}^2$	$4.63 \pm 0.76$
$\sigma_8$	$0.827 \pm 0.011$	$H(0.15)$	$73.85 \pm 0.49$	$\chi_{\text{prior}}^2$	$7.2 \pm 3.6$
$S_8$	$0.822 \pm 0.012$	$D_{\text{M}}(0.15)$	$629.6 \pm 5.4$	$\chi_{\text{CMB}}^2$	$1200.0 \pm 5.3$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	$0.4505 \pm 0.0066$	$H(0.38)$	$83.19 \pm 0.31$	$\chi_{\text{BAO}}^2$	$7.2 \pm 1.1$
$\sigma_8 \Omega_{\text{m}}^{0.25}$	$0.6104 \pm 0.0078$	$D_{\text{M}}(0.38)$	$1511.3 \pm 9.3$		
$\sigma_8/h^{0.5}$	$0.994 \pm 0.011$	$H(0.51)$	$89.60 \pm 0.30$		

$$\bar{\chi}_{\text{eff}}^2 = 2257.48; R - 1 = 0.01061$$



18.63 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022427	$0.02240 \pm 0.00014$ (+1.0 $\sigma$ )	$\sigma_8$	0.8277	$0.828 \pm 0.013$ (+0.1 $\sigma$ )	$D_M(0.15)$	628.7	$628.9 \pm 5.3$ (−0.2 $\sigma$ )
$\Omega_c h^2$	0.11971	$0.1198 \pm 0.0012$ (+0.1 $\sigma$ )	$S_8$	0.8233	$0.824 \pm 0.013$ (+0.1 $\sigma$ )	$H(0.38)$	83.327	$83.29 \pm 0.28$ (+0.4 $\sigma$ )
$100\theta_{MC}$	1.040988	$1.04097 \pm 0.00030$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4510	$0.4515 \pm 0.0072$ (+0.1 $\sigma$ )	$D_M(0.38)$	1509.1	$1509.6 \pm 9.0$ (−0.3 $\sigma$ )
$\tau$	0.0546	$0.0548 \pm 0.0079$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6109	$0.6116 \pm 0.0089$ (+0.1 $\sigma$ )	$H(0.51)$	89.753	$89.71 \pm 0.26$ (+0.4 $\sigma$ )
$w_0$	−1.0606	$−1.063 \pm 0.031$ (+0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9939	$0.995 \pm 0.013$ (+0.1 $\sigma$ )	$D_M(0.51)$	1959.9	$1960.6 \pm 9.9$ (−0.3 $\sigma$ )
$\ln(10^{10} A_s)$	3.0442	$3.045 \pm 0.016$ (+0.3 $\sigma$ )	$r_{drag} h$	102.02	$102.0 \pm 1.1$ (−0.0 $\sigma$ )	$H(0.61)$	95.198	$95.16 \pm 0.27$ (+0.4 $\sigma$ )
$n_s$	0.96659	$0.9658 \pm 0.0040$ (+0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4480	$2.451 \pm 0.029$ (+0.1 $\sigma$ )	$D_M(0.61)$	2284.3	$2285 \pm 10$ (−0.3 $\sigma$ )
$y_{cal}$	1.00033	$1.0006 \pm 0.0025$ (+0.0 $\sigma$ )	$z_{re}$	7.68	$7.69 \pm 0.79$ (+0.2 $\sigma$ )	$H(2.33)$	235.55	$235.57 \pm 0.60$ (+0.4 $\sigma$ )
$A_{217}^{CIB}$	47.0	$47 \pm 7$ (−0.2 $\sigma$ )	$10^9 A_s$	2.0992	$2.101^{+0.031}_{-0.035}$ (+0.3 $\sigma$ )	$D_M(2.33)$	5753.4	$5754.9 \pm 8.8$ (−0.7 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.52	—	$10^9 A_s e^{-2\tau}$	1.8821	$1.882 \pm 0.011$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4613	$0.4620 \pm 0.0084$ (+0.0 $\sigma$ )
$A_{143}^{tSZ}$	7.14	$5.5^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$D_{40}$	1227.2	$1229 \pm 12$ (+0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7659	$0.767 \pm 0.012$ (+0.1 $\sigma$ )
$A_{100}^{PS}$	249.5	$258 \pm 28$ (−0.2 $\sigma$ )	$D_{220}$	5734.0	$5735 \pm 39$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4856	$0.4864 \pm 0.0096$ (+0.0 $\sigma$ )
$A_{143}^{PS}$	48.8	$45 \pm 8$ (−0.4 $\sigma$ )	$D_{810}$	2539.9	$2539 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6795	$0.680 \pm 0.010$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{PS}$	49.7	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{1420}$	818.16	$817.6 \pm 4.7$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.4860	$0.4868 \pm 0.0097$ (+0.1 $\sigma$ )
$A_{217}^{PS}$	120.0	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	231.33	$231.1 \pm 1.6$ (+0.6 $\sigma$ )	$\sigma_8(0.51)$	0.6359	$0.6364 \pm 0.0095$ (+0.1 $\sigma$ )
$A^{kSZ}$	0.01	$< 4.12$ (−0.2 $\sigma$ )	$n_{s,0.002}$	0.96659	$0.9658 \pm 0.0040$ (+0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.4818	$0.4825 \pm 0.0096$ (+0.1 $\sigma$ )
$A_{100}^{dustTT}$	8.85	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P$	0.245418	$0.245406^{+0.000057}_{-0.000051}$ (+1.0 $\sigma$ )	$\sigma_8(0.61)$	0.6050	$0.6054 \pm 0.0089$ (+0.1 $\sigma$ )
$A_{143}^{dustTT}$	11.02	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246745	$0.246732^{+0.000057}_{-0.000051}$ (+1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.30515	$0.3053 \pm 0.0044$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.94	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5749	$2.580 \pm 0.026$ (−1.0 $\sigma$ )	$\sigma_8(2.33)$	0.31322	$0.3134 \pm 0.0039$ (+0.2 $\sigma$ )
$A_{217}^{dustTT}$	95.0	$93.7 \pm 7.3$ (+0.0 $\sigma$ )	Age/Gyr	13.7518	$13.755 \pm 0.021$ (−0.7 $\sigma$ )	$f_{2000}^{143}$	28.72	$29.3 \pm 2.7$ (−0.5 $\sigma$ )
$A_{100}^{dustTE}$	0.1138	$0.114 \pm 0.038$	$z_*$	1089.821	$1089.86 \pm 0.24$ (−0.8 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.94	$32.0 \pm 1.8$ (−0.6 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1344	$0.135 \pm 0.030$	$r_*$	144.463	$144.47 \pm 0.26$ (−0.5 $\sigma$ )	$f_{2000}^{217}$	106.43	$106.9 \pm 1.8$ (−0.5 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.482	$0.481 \pm 0.085$	$100\theta_*$	1.041169	$1.04115 \pm 0.00030$ (+0.0 $\sigma$ )	$\chi_{small}^2$	396.06	$397.2 \pm 2.0$ (+0.1 $\sigma$ )
$A_{143}^{dustTE}$	0.224	$0.224 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	13.8750	$13.876 \pm 0.025$ (−0.5 $\sigma$ )	$\chi_{lowl}^2$	23.05	$23.25 \pm 0.87$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.664	$0.665 \pm 0.080$	$z_{drag}$	1060.047	$1059.99 \pm 0.29$ (+1.1 $\sigma$ )	$\chi_{plik}^2$	2344.5	$2359.1 \pm 5.8$ (+298.2 $\sigma$ )
$A_{217}^{dustTE}$	2.086	$2.08 \pm 0.27$	$r_{drag}$	147.105	$147.12 \pm 0.27$ (−0.7 $\sigma$ )	$\chi_{H073p45}^2$	6.09	$6.3 \pm 2.2$ (−0.1 $\sigma$ )
$c_{100}$	0.99971	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$k_D$	0.140896	$0.14086 \pm 0.00030$ (+0.9 $\sigma$ )	$\chi_{JLA}^2$	1035.90	$1036.5 \pm 1.9$ (−0.0 $\sigma$ )
$c_{217}$	0.99819	$0.99819 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_D$	0.160700	$0.16073 \pm 0.00017$ (−1.1 $\sigma$ )	$\chi_{6DF}^2$	0.055	$0.09 \pm 0.11$ (−0.0 $\sigma$ )
$H_0$	69.35	$69.35 \pm 0.75$ (+0.1 $\sigma$ )	$z_{eq}$	3396.6	$3398 \pm 26$ (+0.2 $\sigma$ )	$\chi_{MGS}^2$	2.35	$2.40 \pm 0.62$ (−0.0 $\sigma$ )
$\Omega_\Lambda$	0.7031	$0.7029 \pm 0.0068$ (+0.0 $\sigma$ )	$k_{eq}$	0.010367	$0.010370 \pm 0.000080$ (+0.2 $\sigma$ )	$\chi_{DR12BAO}^2$	4.21	$4.65 \pm 0.73$ (−0.1 $\sigma$ )
$\Omega_m$	0.2969	$0.2971 \pm 0.0068$ (−0.0 $\sigma$ )	$100\theta_{eq}$	0.81451	$0.8143 \pm 0.0049$ (−0.1 $\sigma$ )	$\chi_{prior}^2$	1.68	$11.5 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_m h^2$	0.14278	$0.1428 \pm 0.0011$ (+0.2 $\sigma$ )	$100\theta_{s,eq}$	0.44997	$0.4499 \pm 0.0025$ (−0.2 $\sigma$ )	$\chi_{BAO}^2$	6.61	$7.1 \pm 1.1$ (−0.1 $\sigma$ )
$\Omega_m h^3$	0.09902	$0.0991 \pm 0.0013$ (+0.2 $\sigma$ )	$H(0.15)$	73.955	$73.93 \pm 0.48$ (+0.2 $\sigma$ )	$\chi_{CMB}^2$	2763.6	$2779.5 \pm 5.8$ (+294.8 $\sigma$ )

Best-fit  $\chi_{eff}^2 = 3813.86$ ;  $\Delta\chi_{eff}^2 = 1585.58$ ;  $\bar{\chi}_{eff}^2 = 3841.02$ ;  $\Delta\bar{\chi}_{eff}^2 = 1591.91$ ;  $R - 1 = 0.00783$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.06 ( $\Delta$  -0.00) MGS: 2.35 ( $\Delta$  0.00) DR12BAO: 4.21 ( $\Delta$  -0.09) CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.06 ( $\Delta$  0.17) commander\_dx12.v3.2.29: 23.05 ( $\Delta$  -0.03) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.47 Hubble - H073p45: 6.09 ( $\Delta$  -0.21) SN - JLA Pantheon18: 1035.90 ( $\Delta$  -0.21)



## 18.64 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022427	$0.02241 \pm 0.00014$ (+1.0 $\sigma$ )	$\sigma_8$	0.8281	$0.827 \pm 0.010$ (+0.0 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	628.7	$628.7 \pm 5.3$ (−0.2 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11967	$0.1197 \pm 0.0010$ (+0.1 $\sigma$ )	$S_8$	0.8237	$0.823 \pm 0.011$ (+0.0 $\sigma$ )	$H(0.38)$	83.328	$83.32 \pm 0.27$ (+0.4 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.040978	$1.04098 \pm 0.00030$ (+0.1 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4512	$0.4506 \pm 0.0058$ (+0.0 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1509.1	$1509.2 \pm 9.0$ (−0.2 $\sigma$ )
$\tau$	0.0552	$0.0545 \pm 0.0073$ (+0.2 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6112	$0.6105 \pm 0.0069$ (+0.0 $\sigma$ )	$H(0.51)$	89.755	$89.74 \pm 0.24$ (+0.5 $\sigma$ )
$w_0$	−1.0602	$−1.061 \pm 0.029$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9944	$0.993 \pm 0.010$ (−0.0 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1959.9	$1960.1 \pm 9.8$ (−0.3 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0457	$3.044 \pm 0.014$ (+0.2 $\sigma$ )	$r_{\mathrm{drag}}h$	102.02	$102.1 \pm 1.1$ (−0.0 $\sigma$ )	$H(0.61)$	95.199	$95.18 \pm 0.25$ (+0.5 $\sigma$ )
$n_{\mathrm{s}}$	0.96671	$0.9660 \pm 0.0038$ (+0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4493	$2.448 \pm 0.022$ (+0.0 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2284.3	$2285 \pm 10$ (−0.3 $\sigma$ )
$y_{\mathrm{cal}}$	1.00050	$1.0006 \pm 0.0025$ (+0.0 $\sigma$ )	$z_{\mathrm{re}}$	7.75	$7.66 \pm 0.74$ (+0.1 $\sigma$ )	$H(2.33)$	235.53	$235.51 \pm 0.56$ (+0.4 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	46.6	$47 \pm 7$ (−0.1 $\sigma$ )	$10^9A_{\mathrm{s}}$	2.1025	$2.099 \pm 0.030$ (+0.2 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5753.5	$5754.3 \pm 8.6$ (−0.8 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.52	—	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8827	$1.882 \pm 0.011$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4614	$0.4609 \pm 0.0067$ (−0.0 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	7.19	$5.5 \pm 1.9$ (+0.2 $\sigma$ )	$D_{40}$	1227.5	$1229 \pm 11$ (+0.0 $\sigma$ )	$\sigma_8(0.15)$	0.7664	$0.7655 \pm 0.0098$ (+0.0 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	249.2	$258 \pm 27$ (−0.2 $\sigma$ )	$D_{220}$	5736.0	$5736 \pm 39$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4858	$0.4854 \pm 0.0078$ (−0.0 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	48.4	$45 \pm 8$ (−0.4 $\sigma$ )	$D_{810}$	2540.8	$2539 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6799	$0.6792 \pm 0.0087$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	49.5	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{1420}$	818.47	$817.5 \pm 4.8$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.4862	$0.4857 \pm 0.0080$ (−0.0 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	120.6	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	231.43	$231.1 \pm 1.6$ (+0.6 $\sigma$ )	$\sigma_8(0.51)$	0.6362	$0.6356 \pm 0.0080$ (+0.1 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.01	$< 4.17$ (−0.2 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.96671	$0.9660 \pm 0.0038$ (+0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.4820	$0.4815 \pm 0.0080$ (−0.0 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.82	$8.9 \pm 1.8$ (+0.0 $\sigma$ )	$Y_{\mathrm{P}}$	0.245418	$0.245409_{-0.000049}^{+0.000057}$ (+1.0 $\sigma$ )	$\sigma_8(0.61)$	0.6053	$0.6047 \pm 0.0075$ (+0.1 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	10.97	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246745	$0.246736_{-0.000050}^{+0.000057}$ (+1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.30534	$0.3050 \pm 0.0038$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.94	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$10^5\mathrm{D}/\mathrm{H}$	2.5749	$2.579 \pm 0.025$ (−1.0 $\sigma$ )	$\sigma_8(2.33)$	0.31343	$0.3131 \pm 0.0034$ (+0.1 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	95.3	$93.8 \pm 7.4$ (+0.0 $\sigma$ )	Age/Gyr	13.7523	$13.754 \pm 0.021$ (−0.7 $\sigma$ )	$\chi_{\mathrm{lensing}}^2$	8.697	$9.09 \pm 0.65$ (−0.1 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1144	$0.114 \pm 0.038$	$z_*$	1089.818	$1089.84 \pm 0.23$ (−0.8 $\sigma$ )	$\chi_{\mathrm{simall}}^2$	396.19	$397.0 \pm 1.7$ (+0.1 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1346	$0.135 \pm 0.030$	$r_*$	144.472	$144.49 \pm 0.24$ (−0.6 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	23.05	$23.20 \pm 0.78$ (−0.1 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.480	$0.481 \pm 0.085$	$100\theta_*$	1.041156	$1.04116 \pm 0.00029$ (+0.1 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2344.4	$2359.1 \pm 5.7$ (+310.9 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.225	$0.224 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8761	$13.878 \pm 0.022$ (−0.6 $\sigma$ )	$\chi_{\mathrm{H073p45}}^2$	6.10	$6.3 \pm 2.2$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.664	$0.665 \pm 0.081$	$z_{\mathrm{drag}}$	1060.047	$1060.00 \pm 0.29$ (+1.1 $\sigma$ )	$\chi_{\mathrm{JLA}}^2$	1035.89	$1036.5 \pm 1.8$ (−0.0 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.081	$2.08 \pm 0.27$	$r_{\mathrm{drag}}$	147.114	$147.14 \pm 0.24$ (−0.7 $\sigma$ )	$\chi_{\mathrm{6DF}}^2$	0.055	$0.097 \pm 0.11$ (−0.0 $\sigma$ )
$c_{100}$	0.99974	$0.99966 \pm 0.00061$ (+0.1 $\sigma$ )	$k_{\mathrm{D}}$	0.140886	$0.14085 \pm 0.00028$ (+1.0 $\sigma$ )	$\chi_{\mathrm{MGS}}^2$	2.35	$2.42 \pm 0.62$ (−0.0 $\sigma$ )
$c_{217}$	0.99819	$0.99818 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160699	$0.16072 \pm 0.00017$ (−1.1 $\sigma$ )	$\chi_{\mathrm{DR12BAO}}^2$	4.20	$4.58 \pm 0.65$ (−0.1 $\sigma$ )
$H_0$	69.35	$69.36 \pm 0.75$ (+0.1 $\sigma$ )	$z_{\mathrm{eq}}$	3395.7	$3395 \pm 23$ (+0.2 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.64	$11.6 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_{\Lambda}$	0.7032	$0.7032 \pm 0.0067$ (+0.0 $\sigma$ )	$k_{\mathrm{eq}}$	0.010364	$0.010362 \pm 0.000071$ (+0.2 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	2772.3	$2788.3 \pm 5.8$ (+297.5 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.2968	$0.2968 \pm 0.0067$ (−0.0 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.81466	$0.8148 \pm 0.0044$ (−0.1 $\sigma$ )	$\chi_{\mathrm{BAO}}^2$	6.60	$7.1 \pm 1.1$ (−0.1 $\sigma$ )
$\Omega_{\mathrm{m}}h^2$	0.14274	$0.14271 \pm 0.00098$ (+0.2 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.45005	$0.4501 \pm 0.0023$ (−0.2 $\sigma$ )			
$\Omega_{\mathrm{m}}h^3$	0.09899	$0.0990 \pm 0.0013$ (+0.2 $\sigma$ )	$H(0.15)$	73.954	$73.95 \pm 0.48$ (+0.2 $\sigma$ )			

Best-fit  $\chi_{\mathrm{eff}}^2 = 3822.55$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1585.55$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 3849.70$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.96$ ;  $R - 1 = 0.00999$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.06 ( $\Delta$  -0.01) MGS: 2.35 ( $\Delta$  -0.08) DR12BAO: 4.20 ( $\Delta$  0.02) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consect8: 8.70 ( $\Delta$  0.02) simall\_100x143\_offlike5\_EE\_Aplanck 396.19 ( $\Delta$  0.34) commander\_dx12\_v3.2.29: 23.05 ( $\Delta$  -0.02) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.38 Hubble - H073p45: 6.10 ( $\Delta$  -0.13) SN - JLA Pantheon18: 1035.89 ( $\Delta$  -0.14)



## 18.65 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02240 \pm 0.00014 \quad (+1.0\sigma)$	$\sigma_8$	$0.829 \pm 0.012 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$628.9 \pm 5.3 \quad (-0.2\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1198 \pm 0.0012 \quad (+0.1\sigma)$	$S_8$	$0.825 \pm 0.013 \quad (+0.1\sigma)$	$H(0.38)$	$83.30 \pm 0.28 \quad (+0.4\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04097 \pm 0.00030 \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4518 \pm 0.0071 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1509.5 \pm 9.0 \quad (-0.2\sigma)$
$\tau$	$0.0558^{+0.0053}_{-0.0082} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6120 \pm 0.0088 \quad (+0.1\sigma)$	$H(0.51)$	$89.72 \pm 0.26 \quad (+0.4\sigma)$
$w_0$	$-1.062 \pm 0.031 \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.996 \pm 0.013 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1960.6 \pm 9.9 \quad (-0.3\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.047^{+0.012}_{-0.017} \quad (+0.3\sigma)$	$r_{\mathrm{drag}}h$	$102.0 \pm 1.1 \quad (-0.0\sigma)$	$H(0.61)$	$95.16 \pm 0.27 \quad (+0.4\sigma)$
$n_{\mathrm{s}}$	$0.9659 \pm 0.0040 \quad (+0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.453 \pm 0.028 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2285 \pm 10 \quad (-0.3\sigma)$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.80^{+0.58}_{-0.80} \quad (+0.1\sigma)$	$H(2.33)$	$235.56 \pm 0.60 \quad (+0.4\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.105^{+0.025}_{-0.036} \quad (+0.3\sigma)$	$D_{\mathrm{M}}(2.33)$	$5754.7 \pm 8.8 \quad (-0.7\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.882 \pm 0.011 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4623 \pm 0.0083 \quad (+0.0\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$D_{40}$	$1229 \pm 12 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.767 \pm 0.012 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$257 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5735 \pm 39 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4867 \pm 0.0095 \quad (+0.0\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.681 \pm 0.010 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$817.6 \pm 4.7 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4871 \pm 0.0096 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$231.1 \pm 1.6 \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.6369 \pm 0.0093 \quad (+0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.10 \quad (-0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.9659 \pm 0.0040 \quad (+0.2\sigma)$	$f\sigma_8(0.61)$	$0.4828 \pm 0.0095 \quad (+0.0\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.245407^{+0.000057}_{-0.000051} \quad (+1.0\sigma)$	$\sigma_8(0.61)$	$0.6059 \pm 0.0087 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246733^{+0.000057}_{-0.000051} \quad (+1.0\sigma)$	$f\sigma_8(2.33)$	$0.3056 \pm 0.0043 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.580 \pm 0.026 \quad (-1.0\sigma)$	$\sigma_8(2.33)$	$0.3137 \pm 0.0038 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.7 \pm 7.3 \quad (+0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.755 \pm 0.021 \quad (-0.7\sigma)$	$f_{2000}^{143}$	$29.2 \pm 2.7 \quad (-0.5\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.114 \pm 0.038$	$z_*$	$1089.86 \pm 0.24 \quad (-0.7\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 1.8 \quad (-0.6\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.029$	$r_*$	$144.47 \pm 0.26 \quad (-0.5\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.7 \quad (-0.5\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.481 \pm 0.086$	$100\theta_*$	$1.04115 \pm 0.00030 \quad (+0.0\sigma)$	$\chi_{\mathrm{small}}^2$	$397.1 \pm 2.0 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.224 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.876 \pm 0.025 \quad (-0.5\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.26 \pm 0.87 \quad (-0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.665 \pm 0.080$	$z_{\mathrm{drag}}$	$1060.00 \pm 0.29 \quad (+1.1\sigma)$	$\chi_{\mathrm{plik}}^2$	$2358.9 \pm 5.8 \quad (+300.3\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.27$	$r_{\mathrm{drag}}$	$147.12 \pm 0.27 \quad (-0.7\sigma)$	$\chi_{\mathrm{H073p45}}^2$	$6.3 \pm 2.2 \quad (-0.1\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.14086 \pm 0.00030 \quad (+0.9\sigma)$	$\chi_{\mathrm{JLA}}^2$	$1036.5 \pm 1.8 \quad (-0.0\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16073 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.09 \pm 0.11 \quad (-0.0\sigma)$
$H_0$	$69.35 \pm 0.75 \quad (+0.1\sigma)$	$z_{\mathrm{eq}}$	$3397 \pm 26 \quad (+0.2\sigma)$	$\chi_{\mathrm{MGS}}^2$	$2.40 \pm 0.62 \quad (-0.0\sigma)$
$\Omega_{\Lambda}$	$0.7030 \pm 0.0068 \quad (+0.0\sigma)$	$k_{\mathrm{eq}}$	$0.010368 \pm 0.000080 \quad (+0.2\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.64 \pm 0.73 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.2970 \pm 0.0068 \quad (-0.0\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8144 \pm 0.0049 \quad (-0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1428 \pm 0.0011 \quad (+0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4499 \pm 0.0025 \quad (-0.2\sigma)$	$\chi_{\mathrm{BAO}}^2$	$7.1 \pm 1.1 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.0990 \pm 0.0013 \quad (+0.2\sigma)$	$H(0.15)$	$73.93 \pm 0.48 \quad (+0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2779.3 \pm 5.7 \quad (+299.3\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 3840.79; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.96; R - 1 = 0.00674$$



## 18.66 base\_w\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02241 \pm 0.00014 \quad (+1.0\sigma)$	$S_8$	$0.823 \pm 0.011 \quad (+0.0\sigma)$	$D_M(0.38)$	$1509.2 \pm 9.0 \quad (-0.2\sigma)$
$\Omega_c h^2$	$0.1196 \pm 0.0010 \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4507 \pm 0.0058 \quad (+0.0\sigma)$	$H(0.51)$	$89.75 \pm 0.24 \quad (+0.5\sigma)$
$100\theta_{MC}$	$1.04098 \pm 0.00030 \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6107 \pm 0.0069 \quad (+0.0\sigma)$	$D_M(0.51)$	$1960.1 \pm 9.8 \quad (-0.3\sigma)$
$\tau$	$0.0554^{+0.0051}_{-0.0076} \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.994 \pm 0.010 \quad (+0.0\sigma)$	$H(0.61)$	$95.19 \pm 0.25 \quad (+0.5\sigma)$
$w_0$	$-1.060 \pm 0.029 \quad (+0.1\sigma)$	$r_{\text{drag}} h$	$102.1 \pm 1.1 \quad (-0.0\sigma)$	$D_M(0.61)$	$2284 \pm 10 \quad (-0.3\sigma)$
$\ln(10^{10} A_s)$	$3.045^{+0.011}_{-0.015} \quad (+0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.450 \pm 0.022 \quad (+0.0\sigma)$	$H(2.33)$	$235.50 \pm 0.56 \quad (+0.4\sigma)$
$n_s$	$0.9661 \pm 0.0038 \quad (+0.2\sigma)$	$z_{\text{re}}$	$7.75^{+0.56}_{-0.74} \quad (+0.1\sigma)$	$D_M(2.33)$	$5754.1 \pm 8.6 \quad (-0.7\sigma)$
$y_{\text{cal}}$	$1.0005 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_s$	$2.102^{+0.023}_{-0.031} \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4610 \pm 0.0067 \quad (+0.0\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.882 \pm 0.011 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7658 \pm 0.0098 \quad (+0.0\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{40}$	$1229 \pm 11 \quad (+0.0\sigma)$	$f\sigma_8(0.38)$	$0.4854 \pm 0.0078 \quad (+0.0\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5 \pm 1.9 \quad (+0.2\sigma)$	$D_{220}$	$5736 \pm 38 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.6794 \pm 0.0086 \quad (+0.1\sigma)$
$A_{100}^{\text{PS}}$	$257 \pm 27 \quad (-0.2\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4858 \pm 0.0080 \quad (+0.0\sigma)$
$A_{143}^{\text{PS}}$	$45 \pm 8 \quad (-0.4\sigma)$	$D_{1420}$	$817.5 \pm 4.8 \quad (+0.4\sigma)$	$\sigma_8(0.51)$	$0.6358 \pm 0.0080 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{2000}$	$231.1 \pm 1.6 \quad (+0.6\sigma)$	$f\sigma_8(0.61)$	$0.4816 \pm 0.0080 \quad (+0.0\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$n_{s,0.002}$	$0.9661 \pm 0.0038 \quad (+0.2\sigma)$	$\sigma_8(0.61)$	$0.6049 \pm 0.0075 \quad (+0.1\sigma)$
$A^{\text{kSZ}}$	$< 4.14 \quad (-0.2\sigma)$	$Y_P$	$0.245410^{+0.000056}_{-0.000049} \quad (+1.0\sigma)$	$f\sigma_8(2.33)$	$0.3051 \pm 0.0037 \quad (+0.1\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_P^{\text{BBN}}$	$0.246737^{+0.000056}_{-0.000050} \quad (+1.0\sigma)$	$\sigma_8(2.33)$	$0.3133 \pm 0.0033 \quad (+0.1\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$10^5 D/H$	$2.578 \pm 0.025 \quad (-1.0\sigma)$	$f_{2000}^{143}$	$29.3 \pm 2.7 \quad (-0.5\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$\text{Age}/\text{Gyr}$	$13.754 \pm 0.021 \quad (-0.7\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 1.8 \quad (-0.6\sigma)$
$A_{217}^{\text{dustTT}}$	$93.8 \pm 7.3 \quad (+0.0\sigma)$	$z_*$	$1089.83 \pm 0.23 \quad (-0.8\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.7 \quad (-0.5\sigma)$
$A_{100}^{\text{dustTE}}$	$0.114 \pm 0.038$	$r_*$	$144.50 \pm 0.23 \quad (-0.6\sigma)$	$\chi_{\text{lensing}}^2$	$9.07 \pm 0.65 \quad (-0.1\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.030$	$100\theta_*$	$1.04116 \pm 0.00030 \quad (+0.1\sigma)$	$\chi_{\text{simall}}^2$	$396.9 \pm 1.7 \quad (+0.1\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.481 \pm 0.085$	$D_M(z_*)/\text{Gpc}$	$13.879 \pm 0.022 \quad (-0.6\sigma)$	$\chi_{\text{lowl}}^2$	$23.20 \pm 0.79 \quad (-0.1\sigma)$
$A_{143}^{\text{dustTE}}$	$0.224 \pm 0.053$	$z_{\text{drag}}$	$1060.01 \pm 0.29 \quad (+1.1\sigma)$	$\chi_{\text{plik}}^2$	$2358.9 \pm 5.7 \quad (+311.4\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.665 \pm 0.081$	$r_{\text{drag}}$	$147.15 \pm 0.24 \quad (-0.8\sigma)$	$\chi_{\text{H073p45}}^2$	$6.3 \pm 2.2 \quad (-0.1\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.27$	$k_D$	$0.14084 \pm 0.00028 \quad (+1.0\sigma)$	$\chi_{\text{JLA}}^2$	$1036.4 \pm 1.8 \quad (-0.0\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_D$	$0.16072 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{6\text{DF}}^2$	$0.097 \pm 0.11 \quad (-0.0\sigma)$
$c_{217}$	$0.99818 \pm 0.00062 \quad (-0.1\sigma)$	$z_{\text{eq}}$	$3394 \pm 23 \quad (+0.3\sigma)$	$\chi_{\text{MGS}}^2$	$2.43 \pm 0.62 \quad (-0.0\sigma)$
$H_0$	$69.35 \pm 0.75 \quad (+0.1\sigma)$	$k_{\text{eq}}$	$0.010359 \pm 0.000070 \quad (+0.3\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.56 \pm 0.65 \quad (-0.1\sigma)$
$\Omega_\Lambda$	$0.7033 \pm 0.0067 \quad (+0.0\sigma)$	$100\theta_{\text{eq}}$	$0.8150 \pm 0.0043 \quad (-0.2\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_m$	$0.2967 \pm 0.0067 \quad (-0.0\sigma)$	$100\theta_{s,\text{eq}}$	$0.4502 \pm 0.0022 \quad (-0.2\sigma)$	$\chi_{\text{CMB}}^2$	$2788.1 \pm 5.7 \quad (+301.6\sigma)$
$\Omega_m h^2$	$0.14267 \pm 0.00097 \quad (+0.3\sigma)$	$H(0.15)$	$73.95 \pm 0.48 \quad (+0.2\sigma)$	$\chi_{\text{BAO}}^2$	$7.1 \pm 1.1 \quad (-0.1\sigma)$
$\Omega_m h^3$	$0.0989 \pm 0.0012 \quad (+0.3\sigma)$	$D_M(0.15)$	$628.8 \pm 5.3 \quad (-0.2\sigma)$		
$\sigma_8$	$0.828 \pm 0.010 \quad (+0.0\sigma)$	$H(0.38)$	$83.32 \pm 0.27 \quad (+0.4\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 3849.47; \Delta \bar{\chi}_{\text{eff}}^2 = 1591.99; R - 1 = 0.00919$$



18.67 base\_w\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Riess18\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022203	$0.02222 \pm 0.00020$	$\sigma_8/h^{0.5}$	1.0025	$0.993 \pm 0.016$	$H(0.51)$	89.519	$89.62 \pm 0.35$
$\Omega_c h^2$	0.12017	$0.1196 \pm 0.0015$	$r_{\text{drag}} h$	101.84	$102.1 \pm 1.1$	$D_M(0.51)$	1965.5	$1963 \pm 10$
$100\theta_{\text{MC}}$	1.040991	$1.04101 \pm 0.00043$	$\langle d^2 \rangle^{1/2}$	2.4667	$2.444 \pm 0.034$	$H(0.61)$	94.969	$95.05 \pm 0.36$
$\tau$	0.0574	$0.0535 \pm 0.0081$	$z_{\text{re}}$	8.03	$7.60 \pm 0.82$	$D_M(0.61)$	2290.7	$2288 \pm 11$
$w_0$	-1.0671	$-1.062 \pm 0.035$	$10^9 A_s$	2.1120	$2.090^{+0.032}_{-0.036}$	$H(2.33)$	235.56	$235.28 \pm 0.75$
$\ln(10^{10} A_s)$	3.0502	$3.040 \pm 0.017$	$10^9 A_s e^{-2\tau}$	1.8828	$1.878 \pm 0.012$	$D_M(2.33)$	5763.6	$5762 \pm 12$
$n_s$	0.96447	$0.9660 \pm 0.0048$	$D_{40}$	1230.8	$1225 \pm 14$	$f\sigma_8(0.15)$	0.4665	$0.461 \pm 0.011$
$y_{\text{cal}}$	1.00099	$1.0005 \pm 0.0025$	$D_{220}$	5716.8	$5711 \pm 40$	$\sigma_8(0.15)$	0.7713	$0.765 \pm 0.014$
$A_{100}^{\text{PS}}$	238.7	$241 \pm 25$	$D_{810}$	2536.9	$2534 \pm 14$	$f\sigma_8(0.38)$	0.4908	$0.485 \pm 0.012$
$A_{143}^{\text{PS}}$	42.8	$40 \pm 8$	$D_{1420}$	815.4	$815.0 \pm 5.1$	$\sigma_8(0.38)$	0.6839	$0.678 \pm 0.012$
$A_{217}^{\text{PS}}$	97.1	$101 \pm 10$	$D_{2000}$	230.16	$230.0 \pm 1.8$	$f\sigma_8(0.51)$	0.4909	$0.485 \pm 0.012$
$A_{217}^{\text{CIB}}$	46.2	$41^{+7}_{-8}$	$n_{s,0.002}$	0.96447	$0.9660 \pm 0.0048$	$\sigma_8(0.51)$	0.6398	$0.635 \pm 0.011$
$A_{143}^{\text{tSZ}}$	5.70	$3.9^{+1.8}_{-2.6}$	$Y_P$	0.245327	$0.245333^{+0.000089}_{-0.000076}$	$f\sigma_8(0.61)$	0.4864	$0.481 \pm 0.012$
$r_{143 \times 217}^{\text{PS}}$	0.566	$0.65 \pm 0.13$	$Y_P^{\text{BBN}}$	0.246653	$0.246659^{+0.000089}_{-0.000077}$	$\sigma_8(0.61)$	0.6086	$0.604 \pm 0.010$
$r_{143 \times 217}^{\text{CIB}}$	0.913	$0.58^{+0.41}_{-0.13}$	$10^5 D/H$	2.6173	$2.614 \pm 0.038$	$f\sigma_8(2.33)$	0.30684	$0.3046 \pm 0.0049$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.29	—	Age/Gyr	13.7731	$13.771 \pm 0.027$	$\sigma_8(2.33)$	0.31468	$0.3126 \pm 0.0043$
$A^{\text{kSZ}}$	1.7	—	$z_*$	1090.145	$1090.07 \pm 0.33$	$f_{2000}^{143}$	31.09	$30.4 \pm 3.0$
$A_{100}^{\text{dust}}$	1.012	$1.01 \pm 0.19$	$r_*$	144.514	$144.65 \pm 0.37$	$f_{2000}^{217}$	107.40	$107.3 \pm 2.0$
$A_{143}^{\text{dust}}$	1.003	$0.98 \pm 0.18$	$100\theta_*$	1.041189	$1.04121 \pm 0.00042$	$f_{2000}^{143 \times 217}$	32.58	$32.6 \pm 2.1$
$A_{217}^{\text{dust}}$	0.954	$0.97 \pm 0.10$	$D_M(z_*)/\text{Gpc}$	13.8797	$13.893 \pm 0.035$	$\chi_{\text{simall}}^2$	396.83	$397.0 \pm 1.9$
$A_{143 \times 217}^{\text{dust}}$	0.931	$1.03 \pm 0.16$	$z_{\text{drag}}$	1059.551	$1059.57 \pm 0.44$	$\chi_{\text{lowl}}^2$	23.38	$23.02 \pm 0.96$
$c_{100}$	0.99751	$0.9975 \pm 0.0011$	$r_{\text{drag}}$	147.233	$147.37 \pm 0.38$	$\chi_{\text{CamSpec}}^2$	7049.3	$7063.1 \pm 5.4$
$c_{217}$	1.00152	$1.0012 \pm 0.0016$	$k_D$	0.140590	$0.14046 \pm 0.00046$	$\chi_{\text{H073p45}}^2$	6.64	$6.6 \pm 2.3$
$H_0$	69.17	$69.26 \pm 0.75$	$100\theta_D$	0.160996	$0.16099 \pm 0.00025$	$\chi_{\text{JLA}}^2$	1035.92	$1036.5 \pm 1.9$
$\Omega_\Lambda$	0.7011	$0.7030 \pm 0.0069$	$z_{\text{eq}}$	3402.3	$3388 \pm 35$	$\chi_{6\text{DF}}^2$	0.036	$0.099 \pm 0.11$
$\Omega_m$	0.2989	$0.2970 \pm 0.0069$	$k_{\text{eq}}$	0.010384	$0.01034 \pm 0.00011$	$\chi_{\text{MGS}}^2$	2.19	$2.43 \pm 0.64$
$\Omega_m h^2$	0.14302	$0.1424 \pm 0.0015$	$100\theta_{\text{eq}}$	0.8129	$0.8155 \pm 0.0065$	$\chi_{\text{DR12BAO}}^2$	4.41	$4.71 \pm 0.91$
$\Omega_m h^3$	0.09893	$0.0987 \pm 0.0015$	$100\theta_{s,\text{eq}}$	0.44928	$0.4506 \pm 0.0034$	$\chi_{\text{prior}}^2$	2.64	$7.6 \pm 3.5$
$\sigma_8$	0.8338	$0.826 \pm 0.015$	$H(0.15)$	73.738	$73.84 \pm 0.49$	$\chi_{\text{BAO}}^2$	6.64	$7.2 \pm 1.2$
$S_8$	0.8322	$0.822 \pm 0.016$	$D_M(0.15)$	630.5	$629.7 \pm 5.4$	$\chi_{\text{CMB}}^2$	7469.5	$7483.1 \pm 5.4$
$\sigma_8 \Omega_m^{0.5}$	0.4558	$0.4503 \pm 0.0090$	$H(0.38)$	83.090	$83.20 \pm 0.34$			
$\sigma_8 \Omega_m^{0.25}$	0.6165	$0.610 \pm 0.011$	$D_M(0.38)$	1513.4	$1511.4 \pm 9.3$			

Best-fit  $\chi_{\text{eff}}^2 = 8521.38$ ;  $\bar{\chi}_{\text{eff}}^2 = 8541.10$ ;  $R - 1 = 0.00624$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.04 MGS: 2.19 DR12BAO: 4.41 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.83 commander\_dx12\_v3.2.29: 23.38 CamSpec like\_10.7HM: 7049.34  
Hubble - H073p45: 6.64 SN - JLA Pantheon18: 1035.92



18.68 base\_w\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02223 \pm 0.00020$	$\sigma_8/h^{0.5}$	$0.994 \pm 0.011$	$H(0.51)$	$89.61 \pm 0.31$
$\Omega_{\mathrm{c}}h^2$	$0.1196 \pm 0.0013$	$r_{\mathrm{drag}}h$	$102.1 \pm 1.1$	$D_{\mathrm{M}}(0.51)$	$1963 \pm 10$
$100\theta_{\mathrm{MC}}$	$1.04100 \pm 0.00043$	$\langle d^2 \rangle^{1/2}$	$2.447 \pm 0.024$	$H(0.61)$	$95.04 \pm 0.32$
$\tau$	$0.0540^{+0.0071}_{-0.0079}$	$z_{\mathrm{re}}$	$7.65 \pm 0.77$	$D_{\mathrm{M}}(0.61)$	$2288 \pm 11$
$w_0$	$-1.063 \pm 0.032$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.028}_{-0.032}$	$H(2.33)$	$235.28 \pm 0.67$
$\ln(10^{10} A_{\mathrm{s}})$	$3.041^{+0.014}_{-0.015}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.879 \pm 0.011$	$D_{\mathrm{M}}(2.33)$	$5762 \pm 12$
$n_{\mathrm{s}}$	$0.9657 \pm 0.0044$	$D_{40}$	$1226 \pm 12$	$f\sigma_8(0.15)$	$0.4612 \pm 0.0078$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$D_{220}$	$5713 \pm 40$	$\sigma_8(0.15)$	$0.766 \pm 0.011$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25$	$D_{810}$	$2534 \pm 14$	$f\sigma_8(0.38)$	$0.4857 \pm 0.0090$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8$	$D_{1420}$	$815.0 \pm 5.1$	$\sigma_8(0.38)$	$0.6791 \pm 0.0092$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{2000}$	$230.0 \pm 1.8$	$f\sigma_8(0.51)$	$0.4861 \pm 0.0091$
$A_{217}^{\mathrm{CIB}}$	$41^{+7}_{-8}$	$n_{\mathrm{s},0.002}$	$0.9657 \pm 0.0044$	$\sigma_8(0.51)$	$0.6355 \pm 0.0085$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.7}$	$Y_{\mathrm{P}}$	$0.245334 \pm 0.000083$	$f\sigma_8(0.61)$	$0.4818 \pm 0.0090$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246660 \pm 0.000083$	$\sigma_8(0.61)$	$0.6046 \pm 0.0079$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.58^{+0.39}_{-0.16}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.613 \pm 0.037$	$f\sigma_8(2.33)$	$0.3049 \pm 0.0039$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	Age/Gyr	$13.770 \pm 0.027$	$\sigma_8(2.33)$	$0.3130 \pm 0.0034$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.07 \pm 0.31$	$f_{2000}^{143}$	$30.4 \pm 2.9$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$r_*$	$144.64 \pm 0.31$	$f_{2000}^{217}$	$107.3 \pm 2.0$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.18$	$100\theta_*$	$1.04120 \pm 0.00042$	$f_{2000}^{143 \times 217}$	$32.7 \pm 2.1$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.892 \pm 0.030$	$\chi_{\mathrm{lensing}}^2$	$9.25 \pm 0.76$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$z_{\mathrm{drag}}$	$1059.57 \pm 0.44$	$\chi_{\mathrm{small}}^2$	$397.0 \pm 1.8$
$c_{100}$	$0.9975 \pm 0.0011$	$r_{\mathrm{drag}}$	$147.35 \pm 0.33$	$\chi_{\mathrm{lowl}}^2$	$23.08 \pm 0.86$
$c_{217}$	$1.0012 \pm 0.0016$	$k_{\mathrm{D}}$	$0.14048 \pm 0.00043$	$\chi_{\mathrm{CamSpec}}^2$	$7062.7 \pm 5.2$
$H_0$	$69.29 \pm 0.75$	$100\theta_{\mathrm{D}}$	$0.16098 \pm 0.00025$	$\chi_{\mathrm{H073p45}}^2$	$6.5 \pm 2.3$
$\Omega_{\Lambda}$	$0.7031 \pm 0.0068$	$z_{\mathrm{eq}}$	$3390 \pm 29$	$\chi_{\mathrm{JLA}}^2$	$1036.6 \pm 1.8$
$\Omega_{\mathrm{m}}$	$0.2969 \pm 0.0068$	$k_{\mathrm{eq}}$	$0.010345 \pm 0.000088$	$\chi_{6\mathrm{DF}}^2$	$0.10 \pm 0.11$
$\Omega_{\mathrm{m}}h^2$	$0.1425 \pm 0.0012$	$100\theta_{\mathrm{eq}}$	$0.8153 \pm 0.0053$	$\chi_{\mathrm{MGS}}^2$	$2.45 \pm 0.63$
$\Omega_{\mathrm{m}}h^3$	$0.0987 \pm 0.0014$	$100\theta_{\mathrm{s,eq}}$	$0.4505 \pm 0.0028$	$\chi_{\mathrm{DR12BAO}}^2$	$4.64 \pm 0.76$
$\sigma_8$	$0.827 \pm 0.011$	$H(0.15)$	$73.86 \pm 0.48$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.4$
$S_8$	$0.823 \pm 0.012$	$D_{\mathrm{M}}(0.15)$	$629.4 \pm 5.3$	$\chi_{\mathrm{CMB}}^2$	$7492.0 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4507 \pm 0.0066$	$H(0.38)$	$83.20 \pm 0.31$	$\chi_{\mathrm{BAO}}^2$	$7.2 \pm 1.1$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6106 \pm 0.0079$	$D_{\mathrm{M}}(0.38)$	$1511.1 \pm 9.2$		
$\bar{\chi}_{\mathrm{eff}}^2 = 8549.81$ ; $R - 1 = 0.01112$					



18.69 base\_w\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02223 \pm 0.00020$	$\sigma_8/h^{0.5}$	$0.994 \pm 0.016$	$H(0.51)$	$89.62 \pm 0.35$
$\Omega_{\mathrm{c}}h^2$	$0.1195 \pm 0.0015$	$r_{\mathrm{drag}}h$	$102.1 \pm 1.1$	$D_{\mathrm{M}}(0.51)$	$1963 \pm 10$
$100\theta_{\mathrm{MC}}$	$1.04102 \pm 0.00043$	$\langle d^2 \rangle^{1/2}$	$2.446 \pm 0.033$	$H(0.61)$	$95.06 \pm 0.36$
$\tau$	$0.0549^{+0.0050}_{-0.0085}$	$z_{\mathrm{re}}$	$7.74^{+0.56}_{-0.84}$	$D_{\mathrm{M}}(0.61)$	$2288 \pm 11$
$w_0$	$-1.061 \pm 0.035$	$10^9 A_{\mathrm{s}}$	$2.096^{+0.024}_{-0.036}$	$H(2.33)$	$235.27 \pm 0.75$
$\ln(10^{10} A_{\mathrm{s}})$	$3.042^{+0.012}_{-0.017}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878 \pm 0.012$	$D_{\mathrm{M}}(2.33)$	$5761 \pm 12$
$n_{\mathrm{s}}$	$0.9661 \pm 0.0048$	$D_{40}$	$1225 \pm 13$	$f\sigma_8(0.15)$	$0.461 \pm 0.011$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{220}$	$5711 \pm 40$	$\sigma_8(0.15)$	$0.765 \pm 0.013$
$A_{100}^{\mathrm{PS}}$	$241 \pm 25$	$D_{810}$	$2534 \pm 14$	$f\sigma_8(0.38)$	$0.485 \pm 0.012$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8$	$D_{1420}$	$815.0 \pm 5.2$	$\sigma_8(0.38)$	$0.679 \pm 0.012$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{2000}$	$230.0 \pm 1.8$	$f\sigma_8(0.51)$	$0.486 \pm 0.012$
$A_{217}^{\mathrm{CIB}}$	$40^{+7}_{-8}$	$n_{\mathrm{s},0.002}$	$0.9661 \pm 0.0048$	$\sigma_8(0.51)$	$0.635 \pm 0.011$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.8}_{-2.6}$	$Y_{\mathrm{P}}$	$0.245335^{+0.000088}_{-0.000076}$	$f\sigma_8(0.61)$	$0.482 \pm 0.012$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246661^{+0.000089}_{-0.000077}$	$\sigma_8(0.61)$	$0.6045 \pm 0.0098$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.58^{+0.41}_{-0.13}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.613 \pm 0.038$	$f\sigma_8(2.33)$	$0.3049 \pm 0.0048$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	Age/Gyr	$13.771 \pm 0.026$	$\sigma_8(2.33)$	$0.3130 \pm 0.0041$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.06 \pm 0.33$	$f_{2000}^{143}$	$30.3 \pm 3.0$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$r_*$	$144.66 \pm 0.37$	$f_{2000}^{217}$	$107.2 \pm 2.0$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.18$	$100\theta_*$	$1.04122 \pm 0.00042$	$f_{2000}^{143 \times 217}$	$32.6 \pm 2.1$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.893 \pm 0.035$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.9$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$z_{\mathrm{drag}}$	$1059.57 \pm 0.44$	$\chi_{\mathrm{lowl}}^2$	$23.03 \pm 0.96$
$c_{100}$	$0.9975 \pm 0.0011$	$r_{\mathrm{drag}}$	$147.37 \pm 0.38$	$\chi_{\mathrm{CamSpec}}^2$	$7062.9 \pm 5.4$
$c_{217}$	$1.0012 \pm 0.0016$	$k_{\mathrm{D}}$	$0.14046 \pm 0.00046$	$\chi_{\mathrm{H073p45}}^2$	$6.6 \pm 2.3$
$H_0$	$69.26 \pm 0.76$	$100\theta_{\mathrm{D}}$	$0.16099 \pm 0.00025$	$\chi_{\mathrm{JLA}}^2$	$1036.5 \pm 1.9$
$\Omega_{\Lambda}$	$0.7030 \pm 0.0070$	$z_{\mathrm{eq}}$	$3388 \pm 35$	$\chi_{6\mathrm{DF}}^2$	$0.10 \pm 0.11$
$\Omega_{\mathrm{m}}$	$0.2970 \pm 0.0070$	$k_{\mathrm{eq}}$	$0.01034 \pm 0.00011$	$\chi_{\mathrm{MGS}}^2$	$2.44 \pm 0.64$
$\Omega_{\mathrm{m}}h^2$	$0.1424 \pm 0.0015$	$100\theta_{\mathrm{eq}}$	$0.8156 \pm 0.0065$	$\chi_{\mathrm{DR12BAO}}^2$	$4.70 \pm 0.90$
$\Omega_{\mathrm{m}}h^3$	$0.0986 \pm 0.0015$	$100\theta_{\mathrm{s,eq}}$	$0.4507 \pm 0.0034$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.4$
$\sigma_8$	$0.827 \pm 0.015$	$H(0.15)$	$73.85 \pm 0.49$	$\chi_{\mathrm{BAO}}^2$	$7.2 \pm 1.2$
$S_8$	$0.823 \pm 0.016$	$D_{\mathrm{M}}(0.15)$	$629.7 \pm 5.4$	$\chi_{\mathrm{CMB}}^2$	$7482.9 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4507 \pm 0.0089$	$H(0.38)$	$83.20 \pm 0.34$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.611 \pm 0.011$	$D_{\mathrm{M}}(0.38)$	$1511.3 \pm 9.3$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 8540.87; R - 1 = 0.00534$$



18.70 base\_w\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02223 \pm 0.00020$	$\sigma_8/h^{0.5}$	$0.994 \pm 0.011$	$H(0.51)$	$89.62 \pm 0.30$
$\Omega_{\mathrm{c}}h^2$	$0.1195 \pm 0.0012$	$r_{\mathrm{drag}}h$	$102.1 \pm 1.1$	$D_{\mathrm{M}}(0.51)$	$1963 \pm 10$
$100\theta_{\mathrm{MC}}$	$1.04100 \pm 0.00043$	$\langle d^2 \rangle^{1/2}$	$2.448 \pm 0.024$	$H(0.61)$	$95.06 \pm 0.32$
$\tau$	$0.0550^{+0.0052}_{-0.0082}$	$z_{\mathrm{re}}$	$7.76^{+0.57}_{-0.80}$	$D_{\mathrm{M}}(0.61)$	$2287 \pm 11$
$w_0$	$-1.062 \pm 0.031$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.023}_{-0.032}$	$H(2.33)$	$235.26 \pm 0.67$
$\ln(10^{10} A_{\mathrm{s}})$	$3.043^{+0.011}_{-0.015}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878 \pm 0.011$	$D_{\mathrm{M}}(2.33)$	$5761 \pm 12$
$n_{\mathrm{s}}$	$0.9659 \pm 0.0044$	$D_{40}$	$1226 \pm 12$	$f\sigma_8(0.15)$	$0.4612 \pm 0.0078$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{220}$	$5713 \pm 40$	$\sigma_8(0.15)$	$0.766 \pm 0.011$
$A_{100}^{\mathrm{PS}}$	$241 \pm 25$	$D_{810}$	$2534 \pm 14$	$f\sigma_8(0.38)$	$0.4857 \pm 0.0089$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8$	$D_{1420}$	$815.0 \pm 5.1$	$\sigma_8(0.38)$	$0.6794 \pm 0.0092$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{2000}$	$230.0 \pm 1.8$	$f\sigma_8(0.51)$	$0.4861 \pm 0.0091$
$A_{217}^{\mathrm{CIB}}$	$40^{+7}_{-8}$	$n_{\mathrm{s},0.002}$	$0.9659 \pm 0.0044$	$\sigma_8(0.51)$	$0.6358 \pm 0.0084$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.8}_{-2.7}$	$Y_{\mathrm{P}}$	$0.245336 \pm 0.000082$	$f\sigma_8(0.61)$	$0.4818 \pm 0.0090$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246662 \pm 0.000082$	$\sigma_8(0.61)$	$0.6049 \pm 0.0079$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.58^{+0.38}_{-0.16}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.612 \pm 0.037$	$f\sigma_8(2.33)$	$0.3051 \pm 0.0039$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	Age/Gyr	$13.770 \pm 0.027$	$\sigma_8(2.33)$	$0.3131 \pm 0.0034$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.06 \pm 0.30$	$f_{2000}^{143}$	$30.3 \pm 2.9$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$r_*$	$144.65 \pm 0.31$	$f_{2000}^{217}$	$107.3 \pm 2.0$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.17$	$100\theta_*$	$1.04120 \pm 0.00042$	$f_{2000}^{143 \times 217}$	$32.6 \pm 2.1$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.893 \pm 0.030$	$\chi_{\mathrm{lensing}}^2$	$9.22 \pm 0.74$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$z_{\mathrm{drag}}$	$1059.58 \pm 0.43$	$\chi_{\mathrm{small}}^2$	$397.0 \pm 1.8$
$c_{100}$	$0.9975 \pm 0.0011$	$r_{\mathrm{drag}}$	$147.37 \pm 0.33$	$\chi_{\mathrm{lowl}}^2$	$23.06 \pm 0.86$
$c_{217}$	$1.0012 \pm 0.0016$	$k_{\mathrm{D}}$	$0.14047 \pm 0.00042$	$\chi_{\mathrm{CamSpec}}^2$	$7062.6 \pm 5.2$
$H_0$	$69.29 \pm 0.75$	$100\theta_{\mathrm{D}}$	$0.16098 \pm 0.00025$	$\chi_{\mathrm{H073p45}}^2$	$6.5 \pm 2.3$
$\Omega_{\Lambda}$	$0.7032 \pm 0.0068$	$z_{\mathrm{eq}}$	$3388 \pm 28$	$\chi_{\mathrm{JLA}}^2$	$1036.5 \pm 1.8$
$\Omega_{\mathrm{m}}$	$0.2968 \pm 0.0068$	$k_{\mathrm{eq}}$	$0.010341 \pm 0.000086$	$\chi_{6\mathrm{DF}}^2$	$0.10 \pm 0.11$
$\Omega_{\mathrm{m}}h^2$	$0.1424 \pm 0.0012$	$100\theta_{\mathrm{eq}}$	$0.8155 \pm 0.0053$	$\chi_{\mathrm{MGS}}^2$	$2.46 \pm 0.63$
$\Omega_{\mathrm{m}}h^3$	$0.0987 \pm 0.0014$	$100\theta_{\mathrm{s,eq}}$	$0.4507 \pm 0.0027$	$\chi_{\mathrm{DR12BAO}}^2$	$4.61 \pm 0.74$
$\sigma_8$	$0.828 \pm 0.011$	$H(0.15)$	$73.87 \pm 0.49$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.4$
$S_8$	$0.823 \pm 0.012$	$D_{\mathrm{M}}(0.15)$	$629.4 \pm 5.4$	$\chi_{\mathrm{CMB}}^2$	$7491.8 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4508 \pm 0.0066$	$H(0.38)$	$83.21 \pm 0.31$	$\chi_{\mathrm{BAO}}^2$	$7.2 \pm 1.1$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6108 \pm 0.0079$	$D_{\mathrm{M}}(0.38)$	$1511.0 \pm 9.2$		
$\bar{\chi}_{\mathrm{eff}}^2 = 8549.61$ ; $R - 1 = 0.01012$					



18.71 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022344	$0.02233 \pm 0.00015$ (+0.5 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4481	$0.4480 \pm 0.0071$ (-0.3 $\sigma$ )	$H(0.38)$	83.302	$83.30 \pm 0.28$ (+0.3 $\sigma$ )
$\Omega_c h^2$	0.11925	$0.1193 \pm 0.0012$ (-0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6069	$0.6071 \pm 0.0088$ (-0.3 $\sigma$ )	$D_M(0.38)$	1510.6	$1510.0 \pm 9.3$ (-0.1 $\sigma$ )
$100\theta_{MC}$	1.040954	$1.04094 \pm 0.00030$ (-0.2 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9883	$0.989 \pm 0.013$ (-0.3 $\sigma$ )	$H(0.51)$	89.741	$89.72 \pm 0.26$ (+0.3 $\sigma$ )
$\tau$	0.0531	$0.0529 \pm 0.0078$ (-0.1 $\sigma$ )	$r_{drag}h$	101.96	$102.1 \pm 1.1$ (+0.0 $\sigma$ )	$D_M(0.51)$	1961.6	$1961 \pm 10$ (-0.2 $\sigma$ )
$w_0$	-1.0528	$-1.056 \pm 0.031$ (+0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4352	$2.436 \pm 0.028$ (-0.2 $\sigma$ )	$H(0.61)$	95.189	$95.16 \pm 0.27$ (+0.3 $\sigma$ )
$\ln(10^{10} A_s)$	3.0387	$3.038 \pm 0.016$ (-0.1 $\sigma$ )	$z_{re}$	7.55	$7.51 \pm 0.80$ (-0.1 $\sigma$ )	$D_M(0.61)$	2286.0	$2286 \pm 10$ (-0.2 $\sigma$ )
$n_s$	0.96715	$0.9667 \pm 0.0042$ (+0.2 $\sigma$ )	$10^9 A_s$	2.0877	$2.087 \pm 0.033$ (-0.1 $\sigma$ )	$H(2.33)$	235.27	$235.24 \pm 0.60$ (-0.0 $\sigma$ )
$y_{cal}$	1.00045	$1.0005 \pm 0.0025$ (-0.0 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8772	$1.877 \pm 0.011$ (-0.1 $\sigma$ )	$D_M(2.33)$	5757.0	$5757.5 \pm 9.0$ (-0.3 $\sigma$ )
$A_{100}^{PS}$	233.8	$240 \pm 25$ (-0.1 $\sigma$ )	$D_{40}$	1222.9	$1224 \pm 12$ (-0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4577	$0.4579 \pm 0.0083$ (-0.3 $\sigma$ )
$A_{143}^{PS}$	39.3	$39 \pm 8$ (-0.1 $\sigma$ )	$D_{220}$	5720.1	$5721 \pm 39$ (+0.3 $\sigma$ )	$\sigma_8(0.15)$	0.7609	$0.762 \pm 0.012$ (-0.2 $\sigma$ )
$A_{217}^{PS}$	102.2	$102 \pm 10$ (+0.1 $\sigma$ )	$D_{810}$	2535.2	$2535 \pm 14$ (+0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.4816	$0.4821 \pm 0.0095$ (-0.2 $\sigma$ )
$A_{217}^{CIB}$	44.2	$40 \pm 7$ (-0.1 $\sigma$ )	$D_{1420}$	816.32	$816.0 \pm 4.8$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6751	$0.676 \pm 0.010$ (-0.2 $\sigma$ )
$A_{143}^{tSZ}$	6.58	$3.9^{+1.9}_{-2.5}$ (+0.0 $\sigma$ )	$D_{2000}$	230.55	$230.4 \pm 1.6$ (+0.2 $\sigma$ )	$f\sigma_8(0.51)$	0.4820	$0.4826 \pm 0.0097$ (-0.2 $\sigma$ )
$r_{143 \times 217}^{PS}$	0.600	$0.66 \pm 0.13$ (+0.0 $\sigma$ )	$n_{s,0.002}$	0.96715	$0.9667 \pm 0.0042$ (+0.2 $\sigma$ )	$\sigma_8(0.51)$	0.6319	$0.6324 \pm 0.0095$ (-0.2 $\sigma$ )
$r_{143 \times 217}^{CIB}$	0.779	$0.56^{+0.38}_{-0.19}$ (-0.1 $\sigma$ )	$Y_P$	0.245385	$0.245379^{+0.000062}_{-0.000056}$ (+0.5 $\sigma$ )	$f\sigma_8(0.61)$	0.4778	$0.4784 \pm 0.0096$ (-0.2 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.11	—	$Y_P^{BBN}$	0.246712	$0.246705^{+0.000062}_{-0.000056}$ (+0.5 $\sigma$ )	$\sigma_8(0.61)$	0.6012	$0.6017 \pm 0.0089$ (-0.2 $\sigma$ )
$A^{kSZ}$	0.00	$4.7^{+2.2}_{-4.0}$ (-0.1 $\sigma$ )	$10^5 D/H$	2.5904	$2.593 \pm 0.028$ (-0.5 $\sigma$ )	$f\sigma_8(2.33)$	0.30334	$0.3036 \pm 0.0044$ (-0.2 $\sigma$ )
$A_{100}^{dust}$	1.010	$1.01 \pm 0.20$ (-0.0 $\sigma$ )	Age/Gyr	13.7637	$13.764 \pm 0.022$ (-0.3 $\sigma$ )	$\sigma_8(2.33)$	0.31160	$0.3118 \pm 0.0039$ (-0.2 $\sigma$ )
$A_{143}^{dust}$	0.977	$0.96 \pm 0.18$ (-0.1 $\sigma$ )	$z_*$	1089.886	$1089.90 \pm 0.25$ (-0.5 $\sigma$ )	$f_{2000}^{143}$	29.74	$29.6 \pm 2.8$ (-0.3 $\sigma$ )
$A_{217}^{dust}$	0.971	$0.97 \pm 0.10$ (+0.0 $\sigma$ )	$r_*$	144.646	$144.65 \pm 0.27$ (-0.0 $\sigma$ )	$f_{2000}^{217}$	106.67	$106.7 \pm 1.9$ (-0.3 $\sigma$ )
$A_{143 \times 217}^{dust}$	1.002	$1.03 \pm 0.16$ (-0.0 $\sigma$ )	$100\theta_*$	1.041144	$1.04113 \pm 0.00030$ (-0.2 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.95	$32.0 \pm 2.0$ (-0.3 $\sigma$ )
$c_{100}$	0.99765	$0.9975 \pm 0.0011$ (+0.0 $\sigma$ )	$D_M(z_*)/\text{Gpc}$	13.8930	$13.894 \pm 0.026$ (+0.0 $\sigma$ )	$\chi_{simall}^2$	395.86	$396.9 \pm 1.6$ (-0.1 $\sigma$ )
$c_{217}$	1.00129	$1.0011 \pm 0.0016$ (-0.0 $\sigma$ )	$z_{drag}$	1059.818	$1059.80 \pm 0.32$ (+0.5 $\sigma$ )	$\chi_{lowl}^2$	22.75	$22.88 \pm 0.84$ (-0.1 $\sigma$ )
$c_{TE}$	0.99636	$0.9965 \pm 0.0049$	$r_{drag}$	147.320	$147.33 \pm 0.28$ (-0.1 $\sigma$ )	$\chi_{CamSpec}^2$	11499.6	$11514.4 \pm 5.6$ (+825.4 $\sigma$ )
$c_{EE}$	0.99169	$0.9919 \pm 0.0050$	$k_D$	0.140605	$0.14059 \pm 0.00033$ (+0.3 $\sigma$ )	$\chi_{H073p45}^2$	6.53	$6.5 \pm 2.3$ (-0.0 $\sigma$ )
$H_0$	69.21	$69.28 \pm 0.77$ (+0.0 $\sigma$ )	$100\theta_D$	0.160825	$0.16084 \pm 0.00019$ (-0.6 $\sigma$ )	$\chi_{JLA}^2$	1035.62	$1036.4 \pm 1.8$ (-0.1 $\sigma$ )
$\Omega_\Lambda$	0.7030	$0.7035 \pm 0.0069$ (+0.1 $\sigma$ )	$z_{eq}$	3383.6	$3384 \pm 26$ (-0.1 $\sigma$ )	$\chi_{6DF}^2$	0.054	$0.10 \pm 0.12$ (+0.0 $\sigma$ )
$\Omega_m$	0.2970	$0.2965 \pm 0.0069$ (-0.1 $\sigma$ )	$k_{eq}$	0.010327	$0.010328 \pm 0.000080$ (-0.1 $\sigma$ )	$\chi_{MGS}^2$	2.35	$2.47 \pm 0.64$ (+0.1 $\sigma$ )
$\Omega_m h^2$	0.14224	$0.1422 \pm 0.0011$ (-0.1 $\sigma$ )	$100\theta_{eq}$	0.81659	$0.8165 \pm 0.0049$ (+0.2 $\sigma$ )	$\chi_{DR12BAO}^2$	4.05	$4.51 \pm 0.71$ (-0.2 $\sigma$ )
$\Omega_m h^3$	0.09844	$0.0986 \pm 0.0014$ (-0.1 $\sigma$ )	$100\theta_{s,eq}$	0.45112	$0.4511 \pm 0.0025$ (+0.1 $\sigma$ )	$\chi_{prior}^2$	2.19	$7.8 \pm 3.4$ (+0.1 $\sigma$ )
$\sigma_8$	0.8222	$0.823 \pm 0.013$ (-0.2 $\sigma$ )	$H(0.15)$	73.874	$73.91 \pm 0.49$ (+0.1 $\sigma$ )	$\chi_{BAO}^2$	6.46	$7.1 \pm 1.2$ (-0.1 $\sigma$ )
$S_8$	0.8180	$0.818 \pm 0.013$ (-0.3 $\sigma$ )	$D_M(0.15)$	629.7	$629.3 \pm 5.5$ (-0.1 $\sigma$ )	$\chi_{CMB}^2$	11918.2	$11934.1 \pm 5.7$ (+822.5 $\sigma$ )

Best-fit  $\chi_{eff}^2 = 12969.03$ ;  $\Delta\chi_{eff}^2 = 4447.65$ ;  $\bar{\chi}_{eff}^2 = 12991.92$ ;  $\Delta\bar{\chi}_{eff}^2 = 4450.82$ ;  $R - 1 = 0.00648$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.05 ( $\Delta$  0.02) MGS: 2.35 ( $\Delta$  0.16) DR12BAO: 4.05 ( $\Delta$  -0.35) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.86 ( $\Delta$  -0.97) commander\_dx12.v3.2.29: 22.75 ( $\Delta$  -0.63) CamSpec like\_10.7HM\_1400\_unified: 11499.61 Hubble - H073p45: 6.54 ( $\Delta$  -0.10) SN - JLA Pantheon18: 1035.62 ( $\Delta$  -0.30)



**18.72**    **base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_lensing**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02233 \pm 0.00015 \quad (+0.5\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6083 \pm 0.0070 \quad (-0.3\sigma)$	$H(0.51)$	$89.71 \pm 0.24 \quad (+0.3\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1193 \pm 0.0010 \quad (-0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.010 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.51)$	$1961 \pm 10 \quad (-0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04093 \pm 0.00030 \quad (-0.2\sigma)$	$r_{\mathrm{drag}}h$	$102.1 \pm 1.1 \quad (+0.0\sigma)$	$H(0.61)$	$95.14 \pm 0.26 \quad (+0.3\sigma)$
$\tau$	$0.0538 \pm 0.0074 \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.441 \pm 0.022 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.61)$	$2285 \pm 10 \quad (-0.2\sigma)$
$w_0$	$-1.059 \pm 0.030 \quad (+0.2\sigma)$	$z_{\mathrm{re}}$	$7.60 \pm 0.74 \quad (-0.1\sigma)$	$H(2.33)$	$235.26 \pm 0.57 \quad (-0.0\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041 \pm 0.014 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.092 \pm 0.030 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	$5757.7 \pm 8.8 \quad (-0.3\sigma)$
$n_{\mathrm{s}}$	$0.9664 \pm 0.0040 \quad (+0.2\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878 \pm 0.011 \quad (-0.0\sigma)$	$f\sigma_8(0.15)$	$0.4590 \pm 0.0067 \quad (-0.3\sigma)$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025 \quad (+0.0\sigma)$	$D_{40}$	$1225 \pm 12 \quad (-0.0\sigma)$	$\sigma_8(0.15)$	$0.7632 \pm 0.0099 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$239 \pm 25 \quad (-0.1\sigma)$	$D_{220}$	$5724 \pm 38 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4834 \pm 0.0079 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.1\sigma)$	$D_{810}$	$2535 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.6771 \pm 0.0088 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{1420}$	$816.1 \pm 4.8 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4838 \pm 0.0081 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7 \quad (-0.1\sigma)$	$D_{2000}$	$230.4 \pm 1.6 \quad (+0.3\sigma)$	$\sigma_8(0.51)$	$0.6337 \pm 0.0081 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.6} \quad (+0.0\sigma)$	$n_{\mathrm{s},0.002}$	$0.9664 \pm 0.0040 \quad (+0.2\sigma)$	$f\sigma_8(0.61)$	$0.4796 \pm 0.0081 \quad (-0.2\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.0\sigma)$	$Y_{\mathrm{P}}$	$0.245379^{+0.000062}_{-0.000056} \quad (+0.5\sigma)$	$\sigma_8(0.61)$	$0.6030 \pm 0.0076 \quad (-0.2\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.39}_{-0.18} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246705^{+0.000062}_{-0.000056} \quad (+0.5\sigma)$	$f\sigma_8(2.33)$	$0.3042 \pm 0.0038 \quad (-0.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5 \mathrm{D}/\mathrm{H}$	$2.593 \pm 0.028 \quad (-0.5\sigma)$	$\sigma_8(2.33)$	$0.3123 \pm 0.0034 \quad (-0.2\sigma)$
$A^{\mathrm{kSZ}}$	$4.7^{+2.1}_{-4.1} \quad (-0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.763 \pm 0.022 \quad (-0.3\sigma)$	$f_{2000}^{143}$	$29.6 \pm 2.8 \quad (-0.3\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$z_*$	$1089.91 \pm 0.24 \quad (-0.5\sigma)$	$f_{2000}^{217}$	$106.7 \pm 1.9 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$r_*$	$144.63 \pm 0.25 \quad (-0.0\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.0 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.0\sigma)$	$100\theta_*$	$1.04111 \pm 0.00029 \quad (-0.2\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.13 \pm 0.67 \quad (-0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.892 \pm 0.023 \quad (-0.0\sigma)$	$\chi_{\mathrm{small}}^2$	$396.9 \pm 1.6 \quad (-0.1\sigma)$
$c_{100}$	$0.9976 \pm 0.0011 \quad (+0.0\sigma)$	$z_{\mathrm{drag}}$	$1059.80 \pm 0.32 \quad (+0.5\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.98 \pm 0.79 \quad (-0.1\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$r_{\mathrm{drag}}$	$147.31 \pm 0.26 \quad (-0.1\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11513.9 \pm 5.6 \quad (+850.3\sigma)$
$c_{TE}$	$0.9964 \pm 0.0049$	$k_{\mathrm{D}}$	$0.14061 \pm 0.00032 \quad (+0.3\sigma)$	$\chi_{\mathrm{H073p45}}^2$	$6.4 \pm 2.3 \quad (-0.0\sigma)$
$c_{EE}$	$0.9919 \pm 0.0050$	$100\theta_{\mathrm{D}}$	$0.16083 \pm 0.00019 \quad (-0.6\sigma)$	$\chi_{\mathrm{JLA}}^2$	$1036.5 \pm 1.9 \quad (-0.1\sigma)$
$H_0$	$69.32 \pm 0.77 \quad (+0.0\sigma)$	$z_{\mathrm{eq}}$	$3386 \pm 24 \quad (-0.1\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.11 \pm 0.12 \quad (+0.0\sigma)$
$\Omega_{\Lambda}$	$0.7037 \pm 0.0068 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010334 \pm 0.000072 \quad (-0.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$2.48 \pm 0.64 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}$	$0.2963 \pm 0.0068 \quad (-0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8162 \pm 0.0044 \quad (+0.2\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.51 \pm 0.66 \quad (-0.2\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14233 \pm 0.00099 \quad (-0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4509 \pm 0.0023 \quad (+0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.0987 \pm 0.0013 \quad (-0.1\sigma)$	$H(0.15)$	$73.92 \pm 0.49 \quad (+0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11942.9 \pm 5.8 \quad (+817.8\sigma)$
$\sigma_8$	$0.825 \pm 0.011 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$629.0 \pm 5.5 \quad (-0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$7.1 \pm 1.2 \quad (-0.1\sigma)$
$S_8$	$0.819 \pm 0.011 \quad (-0.3\sigma)$	$H(0.38)$	$83.29 \pm 0.27 \quad (+0.3\sigma)$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4488 \pm 0.0058 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.38)$	$1509.8 \pm 9.2 \quad (-0.1\sigma)$		
$\bar{\chi}_{\mathrm{eff}}^2 = 13000.66; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.85; R - 1 = 0.00726$					



**18.73**    **base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02234 \pm 0.00015 \quad (+0.5\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4485 \pm 0.0070 \quad (-0.3\sigma)$	$H(0.38)$	$83.30 \pm 0.28 \quad (+0.3\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1192 \pm 0.0012 \quad (-0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6078 \pm 0.0086 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.38)$	$1510.0 \pm 9.3 \quad (-0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04094 \pm 0.00030 \quad (-0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.012 \quad (-0.3\sigma)$	$H(0.51)$	$89.73 \pm 0.26 \quad (+0.3\sigma)$
$\tau$	$0.0545^{+0.0048}_{-0.0080} \quad (-0.1\sigma)$	$r_{\mathrm{drag}}h$	$102.1 \pm 1.1 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1961 \pm 10 \quad (-0.2\sigma)$
$w_0$	$-1.056 \pm 0.031 \quad (+0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.439 \pm 0.027 \quad (-0.2\sigma)$	$H(0.61)$	$95.17 \pm 0.27 \quad (+0.3\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.012}_{-0.016} \quad (-0.1\sigma)$	$z_{\mathrm{re}}$	$7.67^{+0.54}_{-0.79} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2286 \pm 10 \quad (-0.2\sigma)$
$n_{\mathrm{s}}$	$0.9669 \pm 0.0042 \quad (+0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.024}_{-0.033} \quad (-0.1\sigma)$	$H(2.33)$	$235.23 \pm 0.61 \quad (-0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.011 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5757.3 \pm 9.1 \quad (-0.3\sigma)$
$A_{100}^{\mathrm{PS}}$	$239 \pm 25 \quad (-0.1\sigma)$	$D_{40}$	$1224 \pm 12 \quad (-0.1\sigma)$	$f\sigma_8(0.15)$	$0.4584 \pm 0.0082 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.1\sigma)$	$D_{220}$	$5720 \pm 39 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.762 \pm 0.011 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2535 \pm 14 \quad (+0.0\sigma)$	$f\sigma_8(0.38)$	$0.4826 \pm 0.0094 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7 \quad (-0.1\sigma)$	$D_{1420}$	$815.9 \pm 4.8 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.677 \pm 0.010 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5} \quad (+0.0\sigma)$	$D_{2000}$	$230.4 \pm 1.6 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4830 \pm 0.0096 \quad (-0.2\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9669 \pm 0.0042 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6332 \pm 0.0092 \quad (-0.2\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.38}_{-0.19} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245380^{+0.000062}_{-0.000056} \quad (+0.5\sigma)$	$f\sigma_8(0.61)$	$0.4789 \pm 0.0095 \quad (-0.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246707^{+0.000063}_{-0.000057} \quad (+0.5\sigma)$	$\sigma_8(0.61)$	$0.6025 \pm 0.0086 \quad (-0.2\sigma)$
$A^{\mathrm{kSZ}}$	$4.7^{+2.1}_{-4.1} \quad (-0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.592 \pm 0.028 \quad (-0.5\sigma)$	$f\sigma_8(2.33)$	$0.3039 \pm 0.0043 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.764 \pm 0.022 \quad (-0.3\sigma)$	$\sigma_8(2.33)$	$0.3122 \pm 0.0037 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$z_*$	$1089.90 \pm 0.25 \quad (-0.5\sigma)$	$f_{2000}^{143}$	$29.5 \pm 2.8 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.0\sigma)$	$r_*$	$144.66 \pm 0.27 \quad (-0.0\sigma)$	$f_{2000}^{217}$	$106.7 \pm 1.9 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_*$	$1.04113 \pm 0.00030 \quad (-0.2\sigma)$	$f_{2000}^{143 \times 217}$	$31.9 \pm 2.0 \quad (-0.3\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.894 \pm 0.026 \quad (+0.0\sigma)$	$\chi_{\mathrm{small}}^2$	$396.8 \pm 1.6 \quad (-0.1\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$z_{\mathrm{drag}}$	$1059.80 \pm 0.32 \quad (+0.5\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.89 \pm 0.85 \quad (-0.1\sigma)$
$c_{TE}$	$0.9964 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.33 \pm 0.28 \quad (-0.1\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11514.2 \pm 5.6 \quad (+830.2\sigma)$
$c_{EE}$	$0.9919 \pm 0.0050$	$k_{\mathrm{D}}$	$0.14059 \pm 0.00033 \quad (+0.3\sigma)$	$\chi_{\mathrm{H073p45}}^2$	$6.5 \pm 2.3 \quad (-0.0\sigma)$
$H_0$	$69.28 \pm 0.77 \quad (+0.0\sigma)$	$100\theta_{\mathrm{D}}$	$0.16083 \pm 0.00019 \quad (-0.6\sigma)$	$\chi_{\mathrm{JLA}}^2$	$1036.4 \pm 1.8 \quad (-0.1\sigma)$
$\Omega_{\Lambda}$	$0.7036 \pm 0.0069 \quad (+0.1\sigma)$	$z_{\mathrm{eq}}$	$3383 \pm 26 \quad (-0.1\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.10 \pm 0.12 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}$	$0.2964 \pm 0.0069 \quad (-0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010326 \pm 0.000081 \quad (-0.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$2.47 \pm 0.64 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1422 \pm 0.0011 \quad (-0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8167 \pm 0.0050 \quad (+0.2\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.50 \pm 0.71 \quad (-0.2\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.0985 \pm 0.0014 \quad (-0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4512 \pm 0.0026 \quad (+0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$\sigma_8$	$0.824 \pm 0.012 \quad (-0.2\sigma)$	$H(0.15)$	$73.91 \pm 0.49 \quad (+0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$7.1 \pm 1.2 \quad (-0.1\sigma)$
$S_8$	$0.819 \pm 0.013 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.15)$	$629.3 \pm 5.5 \quad (-0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11933.9 \pm 5.6 \quad (+831.8\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 12991.69; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.82; R - 1 = 0.00727$$



18.74 base\_w\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02234 \pm 0.00015 \quad (+0.5\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6086 \pm 0.0069 \quad (-0.3\sigma)$	$H(0.51)$	$89.72 \pm 0.24 \quad (+0.3\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1193 \pm 0.0010 \quad (-0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.991 \pm 0.010 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.51)$	$1961 \pm 10 \quad (-0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04093 \pm 0.00030 \quad (-0.2\sigma)$	$r_{\mathrm{drag}}h$	$102.1 \pm 1.1 \quad (+0.0\sigma)$	$H(0.61)$	$95.16 \pm 0.25 \quad (+0.3\sigma)$
$\tau$	$0.0549^{+0.0051}_{-0.0076} \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.442 \pm 0.022 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.61)$	$2285 \pm 10 \quad (-0.2\sigma)$
$w_0$	$-1.058 \pm 0.030 \quad (+0.1\sigma)$	$z_{\mathrm{re}}$	$7.72^{+0.56}_{-0.74} \quad (-0.1\sigma)$	$H(2.33)$	$235.24 \pm 0.57 \quad (-0.0\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.042^{+0.011}_{-0.014} \quad (-0.0\sigma)$	$10^9A_{\mathrm{s}}$	$2.096^{+0.023}_{-0.030} \quad (-0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	$5757.5 \pm 8.8 \quad (-0.3\sigma)$
$n_{\mathrm{s}}$	$0.9666 \pm 0.0040 \quad (+0.2\sigma)$	$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.878 \pm 0.010 \quad (-0.0\sigma)$	$f\sigma_8(0.15)$	$0.4591 \pm 0.0067 \quad (-0.3\sigma)$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025 \quad (+0.0\sigma)$	$D_{40}$	$1225 \pm 12 \quad (-0.0\sigma)$	$\sigma_8(0.15)$	$0.7635 \pm 0.0099 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$239 \pm 25 \quad (-0.1\sigma)$	$D_{220}$	$5723 \pm 38 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4834 \pm 0.0079 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.1\sigma)$	$D_{810}$	$2535 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.6775 \pm 0.0087 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{1420}$	$816.0 \pm 4.8 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4839 \pm 0.0081 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7 \quad (-0.1\sigma)$	$D_{2000}$	$230.5 \pm 1.6 \quad (+0.3\sigma)$	$\sigma_8(0.51)$	$0.6341 \pm 0.0080 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.6} \quad (+0.0\sigma)$	$n_{\mathrm{s},0.002}$	$0.9666 \pm 0.0040 \quad (+0.2\sigma)$	$f\sigma_8(0.61)$	$0.4797 \pm 0.0081 \quad (-0.2\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245380^{+0.000062}_{-0.000055} \quad (+0.5\sigma)$	$\sigma_8(0.61)$	$0.6033 \pm 0.0075 \quad (-0.2\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.39}_{-0.18} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246707^{+0.000062}_{-0.000055} \quad (+0.5\sigma)$	$f\sigma_8(2.33)$	$0.3044 \pm 0.0038 \quad (-0.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5\mathrm{D}/\mathrm{H}$	$2.592 \pm 0.028 \quad (-0.5\sigma)$	$\sigma_8(2.33)$	$0.3126 \pm 0.0033 \quad (-0.2\sigma)$
$A^{\mathrm{kSZ}}$	$4.7^{+1.9}_{-4.3} \quad (-0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.763 \pm 0.022 \quad (-0.3\sigma)$	$f_{2000}^{143}$	$29.5 \pm 2.8 \quad (-0.3\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$z_*$	$1089.90 \pm 0.24 \quad (-0.5\sigma)$	$f_{2000}^{217}$	$106.7 \pm 1.9 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$r_*$	$144.64 \pm 0.24 \quad (-0.0\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.0 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.0\sigma)$	$100\theta_*$	$1.04112 \pm 0.00029 \quad (-0.2\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.09 \pm 0.62 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.893 \pm 0.023 \quad (-0.0\sigma)$	$\chi_{\mathrm{small}}^2$	$396.8 \pm 1.6 \quad (-0.1\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$z_{\mathrm{drag}}$	$1059.81 \pm 0.32 \quad (+0.5\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.97 \pm 0.79 \quad (-0.1\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$r_{\mathrm{drag}}$	$147.32 \pm 0.26 \quad (-0.2\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11513.9 \pm 5.6 \quad (+854.6\sigma)$
$c_{TE}$	$0.9964 \pm 0.0049$	$k_{\mathrm{D}}$	$0.14060 \pm 0.00032 \quad (+0.3\sigma)$	$\chi_{\mathrm{H073p45}}^2$	$6.4 \pm 2.3 \quad (-0.0\sigma)$
$c_{EE}$	$0.9919 \pm 0.0050$	$100\theta_{\mathrm{D}}$	$0.16083 \pm 0.00019 \quad (-0.6\sigma)$	$\chi_{\mathrm{JLA}}^2$	$1036.4 \pm 1.8 \quad (-0.1\sigma)$
$H_0$	$69.31 \pm 0.77 \quad (+0.0\sigma)$	$z_{\mathrm{eq}}$	$3385 \pm 23 \quad (-0.1\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.11 \pm 0.12 \quad (+0.0\sigma)$
$\Omega_{\Lambda}$	$0.7037 \pm 0.0069 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010330 \pm 0.000071 \quad (-0.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$2.48 \pm 0.64 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}$	$0.2963 \pm 0.0069 \quad (-0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8164 \pm 0.0044 \quad (+0.2\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.50 \pm 0.66 \quad (-0.2\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14228 \pm 0.00098 \quad (-0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4510 \pm 0.0023 \quad (+0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.0986 \pm 0.0013 \quad (-0.0\sigma)$	$H(0.15)$	$73.93 \pm 0.49 \quad (+0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11942.8 \pm 5.7 \quad (+825.6\sigma)$
$\sigma_8$	$0.825 \pm 0.010 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$629.1 \pm 5.5 \quad (-0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$7.1 \pm 1.2 \quad (-0.1\sigma)$
$S_8$	$0.820 \pm 0.011 \quad (-0.3\sigma)$	$H(0.38)$	$83.30 \pm 0.27 \quad (+0.3\sigma)$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4490 \pm 0.0058 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.38)$	$1509.7 \pm 9.2 \quad (-0.1\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 13000.46; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.85; R - 1 = 0.00765$$



18.75 base\_w\_CleanedCamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022163	$0.02215 \pm 0.00022$	$\sigma_8/h^{0.5}$	1.0756	$1.041^{+0.036}_{-0.026}$	$D_M(0.15)$	480.6	$547^{+21}_{-66}$
$\Omega_c h^2$	0.12011	$0.1201 \pm 0.0021$	$r_{\text{drag}} h$	147.3	$125^{+20}_{-8}$	$H(0.38)$	84.30	$84.1^{+1.1}_{-0.90}$
$100\theta_{\text{MC}}$	1.040873	$1.04084 \pm 0.00046$	$\langle d^2 \rangle^{1/2}$	2.5287	$2.498^{+0.047}_{-0.041}$	$D_M(0.38)$	1288	$1386^{+36}_{-99}$
$\tau$	0.0528	$0.0518 \pm 0.0081$	$z_{\text{re}}$	7.51	$7.41 \pm 0.83$	$H(0.51)$	86.59	$88.2^{+1.3}_{-0.86}$
$w_0$	-1.972	$-1.55^{+0.20}_{-0.39}$	$10^9 A_s$	2.0891	$2.085 \pm 0.034$	$D_M(0.51)$	1745	$1839^{+37}_{-98}$
$\ln(10^{10} A_s)$	3.0393	$3.037 \pm 0.016$	$10^9 A_s e^{-2\tau}$	1.8795	$1.879 \pm 0.014$	$H(0.61)$	90.02	$92.5^{+1.7}_{-1.9}$
$n_s$	0.9632	$0.9631 \pm 0.0056$	$D_{40}$	1226.3	$1228 \pm 15$	$D_M(0.61)$	2085	$2171^{+36}_{-92}$
$y_{\text{cal}}$	1.00014	$1.0004 \pm 0.0025$	$D_{220}$	5711.2	$5710 \pm 42$	$H(2.33)$	230.38	$232.1^{+1.4}_{-2.7}$
$A_{100}^{\text{PS}}$	249.8	$254 \pm 26$	$D_{810}$	2530.7	$2531 \pm 14$	$D_M(2.33)$	5739.8	$5749^{+18}_{-23}$
$A_{143}^{\text{tSZ}}$	6.15	$3.8^{+1.8}_{-2.6}$	$D_{1420}$	812.4	$812.5 \pm 5.1$	$f\sigma_8(0.15)$	0.5097	$0.488 \pm 0.021$
$A^{\text{kSZ}}$	0.4	—	$D_{2000}$	229.29	$229.2 \pm 1.8$	$\sigma_8(0.15)$	1.014	$0.897^{+0.11}_{-0.054}$
$A_{100}^{\text{dust}}$	1.003	$1.01 \pm 0.19$	$n_{s,0.002}$	0.9632	$0.9631 \pm 0.0056$	$f\sigma_8(0.38)$	0.647	$0.570^{+0.064}_{-0.046}$
$A_{143}^{\text{power}}$	11.68	$10.2^{+2.1}_{-2.4}$	$Y_{\text{P}}$	0.245310	$0.24530^{+0.00010}_{-0.000082}$	$\sigma_8(0.38)$	0.908	$0.800^{+0.098}_{-0.048}$
$A_{217}^{\text{power}}$	11.02	$8.0^{+1.7}_{-2.9}$	$Y_{\text{P}}^{\text{BBN}}$	0.246637	$0.24663^{+0.00010}_{-0.000082}$	$f\sigma_8(0.51)$	0.679	$0.586^{+0.079}_{-0.050}$
$A_{143 \times 217}^{\text{power}}$	7.34	$4.1^{+1.7}_{-2.8}$	$10^5 D/H$	2.6250	$2.628 \pm 0.042$	$\sigma_8(0.51)$	0.848	$0.748^{+0.092}_{-0.043}$
$\gamma_{143}^{\text{power}}$	1.341	$1.34^{+0.41}_{-0.54}$	Age/Gyr	13.456	$13.591^{+0.058}_{-0.15}$	$f\sigma_8(0.61)$	0.685	$0.587^{+0.085}_{-0.050}$
$\gamma_{217}^{\text{power}}$	1.35	$1.39^{+0.76}_{-0.57}$	$z_*$	1090.192	$1090.21 \pm 0.40$	$\sigma_8(0.61)$	0.804	$0.710^{+0.086}_{-0.040}$
$\gamma_{143 \times 217}^{\text{power}}$	1.27	$1.34 \pm 0.59$	$r_*$	144.560	$144.56 \pm 0.48$	$f\sigma_8(2.33)$	0.4002	$0.356^{+0.041}_{-0.018}$
$c_{100}$	0.99813	$0.9978 \pm 0.0011$	$100\theta_*$	1.041073	$1.04105 \pm 0.00046$	$\sigma_8(2.33)$	0.4007	$0.359^{+0.038}_{-0.018}$
$c_{217}$	0.99899	$0.9994^{+0.0013}_{-0.0017}$	$D_M(z_*)/\text{Gpc}$	13.8857	$13.886 \pm 0.044$	$f_{2000}^{143}$	22.97	$23 \pm 3$
$H_0$	99.98	$> 80.2$	$z_{\text{drag}}$	1059.475	$1059.44 \pm 0.45$	$f_{2000}^{217}$	16.62	$16.6 \pm 2.0$
$\Omega_\Lambda$	0.8570	$0.792^{+0.066}_{-0.017}$	$r_{\text{drag}}$	147.292	$147.30 \pm 0.48$	$f_{2000}^{143 \times 217}$	10.95	$10.8 \pm 2.1$
$\Omega_m$	0.1430	$0.208^{+0.017}_{-0.066}$	$k_D$	0.14049	$0.14047 \pm 0.00052$	$\chi_{\text{small}}^2$	395.78	$396.8 \pm 1.6$
$\Omega_m h^2$	0.14292	$0.1429 \pm 0.0020$	$100\theta_D$	0.161037	$0.16105 \pm 0.00026$	$\chi_{\text{lowl}}^2$	22.79	$23.1 \pm 1.1$
$\Omega_m h^3$	0.1429	$0.121^{+0.019}_{-0.0095}$	$z_{\text{eq}}$	3399.9	$3400 \pm 47$	$\chi_{\text{CamSpec}}^2$	6702.39	$6715.0 \pm 5.1$
$\sigma_8$	1.075	$0.959^{+0.11}_{-0.055}$	$k_{\text{eq}}$	0.010377	$0.01038 \pm 0.00014$	$\chi_{\text{prior}}^2$	1.19	$5.2 \pm 2.9$
$S_8$	0.7425	$0.783^{+0.030}_{-0.042}$	$100\theta_{\text{eq}}$	0.8131	$0.8131 \pm 0.0089$	$\chi_{\text{CMB}}^2$	7121.0	$7135.0 \pm 5.3$
$\sigma_8 \Omega_m^{0.5}$	0.4067	$0.429^{+0.016}_{-0.023}$	$100\theta_{s,\text{eq}}$	0.44943	$0.4494 \pm 0.0046$			
$\sigma_8 \Omega_m^{0.25}$	0.6613	$0.640^{+0.023}_{-0.018}$	$H(0.15)$	88.73	$81.8^{+6.7}_{-2.9}$			

Best-fit  $\chi_{\text{eff}}^2 = 7122.16$ ;  $\bar{\chi}_{\text{eff}}^2 = 7140.23$ ;  $R - 1 = 0.00669$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.78 commander\_dx12\_v3.2\_29: 22.79 CamSpec like\_10.7cleaned: 6702.39



## 19 w+wa

### 19.1 base\_w\_wa\_plikHM\_TT\_lowl\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022172	$0.02213 \pm 0.00021$	$\sigma_8 \Omega_m^{0.25}$	0.6089	$0.609 \pm 0.014$	$H(0.38)$	84.71	$84.8^{+1.2}_{-1.1}$
$\Omega_c h^2$	0.12035	$0.1206 \pm 0.0019$	$\sigma_8/h^{0.5}$	0.9899	$0.990 \pm 0.020$	$D_M(0.38)$	1527.0	$1527 \pm 17$
$100\theta_{MC}$	1.040791	$1.04078 \pm 0.00046$	$r_{drag}h$	95.60	$95.5^{+3.1}_{-4.1}$	$H(0.51)$	91.42	$91.4 \pm 1.2$
$\tau$	0.0530	$0.0516 \pm 0.0081$	$\langle d^2 \rangle^{1/2}$	2.4660	$2.469 \pm 0.042$	$D_M(0.51)$	1969.8	$1969 \pm 18$
$w_0$	-0.617	$-0.59^{+0.29}_{-0.26}$	$z_{re}$	7.57	$7.42^{+0.84}_{-0.75}$	$H(0.61)$	96.82	$96.8 \pm 1.2$
$w_a$	-1.20	$-1.33 \pm 0.79$	$10^9 A_s$	2.0932	$2.089 \pm 0.035$	$D_M(0.61)$	2288.5	$2288 \pm 18$
$\ln(10^{10} A_s)$	3.0413	$3.039 \pm 0.017$	$10^9 A_s e^{-2\tau}$	1.8827	$1.884 \pm 0.013$	$H(2.33)$	233.96	$234.0^{+1.1}_{-1.3}$
$n_s$	0.9644	$0.9630 \pm 0.0053$	$D_{40}$	1228.6	$1232 \pm 14$	$D_M(2.33)$	5754.1	$5757 \pm 14$
$y_{cal}$	1.00010	$1.0004 \pm 0.0025$	$D_{220}$	5710.0	$5714 \pm 41$	$f\sigma_8(0.15)$	0.4487	$0.449 \pm 0.014$
$A_{217}^{CIB}$	48.3	$48 \pm 7$	$D_{810}$	2536.0	$2536 \pm 14$	$\sigma_8(0.15)$	0.7361	$0.736^{+0.023}_{-0.026}$
$\xi^{tSZ \times CIB}$	0.37	—	$D_{1420}$	815.1	$814.4 \pm 5.0$	$f\sigma_8(0.38)$	0.4595	$0.460^{+0.020}_{-0.022}$
$A_{143}^{tSZ}$	6.99	$5.1 \pm 2.0$	$D_{2000}$	230.03	$229.7 \pm 1.8$	$\sigma_8(0.38)$	0.6535	$0.653^{+0.020}_{-0.023}$
$A_{100}^{PS}$	253.4	$262 \pm 28$	$n_{s,0.002}$	0.9644	$0.9630 \pm 0.0053$	$f\sigma_8(0.51)$	0.4597	$0.460^{+0.020}_{-0.023}$
$A_{143}^{PS}$	49.9	$49 \pm 8$	$Y_P$	0.245314	$0.24529^{+0.00010}_{-0.000079}$	$\sigma_8(0.51)$	0.6122	$0.612^{+0.019}_{-0.021}$
$A_{143 \times 217}^{PS}$	48.0	$44 \pm 9$	$Y_P^{BBN}$	0.246641	$0.24662^{+0.00010}_{-0.000080}$	$f\sigma_8(0.61)$	0.4569	$0.458^{+0.020}_{-0.022}$
$A_{217}^{PS}$	119.8	$115 \pm 10$	$10^5 D/H$	2.6233	$2.631 \pm 0.040$	$\sigma_8(0.61)$	0.5830	$0.583^{+0.017}_{-0.019}$
$A^{kSZ}$	0.01	$< 4.70$	Age/Gyr	13.7748	$13.777 \pm 0.035$	$f\sigma_8(2.33)$	0.2963	$0.2960^{+0.0078}_{-0.0088}$
$A_{100}^{dustTT}$	8.90	$8.9 \pm 1.8$	$z_*$	1090.201	$1090.28 \pm 0.37$	$\sigma_8(2.33)$	0.3014	$0.3010^{+0.0078}_{-0.0090}$
$A_{143}^{dustTT}$	10.75	$10.7 \pm 1.8$	$r_*$	144.493	$144.47 \pm 0.43$	$f_{2000}^{143}$	30.14	$31.0 \pm 2.9$
$A_{143 \times 217}^{dustTT}$	19.42	$18.3 \pm 3.3$	$100\theta_*$	1.041002	$1.04099 \pm 0.00045$	$f_{2000}^{143 \times 217}$	33.07	$33.4 \pm 2.0$
$A_{217}^{dustTT}$	94.6	$93.5 \pm 7.4$	$D_M(z_*)/\text{Gpc}$	13.8802	$13.878 \pm 0.041$	$f_{2000}^{217}$	107.46	$108.0 \pm 1.9$
$c_{100}$	0.99965	$0.99960 \pm 0.00061$	$z_{drag}$	1059.513	$1059.42 \pm 0.44$	$\chi_{simall}^2$	395.89	$396.9 \pm 1.7$
$c_{217}$	0.99825	$0.99825 \pm 0.00062$	$r_{drag}$	147.220	$147.21 \pm 0.44$	$\chi_{lowl}^2$	23.46	$23.8 \pm 1.2$
$H_0$	64.94	$64.9^{+2.1}_{-2.8}$	$k_D$	0.14058	$0.14055 \pm 0.00050$	$\chi_{plik}^2$	758.0	$770.5 \pm 5.3$
$\Omega_\Lambda$	0.6605	$0.658 \pm 0.026$	$100\theta_D$	0.161005	$0.16106 \pm 0.00026$	$\chi_{6DF}^2$	0.316	$0.56 \pm 0.60$
$\Omega_m$	0.3395	$0.342 \pm 0.026$	$z_{eq}$	3405.7	$3410 \pm 42$	$\chi_{MGS}^2$	0.63	$0.89 \pm 0.88$
$\Omega_m h^2$	0.14316	$0.1433 \pm 0.0018$	$k_{eq}$	0.010395	$0.01041 \pm 0.00013$	$\chi_{DR12BAO}^2$	3.49	$5.0 \pm 1.5$
$\Omega_m h^3$	0.09297	$0.0930^{+0.0033}_{-0.0041}$	$100\theta_{eq}$	0.8120	$0.8113 \pm 0.0079$	$\chi_{prior}^2$	1.32	$7.2 \pm 3.6$
$\sigma_8$	0.7977	$0.798^{+0.024}_{-0.027}$	$100\theta_{s,eq}$	0.44886	$0.4485 \pm 0.0041$	$\chi_{BAO}^2$	4.43	$6.4 \pm 1.9$
$S_8$	0.8486	$0.850 \pm 0.022$	$H(0.15)$	73.09	$73.14 \pm 0.92$	$\chi_{CMB}^2$	1177.3	$1191.2 \pm 5.5$
$\sigma_8 \Omega_m^{0.5}$	0.4648	$0.466 \pm 0.012$	$D_M(0.15)$	651.6	$652 \pm 14$			

Best-fit  $\chi_{\text{eff}}^2 = 1183.08$ ;  $\bar{\chi}_{\text{eff}}^2 = 1204.85$ ;  $R - 1 = 0.00724$

$\chi_{\text{eff}}^2$ : BAO - 6DF: 0.32 MGS: 0.62 DR12BAO: 3.49 CMB - simall\_100x143.offlike5\_EE\_Aplanck\_B: 395.89 commander\_dx12\_v3.2.29: 23.46 plik\_rd12\_HM\_v22.TT: 757.98



## 19.2 base\_w\_wa\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022196	$0.02216 \pm 0.00020$	$\sigma_8 \Omega_m^{0.25}$	0.6047	$0.6046 \pm 0.0098$	$H(0.38)$	84.55	$84.7 \pm 1.1$
$\Omega_c h^2$	0.11973	$0.1199 \pm 0.0014$	$\sigma_8/h^{0.5}$	0.9841	$0.984 \pm 0.014$	$D_M(0.38)$	1527.2	$1528 \pm 17$
$100\theta_{MC}$	1.040926	$1.04083 \pm 0.00044$	$r_{drag}h$	96.12	$95.7^{+3.3}_{-4.1}$	$H(0.51)$	91.30	$91.5 \pm 1.2$
$\tau$	0.0525	$0.0512 \pm 0.0080$	$\langle d^2 \rangle^{1/2}$	2.4508	$2.455 \pm 0.027$	$D_M(0.51)$	1970.8	$1970 \pm 17$
$w_0$	-0.662	$-0.61 \pm 0.27$	$z_{re}$	7.51	$7.36 \pm 0.82$	$H(0.61)$	96.75	$96.9 \pm 1.2$
$w_a$	-1.01	$-1.21 \pm 0.76$	$10^9 A_s$	2.0882	$2.084 \pm 0.032$	$D_M(0.61)$	2289.8	$2289 \pm 18$
$\ln(10^{10} A_s)$	3.0389	$3.037 \pm 0.015$	$10^9 A_s e^{-2\tau}$	1.8801	$1.881 \pm 0.011$	$H(2.33)$	234.01	$233.9^{+1.1}_{-1.4}$
$n_s$	0.96570	$0.9641 \pm 0.0045$	$D_{40}$	1225.7	$1229 \pm 12$	$D_M(2.33)$	5752.4	$5755 \pm 14$
$y_{cal}$	1.00014	$1.0003 \pm 0.0024$	$D_{220}$	5712.1	$5715 \pm 41$	$f\sigma_8(0.15)$	0.4463	$0.445 \pm 0.012$
$A_{217}^{CIB}$	48.8	$48 \pm 7$	$D_{810}$	2535.8	$2535 \pm 13$	$\sigma_8(0.15)$	0.7336	$0.732^{+0.022}_{-0.024}$
$\xi^{tSZ \times CIB}$	0.30	—	$D_{1420}$	815.40	$814.4 \pm 5.0$	$f\sigma_8(0.38)$	0.4577	$0.456^{+0.019}_{-0.021}$
$A_{143}^{tSZ}$	7.06	$5.1 \pm 2.0$	$D_{2000}$	230.09	$229.6 \pm 1.8$	$\sigma_8(0.38)$	0.6513	$0.650^{+0.019}_{-0.021}$
$A_{100}^{PS}$	254.4	$263 \pm 28$	$n_{s,0.002}$	0.96570	$0.9641 \pm 0.0045$	$f\sigma_8(0.51)$	0.4577	$0.456^{+0.019}_{-0.021}$
$A_{143}^{PS}$	48.8	$49 \pm 8$	$Y_P$	0.245324	$0.245306^{+0.000095}_{-0.000075}$	$\sigma_8(0.51)$	0.6103	$0.609^{+0.017}_{-0.019}$
$A_{143 \times 217}^{PS}$	46.1	$43 \pm 9$	$Y_P^{BBN}$	0.246650	$0.246632^{+0.000096}_{-0.000075}$	$f\sigma_8(0.61)$	0.4547	$0.453 \pm 0.019$
$A_{217}^{PS}$	118.8	$115^{+11}_{-9.8}$	$10^5 D/H$	2.6187	$2.626 \pm 0.038$	$\sigma_8(0.61)$	0.5811	$0.580^{+0.016}_{-0.018}$
$A^{kSZ}$	0.01	$< 4.75$	Age/Gyr	13.7765	$13.779 \pm 0.034$	$f\sigma_8(2.33)$	0.2953	$0.2945^{+0.0071}_{-0.0080}$
$A_{100}^{dustTT}$	8.88	$8.9 \pm 1.9$	$z_*$	1090.116	$1090.18 \pm 0.32$	$\sigma_8(2.33)$	0.3011	$0.2999^{+0.0076}_{-0.0086}$
$A_{143}^{dustTT}$	10.84	$10.7 \pm 1.8$	$r_*$	144.633	$144.61 \pm 0.33$	$f_{2000}^{143}$	30.19	$31.1 \pm 2.9$
$A_{143 \times 217}^{dustTT}$	19.47	$18.3 \pm 3.3$	$100\theta_*$	1.041123	$1.04104 \pm 0.00044$	$f_{2000}^{143 \times 217}$	33.06	$33.5 \pm 2.0$
$A_{217}^{dustTT}$	94.6	$93.4 \pm 7.2$	$D_M(z_*)/\text{Gpc}$	13.8921	$13.891 \pm 0.032$	$f_{2000}^{217}$	107.48	$108.0 \pm 1.9$
$c_{100}$	0.99965	$0.99960 \pm 0.00061$	$z_{drag}$	1059.513	$1059.44 \pm 0.44$	$\chi^2_{lensing}$	8.80	$9.4 \pm 1.0$
$c_{217}$	0.99825	$0.99824 \pm 0.00063$	$r_{drag}$	147.356	$147.35 \pm 0.35$	$\chi^2_{small}$	395.81	$396.8 \pm 1.5$
$H_0$	65.23	$64.9^{+2.2}_{-2.8}$	$k_D$	0.140453	$0.14043 \pm 0.00044$	$\chi^2_{lowl}$	23.18	$23.52 \pm 0.93$
$\Omega_\Lambda$	0.6649	$0.660 \pm 0.026$	$100\theta_D$	0.161010	$0.16104 \pm 0.00026$	$\chi^2_{plik}$	758.58	$770.6 \pm 5.2$
$\Omega_m$	0.3351	$0.340 \pm 0.026$	$z_{eq}$	3391.6	$3395 \pm 32$	$\chi^2_{6DF}$	0.254	$0.55 \pm 0.59$
$\Omega_m h^2$	0.14257	$0.1427 \pm 0.0013$	$k_{eq}$	0.010352	$0.010363 \pm 0.000097$	$\chi^2_{MGS}$	0.72	$0.91 \pm 0.89$
$\Omega_m h^3$	0.09300	$0.0927^{+0.0033}_{-0.0040}$	$100\theta_{eq}$	0.8147	$0.8139 \pm 0.0059$	$\chi^2_{DR12BAO}$	3.34	$4.9 \pm 1.5$
$\sigma_8$	0.7948	$0.793 \pm 0.024$	$100\theta_{s,eq}$	0.45025	$0.4499 \pm 0.0030$	$\chi^2_{prior}$	1.36	$7.2 \pm 3.6$
$S_8$	0.8400	$0.842 \pm 0.016$	$H(0.15)$	73.05	$73.07 \pm 0.89$	$\chi^2_{CMB}$	1186.4	$1200.3 \pm 5.4$
$\sigma_8 \Omega_m^{0.5}$	0.4601	$0.4613 \pm 0.0088$	$D_M(0.15)$	650.6	$652 \pm 15$	$\chi^2_{BAO}$	4.31	$6.3 \pm 1.9$

Best-fit  $\chi^2_{eff} = 1192.04$ ;  $\bar{\chi}^2_{eff} = 1213.89$ ;  $R - 1 = 0.01045$

$\chi^2_{eff}$ : BAO - 6DF: 0.25 MGS: 0.72 DR12BAO: 3.34 CMB - smicadx12\_Dec5.ftl\_mv2.ndclpp\_p\_teb\_consext8: 8.80 small\_100x143.offlike5\_EE\_Aplanck\_B: 395.81 commander\_dx12.v3.2.29: 23.18 plik\_rd12\_HM.v22\_TT: 758.58



### 19.3 base\_w\_wa\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02214 \pm 0.00021$	$\sigma_8 \Omega_m^{0.25}$	$0.610 \pm 0.014$	$H(0.38)$	$84.8^{+1.2}_{-1.1}$
$\Omega_c h^2$	$0.1205 \pm 0.0019$	$\sigma_8/h^{0.5}$	$0.992 \pm 0.020$	$D_M(0.38)$	$1527 \pm 17$
$100\theta_{MC}$	$1.04079 \pm 0.00046$	$r_{drag}h$	$95.6^{+3.1}_{-4.1}$	$H(0.51)$	$91.4 \pm 1.2$
$\tau$	$0.0535^{+0.0044}_{-0.0082}$	$\langle d^2 \rangle^{1/2}$	$2.472 \pm 0.042$	$D_M(0.51)$	$1969 \pm 18$
$w_0$	$-0.59^{+0.29}_{-0.26}$	$z_{re}$	$7.62^{+0.50}_{-0.83}$	$H(0.61)$	$96.8 \pm 1.2$
$w_a$	$-1.31 \pm 0.79$	$10^9 A_s$	$2.097^{+0.024}_{-0.033}$	$D_M(0.61)$	$2288 \pm 18$
$\ln(10^{10} A_s)$	$3.043^{+0.012}_{-0.016}$	$10^9 A_s e^{-2\tau}$	$1.884 \pm 0.013$	$H(2.33)$	$234.0^{+1.1}_{-1.3}$
$n_s$	$0.9632 \pm 0.0053$	$D_{40}$	$1232 \pm 14$	$D_M(2.33)$	$5757 \pm 14$
$y_{cal}$	$1.0004 \pm 0.0025$	$D_{220}$	$5714 \pm 41$	$f\sigma_8(0.15)$	$0.449 \pm 0.014$
$A_{217}^{CIB}$	$48 \pm 7$	$D_{810}$	$2536 \pm 14$	$\sigma_8(0.15)$	$0.737^{+0.023}_{-0.026}$
$\xi^{tSZ \times CIB}$	—	$D_{1420}$	$814.4 \pm 5.1$	$f\sigma_8(0.38)$	$0.460^{+0.020}_{-0.022}$
$A_{143}^{tSZ}$	$5.1 \pm 2.0$	$D_{2000}$	$229.7 \pm 1.8$	$\sigma_8(0.38)$	$0.654^{+0.020}_{-0.023}$
$A_{100}^{PS}$	$262 \pm 28$	$n_{s,0.002}$	$0.9632 \pm 0.0053$	$f\sigma_8(0.51)$	$0.461^{+0.020}_{-0.023}$
$A_{143}^{PS}$	$49 \pm 8$	$Y_P$	$0.24530^{+0.00010}_{-0.000080}$	$\sigma_8(0.51)$	$0.613^{+0.019}_{-0.021}$
$A_{143 \times 217}^{PS}$	$44 \pm 9$	$Y_P^{BBN}$	$0.24662^{+0.00010}_{-0.000080}$	$f\sigma_8(0.61)$	$0.458^{+0.020}_{-0.022}$
$A_{217}^{PS}$	$115 \pm 10$	$10^5 D/H$	$2.630 \pm 0.040$	$\sigma_8(0.61)$	$0.584^{+0.017}_{-0.019}$
$A^{kSZ}$	$< 4.66$	Age/Gyr	$13.777 \pm 0.035$	$f\sigma_8(2.33)$	$0.2964^{+0.0078}_{-0.0088}$
$A_{100}^{dustTT}$	$8.9 \pm 1.8$	$z_*$	$1090.26 \pm 0.37$	$\sigma_8(2.33)$	$0.3015^{+0.0077}_{-0.0089}$
$A_{143}^{dustTT}$	$10.7 \pm 1.8$	$r_*$	$144.48 \pm 0.43$	$f_{2000}^{143}$	$30.9 \pm 2.9$
$A_{143 \times 217}^{dustTT}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04100 \pm 0.00045$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.0$
$A_{217}^{dustTT}$	$93.4 \pm 7.4$	$D_M(z_*)/\text{Gpc}$	$13.879 \pm 0.041$	$f_{2000}^{217}$	$108.0 \pm 1.9$
$c_{100}$	$0.99960 \pm 0.00061$	$z_{drag}$	$1059.43 \pm 0.44$	$\chi_{simall}^2$	$396.7 \pm 1.6$
$c_{217}$	$0.99824 \pm 0.00062$	$r_{drag}$	$147.22 \pm 0.44$	$\chi_{lowl}^2$	$23.8 \pm 1.2$
$H_0$	$64.9^{+2.1}_{-2.8}$	$k_D$	$0.14055 \pm 0.00050$	$\chi_{plik}^2$	$770.3 \pm 5.3$
$\Omega_\Lambda$	$0.659 \pm 0.026$	$100\theta_D$	$0.16105 \pm 0.00026$	$\chi_{6DF}^2$	$0.56 \pm 0.60$
$\Omega_m$	$0.341 \pm 0.026$	$z_{eq}$	$3408 \pm 42$	$\chi_{MGS}^2$	$0.89 \pm 0.88$
$\Omega_m h^2$	$0.1433 \pm 0.0018$	$k_{eq}$	$0.01040 \pm 0.00013$	$\chi_{DR12BAO}^2$	$5.0 \pm 1.5$
$\Omega_m h^3$	$0.0930^{+0.0033}_{-0.0041}$	$100\theta_{eq}$	$0.8116 \pm 0.0079$	$\chi_{prior}^2$	$7.2 \pm 3.6$
$\sigma_8$	$0.799^{+0.024}_{-0.027}$	$100\theta_{s,eq}$	$0.4486 \pm 0.0041$	$\chi_{BAO}^2$	$6.4 \pm 1.9$
$S_8$	$0.851 \pm 0.022$	$H(0.15)$	$73.13 \pm 0.92$	$\chi_{CMB}^2$	$1190.9 \pm 5.4$
$\sigma_8 \Omega_m^{0.5}$	$0.466 \pm 0.012$	$D_M(0.15)$	$652 \pm 14$		

$$\bar{\chi}_{\text{eff}}^2 = 1204.53; R - 1 = 0.00721$$



#### 19.4 base\_w\_wa\_plikHM\_TT\_lowl\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02217 \pm 0.00020$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6048 \pm 0.0098$	$H(0.38)$	$84.7 \pm 1.1$
$\Omega_{\mathrm{c}}h^2$	$0.1198 \pm 0.0013$	$\sigma_8/h^{0.5}$	$0.984 \pm 0.014$	$D_{\mathrm{M}}(0.38)$	$1528 \pm 17$
$100\theta_{\mathrm{MC}}$	$1.04085 \pm 0.00044$	$r_{\mathrm{drag}}h$	$95.7^{+3.3}_{-4.1}$	$H(0.51)$	$91.5 \pm 1.3$
$\tau$	$0.0532^{+0.0043}_{-0.0080}$	$\langle d^2 \rangle^{1/2}$	$2.456 \pm 0.027$	$D_{\mathrm{M}}(0.51)$	$1971 \pm 17$
$w_0$	$-0.61 \pm 0.27$	$z_{\mathrm{re}}$	$7.58^{+0.47}_{-0.82}$	$H(0.61)$	$96.9 \pm 1.2$
$w_a$	$-1.18^{+0.82}_{-0.74}$	$10^9 A_{\mathrm{s}}$	$2.091^{+0.021}_{-0.030}$	$D_{\mathrm{M}}(0.61)$	$2289 \pm 18$
$\ln(10^{10}A_{\mathrm{s}})$	$3.040^{+0.010}_{-0.014}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.880 \pm 0.011$	$H(2.33)$	$233.9^{+1.2}_{-1.4}$
$n_{\mathrm{s}}$	$0.9645 \pm 0.0045$	$D_{40}$	$1229 \pm 12$	$D_{\mathrm{M}}(2.33)$	$5755 \pm 14$
$y_{\mathrm{cal}}$	$1.0003 \pm 0.0024$	$D_{220}$	$5715 \pm 41$	$f\sigma_8(0.15)$	$0.445 \pm 0.013$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2535 \pm 13$	$\sigma_8(0.15)$	$0.732 \pm 0.023$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$814.4 \pm 5.0$	$f\sigma_8(0.38)$	$0.456^{+0.019}_{-0.021}$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{2000}$	$229.7 \pm 1.8$	$\sigma_8(0.38)$	$0.650 \pm 0.020$
$A_{100}^{\mathrm{PS}}$	$263 \pm 28$	$n_{\mathrm{s},0.002}$	$0.9645 \pm 0.0045$	$f\sigma_8(0.51)$	$0.456 \pm 0.020$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}$	$0.245310^{+0.000094}_{-0.000075}$	$\sigma_8(0.51)$	$0.609 \pm 0.018$
$A_{143 \times 217}^{\mathrm{PS}}$	$43^{+9}_{-10}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246636^{+0.000094}_{-0.000076}$	$f\sigma_8(0.61)$	$0.454 \pm 0.020$
$A_{217}^{\mathrm{PS}}$	$115^{+11}_{-9.8}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.624 \pm 0.038$	$\sigma_8(0.61)$	$0.580 \pm 0.017$
$A^{\mathrm{kSZ}}$	$< 4.72$	$\mathrm{Age}/\mathrm{Gyr}$	$13.780 \pm 0.035$	$f\sigma_8(2.33)$	$0.2947^{+0.0072}_{-0.0080}$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.9$	$z_*$	$1090.15 \pm 0.32$	$\sigma_8(2.33)$	$0.3004^{+0.0076}_{-0.0086}$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.8$	$r_*$	$144.64 \pm 0.33$	$f_{2000}^{143}$	$31.0 \pm 2.9$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.2$	$100\theta_*$	$1.04105 \pm 0.00044$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.0$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.2$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.894 \pm 0.031$	$f_{2000}^{217}$	$108.0 \pm 1.9$
$c_{100}$	$0.99960 \pm 0.00061$	$z_{\mathrm{drag}}$	$1059.46 \pm 0.44$	$\chi_{\mathrm{lensing}}^2$	$9.4 \pm 1.0$
$c_{217}$	$0.99824 \pm 0.00062$	$r_{\mathrm{drag}}$	$147.38 \pm 0.35$	$\chi_{\mathrm{simall}}^2$	$396.6 \pm 1.4$
$H_0$	$65.0^{+2.2}_{-2.8}$	$k_{\mathrm{D}}$	$0.14041 \pm 0.00044$	$\chi_{\mathrm{lowl}}^2$	$23.50 \pm 0.93$
$\Omega_{\Lambda}$	$0.661 \pm 0.026$	$100\theta_{\mathrm{D}}$	$0.16104 \pm 0.00026$	$\chi_{\mathrm{plik}}^2$	$770.5 \pm 5.2$
$\Omega_{\mathrm{m}}$	$0.339 \pm 0.026$	$z_{\mathrm{eq}}$	$3392 \pm 31$	$\chi_{6\mathrm{DF}}^2$	$0.54 \pm 0.60$
$\Omega_{\mathrm{m}}h^2$	$0.1426 \pm 0.0013$	$k_{\mathrm{eq}}$	$0.010352 \pm 0.000093$	$\chi_{\mathrm{MGS}}^2$	$0.91 \pm 0.89$
$\Omega_{\mathrm{m}}h^3$	$0.0926^{+0.0034}_{-0.0040}$	$100\theta_{\mathrm{eq}}$	$0.8146 \pm 0.0057$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 \pm 1.5$
$\sigma_8$	$0.793 \pm 0.024$	$100\theta_{\mathrm{s,eq}}$	$0.4502 \pm 0.0029$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.6$
$S_8$	$0.842 \pm 0.016$	$H(0.15)$	$73.05 \pm 0.89$	$\chi_{\mathrm{CMB}}^2$	$1200.0 \pm 5.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4612 \pm 0.0088$	$D_{\mathrm{M}}(0.15)$	$652 \pm 15$	$\chi_{\mathrm{BAO}}^2$	$6.3 \pm 1.9$

$\bar{\chi}_{\mathrm{eff}}^2 = 1213.56$ ;  $R - 1 = 0.01398$



## 19.5 base\_w\_wa\_plikHM\_TTTEEE\_lowl\_lowE\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022395	$0.02236 \pm 0.00014$ (+1.1 $\sigma$ )	$\Omega_m h^3$	0.09287	$0.0930^{+0.0032}_{-0.0039}$ (−0.0 $\sigma$ )	$H(0.15)$	73.19	$73.24 \pm 0.88$ (+0.1 $\sigma$ )
$\Omega_c h^2$	0.12001	$0.1203 \pm 0.0013$ (−0.2 $\sigma$ )	$\sigma_8$	0.7948	$0.795^{+0.022}_{-0.025}$ (−0.1 $\sigma$ )	$D_M(0.15)$	651.2	$652 \pm 14$ (−0.0 $\sigma$ )
$100\theta_{MC}$	1.040930	$1.04089 \pm 0.00031$ (+0.2 $\sigma$ )	$S_8$	0.8454	$0.848 \pm 0.017$ (−0.1 $\sigma$ )	$H(0.38)$	84.95	$85.0 \pm 1.1$ (+0.2 $\sigma$ )
$\tau$	0.0546	$0.0538 \pm 0.0078$ (+0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4631	$0.4642 \pm 0.0094$ (−0.1 $\sigma$ )	$D_M(0.38)$	1524.6	$1524 \pm 17$ (−0.1 $\sigma$ )
$w_0$	−0.603	$−0.58 \pm 0.27$ (+0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6067	$0.608 \pm 0.010$ (−0.1 $\sigma$ )	$H(0.51)$	91.71	$91.7 \pm 1.2$ (+0.2 $\sigma$ )
$w_a$	−1.20	$−1.32 \pm 0.76$ (+0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9865	$0.988 \pm 0.015$ (−0.1 $\sigma$ )	$D_M(0.51)$	1966.1	$1965 \pm 17$ (−0.2 $\sigma$ )
$\ln(10^{10} A_s)$	3.0454	$3.044 \pm 0.016$ (+0.3 $\sigma$ )	$r_{drag} h$	95.47	$95.4^{+3.2}_{-3.9}$ (−0.0 $\sigma$ )	$H(0.61)$	97.14	$97.1 \pm 1.2$ (+0.3 $\sigma$ )
$n_s$	0.96636	$0.9645 \pm 0.0042$ (+0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4606	$2.466 \pm 0.032$ (−0.1 $\sigma$ )	$D_M(0.61)$	2283.8	$2283 \pm 18$ (−0.3 $\sigma$ )
$y_{cal}$	1.00057	$1.0005 \pm 0.0025$ (+0.0 $\sigma$ )	$z_{re}$	7.68	$7.60 \pm 0.79$ (+0.2 $\sigma$ )	$H(2.33)$	234.06	$234.1^{+1.0}_{-1.3}$ (+0.1 $\sigma$ )
$A_{217}^{CIB}$	45.5	$47 \pm 7$ (−0.1 $\sigma$ )	$10^9 A_s$	2.1018	$2.099 \pm 0.033$ (+0.3 $\sigma$ )	$D_M(2.33)$	5742.5	$5746 \pm 11$ (−0.8 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.69	—	$10^9 A_s e^{-2\tau}$	1.8846	$1.884 \pm 0.011$ (+0.0 $\sigma$ )	$f\sigma_8(0.15)$	0.4460	$0.446^{+0.011}_{-0.013}$ (−0.2 $\sigma$ )
$A_{143}^{tSZ}$	7.02	$5.5^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$D_{40}$	1228.1	$1232 \pm 12$ (−0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7335	$0.734^{+0.021}_{-0.024}$ (−0.1 $\sigma$ )
$A_{100}^{PS}$	248.1	$258 \pm 28$ (−0.2 $\sigma$ )	$D_{220}$	5732.4	$5731 \pm 38$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4563	$0.457^{+0.017}_{-0.021}$ (−0.1 $\sigma$ )
$A_{143}^{PS}$	51.1	$46 \pm 8$ (−0.4 $\sigma$ )	$D_{810}$	2541.5	$2539 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6514	$0.652^{+0.019}_{-0.021}$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{PS}$	54.0	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{1420}$	818.52	$816.8 \pm 4.8$ (+0.5 $\sigma$ )	$f\sigma_8(0.51)$	0.4565	$0.457^{+0.018}_{-0.021}$ (−0.1 $\sigma$ )
$A_{217}^{PS}$	122.4	$115 \pm 10$ (−0.0 $\sigma$ )	$D_{2000}$	231.50	$230.9 \pm 1.6$ (+0.7 $\sigma$ )	$\sigma_8(0.51)$	0.6105	$0.611^{+0.017}_{-0.019}$ (−0.1 $\sigma$ )
$A^{kSZ}$	0.01	$< 4.20$ (−0.1 $\sigma$ )	$n_{s,0.002}$	0.96636	$0.9645 \pm 0.0042$ (+0.3 $\sigma$ )	$f\sigma_8(0.61)$	0.4538	$0.455^{+0.018}_{-0.020}$ (−0.1 $\sigma$ )
$A_{100}^{dustTT}$	8.79	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P$	0.245405	$0.245388^{+0.000059}_{-0.000053}$ (+1.0 $\sigma$ )	$\sigma_8(0.61)$	0.5814	$0.582^{+0.016}_{-0.018}$ (−0.1 $\sigma$ )
$A_{143}^{dustTT}$	11.00	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246732	$0.246714^{+0.000059}_{-0.000053}$ (+1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.2958	$0.2957^{+0.0072}_{-0.0081}$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.17	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5808	$2.589 \pm 0.027$ (−1.1 $\sigma$ )	$\sigma_8(2.33)$	0.3011	$0.3008^{+0.0075}_{-0.0086}$ (−0.0 $\sigma$ )
$A_{217}^{dustTT}$	95.7	$93.7 \pm 7.4$ (+0.0 $\sigma$ )	Age/Gyr	13.7528	$13.755 \pm 0.030$ (−0.6 $\sigma$ )	$f_{2000}^{143}$	28.50	$29.4 \pm 2.7$ (−0.5 $\sigma$ )
$A_{100}^{dustTE}$	0.1149	$0.115 \pm 0.038$	$z_*$	1089.889	$1089.96 \pm 0.26$ (−0.8 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.83	$32.1 \pm 1.8$ (−0.7 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1349	$0.134 \pm 0.029$	$r_*$	144.409	$144.37 \pm 0.29$ (−0.2 $\sigma$ )	$f_{2000}^{217}$	106.35	$106.9 \pm 1.8$ (−0.6 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.483	$0.482 \pm 0.085$	$100\theta_*$	1.041107	$1.04108 \pm 0.00031$ (+0.2 $\sigma$ )	$\chi_{simall}^2$	396.05	$397.0 \pm 1.8$ (+0.1 $\sigma$ )
$A_{143}^{dustTE}$	0.226	$0.225 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	13.8707	$13.867 \pm 0.027$ (−0.3 $\sigma$ )	$\chi_{lowl}^2$	23.24	$23.63 \pm 0.94$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.665	$0.667 \pm 0.080$	$z_{drag}$	1060.009	$1059.92 \pm 0.30$ (+1.1 $\sigma$ )	$\chi_{plik}^2$	2343.6	$2358.5 \pm 5.8$ (+297.4 $\sigma$ )
$A_{217}^{dustTE}$	2.086	$2.09 \pm 0.27$	$r_{drag}$	147.059	$147.03 \pm 0.29$ (−0.4 $\sigma$ )	$\chi_{6DF}^2$	0.329	$0.57 \pm 0.61$ (+0.0 $\sigma$ )
$c_{100}$	0.99973	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$k_D$	0.140919	$0.14092 \pm 0.00032$ (+0.7 $\sigma$ )	$\chi_{MGS}^2$	0.63	$0.87 \pm 0.86$ (−0.0 $\sigma$ )
$c_{217}$	0.99818	$0.99819 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_D$	0.160724	$0.16077 \pm 0.00017$ (−1.1 $\sigma$ )	$\chi_{DR12BAO}^2$	3.45	$4.9 \pm 1.5$ (−0.1 $\sigma$ )
$H_0$	64.92	$64.9^{+2.1}_{-2.7}$ (−0.0 $\sigma$ )	$z_{eq}$	3403.1	$3409 \pm 29$ (−0.0 $\sigma$ )	$\chi_{prior}^2$	1.56	$11.5 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_\Lambda$	0.6606	$0.658 \pm 0.025$ (+0.0 $\sigma$ )	$k_{eq}$	0.010387	$0.010403 \pm 0.000088$ (−0.0 $\sigma$ )	$\chi_{BAO}^2$	4.40	$6.3 \pm 1.8$ (−0.1 $\sigma$ )
$\Omega_m$	0.3394	$0.342 \pm 0.025$ (−0.0 $\sigma$ )	$100\theta_{eq}$	0.8132	$0.8121 \pm 0.0054$ (+0.1 $\sigma$ )	$\chi_{CMB}^2$	2762.9	$2779.1 \pm 5.8$ (+290.9 $\sigma$ )
$\Omega_m h^2$	0.14305	$0.1433 \pm 0.0012$ (−0.0 $\sigma$ )	$100\theta_{s,eq}$	0.44932	$0.4488 \pm 0.0028$ (+0.1 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 2768.85$ ;  $\Delta\chi_{eff}^2 = 1585.77$ ;  $\bar{\chi}_{eff}^2 = 2796.92$ ;  $\Delta\bar{\chi}_{eff}^2 = 1592.08$ ;  $R - 1 = 0.01402$

$\chi_{eff}^2$ : BAO - 6DF: 0.33 ( $\Delta$  0.01) MGS: 0.62 ( $\Delta$  0.00) DR12BAO: 3.45 ( $\Delta$  -0.04) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.05 ( $\Delta$  0.16) commander\_dx12\_v3\_2\_29: 23.24 ( $\Delta$  -0.22) plik\_rd12\_HM\_v22b\_TTTEEE: 2343.59



## 19.6 base\_w\_wa\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022408	$0.02238 \pm 0.00014$ (+1.1 $\sigma$ )	$\Omega_m h^3$	0.09286	$0.0928^{+0.0032}_{-0.0039}$ (+0.0 $\sigma$ )	$H(0.15)$	73.10	$73.20 \pm 0.87$ (+0.1 $\sigma$ )
$\Omega_c h^2$	0.11969	$0.1199 \pm 0.0011$ (−0.0 $\sigma$ )	$\sigma_8$	0.7917	$0.792^{+0.021}_{-0.024}$ (−0.0 $\sigma$ )	$D_M(0.15)$	651.2	$651 \pm 14$ (−0.0 $\sigma$ )
$100\theta_{MC}$	1.040950	$1.04092 \pm 0.00031$ (+0.2 $\sigma$ )	$S_8$	0.8396	$0.842 \pm 0.014$ (−0.0 $\sigma$ )	$H(0.38)$	84.79	$85.0 \pm 1.1$ (+0.2 $\sigma$ )
$\tau$	0.0530	$0.0529 \pm 0.0075$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4599	$0.4612 \pm 0.0078$ (−0.0 $\sigma$ )	$D_M(0.38)$	1526.2	$1525 \pm 17$ (−0.2 $\sigma$ )
$w_0$	−0.635	$−0.59 \pm 0.27$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6034	$0.6043 \pm 0.0084$ (−0.0 $\sigma$ )	$H(0.51)$	91.58	$91.7 \pm 1.2$ (+0.2 $\sigma$ )
$w_a$	−1.07	$−1.24 \pm 0.74$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9817	$0.983 \pm 0.013$ (−0.1 $\sigma$ )	$D_M(0.51)$	1968.5	$1966 \pm 17$ (−0.2 $\sigma$ )
$\ln(10^{10} A_s)$	3.0408	$3.041 \pm 0.015$ (+0.3 $\sigma$ )	$r_{drag} h$	95.71	$95.6^{+3.2}_{-4.0}$ (−0.0 $\sigma$ )	$H(0.61)$	97.05	$97.1 \pm 1.2$ (+0.2 $\sigma$ )
$n_s$	0.96706	$0.9652 \pm 0.0039$ (+0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4480	$2.455 \pm 0.024$ (+0.0 $\sigma$ )	$D_M(0.61)$	2286.5	$2284 \pm 17$ (−0.3 $\sigma$ )
$y_{cal}$	1.00045	$1.0004 \pm 0.0025$ (+0.0 $\sigma$ )	$z_{re}$	7.51	$7.50 \pm 0.76$ (+0.2 $\sigma$ )	$H(2.33)$	234.19	$234.1^{+1.1}_{-1.3}$ (+0.1 $\sigma$ )
$A_{217}^{CIB}$	46.6	$47 \pm 7$ (−0.1 $\sigma$ )	$10^9 A_s$	2.0922	$2.092 \pm 0.031$ (+0.3 $\sigma$ )	$D_M(2.33)$	5742.7	$5744 \pm 11$ (−0.8 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.52	—	$10^9 A_s e^{-2\tau}$	1.8818	$1.882 \pm 0.010$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4444	$0.444^{+0.011}_{-0.013}$ (−0.1 $\sigma$ )
$A_{143}^{tSZ}$	7.16	$5.5^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$D_{40}$	1225.3	$1229 \pm 11$ (+0.0 $\sigma$ )	$\sigma_8(0.15)$	0.7307	$0.731^{+0.021}_{-0.024}$ (−0.0 $\sigma$ )
$A_{100}^{PS}$	249.2	$258 \pm 28$ (−0.2 $\sigma$ )	$D_{220}$	5729.1	$5732 \pm 38$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4549	$0.455^{+0.017}_{-0.020}$ (−0.1 $\sigma$ )
$A_{143}^{PS}$	48.6	$46 \pm 8$ (−0.4 $\sigma$ )	$D_{810}$	2539.7	$2538 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6489	$0.649^{+0.018}_{-0.020}$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{PS}$	49.7	$42 \pm 9$ (−0.2 $\sigma$ )	$D_{1420}$	818.18	$816.7 \pm 4.8$ (+0.5 $\sigma$ )	$f\sigma_8(0.51)$	0.4548	$0.455^{+0.018}_{-0.021}$ (−0.1 $\sigma$ )
$A_{217}^{PS}$	120.6	$115 \pm 10$ (−0.0 $\sigma$ )	$D_{2000}$	231.36	$230.8 \pm 1.6$ (+0.7 $\sigma$ )	$\sigma_8(0.51)$	0.6081	$0.608^{+0.016}_{-0.019}$ (−0.0 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.32$ (−0.1 $\sigma$ )	$n_{s,0.002}$	0.96706	$0.9652 \pm 0.0039$ (+0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.4519	$0.452^{+0.017}_{-0.020}$ (−0.1 $\sigma$ )
$A_{100}^{dustTT}$	8.85	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P$	0.245411	$0.245397^{+0.000057}_{-0.000052}$ (+1.0 $\sigma$ )	$\sigma_8(0.61)$	0.5791	$0.579^{+0.015}_{-0.017}$ (−0.0 $\sigma$ )
$A_{143}^{dustTT}$	11.02	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246737	$0.246723^{+0.000057}_{-0.000052}$ (+1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.2945	$0.2946^{+0.0069}_{-0.0077}$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.87	$18.6 \pm 3.2$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5784	$2.584 \pm 0.026$ (−1.1 $\sigma$ )	$\sigma_8(2.33)$	0.3004	$0.3001^{+0.0074}_{-0.0084}$ (+0.0 $\sigma$ )
$A_{217}^{dustTT}$	95.2	$93.7 \pm 7.2$ (+0.0 $\sigma$ )	Age/Gyr	13.7575	$13.756 \pm 0.030$ (−0.7 $\sigma$ )	$f_{2000}^{143}$	28.64	$29.5 \pm 2.7$ (−0.5 $\sigma$ )
$A_{100}^{dustTE}$	0.1139	$0.115 \pm 0.038$	$z_*$	1089.844	$1089.90 \pm 0.24$ (−0.9 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.89	$32.1 \pm 1.8$ (−0.7 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1346	$0.134 \pm 0.029$	$r_*$	144.481	$144.45 \pm 0.25$ (−0.5 $\sigma$ )	$f_{2000}^{217}$	106.47	$106.9 \pm 1.8$ (−0.6 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.481	$0.479 \pm 0.084$	$100\theta_*$	1.041125	$1.04111 \pm 0.00031$ (+0.2 $\sigma$ )	$\chi^2_{lensing}$	8.766	$9.28 \pm 0.87$ (−0.1 $\sigma$ )
$A_{143}^{dustTE}$	0.225	$0.224 \pm 0.053$	$D_M(z_*)/\text{Gpc}$	13.8774	$13.875 \pm 0.023$ (−0.5 $\sigma$ )	$\chi^2_{small}$	395.82	$396.8 \pm 1.5$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.666	$0.666 \pm 0.081$	$z_{drag}$	1060.009	$1059.95 \pm 0.30$ (+1.1 $\sigma$ )	$\chi^2_{lowl}$	23.02	$23.44 \pm 0.82$ (−0.1 $\sigma$ )
$A_{217}^{dustTE}$	2.082	$2.08 \pm 0.27$	$r_{drag}$	147.129	$147.11 \pm 0.25$ (−0.7 $\sigma$ )	$\chi^2_{plik}$	2344.2	$2358.6 \pm 5.7$ (+307.6 $\sigma$ )
$c_{100}$	0.99971	$0.99966 \pm 0.00061$ (+0.1 $\sigma$ )	$k_D$	0.140855	$0.14085 \pm 0.00030$ (+1.0 $\sigma$ )	$\chi^2_{6DF}$	0.313	$0.56 \pm 0.61$ (+0.0 $\sigma$ )
$c_{217}$	0.99819	$0.99819 \pm 0.00063$ (−0.1 $\sigma$ )	$100\theta_D$	0.160720	$0.16075 \pm 0.00017$ (−1.1 $\sigma$ )	$\chi^2_{MGS}$	0.63	$0.89 \pm 0.87$ (−0.0 $\sigma$ )
$H_0$	65.05	$65.0^{+2.2}_{-2.7}$ (+0.0 $\sigma$ )	$z_{eq}$	3395.8	$3400 \pm 25$ (+0.2 $\sigma$ )	$\chi^2_{DR12BAO}$	3.35	$4.8 \pm 1.5$ (−0.0 $\sigma$ )
$\Omega_\Lambda$	0.6627	$0.660 \pm 0.025$ (−0.0 $\sigma$ )	$k_{eq}$	0.010364	$0.010377 \pm 0.000075$ (+0.2 $\sigma$ )	$\chi^2_{prior}$	1.68	$11.5 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_m$	0.3373	$0.340 \pm 0.025$ (+0.0 $\sigma$ )	$100\theta_{eq}$	0.81457	$0.8137 \pm 0.0046$ (−0.0 $\sigma$ )	$\chi^2_{CMB}$	2771.8	$2788.1 \pm 5.9$ (+292.5 $\sigma$ )
$\Omega_m h^2$	0.14275	$0.1429 \pm 0.0010$ (+0.2 $\sigma$ )	$100\theta_{s,eq}$	0.45002	$0.4496 \pm 0.0024$ (−0.1 $\sigma$ )	$\chi^2_{BAO}$	4.28	$6.3 \pm 1.9$ (−0.0 $\sigma$ )

Best-fit  $\chi^2_{eff} = 2777.81$ ;  $\Delta\chi^2_{eff} = 1585.78$ ;  $\bar{\chi}^2_{eff} = 2805.90$ ;  $\Delta\bar{\chi}^2_{eff} = 1592.01$ ;  $R - 1 = 0.01750$   
 $\chi^2_{eff}$ : BAO - 6DF: 0.31 ( $\Delta$  0.06) MGS: 0.62 ( $\Delta$  -0.09) DR12BAO: 3.35 ( $\Delta$  0.01) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.77 ( $\Delta$  -0.03) simall\_100x143\_offlike5\_EE\_Aplanck 395.82 ( $\Delta$  0.01) commander\_dx12\_v3\_2.29: 23.02 ( $\Delta$  -0.16) plik\_rd12\_HM\_v22b.TTTEEE: 2344.24



## 19.7 base\_w\_wa\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02236 \pm 0.00014 \quad (+1.1\sigma)$	$\Omega_m h^3$	$0.0929^{+0.0032}_{-0.0039} \quad (-0.0\sigma)$	$H(0.15)$	$73.23 \pm 0.88 \quad (+0.1\sigma)$
$\Omega_c h^2$	$0.1202 \pm 0.0013 \quad (-0.1\sigma)$	$\sigma_8$	$0.796^{+0.022}_{-0.025} \quad (-0.1\sigma)$	$D_M(0.15)$	$652 \pm 14 \quad (-0.0\sigma)$
$100\theta_{MC}$	$1.04090 \pm 0.00031 \quad (+0.2\sigma)$	$S_8$	$0.848 \pm 0.017 \quad (-0.1\sigma)$	$H(0.38)$	$85.0 \pm 1.1 \quad (+0.2\sigma)$
$\tau$	$0.0551^{+0.0049}_{-0.0083} \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4646 \pm 0.0094 \quad (-0.1\sigma)$	$D_M(0.38)$	$1524 \pm 17 \quad (-0.1\sigma)$
$w_0$	$-0.58 \pm 0.27 \quad (+0.0\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.608 \pm 0.010 \quad (-0.1\sigma)$	$H(0.51)$	$91.7 \pm 1.2 \quad (+0.2\sigma)$
$w_a$	$-1.31 \pm 0.76 \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.988 \pm 0.015 \quad (-0.2\sigma)$	$D_M(0.51)$	$1966 \pm 17 \quad (-0.2\sigma)$
$\ln(10^{10} A_s)$	$3.046^{+0.012}_{-0.016} \quad (+0.2\sigma)$	$r_{\text{drag}} h$	$95.4^{+3.1}_{-4.0} \quad (-0.0\sigma)$	$H(0.61)$	$97.1 \pm 1.2 \quad (+0.3\sigma)$
$n_s$	$0.9647 \pm 0.0042 \quad (+0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.468 \pm 0.031 \quad (-0.1\sigma)$	$D_M(0.61)$	$2283 \pm 18 \quad (-0.3\sigma)$
$y_{\text{cal}}$	$1.0005 \pm 0.0025 \quad (+0.0\sigma)$	$z_{\text{re}}$	$7.73^{+0.55}_{-0.81} \quad (+0.2\sigma)$	$H(2.33)$	$234.1^{+1.0}_{-1.3} \quad (+0.1\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.1\sigma)$	$10^9 A_s$	$2.104^{+0.025}_{-0.034} \quad (+0.2\sigma)$	$D_M(2.33)$	$5745 \pm 11 \quad (-0.8\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.884 \pm 0.011 \quad (+0.0\sigma)$	$f\sigma_8(0.15)$	$0.447^{+0.011}_{-0.013} \quad (-0.2\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$D_{40}$	$1232 \pm 12 \quad (-0.0\sigma)$	$\sigma_8(0.15)$	$0.735^{+0.021}_{-0.024} \quad (-0.1\sigma)$
$A_{100}^{\text{PS}}$	$258 \pm 28 \quad (-0.1\sigma)$	$D_{220}$	$5731 \pm 38 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.457^{+0.018}_{-0.021} \quad (-0.1\sigma)$
$A_{143}^{\text{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.652^{+0.019}_{-0.021} \quad (-0.1\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$816.8 \pm 4.8 \quad (+0.5\sigma)$	$f\sigma_8(0.51)$	$0.458^{+0.018}_{-0.021} \quad (-0.1\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (-0.0\sigma)$	$D_{2000}$	$230.9 \pm 1.6 \quad (+0.7\sigma)$	$\sigma_8(0.51)$	$0.611^{+0.017}_{-0.019} \quad (-0.1\sigma)$
$A^{\text{kSZ}}$	$< 4.18 \quad (-0.1\sigma)$	$n_{s,0.002}$	$0.9647 \pm 0.0042 \quad (+0.3\sigma)$	$f\sigma_8(0.61)$	$0.455^{+0.018}_{-0.020} \quad (-0.1\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_P$	$0.245389^{+0.000059}_{-0.000053} \quad (+1.0\sigma)$	$\sigma_8(0.61)$	$0.582^{+0.016}_{-0.018} \quad (-0.1\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.246716^{+0.000059}_{-0.000053} \quad (+1.0\sigma)$	$f\sigma_8(2.33)$	$0.2959 \pm 0.0076 \quad (-0.1\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.5 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \text{D/H}$	$2.588 \pm 0.027 \quad (-1.1\sigma)$	$\sigma_8(2.33)$	$0.3011^{+0.0075}_{-0.0086} \quad (-0.0\sigma)$
$A_{217}^{\text{dustTT}}$	$93.7 \pm 7.4 \quad (+0.0\sigma)$	$\text{Age/Gyr}$	$13.755^{+0.028}_{-0.031} \quad (-0.6\sigma)$	$f_{2000}^{143}$	$29.4 \pm 2.7 \quad (-0.5\sigma)$
$A_{100}^{\text{dustTE}}$	$0.115 \pm 0.038$	$z_*$	$1089.96 \pm 0.26 \quad (-0.8\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 1.8 \quad (-0.7\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.134 \pm 0.029$	$r_*$	$144.38 \pm 0.29 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.7 \quad (-0.6\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.482 \pm 0.085$	$100\theta_*$	$1.04108 \pm 0.00031 \quad (+0.2\sigma)$	$\chi_{\text{simall}}^2$	$397.0 \pm 1.9 \quad (+0.1\sigma)$
$A_{143}^{\text{dustTE}}$	$0.225 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	$13.868 \pm 0.027 \quad (-0.3\sigma)$	$\chi_{\text{lowl}}^2$	$23.64 \pm 0.94 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.667 \pm 0.080$	$z_{\text{drag}}$	$1059.93 \pm 0.30 \quad (+1.1\sigma)$	$\chi_{\text{plik}}^2$	$2358.3 \pm 5.7 \quad (+297.3\sigma)$
$A_{217}^{\text{dustTE}}$	$2.09 \pm 0.27$	$r_{\text{drag}}$	$147.04 \pm 0.29 \quad (-0.4\sigma)$	$\chi_{6\text{DF}}^2$	$0.57 \pm 0.61 \quad (+0.0\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$k_D$	$0.14091 \pm 0.00032 \quad (+0.7\sigma)$	$\chi_{\text{MGS}}^2$	$0.87 \pm 0.86 \quad (-0.0\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_D$	$0.16076 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.9 \pm 1.5 \quad (-0.1\sigma)$
$H_0$	$64.9^{+2.1}_{-2.7} \quad (-0.0\sigma)$	$z_{\text{eq}}$	$3408 \pm 29 \quad (-0.0\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_\Lambda$	$0.658 \pm 0.025 \quad (-0.0\sigma)$	$k_{\text{eq}}$	$0.010401 \pm 0.000088 \quad (-0.0\sigma)$	$\chi_{\text{BAO}}^2$	$6.3 \pm 1.8 \quad (-0.1\sigma)$
$\Omega_m$	$0.342 \pm 0.025 \quad (+0.0\sigma)$	$100\theta_{\text{eq}}$	$0.8123 \pm 0.0054 \quad (+0.1\sigma)$	$\chi_{\text{CMB}}^2$	$2778.9 \pm 5.8 \quad (+294.9\sigma)$
$\Omega_m h^2$	$0.1432 \pm 0.0012 \quad (-0.0\sigma)$	$100\theta_{s,\text{eq}}$	$0.4489 \pm 0.0028 \quad (+0.1\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2796.70; \Delta \bar{\chi}_{\text{eff}}^2 = 1592.17; R - 1 = 0.01451$$



19.8 base\_w\_wa\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02238 \pm 0.00014 \quad (+1.1\sigma)$	$\Omega_m h^3$	$0.0928^{+0.0032}_{-0.0039} \quad (+0.0\sigma)$	$H(0.15)$	$73.18 \pm 0.87 \quad (+0.2\sigma)$
$\Omega_c h^2$	$0.1198 \pm 0.0011 \quad (+0.0\sigma)$	$\sigma_8$	$0.792^{+0.021}_{-0.024} \quad (-0.0\sigma)$	$D_M(0.15)$	$652 \pm 14 \quad (-0.0\sigma)$
$100\theta_{MC}$	$1.04093 \pm 0.00031 \quad (+0.2\sigma)$	$S_8$	$0.842 \pm 0.014 \quad (+0.0\sigma)$	$H(0.38)$	$85.0 \pm 1.1 \quad (+0.2\sigma)$
$\tau$	$0.0543^{+0.0047}_{-0.0078} \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4613 \pm 0.0078 \quad (+0.0\sigma)$	$D_M(0.38)$	$1525 \pm 17 \quad (-0.2\sigma)$
$w_0$	$-0.60 \pm 0.27 \quad (+0.1\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6045 \pm 0.0084 \quad (-0.0\sigma)$	$H(0.51)$	$91.7 \pm 1.2 \quad (+0.2\sigma)$
$w_a$	$-1.22 \pm 0.74 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.983 \pm 0.013 \quad (-0.1\sigma)$	$D_M(0.51)$	$1967 \pm 17 \quad (-0.2\sigma)$
$\ln(10^{10} A_s)$	$3.043^{+0.010}_{-0.015} \quad (+0.2\sigma)$	$r_{\text{drag}} h$	$95.6^{+3.2}_{-4.0} \quad (-0.1\sigma)$	$H(0.61)$	$97.1 \pm 1.2 \quad (+0.2\sigma)$
$n_s$	$0.9655 \pm 0.0039 \quad (+0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.457 \pm 0.023 \quad (+0.0\sigma)$	$D_M(0.61)$	$2284 \pm 17 \quad (-0.3\sigma)$
$y_{\text{cal}}$	$1.0003 \pm 0.0025 \quad (+0.0\sigma)$	$z_{\text{re}}$	$7.64^{+0.51}_{-0.78} \quad (+0.1\sigma)$	$H(2.33)$	$234.1^{+1.1}_{-1.3} \quad (+0.2\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.1\sigma)$	$10^9 A_s$	$2.097^{+0.022}_{-0.031} \quad (+0.2\sigma)$	$D_M(2.33)$	$5744 \pm 11 \quad (-0.7\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_s e^{-2\tau}$	$1.881 \pm 0.010 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.444^{+0.011}_{-0.012} \quad (-0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$D_{40}$	$1229 \pm 11 \quad (+0.0\sigma)$	$\sigma_8(0.15)$	$0.731^{+0.021}_{-0.023} \quad (-0.0\sigma)$
$A_{100}^{\text{PS}}$	$258 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5731 \pm 38 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.455^{+0.017}_{-0.020} \quad (-0.1\sigma)$
$A_{143}^{\text{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2537 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.650^{+0.018}_{-0.020} \quad (-0.0\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.2\sigma)$	$D_{1420}$	$816.7 \pm 4.8 \quad (+0.5\sigma)$	$f\sigma_8(0.51)$	$0.455^{+0.018}_{-0.021} \quad (-0.1\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (-0.0\sigma)$	$D_{2000}$	$230.8 \pm 1.6 \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.609^{+0.017}_{-0.019} \quad (-0.0\sigma)$
$A^{\text{kSZ}}$	$< 4.31 \quad (-0.1\sigma)$	$n_{s,0.002}$	$0.9655 \pm 0.0039 \quad (+0.2\sigma)$	$f\sigma_8(0.61)$	$0.452^{+0.017}_{-0.020} \quad (-0.1\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_P$	$0.245399^{+0.000057}_{-0.000051} \quad (+1.0\sigma)$	$\sigma_8(0.61)$	$0.580^{+0.015}_{-0.017} \quad (-0.0\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.246725^{+0.000057}_{-0.000051} \quad (+1.0\sigma)$	$f\sigma_8(2.33)$	$0.2948 \pm 0.0073 \quad (+0.0\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.2 \quad (+0.1\sigma)$	$10^5 \text{D/H}$	$2.583 \pm 0.026 \quad (-1.1\sigma)$	$\sigma_8(2.33)$	$0.3003^{+0.0075}_{-0.0084} \quad (-0.0\sigma)$
$A_{217}^{\text{dustTT}}$	$93.7 \pm 7.3 \quad (+0.0\sigma)$	$\text{Age/Gyr}$	$13.757 \pm 0.030 \quad (-0.7\sigma)$	$f_{2000}^{143}$	$29.4 \pm 2.7 \quad (-0.5\sigma)$
$A_{100}^{\text{dustTE}}$	$0.115 \pm 0.038$	$z_*$	$1089.89 \pm 0.23 \quad (-0.8\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 1.8 \quad (-0.7\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.029$	$r_*$	$144.47 \pm 0.24 \quad (-0.5\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.8 \quad (-0.6\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.479 \pm 0.084$	$100\theta_*$	$1.04112 \pm 0.00031 \quad (+0.1\sigma)$	$\chi_{\text{lensing}}^2$	$9.29 \pm 0.89 \quad (-0.1\sigma)$
$A_{143}^{\text{dustTE}}$	$0.224 \pm 0.053$	$D_M(z_*)/\text{Gpc}$	$13.876 \pm 0.023 \quad (-0.6\sigma)$	$\chi_{\text{small}}^2$	$396.7 \pm 1.6 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.667 \pm 0.080$	$z_{\text{drag}}$	$1059.95 \pm 0.30 \quad (+1.1\sigma)$	$\chi_{\text{lowl}}^2$	$23.43 \pm 0.83 \quad (-0.1\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.27$	$r_{\text{drag}}$	$147.12 \pm 0.25 \quad (-0.7\sigma)$	$\chi_{\text{plik}}^2$	$2358.5 \pm 5.7 \quad (+307.0\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$k_D$	$0.14084 \pm 0.00029 \quad (+1.0\sigma)$	$\chi_{6\text{DF}}^2$	$0.56 \pm 0.61 \quad (+0.0\sigma)$
$c_{217}$	$0.99819 \pm 0.00063 \quad (-0.1\sigma)$	$100\theta_D$	$0.16075 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{\text{MGS}}^2$	$0.89 \pm 0.87 \quad (-0.0\sigma)$
$H_0$	$65.0^{+2.2}_{-2.7} \quad (-0.0\sigma)$	$z_{\text{eq}}$	$3398 \pm 24 \quad (+0.2\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.8 \pm 1.5 \quad (-0.0\sigma)$
$\Omega_\Lambda$	$0.660 \pm 0.026 \quad (-0.0\sigma)$	$k_{\text{eq}}$	$0.010372 \pm 0.000073 \quad (+0.2\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_m$	$0.340 \pm 0.026 \quad (+0.0\sigma)$	$100\theta_{\text{eq}}$	$0.8141 \pm 0.0045 \quad (-0.1\sigma)$	$\chi_{\text{CMB}}^2$	$2787.9 \pm 5.8 \quad (+297.8\sigma)$
$\Omega_m h^2$	$0.1429 \pm 0.0010 \quad (+0.2\sigma)$	$100\theta_{s,\text{eq}}$	$0.4498 \pm 0.0023 \quad (-0.1\sigma)$	$\chi_{\text{BAO}}^2$	$6.3 \pm 1.9 \quad (-0.0\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 2805.65; \Delta\bar{\chi}_{\text{eff}}^2 = 1592.09; R - 1 = 0.01782$$



## 19.9 base\_w\_wa\_plikHM\_TT\_lowl\_lowE\_BAO\_Riess18\_JLA

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022183	$0.02214 \pm 0.00021$	$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4571	$0.458 \pm 0.011$	$H(0.38)$	83.67	$83.70 \pm 0.69$
$\Omega_{\text{c}}h^2$	0.12068	$0.1209 \pm 0.0018$	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6194	$0.620 \pm 0.013$	$D_{\text{M}}(0.38)$	1500.3	$1499 \pm 14$
$100\theta_{\text{MC}}$	1.040847	$1.04080 \pm 0.00045$	$\sigma_8/h^{0.5}$	1.0064	$1.008 \pm 0.019$	$H(0.51)$	89.89	$89.85 \pm 0.57$
$\tau$	0.0523	$0.0519 \pm 0.0079$	$r_{\text{drag}}h$	102.36	$102.4 \pm 1.4$	$D_{\text{M}}(0.51)$	1949.9	$1949 \pm 16$
$w_0$	-1.010	$-0.998 \pm 0.10$	$\langle d^2 \rangle^{1/2}$	2.4726	$2.478 \pm 0.041$	$H(0.61)$	95.160	$95.07 \pm 0.50$
$w_a$	-0.314	$-0.40^{+0.48}_{-0.38}$	$z_{\text{re}}$	7.51	$7.46^{+0.82}_{-0.74}$	$D_{\text{M}}(0.61)$	2274.1	$2273 \pm 17$
$\ln(10^{10}A_{\text{s}})$	3.0415	$3.041 \pm 0.016$	$10^9A_{\text{s}}$	2.0937	$2.092 \pm 0.033$	$H(2.33)$	234.70	$234.67 \pm 0.98$
$n_{\text{s}}$	0.9641	$0.9625 \pm 0.0051$	$10^9A_{\text{s}}e^{-2\tau}$	1.8857	$1.886 \pm 0.013$	$D_{\text{M}}(2.33)$	5758.8	$5762 \pm 13$
$\alpha_{\text{JLA}}$	0.1417	$0.1417 \pm 0.0066$	$D_{40}$	1229.7	$1233 \pm 14$	$f\sigma_8(0.15)$	0.4661	$0.467 \pm 0.011$
$\beta_{\text{JLA}}$	3.111	$3.113 \pm 0.080$	$D_{220}$	5713.3	$5714 \pm 41$	$\sigma_8(0.15)$	0.7770	$0.778 \pm 0.016$
$y_{\text{cal}}$	1.00040	$1.0004 \pm 0.0025$	$D_{810}$	2538.9	$2537 \pm 14$	$f\sigma_8(0.38)$	0.4925	$0.494 \pm 0.013$
$A_{217}^{\text{CIB}}$	48.0	$48 \pm 7$	$D_{1420}$	816.1	$814.5 \pm 5.0$	$\sigma_8(0.38)$	0.6895	$0.691 \pm 0.014$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.47	—	$D_{2000}$	230.38	$229.8 \pm 1.8$	$f\sigma_8(0.51)$	0.4942	$0.496 \pm 0.014$
$A_{143}^{\text{tSZ}}$	6.99	$5.1 \pm 2.0$	$n_{\text{s},0.002}$	0.9641	$0.9625 \pm 0.0051$	$\sigma_8(0.51)$	0.6452	$0.646 \pm 0.013$
$A_{100}^{\text{PS}}$	251.6	$263 \pm 28$	$Y_{\text{P}}$	0.245319	$0.245296^{+0.000096}_{-0.000080}$	$f\sigma_8(0.61)$	0.4908	$0.492 \pm 0.014$
$A_{143}^{\text{PS}}$	51.0	$49 \pm 8$	$Y_{\text{P}}^{\text{BBN}}$	0.246645	$0.246622^{+0.000096}_{-0.000080}$	$\sigma_8(0.61)$	0.6138	$0.615 \pm 0.012$
$A_{143 \times 217}^{\text{PS}}$	50.5	$44 \pm 9$	$10^5\text{D}/\text{H}$	2.6212	$2.630 \pm 0.040$	$f\sigma_8(2.33)$	0.3100	$0.3103^{+0.0066}_{-0.0057}$
$A_{217}^{\text{PS}}$	120.5	$115 \pm 10$	$\text{Age}/\text{Gyr}$	13.7465	$13.749 \pm 0.035$	$\sigma_8(2.33)$	0.31606	$0.3161 \pm 0.0048$
$A^{\text{kSZ}}$	0.05	$< 4.71$	$z_*$	1090.217	$1090.29 \pm 0.36$	$f_{2000}^{143}$	29.93	$30.9 \pm 2.9$
$A_{100}^{\text{dustTT}}$	8.91	$8.9 \pm 1.8$	$r_*$	144.399	$144.39 \pm 0.42$	$f_{2000}^{143 \times 217}$	33.00	$33.4 \pm 2.0$
$A_{143}^{\text{dustTT}}$	10.70	$10.7 \pm 1.8$	$100\theta_*$	1.041047	$1.04100 \pm 0.00045$	$f_{2000}^{217}$	107.38	$107.9 \pm 1.9$
$A_{143 \times 217}^{\text{dustTT}}$	19.53	$18.2 \pm 3.3$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8706	$13.870 \pm 0.039$	$\chi_{\text{simall}}^2$	395.83	$396.9 \pm 1.6$
$A_{217}^{\text{dustTT}}$	94.6	$93.3 \pm 7.3$	$z_{\text{drag}}$	1059.551	$1059.46 \pm 0.45$	$\chi_{\text{lowl}}^2$	23.33	$23.7 \pm 1.1$
$c_{100}$	0.99967	$0.99960 \pm 0.00062$	$r_{\text{drag}}$	147.121	$147.13 \pm 0.43$	$\chi_{\text{plik}}^2$	758.1	$770.5 \pm 5.4$
$c_{217}$	0.99824	$0.99825 \pm 0.00063$	$k_{\text{D}}$	0.140691	$0.14065 \pm 0.00049$	$\chi_{\text{H073p45}}^2$	5.46	$5.7 \pm 2.7$
$H_0$	69.57	$69.61 \pm 0.95$	$100\theta_{\text{D}}$	0.160987	$0.16104 \pm 0.00026$	$\chi_{\text{JLA}}^2$	695.50	$698.3 \pm 2.6$
$\Omega_{\Lambda}$	0.7035	$0.7034 \pm 0.0086$	$z_{\text{eq}}$	3414.0	$3417 \pm 41$	$\chi_{6\text{DF}}^2$	0.133	$0.21 \pm 0.21$
$\Omega_{\text{m}}$	0.2965	$0.2966 \pm 0.0086$	$k_{\text{eq}}$	0.010420	$0.01043 \pm 0.00012$	$\chi_{\text{MGS}}^2$	2.84	$2.99 \pm 0.81$
$\Omega_{\text{m}}h^2$	0.14351	$0.1436 \pm 0.0017$	$100\theta_{\text{eq}}$	0.8106	$0.8100^{+0.0071}_{-0.0079}$	$\chi_{\text{DR12BAO}}^2$	4.81	$5.9 \pm 1.7$
$\Omega_{\text{m}}h^3$	0.09984	$0.09999 \pm 0.0019$	$100\theta_{\text{s,eq}}$	0.44813	$0.4478 \pm 0.0039$	$\chi_{\text{prior}}^2$	1.29	$7.2 \pm 3.6$
$\sigma_8$	0.8395	$0.841 \pm 0.018$	$H(0.15)$	74.46	$74.56 \pm 0.78$	$\chi_{\text{BAO}}^2$	7.78	$9.1 \pm 2.5$
$S_8$	0.8345	$0.836 \pm 0.020$	$D_{\text{M}}(0.15)$	625.2	$624.6 \pm 6.8$	$\chi_{\text{CMB}}^2$	1177.3	$1191.1 \pm 5.4$

Best-fit  $\chi_{\text{eff}}^2 = 1887.34$ ;  $\bar{\chi}_{\text{eff}}^2 = 1911.34$ ;  $R - 1 = 0.00894$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.13 MGS: 2.84 DR12BAO: 4.81 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.83 commander\_dx12\_v3.2.29: 23.34 plik\_rd12\_HM\_v22.TT: 758.14  
Hubble - H073p45: 5.46 SN - JLA December\_2013: 695.50



# 19.10 base\_w\_wa\_plikHM\_TT\_lowl\_lowE\_BAO\_Riess18\_JLA\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022220	$0.02217 \pm 0.00020$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6136	$0.6147 \pm 0.0086$	$H(0.51)$	89.90	$89.88 \pm 0.58$
$\Omega_{\mathrm{c}}h^2$	0.11990	$0.1201 \pm 0.0013$	$\sigma_8/h^{0.5}$	0.9982	$0.9997 \pm 0.012$	$D_{\mathrm{M}}(0.51)$	1950.4	$1950 \pm 16$
$100\theta_{\mathrm{MC}}$	1.040879	$1.04085 \pm 0.00044$	$r_{\mathrm{drag}}h$	102.59	$102.5 \pm 1.4$	$H(0.61)$	95.201	$95.15 \pm 0.49$
$\tau$	0.0519	$0.0514 \pm 0.0078$	$\langle d^2 \rangle^{1/2}$	2.4552	$2.461 \pm 0.027$	$D_{\mathrm{M}}(0.61)$	2274.5	$2274 \pm 17$
$w_0$	-1.025	$-1.01 \pm 0.10$	$z_{\mathrm{re}}$	7.44	$7.39 \pm 0.80$	$H(2.33)$	234.57	$234.6 \pm 1.0$
$w_a$	-0.214	$-0.29^{+0.41}_{-0.34}$	$10^9 A_{\mathrm{s}}$	2.0876	$2.086 \pm 0.031$	$D_{\mathrm{M}}(2.33)$	5757.3	$5760 \pm 13$
$\ln(10^{10}A_{\mathrm{s}})$	3.0386	$3.038 \pm 0.015$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8820	$1.882 \pm 0.011$	$f\sigma_8(0.15)$	0.4615	$0.4621 \pm 0.0080$
$n_{\mathrm{s}}$	0.96544	$0.9638 \pm 0.0045$	$D_{40}$	1226.5	$1230 \pm 12$	$\sigma_8(0.15)$	0.7713	$0.772 \pm 0.012$
$y_{\mathrm{cal}}$	1.00035	$1.0003 \pm 0.0025$	$D_{220}$	5717.0	$5716 \pm 41$	$f\sigma_8(0.38)$	0.4877	$0.4885 \pm 0.0099$
$\alpha_{JLA}$	0.1415	$0.1418 \pm 0.0066$	$D_{810}$	2537.6	$2535 \pm 13$	$\sigma_8(0.38)$	0.6847	$0.685 \pm 0.011$
$\beta_{JLA}$	3.111	$3.112 \pm 0.080$	$D_{1420}$	816.1	$814.5 \pm 5.1$	$f\sigma_8(0.51)$	0.4893	$0.490 \pm 0.010$
$A_{217}^{\mathrm{CIB}}$	48.1	$48 \pm 7$	$D_{2000}$	230.32	$229.7 \pm 1.8$	$\sigma_8(0.51)$	0.6408	$0.641 \pm 0.010$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.44	—	$n_{\mathrm{s},0.002}$	0.96544	$0.9638 \pm 0.0045$	$f\sigma_8(0.61)$	0.4858	$0.487 \pm 0.010$
$A_{143}^{\mathrm{tSZ}}$	6.97	$5.1 \pm 2.0$	$Y_{\mathrm{P}}$	0.245334	$0.245311^{+0.000091}_{-0.000078}$	$\sigma_8(0.61)$	0.6097	$0.6102 \pm 0.0093$
$A_{100}^{\mathrm{PS}}$	253.4	$263 \pm 29$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246661	$0.246637^{+0.000092}_{-0.000078}$	$f\sigma_8(2.33)$	0.30799	$0.3081 \pm 0.0047$
$A_{143}^{\mathrm{PS}}$	50.7	$49 \pm 8$	$10^5\mathrm{D}/\mathrm{H}$	2.6140	$2.624 \pm 0.038$	$\sigma_8(2.33)$	0.31469	$0.3146 \pm 0.0039$
$A_{143 \times 217}^{\mathrm{PS}}$	49.8	$43 \pm 9$	$\mathrm{Age}/\mathrm{Gyr}$	13.7493	$13.752 \pm 0.034$	$f_{2000}^{143}$	30.03	$31.0 \pm 2.9$
$A_{217}^{\mathrm{PS}}$	120.2	$115 \pm 10$	$z_*$	1090.100	$1090.19 \pm 0.32$	$f_{2000}^{143 \times 217}$	33.06	$33.4 \pm 2.0$
$A^{\mathrm{kSZ}}$	0.00	$< 4.77$	$r_*$	144.572	$144.55 \pm 0.32$	$f_{2000}^{217}$	107.41	$107.9 \pm 1.9$
$A_{100}^{\mathrm{dustTT}}$	8.91	$8.9 \pm 1.8$	$100\theta_*$	1.041083	$1.04105 \pm 0.00044$	$\chi_{\mathrm{lensing}}^2$	8.75	$9.4 \pm 1.1$
$A_{143}^{\mathrm{dustTT}}$	10.82	$10.7 \pm 1.8$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8867	$13.885 \pm 0.031$	$\chi_{\mathrm{simall}}^2$	395.76	$396.8 \pm 1.5$
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.51	$18.2 \pm 3.4$	$z_{\mathrm{drag}}$	1059.589	$1059.48 \pm 0.45$	$\chi_{\mathrm{lowl}}^2$	23.05	$23.40 \pm 0.89$
$A_{217}^{\mathrm{dustTT}}$	94.6	$93.2 \pm 7.4$	$r_{\mathrm{drag}}$	147.285	$147.28 \pm 0.35$	$\chi_{\mathrm{plik}}^2$	758.7	$770.7 \pm 5.3$
$c_{100}$	0.99967	$0.99960 \pm 0.00063$	$k_{\mathrm{D}}$	0.140546	$0.14052 \pm 0.00044$	$\chi_{\mathrm{H073p45}}^2$	5.23	$5.7 \pm 2.7$
$c_{217}$	0.99826	$0.99824 \pm 0.00063$	$100\theta_{\mathrm{D}}$	0.160965	$0.16102 \pm 0.00026$	$\chi_{\mathrm{JLA}}^2$	695.66	$698.2 \pm 2.6$
$H_0$	69.65	$69.60 \pm 0.95$	$z_{\mathrm{eq}}$	3396.2	$3401 \pm 30$	$\chi_{6\mathrm{DF}}^2$	0.155	$0.21 \pm 0.21$
$\Omega_{\Lambda}$	0.7057	$0.7047 \pm 0.0083$	$k_{\mathrm{eq}}$	0.010365	$0.010379 \pm 0.000093$	$\chi_{\mathrm{MGS}}^2$	2.92	$2.99 \pm 0.81$
$\Omega_{\mathrm{m}}$	0.2943	$0.2953 \pm 0.0083$	$100\theta_{\mathrm{eq}}$	0.8139	$0.8130 \pm 0.0056$	$\chi_{\mathrm{DR12BAO}}^2$	4.72	$5.7 \pm 1.7$
$\Omega_{\mathrm{m}}h^2$	0.14276	$0.1430 \pm 0.0013$	$100\theta_{\mathrm{s,eq}}$	0.44982	$0.4494 \pm 0.0029$	$\chi_{\mathrm{prior}}^2$	1.28	$7.3 \pm 3.7$
$\Omega_{\mathrm{m}}h^3$	0.09944	$0.0995 \pm 0.0017$	$H(0.15)$	74.43	$74.46 \pm 0.75$	$\chi_{\mathrm{CMB}}^2$	1186.3	$1200.2 \pm 5.5$
$\sigma_8$	0.8331	$0.834 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	625.1	$625.2 \pm 6.7$	$\chi_{\mathrm{BAO}}^2$	7.79	$8.9 \pm 2.5$
$S_8$	0.8251	$0.827 \pm 0.013$	$H(0.38)$	83.64	$83.67 \pm 0.69$			
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4519	$0.4531 \pm 0.0072$	$D_{\mathrm{M}}(0.38)$	1500.7	$1500 \pm 14$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 1896.26$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1920.42$ ;  $R - 1 = 0.01184$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.15 MGS: 2.92 DR12BAO: 4.72 CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.75 simall\_100x143.offlike5\_EE\_Aplanck\_B: 395.76 comman-  
der\_dx12.v3.2.29: 23.05 plik\_rd12\_HM.v22\_TT: 758.73 Hubble - H073p45: 5.23 SN - JLA December\_2013: 695.66



19.11 base\_w\_wa\_plikHM\_TT\_lowl\_lowE\_BAO\_Riess18\_JLA\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02215 \pm 0.00021$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.458 \pm 0.011$	$H(0.38)$	$83.69 \pm 0.69$
$\Omega_{\text{c}}h^2$	$0.1208 \pm 0.0018$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.621 \pm 0.013$	$D_{\text{M}}(0.38)$	$1499 \pm 14$
$100\theta_{\text{MC}}$	$1.04081 \pm 0.00045$	$\sigma_8/h^{0.5}$	$1.009 \pm 0.018$	$H(0.51)$	$89.85 \pm 0.57$
$\tau$	$0.0536^{+0.0047}_{-0.0079}$	$r_{\text{drag}}h$	$102.4 \pm 1.4$	$D_{\text{M}}(0.51)$	$1949 \pm 16$
$w_0$	$-0.999 \pm 0.10$	$\langle d^2 \rangle^{1/2}$	$2.481 \pm 0.040$	$H(0.61)$	$95.08 \pm 0.50$
$w_{\text{a}}$	$-0.39^{+0.47}_{-0.38}$	$z_{\text{re}}$	$7.64^{+0.52}_{-0.80}$	$D_{\text{M}}(0.61)$	$2273 \pm 17$
$\ln(10^{10}A_{\text{s}})$	$3.044^{+0.012}_{-0.015}$	$10^9 A_{\text{s}}$	$2.099^{+0.024}_{-0.032}$	$H(2.33)$	$234.68 \pm 0.98$
$n_{\text{s}}$	$0.9627 \pm 0.0051$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.885 \pm 0.013$	$D_{\text{M}}(2.33)$	$5762 \pm 13$
$\alpha_{JLA}$	$0.1417 \pm 0.0066$	$D_{40}$	$1233 \pm 14$	$f\sigma_8(0.15)$	$0.467 \pm 0.011$
$\beta_{JLA}$	$3.112 \pm 0.080$	$D_{220}$	$5714 \pm 41$	$\sigma_8(0.15)$	$0.779 \pm 0.016$
$y_{\text{cal}}$	$1.0004 \pm 0.0025$	$D_{810}$	$2536 \pm 14$	$f\sigma_8(0.38)$	$0.494 \pm 0.013$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{1420}$	$814.5 \pm 5.1$	$\sigma_8(0.38)$	$0.691 \pm 0.014$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{2000}$	$229.8 \pm 1.8$	$f\sigma_8(0.51)$	$0.496 \pm 0.014$
$A_{143}^{\text{tSZ}}$	$5.1 \pm 2.0$	$n_{\text{s},0.002}$	$0.9627 \pm 0.0051$	$\sigma_8(0.51)$	$0.647 \pm 0.013$
$A_{100}^{\text{PS}}$	$263 \pm 28$	$Y_{\text{P}}$	$0.245299^{+0.000094}_{-0.000080}$	$f\sigma_8(0.61)$	$0.493 \pm 0.014$
$A_{143}^{\text{PS}}$	$49 \pm 8$	$Y_{\text{P}}^{\text{BBN}}$	$0.246625^{+0.000095}_{-0.000080}$	$\sigma_8(0.61)$	$0.615 \pm 0.012$
$A_{143 \times 217}^{\text{PS}}$	$44 \pm 9$	$10^5 \text{D}/\text{H}$	$2.629 \pm 0.039$	$f\sigma_8(2.33)$	$0.3106^{+0.0065}_{-0.0057}$
$A_{217}^{\text{PS}}$	$115 \pm 10$	$\text{Age}/\text{Gyr}$	$13.749 \pm 0.035$	$\sigma_8(2.33)$	$0.3165 \pm 0.0047$
$A^{\text{kSZ}}$	$< 4.67$	$z_*$	$1090.28 \pm 0.36$	$f_{2000}^{143}$	$30.8 \pm 2.9$
$A_{100}^{\text{dust}TT}$	$8.9 \pm 1.8$	$r_*$	$144.40 \pm 0.42$	$f_{2000}^{143 \times 217}$	$33.3 \pm 2.0$
$A_{143}^{\text{dust}TT}$	$10.7 \pm 1.8$	$100\theta_*$	$1.04101 \pm 0.00045$	$f_{2000}^{217}$	$107.9 \pm 1.9$
$A_{143 \times 217}^{\text{dust}TT}$	$18.2 \pm 3.3$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.871 \pm 0.039$	$\chi_{\text{simall}}^2$	$396.8 \pm 1.6$
$A_{217}^{\text{dust}TT}$	$93.3 \pm 7.3$	$z_{\text{drag}}$	$1059.47 \pm 0.45$	$\chi_{\text{lowl}}^2$	$23.7 \pm 1.1$
$c_{100}$	$0.99959 \pm 0.00062$	$r_{\text{drag}}$	$147.13 \pm 0.43$	$\chi_{\text{plik}}^2$	$770.3 \pm 5.3$
$c_{217}$	$0.99825 \pm 0.00063$	$k_{\text{D}}$	$0.14065 \pm 0.00049$	$\chi_{\text{H073p45}}^2$	$5.7 \pm 2.7$
$H_0$	$69.60 \pm 0.95$	$100\theta_{\text{D}}$	$0.16103 \pm 0.00026$	$\chi_{\text{JLA}}^2$	$698.3 \pm 2.6$
$\Omega_{\Lambda}$	$0.7035 \pm 0.0086$	$z_{\text{eq}}$	$3416 \pm 41$	$\chi_{6\text{DF}}^2$	$0.21 \pm 0.21$
$\Omega_{\text{m}}$	$0.2965 \pm 0.0086$	$k_{\text{eq}}$	$0.01043 \pm 0.00012$	$\chi_{\text{MGS}}^2$	$2.98 \pm 0.81$
$\Omega_{\text{m}}h^2$	$0.1436 \pm 0.0017$	$100\theta_{\text{eq}}$	$0.8102 \pm 0.0075$	$\chi_{\text{DR12BAO}}^2$	$5.9 \pm 1.7$
$\Omega_{\text{m}}h^3$	$0.0999 \pm 0.0019$	$100\theta_{\text{s,eq}}$	$0.4479 \pm 0.0039$	$\chi_{\text{prior}}^2$	$7.2 \pm 3.6$
$\sigma_8$	$0.842 \pm 0.018$	$H(0.15)$	$74.54 \pm 0.77$	$\chi_{\text{BAO}}^2$	$9.1 \pm 2.5$
$S_8$	$0.837 \pm 0.020$	$D_{\text{M}}(0.15)$	$624.7 \pm 6.8$	$\chi_{\text{CMB}}^2$	$1190.8 \pm 5.3$

$$\bar{\chi}_{\text{eff}}^2 = 1911.05; R - 1 = 0.01013$$



19.12 base\_w\_wa\_plikHM\_TT\_lowl\_lowE\_BAO\_Riess18\_JLA\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02218 \pm 0.00020$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6148 \pm 0.0086$	$H(0.51)$	$89.89 \pm 0.58$
$\Omega_{\mathrm{c}}h^2$	$0.1200 \pm 0.0013$	$\sigma_8/h^{0.5}$	$1.000 \pm 0.012$	$D_{\mathrm{M}}(0.51)$	$1950 \pm 16$
$100\theta_{\mathrm{MC}}$	$1.04087 \pm 0.00044$	$r_{\mathrm{drag}}h$	$102.5 \pm 1.4$	$H(0.61)$	$95.17 \pm 0.49$
$\tau$	$0.0533^{+0.0044}_{-0.0078}$	$\langle d^2 \rangle^{1/2}$	$2.462 \pm 0.026$	$D_{\mathrm{M}}(0.61)$	$2275 \pm 17$
$w_0$	$-1.01 \pm 0.10$	$z_{\mathrm{re}}$	$7.58^{+0.48}_{-0.80}$	$H(2.33)$	$234.6 \pm 1.0$
$w_{\mathrm{a}}$	$-0.27^{+0.40}_{-0.33}$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.022}_{-0.029}$	$D_{\mathrm{M}}(2.33)$	$5760 \pm 13$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.011}_{-0.014}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.881 \pm 0.011$	$f\sigma_8(0.15)$	$0.4622 \pm 0.0081$
$n_{\mathrm{s}}$	$0.9642 \pm 0.0044$	$D_{40}$	$1229 \pm 12$	$\sigma_8(0.15)$	$0.772 \pm 0.012$
$y_{\mathrm{cal}}$	$1.0003 \pm 0.0025$	$D_{220}$	$5716 \pm 41$	$f\sigma_8(0.38)$	$0.4884 \pm 0.0099$
$\alpha_{JLA}$	$0.1418 \pm 0.0066$	$D_{810}$	$2535 \pm 13$	$\sigma_8(0.38)$	$0.686 \pm 0.011$
$\beta_{JLA}$	$3.112 \pm 0.079$	$D_{1420}$	$814.5 \pm 5.1$	$f\sigma_8(0.51)$	$0.490 \pm 0.010$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{2000}$	$229.8 \pm 1.8$	$\sigma_8(0.51)$	$0.6416 \pm 0.0099$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.9642 \pm 0.0044$	$f\sigma_8(0.61)$	$0.487 \pm 0.010$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$Y_{\mathrm{P}}$	$0.245316^{+0.000089}_{-0.000077}$	$\sigma_8(0.61)$	$0.6104 \pm 0.0093$
$A_{100}^{\mathrm{PS}}$	$263 \pm 29$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246642^{+0.000090}_{-0.000077}$	$f\sigma_8(2.33)$	$0.3083 \pm 0.0047$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$10^5 \mathrm{D}/\mathrm{H}$	$2.621 \pm 0.038$	$\sigma_8(2.33)$	$0.3149 \pm 0.0038$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$\mathrm{Age}/\mathrm{Gyr}$	$13.752 \pm 0.034$	$f_{2000}^{143}$	$30.9 \pm 2.9$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$z_*$	$1090.16 \pm 0.31$	$f_{2000}^{143 \times 217}$	$33.3 \pm 2.0$
$A^{\mathrm{kSZ}}$	$< 4.75$	$r_*$	$144.57 \pm 0.32$	$f_{2000}^{217}$	$107.9 \pm 1.9$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.9$	$100\theta_*$	$1.04107 \pm 0.00044$	$\chi_{\mathrm{lensing}}^2$	$9.4 \pm 1.1$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.887 \pm 0.031$	$\chi_{\mathrm{simall}}^2$	$396.6 \pm 1.4$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.2 \pm 3.3$	$z_{\mathrm{drag}}$	$1059.50 \pm 0.44$	$\chi_{\mathrm{lowl}}^2$	$23.38 \pm 0.89$
$A_{217}^{\mathrm{dust}TT}$	$93.3 \pm 7.3$	$r_{\mathrm{drag}}$	$147.30 \pm 0.34$	$\chi_{\mathrm{plik}}^2$	$770.6 \pm 5.3$
$c_{100}$	$0.99959 \pm 0.00062$	$k_{\mathrm{D}}$	$0.14050 \pm 0.00044$	$\chi_{\mathrm{H073p45}}^2$	$5.7 \pm 2.7$
$c_{217}$	$0.99824 \pm 0.00062$	$100\theta_{\mathrm{D}}$	$0.16101 \pm 0.00026$	$\chi_{\mathrm{JLA}}^2$	$698.2 \pm 2.6$
$H_0$	$69.59 \pm 0.95$	$z_{\mathrm{eq}}$	$3398 \pm 30$	$\chi_{6\mathrm{DF}}^2$	$0.21 \pm 0.21$
$\Omega_{\Lambda}$	$0.7049 \pm 0.0083$	$k_{\mathrm{eq}}$	$0.010370 \pm 0.000091$	$\chi_{\mathrm{MGS}}^2$	$2.98 \pm 0.81$
$\Omega_{\mathrm{m}}$	$0.2951 \pm 0.0083$	$100\theta_{\mathrm{eq}}$	$0.8136 \pm 0.0055$	$\chi_{\mathrm{DR12BAO}}^2$	$5.7 \pm 1.7$
$\Omega_{\mathrm{m}}h^2$	$0.1428 \pm 0.0012$	$100\theta_{\mathrm{s,eq}}$	$0.4497 \pm 0.0028$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\Omega_{\mathrm{m}}h^3$	$0.0994 \pm 0.0016$	$H(0.15)$	$74.44 \pm 0.74$	$\chi_{\mathrm{CMB}}^2$	$1199.9 \pm 5.5$
$\sigma_8$	$0.834 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$625.3 \pm 6.7$	$\chi_{\mathrm{BAO}}^2$	$8.8 \pm 2.5$
$S_8$	$0.827 \pm 0.013$	$H(0.38)$	$83.66 \pm 0.69$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4531 \pm 0.0072$	$D_{\mathrm{M}}(0.38)$	$1501 \pm 13$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1920.07$ ;  $R - 1 = 0.01435$



### 19.13 base\_w\_wa\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_JLA

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022383	$0.02237 \pm 0.00014$ (+1.1 $\sigma$ )	$\Omega_m h^2$	0.14321	$0.1434 \pm 0.0012$ (−0.1 $\sigma$ )	$H(0.15)$	74.51	$74.65 \pm 0.74$ (+0.1 $\sigma$ )
$\Omega_c h^2$	0.12018	$0.1204 \pm 0.0012$ (−0.3 $\sigma$ )	$\Omega_m h^3$	0.09971	$0.09996 \pm 0.0016$ (−0.0 $\sigma$ )	$D_M(0.15)$	624.8	$623.8 \pm 6.7$ (−0.1 $\sigma$ )
$100\theta_{MC}$	1.040920	$1.04090 \pm 0.00030$ (+0.2 $\sigma$ )	$\sigma_8$	0.8356	$0.837 \pm 0.014$ (−0.2 $\sigma$ )	$H(0.38)$	83.79	$83.87 \pm 0.66$ (+0.3 $\sigma$ )
$\tau$	0.0544	$0.0536 \pm 0.0077$ (+0.2 $\sigma$ )	$S_8$	0.8292	$0.831 \pm 0.014$ (−0.3 $\sigma$ )	$D_M(0.38)$	1499.0	$1497 \pm 13$ (−0.2 $\sigma$ )
$w_0$	−1.013	$−1.001 \pm 0.097$ (−0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4542	$0.4549 \pm 0.0079$ (−0.3 $\sigma$ )	$H(0.51)$	90.06	$90.08 \pm 0.54$ (+0.4 $\sigma$ )
$w_a$	−0.253	$−0.33_{-0.33}^{+0.39}$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6160	$0.6171 \pm 0.0096$ (−0.3 $\sigma$ )	$D_M(0.51)$	1947.9	$1945 \pm 16$ (−0.2 $\sigma$ )
$\ln(10^{10} A_s)$	3.0447	$3.044 \pm 0.016$ (+0.2 $\sigma$ )	$\sigma_8/h^{0.5}$	1.0014	$1.003 \pm 0.014$ (−0.3 $\sigma$ )	$H(0.61)$	95.362	$95.33 \pm 0.45$ (+0.5 $\sigma$ )
$n_s$	0.96606	$0.9645 \pm 0.0041$ (+0.4 $\sigma$ )	$r_{drag} h$	102.37	$102.5 \pm 1.4$ (+0.0 $\sigma$ )	$D_M(0.61)$	2271.5	$2269 \pm 17$ (−0.2 $\sigma$ )
$\alpha_{JLA}$	0.1417	$0.1417 \pm 0.0067$ (+0.0 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4635	$2.469 \pm 0.031$ (−0.2 $\sigma$ )	$H(2.33)$	234.84	$234.78 \pm 0.94$ (+0.1 $\sigma$ )
$\beta_{JLA}$	3.108	$3.114 \pm 0.081$ (+0.0 $\sigma$ )	$z_{re}$	7.67	$7.58 \pm 0.79$ (+0.1 $\sigma$ )	$D_M(2.33)$	5749.9	$5751 \pm 10$ (−0.9 $\sigma$ )
$y_{cal}$	1.00035	$1.0006 \pm 0.0025$ (+0.1 $\sigma$ )	$10^9 A_s$	2.1004	$2.099 \pm 0.033$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4630	$0.4635 \pm 0.0085$ (−0.3 $\sigma$ )
$A_{217}^{CIB}$	46.8	$46 \pm 7$ (−0.2 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8840	$1.885 \pm 0.011$ (−0.0 $\sigma$ )	$\sigma_8(0.15)$	0.7736	$0.775 \pm 0.013$ (−0.2 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.478	$> 0.382$ (+0.1 $\sigma$ )	$D_{40}$	1227.4	$1232 \pm 12$ (−0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.4890	$0.490 \pm 0.010$ (−0.3 $\sigma$ )
$A_{143}^{tSZ}$	7.20	$5.5_{-1.9}^{+2.1}$ (+0.2 $\sigma$ )	$D_{220}$	5727.1	$5734 \pm 38$ (+0.5 $\sigma$ )	$\sigma_8(0.38)$	0.6867	$0.688 \pm 0.012$ (−0.2 $\sigma$ )
$A_{100}^{PS}$	248.2	$258 \pm 28$ (−0.2 $\sigma$ )	$D_{810}$	2540.1	$2540 \pm 13$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.4906	$0.492 \pm 0.011$ (−0.3 $\sigma$ )
$A_{143}^{PS}$	47.6	$46 \pm 8$ (−0.4 $\sigma$ )	$D_{1420}$	817.98	$817.3 \pm 4.8$ (+0.6 $\sigma$ )	$\sigma_8(0.51)$	0.6427	$0.644 \pm 0.011$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{PS}$	48.4	$43 \pm 9$ (−0.1 $\sigma$ )	$D_{2000}$	231.32	$231.0 \pm 1.6$ (+0.7 $\sigma$ )	$f\sigma_8(0.61)$	0.4872	$0.489 \pm 0.011$ (−0.3 $\sigma$ )
$A_{217}^{PS}$	120.1	$116 \pm 10$ (+0.0 $\sigma$ )	$n_{s,0.002}$	0.96606	$0.9645 \pm 0.0041$ (+0.4 $\sigma$ )	$\sigma_8(0.61)$	0.6115	$0.613 \pm 0.010$ (−0.2 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.05$ (−0.2 $\sigma$ )	$Y_P$	0.245401	$0.245392_{-0.000053}^{+0.000059}$ (+1.1 $\sigma$ )	$f\sigma_8(2.33)$	0.3090	$0.3095 \pm 0.0052$ (−0.1 $\sigma$ )
$A_{100}^{dustTT}$	8.94	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P^{BBN}$	0.246727	$0.246718_{-0.000053}^{+0.000059}$ (+1.1 $\sigma$ )	$\sigma_8(2.33)$	0.31555	$0.3158 \pm 0.0043$ (−0.1 $\sigma$ )
$A_{143}^{dustTT}$	10.97	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5830	$2.587 \pm 0.027$ (−1.1 $\sigma$ )	$f_{2000}^{143}$	28.50	$29.3 \pm 2.7$ (−0.6 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.77	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	Age/Gyr	13.7315	$13.729_{-0.031}^{+0.028}$ (−0.6 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.77	$32.0 \pm 1.8$ (−0.7 $\sigma$ )
$A_{217}^{dustTT}$	95.0	$93.8 \pm 7.3$ (+0.1 $\sigma$ )	$z_*$	1089.919	$1089.96 \pm 0.26$ (−0.9 $\sigma$ )	$f_{2000}^{217}$	106.41	$106.9 \pm 1.7$ (−0.5 $\sigma$ )
$A_{100}^{dustTE}$	0.1145	$0.114 \pm 0.038$	$r_*$	144.375	$144.34 \pm 0.28$ (−0.1 $\sigma$ )	$\chi_{simall}^2$	396.04	$397.0 \pm 1.8$ (+0.1 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1337	$0.134 \pm 0.030$	$100\theta_*$	1.041101	$1.04108 \pm 0.00030$ (+0.2 $\sigma$ )	$\chi_{lowl}^2$	23.09	$23.43 \pm 0.88$ (−0.3 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.481	$0.480 \pm 0.085$	$D_M(z_*)/\text{Gpc}$	13.8675	$13.864 \pm 0.026$ (−0.2 $\sigma$ )	$\chi_{plik}^2$	2343.7	$2358.5 \pm 5.7$ (+295.8 $\sigma$ )
$A_{143}^{dustTE}$	0.223	$0.225 \pm 0.054$	$z_{drag}$	1059.971	$1059.95 \pm 0.30$ (+1.1 $\sigma$ )	$\chi_{H073p45}^2$	5.31	$5.4 \pm 2.6$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.669	$0.666 \pm 0.080$	$r_{drag}$	147.030	$147.00 \pm 0.28$ (−0.3 $\sigma$ )	$\chi_{JLA}^2$	695.47	$698.2 \pm 2.6$ (−0.0 $\sigma$ )
$A_{217}^{dustTE}$	2.083	$2.08 \pm 0.27$	$k_D$	0.140943	$0.14096 \pm 0.00031$ (+0.6 $\sigma$ )	$\chi_{6DF}^2$	0.133	$0.22 \pm 0.21$ (+0.0 $\sigma$ )
$c_{100}$	0.99971	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$100\theta_D$	0.160734	$0.16075 \pm 0.00017$ (−1.1 $\sigma$ )	$\chi_{MGS}^2$	2.84	$3.02 \pm 0.82$ (+0.0 $\sigma$ )
$c_{217}$	0.99819	$0.99819 \pm 0.00062$ (−0.1 $\sigma$ )	$z_{eq}$	3406.8	$3411 \pm 28$ (−0.1 $\sigma$ )	$\chi_{DR12BAO}^2$	4.68	$5.8 \pm 1.7$ (−0.1 $\sigma$ )
$H_0$	69.63	$69.71 \pm 0.95$ (+0.1 $\sigma$ )	$k_{eq}$	0.010398	$0.010412 \pm 0.000085$ (−0.1 $\sigma$ )	$\chi_{prior}^2$	1.67	$11.5 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_\Lambda$	0.7046	$0.7047 \pm 0.0084$ (+0.2 $\sigma$ )	$100\theta_{eq}$	0.8125	$0.8117 \pm 0.0052$ (+0.2 $\sigma$ )	$\chi_{BAO}^2$	7.65	$9.0 \pm 2.6$ (−0.0 $\sigma$ )
$\Omega_m$	0.2954	$0.2953 \pm 0.0084$ (−0.2 $\sigma$ )	$100\theta_{s,eq}$	0.44897	$0.4485 \pm 0.0027$ (+0.2 $\sigma$ )	$\chi_{CMB}^2$	2762.8	$2778.9 \pm 5.8$ (+292.3 $\sigma$ )

Best-fit  $\chi_{eff}^2 = 3472.92$ ;  $\Delta\chi_{eff}^2 = 1585.58$ ;  $\bar{\chi}_{eff}^2 = 3502.96$ ;  $\Delta\bar{\chi}_{eff}^2 = 1591.62$ ;  $R - 1 = 0.01220$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.13 ( $\Delta$  0.00) MGS: 2.84 ( $\Delta$  0.00) DR12BAO: 4.67 ( $\Delta$  -0.13) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.04 ( $\Delta$  0.20) commander\_dx12.v3.2.29: 23.09 ( $\Delta$  -0.25) plik\_rd12\_HM.v22b\_TTTEEE: 2343.70 Hubble - H073p45: 5.30 ( $\Delta$  -0.15) SN - JLA December\_2013: 695.47 ( $\Delta$  -0.04)



## 19.14 base\_w\_wa\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_JLA\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022394	$0.02239 \pm 0.00014$ (+1.1 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.09957	$0.0997 \pm 0.0015$ (+0.1 $\sigma$ )	$H(0.38)$	83.84	$83.85 \pm 0.65$ (+0.3 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11988	$0.1200 \pm 0.0011$ (−0.1 $\sigma$ )	$\sigma_8$	0.8326	$0.833 \pm 0.012$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1498.2	$1498 \pm 13$ (−0.2 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.040956	$1.04093 \pm 0.00030$ (+0.2 $\sigma$ )	$S_8$	0.8249	$0.826 \pm 0.011$ (−0.1 $\sigma$ )	$H(0.51)$	90.10	$90.09 \pm 0.54$ (+0.4 $\sigma$ )
$\tau$	0.0531	$0.0526 \pm 0.0074$ (+0.2 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4518	$0.4522 \pm 0.0061$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1946.8	$1946 \pm 15$ (−0.2 $\sigma$ )
$w_0$	−1.012	$−1.008 \pm 0.094$ (+0.0 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6133	$0.6138 \pm 0.0073$ (−0.1 $\sigma$ )	$H(0.61)$	95.408	$95.37 \pm 0.45$ (+0.4 $\sigma$ )
$w_a$	−0.244	$−0.28_{-0.31}^{+0.36}$ (+0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9975	$0.998 \pm 0.011$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2270.2	$2270 \pm 17$ (−0.3 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0418	$3.041 \pm 0.014$ (+0.2 $\sigma$ )	$r_{\mathrm{drag}}h$	102.48	$102.5 \pm 1.4$ (+0.0 $\sigma$ )	$H(2.33)$	234.72	$234.75 \pm 0.95$ (+0.2 $\sigma$ )
$n_{\mathrm{s}}$	0.96629	$0.9651 \pm 0.0039$ (+0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4558	$2.459 \pm 0.023$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5748.7	$5750 \pm 10$ (−0.8 $\sigma$ )
$y_{\mathrm{cal}}$	1.00044	$1.0005 \pm 0.0025$ (+0.1 $\sigma$ )	$z_{\mathrm{re}}$	7.53	$7.47 \pm 0.75$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4606	$0.4610 \pm 0.0071$ (−0.1 $\sigma$ )
$\alpha_{JLA}$	0.1417	$0.1416 \pm 0.0068$ (−0.0 $\sigma$ )	$10^9A_{\mathrm{s}}$	2.0943	$2.092 \pm 0.030$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7709	$0.772 \pm 0.011$ (−0.0 $\sigma$ )
$\beta_{JLA}$	3.106	$3.115 \pm 0.080$ (+0.0 $\sigma$ )	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8834	$1.883 \pm 0.010$ (+0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.4865	$0.4872 \pm 0.0089$ (−0.1 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	46.0	$47 \pm 7$ (−0.2 $\sigma$ )	$D_{40}$	1227.1	$1230 \pm 11$ (−0.0 $\sigma$ )	$\sigma_8(0.38)$	0.6845	$0.685 \pm 0.010$ (−0.0 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.63	—	$D_{220}$	5732.1	$5734 \pm 38$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.4882	$0.4891 \pm 0.0092$ (−0.1 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	7.09	$5.5_{-1.9}^{+2.1}$ (+0.2 $\sigma$ )	$D_{810}$	2540.5	$2539 \pm 13$ (+0.3 $\sigma$ )	$\sigma_8(0.51)$	0.6407	$0.6412 \pm 0.0094$ (−0.0 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	249.2	$259 \pm 28$ (−0.2 $\sigma$ )	$D_{1420}$	818.15	$817.1 \pm 4.8$ (+0.5 $\sigma$ )	$f\sigma_8(0.61)$	0.4849	$0.4858 \pm 0.0092$ (−0.1 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	50.7	$46 \pm 8$ (−0.4 $\sigma$ )	$D_{2000}$	231.31	$230.9 \pm 1.6$ (+0.7 $\sigma$ )	$\sigma_8(0.61)$	0.6096	$0.6100 \pm 0.0088$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	52.9	$42 \pm 9$ (−0.1 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.96629	$0.9651 \pm 0.0039$ (+0.3 $\sigma$ )	$f\sigma_8(2.33)$	0.30809	$0.3082 \pm 0.0045$ (+0.0 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	122.0	$115 \pm 10$ (+0.0 $\sigma$ )	$Y_{\mathrm{P}}$	0.245405	$0.245400_{-0.000051}^{+0.000057}$ (+1.0 $\sigma$ )	$\sigma_8(2.33)$	0.31481	$0.3148 \pm 0.0038$ (+0.1 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.01	$< 4.21$ (−0.1 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246731	$0.246726_{-0.000051}^{+0.000057}$ (+1.0 $\sigma$ )	$f_{2000}^{143}$	28.75	$29.4 \pm 2.7$ (−0.5 $\sigma$ )
$A_{100}^{\mathrm{dust}TT}$	8.79	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$10^5\mathrm{D}/\mathrm{H}$	2.5810	$2.583 \pm 0.026$ (−1.1 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.04	$32.1 \pm 1.8$ (−0.6 $\sigma$ )
$A_{143}^{\mathrm{dust}TT}$	11.02	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	Age/Gyr	13.7302	$13.730 \pm 0.029$ (−0.6 $\sigma$ )	$f_{2000}^{217}$	106.55	$106.9 \pm 1.8$ (−0.5 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dust}TT}$	20.16	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$z_*$	1089.879	$1089.90 \pm 0.24$ (−0.9 $\sigma$ )	$\chi_{\mathrm{lensing}}^2$	8.770	$9.23 \pm 0.85$ (−0.2 $\sigma$ )
$A_{217}^{\mathrm{dust}TT}$	95.6	$93.7 \pm 7.4$ (+0.1 $\sigma$ )	$r_*$	144.443	$144.41 \pm 0.24$ (−0.4 $\sigma$ )	$\chi_{\mathrm{small}}^2$	396	$216 \pm 200$ (−122.4 $\sigma$ )
$A_{100}^{\mathrm{dust}TE}$	0.1136	$0.114 \pm 0.038$	$100\theta_*$	1.041133	$1.04111 \pm 0.00029$ (+0.1 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	23.02	$23.27 \pm 0.78$ (−0.1 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dust}TE}$	0.1351	$0.134 \pm 0.029$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8736	$13.871 \pm 0.023$ (−0.5 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2344.1	$2358.6 \pm 5.5$ (+298.9 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dust}TE}$	0.485	$0.481 \pm 0.084$	$z_{\mathrm{drag}}$	1059.971	$1059.97 \pm 0.30$ (+1.1 $\sigma$ )	$\chi_{\mathrm{H073p45}}^2$	5	$186 \pm 200$ (+67.1 $\sigma$ )
$A_{143}^{\mathrm{dust}TE}$	0.226	$0.226 \pm 0.054$	$r_{\mathrm{drag}}$	147.097	$147.06 \pm 0.25$ (−0.6 $\sigma$ )	$\chi_{\mathrm{JLA}}^2$	695.46	$698.2 \pm 2.6$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dust}TE}$	0.665	$0.665 \pm 0.079$	$k_{\mathrm{D}}$	0.140880	$0.14091 \pm 0.00029$ (+0.9 $\sigma$ )	$\chi_{\mathrm{6DF}}^2$	0.150	$0.22 \pm 0.22$ (+0.0 $\sigma$ )
$A_{217}^{\mathrm{dust}TE}$	2.088	$2.08 \pm 0.27$	$100\theta_{\mathrm{D}}$	0.160734	$0.16074 \pm 0.00017$ (−1.1 $\sigma$ )	$\chi_{\mathrm{MGS}}^2$	2.92	$3.02 \pm 0.82$ (+0.0 $\sigma$ )
$c_{100}$	0.99974	$0.99968 \pm 0.00061$ (+0.1 $\sigma$ )	$z_{\mathrm{eq}}$	3400.0	$3404 \pm 24$ (+0.1 $\sigma$ )	$\chi_{\mathrm{DR12BAO}}^2$	4.74	$5.7 \pm 1.7$ (−0.0 $\sigma$ )
$c_{217}$	0.99820	$0.99819 \pm 0.00063$ (−0.1 $\sigma$ )	$k_{\mathrm{eq}}$	0.010377	$0.010388 \pm 0.000074$ (+0.1 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.62	$11.5 \pm 4.5$ (+1.1 $\sigma$ )
$H_0$	69.67	$69.71 \pm 0.95$ (+0.1 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.81378	$0.8131 \pm 0.0045$ (+0.0 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	2772	$2607 \pm 200$ (+253.9 $\sigma$ )
$\Omega_{\Lambda}$	0.7055	$0.7054 \pm 0.0083$ (+0.1 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.44962	$0.4493 \pm 0.0023$ (−0.0 $\sigma$ )	$\chi_{\mathrm{BAO}}^2$	7.81	$8.9 \pm 2.6$ (+0.0 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.2945	$0.2946 \pm 0.0083$ (−0.1 $\sigma$ )	$H(0.15)$	74.56	$74.61 \pm 0.73$ (+0.2 $\sigma$ )			
$\Omega_{\mathrm{m}}h^2$	0.14292	$0.1431 \pm 0.0010$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	624.4	$624.1 \pm 6.6$ (−0.2 $\sigma$ )			

Best-fit  $\chi_{\mathrm{eff}}^2 = 3481.83$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1585.57$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 3511.91$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.49$ ;  $R - 1 = 0.02088$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.15 ( $\Delta$  -0.01) MGS: 2.92 ( $\Delta$  0.00) DR12BAO: 4.74 ( $\Delta$  0.02) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.77 ( $\Delta$  0.02) small\_100x143\_offlike5\_EE\_Aplanck: 395.84 ( $\Delta$  0.08) commander\_dx12\_v3.2.29: 23.02 ( $\Delta$  -0.04) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.12 Hubble - H073p45: 5.19 ( $\Delta$  -0.04) SN - JLA December.2013: 695.46 ( $\Delta$  -0.20)



## 19.15 base\_w\_wa\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_JLA\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02237 \pm 0.00014 \quad (+1.1\sigma)$	$\Omega_{\mathrm{m}}h^2$	$0.1434 \pm 0.0012 \quad (-0.1\sigma)$	$H(0.15)$	$74.65 \pm 0.74 \quad (+0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1203 \pm 0.0012 \quad (-0.3\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.0999 \pm 0.0016 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.15)$	$623.9 \pm 6.7 \quad (-0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00030 \quad (+0.2\sigma)$	$\sigma_8$	$0.838 \pm 0.014 \quad (-0.2\sigma)$	$H(0.38)$	$83.87 \pm 0.66 \quad (+0.3\sigma)$
$\tau$	$0.0549^{+0.0050}_{-0.0079} \quad (+0.2\sigma)$	$S_8$	$0.831 \pm 0.014 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.38)$	$1497 \pm 13 \quad (-0.2\sigma)$
$w_0$	$-1.002 \pm 0.097 \quad (-0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4552 \pm 0.0078 \quad (-0.3\sigma)$	$H(0.51)$	$90.08 \pm 0.54 \quad (+0.4\sigma)$
$w_a$	$-0.33^{+0.39}_{-0.33} \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6177 \pm 0.0095 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.51)$	$1946 \pm 16 \quad (-0.2\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046^{+0.012}_{-0.015} \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$1.004 \pm 0.014 \quad (-0.3\sigma)$	$H(0.61)$	$95.34 \pm 0.45 \quad (+0.5\sigma)$
$n_{\mathrm{s}}$	$0.9646 \pm 0.0041 \quad (+0.4\sigma)$	$r_{\mathrm{drag}}h$	$102.5 \pm 1.4 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2269 \pm 17 \quad (-0.2\sigma)$
$\alpha_{JLA}$	$0.1417 \pm 0.0067 \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.471 \pm 0.030 \quad (-0.2\sigma)$	$H(2.33)$	$234.78 \pm 0.94 \quad (+0.1\sigma)$
$\beta_{JLA}$	$3.114 \pm 0.081 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.71^{+0.56}_{-0.78} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5751 \pm 10 \quad (-0.9\sigma)$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025 \quad (+0.1\sigma)$	$10^9 A_{\mathrm{s}}$	$2.104^{+0.025}_{-0.033} \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4639 \pm 0.0084 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.885 \pm 0.011 \quad (+0.0\sigma)$	$\sigma_8(0.15)$	$0.776 \pm 0.013 \quad (-0.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	$> 0.382 \quad (+0.1\sigma)$	$D_{40}$	$1232 \pm 12 \quad (-0.1\sigma)$	$f\sigma_8(0.38)$	$0.490 \pm 0.010 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$D_{220}$	$5733 \pm 38 \quad (+0.5\sigma)$	$\sigma_8(0.38)$	$0.689 \pm 0.012 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$258 \pm 28 \quad (-0.2\sigma)$	$D_{810}$	$2540 \pm 13 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.492 \pm 0.011 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{1420}$	$817.3 \pm 4.7 \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.645 \pm 0.011 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9 \quad (-0.1\sigma)$	$D_{2000}$	$231.1 \pm 1.6 \quad (+0.7\sigma)$	$f\sigma_8(0.61)$	$0.489 \pm 0.011 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{PS}}$	$116 \pm 10 \quad (+0.0\sigma)$	$n_{\mathrm{s},0.002}$	$0.9646 \pm 0.0041 \quad (+0.4\sigma)$	$\sigma_8(0.61)$	$0.613 \pm 0.010 \quad (-0.2\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.03 \quad (-0.2\sigma)$	$Y_{\mathrm{P}}$	$0.245393^{+0.000058}_{-0.000052} \quad (+1.0\sigma)$	$f\sigma_8(2.33)$	$0.3098 \pm 0.0052 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246719^{+0.000059}_{-0.000053} \quad (+1.0\sigma)$	$\sigma_8(2.33)$	$0.3161 \pm 0.0042 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.8 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.586 \pm 0.027 \quad (-1.1\sigma)$	$f_{2000}^{143}$	$29.3 \pm 2.7 \quad (-0.5\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.3 \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.729^{+0.028}_{-0.031} \quad (-0.6\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 1.8 \quad (-0.6\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.8 \pm 7.3 \quad (+0.1\sigma)$	$z_*$	$1089.95 \pm 0.25 \quad (-0.9\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.7 \quad (-0.5\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.038$	$r_*$	$144.34 \pm 0.28 \quad (-0.1\sigma)$	$\chi_{\mathrm{small}}^2$	$396.9 \pm 1.8 \quad (+0.1\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.134 \pm 0.030$	$100\theta_*$	$1.04109 \pm 0.00030 \quad (+0.2\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.44 \pm 0.88 \quad (-0.3\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.480 \pm 0.085$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.865 \pm 0.026 \quad (-0.2\sigma)$	$\chi_{\mathrm{plik}}^2$	$2358.3 \pm 5.7 \quad (+297.1\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.225 \pm 0.054$	$z_{\mathrm{drag}}$	$1059.96 \pm 0.29 \quad (+1.1\sigma)$	$\chi_{\mathrm{H073p45}}^2$	$5.4 \pm 2.6 \quad (-0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.666 \pm 0.080$	$r_{\mathrm{drag}}$	$147.00 \pm 0.28 \quad (-0.3\sigma)$	$\chi_{\mathrm{JLA}}^2$	$698.2 \pm 2.6 \quad (-0.0\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.08 \pm 0.27$	$k_{\mathrm{D}}$	$0.14096 \pm 0.00031 \quad (+0.6\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.22 \pm 0.22 \quad (+0.1\sigma)$
$c_{100}$	$0.99968 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16075 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$3.02 \pm 0.83 \quad (+0.0\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3411 \pm 28 \quad (-0.1\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$5.8 \pm 1.7 \quad (-0.1\sigma)$
$H_0$	$69.71 \pm 0.95 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010409 \pm 0.000085 \quad (-0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\Lambda}$	$0.7048 \pm 0.0084 \quad (+0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8118 \pm 0.0052 \quad (+0.2\sigma)$	$\chi_{\mathrm{BAO}}^2$	$9.0 \pm 2.6 \quad (-0.0\sigma)$
$\Omega_{\mathrm{m}}$	$0.2952 \pm 0.0084 \quad (-0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4486 \pm 0.0027 \quad (+0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2778.6 \pm 5.7 \quad (+297.7\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 3502.71; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.66; R - 1 = 0.01370$$



19.16 base\_w\_wa\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_JLA\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02239 \pm 0.00014 \quad (+1.0\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.0997 \pm 0.0015 \quad (+0.2\sigma)$	$H(0.38)$	$83.85 \pm 0.65 \quad (+0.3\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1200 \pm 0.0010 \quad (-0.0\sigma)$	$\sigma_8$	$0.834 \pm 0.012 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.38)$	$1498 \pm 13 \quad (-0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04094 \pm 0.00030 \quad (+0.2\sigma)$	$S_8$	$0.826 \pm 0.011 \quad (-0.1\sigma)$	$H(0.51)$	$90.09 \pm 0.54 \quad (+0.3\sigma)$
$\tau$	$0.0540^{+0.0048}_{-0.0075} \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4523 \pm 0.0061 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1946 \pm 16 \quad (-0.3\sigma)$
$w_0$	$-1.009 \pm 0.094 \quad (+0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6141 \pm 0.0073 \quad (-0.1\sigma)$	$H(0.61)$	$95.37 \pm 0.45 \quad (+0.4\sigma)$
$w_a$	$-0.27^{+0.36}_{-0.31} \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.999 \pm 0.011 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2270 \pm 17 \quad (-0.3\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.011}_{-0.014} \quad (+0.2\sigma)$	$r_{\mathrm{drag}}h$	$102.5 \pm 1.4 \quad (+0.0\sigma)$	$H(2.33)$	$234.74 \pm 0.96 \quad (+0.2\sigma)$
$n_{\mathrm{s}}$	$0.9653 \pm 0.0038 \quad (+0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.460 \pm 0.023 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5750 \pm 10 \quad (-0.8\sigma)$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025 \quad (+0.1\sigma)$	$z_{\mathrm{re}}$	$7.61^{+0.53}_{-0.74} \quad (+0.0\sigma)$	$f\sigma_8(0.15)$	$0.4611 \pm 0.0070 \quad (-0.1\sigma)$
$\alpha_{JLA}$	$0.1416 \pm 0.0068 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.098^{+0.022}_{-0.030} \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.772 \pm 0.011 \quad (-0.0\sigma)$
$\beta_{JLA}$	$3.116 \pm 0.080 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.883 \pm 0.010 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4873 \pm 0.0089 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$D_{40}$	$1229 \pm 11 \quad (+0.0\sigma)$	$\sigma_8(0.38)$	$0.685 \pm 0.010 \quad (-0.0\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{220}$	$5733 \pm 38 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.4892 \pm 0.0092 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.3\sigma)$	$\sigma_8(0.51)$	$0.6416 \pm 0.0094 \quad (-0.0\sigma)$
$A_{100}^{\mathrm{PS}}$	$259 \pm 28 \quad (-0.2\sigma)$	$D_{1420}$	$817.1 \pm 4.8 \quad (+0.5\sigma)$	$f\sigma_8(0.61)$	$0.4859 \pm 0.0092 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{2000}$	$231.0 \pm 1.6 \quad (+0.7\sigma)$	$\sigma_8(0.61)$	$0.6104 \pm 0.0088 \quad (-0.0\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9653 \pm 0.0038 \quad (+0.3\sigma)$	$f\sigma_8(2.33)$	$0.3084 \pm 0.0045 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$Y_{\mathrm{P}}$	$0.245402 \pm 0.000054 \quad (+1.0\sigma)$	$\sigma_8(2.33)$	$0.3150 \pm 0.0037 \quad (+0.0\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.19 \quad (-0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246728 \pm 0.000054 \quad (+1.0\sigma)$	$f_{2000}^{143}$	$29.4 \pm 2.7 \quad (-0.5\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.582 \pm 0.026 \quad (-1.0\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 1.8 \quad (-0.6\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.8 \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.730 \pm 0.029 \quad (-0.6\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.7 \quad (-0.5\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.5 \pm 3.3 \quad (+0.1\sigma)$	$z_*$	$1089.89 \pm 0.23 \quad (-0.9\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.24 \pm 0.87 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.7 \pm 7.4 \quad (+0.1\sigma)$	$r_*$	$144.43 \pm 0.24 \quad (-0.5\sigma)$	$\chi_{\mathrm{small}}^2$	$218 \pm 200 \quad (-126.1\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.038$	$100\theta_*$	$1.04112 \pm 0.00029 \quad (+0.1\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.26 \pm 0.78 \quad (-0.1\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.134 \pm 0.029$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.872 \pm 0.022 \quad (-0.5\sigma)$	$\chi_{\mathrm{plik}}^2$	$2358.4 \pm 5.5 \quad (+299.6\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.481 \pm 0.084$	$z_{\mathrm{drag}}$	$1059.98 \pm 0.29 \quad (+1.1\sigma)$	$\chi_{\mathrm{H073p45}}^2$	$184 \pm 200 \quad (+66.4\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.225 \pm 0.054$	$r_{\mathrm{drag}}$	$147.08 \pm 0.24 \quad (-0.6\sigma)$	$\chi_{\mathrm{JLA}}^2$	$698.2 \pm 2.6 \quad (-0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.665 \pm 0.079$	$k_{\mathrm{D}}$	$0.14089 \pm 0.00029 \quad (+0.9\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.22 \pm 0.22 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.08 \pm 0.27$	$100\theta_{\mathrm{D}}$	$0.16074 \pm 0.00017 \quad (-1.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$3.02 \pm 0.83 \quad (+0.0\sigma)$
$c_{100}$	$0.99968 \pm 0.00061 \quad (+0.1\sigma)$	$z_{\mathrm{eq}}$	$3402 \pm 24 \quad (+0.1\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$5.7 \pm 1.8 \quad (+0.0\sigma)$
$c_{217}$	$0.99819 \pm 0.00063 \quad (-0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010383 \pm 0.000072 \quad (+0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.4 \quad (+1.1\sigma)$
$H_0$	$69.70 \pm 0.95 \quad (+0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8135 \pm 0.0044 \quad (-0.0\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2609 \pm 200 \quad (+258.3\sigma)$
$\Omega_{\Lambda}$	$0.7055 \pm 0.0083 \quad (+0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4495 \pm 0.0023 \quad (-0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$8.9 \pm 2.6 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}$	$0.2945 \pm 0.0083 \quad (-0.1\sigma)$	$H(0.15)$	$74.59^{+0.69}_{-0.76} \quad (+0.2\sigma)$		
$\Omega_{\mathrm{m}}h^2$	$0.14300 \pm 0.00099 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$624.2 \pm 6.7 \quad (-0.2\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 3511.63; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.55; R - 1 = 0.02239$$



# 19.17 base\_w\_wa\_plikHM\_TT\_lowl\_lowE\_BAO\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022152	$0.02212 \pm 0.00021$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6137	$0.615 \pm 0.013$	$H(0.38)$	83.41	$83.44 \pm 0.62$
$\Omega_{\mathrm{c}}h^2$	0.12027	$0.1206 \pm 0.0018$	$\sigma_8/h^{0.5}$	0.9978	$0.999 \pm 0.019$	$D_{\mathrm{M}}(0.38)$	1516.3	$1516 \pm 14$
$100\theta_{\mathrm{MC}}$	1.040823	$1.04079 \pm 0.00045$	$r_{\mathrm{drag}}h$	100.49	$100.3 \pm 1.2$	$H(0.51)$	89.88	$89.88 \pm 0.50$
$\tau$	0.0526	$0.0519 \pm 0.0079$	$\langle d^2 \rangle^{1/2}$	2.4596	$2.466 \pm 0.042$	$D_{\mathrm{M}}(0.51)$	1966.6	$1966 \pm 16$
$w_0$	-0.971	$-0.953 \pm 0.085$	$z_{\mathrm{re}}$	7.55	$7.46 \pm 0.82$	$H(0.61)$	95.307	$95.27 \pm 0.44$
$w_a$	-0.265	$-0.36^{+0.41}_{-0.31}$	$10^9 A_{\mathrm{s}}$	2.0918	$2.091 \pm 0.034$	$D_{\mathrm{M}}(0.61)$	2290.6	$2290 \pm 17$
$\ln(10^{10} A_{\mathrm{s}})$	3.0406	$3.040 \pm 0.016$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8828	$1.884 \pm 0.013$	$H(2.33)$	235.10	$235.13 \pm 0.98$
$n_{\mathrm{s}}$	0.9646	$0.9629 \pm 0.0052$	$D_{40}$	1228.3	$1232 \pm 14$	$D_{\mathrm{M}}(2.33)$	5763.8	$5766 \pm 13$
$y_{\mathrm{cal}}$	1.00031	$1.0005 \pm 0.0025$	$D_{220}$	5709.7	$5713 \pm 41$	$f\sigma_8(0.15)$	0.4618	$0.462 \pm 0.011$
$A_{217}^{\mathrm{CIB}}$	48.9	$48 \pm 7$	$D_{810}$	2536.9	$2536 \pm 14$	$\sigma_8(0.15)$	0.7621	$0.763 \pm 0.016$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.31	—	$D_{1420}$	815.3	$814.4 \pm 5.1$	$f\sigma_8(0.38)$	0.4832	$0.484 \pm 0.013$
$A_{143}^{\mathrm{tSZ}}$	7.11	$5.1 \pm 2.0$	$D_{2000}$	230.01	$229.6 \pm 1.8$	$\sigma_8(0.38)$	0.6759	$0.676 \pm 0.014$
$A_{100}^{\mathrm{PS}}$	253.9	$263 \pm 28$	$n_{\mathrm{s},0.002}$	0.9646	$0.9629 \pm 0.0052$	$f\sigma_8(0.51)$	0.4834	$0.484 \pm 0.013$
$A_{143}^{\mathrm{PS}}$	49.0	$49 \pm 8$	$Y_{\mathrm{P}}$	0.245306	$0.245289^{+0.000098}_{-0.000081}$	$\sigma_8(0.51)$	0.6325	$0.633 \pm 0.013$
$A_{143 \times 217}^{\mathrm{PS}}$	46.5	$43 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.246632	$0.246615^{+0.000098}_{-0.000082}$	$f\sigma_8(0.61)$	0.4793	$0.480 \pm 0.013$
$A_{217}^{\mathrm{PS}}$	119.0	$115 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	2.6270	$2.633 \pm 0.040$	$\sigma_8(0.61)$	0.6018	$0.602 \pm 0.012$
$A^{\mathrm{kSZ}}$	0.01	$< 4.83$	$\mathrm{Age}/\mathrm{Gyr}$	13.7778	$13.779 \pm 0.035$	$f\sigma_8(2.33)$	0.3040	$0.3040^{+0.0065}_{-0.0057}$
$A_{100}^{\mathrm{dustTT}}$	8.86	$9.0 \pm 1.8$	$z_*$	1090.220	$1090.29 \pm 0.36$	$\sigma_8(2.33)$	0.31100	$0.3108 \pm 0.0047$
$A_{143}^{\mathrm{dustTT}}$	10.85	$10.7 \pm 1.8$	$r_*$	144.527	$144.48 \pm 0.43$	$f_{2000}^{143}$	30.29	$31.1 \pm 2.9$
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.45	$18.3 \pm 3.3$	$100\theta_*$	1.041026	$1.04100 \pm 0.00044$	$f_{2000}^{143 \times 217}$	33.19	$33.5 \pm 2.0$
$A_{217}^{\mathrm{dustTT}}$	94.5	$93.4 \pm 7.4$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8831	$13.879 \pm 0.040$	$f_{2000}^{217}$	107.61	$108.1 \pm 1.9$
$c_{100}$	0.99966	$0.99961 \pm 0.00061$	$z_{\mathrm{drag}}$	1059.437	$1059.40 \pm 0.45$	$\chi_{\mathrm{small}}^2$	395.87	$396.9 \pm 1.6$
$c_{217}$	0.99825	$0.99826 \pm 0.00062$	$r_{\mathrm{drag}}$	147.263	$147.22 \pm 0.44$	$\chi_{\mathrm{lowl}}^2$	23.28	$23.7 \pm 1.1$
$H_0$	68.24	$68.14 \pm 0.83$	$k_{\mathrm{D}}$	0.14052	$0.14054 \pm 0.00050$	$\chi_{\mathrm{plik}}^2$	758.4	$770.8 \pm 5.4$
$\Omega_{\Lambda}$	0.6928	$0.6912 \pm 0.0082$	$100\theta_{\mathrm{D}}$	0.161039	$0.16107 \pm 0.00026$	$\chi_{\mathrm{JLA}}^2$	1034.78	$1035.9 \pm 1.5$
$\Omega_{\mathrm{m}}$	0.3072	$0.3088 \pm 0.0082$	$z_{\mathrm{eq}}$	3403.5	$3410 \pm 42$	$\chi_{6\mathrm{DF}}^2$	0.0012	$0.052 \pm 0.073$
$\Omega_{\mathrm{m}}h^2$	0.14307	$0.1433 \pm 0.0018$	$k_{\mathrm{eq}}$	0.010388	$0.01041 \pm 0.00013$	$\chi_{\mathrm{MGS}}^2$	1.82	$1.87 \pm 0.69$
$\Omega_{\mathrm{m}}h^3$	0.09763	$0.0977 \pm 0.0017$	$100\theta_{\mathrm{eq}}$	0.8124	$0.8113 \pm 0.0078$	$\chi_{\mathrm{DR12BAO}}^2$	4.04	$5.0 \pm 1.3$
$\sigma_8$	0.8243	$0.825 \pm 0.017$	$100\theta_{\mathrm{s,eq}}$	0.44906	$0.4485 \pm 0.0040$	$\chi_{\mathrm{prior}}^2$	1.38	$7.3 \pm 3.7$
$S_8$	0.8342	$0.837 \pm 0.020$	$H(0.15)$	73.60	$73.63 \pm 0.73$	$\chi_{\mathrm{BAO}}^2$	5.86	$6.9 \pm 1.5$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4569	$0.458 \pm 0.011$	$D_{\mathrm{M}}(0.15)$	634.9	$635.2 \pm 6.6$	$\chi_{\mathrm{CMB}}^2$	1177.5	$1191.3 \pm 5.5$

Best-fit  $\chi_{\mathrm{eff}}^2 = 2219.53$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2241.47$ ;  $R - 1 = 0.00718$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.00 MGS: 1.82 DR12BAO: 4.04 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.87 commander\_dx12\_v3.2.29: 23.29 plik\_rd12\_HM\_v22.TT: 758.36  
SN - JLA Pantheon18: 1034.78



19.18 base\_w\_wa\_plikHM\_TT\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022187	$0.02215 \pm 0.00020$	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6096	$0.6111 \pm 0.0086$	$H(0.38)$	83.40	$83.44 \pm 0.63$
$\Omega_{\text{c}}h^2$	0.11971	$0.1200 \pm 0.0014$	$\sigma_8/h^{0.5}$	0.9921	$0.994 \pm 0.012$	$D_{\text{M}}(0.38)$	1517.3	$1517 \pm 13$
$100\theta_{\text{MC}}$	1.040810	$1.04083 \pm 0.00044$	$r_{\text{drag}}h$	100.49	$100.4 \pm 1.2$	$H(0.51)$	89.90	$89.91 \pm 0.52$
$\tau$	0.0528	$0.0517 \pm 0.0077$	$\langle d^2 \rangle^{1/2}$	2.4487	$2.455 \pm 0.027$	$D_{\text{M}}(0.51)$	1967.5	$1967 \pm 16$
$w_0$	-0.974	$-0.960 \pm 0.081$	$z_{\text{re}}$	7.55	$7.43 \pm 0.80$	$H(0.61)$	95.356	$95.33 \pm 0.44$
$w_a$	-0.216	$-0.29^{+0.34}_{-0.27}$	$10^9 A_{\text{s}}$	2.0899	$2.087 \pm 0.031$	$D_{\text{M}}(0.61)$	2291.4	$2291 \pm 17$
$\ln(10^{10} A_{\text{s}})$	3.0397	$3.038 \pm 0.015$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8804	$1.882 \pm 0.011$	$H(2.33)$	235.02	$235.03 \pm 0.99$
$n_{\text{s}}$	0.96535	$0.9638 \pm 0.0044$	$D_{40}$	1226.7	$1230 \pm 12$	$D_{\text{M}}(2.33)$	5762.9	$5765 \pm 13$
$y_{\text{cal}}$	1.00032	$1.0004 \pm 0.0025$	$D_{220}$	5714.6	$5716 \pm 41$	$f\sigma_8(0.15)$	0.4584	$0.4594 \pm 0.0078$
$A_{217}^{\text{CIB}}$	49.0	$48 \pm 7$	$D_{810}$	2536.1	$2535 \pm 13$	$\sigma_8(0.15)$	0.7576	$0.759 \pm 0.011$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.26	—	$D_{1420}$	815.3	$814.4 \pm 5.0$	$f\sigma_8(0.38)$	0.4794	$0.4805 \pm 0.0092$
$A_{143}^{\text{tSZ}}$	7.10	$5.1 \pm 2.0$	$D_{2000}$	229.98	$229.6 \pm 1.7$	$\sigma_8(0.38)$	0.6720	$0.673 \pm 0.010$
$A_{100}^{\text{PS}}$	254.8	$264 \pm 28$	$n_{\text{s},0.002}$	0.96535	$0.9638 \pm 0.0044$	$f\sigma_8(0.51)$	0.4795	$0.4808 \pm 0.0095$
$A_{143}^{\text{PS}}$	48.4	$49 \pm 8$	$Y_{\text{P}}$	0.245320	$0.245301^{+0.000093}_{-0.000077}$	$\sigma_8(0.51)$	0.6290	$0.6298 \pm 0.0094$
$A_{143 \times 217}^{\text{PS}}$	45.2	$43 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	0.246647	$0.246627^{+0.000094}_{-0.000077}$	$f\sigma_8(0.61)$	0.4754	$0.4768 \pm 0.0096$
$A_{217}^{\text{PS}}$	118.5	$115 \pm 10$	$10^5 \text{D}/\text{H}$	2.6204	$2.628 \pm 0.038$	$\sigma_8(0.61)$	0.5985	$0.5992 \pm 0.0089$
$A^{\text{kSZ}}$	0.01	$< 4.91$	$\text{Age}/\text{Gyr}$	13.7809	$13.781 \pm 0.034$	$f\sigma_8(2.33)$	0.30235	$0.3027 \pm 0.0046$
$A_{100}^{\text{dustTT}}$	8.91	$9.0 \pm 1.8$	$z_*$	1090.126	$1090.21 \pm 0.32$	$\sigma_8(2.33)$	0.30984	$0.3098 \pm 0.0036$
$A_{143}^{\text{dustTT}}$	10.82	$10.8 \pm 1.8$	$r_*$	144.646	$144.59 \pm 0.33$	$\chi^2_{\text{lensing}}$	8.72	$9.40 \pm 0.97$
$A_{143 \times 217}^{\text{dustTT}}$	19.47	$18.3 \pm 3.3$	$100\theta_*$	1.041016	$1.04103 \pm 0.00043$	$\chi^2_{\text{small}}$	395.86	$396.8 \pm 1.5$
$A_{217}^{\text{dustTT}}$	94.8	$93.5 \pm 7.3$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8947	$13.889 \pm 0.032$	$\chi^2_{\text{lowl}}$	23.14	$23.48 \pm 0.91$
$c_{100}$	0.99963	$0.99961 \pm 0.00061$	$z_{\text{drag}}$	1059.475	$1059.42 \pm 0.44$	$\chi^2_{\text{plik}}$	758.71	$770.7 \pm 5.3$
$c_{217}$	0.99826	$0.99826 \pm 0.00062$	$r_{\text{drag}}$	147.373	$147.33 \pm 0.35$	$\chi^2_{\text{JLA}}$	1034.79	$1035.9 \pm 1.5$
$H_0$	68.19	$68.14 \pm 0.83$	$k_{\text{D}}$	0.140429	$0.14045 \pm 0.00044$	$\chi^2_{6\text{DF}}$	0.0010	$0.053 \pm 0.075$
$\Omega_{\Lambda}$	0.6934	$0.6922 \pm 0.0079$	$100\theta_{\text{D}}$	0.161007	$0.16105 \pm 0.00026$	$\chi^2_{\text{MGS}}$	1.82	$1.89 \pm 0.69$
$\Omega_{\text{m}}$	0.3066	$0.3078 \pm 0.0079$	$z_{\text{eq}}$	3390.9	$3398 \pm 31$	$\chi^2_{\text{DR12BAO}}$	3.86	$4.8 \pm 1.3$
$\Omega_{\text{m}}h^2$	0.14254	$0.1428 \pm 0.0013$	$k_{\text{eq}}$	0.010350	$0.010371 \pm 0.000095$	$\chi^2_{\text{prior}}$	1.46	$7.3 \pm 3.7$
$\Omega_{\text{m}}h^3$	0.09720	$0.0973 \pm 0.0015$	$100\theta_{\text{eq}}$	0.8147	$0.8134 \pm 0.0058$	$\chi^2_{\text{CMB}}$	1186.4	$1200.4 \pm 5.6$
$\sigma_8$	0.8193	$0.821 \pm 0.012$	$100\theta_{\text{s,eq}}$	0.45026	$0.4496 \pm 0.0030$	$\chi^2_{\text{BAO}}$	5.68	$6.7 \pm 1.5$
$S_8$	0.8282	$0.831 \pm 0.013$	$H(0.15)$	73.54	$73.59 \pm 0.71$			
$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4536	$0.4551 \pm 0.0073$	$D_{\text{M}}(0.15)$	635.4	$635.4 \pm 6.5$			

Best-fit  $\chi^2_{\text{eff}} = 2228.36$ ;  $\bar{\chi}^2_{\text{eff}} = 2250.30$ ;  $R - 1 = 0.00973$

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.00 MGS: 1.82 DR12BAO: 3.86 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.72 small\_100x143.offlike5\_EE\_Aplanck\_B: 395.86 commander\_dx12.v3.2.29: 23.14 plik\_rd12\_HM.v22\_TT: 758.71 SN - JLA Pantheon18: 1034.79



19.19 base\_w\_wa\_plikHM\_TT\_lowl\_lowE\_BAO\_Pantheon18\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02213 \pm 0.00021$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.615 \pm 0.013$	$H(0.38)$	$83.44 \pm 0.62$
$\Omega_{\mathrm{c}}h^2$	$0.1205 \pm 0.0018$	$\sigma_8/h^{0.5}$	$1.000 \pm 0.019$	$D_{\mathrm{M}}(0.38)$	$1516 \pm 14$
$100\theta_{\mathrm{MC}}$	$1.04080 \pm 0.00045$	$r_{\mathrm{drag}}h$	$100.3 \pm 1.2$	$H(0.51)$	$89.88 \pm 0.50$
$\tau$	$0.0536^{+0.0046}_{-0.0081}$	$\langle d^2 \rangle^{1/2}$	$2.468 \pm 0.041$	$D_{\mathrm{M}}(0.51)$	$1967 \pm 16$
$w_0$	$-0.953 \pm 0.084$	$z_{\mathrm{re}}$	$7.65^{+0.52}_{-0.82}$	$H(0.61)$	$95.29 \pm 0.43$
$w_a$	$-0.35^{+0.41}_{-0.31}$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.024}_{-0.033}$	$D_{\mathrm{M}}(0.61)$	$2291 \pm 17$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.012}_{-0.016}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.884 \pm 0.013$	$H(2.33)$	$235.13 \pm 0.98$
$n_{\mathrm{s}}$	$0.9632 \pm 0.0051$	$D_{40}$	$1232 \pm 14$	$D_{\mathrm{M}}(2.33)$	$5766 \pm 13$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{220}$	$5713 \pm 42$	$f\sigma_8(0.15)$	$0.463 \pm 0.011$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2536 \pm 14$	$\sigma_8(0.15)$	$0.763 \pm 0.016$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$814.5 \pm 5.1$	$f\sigma_8(0.38)$	$0.484 \pm 0.013$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{2000}$	$229.7 \pm 1.8$	$\sigma_8(0.38)$	$0.677 \pm 0.014$
$A_{100}^{\mathrm{PS}}$	$263 \pm 28$	$n_{\mathrm{s},0.002}$	$0.9632 \pm 0.0051$	$f\sigma_8(0.51)$	$0.485 \pm 0.013$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}$	$0.245291^{+0.000097}_{-0.000081}$	$\sigma_8(0.51)$	$0.633 \pm 0.013$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246618^{+0.000098}_{-0.000082}$	$f\sigma_8(0.61)$	$0.481 \pm 0.013$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$10^5 \mathrm{D}/\mathrm{H}$	$2.632 \pm 0.040$	$\sigma_8(0.61)$	$0.603 \pm 0.012$
$A^{\mathrm{kSZ}}$	$< 4.77$	$\mathrm{Age}/\mathrm{Gyr}$	$13.779 \pm 0.035$	$f\sigma_8(2.33)$	$0.3043^{+0.0065}_{-0.0057}$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$z_*$	$1090.27 \pm 0.36$	$\sigma_8(2.33)$	$0.3111 \pm 0.0046$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$r_*$	$144.49 \pm 0.43$	$f_{2000}^{143}$	$31.0 \pm 2.9$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04101 \pm 0.00044$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.0$
$A_{217}^{\mathrm{dust}TT}$	$93.5 \pm 7.4$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.880 \pm 0.040$	$f_{2000}^{217}$	$108.0 \pm 1.9$
$c_{100}$	$0.99960 \pm 0.00061$	$z_{\mathrm{drag}}$	$1059.41 \pm 0.45$	$\chi_{\mathrm{simall}}^2$	$396.8 \pm 1.6$
$c_{217}$	$0.99826 \pm 0.00062$	$r_{\mathrm{drag}}$	$147.24 \pm 0.44$	$\chi_{\mathrm{lowl}}^2$	$23.7 \pm 1.1$
$H_0$	$68.13 \pm 0.83$	$k_{\mathrm{D}}$	$0.14053 \pm 0.00050$	$\chi_{\mathrm{plik}}^2$	$770.6 \pm 5.4$
$\Omega_{\Lambda}$	$0.6912 \pm 0.0082$	$100\theta_{\mathrm{D}}$	$0.16107 \pm 0.00026$	$\chi_{\mathrm{JLA}}^2$	$1035.9 \pm 1.5$
$\Omega_{\mathrm{m}}$	$0.3088 \pm 0.0082$	$z_{\mathrm{eq}}$	$3408 \pm 41$	$\chi_{6\mathrm{DF}}^2$	$0.053 \pm 0.073$
$\Omega_{\mathrm{m}}h^2$	$0.1433 \pm 0.0017$	$k_{\mathrm{eq}}$	$0.01040 \pm 0.00013$	$\chi_{\mathrm{MGS}}^2$	$1.86 \pm 0.69$
$\Omega_{\mathrm{m}}h^3$	$0.0976 \pm 0.0017$	$100\theta_{\mathrm{eq}}$	$0.8116 \pm 0.0077$	$\chi_{\mathrm{DR12BAO}}^2$	$5.0 \pm 1.3$
$\sigma_8$	$0.826 \pm 0.017$	$100\theta_{\mathrm{s,eq}}$	$0.4487 \pm 0.0040$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$S_8$	$0.838 \pm 0.020$	$H(0.15)$	$73.62 \pm 0.73$	$\chi_{\mathrm{BAO}}^2$	$6.9 \pm 1.5$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.459 \pm 0.011$	$D_{\mathrm{M}}(0.15)$	$635.3 \pm 6.6$	$\chi_{\mathrm{CMB}}^2$	$1191.0 \pm 5.4$

$$\bar{\chi}_{\mathrm{eff}}^2 = 2241.17; R - 1 = 0.00784$$



19.20 base\_w\_wa\_plikHM\_TT\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02216 \pm 0.00020$	$\sigma_8/h^{0.5}$	$0.994 \pm 0.012$	$H(0.51)$	$89.92 \pm 0.52$
$\Omega_{\mathrm{c}}h^2$	$0.1199 \pm 0.0013$	$r_{\mathrm{drag}}h$	$100.4 \pm 1.2$	$D_{\mathrm{M}}(0.51)$	$1967 \pm 16$
$100\theta_{\mathrm{MC}}$	$1.04084 \pm 0.00044$	$\langle d^2 \rangle^{1/2}$	$2.456 \pm 0.027$	$H(0.61)$	$95.35 \pm 0.44$
$\tau$	$0.0534^{+0.0046}_{-0.0079}$	$z_{\mathrm{re}}$	$7.61^{+0.51}_{-0.80}$	$D_{\mathrm{M}}(0.61)$	$2291 \pm 17$
$w_0$	$-0.961 \pm 0.081$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.023}_{-0.030}$	$H(2.33)$	$235.0 \pm 1.0$
$w_a$	$-0.28^{+0.34}_{-0.27}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.881 \pm 0.011$	$D_{\mathrm{M}}(2.33)$	$5764 \pm 13$
$\ln(10^{10} A_{\mathrm{s}})$	$3.041^{+0.011}_{-0.014}$	$D_{40}$	$1230 \pm 12$	$f\sigma_8(0.15)$	$0.4593 \pm 0.0078$
$n_{\mathrm{s}}$	$0.9642 \pm 0.0043$	$D_{220}$	$5716 \pm 41$	$\sigma_8(0.15)$	$0.759 \pm 0.011$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$D_{810}$	$2535 \pm 13$	$f\sigma_8(0.38)$	$0.4803 \pm 0.0092$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{1420}$	$814.5 \pm 5.0$	$\sigma_8(0.38)$	$0.673 \pm 0.010$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{2000}$	$229.7 \pm 1.7$	$f\sigma_8(0.51)$	$0.4805 \pm 0.0095$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$n_{\mathrm{s},0.002}$	$0.9642 \pm 0.0043$	$\sigma_8(0.51)$	$0.6299 \pm 0.0095$
$A_{100}^{\mathrm{PS}}$	$263 \pm 28$	$Y_{\mathrm{P}}$	$0.245305^{+0.000093}_{-0.000076}$	$f\sigma_8(0.61)$	$0.4765 \pm 0.0096$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246631^{+0.000093}_{-0.000077}$	$\sigma_8(0.61)$	$0.5993 \pm 0.0089$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$10^5 \mathrm{D}/\mathrm{H}$	$2.626 \pm 0.038$	$f\sigma_8(2.33)$	$0.3027 \pm 0.0046$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$\mathrm{Age}/\mathrm{Gyr}$	$13.781 \pm 0.034$	$\sigma_8(2.33)$	$0.3100 \pm 0.0036$
$A^{\mathrm{kSZ}}$	$< 4.86$	$z_*$	$1090.18 \pm 0.31$	$f_{2000}^{143}$	$31.0 \pm 2.9$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	$r_*$	$144.62 \pm 0.32$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.0$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.8$	$100\theta_*$	$1.04104 \pm 0.00043$	$f_{2000}^{217}$	$108.1 \pm 1.9$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.892 \pm 0.031$	$\chi_{\mathrm{lensing}}^2$	$9.39 \pm 0.98$
$A_{217}^{\mathrm{dust}TT}$	$93.5 \pm 7.3$	$z_{\mathrm{drag}}$	$1059.44 \pm 0.44$	$\chi_{\mathrm{simall}}^2$	$396.7 \pm 1.4$
$c_{100}$	$0.99961 \pm 0.00061$	$r_{\mathrm{drag}}$	$147.35 \pm 0.35$	$\chi_{\mathrm{lowl}}^2$	$23.44 \pm 0.89$
$c_{217}$	$0.99826 \pm 0.00062$	$k_{\mathrm{D}}$	$0.14043 \pm 0.00044$	$\chi_{\mathrm{plik}}^2$	$770.6 \pm 5.3$
$H_0$	$68.12 \pm 0.83$	$100\theta_{\mathrm{D}}$	$0.16105 \pm 0.00026$	$\chi_{\mathrm{JLA}}^2$	$1035.9 \pm 1.5$
$\Omega_{\Lambda}$	$0.6924 \pm 0.0079$	$z_{\mathrm{eq}}$	$3395 \pm 30$	$\chi_{6\mathrm{DF}}^2$	$0.053 \pm 0.075$
$\Omega_{\mathrm{m}}$	$0.3076 \pm 0.0079$	$k_{\mathrm{eq}}$	$0.010362 \pm 0.000092$	$\chi_{\mathrm{MGS}}^2$	$1.88 \pm 0.70$
$\Omega_{\mathrm{m}}h^2$	$0.1427 \pm 0.0013$	$100\theta_{\mathrm{eq}}$	$0.8140 \pm 0.0056$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.2$
$\Omega_{\mathrm{m}}h^3$	$0.0972 \pm 0.0015$	$100\theta_{\mathrm{s,eq}}$	$0.4499 \pm 0.0029$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8$	$0.821 \pm 0.012$	$H(0.15)$	$73.57 \pm 0.71$	$\chi_{\mathrm{CMB}}^2$	$1200.1 \pm 5.5$
$S_8$	$0.831 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$635.6 \pm 6.5$	$\chi_{\mathrm{BAO}}^2$	$6.7 \pm 1.5$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4551 \pm 0.0073$	$H(0.38)$	$83.44 \pm 0.63$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6111 \pm 0.0086$	$D_{\mathrm{M}}(0.38)$	$1517 \pm 13$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2250.01; R - 1 = 0.01194$$



# 19.21 base\_w\_wa\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022366	$0.02236 \pm 0.00014$ (+1.2 $\sigma$ )	$\Omega_m h^3$	0.09770	$0.0978 \pm 0.0015$ (+0.1 $\sigma$ )	$H(0.15)$	73.70	$73.81 \pm 0.72$ (+0.2 $\sigma$ )
$\Omega_c h^2$	0.12004	$0.1202 \pm 0.0013$ (−0.2 $\sigma$ )	$\sigma_8$	0.8226	$0.823 \pm 0.014$ (−0.1 $\sigma$ )	$D_M(0.15)$	634.2	$633.7 \pm 6.5$ (−0.2 $\sigma$ )
$100\theta_{MC}$	1.040882	$1.04090 \pm 0.00030$ (+0.2 $\sigma$ )	$S_8$	0.8318	$0.833 \pm 0.015$ (−0.2 $\sigma$ )	$H(0.38)$	83.57	$83.66 \pm 0.61$ (+0.4 $\sigma$ )
$\tau$	0.0544	$0.0539 \pm 0.0078$ (+0.3 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4556	$0.4561 \pm 0.0080$ (−0.2 $\sigma$ )	$D_M(0.38)$	1514.1	$1512 \pm 13$ (−0.3 $\sigma$ )
$w_0$	−0.967	$−0.953 \pm 0.082$ (+0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6122	$0.6128 \pm 0.0098$ (−0.2 $\sigma$ )	$H(0.51)$	90.071	$90.12 \pm 0.49$ (+0.5 $\sigma$ )
$w_a$	−0.250	$−0.33^{+0.35}_{-0.28}$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9954	$0.996 \pm 0.014$ (−0.2 $\sigma$ )	$D_M(0.51)$	1963.5	$1961 \pm 16$ (−0.3 $\sigma$ )
$\ln(10^{10} A_s)$	3.0448	$3.044 \pm 0.016$ (+0.2 $\sigma$ )	$r_{drag} h$	100.45	$100.4 \pm 1.2$ (+0.1 $\sigma$ )	$H(0.61)$	95.518	$95.53 \pm 0.40$ (+0.6 $\sigma$ )
$n_s$	0.96608	$0.9646 \pm 0.0042$ (+0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4562	$2.461 \pm 0.032$ (−0.1 $\sigma$ )	$D_M(0.61)$	2286.8	$2285 \pm 17$ (−0.3 $\sigma$ )
$y_{cal}$	1.00059	$1.0005 \pm 0.0025$ (+0.0 $\sigma$ )	$z_{re}$	7.68	$7.62 \pm 0.79$ (+0.2 $\sigma$ )	$H(2.33)$	235.30	$235.26 \pm 0.93$ (+0.1 $\sigma$ )
$A_{217}^{CIB}$	46.9	$47 \pm 7$ (−0.2 $\sigma$ )	$10^9 A_s$	2.1006	$2.099 \pm 0.033$ (+0.2 $\sigma$ )	$D_M(2.33)$	5754.1	$5754.2 \pm 9.9$ (−0.9 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.46	—	$10^9 A_s e^{-2\tau}$	1.8840	$1.884 \pm 0.011$ (−0.0 $\sigma$ )	$f\sigma_8(0.15)$	0.4601	$0.4601 \pm 0.0082$ (−0.2 $\sigma$ )
$A_{143}^{tSZ}$	7.23	$5.5^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$D_{40}$	1228.1	$1231 \pm 12$ (−0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7607	$0.761 \pm 0.013$ (−0.1 $\sigma$ )
$A_{100}^{PS}$	248.8	$259 \pm 28$ (−0.2 $\sigma$ )	$D_{220}$	5729.0	$5733 \pm 38$ (+0.5 $\sigma$ )	$f\sigma_8(0.38)$	0.4813	$0.4815 \pm 0.0097$ (−0.2 $\sigma$ )
$A_{143}^{PS}$	47.8	$46 \pm 8$ (−0.4 $\sigma$ )	$D_{810}$	2540.6	$2539 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6748	$0.675 \pm 0.012$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{PS}$	48.3	$42 \pm 9$ (−0.1 $\sigma$ )	$D_{1420}$	818.06	$817.0 \pm 4.7$ (+0.5 $\sigma$ )	$f\sigma_8(0.51)$	0.4815	$0.482 \pm 0.010$ (−0.2 $\sigma$ )
$A_{217}^{PS}$	120.2	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	231.25	$230.9 \pm 1.6$ (+0.7 $\sigma$ )	$\sigma_8(0.51)$	0.6316	$0.632 \pm 0.011$ (−0.1 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.22$ (−0.2 $\sigma$ )	$n_{s,0.002}$	0.96608	$0.9646 \pm 0.0042$ (+0.3 $\sigma$ )	$f\sigma_8(0.61)$	0.4774	$0.478 \pm 0.010$ (−0.2 $\sigma$ )
$A_{100}^{dustTT}$	8.87	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P$	0.245394	$0.245391^{+0.000060}_{-0.000052}$ (+1.1 $\sigma$ )	$\sigma_8(0.61)$	0.6010	$0.601 \pm 0.010$ (−0.1 $\sigma$ )
$A_{143}^{dustTT}$	11.00	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246721	$0.246717^{+0.000060}_{-0.000052}$ (+1.1 $\sigma$ )	$f\sigma_8(2.33)$	0.3037	$0.3039 \pm 0.0053$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.92	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5862	$2.587 \pm 0.026$ (−1.2 $\sigma$ )	$\sigma_8(2.33)$	0.31097	$0.3109 \pm 0.0042$ (+0.0 $\sigma$ )
$A_{217}^{dustTT}$	95.3	$93.7 \pm 7.3$ (+0.0 $\sigma$ )	Age/Gyr	13.7585	$13.755 \pm 0.030$ (−0.7 $\sigma$ )	$f_{2000}^{143}$	28.75	$29.5 \pm 2.7$ (−0.6 $\sigma$ )
$A_{100}^{dustTE}$	0.1132	$0.115 \pm 0.038$	$z_*$	1089.929	$1089.95 \pm 0.26$ (−0.9 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.95	$32.2 \pm 1.8$ (−0.7 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1347	$0.135 \pm 0.030$	$r_*$	144.424	$144.38 \pm 0.28$ (−0.2 $\sigma$ )	$f_{2000}^{217}$	106.63	$107.0 \pm 1.8$ (−0.6 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.480	$0.482 \pm 0.085$	$100\theta_*$	1.041071	$1.04108 \pm 0.00030$ (+0.2 $\sigma$ )	$\chi_{simall}^2$	396.04	$397.0 \pm 1.8$ (+0.1 $\sigma$ )
$A_{143}^{dustTE}$	0.226	$0.225 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	13.8726	$13.869 \pm 0.027$ (−0.3 $\sigma$ )	$\chi_{lowl}^2$	23.14	$23.49 \pm 0.91$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.664	$0.666 \pm 0.080$	$z_{drag}$	1059.933	$1059.93 \pm 0.29$ (+1.2 $\sigma$ )	$\chi_{plik}^2$	2344.0	$2358.7 \pm 5.7$ (+293.6 $\sigma$ )
$A_{217}^{dustTE}$	2.075	$2.09 \pm 0.27$	$r_{drag}$	147.085	$147.04 \pm 0.28$ (−0.4 $\sigma$ )	$\chi_{JLA}^2$	1034.82	$1035.9 \pm 1.6$ (−0.0 $\sigma$ )
$c_{100}$	0.99972	$0.99966 \pm 0.00062$ (+0.1 $\sigma$ )	$k_D$	0.140871	$0.14091 \pm 0.00031$ (+0.7 $\sigma$ )	$\chi_{6DF}^2$	0.0009	$0.054 \pm 0.077$ (+0.0 $\sigma$ )
$c_{217}$	0.99819	$0.99819 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_D$	0.160757	$0.16076 \pm 0.00017$ (−1.2 $\sigma$ )	$\chi_{MGS}^2$	1.82	$1.95 \pm 0.69$ (+0.1 $\sigma$ )
$H_0$	68.29	$68.31 \pm 0.83$ (+0.2 $\sigma$ )	$z_{eq}$	3403.1	$3407 \pm 29$ (−0.1 $\sigma$ )	$\chi_{DR12BAO}^2$	3.91	$4.8 \pm 1.2$ (−0.2 $\sigma$ )
$\Omega_\Lambda$	0.6933	$0.6929 \pm 0.0078$ (+0.2 $\sigma$ )	$k_{eq}$	0.010387	$0.010399 \pm 0.000088$ (−0.1 $\sigma$ )	$\chi_{prior}^2$	1.76	$11.6 \pm 4.6$ (+1.2 $\sigma$ )
$\Omega_m$	0.3067	$0.3071 \pm 0.0078$ (−0.2 $\sigma$ )	$100\theta_{eq}$	0.8131	$0.8124 \pm 0.0054$ (+0.1 $\sigma$ )	$\chi_{BAO}^2$	5.73	$6.8 \pm 1.5$ (−0.1 $\sigma$ )
$\Omega_m h^2$	0.14305	$0.1432 \pm 0.0012$ (−0.1 $\sigma$ )	$100\theta_{s,eq}$	0.44928	$0.4489 \pm 0.0028$ (+0.1 $\sigma$ )	$\chi_{CMB}^2$	2763.1	$2779.2 \pm 5.8$ (+289.5 $\sigma$ )

Best-fit  $\chi_{eff}^2 = 3805.46$ ;  $\Delta\chi_{eff}^2 = 1585.92$ ;  $\bar{\chi}_{eff}^2 = 3833.50$ ;  $\Delta\bar{\chi}_{eff}^2 = 1592.03$ ;  $R - 1 = 0.00745$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.00 ( $\Delta$  0.00) MGS: 1.82 ( $\Delta$  0.00) DR12BAO: 3.91 ( $\Delta$  -0.12) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.04 ( $\Delta$  0.16) commander\_dx12\_v3\_2\_29: 23.14 ( $\Delta$  -0.15) plik\_rd12\_HM\_v22b\_TTTEEE: 2343.97 SN - JLA Pantheon18: 1034.82 ( $\Delta$  0.05)



19.22 base\_w\_wa\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022398	$0.02238 \pm 0.00014$ (+1.2 $\sigma$ )	$\Omega_m h^3$	0.09764	$0.0977 \pm 0.0014$ (+0.2 $\sigma$ )	$H(0.15)$	73.71	$73.78 \pm 0.70$ (+0.3 $\sigma$ )
$\Omega_c h^2$	0.11992	$0.1199 \pm 0.0011$ (-0.1 $\sigma$ )	$\sigma_8$	0.8210	$0.820 \pm 0.011$ (-0.0 $\sigma$ )	$D_M(0.15)$	634.2	$633.8 \pm 6.3$ (-0.2 $\sigma$ )
$100\theta_{MC}$	1.040936	$1.04092 \pm 0.00029$ (+0.2 $\sigma$ )	$S_8$	0.8298	$0.829 \pm 0.011$ (-0.1 $\sigma$ )	$H(0.38)$	83.60	$83.66 \pm 0.61$ (+0.3 $\sigma$ )
$\tau$	0.0540	$0.0535 \pm 0.0075$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4545	$0.4542 \pm 0.0060$ (-0.1 $\sigma$ )	$D_M(0.38)$	1513.9	$1513 \pm 13$ (-0.3 $\sigma$ )
$w_0$	-0.967	$-0.957 \pm 0.080$ (+0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6108	$0.6104 \pm 0.0072$ (-0.1 $\sigma$ )	$H(0.51)$	90.105	$90.13 \pm 0.49$ (+0.4 $\sigma$ )
$w_a$	-0.237	$-0.29^{+0.32}_{-0.26}$ (+0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9934	$0.993 \pm 0.010$ (-0.1 $\sigma$ )	$D_M(0.51)$	1963.2	$1962 \pm 15$ (-0.3 $\sigma$ )
$\ln(10^{10} A_s)$	3.0437	$3.042 \pm 0.015$ (+0.3 $\sigma$ )	$r_{drag} h$	100.45	$100.5 \pm 1.2$ (+0.1 $\sigma$ )	$H(0.61)$	95.558	$95.56 \pm 0.40$ (+0.5 $\sigma$ )
$n_s$	0.96656	$0.9650 \pm 0.0040$ (+0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4517	$2.454 \pm 0.023$ (-0.0 $\sigma$ )	$D_M(0.61)$	2286.3	$2285 \pm 16$ (-0.3 $\sigma$ )
$y_{cal}$	1.00050	$1.0004 \pm 0.0025$ (+0.0 $\sigma$ )	$z_{re}$	7.63	$7.56 \pm 0.76$ (+0.2 $\sigma$ )	$H(2.33)$	235.33	$235.22 \pm 0.93$ (+0.2 $\sigma$ )
$A_{217}^{CIB}$	46.3	$47 \pm 7$ (-0.1 $\sigma$ )	$10^9 A_s$	2.0982	$2.095 \pm 0.030$ (+0.3 $\sigma$ )	$D_M(2.33)$	5752.4	$5753.3 \pm 9.9$ (-0.9 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.57	—	$10^9 A_s e^{-2\tau}$	1.8834	$1.883 \pm 0.010$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4589	$0.4582 \pm 0.0065$ (-0.1 $\sigma$ )
$A_{143}^{tSZ}$	7.19	$5.4^{+2.2}_{-1.9}$ (+0.2 $\sigma$ )	$D_{40}$	1227.0	$1230 \pm 11$ (+0.0 $\sigma$ )	$\sigma_8(0.15)$	0.7592	$0.759 \pm 0.010$ (+0.0 $\sigma$ )
$A_{100}^{PS}$	249.1	$259 \pm 27$ (-0.2 $\sigma$ )	$D_{220}$	5730.3	$5734 \pm 39$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4800	$0.4795 \pm 0.0079$ (-0.1 $\sigma$ )
$A_{143}^{PS}$	49.0	$46 \pm 8$ (-0.4 $\sigma$ )	$D_{810}$	2540.7	$2538 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6735	$0.6732 \pm 0.0094$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{PS}$	50.9	$42 \pm 9$ (-0.1 $\sigma$ )	$D_{1420}$	818.39	$816.9 \pm 4.7$ (+0.5 $\sigma$ )	$f\sigma_8(0.51)$	0.4802	$0.4799 \pm 0.0083$ (-0.1 $\sigma$ )
$A_{217}^{PS}$	121.1	$115 \pm 10$ (-0.0 $\sigma$ )	$D_{2000}$	231.40	$230.8 \pm 1.6$ (+0.7 $\sigma$ )	$\sigma_8(0.51)$	0.6304	$0.6301 \pm 0.0088$ (+0.0 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.30$ (-0.2 $\sigma$ )	$n_{s,0.002}$	0.96656	$0.9650 \pm 0.0040$ (+0.3 $\sigma$ )	$f\sigma_8(0.61)$	0.4762	$0.4760 \pm 0.0084$ (-0.1 $\sigma$ )
$A_{100}^{dustTT}$	8.85	$9.0 \pm 1.8$ (-0.0 $\sigma$ )	$Y_P$	0.245406	$0.245398^{+0.000057}_{-0.000050}$ (+1.1 $\sigma$ )	$\sigma_8(0.61)$	0.5999	$0.5996 \pm 0.0083$ (+0.0 $\sigma$ )
$A_{143}^{dustTT}$	11.05	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246733	$0.246724^{+0.000057}_{-0.000050}$ (+1.1 $\sigma$ )	$f\sigma_8(2.33)$	0.30312	$0.3030 \pm 0.0043$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.07	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5803	$2.584 \pm 0.025$ (-1.1 $\sigma$ )	$\sigma_8(2.33)$	0.31058	$0.3102 \pm 0.0035$ (+0.1 $\sigma$ )
$A_{217}^{dustTT}$	95.4	$93.6 \pm 7.2$ (+0.0 $\sigma$ )	Age/Gyr	13.7559	$13.756 \pm 0.029$ (-0.7 $\sigma$ )	$\chi^2_{lensing}$	8.805	$9.20 \pm 0.79$ (-0.2 $\sigma$ )
$A_{100}^{dustTE}$	0.1152	$0.114 \pm 0.038$	$z_*$	1089.877	$1089.90 \pm 0.23$ (-1.0 $\sigma$ )	$\chi^2_{small}$	396.01	$396.9 \pm 1.6$ (+0.1 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1349	$0.135 \pm 0.030$	$r_*$	144.431	$144.44 \pm 0.25$ (-0.4 $\sigma$ )	$\chi^2_{lowl}$	23.05	$23.38 \pm 0.81$ (-0.1 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.480	$0.484 \pm 0.085$	$100\theta_*$	1.041115	$1.04110 \pm 0.00029$ (+0.2 $\sigma$ )	$\chi^2_{plik}$	2344.2	$2358.6 \pm 5.6$ (+300.6 $\sigma$ )
$A_{143}^{dustTE}$	0.226	$0.225 \pm 0.054$	$D_M(z_*)/\text{Gpc}$	13.8727	$13.874 \pm 0.023$ (-0.5 $\sigma$ )	$\chi^2_{JLA}$	1034.83	$1035.9 \pm 1.6$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.663	$0.667 \pm 0.081$	$z_{drag}$	1060.009	$1059.95 \pm 0.29$ (+1.2 $\sigma$ )	$\chi^2_{6DF}$	0.0010	$0.053 \pm 0.076$ (+0.0 $\sigma$ )
$A_{217}^{dustTE}$	2.077	$2.08 \pm 0.26$	$r_{drag}$	147.081	$147.10 \pm 0.25$ (-0.6 $\sigma$ )	$\chi^2_{MGS}$	1.82	$1.96 \pm 0.69$ (+0.1 $\sigma$ )
$c_{100}$	0.99971	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$k_D$	0.140898	$0.14087 \pm 0.00029$ (+0.9 $\sigma$ )	$\chi^2_{DR12BAO}$	3.86	$4.7 \pm 1.1$ (-0.1 $\sigma$ )
$c_{217}$	0.99818	$0.99820 \pm 0.00062$ (-0.1 $\sigma$ )	$100\theta_D$	0.160725	$0.16075 \pm 0.00017$ (-1.2 $\sigma$ )	$\chi^2_{prior}$	1.70	$11.6 \pm 4.5$ (+1.2 $\sigma$ )
$H_0$	68.30	$68.31 \pm 0.82$ (+0.2 $\sigma$ )	$z_{eq}$	3400.9	$3401 \pm 24$ (+0.1 $\sigma$ )	$\chi^2_{CMB}$	2772.1	$2788.0 \pm 5.8$ (+285.1 $\sigma$ )
$\Omega_\Lambda$	0.6935	$0.6935 \pm 0.0077$ (+0.2 $\sigma$ )	$k_{eq}$	0.010380	$0.010380 \pm 0.000075$ (+0.1 $\sigma$ )	$\chi^2_{BAO}$	5.68	$6.7 \pm 1.4$ (-0.1 $\sigma$ )
$\Omega_m$	0.3065	$0.3065 \pm 0.0077$ (-0.2 $\sigma$ )	$100\theta_{eq}$	0.81362	$0.8136 \pm 0.0046$ (+0.0 $\sigma$ )			
$\Omega_m h^2$	0.14296	$0.1430 \pm 0.0010$ (+0.1 $\sigma$ )	$100\theta_{s,eq}$	0.44953	$0.4495 \pm 0.0023$ (-0.0 $\sigma$ )			

Best-fit  $\chi^2_{eff} = 3814.30$ ;  $\Delta\chi^2_{eff} = 1585.94$ ;  $\bar{\chi}^2_{eff} = 3842.17$ ;  $\Delta\bar{\chi}^2_{eff} = 1591.87$ ;  $R - 1 = 0.01143$   
 $\chi^2_{eff}$ : BAO - 6DF: 0.00 ( $\Delta$  0.00) MGS: 1.82 ( $\Delta$  0.00) DR12BAO: 3.86 ( $\Delta$  -0.00) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.80 ( $\Delta$  0.08) small\_100x143\_offlike5\_EE\_Aplanck: 396.01 ( $\Delta$  0.15) commander\_dx12\_v3\_2.29: 23.05 ( $\Delta$  -0.09) plik\_rd12\_HM\_v22b.TTTEEE: 2344.24 SN - JLA Pantheon18: 1034.83 ( $\Delta$  0.04)



19.23 base\_w\_wa\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02237 \pm 0.00014 \quad (+1.1\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.0978 \pm 0.0015 \quad (+0.1\sigma)$	$H(0.15)$	$73.80 \pm 0.72 \quad (+0.2\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1202 \pm 0.0013 \quad (-0.2\sigma)$	$\sigma_8$	$0.824 \pm 0.014 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$633.7 \pm 6.5 \quad (-0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04090 \pm 0.00030 \quad (+0.2\sigma)$	$S_8$	$0.833 \pm 0.014 \quad (-0.2\sigma)$	$H(0.38)$	$83.66 \pm 0.61 \quad (+0.3\sigma)$
$\tau$	$0.0551^{+0.0052}_{-0.0083} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4565 \pm 0.0079 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.38)$	$1513 \pm 13 \quad (-0.3\sigma)$
$w_0$	$-0.953 \pm 0.081 \quad (+0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6133 \pm 0.0096 \quad (-0.2\sigma)$	$H(0.51)$	$90.12 \pm 0.49 \quad (+0.5\sigma)$
$w_a$	$-0.32^{+0.35}_{-0.28} \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.997 \pm 0.014 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1962 \pm 15 \quad (-0.3\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046^{+0.012}_{-0.016} \quad (+0.2\sigma)$	$r_{\mathrm{drag}}h$	$100.4 \pm 1.2 \quad (+0.1\sigma)$	$H(0.61)$	$95.53 \pm 0.40 \quad (+0.6\sigma)$
$n_{\mathrm{s}}$	$0.9647 \pm 0.0042 \quad (+0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.463 \pm 0.031 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2285 \pm 17 \quad (-0.3\sigma)$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.74^{+0.58}_{-0.82} \quad (+0.1\sigma)$	$H(2.33)$	$235.26 \pm 0.93 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.104^{+0.025}_{-0.034} \quad (+0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5754.1 \pm 9.9 \quad (-0.9\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.884 \pm 0.011 \quad (+0.0\sigma)$	$f\sigma_8(0.15)$	$0.4605 \pm 0.0081 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$D_{40}$	$1231 \pm 12 \quad (-0.0\sigma)$	$\sigma_8(0.15)$	$0.762 \pm 0.013 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$258 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5732 \pm 39 \quad (+0.5\sigma)$	$f\sigma_8(0.38)$	$0.4819 \pm 0.0096 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.676 \pm 0.011 \quad (-0.1\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$816.9 \pm 4.7 \quad (+0.5\sigma)$	$f\sigma_8(0.51)$	$0.482 \pm 0.010 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$230.9 \pm 1.6 \quad (+0.7\sigma)$	$\sigma_8(0.51)$	$0.633 \pm 0.011 \quad (-0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.20 \quad (-0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.9647 \pm 0.0042 \quad (+0.3\sigma)$	$f\sigma_8(0.61)$	$0.479 \pm 0.010 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.245392^{+0.000060}_{-0.000051} \quad (+1.1\sigma)$	$\sigma_8(0.61)$	$0.602 \pm 0.010 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246718^{+0.000060}_{-0.000051} \quad (+1.1\sigma)$	$f\sigma_8(2.33)$	$0.3041 \pm 0.0052 \quad (-0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.587^{+0.025}_{-0.028} \quad (-1.1\sigma)$	$\sigma_8(2.33)$	$0.3112 \pm 0.0041 \quad (+0.0\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.7 \pm 7.3 \quad (+0.0\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.755 \pm 0.030 \quad (-0.7\sigma)$	$f_{2000}^{143}$	$29.5 \pm 2.7 \quad (-0.5\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.038$	$z_*$	$1089.94 \pm 0.26 \quad (-0.9\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 1.8 \quad (-0.6\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.030$	$r_*$	$144.39 \pm 0.28 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$107.0 \pm 1.8 \quad (-0.6\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.482 \pm 0.085$	$100\theta_*$	$1.04108 \pm 0.00030 \quad (+0.2\sigma)$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.8 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.226 \pm 0.054$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.869 \pm 0.027 \quad (-0.3\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.50 \pm 0.91 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.666 \pm 0.081$	$z_{\mathrm{drag}}$	$1059.94 \pm 0.29 \quad (+1.2\sigma)$	$\chi_{\mathrm{plik}}^2$	$2358.5 \pm 5.7 \quad (+295.1\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.09 \pm 0.27$	$r_{\mathrm{drag}}$	$147.05 \pm 0.28 \quad (-0.4\sigma)$	$\chi_{\mathrm{JLA}}^2$	$1035.9 \pm 1.6 \quad (-0.0\sigma)$
$c_{100}$	$0.99966 \pm 0.00062 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.14091 \pm 0.00031 \quad (+0.8\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.054 \pm 0.077 \quad (+0.0\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16076 \pm 0.00017 \quad (-1.2\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.95 \pm 0.70 \quad (+0.1\sigma)$
$H_0$	$68.30 \pm 0.83 \quad (+0.2\sigma)$	$z_{\mathrm{eq}}$	$3406 \pm 29 \quad (-0.0\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.2 \quad (-0.2\sigma)$
$\Omega_{\Lambda}$	$0.6929 \pm 0.0078 \quad (+0.2\sigma)$	$k_{\mathrm{eq}}$	$0.010397 \pm 0.000088 \quad (-0.0\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.6 \pm 4.6 \quad (+1.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.3071 \pm 0.0078 \quad (-0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8125 \pm 0.0054 \quad (+0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.7 \pm 1.5 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1432 \pm 0.0012 \quad (-0.0\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4490 \pm 0.0028 \quad (+0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2779.0 \pm 5.7 \quad (+294.8\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 3833.27; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.10; R - 1 = 0.00878$$



19.24 base\_w\_wa\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02238 \pm 0.00014 \quad (+1.1\sigma)$	$\sigma_8$	$0.821 \pm 0.011 \quad (+0.0\sigma)$	$H(0.38)$	$83.65 \pm 0.60 \quad (+0.3\sigma)$
$\Omega_c h^2$	$0.1199 \pm 0.0011 \quad (-0.0\sigma)$	$S_8$	$0.829 \pm 0.011 \quad (-0.1\sigma)$	$D_M(0.38)$	$1513 \pm 13 \quad (-0.3\sigma)$
$100\theta_{MC}$	$1.04092 \pm 0.00029 \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4543 \pm 0.0060 \quad (-0.1\sigma)$	$H(0.51)$	$90.13 \pm 0.49 \quad (+0.4\sigma)$
$\tau$	$0.0546^{+0.0051}_{-0.0079} \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6106 \pm 0.0071 \quad (-0.1\sigma)$	$D_M(0.51)$	$1962 \pm 15 \quad (-0.3\sigma)$
$w_0$	$-0.958 \pm 0.079 \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.993 \pm 0.010 \quad (-0.1\sigma)$	$H(0.61)$	$95.56 \pm 0.40 \quad (+0.5\sigma)$
$w_a$	$-0.28^{+0.32}_{-0.26} \quad (-0.0\sigma)$	$r_{\text{drag}} h$	$100.5 \pm 1.2 \quad (+0.1\sigma)$	$D_M(0.61)$	$2285 \pm 16 \quad (-0.3\sigma)$
$\ln(10^{10} A_s)$	$3.044^{+0.011}_{-0.015} \quad (+0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.455 \pm 0.023 \quad (-0.0\sigma)$	$H(2.33)$	$235.23 \pm 0.93 \quad (+0.2\sigma)$
$n_s$	$0.9653 \pm 0.0039 \quad (+0.2\sigma)$	$z_{\text{re}}$	$7.68^{+0.56}_{-0.79} \quad (+0.1\sigma)$	$D_M(2.33)$	$5753.2 \pm 9.9 \quad (-0.9\sigma)$
$y_{\text{cal}}$	$1.0004 \pm 0.0025 \quad (-0.0\sigma)$	$10^9 A_s$	$2.099^{+0.024}_{-0.031} \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4584 \pm 0.0065 \quad (-0.1\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.882 \pm 0.010 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.759 \pm 0.010 \quad (+0.0\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{40}$	$1230 \pm 11 \quad (+0.0\sigma)$	$f\sigma_8(0.38)$	$0.4796 \pm 0.0079 \quad (-0.1\sigma)$
$A_{143}^{\text{tSZ}}$	$5.4^{+2.2}_{-1.9} \quad (+0.2\sigma)$	$D_{220}$	$5733 \pm 39 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6734 \pm 0.0094 \quad (+0.0\sigma)$
$A_{100}^{\text{PS}}$	$259 \pm 27 \quad (-0.2\sigma)$	$D_{810}$	$2538 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4799 \pm 0.0082 \quad (-0.1\sigma)$
$A_{143}^{\text{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{1420}$	$816.8 \pm 4.8 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.6304 \pm 0.0087 \quad (+0.0\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{2000}$	$230.8 \pm 1.6 \quad (+0.7\sigma)$	$f\sigma_8(0.61)$	$0.4761 \pm 0.0084 \quad (-0.0\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (-0.0\sigma)$	$n_{s,0.002}$	$0.9653 \pm 0.0039 \quad (+0.2\sigma)$	$\sigma_8(0.61)$	$0.5998 \pm 0.0082 \quad (+0.1\sigma)$
$A^{\text{kSZ}}$	$< 4.29 \quad (-0.2\sigma)$	$Y_P$	$0.245399^{+0.000057}_{-0.000049} \quad (+1.1\sigma)$	$f\sigma_8(2.33)$	$0.3031 \pm 0.0043 \quad (+0.1\sigma)$
$A_{100}^{\text{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_P^{\text{BBN}}$	$0.246726^{+0.000057}_{-0.000049} \quad (+1.1\sigma)$	$\sigma_8(2.33)$	$0.3104 \pm 0.0035 \quad (+0.1\sigma)$
$A_{143}^{\text{dust}TT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$10^5 \text{D}/\text{H}$	$2.583 \pm 0.025 \quad (-1.1\sigma)$	$f_{2000}^{143}$	$29.5 \pm 2.7 \quad (-0.5\sigma)$
$A_{143 \times 217}^{\text{dust}TT}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$\text{Age}/\text{Gyr}$	$13.756 \pm 0.029 \quad (-0.7\sigma)$	$f_{2000}^{143 \times 217}$	$32.2 \pm 1.8 \quad (-0.6\sigma)$
$A_{217}^{\text{dust}TT}$	$93.6 \pm 7.2 \quad (+0.0\sigma)$	$z_*$	$1089.89 \pm 0.23 \quad (-0.9\sigma)$	$f_{2000}^{217}$	$107.0 \pm 1.8 \quad (-0.6\sigma)$
$A_{100}^{\text{dust}TE}$	$0.114 \pm 0.038$	$r_*$	$144.45 \pm 0.24 \quad (-0.5\sigma)$	$\chi_{\text{lensing}}^2$	$9.19 \pm 0.80 \quad (-0.2\sigma)$
$A_{100 \times 143}^{\text{dust}TE}$	$0.135 \pm 0.030$	$100\theta_*$	$1.04110 \pm 0.00029 \quad (+0.1\sigma)$	$\chi_{\text{simall}}^2$	$396.8 \pm 1.6 \quad (+0.1\sigma)$
$A_{100 \times 217}^{\text{dust}TE}$	$0.485 \pm 0.085$	$D_M(z_*)/\text{Gpc}$	$13.875 \pm 0.023 \quad (-0.5\sigma)$	$\chi_{\text{lowl}}^2$	$23.37 \pm 0.81 \quad (-0.1\sigma)$
$A_{143}^{\text{dust}TE}$	$0.226 \pm 0.054$	$z_{\text{drag}}$	$1059.96 \pm 0.29 \quad (+1.2\sigma)$	$\chi_{\text{plik}}^2$	$2358.4 \pm 5.6 \quad (+299.1\sigma)$
$A_{143 \times 217}^{\text{dust}TE}$	$0.667 \pm 0.081$	$r_{\text{drag}}$	$147.11 \pm 0.25 \quad (-0.7\sigma)$	$\chi_{\text{JLA}}^2$	$1035.9 \pm 1.6 \quad (-0.0\sigma)$
$A_{217}^{\text{dust}TE}$	$2.08 \pm 0.26$	$k_D$	$0.14086 \pm 0.00029 \quad (+1.0\sigma)$	$\chi_{6\text{DF}}^2$	$0.053 \pm 0.077 \quad (-0.0\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_D$	$0.16074 \pm 0.00017 \quad (-1.2\sigma)$	$\chi_{\text{MGS}}^2$	$1.95 \pm 0.69 \quad (+0.1\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$z_{\text{eq}}$	$3400 \pm 24 \quad (+0.2\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.6 \pm 1.1 \quad (-0.1\sigma)$
$H_0$	$68.30 \pm 0.82 \quad (+0.2\sigma)$	$k_{\text{eq}}$	$0.010376 \pm 0.000073 \quad (+0.2\sigma)$	$\chi_{\text{prior}}^2$	$11.6 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_\Lambda$	$0.6935 \pm 0.0077 \quad (+0.1\sigma)$	$100\theta_{\text{eq}}$	$0.8138 \pm 0.0045 \quad (-0.0\sigma)$	$\chi_{\text{CMB}}^2$	$2787.8 \pm 5.7 \quad (+287.4\sigma)$
$\Omega_m$	$0.3065 \pm 0.0077 \quad (-0.1\sigma)$	$100\theta_{s,\text{eq}}$	$0.4497 \pm 0.0023 \quad (-0.1\sigma)$	$\chi_{\text{BAO}}^2$	$6.6 \pm 1.4 \quad (-0.0\sigma)$
$\Omega_m h^2$	$0.1429 \pm 0.0010 \quad (+0.2\sigma)$	$H(0.15)$	$73.77 \pm 0.69 \quad (+0.3\sigma)$		
$\Omega_m h^3$	$0.0976 \pm 0.0014 \quad (+0.3\sigma)$	$D_M(0.15)$	$633.9 \pm 6.3 \quad (-0.3\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 3841.93; \Delta\bar{\chi}_{\text{eff}}^2 = 1591.92; R - 1 = 0.01414$$



## 19.25 base\_w\_wa\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022192	$0.02214 \pm 0.00021$	$\sigma_8 \Omega_m^{0.25}$	0.6134	$0.614 \pm 0.013$	$D_M(0.38)$	1518.3	$1516 \pm 14$
$\Omega_c h^2$	0.11995	$0.1204 \pm 0.0018$	$\sigma_8/h^{0.5}$	0.9979	$0.998 \pm 0.019$	$H(0.51)$	89.84	$89.90 \pm 0.51$
$100\theta_{MC}$	1.040945	$1.04085 \pm 0.00046$	$r_{drag}h$	100.48	$100.4 \pm 1.2$	$D_M(0.51)$	1968.9	$1966 \pm 16$
$\tau$	0.0590	$0.0520 \pm 0.0080$	$\langle d^2 \rangle^{1/2}$	2.4623	$2.460^{+0.044}_{-0.039}$	$H(0.61)$	95.317	$95.30 \pm 0.44$
$w_0$	-0.985	$-0.956^{+0.079}_{-0.089}$	$z_{re}$	8.18	$7.47 \pm 0.83$	$D_M(0.61)$	2292.9	$2290 \pm 17$
$w_a$	-0.180	$-0.34^{+0.41}_{-0.31}$	$10^9 A_s$	2.1095	$2.088 \pm 0.034$	$H(2.33)$	235.28	$235.11 \pm 0.98$
$\ln(10^{10} A_s)$	3.0490	$3.039 \pm 0.016$	$10^9 A_s e^{-2\tau}$	1.8748	$1.881 \pm 0.013$	$D_M(2.33)$	5762.3	$5765 \pm 13$
$n_s$	0.9649	$0.9639 \pm 0.0052$	$D_{40}$	1225.7	$1228 \pm 14$	$f\sigma_8(0.15)$	0.4619	$0.461 \pm 0.011$
$y_{cal}$	0.99919	$1.0004 \pm 0.0025$	$D_{220}$	5695.2	$5704 \pm 40$	$\sigma_8(0.15)$	0.7620	$0.762 \pm 0.016$
$A_{100}^{PS}$	236.7	$242 \pm 25$	$D_{810}$	2527.2	$2534 \pm 14$	$f\sigma_8(0.38)$	0.4830	$0.483 \pm 0.013$
$A_{143}^{PS}$	44.0	$41 \pm 8$	$D_{1420}$	812.3	$814.0 \pm 5.0$	$\sigma_8(0.38)$	0.6758	$0.676 \pm 0.014$
$A_{217}^{PS}$	97.5	$101 \pm 10$	$D_{2000}$	229.24	$229.6 \pm 1.8$	$f\sigma_8(0.51)$	0.4829	$0.483 \pm 0.013$
$A_{217}^{CIB}$	46.0	$41 \pm 7$	$n_{s,0.002}$	0.9649	$0.9639 \pm 0.0052$	$\sigma_8(0.51)$	0.6324	$0.632 \pm 0.013$
$A_{143}^{tSZ}$	5.97	$3.7^{+1.8}_{-2.6}$	$Y_P$	0.245322	$0.245294^{+0.000097}_{-0.000080}$	$f\sigma_8(0.61)$	0.4786	$0.479 \pm 0.014$
$r_{143 \times 217}^{PS}$	0.614	$0.65 \pm 0.13$	$Y_P^{BBN}$	0.246649	$0.246620^{+0.000097}_{-0.000080}$	$\sigma_8(0.61)$	0.6017	$0.601 \pm 0.012$
$r_{143 \times 217}^{CIB}$	0.868	$0.58^{+0.41}_{-0.13}$	$10^5 D/H$	2.6195	$2.631 \pm 0.039$	$f\sigma_8(2.33)$	0.3039	$0.3037^{+0.0067}_{-0.0058}$
$\xi^{tSZ \times CIB}$	0.35	—	Age/Gyr	13.7793	$13.777 \pm 0.035$	$\sigma_8(2.33)$	0.31148	$0.3106 \pm 0.0048$
$A^{kSZ}$	1.2	—	$z_*$	1090.140	$1090.26 \pm 0.36$	$f_{2000}^{143}$	31.00	$30.8 \pm 3.0$
$A_{100}^{dust}$	1.010	$1.01 \pm 0.20$	$r_*$	144.581	$144.51 \pm 0.43$	$f_{2000}^{217}$	107.08	$107.5 \pm 2.0$
$A_{143}^{dust}$	0.996	$0.98 \pm 0.18$	$100\theta_*$	1.041148	$1.04106 \pm 0.00045$	$f_{2000}^{143 \times 217}$	32.79	$33.0 \pm 2.1$
$A_{217}^{dust}$	0.954	$0.97 \pm 0.10$	$D_M(z_*)/Gpc$	13.8867	$13.881 \pm 0.040$	$\chi_{small}^2$	397.31	$396.9 \pm 1.6$
$A_{143 \times 217}^{dust}$	0.973	$1.03 \pm 0.16$	$z_{drag}$	1059.513	$1059.42 \pm 0.44$	$\chi_{lowl}^2$	23.37	$23.4 \pm 1.1$
$c_{100}$	0.99756	$0.9974 \pm 0.0011$	$r_{drag}$	147.305	$147.25 \pm 0.44$	$\chi_{CamSpec}^2$	7049.3	$7062.7 \pm 5.4$
$c_{217}$	1.00160	$1.0012 \pm 0.0016$	$k_D$	0.140504	$0.14052 \pm 0.00050$	$\chi_{JLA}^2$	1034.74	$1035.9 \pm 1.5$
$H_0$	68.21	$68.19 \pm 0.84$	$100\theta_D$	0.161013	$0.16107 \pm 0.00026$	$\chi_{6DF}^2$	0.0002	$0.056 \pm 0.081$
$\Omega_\Lambda$	0.6931	$0.6920 \pm 0.0082$	$z_{eq}$	3396.7	$3406 \pm 42$	$\chi_{MGS}^2$	1.75	$1.92 \pm 0.71$
$\Omega_m$	0.3069	$0.3080 \pm 0.0082$	$k_{eq}$	0.010367	$0.01040 \pm 0.00013$	$\chi_{DR12BAO}^2$	3.97	$4.9 \pm 1.3$
$\Omega_m h^2$	0.14278	$0.1432 \pm 0.0017$	$100\theta_{eq}$	0.8138	$0.8120 \pm 0.0078$	$\chi_{prior}^2$	2.49	$7.6 \pm 3.4$
$\Omega_m h^3$	0.09739	$0.0976 \pm 0.0018$	$100\theta_{s,eq}$	0.44979	$0.4489 \pm 0.0040$	$\chi_{BAO}^2$	5.72	$6.9 \pm 1.6$
$\sigma_8$	0.8241	$0.824 \pm 0.018$	$H(0.15)$	73.49	$73.66 \pm 0.75$	$\chi_{CMB}^2$	7470.0	$7483.0 \pm 5.4$
$S_8$	0.8335	$0.835 \pm 0.020$	$D_M(0.15)$	635.6	$634.9 \pm 6.7$			
$\sigma_8 \Omega_m^{0.5}$	0.4565	$0.457 \pm 0.011$	$H(0.38)$	83.32	$83.46 \pm 0.63$			

Best-fit  $\chi_{eff}^2 = 8512.97$ ;  $\bar{\chi}_{eff}^2 = 8533.43$ ;  $R - 1 = 0.00675$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.97 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 397.31 commander\_dx12\_v3.2\_29: 23.37 CamSpec like\_10.7HM: 7049.34  
SN - JLA Pantheon18: 1034.74



**19.26**    **base\_w\_wa\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02215 \pm 0.00020$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6116 \pm 0.0086$	$D_{\mathrm{M}}(0.38)$	$1516 \pm 13$
$\Omega_{\mathrm{c}}h^2$	$0.1201 \pm 0.0014$	$\sigma_8/h^{0.5}$	$0.995 \pm 0.012$	$H(0.51)$	$89.93 \pm 0.51$
$100\theta_{\mathrm{MC}}$	$1.04086 \pm 0.00045$	$r_{\mathrm{drag}}h$	$100.5 \pm 1.2$	$D_{\mathrm{M}}(0.51)$	$1966 \pm 16$
$\tau$	$0.0520 \pm 0.0079$	$\langle d^2 \rangle^{1/2}$	$2.454 \pm 0.027$	$H(0.61)$	$95.34 \pm 0.43$
$w_0$	$-0.960 \pm 0.081$	$z_{\mathrm{re}}$	$7.46 \pm 0.81$	$D_{\mathrm{M}}(0.61)$	$2289 \pm 17$
$w_a$	$-0.30^{+0.34}_{-0.27}$	$10^9 A_{\mathrm{s}}$	$2.086 \pm 0.032$	$H(2.33)$	$235.02 \pm 0.98$
$\ln(10^{10}A_{\mathrm{s}})$	$3.038 \pm 0.015$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.880 \pm 0.011$	$D_{\mathrm{M}}(2.33)$	$5764 \pm 13$
$n_{\mathrm{s}}$	$0.9643 \pm 0.0045$	$D_{40}$	$1227 \pm 12$	$f\sigma_8(0.15)$	$0.4597 \pm 0.0077$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$D_{220}$	$5706 \pm 40$	$\sigma_8(0.15)$	$0.760 \pm 0.012$
$A_{100}^{\mathrm{PS}}$	$243 \pm 25$	$D_{810}$	$2533 \pm 13$	$f\sigma_8(0.38)$	$0.4810 \pm 0.0091$
$A_{143}^{\mathrm{PS}}$	$41 \pm 8$	$D_{1420}$	$813.9 \pm 5.1$	$\sigma_8(0.38)$	$0.674 \pm 0.010$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{2000}$	$229.5 \pm 1.8$	$f\sigma_8(0.51)$	$0.4814 \pm 0.0095$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$n_{\mathrm{s},0.002}$	$0.9643 \pm 0.0045$	$\sigma_8(0.51)$	$0.6306 \pm 0.0095$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.8}_{-2.6}$	$Y_{\mathrm{P}}$	$0.245302^{+0.000092}_{-0.000077}$	$f\sigma_8(0.61)$	$0.4775 \pm 0.0096$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246629^{+0.000092}_{-0.000078}$	$\sigma_8(0.61)$	$0.6000 \pm 0.0090$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.58^{+0.41}_{-0.13}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.627 \pm 0.038$	$f\sigma_8(2.33)$	$0.3030 \pm 0.0047$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.777 \pm 0.034$	$\sigma_8(2.33)$	$0.3101 \pm 0.0037$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.21 \pm 0.32$	$f_{2000}^{143}$	$30.8 \pm 3.0$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$r_*$	$144.57 \pm 0.33$	$f_{2000}^{217}$	$107.6 \pm 2.0$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.18$	$100\theta_*$	$1.04107 \pm 0.00044$	$f_{2000}^{143 \times 217}$	$33.0 \pm 2.1$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.887 \pm 0.032$	$\chi_{\mathrm{lensing}}^2$	$9.40 \pm 0.93$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$z_{\mathrm{drag}}$	$1059.44 \pm 0.44$	$\chi_{\mathrm{simall}}^2$	$396.8 \pm 1.5$
$c_{100}$	$0.9975 \pm 0.0011$	$r_{\mathrm{drag}}$	$147.30 \pm 0.35$	$\chi_{\mathrm{lowl}}^2$	$23.29 \pm 0.89$
$c_{217}$	$1.0012 \pm 0.0016$	$k_{\mathrm{D}}$	$0.14047 \pm 0.00044$	$\chi_{\mathrm{CamSpec}}^2$	$7062.3 \pm 5.2$
$H_0$	$68.21 \pm 0.84$	$100\theta_{\mathrm{D}}$	$0.16105 \pm 0.00026$	$\chi_{\mathrm{JLA}}^2$	$1035.9 \pm 1.5$
$\Omega_{\Lambda}$	$0.6927 \pm 0.0080$	$z_{\mathrm{eq}}$	$3400 \pm 31$	$\chi_{6\mathrm{DF}}^2$	$0.056 \pm 0.082$
$\Omega_{\mathrm{m}}$	$0.3073 \pm 0.0080$	$k_{\mathrm{eq}}$	$0.010376 \pm 0.000095$	$\chi_{\mathrm{MGS}}^2$	$1.94 \pm 0.71$
$\Omega_{\mathrm{m}}h^2$	$0.1429 \pm 0.0013$	$100\theta_{\mathrm{eq}}$	$0.8131 \pm 0.0058$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.3$
$\Omega_{\mathrm{m}}h^3$	$0.0975 \pm 0.0015$	$100\theta_{\mathrm{s,eq}}$	$0.4495 \pm 0.0030$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.4$
$\sigma_8$	$0.821 \pm 0.012$	$H(0.15)$	$73.65 \pm 0.72$	$\chi_{\mathrm{CMB}}^2$	$7491.9 \pm 5.5$
$S_8$	$0.831 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$634.9 \pm 6.6$	$\chi_{\mathrm{BAO}}^2$	$6.8 \pm 1.5$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4553 \pm 0.0072$	$H(0.38)$	$83.47 \pm 0.62$		
$\bar{\chi}_{\mathrm{eff}}^2 = 8542.20$ ; $R - 1 = 0.00753$					



19.27 base\_w\_wa\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Pantheon18\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02214 \pm 0.00020$	$\sigma_8 \Omega_m^{0.25}$	$0.614 \pm 0.013$	$D_M(0.38)$	$1516 \pm 14$
$\Omega_c h^2$	$0.1203 \pm 0.0018$	$\sigma_8/h^{0.5}$	$0.998 \pm 0.019$	$H(0.51)$	$89.90 \pm 0.51$
$100\theta_{MC}$	$1.04087 \pm 0.00046$	$r_{drag}h$	$100.4 \pm 1.2$	$D_M(0.51)$	$1966 \pm 16$
$\tau$	$0.0538^{+0.0045}_{-0.0084}$	$\langle d^2 \rangle^{1/2}$	$2.462^{+0.043}_{-0.039}$	$H(0.61)$	$95.31 \pm 0.44$
$w_0$	$-0.958^{+0.079}_{-0.088}$	$z_{re}$	$7.66^{+0.52}_{-0.84}$	$D_M(0.61)$	$2290 \pm 17$
$w_a$	$-0.33^{+0.40}_{-0.31}$	$10^9 A_s$	$2.095^{+0.025}_{-0.034}$	$H(2.33)$	$235.11 \pm 0.99$
$\ln(10^{10} A_s)$	$3.042^{+0.012}_{-0.016}$	$10^9 A_s e^{-2\tau}$	$1.881 \pm 0.013$	$D_M(2.33)$	$5764 \pm 13$
$n_s$	$0.9642 \pm 0.0051$	$D_{40}$	$1228 \pm 14$	$f\sigma_8(0.15)$	$0.462 \pm 0.011$
$y_{cal}$	$1.0004 \pm 0.0025$	$D_{220}$	$5704 \pm 40$	$\sigma_8(0.15)$	$0.762 \pm 0.016$
$A_{100}^{PS}$	$242 \pm 25$	$D_{810}$	$2533 \pm 13$	$f\sigma_8(0.38)$	$0.483 \pm 0.013$
$A_{143}^{PS}$	$41 \pm 8$	$D_{1420}$	$814.0 \pm 5.0$	$\sigma_8(0.38)$	$0.676 \pm 0.014$
$A_{217}^{PS}$	$101 \pm 10$	$D_{2000}$	$229.6 \pm 1.8$	$f\sigma_8(0.51)$	$0.484 \pm 0.013$
$A_{217}^{CIB}$	$41 \pm 7$	$n_{s,0.002}$	$0.9642 \pm 0.0051$	$\sigma_8(0.51)$	$0.633 \pm 0.013$
$A_{143}^{tSZ}$	$3.8^{+1.8}_{-2.6}$	$Y_P$	$0.245298^{+0.000096}_{-0.000080}$	$f\sigma_8(0.61)$	$0.480 \pm 0.014$
$r_{143 \times 217}^{PS}$	$0.65 \pm 0.13$	$Y_P^{BBN}$	$0.246624^{+0.000096}_{-0.000080}$	$\sigma_8(0.61)$	$0.602 \pm 0.012$
$r_{143 \times 217}^{CIB}$	$0.58^{+0.41}_{-0.13}$	$10^5 D/H$	$2.629 \pm 0.039$	$f\sigma_8(2.33)$	$0.3040^{+0.0066}_{-0.0058}$
$\xi^{tSZ \times CIB}$	—	Age/Gyr	$13.777 \pm 0.035$	$\sigma_8(2.33)$	$0.3109 \pm 0.0047$
$A^{kSZ}$	—	$z_*$	$1090.24 \pm 0.36$	$f_{2000}^{143}$	$30.7 \pm 3.0$
$A_{100}^{dust}$	$1.01 \pm 0.20$	$r_*$	$144.52 \pm 0.43$	$f_{2000}^{217}$	$107.5 \pm 2.0$
$A_{143}^{dust}$	$0.98 \pm 0.18$	$100\theta_*$	$1.04107 \pm 0.00045$	$f_{2000}^{143 \times 217}$	$32.9 \pm 2.1$
$A_{217}^{dust}$	$0.97 \pm 0.10$	$D_M(z_*)/\text{Gpc}$	$13.882 \pm 0.040$	$\chi_{simall}^2$	$396.8 \pm 1.6$
$A_{143 \times 217}^{dust}$	$1.03 \pm 0.16$	$z_{drag}$	$1059.43 \pm 0.44$	$\chi_{lowl}^2$	$23.4 \pm 1.1$
$c_{100}$	$0.9975 \pm 0.0011$	$r_{drag}$	$147.26 \pm 0.44$	$\chi_{CamSpec}^2$	$7062.5 \pm 5.4$
$c_{217}$	$1.0012 \pm 0.0016$	$k_D$	$0.14051 \pm 0.00050$	$\chi_{JLA}^2$	$1035.9 \pm 1.5$
$H_0$	$68.19 \pm 0.84$	$100\theta_D$	$0.16106 \pm 0.00026$	$\chi_{6DF}^2$	$0.055 \pm 0.080$
$\Omega_\Lambda$	$0.6921 \pm 0.0082$	$z_{eq}$	$3404 \pm 42$	$\chi_{MGS}^2$	$1.91 \pm 0.71$
$\Omega_m$	$0.3079 \pm 0.0082$	$k_{eq}$	$0.01039 \pm 0.00013$	$\chi_{DR12BAO}^2$	$4.9 \pm 1.3$
$\Omega_m h^2$	$0.1431 \pm 0.0017$	$100\theta_{eq}$	$0.8123 \pm 0.0077$	$\chi_{prior}^2$	$7.6 \pm 3.4$
$\Omega_m h^3$	$0.0976 \pm 0.0017$	$100\theta_{s,eq}$	$0.4490 \pm 0.0040$	$\chi_{BAO}^2$	$6.9 \pm 1.6$
$\sigma_8$	$0.824 \pm 0.017$	$H(0.15)$	$73.64 \pm 0.75$	$\chi_{CMB}^2$	$7482.7 \pm 5.3$
$S_8$	$0.835 \pm 0.020$	$D_M(0.15)$	$634.9 \pm 6.7$		
$\sigma_8 \Omega_m^{0.5}$	$0.457 \pm 0.011$	$H(0.38)$	$83.46 \pm 0.63$		

$$\bar{\chi}_{\text{eff}}^2 = 8533.12; R - 1 = 0.00716$$



19.28 base\_w\_wa\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02216 \pm 0.00020$	$\sigma_8 \Omega_m^{0.25}$	$0.6116 \pm 0.0085$	$D_M(0.38)$	$1516 \pm 13$
$\Omega_c h^2$	$0.1200 \pm 0.0013$	$\sigma_8/h^{0.5}$	$0.995 \pm 0.012$	$H(0.51)$	$89.94 \pm 0.51$
$100\theta_{MC}$	$1.04089 \pm 0.00044$	$r_{drag}h$	$100.5 \pm 1.2$	$D_M(0.51)$	$1966 \pm 16$
$\tau$	$0.0537^{+0.0046}_{-0.0083}$	$\langle d^2 \rangle^{1/2}$	$2.455 \pm 0.027$	$H(0.61)$	$95.36 \pm 0.43$
$w_0$	$-0.962 \pm 0.080$	$z_{re}$	$7.64^{+0.51}_{-0.84}$	$D_M(0.61)$	$2290 \pm 17$
$w_a$	$-0.29^{+0.34}_{-0.27}$	$10^9 A_s$	$2.092^{+0.023}_{-0.032}$	$H(2.33)$	$235.02 \pm 0.99$
$\ln(10^{10} A_s)$	$3.041^{+0.011}_{-0.015}$	$10^9 A_s e^{-2\tau}$	$1.879 \pm 0.011$	$D_M(2.33)$	$5763 \pm 13$
$n_s$	$0.9647 \pm 0.0044$	$D_{40}$	$1227 \pm 12$	$f\sigma_8(0.15)$	$0.4596 \pm 0.0077$
$y_{cal}$	$1.0004 \pm 0.0025$	$D_{220}$	$5706 \pm 40$	$\sigma_8(0.15)$	$0.760 \pm 0.011$
$A_{100}^{PS}$	$242 \pm 25$	$D_{810}$	$2533 \pm 13$	$f\sigma_8(0.38)$	$0.4809 \pm 0.0091$
$A_{143}^{PS}$	$41 \pm 8$	$D_{1420}$	$814.0 \pm 5.0$	$\sigma_8(0.38)$	$0.674 \pm 0.010$
$A_{217}^{PS}$	$101 \pm 10$	$D_{2000}$	$229.6 \pm 1.8$	$f\sigma_8(0.51)$	$0.4812 \pm 0.0094$
$A_{217}^{CIB}$	$41 \pm 7$	$n_{s,0.002}$	$0.9647 \pm 0.0044$	$\sigma_8(0.51)$	$0.6308 \pm 0.0095$
$A_{143}^{tSZ}$	$3.8^{+1.8}_{-2.5}$	$Y_P$	$0.245307^{+0.000090}_{-0.000077}$	$f\sigma_8(0.61)$	$0.4773 \pm 0.0096$
$r_{143 \times 217}^{PS}$	$0.65 \pm 0.13$	$Y_P^{BBN}$	$0.246633^{+0.000090}_{-0.000077}$	$\sigma_8(0.61)$	$0.6002 \pm 0.0089$
$r_{143 \times 217}^{CIB}$	$0.58^{+0.41}_{-0.13}$	$10^5 D/H$	$2.625 \pm 0.037$	$f\sigma_8(2.33)$	$0.3032 \pm 0.0047$
$\xi^{tSZ \times CIB}$	—	Age/Gyr	$13.777 \pm 0.034$	$\sigma_8(2.33)$	$0.3104 \pm 0.0036$
$A^{kSZ}$	—	$z_*$	$1090.18 \pm 0.31$	$f_{2000}^{143}$	$30.7 \pm 3.0$
$A_{100}^{dust}$	$1.01 \pm 0.20$	$r_*$	$144.60 \pm 0.32$	$f_{2000}^{217}$	$107.5 \pm 2.0$
$A_{143}^{dust}$	$0.98 \pm 0.18$	$100\theta_*$	$1.04109 \pm 0.00043$	$f_{2000}^{143 \times 217}$	$32.9 \pm 2.1$
$A_{217}^{dust}$	$0.97 \pm 0.10$	$D_M(z_*)/\text{Gpc}$	$13.889 \pm 0.031$	$\chi_{lensing}^2$	$9.39 \pm 0.93$
$A_{143 \times 217}^{dust}$	$1.03 \pm 0.16$	$z_{drag}$	$1059.45 \pm 0.44$	$\chi_{small}^2$	$396.7 \pm 1.5$
$c_{100}$	$0.9975 \pm 0.0011$	$r_{drag}$	$147.33 \pm 0.35$	$\chi_{lowl}^2$	$23.26 \pm 0.88$
$c_{217}$	$1.0012 \pm 0.0016$	$k_D$	$0.14046 \pm 0.00044$	$\chi_{CamSpec}^2$	$7062.2 \pm 5.2$
$H_0$	$68.20 \pm 0.84$	$100\theta_D$	$0.16104 \pm 0.00025$	$\chi_{JLA}^2$	$1035.9 \pm 1.5$
$\Omega_\Lambda$	$0.6929 \pm 0.0079$	$z_{eq}$	$3397 \pm 30$	$\chi_{6DF}^2$	$0.055 \pm 0.081$
$\Omega_m$	$0.3071 \pm 0.0079$	$k_{eq}$	$0.010367 \pm 0.000092$	$\chi_{MGS}^2$	$1.94 \pm 0.71$
$\Omega_m h^2$	$0.1428 \pm 0.0013$	$100\theta_{eq}$	$0.8137 \pm 0.0056$	$\chi_{DR12BAO}^2$	$4.8 \pm 1.3$
$\Omega_m h^3$	$0.0974 \pm 0.0015$	$100\theta_{s,eq}$	$0.4498 \pm 0.0029$	$\chi_{prior}^2$	$7.7 \pm 3.4$
$\sigma_8$	$0.822 \pm 0.012$	$H(0.15)$	$73.63 \pm 0.72$	$\chi_{CMB}^2$	$7491.6 \pm 5.4$
$S_8$	$0.831 \pm 0.013$	$D_M(0.15)$	$635.0 \pm 6.5$	$\chi_{BAO}^2$	$6.8 \pm 1.5$
$\sigma_8 \Omega_m^{0.5}$	$0.4553 \pm 0.0072$	$H(0.38)$	$83.47 \pm 0.62$		
$\bar{\chi}_{eff}^2 = 8541.86; R - 1 = 0.00901$					



# 19.29 base\_w\_wa\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022301	$0.02229 \pm 0.00015$ (+0.8 $\sigma$ )	$S_8$	0.8238	$0.825 \pm 0.015$ (−0.5 $\sigma$ )	$D_M(0.15)$	635.1	$635.1 \pm 6.6$ (+0.0 $\sigma$ )
$\Omega_c h^2$	0.11951	$0.1196 \pm 0.0013$ (−0.4 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4512	$0.4519 \pm 0.0081$ (−0.5 $\sigma$ )	$H(0.38)$	83.49	$83.50 \pm 0.64$ (+0.1 $\sigma$ )
$100\theta_{MC}$	1.040906	$1.04088 \pm 0.00031$ (+0.1 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6066	$0.6074 \pm 0.0099$ (−0.5 $\sigma$ )	$D_M(0.38)$	1516.1	$1516 \pm 14$ (+0.0 $\sigma$ )
$\tau$	0.0520	$0.0523 \pm 0.0079$ (+0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9874	$0.989 \pm 0.014$ (−0.5 $\sigma$ )	$H(0.51)$	90.02	$90.00 \pm 0.52$ (+0.2 $\sigma$ )
$w_0$	−0.972	$−0.966 \pm 0.081$ (−0.1 $\sigma$ )	$r_{drag} h$	100.48	$100.5 \pm 1.2$ (+0.0 $\sigma$ )	$D_M(0.51)$	1965.8	$1966 \pm 16$ (−0.0 $\sigma$ )
$w_a$	−0.202	$−0.24_{-0.28}^{+0.33}$ (+0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4390	$2.442 \pm 0.033$ (−0.4 $\sigma$ )	$H(0.61)$	95.485	$95.45 \pm 0.43$ (+0.4 $\sigma$ )
$\ln(10^{10} A_s)$	3.0366	$3.038 \pm 0.016$ (−0.1 $\sigma$ )	$z_{re}$	7.44	$7.45_{-0.73}^{+0.83}$ (−0.0 $\sigma$ )	$D_M(0.61)$	2289.2	$2289 \pm 17$ (−0.0 $\sigma$ )
$n_s$	0.96617	$0.9659 \pm 0.0043$ (+0.4 $\sigma$ )	$10^9 A_s$	2.0833	$2.086 \pm 0.034$ (−0.1 $\sigma$ )	$H(2.33)$	235.13	$235.15 \pm 0.98$ (+0.0 $\sigma$ )
$y_{cal}$	1.00032	$1.0005 \pm 0.0025$ (+0.0 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8777	$1.878 \pm 0.012$ (−0.2 $\sigma$ )	$D_M(2.33)$	5757.1	$5759 \pm 11$ (−0.5 $\sigma$ )
$A_{100}^{PS}$	234.8	$240 \pm 25$ (−0.1 $\sigma$ )	$D_{40}$	1224.2	$1225 \pm 12$ (−0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4557	$0.4563 \pm 0.0084$ (−0.5 $\sigma$ )
$A_{143}^{PS}$	38.1	$40 \pm 8$ (−0.2 $\sigma$ )	$D_{220}$	5716.5	$5718 \pm 39$ (+0.4 $\sigma$ )	$\sigma_8(0.15)$	0.7541	$0.755 \pm 0.013$ (−0.4 $\sigma$ )
$A_{217}^{PS}$	101.6	$102 \pm 10$ (+0.1 $\sigma$ )	$D_{810}$	2534.1	$2535 \pm 14$ (+0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.4765	$0.4772 \pm 0.0099$ (−0.5 $\sigma$ )
$A_{217}^{CIB}$	44.8	$40 \pm 7$ (−0.2 $\sigma$ )	$D_{1420}$	815.51	$815.5 \pm 4.9$ (+0.3 $\sigma$ )	$\sigma_8(0.38)$	0.6691	$0.670 \pm 0.012$ (−0.4 $\sigma$ )
$A_{143}^{tSZ}$	6.65	$3.8_{-2.5}^{+1.8}$ (+0.0 $\sigma$ )	$D_{2000}$	230.22	$230.2 \pm 1.6$ (+0.4 $\sigma$ )	$f\sigma_8(0.51)$	0.4766	$0.477 \pm 0.010$ (−0.4 $\sigma$ )
$r_{143 \times 217}^{PS}$	0.573	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$n_{s,0.002}$	0.96617	$0.9659 \pm 0.0043$ (+0.4 $\sigma$ )	$\sigma_8(0.51)$	0.6263	$0.627 \pm 0.011$ (−0.4 $\sigma$ )
$r_{143 \times 217}^{CIB}$	0.771	$0.56_{-0.18}^{+0.39}$ (−0.1 $\sigma$ )	$Y_P$	0.245367	$0.245363 \pm 0.000062$ (+0.8 $\sigma$ )	$f\sigma_8(0.61)$	0.4725	$0.473 \pm 0.011$ (−0.4 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.01	—	$Y_P^{BBN}$	0.246694	$0.246689 \pm 0.000062$ (+0.8 $\sigma$ )	$\sigma_8(0.61)$	0.5960	$0.597 \pm 0.010$ (−0.4 $\sigma$ )
$A^{kSZ}$	0.01	$4.7_{-3.8}^{+2.4}$ (−0.1 $\sigma$ )	$10^5 D/H$	2.5986	$2.600 \pm 0.029$ (−0.8 $\sigma$ )	$f\sigma_8(2.33)$	0.3011	$0.3013 \pm 0.0054$ (−0.4 $\sigma$ )
$A_{100}^{dust}$	1.006	$1.01 \pm 0.19$ (+0.0 $\sigma$ )	Age/Gyr	13.7700	$13.771 \pm 0.032$ (−0.2 $\sigma$ )	$\sigma_8(2.33)$	0.30885	$0.3090 \pm 0.0043$ (−0.3 $\sigma$ )
$A_{143}^{dust}$	0.978	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	$z_*$	1089.966	$1089.98 \pm 0.27$ (−0.8 $\sigma$ )	$f_{2000}^{143}$	30.05	$29.8 \pm 2.8$ (−0.3 $\sigma$ )
$A_{217}^{dust}$	0.968	$0.97 \pm 0.10$ (+0.1 $\sigma$ )	$r_*$	144.609	$144.59 \pm 0.30$ (+0.2 $\sigma$ )	$f_{2000}^{217}$	106.86	$106.9 \pm 1.9$ (−0.3 $\sigma$ )
$A_{143 \times 217}^{dust}$	1.003	$1.03 \pm 0.16$ (−0.0 $\sigma$ )	$100\theta_*$	1.041102	$1.04107 \pm 0.00030$ (+0.0 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.13	$32.2 \pm 2.0$ (−0.4 $\sigma$ )
$c_{100}$	0.99760	$0.9975 \pm 0.0011$ (+0.1 $\sigma$ )	$D_M(z_*)/\text{Gpc}$	13.8900	$13.889 \pm 0.028$ (+0.2 $\sigma$ )	$\chi_{small}^2$	395.76	$396.9 \pm 1.6$ (−0.0 $\sigma$ )
$c_{217}$	1.00127	$1.0011 \pm 0.0016$ (−0.1 $\sigma$ )	$z_{drag}$	1059.742	$1059.73 \pm 0.32$ (+0.7 $\sigma$ )	$\chi_{lowl}^2$	22.92	$23.05 \pm 0.87$ (−0.3 $\sigma$ )
$c_{TE}$	0.99642	$0.9965 \pm 0.0049$	$r_{drag}$	147.297	$147.28 \pm 0.30$ (+0.1 $\sigma$ )	$\chi_{CamSpec}^2$	11499.4	$11514.3 \pm 5.7$ (+826.6 $\sigma$ )
$c_{EE}$	0.99206	$0.9921 \pm 0.0050$	$k_D$	0.140597	$0.14060 \pm 0.00034$ (+0.2 $\sigma$ )	$\chi_{JLA}^2$	1034.83	$1035.9 \pm 1.5$ (−0.0 $\sigma$ )
$H_0$	68.22	$68.21 \pm 0.84$ (+0.0 $\sigma$ )	$100\theta_D$	0.160868	$0.16087 \pm 0.00019$ (−0.8 $\sigma$ )	$\chi_{6DF}^2$	0.0010	$0.055 \pm 0.078$ (−0.0 $\sigma$ )
$\Omega_\Lambda$	0.6939	$0.6935 \pm 0.0078$ (+0.2 $\sigma$ )	$z_{eq}$	3388.9	$3391 \pm 29$ (−0.4 $\sigma$ )	$\chi_{MGS}^2$	1.82	$1.91 \pm 0.71$ (−0.0 $\sigma$ )
$\Omega_m$	0.3061	$0.3065 \pm 0.0078$ (−0.2 $\sigma$ )	$k_{eq}$	0.010343	$0.010349 \pm 0.000089$ (−0.4 $\sigma$ )	$\chi_{DR12BAO}^2$	3.77	$4.7 \pm 1.2$ (−0.2 $\sigma$ )
$\Omega_m h^2$	0.14246	$0.1425 \pm 0.0012$ (−0.4 $\sigma$ )	$100\theta_{eq}$	0.8155	$0.8151 \pm 0.0055$ (+0.4 $\sigma$ )	$\chi_{prior}^2$	2.23	$7.8 \pm 3.4$ (+0.1 $\sigma$ )
$\Omega_m h^3$	0.09718	$0.0972 \pm 0.0015$ (−0.2 $\sigma$ )	$100\theta_{s,eq}$	0.45057	$0.4504 \pm 0.0028$ (+0.4 $\sigma$ )	$\chi_{BAO}^2$	5.59	$6.6 \pm 1.5$ (−0.2 $\sigma$ )
$\sigma_8$	0.8155	$0.816 \pm 0.014$ (−0.4 $\sigma$ )	$H(0.15)$	73.60	$73.62 \pm 0.73$ (−0.1 $\sigma$ )	$\chi_{CMB}^2$	11918.0	$11934.2 \pm 5.8$ (+824.6 $\sigma$ )

Best-fit  $\chi_{eff}^2 = 12960.67$ ;  $\Delta\chi_{eff}^2 = 4447.70$ ;  $\bar{\chi}_{eff}^2 = 12984.58$ ;  $\Delta\bar{\chi}_{eff}^2 = 4451.15$ ;  $R - 1 = 0.00938$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.00 ( $\Delta$  0.00) MGS: 1.82 ( $\Delta$  0.07) DR12BAO: 3.77 ( $\Delta$  -0.21) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.76 ( $\Delta$  -1.55) commander\_dx12\_v3\_2\_29: 22.92 ( $\Delta$  -0.45) CamSpec like\_10.7HM\_1400\_unified: 11499.35 SN - JLA Pantheon18: 1034.83 ( $\Delta$  0.08)



19.30 base\_w\_wa\_CamSpecHM\_TTTEE\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02229 \pm 0.00015 \quad (+0.7\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4523 \pm 0.0061 \quad (-0.4\sigma)$	$D_M(0.38)$	$1515 \pm 13 \quad (-0.0\sigma)$
$\Omega_c h^2$	$0.1196 \pm 0.0011 \quad (-0.4\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6080 \pm 0.0074 \quad (-0.4\sigma)$	$H(0.51)$	$90.03 \pm 0.51 \quad (+0.2\sigma)$
$100\theta_{MC}$	$1.04087 \pm 0.00030 \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.989 \pm 0.011 \quad (-0.4\sigma)$	$D_M(0.51)$	$1965 \pm 16 \quad (-0.1\sigma)$
$\tau$	$0.0527 \pm 0.0075 \quad (+0.1\sigma)$	$r_{\text{drag}} h$	$100.5 \pm 1.2 \quad (+0.0\sigma)$	$H(0.61)$	$95.47 \pm 0.43 \quad (+0.3\sigma)$
$w_0$	$-0.964 \pm 0.080 \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.444 \pm 0.024 \quad (-0.4\sigma)$	$D_M(0.61)$	$2288 \pm 17 \quad (-0.1\sigma)$
$w_a$	$-0.25^{+0.32}_{-0.27} \quad (+0.2\sigma)$	$z_{\text{re}}$	$7.50 \pm 0.77 \quad (+0.1\sigma)$	$H(2.33)$	$235.09 \pm 0.97 \quad (+0.1\sigma)$
$\ln(10^{10} A_s)$	$3.039 \pm 0.015 \quad (+0.1\sigma)$	$10^9 A_s$	$2.088 \pm 0.031 \quad (+0.1\sigma)$	$D_M(2.33)$	$5758 \pm 11 \quad (-0.4\sigma)$
$n_s$	$0.9657 \pm 0.0040 \quad (+0.3\sigma)$	$10^9 A_s e^{-2\tau}$	$1.879 \pm 0.011 \quad (-0.1\sigma)$	$f\sigma_8(0.15)$	$0.4566 \pm 0.0068 \quad (-0.4\sigma)$
$y_{\text{cal}}$	$1.0005 \pm 0.0025 \quad (+0.0\sigma)$	$D_{40}$	$1226 \pm 11 \quad (-0.1\sigma)$	$\sigma_8(0.15)$	$0.756 \pm 0.011 \quad (-0.3\sigma)$
$A_{100}^{\text{PS}}$	$240 \pm 24 \quad (-0.1\sigma)$	$D_{220}$	$5720 \pm 39 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4776 \pm 0.0082 \quad (-0.4\sigma)$
$A_{143}^{\text{PS}}$	$40 \pm 8 \quad (-0.2\sigma)$	$D_{810}$	$2535 \pm 14 \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.6706 \pm 0.0097 \quad (-0.3\sigma)$
$A_{217}^{\text{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{1420}$	$815.5 \pm 4.9 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4778 \pm 0.0085 \quad (-0.4\sigma)$
$A_{217}^{\text{CIB}}$	$40^{+7}_{-8} \quad (-0.2\sigma)$	$D_{2000}$	$230.2 \pm 1.6 \quad (+0.4\sigma)$	$\sigma_8(0.51)$	$0.6277 \pm 0.0090 \quad (-0.3\sigma)$
$A_{143}^{\text{tSZ}}$	$3.8^{+1.8}_{-2.5} \quad (+0.0\sigma)$	$n_{s,0.002}$	$0.9657 \pm 0.0040 \quad (+0.3\sigma)$	$f\sigma_8(0.61)$	$0.4739 \pm 0.0086 \quad (-0.4\sigma)$
$r_{143 \times 217}^{\text{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$Y_P$	$0.245363 \pm 0.000061 \quad (+0.7\sigma)$	$\sigma_8(0.61)$	$0.5973 \pm 0.0085 \quad (-0.3\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	$0.56^{+0.40}_{-0.17} \quad (-0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.246690 \pm 0.000061 \quad (+0.7\sigma)$	$f\sigma_8(2.33)$	$0.3017 \pm 0.0045 \quad (-0.3\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^5 \text{D/H}$	$2.600 \pm 0.028 \quad (-0.7\sigma)$	$\sigma_8(2.33)$	$0.3093 \pm 0.0036 \quad (-0.2\sigma)$
$A^{\text{kSZ}}$	$4.7^{+2.2}_{-4.0} \quad (-0.1\sigma)$	$\text{Age/Gyr}$	$13.770 \pm 0.031 \quad (-0.2\sigma)$	$f_{2000}^{143}$	$29.8 \pm 2.8 \quad (-0.3\sigma)$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.19 \quad (+0.0\sigma)$	$z_*$	$1089.98 \pm 0.25 \quad (-0.7\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.9 \quad (-0.3\sigma)$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$r_*$	$144.59 \pm 0.26 \quad (+0.1\sigma)$	$f_{2000}^{143 \times 217}$	$32.2 \pm 2.0 \quad (-0.4\sigma)$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10 \quad (+0.1\sigma)$	$100\theta_*$	$1.04106 \pm 0.00030 \quad (-0.0\sigma)$	$\chi_{\text{lensing}}^2$	$9.19 \pm 0.71 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.16 \quad (-0.0\sigma)$	$D_M(z_*)/\text{Gpc}$	$13.888 \pm 0.024 \quad (+0.1\sigma)$	$\chi_{\text{simall}}^2$	$396.8 \pm 1.5 \quad (-0.0\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.1\sigma)$	$z_{\text{drag}}$	$1059.73 \pm 0.32 \quad (+0.7\sigma)$	$\chi_{\text{lowl}}^2$	$23.10 \pm 0.80 \quad (-0.2\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$r_{\text{drag}}$	$147.28 \pm 0.27 \quad (-0.1\sigma)$	$\chi_{\text{CamSpec}}^2$	$11513.9 \pm 5.5 \quad (+852.8\sigma)$
$c_{TE}$	$0.9965 \pm 0.0049$	$k_D$	$0.14061 \pm 0.00032 \quad (+0.3\sigma)$	$\chi_{\text{JLA}}^2$	$1035.9 \pm 1.5 \quad (+0.0\sigma)$
$c_{EE}$	$0.9922 \pm 0.0050$	$100\theta_D$	$0.16087 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{6\text{DF}}^2$	$0.055 \pm 0.079 \quad (-0.0\sigma)$
$H_0$	$68.23 \pm 0.83 \quad (+0.0\sigma)$	$z_{\text{eq}}$	$3391 \pm 25 \quad (-0.3\sigma)$	$\chi_{\text{MGS}}^2$	$1.93 \pm 0.71 \quad (-0.0\sigma)$
$\Omega_\Lambda$	$0.6936 \pm 0.0078 \quad (+0.1\sigma)$	$k_{\text{eq}}$	$0.010351 \pm 0.000076 \quad (-0.3\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.6 \pm 1.2 \quad (-0.1\sigma)$
$\Omega_m$	$0.3064 \pm 0.0078 \quad (-0.1\sigma)$	$100\theta_{\text{eq}}$	$0.8150 \pm 0.0047 \quad (+0.3\sigma)$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.4 \quad (+0.0\sigma)$
$\Omega_m h^2$	$0.1426 \pm 0.0010 \quad (-0.3\sigma)$	$100\theta_{s,\text{eq}}$	$0.4503 \pm 0.0024 \quad (+0.3\sigma)$	$\chi_{\text{CMB}}^2$	$11942.9 \pm 5.7 \quad (+815.9\sigma)$
$\Omega_m h^3$	$0.0973 \pm 0.0014 \quad (-0.1\sigma)$	$H(0.15)$	$73.65 \pm 0.71 \quad (+0.0\sigma)$	$\chi_{\text{BAO}}^2$	$6.6 \pm 1.5 \quad (-0.1\sigma)$
$\sigma_8$	$0.817 \pm 0.011 \quad (-0.3\sigma)$	$D_M(0.15)$	$634.8 \pm 6.5 \quad (-0.0\sigma)$		
$S_8$	$0.826 \pm 0.011 \quad (-0.4\sigma)$	$H(0.38)$	$83.53 \pm 0.63 \quad (+0.1\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 12993.26; \Delta\bar{\chi}_{\text{eff}}^2 = 4451.06; R - 1 = 0.00901$$



19.31 base\_w\_wa\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Pantheon18\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02230 \pm 0.00015 \quad (+0.8\sigma)$	$S_8$	$0.826 \pm 0.015 \quad (-0.5\sigma)$	$D_M(0.15)$	$635.1 \pm 6.6 \quad (+0.0\sigma)$
$\Omega_c h^2$	$0.1195 \pm 0.0013 \quad (-0.4\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4524 \pm 0.0080 \quad (-0.5\sigma)$	$H(0.38)$	$83.49 \pm 0.64 \quad (+0.1\sigma)$
$100\theta_{MC}$	$1.04089 \pm 0.00031 \quad (+0.0\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6081 \pm 0.0098 \quad (-0.5\sigma)$	$D_M(0.38)$	$1516 \pm 14 \quad (+0.0\sigma)$
$\tau$	$0.0541^{+0.0045}_{-0.0081} \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.014 \quad (-0.5\sigma)$	$H(0.51)$	$90.00 \pm 0.52 \quad (+0.2\sigma)$
$w_0$	$-0.968 \pm 0.081 \quad (-0.1\sigma)$	$r_{\text{drag}} h$	$100.5 \pm 1.2 \quad (+0.0\sigma)$	$D_M(0.51)$	$1966 \pm 16 \quad (-0.0\sigma)$
$w_a$	$-0.23^{+0.33}_{-0.28} \quad (+0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.445 \pm 0.032 \quad (-0.4\sigma)$	$H(0.61)$	$95.45 \pm 0.43 \quad (+0.3\sigma)$
$\ln(10^{10} A_s)$	$3.041^{+0.011}_{-0.016} \quad (-0.1\sigma)$	$z_{\text{re}}$	$7.64^{+0.52}_{-0.80} \quad (-0.0\sigma)$	$D_M(0.61)$	$2289 \pm 17 \quad (-0.0\sigma)$
$n_s$	$0.9661 \pm 0.0043 \quad (+0.4\sigma)$	$10^9 A_s$	$2.093^{+0.023}_{-0.033} \quad (-0.1\sigma)$	$H(2.33)$	$235.15 \pm 0.98 \quad (+0.0\sigma)$
$y_{\text{cal}}$	$1.0005 \pm 0.0025 \quad (+0.0\sigma)$	$10^9 A_s e^{-2\tau}$	$1.878 \pm 0.012 \quad (-0.2\sigma)$	$D_M(2.33)$	$5759 \pm 11 \quad (-0.5\sigma)$
$A_{100}^{\text{PS}}$	$240 \pm 25 \quad (-0.1\sigma)$	$D_{40}$	$1225 \pm 12 \quad (-0.2\sigma)$	$f\sigma_8(0.15)$	$0.4568 \pm 0.0083 \quad (-0.4\sigma)$
$A_{143}^{\text{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$D_{220}$	$5718 \pm 39 \quad (+0.4\sigma)$	$\sigma_8(0.15)$	$0.756 \pm 0.013 \quad (-0.4\sigma)$
$A_{217}^{\text{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2535 \pm 14 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4777 \pm 0.0098 \quad (-0.4\sigma)$
$A_{217}^{\text{CIB}}$	$40 \pm 7 \quad (-0.2\sigma)$	$D_{1420}$	$815.6 \pm 4.9 \quad (+0.3\sigma)$	$\sigma_8(0.38)$	$0.671 \pm 0.012 \quad (-0.4\sigma)$
$A_{143}^{\text{tSZ}}$	$3.8^{+1.8}_{-2.5} \quad (+0.0\sigma)$	$D_{2000}$	$230.3 \pm 1.6 \quad (+0.4\sigma)$	$f\sigma_8(0.51)$	$0.478 \pm 0.010 \quad (-0.4\sigma)$
$r_{143 \times 217}^{\text{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$n_{s,0.002}$	$0.9661 \pm 0.0043 \quad (+0.4\sigma)$	$\sigma_8(0.51)$	$0.628 \pm 0.011 \quad (-0.4\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	$0.56^{+0.39}_{-0.18} \quad (-0.1\sigma)$	$Y_P$	$0.245365 \pm 0.000062 \quad (+0.7\sigma)$	$f\sigma_8(0.61)$	$0.474 \pm 0.010 \quad (-0.4\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$Y_P^{\text{BBN}}$	$0.246691 \pm 0.000062 \quad (+0.7\sigma)$	$\sigma_8(0.61)$	$0.597 \pm 0.010 \quad (-0.4\sigma)$
$A^{\text{kSZ}}$	$4.7^{+2.3}_{-3.9} \quad (-0.1\sigma)$	$10^5 D/H$	$2.599 \pm 0.029 \quad (-0.8\sigma)$	$f\sigma_8(2.33)$	$0.3017 \pm 0.0054 \quad (-0.4\sigma)$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.19 \quad (+0.0\sigma)$	$\text{Age/Gyr}$	$13.772 \pm 0.032 \quad (-0.2\sigma)$	$\sigma_8(2.33)$	$0.3094 \pm 0.0041 \quad (-0.3\sigma)$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$z_*$	$1089.97 \pm 0.26 \quad (-0.7\sigma)$	$f_{2000}^{143}$	$29.7 \pm 2.8 \quad (-0.3\sigma)$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10 \quad (+0.1\sigma)$	$r_*$	$144.60 \pm 0.30 \quad (+0.2\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.9 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\text{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_*$	$1.04108 \pm 0.00030 \quad (+0.0\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 2.0 \quad (-0.4\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.1\sigma)$	$D_M(z_*)/\text{Gpc}$	$13.890 \pm 0.028 \quad (+0.2\sigma)$	$\chi_{\text{small}}^2$	$396.7 \pm 1.5 \quad (-0.0\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$z_{\text{drag}}$	$1059.74 \pm 0.32 \quad (+0.7\sigma)$	$\chi_{\text{lowl}}^2$	$23.06 \pm 0.87 \quad (-0.3\sigma)$
$c_{TE}$	$0.9965 \pm 0.0049$	$r_{\text{drag}}$	$147.29 \pm 0.30 \quad (+0.1\sigma)$	$\chi_{\text{CamSpec}}^2$	$11514.2 \pm 5.6 \quad (+826.0\sigma)$
$c_{EE}$	$0.9921 \pm 0.0050$	$k_D$	$0.14060 \pm 0.00034 \quad (+0.2\sigma)$	$\chi_{\text{JLA}}^2$	$1035.9 \pm 1.5 \quad (-0.0\sigma)$
$H_0$	$68.20 \pm 0.84 \quad (+0.0\sigma)$	$100\theta_D$	$0.16087 \pm 0.00019 \quad (-0.8\sigma)$	$\chi_{6\text{DF}}^2$	$0.055 \pm 0.077 \quad (-0.0\sigma)$
$\Omega_\Lambda$	$0.6935 \pm 0.0078 \quad (+0.2\sigma)$	$z_{\text{eq}}$	$3390 \pm 29 \quad (-0.4\sigma)$	$\chi_{\text{MGS}}^2$	$1.90 \pm 0.70 \quad (-0.0\sigma)$
$\Omega_m$	$0.3065 \pm 0.0078 \quad (-0.2\sigma)$	$k_{\text{eq}}$	$0.010345 \pm 0.000089 \quad (-0.4\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.7 \pm 1.2 \quad (-0.2\sigma)$
$\Omega_m h^2$	$0.1425 \pm 0.0012 \quad (-0.4\sigma)$	$100\theta_{\text{eq}}$	$0.8154 \pm 0.0055 \quad (+0.4\sigma)$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_m h^3$	$0.0972 \pm 0.0015 \quad (-0.2\sigma)$	$100\theta_{s,\text{eq}}$	$0.4505 \pm 0.0028 \quad (+0.4\sigma)$	$\chi_{\text{BAO}}^2$	$6.6 \pm 1.5 \quad (-0.2\sigma)$
$\sigma_8$	$0.817 \pm 0.014 \quad (-0.4\sigma)$	$H(0.15)$	$73.61 \pm 0.73 \quad (-0.1\sigma)$	$\chi_{\text{CMB}}^2$	$11933.9 \pm 5.7 \quad (+832.4\sigma)$

$$\bar{\chi}_{\text{eff}}^2 = 12984.26; \Delta\bar{\chi}_{\text{eff}}^2 = 4451.14; R - 1 = 0.00880$$



19.32 base\_w\_wa\_CamSpecHM\_TTTEE\_lowl\_lowE\_BAO\_Pantheon18\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02230 \pm 0.00015 \quad (+0.7\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4524 \pm 0.0061 \quad (-0.4\sigma)$	$D_M(0.38)$	$1516 \pm 13 \quad (-0.0\sigma)$
$\Omega_c h^2$	$0.1195 \pm 0.0011 \quad (-0.3\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6082 \pm 0.0074 \quad (-0.4\sigma)$	$H(0.51)$	$90.03 \pm 0.51 \quad (+0.2\sigma)$
$100\theta_{MC}$	$1.04088 \pm 0.00030 \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.011 \quad (-0.4\sigma)$	$D_M(0.51)$	$1965 \pm 16 \quad (-0.0\sigma)$
$\tau$	$0.0542^{+0.0046}_{-0.0080} \quad (+0.1\sigma)$	$r_{\text{drag}} h$	$100.5 \pm 1.2 \quad (+0.0\sigma)$	$H(0.61)$	$95.48 \pm 0.43 \quad (+0.3\sigma)$
$w_0$	$-0.965 \pm 0.080 \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.446 \pm 0.024 \quad (-0.3\sigma)$	$D_M(0.61)$	$2289 \pm 17 \quad (-0.1\sigma)$
$w_a$	$-0.24^{+0.31}_{-0.27} \quad (+0.2\sigma)$	$z_{\text{re}}$	$7.65^{+0.53}_{-0.78} \quad (+0.0\sigma)$	$H(2.33)$	$235.10 \pm 0.97 \quad (+0.1\sigma)$
$\ln(10^{10} A_s)$	$3.041^{+0.011}_{-0.015} \quad (+0.0\sigma)$	$10^9 A_s$	$2.093^{+0.022}_{-0.031} \quad (+0.0\sigma)$	$D_M(2.33)$	$5758 \pm 11 \quad (-0.4\sigma)$
$n_s$	$0.9660 \pm 0.0039 \quad (+0.3\sigma)$	$10^9 A_s e^{-2\tau}$	$1.878 \pm 0.011 \quad (-0.1\sigma)$	$f\sigma_8(0.15)$	$0.4567 \pm 0.0068 \quad (-0.4\sigma)$
$y_{\text{cal}}$	$1.0005 \pm 0.0025 \quad (+0.0\sigma)$	$D_{40}$	$1226 \pm 11 \quad (-0.1\sigma)$	$\sigma_8(0.15)$	$0.756 \pm 0.011 \quad (-0.3\sigma)$
$A_{100}^{\text{PS}}$	$240 \pm 24 \quad (-0.1\sigma)$	$D_{220}$	$5719 \pm 39 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4777 \pm 0.0082 \quad (-0.4\sigma)$
$A_{143}^{\text{PS}}$	$40 \pm 8 \quad (-0.2\sigma)$	$D_{810}$	$2535 \pm 14 \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.6709 \pm 0.0096 \quad (-0.3\sigma)$
$A_{217}^{\text{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{1420}$	$815.5 \pm 4.9 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4779 \pm 0.0085 \quad (-0.3\sigma)$
$A_{217}^{\text{CIB}}$	$40^{+7}_{-8} \quad (-0.2\sigma)$	$D_{2000}$	$230.3 \pm 1.6 \quad (+0.4\sigma)$	$\sigma_8(0.51)$	$0.6280 \pm 0.0090 \quad (-0.3\sigma)$
$A_{143}^{\text{tSZ}}$	$3.8^{+1.8}_{-2.5} \quad (+0.0\sigma)$	$n_{s,0.002}$	$0.9660 \pm 0.0039 \quad (+0.3\sigma)$	$f\sigma_8(0.61)$	$0.4740 \pm 0.0086 \quad (-0.3\sigma)$
$r_{143 \times 217}^{\text{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$Y_P$	$0.245366 \pm 0.000060 \quad (+0.7\sigma)$	$\sigma_8(0.61)$	$0.5976 \pm 0.0085 \quad (-0.3\sigma)$
$r_{143 \times 217}^{\text{CIB}}$	$0.56^{+0.40}_{-0.17} \quad (-0.1\sigma)$	$Y_P^{\text{BBN}}$	$0.246692 \pm 0.000060 \quad (+0.7\sigma)$	$f\sigma_8(2.33)$	$0.3019 \pm 0.0045 \quad (-0.3\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^5 \text{D/H}$	$2.599 \pm 0.028 \quad (-0.7\sigma)$	$\sigma_8(2.33)$	$0.3096 \pm 0.0035 \quad (-0.2\sigma)$
$A^{\text{kSZ}}$	$4.7^{+2.1}_{-4.1} \quad (-0.1\sigma)$	$\text{Age/Gyr}$	$13.770 \pm 0.031 \quad (-0.2\sigma)$	$f_{2000}^{143}$	$29.7 \pm 2.8 \quad (-0.3\sigma)$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.19 \quad (+0.0\sigma)$	$z_*$	$1089.97 \pm 0.24 \quad (-0.7\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.9 \quad (-0.3\sigma)$
$A_{143}^{\text{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$r_*$	$144.60 \pm 0.25 \quad (+0.0\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 2.0 \quad (-0.4\sigma)$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10 \quad (+0.0\sigma)$	$100\theta_*$	$1.04107 \pm 0.00030 \quad (-0.0\sigma)$	$\chi_{\text{lensing}}^2$	$9.16 \pm 0.69 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\text{dust}}$	$1.02 \pm 0.16 \quad (-0.0\sigma)$	$D_M(z_*)/\text{Gpc}$	$13.890 \pm 0.024 \quad (+0.0\sigma)$	$\chi_{\text{simall}}^2$	$396.7 \pm 1.5 \quad (-0.0\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.1\sigma)$	$z_{\text{drag}}$	$1059.74 \pm 0.32 \quad (+0.7\sigma)$	$\chi_{\text{lowl}}^2$	$23.09 \pm 0.79 \quad (-0.2\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$r_{\text{drag}}$	$147.29 \pm 0.26 \quad (-0.1\sigma)$	$\chi_{\text{CamSpec}}^2$	$11513.8 \pm 5.5 \quad (+855.1\sigma)$
$c_{TE}$	$0.9964 \pm 0.0049$	$k_D$	$0.14060 \pm 0.00032 \quad (+0.3\sigma)$	$\chi_{\text{JLA}}^2$	$1035.9 \pm 1.5 \quad (+0.0\sigma)$
$c_{EE}$	$0.9921 \pm 0.0050$	$100\theta_D$	$0.16086 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{6\text{DF}}^2$	$0.055 \pm 0.078 \quad (-0.0\sigma)$
$H_0$	$68.22 \pm 0.84 \quad (+0.0\sigma)$	$z_{\text{eq}}$	$3390 \pm 24 \quad (-0.2\sigma)$	$\chi_{\text{MGS}}^2$	$1.93 \pm 0.70 \quad (-0.0\sigma)$
$\Omega_\Lambda$	$0.6937 \pm 0.0077 \quad (+0.1\sigma)$	$k_{\text{eq}}$	$0.010346 \pm 0.000074 \quad (-0.2\sigma)$	$\chi_{\text{DR12BAO}}^2$	$4.6 \pm 1.2 \quad (-0.1\sigma)$
$\Omega_m$	$0.3063 \pm 0.0077 \quad (-0.1\sigma)$	$100\theta_{\text{eq}}$	$0.8153 \pm 0.0046 \quad (+0.3\sigma)$	$\chi_{\text{prior}}^2$	$7.8 \pm 3.4 \quad (+0.0\sigma)$
$\Omega_m h^2$	$0.1425 \pm 0.0010 \quad (-0.2\sigma)$	$100\theta_{s,\text{eq}}$	$0.4505 \pm 0.0023 \quad (+0.3\sigma)$	$\chi_{\text{CMB}}^2$	$11942.7 \pm 5.7 \quad (+827.7\sigma)$
$\Omega_m h^3$	$0.0972 \pm 0.0014 \quad (-0.1\sigma)$	$H(0.15)$	$73.64 \pm 0.71 \quad (+0.0\sigma)$	$\chi_{\text{BAO}}^2$	$6.6 \pm 1.5 \quad (-0.1\sigma)$
$\sigma_8$	$0.818 \pm 0.011 \quad (-0.3\sigma)$	$D_M(0.15)$	$634.9 \pm 6.5 \quad (-0.0\sigma)$		
$S_8$	$0.826 \pm 0.011 \quad (-0.4\sigma)$	$H(0.38)$	$83.52 \pm 0.63 \quad (+0.1\sigma)$		
$\bar{\chi}_{\text{eff}}^2 = 12993.01; \Delta\bar{\chi}_{\text{eff}}^2 = 4451.15; R - 1 = 0.00841$					



### 19.33 base\_w\_wa\_plikHM\_TT\_lowl\_lowE\_BAO\_Riess18\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022181	$0.02216 \pm 0.00020$	$\sigma_8/h^{0.5}$	1.0046	$1.004 \pm 0.019$	$H(0.51)$	89.93	$89.89 \pm 0.51$
$\Omega_c h^2$	0.12056	$0.1207 \pm 0.0018$	$r_{\text{drag}} h$	102.01	$101.9 \pm 1.1$	$D_M(0.51)$	1952.1	$1953 \pm 16$
$100\theta_{\text{MC}}$	1.040823	$1.04082 \pm 0.00045$	$\langle d^2 \rangle^{1/2}$	2.4711	$2.473 \pm 0.041$	$H(0.61)$	95.220	$95.16 \pm 0.44$
$\tau$	0.0525	$0.0521 \pm 0.0079$	$z_{\text{re}}$	7.52	$7.47 \pm 0.82$	$D_M(0.61)$	2276.1	$2277 \pm 17$
$w_0$	-0.997	$-0.988_{-0.091}^{+0.081}$	$10^9 A_s$	2.0941	$2.092 \pm 0.034$	$H(2.33)$	234.69	$234.76 \pm 0.97$
$w_a$	-0.325	$-0.37_{-0.32}^{+0.43}$	$10^9 A_s e^{-2\tau}$	1.8854	$1.885 \pm 0.013$	$D_M(2.33)$	5759.2	$5762 \pm 13$
$\ln(10^{10} A_s)$	3.0417	$3.041 \pm 0.016$	$D_{40}$	1230.5	$1233 \pm 14$	$f\sigma_8(0.15)$	0.4649	$0.465 \pm 0.011$
$n_s$	0.9639	$0.9628 \pm 0.0051$	$D_{220}$	5716.4	$5716 \pm 41$	$\sigma_8(0.15)$	0.7741	$0.774 \pm 0.016$
$y_{\text{cal}}$	1.00058	$1.0004 \pm 0.0025$	$D_{810}$	2538.8	$2537 \pm 14$	$f\sigma_8(0.38)$	0.4903	$0.490 \pm 0.013$
$A_{217}^{\text{CIB}}$	49.1	$48 \pm 7$	$D_{1420}$	815.92	$814.7 \pm 5.0$	$\sigma_8(0.38)$	0.6869	$0.686 \pm 0.014$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.24	—	$D_{2000}$	230.28	$229.8 \pm 1.7$	$f\sigma_8(0.51)$	0.4919	$0.492 \pm 0.013$
$A_{143}^{\text{tSZ}}$	7.13	$5.1 \pm 2.0$	$n_{s,0.002}$	0.9639	$0.9628 \pm 0.0051$	$\sigma_8(0.51)$	0.6428	$0.642 \pm 0.013$
$A_{100}^{\text{PS}}$	254.1	$262 \pm 28$	$Y_{\text{P}}$	0.245318	$0.245304_{-0.000078}^{+0.000094}$	$f\sigma_8(0.61)$	0.4884	$0.489 \pm 0.013$
$A_{143}^{\text{PS}}$	47.5	$49 \pm 8$	$Y_{\text{P}}^{\text{BBN}}$	0.246644	$0.246630_{-0.000078}^{+0.000095}$	$\sigma_8(0.61)$	0.6115	$0.611 \pm 0.012$
$A_{143 \times 217}^{\text{PS}}$	44.6	$43 \pm 9$	$10^5 D/H$	2.6215	$2.627 \pm 0.039$	$f\sigma_8(2.33)$	0.3089	$0.3085_{-0.0056}^{+0.0062}$
$A_{217}^{\text{PS}}$	118.2	$115 \pm 10$	Age/Gyr	13.7508	$13.754 \pm 0.034$	$\sigma_8(2.33)$	0.31509	$0.3147 \pm 0.0046$
$A^{\text{kSZ}}$	0.01	$< 4.74$	$z_*$	1090.208	$1090.25 \pm 0.35$	$f_{2000}^{143}$	30.09	$30.9 \pm 2.9$
$A_{100}^{\text{dustTT}}$	8.87	$8.9 \pm 1.8$	$r_*$	144.432	$144.42 \pm 0.42$	$f_{2000}^{143 \times 217}$	33.05	$33.3 \pm 2.0$
$A_{143}^{\text{dustTT}}$	10.74	$10.7 \pm 1.8$	$100\theta_*$	1.041031	$1.04102 \pm 0.00044$	$f_{2000}^{217}$	107.56	$107.9 \pm 1.9$
$A_{143 \times 217}^{\text{dustTT}}$	19.27	$18.2 \pm 3.3$	$D_M(z_*)/\text{Gpc}$	13.8740	$13.873 \pm 0.040$	$\chi_{\text{small}}^2$	395.86	$396.9 \pm 1.7$
$A_{217}^{\text{dustTT}}$	94.5	$93.4 \pm 7.4$	$z_{\text{drag}}$	1059.551	$1059.49 \pm 0.44$	$\chi_{\text{lowl}}^2$	23.38	$23.7 \pm 1.1$
$c_{100}$	0.99967	$0.99961 \pm 0.00062$	$r_{\text{drag}}$	147.154	$147.16 \pm 0.43$	$\chi_{\text{plik}}^2$	757.9	$770.5 \pm 5.3$
$c_{217}$	0.99827	$0.99825 \pm 0.00062$	$k_{\text{D}}$	0.140653	$0.14063 \pm 0.00049$	$\chi_{\text{H073p45}}^2$	6.19	$6.6 \pm 2.4$
$H_0$	69.32	$69.26 \pm 0.77$	$100\theta_{\text{D}}$	0.160991	$0.16102 \pm 0.00026$	$\chi_{\text{JLA}}^2$	1035.41	$1036.3 \pm 1.7$
$\Omega_{\Lambda}$	0.7016	$0.7008 \pm 0.0074$	$z_{\text{eq}}$	3411.0	$3413 \pm 41$	$\chi_{6\text{DF}}^2$	0.096	$0.14 \pm 0.15$
$\Omega_{\text{m}}$	0.2984	$0.2992 \pm 0.0074$	$k_{\text{eq}}$	0.010411	$0.01042 \pm 0.00013$	$\chi_{\text{MGS}}^2$	2.67	$2.71 \pm 0.74$
$\Omega_{\text{m}} h^2$	0.14338	$0.1435 \pm 0.0017$	$100\theta_{\text{eq}}$	0.8111	$0.8108 \pm 0.0076$	$\chi_{\text{DR12BAO}}^2$	4.61	$5.5 \pm 1.5$
$\Omega_{\text{m}} h^3$	0.09939	$0.0994 \pm 0.0017$	$100\theta_{\text{s,eq}}$	0.44840	$0.4482 \pm 0.0039$	$\chi_{\text{prior}}^2$	1.44	$7.2 \pm 3.7$
$\sigma_8$	0.8364	$0.836 \pm 0.017$	$H(0.15)$	74.34	$74.34 \pm 0.73$	$\chi_{\text{BAO}}^2$	7.38	$8.4 \pm 2.1$
$S_8$	0.8342	$0.835 \pm 0.020$	$D_M(0.15)$	626.8	$627.1 \pm 6.1$	$\chi_{\text{CMB}}^2$	1177.2	$1191.1 \pm 5.5$
$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4569	$0.457 \pm 0.011$	$H(0.38)$	83.67	$83.66 \pm 0.64$			
$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6182	$0.618 \pm 0.013$	$D_M(0.38)$	1502.6	$1503 \pm 13$			

Best-fit  $\chi_{\text{eff}}^2 = 2227.58$ ;  $\bar{\chi}_{\text{eff}}^2 = 2249.60$ ;  $R - 1 = 0.00852$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.10 MGS: 2.67 DR12BAO: 4.61 CMB - small-100x143\_offlike5\_EE\_Aplanck\_B: 395.86 commander\_dx12\_v3.2.29: 23.38 plik\_rd12\_HM\_v22.TT: 757.93  
Hubble - H073p45: 6.19 SN - JLA Pantheon18: 1035.41



19.34 base\_w\_wa\_plikHM\_TT\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.022209	$0.02219 \pm 0.00020$	$\sigma_8\Omega_{\text{m}}^{0.25}$	0.6128	$0.6132 \pm 0.0086$	$H(0.38)$	83.61	$83.65 \pm 0.63$
$\Omega_{\text{c}}h^2$	0.12003	$0.1200 \pm 0.0013$	$\sigma_8/h^{0.5}$	0.9968	$0.997 \pm 0.012$	$D_{\text{M}}(0.38)$	1504.9	$1504 \pm 13$
$100\theta_{\text{MC}}$	1.040896	$1.04087 \pm 0.00043$	$r_{\text{drag}}h$	101.92	$102.0 \pm 1.1$	$H(0.51)$	89.93	$89.93 \pm 0.52$
$\tau$	0.0510	$0.0516 \pm 0.0077$	$\langle d^2 \rangle^{1/2}$	2.4545	$2.458 \pm 0.026$	$D_{\text{M}}(0.51)$	1954.5	$1954 \pm 15$
$w_0$	-1.004	$-0.998 \pm 0.082$	$z_{\text{re}}$	7.36	$7.40 \pm 0.80$	$H(0.61)$	95.269	$95.24 \pm 0.43$
$w_a$	-0.246	$-0.29^{+0.36}_{-0.29}$	$10^9 A_{\text{s}}$	2.0837	$2.086 \pm 0.031$	$D_{\text{M}}(0.61)$	2278.5	$2278 \pm 16$
$\ln(10^{10} A_{\text{s}})$	3.0368	$3.038 \pm 0.015$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8818	$1.882 \pm 0.011$	$H(2.33)$	234.72	$234.65 \pm 0.98$
$n_{\text{s}}$	0.96481	$0.9639 \pm 0.0044$	$D_{40}$	1227.4	$1230 \pm 12$	$D_{\text{M}}(2.33)$	5758.2	$5760 \pm 13$
$y_{\text{cal}}$	1.00028	$1.0004 \pm 0.0025$	$D_{220}$	5715.7	$5719 \pm 41$	$f\sigma_8(0.15)$	0.4608	$0.4608 \pm 0.0079$
$A_{217}^{\text{CIB}}$	49.1	$48 \pm 7$	$D_{810}$	2536.6	$2536 \pm 13$	$\sigma_8(0.15)$	0.7674	$0.768 \pm 0.011$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.24	—	$D_{1420}$	815.52	$814.7 \pm 5.0$	$f\sigma_8(0.38)$	0.4854	$0.4858 \pm 0.0091$
$A_{143}^{\text{tSZ}}$	7.22	$5.1 \pm 2.0$	$D_{2000}$	230.10	$229.8 \pm 1.7$	$\sigma_8(0.38)$	0.6811	$0.6818 \pm 0.0099$
$A_{100}^{\text{PS}}$	254.3	$263 \pm 28$	$n_{\text{s},0.002}$	0.96481	$0.9639 \pm 0.0044$	$f\sigma_8(0.51)$	0.4867	$0.4873 \pm 0.0094$
$A_{143}^{\text{PS}}$	47.8	$49 \pm 8$	$Y_{\text{P}}$	0.245330	$0.245318^{+0.000088}_{-0.000075}$	$\sigma_8(0.51)$	0.6375	$0.6381 \pm 0.0092$
$A_{143 \times 217}^{\text{PS}}$	44.7	$43 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	0.246656	$0.246644^{+0.000088}_{-0.000076}$	$f\sigma_8(0.61)$	0.4831	$0.4838 \pm 0.0095$
$A_{217}^{\text{PS}}$	118.5	$115 \pm 10$	$10^5 \text{D}/\text{H}$	2.6162	$2.620 \pm 0.037$	$\sigma_8(0.61)$	0.6065	$0.6071 \pm 0.0086$
$A^{\text{kSZ}}$	0.02	$< 4.83$	$\text{Age}/\text{Gyr}$	13.7552	$13.756 \pm 0.033$	$f\sigma_8(2.33)$	0.30641	$0.3067 \pm 0.0044$
$A_{100}^{\text{dustTT}}$	8.87	$8.9 \pm 1.9$	$z_*$	1090.126	$1090.15 \pm 0.31$	$\sigma_8(2.33)$	0.31314	$0.3133 \pm 0.0035$
$A_{143}^{\text{dustTT}}$	10.78	$10.7 \pm 1.8$	$r_*$	144.546	$144.56 \pm 0.33$	$\chi^2_{\text{lensing}}$	8.75	$9.35 \pm 0.99$
$A_{143 \times 217}^{\text{dustTT}}$	19.36	$18.2 \pm 3.3$	$100\theta_*$	1.041099	$1.04107 \pm 0.00043$	$\chi^2_{\text{small}}$	395.69	$396.8 \pm 1.5$
$A_{217}^{\text{dustTT}}$	94.5	$93.3 \pm 7.3$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8839	$13.886 \pm 0.032$	$\chi^2_{\text{lowl}}$	23.16	$23.41 \pm 0.89$
$c_{100}$	0.99964	$0.99962 \pm 0.00062$	$z_{\text{drag}}$	1059.551	$1059.52 \pm 0.43$	$\chi^2_{\text{plik}}$	758.52	$770.6 \pm 5.2$
$c_{217}$	0.99826	$0.99826 \pm 0.00062$	$r_{\text{drag}}$	147.263	$147.29 \pm 0.35$	$\chi^2_{\text{H073p45}}$	6.52	$6.6 \pm 2.4$
$H_0$	69.21	$69.25 \pm 0.76$	$k_{\text{D}}$	0.140562	$0.14052 \pm 0.00044$	$\chi^2_{\text{JLA}}$	1035.26	$1036.2 \pm 1.7$
$\Omega_{\Lambda}$	0.7017	$0.7019 \pm 0.0071$	$100\theta_{\text{D}}$	0.160979	$0.16100 \pm 0.00025$	$\chi^2_{6\text{DF}}$	0.081	$0.14 \pm 0.15$
$\Omega_{\text{m}}$	0.2983	$0.2981 \pm 0.0071$	$z_{\text{eq}}$	3399.2	$3399 \pm 31$	$\chi^2_{\text{MGS}}$	2.59	$2.72 \pm 0.74$
$\Omega_{\text{m}}h^2$	0.14289	$0.1429 \pm 0.0013$	$k_{\text{eq}}$	0.010375	$0.010373 \pm 0.000095$	$\chi^2_{\text{DR12BAO}}$	4.37	$5.3 \pm 1.4$
$\Omega_{\text{m}}h^3$	0.09889	$0.0989 \pm 0.0014$	$100\theta_{\text{eq}}$	0.8134	$0.8134 \pm 0.0057$	$\chi^2_{\text{prior}}$	1.50	$7.2 \pm 3.7$
$\sigma_8$	0.8292	$0.830 \pm 0.012$	$100\theta_{\text{s,eq}}$	0.44954	$0.4496 \pm 0.0030$	$\chi^2_{\text{CMB}}$	1186.1	$1200.1 \pm 5.4$
$S_8$	0.8269	$0.827 \pm 0.013$	$H(0.15)$	74.21	$74.27 \pm 0.70$	$\chi^2_{\text{BAO}}$	7.04	$8.2 \pm 2.1$
$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4529	$0.4531 \pm 0.0072$	$D_{\text{M}}(0.15)$	627.9	$627.5 \pm 6.0$			

Best-fit  $\chi^2_{\text{eff}} = 2236.45$ ;  $\bar{\chi}^2_{\text{eff}} = 2258.39$ ;  $R - 1 = 0.00927$

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.08 MGS: 2.59 DR12BAO: 4.37 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.75 small\_100x143.offlike5\_EE\_Aplanck\_B: 395.69 commander\_dx12.v3.2.29: 23.16 plik\_rdl2\_HM.v22\_TT: 758.52 Hubble - H073p45: 6.52 SN - JLA Pantheon18: 1035.26



19.35 base\_w\_wa\_plikHM\_TT\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02216 \pm 0.00020$	$\sigma_8/h^{0.5}$	$1.006 \pm 0.018$	$H(0.51)$	$89.89 \pm 0.51$
$\Omega_{\mathrm{c}}h^2$	$0.1206 \pm 0.0018$	$r_{\mathrm{drag}}h$	$101.9 \pm 1.1$	$D_{\mathrm{M}}(0.51)$	$1953 \pm 16$
$100\theta_{\mathrm{MC}}$	$1.04083 \pm 0.00045$	$\langle d^2 \rangle^{1/2}$	$2.476 \pm 0.041$	$H(0.61)$	$95.17 \pm 0.44$
$\tau$	$0.0538^{+0.0045}_{-0.0081}$	$z_{\mathrm{re}}$	$7.65^{+0.51}_{-0.82}$	$D_{\mathrm{M}}(0.61)$	$2277 \pm 17$
$w_0$	$-0.989^{+0.080}_{-0.091}$	$10^9 A_{\mathrm{s}}$	$2.099^{+0.024}_{-0.033}$	$H(2.33)$	$234.76 \pm 0.97$
$w_a$	$-0.37^{+0.43}_{-0.32}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.885 \pm 0.013$	$D_{\mathrm{M}}(2.33)$	$5761 \pm 13$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044^{+0.011}_{-0.016}$	$D_{40}$	$1233 \pm 14$	$f\sigma_8(0.15)$	$0.465 \pm 0.011$
$n_{\mathrm{s}}$	$0.9630 \pm 0.0051$	$D_{220}$	$5716 \pm 41$	$\sigma_8(0.15)$	$0.774 \pm 0.016$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$D_{810}$	$2537 \pm 14$	$f\sigma_8(0.38)$	$0.491 \pm 0.013$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{1420}$	$814.7 \pm 5.0$	$\sigma_8(0.38)$	$0.687 \pm 0.014$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{2000}$	$229.8 \pm 1.7$	$f\sigma_8(0.51)$	$0.492 \pm 0.013$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$n_{\mathrm{s},0.002}$	$0.9630 \pm 0.0051$	$\sigma_8(0.51)$	$0.643 \pm 0.013$
$A_{100}^{\mathrm{PS}}$	$262 \pm 28$	$Y_{\mathrm{P}}$	$0.245306^{+0.000095}_{-0.000078}$	$f\sigma_8(0.61)$	$0.489 \pm 0.013$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246632^{+0.000095}_{-0.000078}$	$\sigma_8(0.61)$	$0.612 \pm 0.012$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$10^5 \mathrm{D}/\mathrm{H}$	$2.626 \pm 0.039$	$f\sigma_8(2.33)$	$0.3089^{+0.0062}_{-0.0056}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	Age/Gyr	$13.754 \pm 0.034$	$\sigma_8(2.33)$	$0.3151 \pm 0.0045$
$A^{\mathrm{kSZ}}$	$< 4.71$	$z_*$	$1090.24 \pm 0.36$	$f_{2000}^{143}$	$30.8 \pm 2.9$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$r_*$	$144.44 \pm 0.42$	$f_{2000}^{143 \times 217}$	$33.3 \pm 2.0$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$100\theta_*$	$1.04103 \pm 0.00044$	$f_{2000}^{217}$	$107.9 \pm 1.9$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.874 \pm 0.040$	$\chi_{\mathrm{simall}}^2$	$396.8 \pm 1.7$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.4$	$z_{\mathrm{drag}}$	$1059.49 \pm 0.44$	$\chi_{\mathrm{lowl}}^2$	$23.7 \pm 1.1$
$c_{100}$	$0.99961 \pm 0.00062$	$r_{\mathrm{drag}}$	$147.17 \pm 0.43$	$\chi_{\mathrm{plik}}^2$	$770.3 \pm 5.3$
$c_{217}$	$0.99825 \pm 0.00062$	$k_{\mathrm{D}}$	$0.14062 \pm 0.00050$	$\chi_{\mathrm{H073p45}}^2$	$6.6 \pm 2.4$
$H_0$	$69.26 \pm 0.77$	$100\theta_{\mathrm{D}}$	$0.16102 \pm 0.00026$	$\chi_{\mathrm{JLA}}^2$	$1036.3 \pm 1.7$
$\Omega_{\Lambda}$	$0.7009^{+0.0077}_{-0.0069}$	$z_{\mathrm{eq}}$	$3412 \pm 41$	$\chi_{6\mathrm{DF}}^2$	$0.14 \pm 0.15$
$\Omega_{\mathrm{m}}$	$0.2991 \pm 0.0074$	$k_{\mathrm{eq}}$	$0.01041 \pm 0.00013$	$\chi_{\mathrm{MGS}}^2$	$2.71 \pm 0.75$
$\Omega_{\mathrm{m}}h^2$	$0.1434 \pm 0.0017$	$100\theta_{\mathrm{eq}}$	$0.8111 \pm 0.0076$	$\chi_{\mathrm{DR12BAO}}^2$	$5.5 \pm 1.5$
$\Omega_{\mathrm{m}}h^3$	$0.0993 \pm 0.0017$	$100\theta_{\mathrm{s,eq}}$	$0.4484 \pm 0.0039$	$\chi_{\mathrm{prior}}^2$	$7.2 \pm 3.7$
$\sigma_8$	$0.837 \pm 0.017$	$H(0.15)$	$74.33 \pm 0.74$	$\chi_{\mathrm{BAO}}^2$	$8.3 \pm 2.1$
$S_8$	$0.835 \pm 0.020$	$D_{\mathrm{M}}(0.15)$	$627.1 \pm 6.2$	$\chi_{\mathrm{CMB}}^2$	$1190.8 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.458 \pm 0.011$	$H(0.38)$	$83.66 \pm 0.64$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.619 \pm 0.013$	$D_{\mathrm{M}}(0.38)$	$1503 \pm 13$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2249.33; R - 1 = 0.01064$$



19.36 base\_w\_wa\_plikHM\_TT\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00020$	$\sigma_8/h^{0.5}$	$0.998 \pm 0.012$	$H(0.51)$	$89.93 \pm 0.52$
$\Omega_{\mathrm{c}}h^2$	$0.1199 \pm 0.0013$	$r_{\mathrm{drag}}h$	$102.0 \pm 1.1$	$D_{\mathrm{M}}(0.51)$	$1954 \pm 15$
$100\theta_{\mathrm{MC}}$	$1.04088 \pm 0.00043$	$\langle d^2 \rangle^{1/2}$	$2.459 \pm 0.026$	$H(0.61)$	$95.25 \pm 0.44$
$\tau$	$0.0534^{+0.0044}_{-0.0078}$	$z_{\mathrm{re}}$	$7.59^{+0.48}_{-0.80}$	$D_{\mathrm{M}}(0.61)$	$2278 \pm 17$
$w_0$	$-0.9999 \pm 0.081$	$10^9 A_{\mathrm{s}}$	$2.093^{+0.021}_{-0.030}$	$H(2.33)$	$234.64 \pm 0.98$
$w_a$	$-0.27^{+0.35}_{-0.28}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.881 \pm 0.011$	$D_{\mathrm{M}}(2.33)$	$5759 \pm 13$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.010}_{-0.014}$	$D_{40}$	$1229 \pm 12$	$f\sigma_8(0.15)$	$0.4608 \pm 0.0079$
$n_{\mathrm{s}}$	$0.9643 \pm 0.0043$	$D_{220}$	$5718 \pm 41$	$\sigma_8(0.15)$	$0.768 \pm 0.011$
$y_{\mathrm{cal}}$	$1.0003 \pm 0.0025$	$D_{810}$	$2535 \pm 13$	$f\sigma_8(0.38)$	$0.4857 \pm 0.0092$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{1420}$	$814.7 \pm 5.0$	$\sigma_8(0.38)$	$0.6820 \pm 0.0099$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{2000}$	$229.8 \pm 1.8$	$f\sigma_8(0.51)$	$0.4871 \pm 0.0094$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$n_{\mathrm{s},0.002}$	$0.9643 \pm 0.0043$	$\sigma_8(0.51)$	$0.6384 \pm 0.0092$
$A_{100}^{\mathrm{PS}}$	$263 \pm 28$	$Y_{\mathrm{P}}$	$0.245321^{+0.000088}_{-0.000076}$	$f\sigma_8(0.61)$	$0.4836 \pm 0.0095$
$A_{143}^{\mathrm{PS}}$	$48 \pm 8$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246648^{+0.000088}_{-0.000076}$	$\sigma_8(0.61)$	$0.6073 \pm 0.0086$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$10^5 \mathrm{D}/\mathrm{H}$	$2.619 \pm 0.037$	$f\sigma_8(2.33)$	$0.3068 \pm 0.0045$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$\mathrm{Age}/\mathrm{Gyr}$	$13.757 \pm 0.033$	$\sigma_8(2.33)$	$0.3136 \pm 0.0035$
$A^{\mathrm{kSZ}}$	$< 4.81$	$z_*$	$1090.13 \pm 0.31$	$f_{2000}^{143}$	$30.9 \pm 2.9$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$r_*$	$144.59 \pm 0.32$	$f_{2000}^{143 \times 217}$	$33.3 \pm 2.0$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$100\theta_*$	$1.04108 \pm 0.00043$	$f_{2000}^{217}$	$107.9 \pm 1.9$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.889 \pm 0.031$	$\chi_{\mathrm{lensing}}^2$	$9.3 \pm 1.0$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.3$	$z_{\mathrm{drag}}$	$1059.53 \pm 0.44$	$\chi_{\mathrm{small}}^2$	$396.6 \pm 1.5$
$c_{100}$	$0.99961 \pm 0.00062$	$r_{\mathrm{drag}}$	$147.31 \pm 0.35$	$\chi_{\mathrm{lowl}}^2$	$23.38 \pm 0.89$
$c_{217}$	$0.99825 \pm 0.00062$	$k_{\mathrm{D}}$	$0.14050 \pm 0.00044$	$\chi_{\mathrm{plik}}^2$	$770.5 \pm 5.2$
$H_0$	$69.24 \pm 0.76$	$100\theta_{\mathrm{D}}$	$0.16100 \pm 0.00025$	$\chi_{\mathrm{H073p45}}^2$	$6.6 \pm 2.4$
$\Omega_{\Lambda}$	$0.7022 \pm 0.0070$	$z_{\mathrm{eq}}$	$3396 \pm 30$	$\chi_{\mathrm{JLA}}^2$	$1036.2 \pm 1.7$
$\Omega_{\mathrm{m}}$	$0.2978 \pm 0.0070$	$k_{\mathrm{eq}}$	$0.010364 \pm 0.000092$	$\chi_{6\mathrm{DF}}^2$	$0.14 \pm 0.15$
$\Omega_{\mathrm{m}}h^2$	$0.1427 \pm 0.0013$	$100\theta_{\mathrm{eq}}$	$0.8140 \pm 0.0056$	$\chi_{\mathrm{MGS}}^2$	$2.72 \pm 0.74$
$\Omega_{\mathrm{m}}h^3$	$0.0988 \pm 0.0014$	$100\theta_{\mathrm{s,eq}}$	$0.4499 \pm 0.0029$	$\chi_{\mathrm{DR12BAO}}^2$	$5.3 \pm 1.4$
$\sigma_8$	$0.830 \pm 0.012$	$H(0.15)$	$74.25 \pm 0.70$	$\chi_{\mathrm{prior}}^2$	$7.2 \pm 3.7$
$S_8$	$0.827 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$627.7 \pm 6.0$	$\chi_{\mathrm{CMB}}^2$	$1199.9 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4530 \pm 0.0072$	$H(0.38)$	$83.64 \pm 0.64$	$\chi_{\mathrm{BAO}}^2$	$8.1 \pm 2.1$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6133 \pm 0.0086$	$D_{\mathrm{M}}(0.38)$	$1504 \pm 13$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2258.12; R - 1 = 0.01181$$



19.37 base\_w\_wa\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022393	$0.02237 \pm 0.00015$ (+1.0 $\sigma$ )	$\sigma_8$	0.8335	$0.833 \pm 0.014$ (−0.2 $\sigma$ )	$H(0.38)$	83.78	$83.82 \pm 0.62$ (+0.3 $\sigma$ )
$\Omega_c h^2$	0.12021	$0.1203 \pm 0.0013$ (−0.2 $\sigma$ )	$S_8$	0.8297	$0.831 \pm 0.014$ (−0.2 $\sigma$ )	$D_M(0.38)$	1501.0	$1501 \pm 13$ (−0.2 $\sigma$ )
$100\theta_{MC}$	1.040916	$1.04092 \pm 0.00031$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4545	$0.4549 \pm 0.0078$ (−0.2 $\sigma$ )	$H(0.51)$	90.082	$90.09 \pm 0.48$ (+0.4 $\sigma$ )
$\tau$	0.0538	$0.0540 \pm 0.0077$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6155	$0.6157 \pm 0.0097$ (−0.2 $\sigma$ )	$D_M(0.51)$	1949.8	$1950 \pm 15$ (−0.2 $\sigma$ )
$w_0$	−1.003	$−0.990 \pm 0.081$ (−0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	1.0004	$1.001 \pm 0.014$ (−0.2 $\sigma$ )	$H(0.61)$	95.406	$95.39 \pm 0.39$ (+0.5 $\sigma$ )
$w_a$	−0.264	$−0.32_{-0.29}^{+0.36}$ (+0.1 $\sigma$ )	$r_{drag}h$	102.05	$102.0 \pm 1.1$ (+0.0 $\sigma$ )	$D_M(0.61)$	2273.3	$2273 \pm 16$ (−0.2 $\sigma$ )
$\ln(10^{10}A_s)$	3.0444	$3.044 \pm 0.016$ (+0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4639	$2.466 \pm 0.032$ (−0.2 $\sigma$ )	$H(2.33)$	234.92	$234.90 \pm 0.91$ (+0.1 $\sigma$ )
$n_s$	0.96546	$0.9647 \pm 0.0042$ (+0.4 $\sigma$ )	$z_{re}$	7.61	$7.62 \pm 0.78$ (+0.2 $\sigma$ )	$D_M(2.33)$	5749.8	$5751.4 \pm 9.9$ (−0.8 $\sigma$ )
$y_{cal}$	1.00072	$1.0006 \pm 0.0025$ (+0.1 $\sigma$ )	$10^9 A_s$	2.0998	$2.100_{-0.034}^{+0.030}$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4625	$0.4624 \pm 0.0082$ (−0.2 $\sigma$ )
$A_{217}^{CIB}$	47.2	$47 \pm 7$ (−0.1 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8856	$1.885 \pm 0.011$ (−0.0 $\sigma$ )	$\sigma_8(0.15)$	0.7715	$0.771 \pm 0.013$ (−0.1 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.41	—	$D_{40}$	1230.0	$1231 \pm 12$ (−0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.4877	$0.4876 \pm 0.0096$ (−0.2 $\sigma$ )
$A_{143}^{tSZ}$	7.22	$5.5_{-1.9}^{+2.1}$ (+0.2 $\sigma$ )	$D_{220}$	5735.7	$5733 \pm 39$ (+0.4 $\sigma$ )	$\sigma_8(0.38)$	0.6848	$0.685 \pm 0.011$ (−0.1 $\sigma$ )
$A_{100}^{PS}$	248.8	$258 \pm 28$ (−0.2 $\sigma$ )	$D_{810}$	2541.9	$2540 \pm 13$ (+0.2 $\sigma$ )	$f\sigma_8(0.51)$	0.4891	$0.489 \pm 0.010$ (−0.2 $\sigma$ )
$A_{143}^{PS}$	46.9	$46 \pm 8$ (−0.4 $\sigma$ )	$D_{1420}$	818.36	$817.2 \pm 4.8$ (+0.5 $\sigma$ )	$\sigma_8(0.51)$	0.6409	$0.641 \pm 0.010$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{PS}$	47.0	$43 \pm 9$ (−0.1 $\sigma$ )	$D_{2000}$	231.40	$231.0 \pm 1.6$ (+0.7 $\sigma$ )	$f\sigma_8(0.61)$	0.4857	$0.486 \pm 0.010$ (−0.2 $\sigma$ )
$A_{217}^{PS}$	119.7	$115 \pm 10$ (+0.0 $\sigma$ )	$n_{s,0.002}$	0.96546	$0.9647 \pm 0.0042$ (+0.4 $\sigma$ )	$\sigma_8(0.61)$	0.6098	$0.6097 \pm 0.0099$ (−0.1 $\sigma$ )
$A^{kSZ}$	0.01	$< 4.08$ (−0.2 $\sigma$ )	$Y_P$	0.245405	$0.245392_{-0.000054}^{+0.000060}$ (+1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.3081	$0.3080 \pm 0.0051$ (−0.1 $\sigma$ )
$A_{100}^{dustTT}$	8.81	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P^{BBN}$	0.246731	$0.246719_{-0.000054}^{+0.000060}$ (+1.0 $\sigma$ )	$\sigma_8(2.33)$	0.31476	$0.3145 \pm 0.0041$ (−0.0 $\sigma$ )
$A_{143}^{dustTT}$	10.94	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5812	$2.587 \pm 0.027$ (−1.0 $\sigma$ )	$f_{2000}^{143}$	28.69	$29.3 \pm 2.7$ (−0.5 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.66	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	Age/Gyr	13.7336	$13.735 \pm 0.029$ (−0.6 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.90	$32.1 \pm 1.8$ (−0.6 $\sigma$ )
$A_{217}^{dustTT}$	94.8	$93.8 \pm 7.3$ (+0.1 $\sigma$ )	$z_*$	1089.910	$1089.95 \pm 0.26$ (−0.9 $\sigma$ )	$f_{2000}^{217}$	106.65	$106.9 \pm 1.8$ (−0.5 $\sigma$ )
$A_{100}^{dustTE}$	0.1147	$0.114 \pm 0.038$	$r_*$	144.360	$144.36 \pm 0.28$ (−0.1 $\sigma$ )	$\chi_{simall}^2$	395.99	$397.0 \pm 1.8$ (+0.1 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1344	$0.135 \pm 0.029$	$100\theta_*$	1.041097	$1.04110 \pm 0.00030$ (+0.2 $\sigma$ )	$\chi_{lowl}^2$	23.21	$23.42 \pm 0.89$ (−0.2 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.480	$0.480 \pm 0.085$	$D_M(z_*)/\text{Gpc}$	13.8662	$13.866 \pm 0.026$ (−0.2 $\sigma$ )	$\chi_{plik}^2$	2343.7	$2358.6 \pm 5.7$ (+297.7 $\sigma$ )
$A_{143}^{dustTE}$	0.226	$0.225 \pm 0.054$	$z_{drag}$	1060.009	$1059.95 \pm 0.30$ (+1.1 $\sigma$ )	$\chi_{H073p45}^2$	5.90	$6.3 \pm 2.3$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.665	$0.665 \pm 0.080$	$r_{drag}$	147.011	$147.02 \pm 0.28$ (−0.3 $\sigma$ )	$\chi_{JLA}^2$	1035.39	$1036.2 \pm 1.6$ (−0.1 $\sigma$ )
$A_{217}^{dustTE}$	2.074	$2.09 \pm 0.27$	$k_D$	0.140970	$0.14094 \pm 0.00031$ (+0.6 $\sigma$ )	$\chi_{6DF}^2$	0.097	$0.14 \pm 0.15$ (+0.0 $\sigma$ )
$c_{100}$	0.99971	$0.99968 \pm 0.00061$ (+0.1 $\sigma$ )	$100\theta_D$	0.160719	$0.16076 \pm 0.00018$ (−1.0 $\sigma$ )	$\chi_{MGS}^2$	2.67	$2.73 \pm 0.74$ (+0.0 $\sigma$ )
$c_{217}$	0.99815	$0.99819 \pm 0.00062$ (−0.1 $\sigma$ )	$z_{eq}$	3407.7	$3409 \pm 28$ (−0.1 $\sigma$ )	$\chi_{DR12BAO}^2$	4.50	$5.3 \pm 1.5$ (−0.1 $\sigma$ )
$H_0$	69.42	$69.34 \pm 0.76$ (+0.1 $\sigma$ )	$k_{eq}$	0.010401	$0.010404 \pm 0.000086$ (−0.1 $\sigma$ )	$\chi_{prior}^2$	1.74	$11.5 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_\Lambda$	0.7027	$0.7019 \pm 0.0070$ (+0.1 $\sigma$ )	$100\theta_{eq}$	0.8124	$0.8122 \pm 0.0053$ (+0.2 $\sigma$ )	$\chi_{BAO}^2$	7.27	$8.2 \pm 2.2$ (−0.1 $\sigma$ )
$\Omega_m$	0.2973	$0.2981 \pm 0.0070$ (−0.1 $\sigma$ )	$100\theta_{s,eq}$	0.44889	$0.4488 \pm 0.0027$ (+0.1 $\sigma$ )	$\chi_{CMB}^2$	2762.9	$2779.1 \pm 5.8$ (+290.8 $\sigma$ )
$\Omega_m h^2$	0.14325	$0.1433 \pm 0.0012$ (−0.1 $\sigma$ )	$H(0.15)$	74.41	$74.43 \pm 0.71$ (+0.1 $\sigma$ )			
$\Omega_m h^3$	0.09944	$0.0994 \pm 0.0014$ (−0.0 $\sigma$ )	$D_M(0.15)$	626.1	$626.4 \pm 6.0$ (−0.1 $\sigma$ )			

Best-fit  $\chi_{eff}^2 = 3813.17$ ;  $\Delta\chi_{eff}^2 = 1585.59$ ;  $\bar{\chi}_{eff}^2 = 3841.27$ ;  $\Delta\bar{\chi}_{eff}^2 = 1591.67$ ;  $R - 1 = 0.00757$   
 $\chi_{eff}^2$ : BAO - 6DF: 0.10 ( $\Delta$  0.00) MGS: 2.67 ( $\Delta$  0.00) DR12BAO: 4.50 ( $\Delta$  -0.11) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.99 ( $\Delta$  0.13) commander\_dx12\_v3\_2\_29: 23.21 ( $\Delta$  -0.17) plik\_rd12\_HM\_v22b\_TTTEEE: 2343.68 Hubble - H073p45: 5.90 ( $\Delta$  -0.29) SN - JLA Pantheon18: 1035.39 ( $\Delta$  -0.02)



19.38 base\_w\_wa\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022407	$0.02239 \pm 0.00014$ (+1.0 $\sigma$ )	$\Omega_m h^3$	0.09912	$0.0991 \pm 0.0013$ (+0.1 $\sigma$ )	$H(0.15)$	74.39	$74.39 \pm 0.69$ (+0.2 $\sigma$ )
$\Omega_c h^2$	0.11988	$0.1199 \pm 0.0011$ (-0.1 $\sigma$ )	$\sigma_8$	0.8298	$0.830 \pm 0.011$ (-0.0 $\sigma$ )	$D_M(0.15)$	626.5	$626.6 \pm 5.9$ (-0.1 $\sigma$ )
$100\theta_{MC}$	1.040929	$1.04094 \pm 0.00030$ (+0.2 $\sigma$ )	$S_8$	0.8259	$0.826 \pm 0.011$ (-0.1 $\sigma$ )	$H(0.38)$	83.82	$83.80 \pm 0.61$ (+0.2 $\sigma$ )
$\tau$	0.0531	$0.0532 \pm 0.0073$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4523	$0.4525 \pm 0.0060$ (-0.1 $\sigma$ )	$D_M(0.38)$	1501.2	$1502 \pm 13$ (-0.2 $\sigma$ )
$w_0$	-0.998	$-0.996 \pm 0.079$ (+0.0 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6126	$0.6127 \pm 0.0072$ (-0.1 $\sigma$ )	$H(0.51)$	90.138	$90.11 \pm 0.49$ (+0.3 $\sigma$ )
$w_a$	-0.257	$-0.28^{+0.33}_{-0.27}$ (+0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9964	$0.996 \pm 0.011$ (-0.1 $\sigma$ )	$D_M(0.51)$	1949.8	$1950 \pm 15$ (-0.2 $\sigma$ )
$\ln(10^{10} A_s)$	3.0421	$3.042 \pm 0.014$ (+0.3 $\sigma$ )	$r_{drag} h$	102.00	$102.0 \pm 1.1$ (-0.0 $\sigma$ )	$H(0.61)$	95.470	$95.43 \pm 0.39$ (+0.4 $\sigma$ )
$n_s$	0.96633	$0.9653 \pm 0.0039$ (+0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4549	$2.457 \pm 0.024$ (-0.0 $\sigma$ )	$D_M(0.61)$	2273.0	$2274 \pm 16$ (-0.2 $\sigma$ )
$y_{cal}$	1.00054	$1.0005 \pm 0.0024$ (+0.1 $\sigma$ )	$z_{re}$	7.53	$7.53 \pm 0.74$ (+0.2 $\sigma$ )	$H(2.33)$	234.82	$234.86 \pm 0.93$ (+0.2 $\sigma$ )
$A_{217}^{CIB}$	45.9	$47 \pm 7$ (-0.1 $\sigma$ )	$10^9 A_s$	2.0950	$2.094 \pm 0.030$ (+0.3 $\sigma$ )	$D_M(2.33)$	5748.8	$5750.5 \pm 9.9$ (-0.7 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.65	—	$10^9 A_s e^{-2\tau}$	1.8840	$1.883 \pm 0.010$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4599	$0.4600 \pm 0.0066$ (-0.1 $\sigma$ )
$A_{143}^{tSZ}$	7.05	$5.5 \pm 2.0$ (+0.2 $\sigma$ )	$D_{40}$	1227.6	$1229 \pm 11$ (-0.0 $\sigma$ )	$\sigma_8(0.15)$	0.7681	$0.768 \pm 0.010$ (-0.0 $\sigma$ )
$A_{100}^{PS}$	248.0	$259 \pm 28$ (-0.2 $\sigma$ )	$D_{220}$	5735.3	$5734 \pm 39$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4847	$0.4849 \pm 0.0079$ (-0.1 $\sigma$ )
$A_{143}^{PS}$	50.8	$46 \pm 8$ (-0.4 $\sigma$ )	$D_{810}$	2541.5	$2539 \pm 13$ (+0.2 $\sigma$ )	$\sigma_8(0.38)$	0.6819	$0.6817 \pm 0.0093$ (-0.0 $\sigma$ )
$A_{143 \times 217}^{PS}$	53.1	$42 \pm 9$ (-0.1 $\sigma$ )	$D_{1420}$	818.55	$817.1 \pm 4.7$ (+0.5 $\sigma$ )	$f\sigma_8(0.51)$	0.4861	$0.4863 \pm 0.0082$ (-0.1 $\sigma$ )
$A_{217}^{PS}$	122.0	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{2000}$	231.44	$230.9 \pm 1.6$ (+0.7 $\sigma$ )	$\sigma_8(0.51)$	0.6383	$0.6381 \pm 0.0086$ (-0.0 $\sigma$ )
$A^{kSZ}$	0.01	$< 4.20$ (-0.2 $\sigma$ )	$n_{s,0.002}$	0.96633	$0.9653 \pm 0.0039$ (+0.3 $\sigma$ )	$f\sigma_8(0.61)$	0.4827	$0.4829 \pm 0.0083$ (-0.1 $\sigma$ )
$A_{100}^{dustTT}$	8.88	$8.9 \pm 1.8$ (-0.0 $\sigma$ )	$Y_P$	0.245410	$0.245400^{+0.000058}_{-0.000052}$ (+1.0 $\sigma$ )	$\sigma_8(0.61)$	0.6073	$0.6072 \pm 0.0081$ (+0.0 $\sigma$ )
$A_{143}^{dustTT}$	11.01	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.246737	$0.246727^{+0.000058}_{-0.000052}$ (+1.0 $\sigma$ )	$f\sigma_8(2.33)$	0.30696	$0.3068 \pm 0.0043$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	20.12	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$10^5 D/H$	2.5785	$2.583 \pm 0.026$ (-1.0 $\sigma$ )	$\sigma_8(2.33)$	0.31379	$0.3136 \pm 0.0035$ (+0.1 $\sigma$ )
$A_{217}^{dustTT}$	95.5	$93.7 \pm 7.3$ (+0.1 $\sigma$ )	Age/Gyr	13.7343	$13.737 \pm 0.029$ (-0.6 $\sigma$ )	$\chi^2_{lensing}$	8.773	$9.20 \pm 0.83$ (-0.2 $\sigma$ )
$A_{100}^{dustTE}$	0.1148	$0.114 \pm 0.038$	$z_*$	1089.862	$1089.89 \pm 0.24$ (-0.8 $\sigma$ )	$\chi^2_{simall}$	395.84	$396.8 \pm 1.6$ (+0.0 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1348	$0.135 \pm 0.029$	$r_*$	144.434	$144.43 \pm 0.24$ (-0.4 $\sigma$ )	$\chi^2_{lowl}$	23.04	$23.27 \pm 0.79$ (-0.2 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.482	$0.480 \pm 0.085$	$100\theta_*$	1.041113	$1.04113 \pm 0.00030$ (+0.1 $\sigma$ )	$\chi^2_{plik}$	2344.2	$2358.7 \pm 5.6$ (+307.2 $\sigma$ )
$A_{143}^{dustTE}$	0.226	$0.224 \pm 0.054$	$D_M(z_*)/Gpc$	13.8730	$13.873 \pm 0.023$ (-0.4 $\sigma$ )	$\chi^2_{H073p45}$	6.10	$6.4 \pm 2.3$ (-0.1 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.666	$0.663 \pm 0.080$	$z_{drag}$	1060.009	$1059.97 \pm 0.30$ (+1.0 $\sigma$ )	$\chi^2_{JLA}$	1035.24	$1036.1 \pm 1.6$ (-0.1 $\sigma$ )
$A_{217}^{dustTE}$	2.090	$2.08 \pm 0.27$	$r_{drag}$	147.083	$147.09 \pm 0.25$ (-0.6 $\sigma$ )	$\chi^2_{6DF}$	0.095	$0.14 \pm 0.15$ (+0.0 $\sigma$ )
$c_{100}$	0.99974	$0.99969 \pm 0.00061$ (+0.1 $\sigma$ )	$k_D$	0.140905	$0.14088 \pm 0.00029$ (+0.8 $\sigma$ )	$\chi^2_{MGS}$	2.67	$2.73 \pm 0.74$ (+0.0 $\sigma$ )
$c_{217}$	0.99818	$0.99819 \pm 0.00062$ (-0.1 $\sigma$ )	$100\theta_D$	0.160713	$0.16074 \pm 0.00018$ (-1.0 $\sigma$ )	$\chi^2_{DR12BAO}$	4.44	$5.2 \pm 1.5$ (-0.1 $\sigma$ )
$H_0$	69.35	$69.34 \pm 0.76$ (+0.1 $\sigma$ )	$z_{eq}$	3400.2	$3401 \pm 24$ (+0.1 $\sigma$ )	$\chi^2_{prior}$	1.55	$11.5 \pm 4.4$ (+1.1 $\sigma$ )
$\Omega_\Lambda$	0.7028	$0.7025 \pm 0.0069$ (+0.1 $\sigma$ )	$k_{eq}$	0.010378	$0.010381 \pm 0.000074$ (+0.1 $\sigma$ )	$\chi^2_{CMB}$	2771.9	$2788.0 \pm 5.8$ (+293.5 $\sigma$ )
$\Omega_m$	0.2972	$0.2975 \pm 0.0069$ (-0.1 $\sigma$ )	$100\theta_{eq}$	0.81377	$0.8136 \pm 0.0046$ (+0.0 $\sigma$ )	$\chi^2_{BAO}$	7.21	$8.1 \pm 2.2$ (-0.0 $\sigma$ )
$\Omega_m h^2$	0.14293	$0.1430 \pm 0.0010$ (+0.1 $\sigma$ )	$100\theta_{s,eq}$	0.44960	$0.4495 \pm 0.0023$ (-0.0 $\sigma$ )			

Best-fit  $\chi^2_{eff} = 3821.98$ ;  $\Delta\chi^2_{eff} = 1585.53$ ;  $\bar{\chi}^2_{eff} = 3850.02$ ;  $\Delta\bar{\chi}^2_{eff} = 1591.63$ ;  $R - 1 = 0.01297$   
 $\chi^2_{eff}$ : BAO - 6DF: 0.10 ( $\Delta$  0.01) MGS: 2.67 ( $\Delta$  0.08) DR12BAO: 4.44 ( $\Delta$  0.07) CMB - smicadx12\_Dec5\_ft1\_mv2\_ndclpp\_p.teb\_consext8: 8.77 ( $\Delta$  0.03) simall\_100x143\_offlike5\_EE\_Aplanck.L 395.84 ( $\Delta$  0.14) commander\_dx12\_v3.2.29: 23.04 ( $\Delta$  -0.12) plik\_rd12\_HM\_v22b.TTTEEE: 2344.24 Hubble - H073p45: 6.10 ( $\Delta$  -0.42) SN - JLA Pantheon18: 1035.24 ( $\Delta$  -0.02)



19.39 base\_w\_wa\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02237 \pm 0.00015 \quad (+1.0\sigma)$	$\sigma_8$	$0.834 \pm 0.013 \quad (-0.2\sigma)$	$H(0.38)$	$83.82 \pm 0.62 \quad (+0.3\sigma)$
$\Omega_c h^2$	$0.1202 \pm 0.0013 \quad (-0.2\sigma)$	$S_8$	$0.831 \pm 0.014 \quad (-0.2\sigma)$	$D_M(0.38)$	$1501 \pm 13 \quad (-0.2\sigma)$
$100\theta_{MC}$	$1.04092 \pm 0.00031 \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4552 \pm 0.0078 \quad (-0.2\sigma)$	$H(0.51)$	$90.09 \pm 0.48 \quad (+0.4\sigma)$
$\tau$	$0.0551^{+0.0050}_{-0.0081} \quad (+0.2\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6162 \pm 0.0096 \quad (-0.2\sigma)$	$D_M(0.51)$	$1950 \pm 15 \quad (-0.2\sigma)$
$w_0$	$-0.991 \pm 0.080 \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$1.002 \pm 0.014 \quad (-0.2\sigma)$	$H(0.61)$	$95.40 \pm 0.39 \quad (+0.5\sigma)$
$w_a$	$-0.31^{+0.36}_{-0.29} \quad (+0.1\sigma)$	$r_{\text{drag}} h$	$102.0 \pm 1.1 \quad (+0.0\sigma)$	$D_M(0.61)$	$2273 \pm 16 \quad (-0.2\sigma)$
$\ln(10^{10} A_s)$	$3.047^{+0.011}_{-0.016} \quad (+0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.468 \pm 0.031 \quad (-0.2\sigma)$	$H(2.33)$	$234.90 \pm 0.91 \quad (+0.1\sigma)$
$n_s$	$0.9648 \pm 0.0041 \quad (+0.4\sigma)$	$z_{\text{re}}$	$7.74^{+0.56}_{-0.80} \quad (+0.1\sigma)$	$D_M(2.33)$	$5751.2 \pm 9.9 \quad (-0.8\sigma)$
$y_{\text{cal}}$	$1.0006 \pm 0.0025 \quad (+0.1\sigma)$	$10^9 A_s$	$2.104^{+0.024}_{-0.034} \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4627 \pm 0.0081 \quad (-0.2\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.1\sigma)$	$10^9 A_s e^{-2\tau}$	$1.885 \pm 0.011 \quad (+0.0\sigma)$	$\sigma_8(0.15)$	$0.772 \pm 0.013 \quad (-0.2\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{40}$	$1231 \pm 12 \quad (-0.1\sigma)$	$f\sigma_8(0.38)$	$0.4879 \pm 0.0095 \quad (-0.2\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$D_{220}$	$5733 \pm 39 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.685 \pm 0.011 \quad (-0.1\sigma)$
$A_{100}^{\text{PS}}$	$258 \pm 28 \quad (-0.2\sigma)$	$D_{810}$	$2540 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.489 \pm 0.010 \quad (-0.2\sigma)$
$A_{143}^{\text{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{1420}$	$817.2 \pm 4.8 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.641 \pm 0.010 \quad (-0.1\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9 \quad (-0.1\sigma)$	$D_{2000}$	$231.0 \pm 1.6 \quad (+0.7\sigma)$	$f\sigma_8(0.61)$	$0.486 \pm 0.010 \quad (-0.2\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$n_{s,0.002}$	$0.9648 \pm 0.0041 \quad (+0.4\sigma)$	$\sigma_8(0.61)$	$0.6102 \pm 0.0098 \quad (-0.1\sigma)$
$A^{\text{kSZ}}$	$< 4.07 \quad (-0.2\sigma)$	$Y_P$	$0.245394^{+0.000060}_{-0.000053} \quad (+1.0\sigma)$	$f\sigma_8(2.33)$	$0.3083^{+0.0053}_{-0.0048} \quad (-0.1\sigma)$
$A_{100}^{\text{dust}TT}$	$8.9 \pm 1.8 \quad (+0.0\sigma)$	$Y_P^{\text{BBN}}$	$0.246720^{+0.000060}_{-0.000053} \quad (+1.0\sigma)$	$\sigma_8(2.33)$	$0.3148 \pm 0.0040 \quad (-0.1\sigma)$
$A_{143}^{\text{dust}TT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$10^5 \text{D}/\text{H}$	$2.586 \pm 0.027 \quad (-1.0\sigma)$	$f_{2000}^{143}$	$29.3 \pm 2.7 \quad (-0.5\sigma)$
$A_{143 \times 217}^{\text{dust}TT}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$\text{Age}/\text{Gyr}$	$13.735 \pm 0.029 \quad (-0.6\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 1.8 \quad (-0.6\sigma)$
$A_{217}^{\text{dust}TT}$	$93.7 \pm 7.4 \quad (+0.0\sigma)$	$z_*$	$1089.94 \pm 0.26 \quad (-0.8\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.8 \quad (-0.5\sigma)$
$A_{100}^{\text{dust}TE}$	$0.114 \pm 0.038$	$r_*$	$144.37 \pm 0.28 \quad (-0.2\sigma)$	$\chi_{\text{small}}^2$	$397.0 \pm 1.9 \quad (+0.1\sigma)$
$A_{100 \times 143}^{\text{dust}TE}$	$0.135 \pm 0.029$	$100\theta_*$	$1.04111 \pm 0.00030 \quad (+0.2\sigma)$	$\chi_{\text{lowl}}^2$	$23.43 \pm 0.89 \quad (-0.2\sigma)$
$A_{100 \times 217}^{\text{dust}TE}$	$0.481 \pm 0.085$	$D_M(z_*)/\text{Gpc}$	$13.867 \pm 0.026 \quad (-0.2\sigma)$	$\chi_{\text{plik}}^2$	$2358.5 \pm 5.7 \quad (+298.3\sigma)$
$A_{143}^{\text{dust}TE}$	$0.225 \pm 0.054$	$z_{\text{drag}}$	$1059.95 \pm 0.30 \quad (+1.0\sigma)$	$\chi_{\text{H073p45}}^2$	$6.3 \pm 2.3 \quad (-0.1\sigma)$
$A_{143 \times 217}^{\text{dust}TE}$	$0.665 \pm 0.080$	$r_{\text{drag}}$	$147.03 \pm 0.28 \quad (-0.3\sigma)$	$\chi_{\text{JLA}}^2$	$1036.2 \pm 1.6 \quad (-0.1\sigma)$
$A_{217}^{\text{dust}TE}$	$2.09 \pm 0.27$	$k_D$	$0.14093 \pm 0.00031 \quad (+0.6\sigma)$	$\chi_{6\text{DF}}^2$	$0.14 \pm 0.15 \quad (+0.0\sigma)$
$c_{100}$	$0.99968 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_D$	$0.16075 \pm 0.00017 \quad (-1.0\sigma)$	$\chi_{\text{MGS}}^2$	$2.73 \pm 0.74 \quad (+0.0\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$z_{\text{eq}}$	$3408 \pm 28 \quad (-0.1\sigma)$	$\chi_{\text{DR12BAO}}^2$	$5.3 \pm 1.5 \quad (-0.1\sigma)$
$H_0$	$69.35 \pm 0.76 \quad (+0.1\sigma)$	$k_{\text{eq}}$	$0.010401 \pm 0.000086 \quad (-0.1\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_\Lambda$	$0.7020 \pm 0.0069 \quad (+0.1\sigma)$	$100\theta_{\text{eq}}$	$0.8123 \pm 0.0053 \quad (+0.2\sigma)$	$\chi_{\text{BAO}}^2$	$8.2 \pm 2.2 \quad (-0.1\sigma)$
$\Omega_m$	$0.2980 \pm 0.0069 \quad (-0.1\sigma)$	$100\theta_{s,\text{eq}}$	$0.4489 \pm 0.0027 \quad (+0.1\sigma)$	$\chi_{\text{CMB}}^2$	$2778.9 \pm 5.7 \quad (+293.8\sigma)$
$\Omega_m h^2$	$0.1433 \pm 0.0012 \quad (-0.1\sigma)$	$H(0.15)$	$74.42 \pm 0.70 \quad (+0.1\sigma)$		
$\Omega_m h^3$	$0.0993 \pm 0.0014 \quad (+0.0\sigma)$	$D_M(0.15)$	$626.4 \pm 6.0 \quad (-0.1\sigma)$		

$\bar{\chi}_{\text{eff}}^2 = 3841.05$ ;  $\Delta \bar{\chi}_{\text{eff}}^2 = 1591.72$ ;  $R - 1 = 0.00883$



19.40 base\_w\_wa\_plikHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02239 \pm 0.00014 \quad (+1.0\sigma)$	$\sigma_8$	$0.830 \pm 0.011 \quad (-0.0\sigma)$	$H(0.38)$	$83.80 \pm 0.61 \quad (+0.3\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1199 \pm 0.0011 \quad (-0.0\sigma)$	$S_8$	$0.826 \pm 0.011 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1502 \pm 13 \quad (-0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04095 \pm 0.00030 \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4525 \pm 0.0060 \quad (-0.1\sigma)$	$H(0.51)$	$90.10 \pm 0.49 \quad (+0.3\sigma)$
$\tau$	$0.0544^{+0.0049}_{-0.0075} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6129 \pm 0.0072 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1950 \pm 15 \quad (-0.2\sigma)$
$w_0$	$-0.998 \pm 0.078 \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.997 \pm 0.010 \quad (-0.1\sigma)$	$H(0.61)$	$95.43 \pm 0.40 \quad (+0.4\sigma)$
$w_a$	$-0.26^{+0.33}_{-0.27} \quad (+0.0\sigma)$	$r_{\mathrm{drag}}h$	$102.0 \pm 1.1 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2274 \pm 16 \quad (-0.2\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044^{+0.010}_{-0.014} \quad (+0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.458 \pm 0.023 \quad (-0.0\sigma)$	$H(2.33)$	$234.86 \pm 0.93 \quad (+0.2\sigma)$
$n_{\mathrm{s}}$	$0.9655 \pm 0.0039 \quad (+0.3\sigma)$	$z_{\mathrm{re}}$	$7.65^{+0.54}_{-0.74} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5750 \pm 10 \quad (-0.7\sigma)$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0024 \quad (+0.1\sigma)$	$10^9 A_{\mathrm{s}}$	$2.099^{+0.021}_{-0.030} \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4602 \pm 0.0066 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.882 \pm 0.010 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.768 \pm 0.010 \quad (-0.0\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{40}$	$1229 \pm 11 \quad (-0.0\sigma)$	$f\sigma_8(0.38)$	$0.4850 \pm 0.0079 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5 \pm 1.9 \quad (+0.2\sigma)$	$D_{220}$	$5734 \pm 38 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6821 \pm 0.0092 \quad (+0.0\sigma)$
$A_{100}^{\mathrm{PS}}$	$258 \pm 28 \quad (-0.2\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4865 \pm 0.0082 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{1420}$	$817.1 \pm 4.7 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.6385 \pm 0.0086 \quad (+0.0\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{2000}$	$231.0 \pm 1.5 \quad (+0.7\sigma)$	$f\sigma_8(0.61)$	$0.4830 \pm 0.0083 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$n_{\mathrm{s},0.002}$	$0.9655 \pm 0.0039 \quad (+0.3\sigma)$	$\sigma_8(0.61)$	$0.6075 \pm 0.0081 \quad (+0.0\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.18 \quad (-0.2\sigma)$	$Y_{\mathrm{P}}$	$0.245402^{+0.000058}_{-0.000052} \quad (+1.0\sigma)$	$f\sigma_8(2.33)$	$0.3069 \pm 0.0043 \quad (+0.0\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246729^{+0.000058}_{-0.000052} \quad (+1.0\sigma)$	$\sigma_8(2.33)$	$0.3138 \pm 0.0034 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$10^5 \mathrm{D}/\mathrm{H}$	$2.582 \pm 0.026 \quad (-1.0\sigma)$	$f_{2000}^{143}$	$29.4 \pm 2.7 \quad (-0.5\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.737 \pm 0.029 \quad (-0.6\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 1.8 \quad (-0.6\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.6 \pm 7.3 \quad (+0.0\sigma)$	$z_*$	$1089.88 \pm 0.24 \quad (-0.8\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.8 \quad (-0.5\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.114 \pm 0.038$	$r_*$	$144.45 \pm 0.24 \quad (-0.4\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.20 \pm 0.84 \quad (-0.1\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.134 \pm 0.029$	$100\theta_*$	$1.04113 \pm 0.00030 \quad (+0.1\sigma)$	$\chi_{\mathrm{small}}^2$	$396.7 \pm 1.6 \quad (+0.1\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.480 \pm 0.084$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.874 \pm 0.023 \quad (-0.5\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.26 \pm 0.79 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.224 \pm 0.054$	$z_{\mathrm{drag}}$	$1059.98 \pm 0.30 \quad (+1.0\sigma)$	$\chi_{\mathrm{plik}}^2$	$2358.5 \pm 5.6 \quad (+306.2\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.663 \pm 0.080$	$r_{\mathrm{drag}}$	$147.10 \pm 0.24 \quad (-0.6\sigma)$	$\chi_{\mathrm{H073p45}}^2$	$6.3 \pm 2.3 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.08 \pm 0.27$	$k_{\mathrm{D}}$	$0.14087 \pm 0.00029 \quad (+0.9\sigma)$	$\chi_{\mathrm{JLA}}^2$	$1036.2 \pm 1.6 \quad (-0.0\sigma)$
$c_{100}$	$0.99969 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16074 \pm 0.00018 \quad (-1.0\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.14 \pm 0.15 \quad (+0.0\sigma)$
$c_{217}$	$0.99819 \pm 0.00063 \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3400 \pm 24 \quad (+0.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$2.73 \pm 0.74 \quad (+0.0\sigma)$
$H_0$	$69.34 \pm 0.76 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010376 \pm 0.000072 \quad (+0.1\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$5.2 \pm 1.5 \quad (-0.0\sigma)$
$\Omega_{\Lambda}$	$0.7027 \pm 0.0069 \quad (+0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8139 \pm 0.0045 \quad (-0.0\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.4 \quad (+1.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.2973 \pm 0.0069 \quad (-0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4497 \pm 0.0023 \quad (-0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2787.7 \pm 5.7 \quad (+295.6\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14291 \pm 0.00099 \quad (+0.1\sigma)$	$H(0.15)$	$74.38 \pm 0.69 \quad (+0.2\sigma)$	$\chi_{\mathrm{BAO}}^2$	$8.1 \pm 2.2 \quad (-0.0\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.0991 \pm 0.0013 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$626.7 \pm 5.9 \quad (-0.2\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 3849.79; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.67; R - 1 = 0.01314$$



19.41 base\_w\_wa\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Riess18\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022142	$0.02217 \pm 0.00020$	$\sigma_8 \Omega_m^{0.25}$	0.6189	$0.617 \pm 0.013$	$D_M(0.38)$	1508.8	$1503 \pm 13$
$\Omega_c h^2$	0.12049	$0.1205 \pm 0.0018$	$\sigma_8/h^{0.5}$	1.0059	$1.003 \pm 0.019$	$H(0.51)$	89.623	$89.89 \pm 0.50$
$100\theta_{MC}$	1.040925	$1.04089 \pm 0.00045$	$r_{drag}h$	102.03	$101.9 \pm 1.1$	$D_M(0.51)$	1960.1	$1953 \pm 15$
$\tau$	0.0560	$0.0522 \pm 0.0080$	$\langle d^2 \rangle^{1/2}$	2.4756	$2.467 \pm 0.042$	$H(0.61)$	95.002	$95.18 \pm 0.43$
$w_0$	-1.045	$-0.993 \pm 0.083$	$z_{re}$	7.89	$7.47 \pm 0.82$	$D_M(0.61)$	2285.1	$2277 \pm 16$
$w_a$	-0.128	$-0.34^{+0.41}_{-0.32}$	$10^9 A_s$	2.1072	$2.089 \pm 0.034$	$H(2.33)$	235.19	$234.79 \pm 0.95$
$\ln(10^{10} A_s)$	3.0480	$3.039 \pm 0.016$	$10^9 A_s e^{-2\tau}$	1.8841	$1.882 \pm 0.013$	$D_M(2.33)$	5763.7	$5761 \pm 13$
$n_s$	0.9629	$0.9638 \pm 0.0052$	$D_{40}$	1233.5	$1229 \pm 14$	$f\sigma_8(0.15)$	0.4675	$0.464 \pm 0.011$
$y_{cal}$	1.00109	$1.0004 \pm 0.0025$	$D_{220}$	5716.2	$5706 \pm 41$	$\sigma_8(0.15)$	0.7748	$0.772 \pm 0.016$
$A_{100}^{PS}$	249.2	$242 \pm 25$	$D_{810}$	2536.4	$2534 \pm 14$	$f\sigma_8(0.38)$	0.4927	$0.489 \pm 0.013$
$A_{143}^{PS}$	40.3	$41 \pm 8$	$D_{1420}$	814.5	$814.3 \pm 5.1$	$\sigma_8(0.38)$	0.6872	$0.685 \pm 0.014$
$A_{217}^{PS}$	96.7	$101 \pm 10$	$D_{2000}$	229.74	$229.7 \pm 1.8$	$f\sigma_8(0.51)$	0.4934	$0.491 \pm 0.013$
$A_{217}^{CIB}$	42.7	$41 \pm 7$	$n_{s,0.002}$	0.9629	$0.9638 \pm 0.0052$	$\sigma_8(0.51)$	0.6429	$0.641 \pm 0.013$
$A_{143}^{tSZ}$	2.99	$3.8^{+1.8}_{-2.5}$	$Y_P$	0.245302	$0.245308^{+0.000094}_{-0.000080}$	$f\sigma_8(0.61)$	0.4893	$0.487 \pm 0.014$
$r_{143 \times 217}^{PS}$	0.577	$0.65 \pm 0.13$	$Y_P^{BBN}$	0.246628	$0.246634^{+0.000095}_{-0.000080}$	$\sigma_8(0.61)$	0.6115	$0.610 \pm 0.012$
$r_{143 \times 217}^{CIB}$	0.661	$0.58^{+0.41}_{-0.13}$	$10^5 D/H$	2.6290	$2.625 \pm 0.039$	$f\sigma_8(2.33)$	0.3086	$0.3080 \pm 0.0061$
$\xi^{tSZ \times CIB}$	0.34	—	Age/Gyr	13.7665	$13.754 \pm 0.034$	$\sigma_8(2.33)$	0.31556	$0.3143 \pm 0.0046$
$A^{kSZ}$	5.8	—	$z_*$	1090.252	$1090.23 \pm 0.36$	$f_{2000}^{143}$	31.40	$30.6 \pm 3.0$
$A_{100}^{dust}$	1.004	$1.01 \pm 0.20$	$r_*$	144.477	$144.46 \pm 0.42$	$f_{2000}^{217}$	107.86	$107.4 \pm 2.0$
$A_{143}^{dust}$	0.980	$0.98 \pm 0.18$	$100\theta_*$	1.041128	$1.04109 \pm 0.00044$	$f_{2000}^{143 \times 217}$	33.10	$32.8 \pm 2.1$
$A_{217}^{dust}$	0.958	$0.97 \pm 0.10$	$D_M(z_*)/\text{Gpc}$	13.8770	$13.875 \pm 0.039$	$\chi_{simall}^2$	396.52	$396.9 \pm 1.7$
$A_{143 \times 217}^{dust}$	0.983	$1.03 \pm 0.16$	$z_{drag}$	1059.437	$1059.50 \pm 0.44$	$\chi_{lowl}^2$	23.60	$23.4 \pm 1.1$
$c_{100}$	0.99737	$0.9975 \pm 0.0011$	$r_{drag}$	147.215	$147.18 \pm 0.43$	$\chi_{CamSpec}^2$	7049.0	$7062.4 \pm 5.3$
$c_{217}$	1.00146	$1.0012 \pm 0.0016$	$k_D$	0.140560	$0.14061 \pm 0.00049$	$\chi_{H073p45}^2$	6.22	$6.6 \pm 2.3$
$H_0$	69.31	$69.26 \pm 0.77$	$100\theta_D$	0.161061	$0.16103 \pm 0.00026$	$\chi_{JLA}^2$	1035.91	$1036.3 \pm 1.7$
$\Omega_\Lambda$	0.7017	$0.7011 \pm 0.0073$	$z_{eq}$	3408.6	$3410 \pm 41$	$\chi_{6DF}^2$	0.065	$0.14 \pm 0.15$
$\Omega_m$	0.2983	$0.2989 \pm 0.0073$	$k_{eq}$	0.010403	$0.01041 \pm 0.00013$	$\chi_{MGS}^2$	2.43	$2.71 \pm 0.74$
$\Omega_m h^2$	0.14328	$0.1433 \pm 0.0017$	$100\theta_{eq}$	0.8115	$0.8115 \pm 0.0076$	$\chi_{DR12BAO}^2$	4.45	$5.4 \pm 1.4$
$\Omega_m h^3$	0.09931	$0.0993 \pm 0.0017$	$100\theta_{s,eq}$	0.44863	$0.4486 \pm 0.0039$	$\chi_{prior}^2$	2.65	$7.6 \pm 3.4$
$\sigma_8$	0.8374	$0.834 \pm 0.017$	$H(0.15)$	74.00	$74.31 \pm 0.73$	$\chi_{BAO}^2$	6.94	$8.3 \pm 2.1$
$S_8$	0.8350	$0.833 \pm 0.020$	$D_M(0.15)$	628.6	$627.2 \pm 6.1$	$\chi_{CMB}^2$	7469.2	$7482.7 \pm 5.4$
$\sigma_8 \Omega_m^{0.5}$	0.4574	$0.456 \pm 0.011$	$H(0.38)$	83.28	$83.64 \pm 0.62$			

Best-fit  $\chi_{\text{eff}}^2 = 8520.89$ ;  $\bar{\chi}_{\text{eff}}^2 = 8541.50$ ;  $R - 1 = 0.00869$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.07 MGS: 2.43 DR12BAO: 4.45 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.52 commander\_dx12\_v3.2.29: 23.60 CamSpec like\_10.7HM: 7049.04  
Hubble - H073p45: 6.22 SN - JLA Pantheon18: 1035.91



19.42 base\_w\_wa\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02219 \pm 0.00020$	$\sigma_8 \Omega_m^{0.25}$	$0.6136 \pm 0.0086$	$D_M(0.38)$	$1504 \pm 13$
$\Omega_c h^2$	$0.1201 \pm 0.0013$	$\sigma_8/h^{0.5}$	$0.998 \pm 0.012$	$H(0.51)$	$89.93 \pm 0.51$
$100\theta_{MC}$	$1.04091 \pm 0.00044$	$r_{drag}h$	$102.0 \pm 1.1$	$D_M(0.51)$	$1953 \pm 15$
$\tau$	$0.0520 \pm 0.0078$	$\langle d^2 \rangle^{1/2}$	$2.457 \pm 0.027$	$H(0.61)$	$95.24 \pm 0.43$
$w_0$	$-0.999 \pm 0.080$	$z_{re}$	$7.44 \pm 0.80$	$D_M(0.61)$	$2277 \pm 16$
$w_a$	$-0.29^{+0.35}_{-0.29}$	$10^9 A_s$	$2.086 \pm 0.031$	$H(2.33)$	$234.69 \pm 0.97$
$\ln(10^{10} A_s)$	$3.038 \pm 0.015$	$10^9 A_s e^{-2\tau}$	$1.880 \pm 0.011$	$D_M(2.33)$	$5759 \pm 13$
$n_s$	$0.9645 \pm 0.0045$	$D_{40}$	$1227 \pm 12$	$f\sigma_8(0.15)$	$0.4612 \pm 0.0078$
$y_{cal}$	$1.0004 \pm 0.0025$	$D_{220}$	$5708 \pm 40$	$\sigma_8(0.15)$	$0.769 \pm 0.011$
$A_{100}^{PS}$	$242 \pm 25$	$D_{810}$	$2533 \pm 13$	$f\sigma_8(0.38)$	$0.4862 \pm 0.0091$
$A_{143}^{PS}$	$41 \pm 8$	$D_{1420}$	$814.3 \pm 5.1$	$\sigma_8(0.38)$	$0.682 \pm 0.010$
$A_{217}^{PS}$	$101^{+10}_{-10}$	$D_{2000}$	$229.7 \pm 1.8$	$f\sigma_8(0.51)$	$0.4876 \pm 0.0094$
$A_{217}^{CIB}$	$41 \pm 7$	$n_{s,0.002}$	$0.9645 \pm 0.0045$	$\sigma_8(0.51)$	$0.6384 \pm 0.0092$
$A_{143}^{tSZ}$	$3.8^{+1.8}_{-2.6}$	$Y_P$	$0.245318^{+0.000091}_{-0.000076}$	$f\sigma_8(0.61)$	$0.4841 \pm 0.0095$
$r_{143 \times 217}^{PS}$	$0.65 \pm 0.13$	$Y_P^{BBN}$	$0.246644^{+0.000091}_{-0.000076}$	$\sigma_8(0.61)$	$0.6074 \pm 0.0087$
$r_{143 \times 217}^{CIB}$	$> 0.458$	$10^5 D/H$	$2.620 \pm 0.038$	$f\sigma_8(2.33)$	$0.3068 \pm 0.0045$
$\xi^{tSZ \times CIB}$	—	Age/Gyr	$13.755 \pm 0.033$	$\sigma_8(2.33)$	$0.3134 \pm 0.0035$
$A^{kSZ}$	—	$z_*$	$1090.16 \pm 0.32$	$f_{2000}^{143}$	$30.6 \pm 3.0$
$A_{100}^{dust}$	$1.01 \pm 0.19$	$r_*$	$144.55 \pm 0.33$	$f_{2000}^{217}$	$107.4 \pm 2.0$
$A_{143}^{dust}$	$0.98 \pm 0.18$	$100\theta_*$	$1.04112 \pm 0.00043$	$f_{2000}^{143 \times 217}$	$32.8 \pm 2.1$
$A_{217}^{dust}$	$0.97 \pm 0.10$	$D_M(z_*)/\text{Gpc}$	$13.884 \pm 0.031$	$\chi_{lensing}^2$	$9.36 \pm 0.94$
$A_{143 \times 217}^{dust}$	$1.03 \pm 0.16$	$z_{drag}$	$1059.52 \pm 0.44$	$\chi_{small}^2$	$396.8 \pm 1.5$
$c_{100}$	$0.9975 \pm 0.0011$	$r_{drag}$	$147.27 \pm 0.35$	$\chi_{lowl}^2$	$23.21 \pm 0.88$
$c_{217}$	$1.0012 \pm 0.0016$	$k_D$	$0.14054 \pm 0.00044$	$\chi_{CamSpec}^2$	$7062.3 \pm 5.1$
$H_0$	$69.26 \pm 0.76$	$100\theta_D$	$0.16101 \pm 0.00025$	$\chi_{H073p45}^2$	$6.6 \pm 2.4$
$\Omega_\Lambda$	$0.7019 \pm 0.0071$	$z_{eq}$	$3400 \pm 31$	$\chi_{JLA}^2$	$1036.2 \pm 1.7$
$\Omega_m$	$0.2981 \pm 0.0071$	$k_{eq}$	$0.010377 \pm 0.000094$	$\chi_{6DF}^2$	$0.14 \pm 0.15$
$\Omega_m h^2$	$0.1429 \pm 0.0013$	$100\theta_{eq}$	$0.8132 \pm 0.0057$	$\chi_{MGS}^2$	$2.72 \pm 0.74$
$\Omega_m h^3$	$0.0990 \pm 0.0014$	$100\theta_{s,eq}$	$0.4495 \pm 0.0030$	$\chi_{DR12BAO}^2$	$5.3 \pm 1.4$
$\sigma_8$	$0.830 \pm 0.012$	$H(0.15)$	$74.27 \pm 0.70$	$\chi_{prior}^2$	$7.6 \pm 3.4$
$S_8$	$0.828 \pm 0.013$	$D_M(0.15)$	$627.5 \pm 6.0$	$\chi_{CMB}^2$	$7491.6 \pm 5.4$
$\sigma_8 \Omega_m^{0.5}$	$0.4533 \pm 0.0072$	$H(0.38)$	$83.65 \pm 0.62$	$\chi_{BAO}^2$	$8.2 \pm 2.1$

$$\bar{\chi}_{\text{eff}}^2 = 8550.26; R - 1 = 0.01140$$



19.43 base\_w\_wa\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02217 \pm 0.00021$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.617 \pm 0.013$	$D_{\mathrm{M}}(0.38)$	$1503 \pm 13$
$\Omega_{\mathrm{c}}h^2$	$0.1205 \pm 0.0018$	$\sigma_8/h^{0.5}$	$1.004 \pm 0.019$	$H(0.51)$	$89.89 \pm 0.50$
$100\theta_{\mathrm{MC}}$	$1.04089 \pm 0.00045$	$r_{\mathrm{drag}}h$	$102.0 \pm 1.1$	$D_{\mathrm{M}}(0.51)$	$1953 \pm 15$
$\tau$	$0.0539^{+0.0045}_{-0.0083}$	$\langle d^2 \rangle^{1/2}$	$2.469 \pm 0.041$	$H(0.61)$	$95.18 \pm 0.43$
$w_0$	$-0.994 \pm 0.083$	$z_{\mathrm{re}}$	$7.66^{+0.51}_{-0.82}$	$D_{\mathrm{M}}(0.61)$	$2277 \pm 16$
$w_a$	$-0.33^{+0.41}_{-0.31}$	$10^9 A_{\mathrm{s}}$	$2.096^{+0.023}_{-0.034}$	$H(2.33)$	$234.79 \pm 0.96$
$\ln(10^{10}A_{\mathrm{s}})$	$3.042^{+0.011}_{-0.016}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.882 \pm 0.013$	$D_{\mathrm{M}}(2.33)$	$5760 \pm 13$
$n_{\mathrm{s}}$	$0.9640 \pm 0.0051$	$D_{40}$	$1229 \pm 14$	$f\sigma_8(0.15)$	$0.464 \pm 0.011$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$D_{220}$	$5706 \pm 41$	$\sigma_8(0.15)$	$0.773 \pm 0.016$
$A_{100}^{\mathrm{PS}}$	$241 \pm 25$	$D_{810}$	$2534 \pm 14$	$f\sigma_8(0.38)$	$0.490 \pm 0.013$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8$	$D_{1420}$	$814.3 \pm 5.2$	$\sigma_8(0.38)$	$0.686 \pm 0.014$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{2000}$	$229.8 \pm 1.8$	$f\sigma_8(0.51)$	$0.491 \pm 0.013$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$n_{\mathrm{s},0.002}$	$0.9640 \pm 0.0051$	$\sigma_8(0.51)$	$0.642 \pm 0.013$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.5}$	$Y_{\mathrm{P}}$	$0.245310^{+0.000095}_{-0.000079}$	$f\sigma_8(0.61)$	$0.488 \pm 0.014$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246636^{+0.000095}_{-0.000079}$	$\sigma_8(0.61)$	$0.611 \pm 0.012$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.57^{+0.41}_{-0.14}$	$10^5 \mathrm{D}/\mathrm{H}$	$2.624 \pm 0.039$	$f\sigma_8(2.33)$	$0.3083^{+0.0063}_{-0.0057}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	Age/Gyr	$13.754 \pm 0.034$	$\sigma_8(2.33)$	$0.3147 \pm 0.0045$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.21 \pm 0.36$	$f_{2000}^{143}$	$30.5 \pm 3.0$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$r_*$	$144.47 \pm 0.42$	$f_{2000}^{217}$	$107.3 \pm 2.0$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.18$	$100\theta_*$	$1.04110 \pm 0.00044$	$f_{2000}^{143 \times 217}$	$32.7 \pm 2.1$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.876 \pm 0.040$	$\chi_{\mathrm{small}}^2$	$396.8 \pm 1.6$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$z_{\mathrm{drag}}$	$1059.51 \pm 0.44$	$\chi_{\mathrm{lowl}}^2$	$23.4 \pm 1.1$
$c_{100}$	$0.9975 \pm 0.0010$	$r_{\mathrm{drag}}$	$147.19 \pm 0.43$	$\chi_{\mathrm{CamSpec}}^2$	$7062.3 \pm 5.3$
$c_{217}$	$1.0012 \pm 0.0016$	$k_{\mathrm{D}}$	$0.14060 \pm 0.00049$	$\chi_{\mathrm{H073p45}}^2$	$6.6 \pm 2.3$
$H_0$	$69.26 \pm 0.76$	$100\theta_{\mathrm{D}}$	$0.16102 \pm 0.00026$	$\chi_{\mathrm{JLA}}^2$	$1036.3 \pm 1.7$
$\Omega_{\Lambda}$	$0.7012 \pm 0.0073$	$z_{\mathrm{eq}}$	$3408 \pm 41$	$\chi_{6\mathrm{DF}}^2$	$0.14 \pm 0.15$
$\Omega_{\mathrm{m}}$	$0.2988 \pm 0.0073$	$k_{\mathrm{eq}}$	$0.01040 \pm 0.00013$	$\chi_{\mathrm{MGS}}^2$	$2.70 \pm 0.74$
$\Omega_{\mathrm{m}}h^2$	$0.1433 \pm 0.0017$	$100\theta_{\mathrm{eq}}$	$0.8117 \pm 0.0076$	$\chi_{\mathrm{DR12BAO}}^2$	$5.4 \pm 1.4$
$\Omega_{\mathrm{m}}h^3$	$0.0992 \pm 0.0017$	$100\theta_{\mathrm{s,eq}}$	$0.4487 \pm 0.0039$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.4$
$\sigma_8$	$0.835 \pm 0.017$	$H(0.15)$	$74.30 \pm 0.73$	$\chi_{\mathrm{BAO}}^2$	$8.2 \pm 2.1$
$S_8$	$0.833 \pm 0.020$	$D_{\mathrm{M}}(0.15)$	$627.3 \pm 6.1$	$\chi_{\mathrm{CMB}}^2$	$7482.5 \pm 5.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.456 \pm 0.011$	$H(0.38)$	$83.64 \pm 0.62$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 8541.22; R - 1 = 0.00801$$



19.44 base\_w\_wa\_CamSpecHM\_TT\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02220 \pm 0.00020$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6137 \pm 0.0086$	$D_{\mathrm{M}}(0.38)$	$1504 \pm 13$
$\Omega_{\mathrm{c}}h^2$	$0.1200 \pm 0.0013$	$\sigma_8/h^{0.5}$	$0.998 \pm 0.012$	$H(0.51)$	$89.93 \pm 0.51$
$100\theta_{\mathrm{MC}}$	$1.04093 \pm 0.00044$	$r_{\mathrm{drag}}h$	$102.0 \pm 1.1$	$D_{\mathrm{M}}(0.51)$	$1954 \pm 15$
$\tau$	$0.0537^{+0.0044}_{-0.0081}$	$\langle d^2 \rangle^{1/2}$	$2.458 \pm 0.027$	$H(0.61)$	$95.25 \pm 0.43$
$w_0$	$-1.001 \pm 0.079$	$z_{\mathrm{re}}$	$7.63^{+0.50}_{-0.80}$	$D_{\mathrm{M}}(0.61)$	$2278 \pm 16$
$w_a$	$-0.27^{+0.34}_{-0.28}$	$10^9 A_{\mathrm{s}}$	$2.092^{+0.021}_{-0.031}$	$H(2.33)$	$234.69 \pm 0.97$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.010}_{-0.015}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879 \pm 0.011$	$D_{\mathrm{M}}(2.33)$	$5759 \pm 13$
$n_{\mathrm{s}}$	$0.9649 \pm 0.0044$	$D_{40}$	$1227 \pm 12$	$f\sigma_8(0.15)$	$0.4612 \pm 0.0078$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$D_{220}$	$5708 \pm 41$	$\sigma_8(0.15)$	$0.769 \pm 0.011$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25$	$D_{810}$	$2533 \pm 13$	$f\sigma_8(0.38)$	$0.4861 \pm 0.0091$
$A_{143}^{\mathrm{PS}}$	$40 \pm 8$	$D_{1420}$	$814.3 \pm 5.1$	$\sigma_8(0.38)$	$0.682 \pm 0.010$
$A_{217}^{\mathrm{PS}}$	$101^{+10}_{-10}$	$D_{2000}$	$229.8 \pm 1.8$	$f\sigma_8(0.51)$	$0.4875 \pm 0.0094$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$n_{\mathrm{s},0.002}$	$0.9649 \pm 0.0044$	$\sigma_8(0.51)$	$0.6387 \pm 0.0092$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$Y_{\mathrm{P}}$	$0.245321^{+0.000091}_{-0.000075}$	$f\sigma_8(0.61)$	$0.4840 \pm 0.0095$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246648^{+0.000092}_{-0.000075}$	$\sigma_8(0.61)$	$0.6077 \pm 0.0087$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.456$	$10^5 \mathrm{D}/\mathrm{H}$	$2.619 \pm 0.038$	$f\sigma_8(2.33)$	$0.3069 \pm 0.0045$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$\mathrm{Age}/\mathrm{Gyr}$	$13.756 \pm 0.033$	$\sigma_8(2.33)$	$0.3137 \pm 0.0035$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.14 \pm 0.31$	$f_{2000}^{143}$	$30.5 \pm 3.0$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$r_*$	$144.57 \pm 0.32$	$f_{2000}^{217}$	$107.3 \pm 2.0$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.18$	$100\theta_*$	$1.04113 \pm 0.00043$	$f_{2000}^{143 \times 217}$	$32.8 \pm 2.1$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.886 \pm 0.031$	$\chi_{\mathrm{lensing}}^2$	$9.36 \pm 0.95$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$z_{\mathrm{drag}}$	$1059.53 \pm 0.44$	$\chi_{\mathrm{simall}}^2$	$396.7 \pm 1.5$
$c_{100}$	$0.9975 \pm 0.0011$	$r_{\mathrm{drag}}$	$147.30 \pm 0.34$	$\chi_{\mathrm{lowl}}^2$	$23.19 \pm 0.88$
$c_{217}$	$1.0012 \pm 0.0016$	$k_{\mathrm{D}}$	$0.14052 \pm 0.00044$	$\chi_{\mathrm{CamSpec}}^2$	$7062.2 \pm 5.1$
$H_0$	$69.25 \pm 0.76$	$100\theta_{\mathrm{D}}$	$0.16101 \pm 0.00026$	$\chi_{\mathrm{H073p45}}^2$	$6.6 \pm 2.3$
$\Omega_{\Lambda}$	$0.7021 \pm 0.0070$	$z_{\mathrm{eq}}$	$3397 \pm 30$	$\chi_{\mathrm{JLA}}^2$	$1036.2 \pm 1.7$
$\Omega_{\mathrm{m}}$	$0.2979 \pm 0.0070$	$k_{\mathrm{eq}}$	$0.010368 \pm 0.000091$	$\chi_{6\mathrm{DF}}^2$	$0.14 \pm 0.15$
$\Omega_{\mathrm{m}}h^2$	$0.1428 \pm 0.0013$	$100\theta_{\mathrm{eq}}$	$0.8138 \pm 0.0056$	$\chi_{\mathrm{MGS}}^2$	$2.71 \pm 0.74$
$\Omega_{\mathrm{m}}h^3$	$0.0989 \pm 0.0014$	$100\theta_{\mathrm{s,eq}}$	$0.4498 \pm 0.0029$	$\chi_{\mathrm{DR12BAO}}^2$	$5.3 \pm 1.4$
$\sigma_8$	$0.831 \pm 0.012$	$H(0.15)$	$74.25 \pm 0.70$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.4$
$S_8$	$0.828 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$627.6 \pm 6.0$	$\chi_{\mathrm{CMB}}^2$	$7491.4 \pm 5.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4533 \pm 0.0072$	$H(0.38)$	$83.64 \pm 0.63$	$\chi_{\mathrm{BAO}}^2$	$8.1 \pm 2.1$

$$\bar{\chi}_{\mathrm{eff}}^2 = 8549.95; R - 1 = 0.01139$$



19.45 base\_w\_wa\_CamSpecHM\_TTTEEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022321	$0.02231 \pm 0.00015$ (+0.7 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4501	$0.4507 \pm 0.0081$ (−0.5 $\sigma$ )	$D_M(0.38)$	1503.4	$1504 \pm 13$ (+0.0 $\sigma$ )
$\Omega_c h^2$	0.11954	$0.1197 \pm 0.0013$ (−0.5 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6100	$0.6103 \pm 0.0099$ (−0.5 $\sigma$ )	$H(0.51)$	90.018	$90.01 \pm 0.49$ (+0.2 $\sigma$ )
$100\theta_{MC}$	1.040909	$1.04089 \pm 0.00031$ (+0.0 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9928	$0.993 \pm 0.014$ (−0.5 $\sigma$ )	$D_M(0.51)$	1952.7	$1953 \pm 15$ (−0.0 $\sigma$ )
$\tau$	0.0528	$0.0524 \pm 0.0078$ (+0.0 $\sigma$ )	$r_{drag}h$	102.09	$102.0 \pm 1.1$ (+0.0 $\sigma$ )	$H(0.61)$	95.368	$95.34 \pm 0.40$ (+0.4 $\sigma$ )
$w_0$	−1.010	$−1.002 \pm 0.079$ (−0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4457	$2.448 \pm 0.033$ (−0.5 $\sigma$ )	$D_M(0.61)$	2276.3	$2277 \pm 16$ (−0.0 $\sigma$ )
$w_a$	−0.199	$−0.24_{-0.28}^{+0.35}$ (+0.3 $\sigma$ )	$z_{re}$	7.51	$7.46_{-0.73}^{+0.82}$ (−0.0 $\sigma$ )	$H(2.33)$	234.70	$234.76 \pm 0.93$ (−0.0 $\sigma$ )
$\ln(10^{10} A_s)$	3.0385	$3.038 \pm 0.016$ (−0.1 $\sigma$ )	$10^9 A_s$	2.0874	$2.087 \pm 0.034$ (−0.1 $\sigma$ )	$D_M(2.33)$	5753.5	$5755 \pm 10$ (−0.5 $\sigma$ )
$n_s$	0.96659	$0.9658 \pm 0.0043$ (+0.4 $\sigma$ )	$10^9 A_s e^{-2\tau}$	1.8782	$1.879 \pm 0.011$ (−0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4582	$0.4584 \pm 0.0084$ (−0.5 $\sigma$ )
$y_{cal}$	1.00031	$1.0004 \pm 0.0025$ (−0.0 $\sigma$ )	$D_{40}$	1223.5	$1225 \pm 13$ (−0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7652	$0.765 \pm 0.013$ (−0.4 $\sigma$ )
$A_{100}^{PS}$	232.2	$239 \pm 25$ (−0.1 $\sigma$ )	$D_{220}$	5717.0	$5719 \pm 39$ (+0.3 $\sigma$ )	$f\sigma_8(0.38)$	0.4829	$0.4831 \pm 0.0097$ (−0.5 $\sigma$ )
$A_{143}^{PS}$	42.0	$39 \pm 8$ (−0.2 $\sigma$ )	$D_{810}$	2535.0	$2535 \pm 13$ (+0.0 $\sigma$ )	$\sigma_8(0.38)$	0.6793	$0.679 \pm 0.011$ (−0.4 $\sigma$ )
$A_{217}^{PS}$	103.0	$103 \pm 10$ (+0.1 $\sigma$ )	$D_{1420}$	816.02	$815.6 \pm 4.8$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.4842	$0.484 \pm 0.010$ (−0.5 $\sigma$ )
$A_{217}^{CIB}$	43.7	$40 \pm 7$ (−0.2 $\sigma$ )	$D_{2000}$	230.48	$230.3 \pm 1.6$ (+0.3 $\sigma$ )	$\sigma_8(0.51)$	0.6359	$0.636 \pm 0.011$ (−0.4 $\sigma$ )
$A_{143}^{tSZ}$	6.62	$3.9_{-2.5}^{+1.9}$ (+0.1 $\sigma$ )	$n_{s,0.002}$	0.96659	$0.9658 \pm 0.0043$ (+0.4 $\sigma$ )	$f\sigma_8(0.61)$	0.4806	$0.481 \pm 0.010$ (−0.5 $\sigma$ )
$r_{143 \times 217}^{PS}$	0.642	$0.66 \pm 0.13$ (+0.1 $\sigma$ )	$Y_P$	0.245376	$0.245371 \pm 0.000061$ (+0.7 $\sigma$ )	$\sigma_8(0.61)$	0.6051	$0.6049 \pm 0.0099$ (−0.4 $\sigma$ )
$r_{143 \times 217}^{CIB}$	0.791	$0.56_{-0.19}^{+0.39}$ (−0.1 $\sigma$ )	$Y_P^{BBN}$	0.246702	$0.246697 \pm 0.000062$ (+0.7 $\sigma$ )	$f\sigma_8(2.33)$	0.3057	$0.3055 \pm 0.0052$ (−0.4 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.28	—	$10^5 D/H$	2.5948	$2.597 \pm 0.029$ (−0.7 $\sigma$ )	$\sigma_8(2.33)$	0.31289	$0.3126 \pm 0.0041$ (−0.4 $\sigma$ )
$A^{kSZ}$	0.03	$4.7_{-4.0}^{+2.2}$ (−0.1 $\sigma$ )	Age/Gyr	13.7478	$13.749 \pm 0.030$ (−0.1 $\sigma$ )	$f_{2000}^{143}$	29.69	$29.6 \pm 2.8$ (−0.3 $\sigma$ )
$A_{100}^{dust}$	1.006	$1.01 \pm 0.20$ (+0.0 $\sigma$ )	$z_*$	1089.942	$1089.96 \pm 0.26$ (−0.7 $\sigma$ )	$f_{2000}^{217}$	106.53	$106.8 \pm 1.9$ (−0.3 $\sigma$ )
$A_{143}^{dust}$	0.972	$0.96 \pm 0.18$ (−0.1 $\sigma$ )	$r_*$	144.587	$144.56 \pm 0.30$ (+0.3 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.92	$32.0 \pm 2.0$ (−0.4 $\sigma$ )
$A_{217}^{dust}$	0.972	$0.98 \pm 0.10$ (+0.1 $\sigma$ )	$100\theta_*$	1.041092	$1.04108 \pm 0.00030$ (−0.0 $\sigma$ )	$\chi_{simall}^2$	395.84	$396.8 \pm 1.6$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{dust}$	1.011	$1.03 \pm 0.16$ (−0.0 $\sigma$ )	$D_M(z_*)/\text{Gpc}$	13.8880	$13.886 \pm 0.028$ (+0.3 $\sigma$ )	$\chi_{lowl}^2$	22.83	$23.03 \pm 0.88$ (−0.3 $\sigma$ )
$c_{100}$	0.99770	$0.9975 \pm 0.0011$ (+0.1 $\sigma$ )	$z_{drag}$	1059.780	$1059.78 \pm 0.32$ (+0.6 $\sigma$ )	$\chi_{CamSpec}^2$	11499.2	$11514.1 \pm 5.6$ (+841.7 $\sigma$ )
$c_{217}$	1.00127	$1.0011 \pm 0.0016$ (−0.0 $\sigma$ )	$r_{drag}$	147.268	$147.24 \pm 0.30$ (+0.1 $\sigma$ )	$\chi_{H073p45}^2$	6.18	$6.6 \pm 2.3$ (−0.0 $\sigma$ )
$c_{TE}$	0.99616	$0.9963 \pm 0.0049$	$k_D$	0.140644	$0.14066 \pm 0.00034$ (+0.1 $\sigma$ )	$\chi_{JLA}^2$	1035.34	$1036.1 \pm 1.6$ (−0.1 $\sigma$ )
$c_{EE}$	0.99159	$0.9917 \pm 0.0049$	$100\theta_D$	0.160838	$0.16085 \pm 0.00019$ (−0.7 $\sigma$ )	$\chi_{6DF}^2$	0.098	$0.14 \pm 0.15$ (−0.0 $\sigma$ )
$H_0$	69.32	$69.26 \pm 0.76$ (+0.0 $\sigma$ )	$z_{eq}$	3390.1	$3393 \pm 29$ (−0.4 $\sigma$ )	$\chi_{MGS}^2$	2.67	$2.70 \pm 0.73$ (−0.0 $\sigma$ )
$\Omega_\Lambda$	0.7035	$0.7026 \pm 0.0069$ (+0.2 $\sigma$ )	$k_{eq}$	0.010347	$0.010355 \pm 0.000089$ (−0.4 $\sigma$ )	$\chi_{DR12BAO}^2$	4.36	$5.2 \pm 1.4$ (−0.2 $\sigma$ )
$\Omega_m$	0.2965	$0.2974 \pm 0.0069$ (−0.2 $\sigma$ )	$100\theta_{eq}$	0.8153	$0.8148 \pm 0.0055$ (+0.4 $\sigma$ )	$\chi_{prior}^2$	2.14	$7.8 \pm 3.4$ (+0.0 $\sigma$ )
$\Omega_m h^2$	0.14251	$0.1426 \pm 0.0012$ (−0.4 $\sigma$ )	$100\theta_{s,eq}$	0.45047	$0.4502 \pm 0.0028$ (+0.4 $\sigma$ )	$\chi_{BAO}^2$	7.13	$8.0 \pm 2.1$ (−0.1 $\sigma$ )
$\Omega_m h^3$	0.09879	$0.0988 \pm 0.0014$ (−0.3 $\sigma$ )	$H(0.15)$	74.27	$74.27 \pm 0.70$ (−0.1 $\sigma$ )	$\chi_{CMB}^2$	11917.9	$11933.9 \pm 5.7$ (+829.1 $\sigma$ )
$\sigma_8$	0.8266	$0.827 \pm 0.014$ (−0.5 $\sigma$ )	$D_M(0.15)$	627.2	$627.5 \pm 6.0$ (+0.0 $\sigma$ )			
$S_8$	0.8218	$0.823 \pm 0.015$ (−0.5 $\sigma$ )	$H(0.38)$	83.69	$83.69 \pm 0.62$ (+0.1 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 12968.70$ ;  $\Delta\chi_{\text{eff}}^2 = 4447.81$ ;  $\bar{\chi}_{\text{eff}}^2 = 12992.43$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 4450.94$ ;  $R - 1 = 0.01047$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.10 ( $\Delta$  0.03) MGS: 2.67 ( $\Delta$  0.24) DR12BAO: 4.36 ( $\Delta$  -0.09) CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.84 ( $\Delta$  -0.69) commander\_dx12\_v3\_2\_29: 22.83 ( $\Delta$  -0.77) CamSpec like\_10.7HM\_1400\_unified: 11499.24 Hubble - H073p45: 6.18 ( $\Delta$  -0.04) SN - JLA Pantheon18: 1035.34 ( $\Delta$  -0.57)



19.46 base\_w\_wa\_CamSpecHM\_TTTEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_b h^2$	$0.02232 \pm 0.00015 \quad (+0.6\sigma)$	$\sigma_8 \Omega_m^{0.5}$	$0.4505 \pm 0.0061 \quad (-0.4\sigma)$	$D_M(0.38)$	$1503 \pm 13 \quad (-0.1\sigma)$
$\Omega_c h^2$	$0.1196 \pm 0.0011 \quad (-0.3\sigma)$	$\sigma_8 \Omega_m^{0.25}$	$0.6103 \pm 0.0074 \quad (-0.4\sigma)$	$H(0.51)$	$90.03 \pm 0.49 \quad (+0.2\sigma)$
$100\theta_{MC}$	$1.04089 \pm 0.00030 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.993 \pm 0.011 \quad (-0.4\sigma)$	$D_M(0.51)$	$1952 \pm 15 \quad (-0.1\sigma)$
$\tau$	$0.0526 \pm 0.0074 \quad (+0.1\sigma)$	$r_{drag} h$	$102.0 \pm 1.1 \quad (+0.0\sigma)$	$H(0.61)$	$95.37 \pm 0.40 \quad (+0.3\sigma)$
$w_0$	$-1.001 \pm 0.077 \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.448 \pm 0.024 \quad (-0.3\sigma)$	$D_M(0.61)$	$2276 \pm 16 \quad (-0.1\sigma)$
$w_a$	$-0.24^{+0.32}_{-0.26} \quad (+0.1\sigma)$	$z_{re}$	$7.48 \pm 0.75 \quad (+0.0\sigma)$	$H(2.33)$	$234.70 \pm 0.93 \quad (+0.0\sigma)$
$\ln(10^{10} A_s)$	$3.038 \pm 0.014 \quad (+0.0\sigma)$	$10^9 A_s$	$2.087 \pm 0.030 \quad (+0.0\sigma)$	$D_M(2.33)$	$5754 \pm 10 \quad (-0.4\sigma)$
$n_s$	$0.9657 \pm 0.0041 \quad (+0.3\sigma)$	$10^9 A_s e^{-2\tau}$	$1.879 \pm 0.010 \quad (-0.1\sigma)$	$f\sigma_8(0.15)$	$0.4582 \pm 0.0068 \quad (-0.4\sigma)$
$y_{cal}$	$1.0004 \pm 0.0025 \quad (+0.0\sigma)$	$D_{40}$	$1226 \pm 12 \quad (-0.1\sigma)$	$\sigma_8(0.15)$	$0.765 \pm 0.010 \quad (-0.3\sigma)$
$A_{100}^{PS}$	$240 \pm 25 \quad (-0.1\sigma)$	$D_{220}$	$5721 \pm 38 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4829 \pm 0.0080 \quad (-0.4\sigma)$
$A_{143}^{PS}$	$39 \pm 8 \quad (-0.1\sigma)$	$D_{810}$	$2535 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.6793 \pm 0.0093 \quad (-0.3\sigma)$
$A_{217}^{PS}$	$103 \pm 10 \quad (+0.1\sigma)$	$D_{1420}$	$815.6 \pm 4.8 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4843 \pm 0.0083 \quad (-0.4\sigma)$
$A_{217}^{CIB}$	$40 \pm 7 \quad (-0.2\sigma)$	$D_{2000}$	$230.3 \pm 1.6 \quad (+0.3\sigma)$	$\sigma_8(0.51)$	$0.6359 \pm 0.0086 \quad (-0.3\sigma)$
$A_{143}^{tSZ}$	$3.9^{+1.9}_{-2.4} \quad (+0.0\sigma)$	$n_{s,0.002}$	$0.9657 \pm 0.0041 \quad (+0.3\sigma)$	$f\sigma_8(0.61)$	$0.4808 \pm 0.0084 \quad (-0.3\sigma)$
$r_{143 \times 217}^{PS}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$Y_P$	$0.245372 \pm 0.000060 \quad (+0.6\sigma)$	$\sigma_8(0.61)$	$0.6051 \pm 0.0082 \quad (-0.3\sigma)$
$r_{143 \times 217}^{CIB}$	$0.56^{+0.39}_{-0.18} \quad (-0.1\sigma)$	$Y_P^{BBN}$	$0.246699 \pm 0.000060 \quad (+0.6\sigma)$	$f\sigma_8(2.33)$	$0.3057 \pm 0.0043 \quad (-0.2\sigma)$
$\xi^{tSZ \times CIB}$	—	$10^5 D/H$	$2.596 \pm 0.028 \quad (-0.6\sigma)$	$\sigma_8(2.33)$	$0.3127 \pm 0.0034 \quad (-0.2\sigma)$
$A^{kSZ}$	$4.7^{+2.2}_{-3.9} \quad (-0.1\sigma)$	$Age/Gyr$	$13.748 \pm 0.030 \quad (-0.2\sigma)$	$f_{2000}^{143}$	$29.6 \pm 2.8 \quad (-0.3\sigma)$
$A_{100}^{dust}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$z_*$	$1089.96 \pm 0.24 \quad (-0.6\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.9 \quad (-0.3\sigma)$
$A_{143}^{dust}$	$0.96 \pm 0.17 \quad (-0.1\sigma)$	$r_*$	$144.57 \pm 0.26 \quad (+0.1\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 2.0 \quad (-0.4\sigma)$
$A_{217}^{dust}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$100\theta_*$	$1.04108 \pm 0.00030 \quad (-0.1\sigma)$	$\chi^2_{lensing}$	$9.13 \pm 0.71 \quad (-0.3\sigma)$
$A_{143 \times 217}^{dust}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$D_M(z_*)/Gpc$	$13.886 \pm 0.024 \quad (+0.1\sigma)$	$\chi^2_{small}$	$396.7 \pm 1.4 \quad (-0.1\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.1\sigma)$	$z_{drag}$	$1059.79 \pm 0.32 \quad (+0.6\sigma)$	$\chi^2_{lowl}$	$23.05 \pm 0.81 \quad (-0.2\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.1\sigma)$	$r_{drag}$	$147.25 \pm 0.26 \quad (-0.1\sigma)$	$\chi^2_{CamSpec}$	$11513.7 \pm 5.5 \quad (+865.5\sigma)$
$c_{TE}$	$0.9962 \pm 0.0049$	$k_D$	$0.14066 \pm 0.00032 \quad (+0.3\sigma)$	$\chi^2_{H073p45}$	$6.5 \pm 2.3 \quad (-0.0\sigma)$
$c_{EE}$	$0.9918 \pm 0.0049$	$100\theta_D$	$0.16084 \pm 0.00019 \quad (-0.7\sigma)$	$\chi^2_{JLA}$	$1036.1 \pm 1.6 \quad (-0.1\sigma)$
$H_0$	$69.29 \pm 0.76 \quad (+0.0\sigma)$	$z_{eq}$	$3392 \pm 25 \quad (-0.3\sigma)$	$\chi^2_{6DF}$	$0.14 \pm 0.15 \quad (+0.0\sigma)$
$\Omega_\Lambda$	$0.7029 \pm 0.0068 \quad (+0.1\sigma)$	$k_{eq}$	$0.010353 \pm 0.000076 \quad (-0.3\sigma)$	$\chi^2_{MGS}$	$2.73 \pm 0.73 \quad (+0.0\sigma)$
$\Omega_m$	$0.2971 \pm 0.0068 \quad (-0.1\sigma)$	$100\theta_{eq}$	$0.8150 \pm 0.0046 \quad (+0.3\sigma)$	$\chi^2_{DR12BAO}$	$5.2 \pm 1.4 \quad (-0.1\sigma)$
$\Omega_m h^2$	$0.1426 \pm 0.0010 \quad (-0.3\sigma)$	$100\theta_{s,eq}$	$0.4503 \pm 0.0024 \quad (+0.3\sigma)$	$\chi^2_{prior}$	$7.8 \pm 3.4 \quad (+0.0\sigma)$
$\Omega_m h^3$	$0.0988 \pm 0.0013 \quad (-0.1\sigma)$	$H(0.15)$	$74.30 \pm 0.69 \quad (+0.0\sigma)$	$\chi^2_{CMB}$	$11942.6 \pm 5.7 \quad (+825.7\sigma)$
$\sigma_8$	$0.827 \pm 0.011 \quad (-0.3\sigma)$	$D_M(0.15)$	$627.3 \pm 5.9 \quad (-0.0\sigma)$	$\chi^2_{BAO}$	$8.1 \pm 2.1 \quad (-0.0\sigma)$
$S_8$	$0.823 \pm 0.011 \quad (-0.4\sigma)$	$H(0.38)$	$83.72 \pm 0.61 \quad (+0.1\sigma)$		

$$\bar{\chi}^2_{eff} = 13001.06; \Delta\bar{\chi}^2_{eff} = 4450.80; R - 1 = 0.01205$$



19.47 base\_w\_wa\_CamSpecHM\_TTTEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02232 \pm 0.00015 \quad (+0.7\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4512 \pm 0.0080 \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.38)$	$1504 \pm 13 \quad (+0.0\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1196 \pm 0.0013 \quad (-0.5\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6110 \pm 0.0097 \quad (-0.5\sigma)$	$H(0.51)$	$90.01 \pm 0.49 \quad (+0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04090 \pm 0.00031 \quad (+0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.994 \pm 0.014 \quad (-0.5\sigma)$	$D_{\mathrm{M}}(0.51)$	$1953 \pm 15 \quad (-0.0\sigma)$
$\tau$	$0.0541^{+0.0045}_{-0.0081} \quad (+0.0\sigma)$	$r_{\mathrm{drag}}h$	$102.0 \pm 1.1 \quad (+0.0\sigma)$	$H(0.61)$	$95.35 \pm 0.40 \quad (+0.4\sigma)$
$w_0$	$-1.003 \pm 0.079 \quad (-0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.451 \pm 0.032 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.61)$	$2277 \pm 16 \quad (-0.0\sigma)$
$w_a$	$-0.23^{+0.34}_{-0.27} \quad (+0.3\sigma)$	$z_{\mathrm{re}}$	$7.64^{+0.52}_{-0.79} \quad (-0.0\sigma)$	$H(2.33)$	$234.76 \pm 0.93 \quad (-0.0\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.011}_{-0.016} \quad (-0.1\sigma)$	$10^9A_{\mathrm{s}}$	$2.093^{+0.023}_{-0.033} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5755 \pm 10 \quad (-0.5\sigma)$
$n_{\mathrm{s}}$	$0.9660 \pm 0.0043 \quad (+0.4\sigma)$	$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.879 \pm 0.011 \quad (-0.2\sigma)$	$f\sigma_8(0.15)$	$0.4589 \pm 0.0082 \quad (-0.5\sigma)$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025 \quad (-0.0\sigma)$	$D_{40}$	$1226 \pm 13 \quad (-0.2\sigma)$	$\sigma_8(0.15)$	$0.766 \pm 0.013 \quad (-0.4\sigma)$
$A_{100}^{\mathrm{PS}}$	$239 \pm 25 \quad (-0.1\sigma)$	$D_{220}$	$5719 \pm 39 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4836 \pm 0.0096 \quad (-0.5\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.2\sigma)$	$D_{810}$	$2535 \pm 13 \quad (+0.0\sigma)$	$\sigma_8(0.38)$	$0.680 \pm 0.011 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{PS}}$	$103 \pm 10 \quad (+0.1\sigma)$	$D_{1420}$	$815.6 \pm 4.8 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.485 \pm 0.010 \quad (-0.5\sigma)$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7 \quad (-0.2\sigma)$	$D_{2000}$	$230.4 \pm 1.6 \quad (+0.3\sigma)$	$\sigma_8(0.51)$	$0.637 \pm 0.010 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5} \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9660 \pm 0.0043 \quad (+0.4\sigma)$	$f\sigma_8(0.61)$	$0.481 \pm 0.010 \quad (-0.5\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245373 \pm 0.000061 \quad (+0.7\sigma)$	$\sigma_8(0.61)$	$0.6057 \pm 0.0098 \quad (-0.4\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.39}_{-0.19} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246699 \pm 0.000061 \quad (+0.7\sigma)$	$f\sigma_8(2.33)$	$0.3059 \pm 0.0051 \quad (-0.4\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5\mathrm{D}/\mathrm{H}$	$2.596 \pm 0.029 \quad (-0.7\sigma)$	$\sigma_8(2.33)$	$0.3131 \pm 0.0039 \quad (-0.4\sigma)$
$A^{\mathrm{kSZ}}$	$4.6^{+2.0}_{-4.1} \quad (-0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.749 \pm 0.030 \quad (-0.1\sigma)$	$f_{2000}^{143}$	$29.5 \pm 2.8 \quad (-0.3\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20 \quad (+0.0\sigma)$	$z_*$	$1089.95 \pm 0.26 \quad (-0.7\sigma)$	$f_{2000}^{217}$	$106.7 \pm 1.9 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18 \quad (-0.1\sigma)$	$r_*$	$144.57 \pm 0.30 \quad (+0.2\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.0 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$100\theta_*$	$1.04109 \pm 0.00030 \quad (-0.0\sigma)$	$\chi_{\mathrm{small}}^2$	$396.7 \pm 1.5 \quad (-0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.886 \pm 0.028 \quad (+0.3\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.04 \pm 0.88 \quad (-0.3\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.1\sigma)$	$z_{\mathrm{drag}}$	$1059.79 \pm 0.32 \quad (+0.6\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11513.9 \pm 5.6 \quad (+844.7\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$r_{\mathrm{drag}}$	$147.25 \pm 0.30 \quad (+0.1\sigma)$	$\chi_{\mathrm{H073p45}}^2$	$6.6 \pm 2.3 \quad (-0.0\sigma)$
$c_{TE}$	$0.9961 \pm 0.0049$	$k_{\mathrm{D}}$	$0.14066 \pm 0.00034 \quad (+0.1\sigma)$	$\chi_{\mathrm{JLA}}^2$	$1036.1 \pm 1.6 \quad (-0.1\sigma)$
$c_{EE}$	$0.9916 \pm 0.0049$	$100\theta_{\mathrm{D}}$	$0.16084 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.14 \pm 0.15 \quad (-0.0\sigma)$
$H_0$	$69.26 \pm 0.76 \quad (+0.0\sigma)$	$z_{\mathrm{eq}}$	$3392 \pm 29 \quad (-0.4\sigma)$	$\chi_{\mathrm{MGS}}^2$	$2.70 \pm 0.73 \quad (-0.0\sigma)$
$\Omega_{\Lambda}$	$0.7027 \pm 0.0069 \quad (+0.2\sigma)$	$k_{\mathrm{eq}}$	$0.010353 \pm 0.000089 \quad (-0.4\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$5.1 \pm 1.4 \quad (-0.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.2973 \pm 0.0069 \quad (-0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8150 \pm 0.0054 \quad (+0.4\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1426 \pm 0.0012 \quad (-0.4\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4503 \pm 0.0028 \quad (+0.4\sigma)$	$\chi_{\mathrm{BAO}}^2$	$8.0 \pm 2.1 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.0988 \pm 0.0014 \quad (-0.3\sigma)$	$H(0.15)$	$74.26 \pm 0.70 \quad (-0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11933.7 \pm 5.6 \quad (+839.9\sigma)$
$\sigma_8$	$0.828 \pm 0.013 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.15)$	$627.5 \pm 6.0 \quad (+0.0\sigma)$		
$S_8$	$0.824 \pm 0.015 \quad (-0.5\sigma)$	$H(0.38)$	$83.69 \pm 0.62 \quad (+0.1\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 12992.15; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.93; R - 1 = 0.01047$$



## 19.48 base\_w\_wa\_CamSpecHM\_TTTEE\_lowl\_lowE\_BAO\_Riess18\_Pantheon18\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02232 \pm 0.00015 \quad (+0.6\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4507 \pm 0.0061 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.38)$	$1503 \pm 13 \quad (-0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1196 \pm 0.0011 \quad (-0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6105 \pm 0.0074 \quad (-0.4\sigma)$	$H(0.51)$	$90.03 \pm 0.49 \quad (+0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04090 \pm 0.00030 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.994 \pm 0.011 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.51)$	$1952 \pm 15 \quad (-0.1\sigma)$
$\tau$	$0.0540^{+0.0047}_{-0.0077} \quad (+0.0\sigma)$	$r_{\mathrm{drag}}h$	$102.0 \pm 1.1 \quad (+0.0\sigma)$	$H(0.61)$	$95.37 \pm 0.40 \quad (+0.3\sigma)$
$w_0$	$-1.002 \pm 0.077 \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.450 \pm 0.024 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.61)$	$2276 \pm 16 \quad (-0.1\sigma)$
$w_{\mathrm{a}}$	$-0.23^{+0.32}_{-0.26} \quad (+0.1\sigma)$	$z_{\mathrm{re}}$	$7.62^{+0.53}_{-0.75} \quad (-0.0\sigma)$	$H(2.33)$	$234.70 \pm 0.93 \quad (+0.0\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.011}_{-0.014} \quad (+0.0\sigma)$	$10^9A_{\mathrm{s}}$	$2.093^{+0.022}_{-0.030} \quad (+0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	$5754 \pm 10 \quad (-0.4\sigma)$
$n_{\mathrm{s}}$	$0.9660 \pm 0.0040 \quad (+0.2\sigma)$	$10^9A_{\mathrm{s}}e^{-2\tau}$	$1.878 \pm 0.010 \quad (-0.1\sigma)$	$f\sigma_8(0.15)$	$0.4584 \pm 0.0068 \quad (-0.4\sigma)$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025 \quad (+0.0\sigma)$	$D_{40}$	$1226 \pm 12 \quad (-0.1\sigma)$	$\sigma_8(0.15)$	$0.766 \pm 0.010 \quad (-0.3\sigma)$
$A_{100}^{\mathrm{PS}}$	$239 \pm 25 \quad (-0.1\sigma)$	$D_{220}$	$5721 \pm 39 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4831 \pm 0.0080 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8 \quad (-0.1\sigma)$	$D_{810}$	$2535 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.6797 \pm 0.0092 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{1420}$	$815.6 \pm 4.8 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4844 \pm 0.0083 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7 \quad (-0.2\sigma)$	$D_{2000}$	$230.3 \pm 1.6 \quad (+0.3\sigma)$	$\sigma_8(0.51)$	$0.6363 \pm 0.0086 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.4} \quad (+0.0\sigma)$	$n_{\mathrm{s},0.002}$	$0.9660 \pm 0.0040 \quad (+0.2\sigma)$	$f\sigma_8(0.61)$	$0.4810 \pm 0.0084 \quad (-0.3\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}$	$0.245375 \pm 0.000059 \quad (+0.6\sigma)$	$\sigma_8(0.61)$	$0.6054 \pm 0.0081 \quad (-0.3\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.39}_{-0.18} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246701 \pm 0.000059 \quad (+0.6\sigma)$	$f\sigma_8(2.33)$	$0.3059 \pm 0.0043 \quad (-0.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^5\mathrm{D}/\mathrm{H}$	$2.595 \pm 0.028 \quad (-0.6\sigma)$	$\sigma_8(2.33)$	$0.3130 \pm 0.0034 \quad (-0.2\sigma)$
$A^{\mathrm{kSZ}}$	$4.6^{+2.1}_{-4.0} \quad (-0.1\sigma)$	$\mathrm{Age}/\mathrm{Gyr}$	$13.748 \pm 0.030 \quad (-0.2\sigma)$	$f_{2000}^{143}$	$29.6 \pm 2.8 \quad (-0.3\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$z_*$	$1089.94 \pm 0.24 \quad (-0.6\sigma)$	$f_{2000}^{217}$	$106.7 \pm 1.9 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.17 \quad (-0.1\sigma)$	$r_*$	$144.58 \pm 0.25 \quad (+0.0\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.0 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$100\theta_*$	$1.04109 \pm 0.00030 \quad (-0.1\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.10 \pm 0.69 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.888 \pm 0.024 \quad (+0.0\sigma)$	$\chi_{\mathrm{simall}}^2$	$396.6 \pm 1.4 \quad (-0.0\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.1\sigma)$	$z_{\mathrm{drag}}$	$1059.79 \pm 0.32 \quad (+0.6\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.04 \pm 0.81 \quad (-0.2\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$r_{\mathrm{drag}}$	$147.26 \pm 0.26 \quad (-0.1\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11513.6 \pm 5.5 \quad (+869.6\sigma)$
$c_{TE}$	$0.9961 \pm 0.0049$	$k_{\mathrm{D}}$	$0.14065 \pm 0.00032 \quad (+0.3\sigma)$	$\chi_{\mathrm{H073p45}}^2$	$6.5 \pm 2.3 \quad (-0.0\sigma)$
$c_{EE}$	$0.9917 \pm 0.0049$	$100\theta_{\mathrm{D}}$	$0.16084 \pm 0.00019 \quad (-0.7\sigma)$	$\chi_{\mathrm{JLA}}^2$	$1036.1 \pm 1.6 \quad (-0.0\sigma)$
$H_0$	$69.29 \pm 0.76 \quad (+0.0\sigma)$	$z_{\mathrm{eq}}$	$3390 \pm 24 \quad (-0.2\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.14 \pm 0.15 \quad (+0.0\sigma)$
$\Omega_{\Lambda}$	$0.7030 \pm 0.0068 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010348 \pm 0.000074 \quad (-0.2\sigma)$	$\chi_{\mathrm{MGS}}^2$	$2.73 \pm 0.73 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}$	$0.2970 \pm 0.0068 \quad (-0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8153 \pm 0.0046 \quad (+0.3\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$5.2 \pm 1.4 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1425 \pm 0.0010 \quad (-0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4505 \pm 0.0023 \quad (+0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.0987 \pm 0.0013 \quad (-0.1\sigma)$	$H(0.15)$	$74.29 \pm 0.68 \quad (+0.0\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11942.3 \pm 5.6 \quad (+839.0\sigma)$
$\sigma_8$	$0.827 \pm 0.011 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.15)$	$627.3 \pm 5.9 \quad (-0.0\sigma)$	$\chi_{\mathrm{BAO}}^2$	$8.0 \pm 2.1 \quad (-0.0\sigma)$
$S_8$	$0.823 \pm 0.011 \quad (-0.4\sigma)$	$H(0.38)$	$83.71 \pm 0.61 \quad (+0.1\sigma)$		
$\bar{\chi}_{\mathrm{eff}}^2 = 13000.80; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.85; R - 1 = 0.01150$					



## 20 yhe

### 20.1 base\_yhe\_plikHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022104	$0.02212 \pm 0.00030$	$\sigma_8 \Omega_m^{0.5}$	0.4596	$0.460 \pm 0.013$	$H(0.15)$	72.21	$72.28 \pm 0.96$
$\Omega_c h^2$	0.12062	$0.1206 \pm 0.0022$	$\sigma_8 \Omega_m^{0.25}$	0.6106	$0.611 \pm 0.012$	$D_M(0.15)$	648.0	$647.5 \pm 9.6$
$100\theta_{MC}$	1.04067	$1.04080 \pm 0.00089$	$\sigma_8/h^{0.5}$	0.9924	$0.992 \pm 0.016$	$H(0.38)$	82.48	$82.54 \pm 0.73$
$\tau$	0.0518	$0.0518 \pm 0.0081$	$r_{\text{drag}} h$	98.40	$98.5 \pm 1.8$	$D_M(0.38)$	1543.1	$1542 \pm 19$
$Y_P$	0.2421	$0.246 \pm 0.021$	$\langle d^2 \rangle^{1/2}$	2.4524	$2.453 \pm 0.043$	$H(0.51)$	89.28	$89.34 \pm 0.60$
$\ln(10^{10} A_s)$	3.0391	$3.040 \pm 0.018$	$z_{\text{re}}$	7.48	$7.47 \pm 0.84$	$D_M(0.51)$	1997.5	$1996 \pm 23$
$n_s$	0.9627	$0.963 \pm 0.011$	$10^9 A_s$	2.0887	$2.091 \pm 0.037$	$H(0.61)$	94.97	$95.02 \pm 0.51$
$y_{\text{cal}}$	1.00043	$1.0004 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8831	$1.885 \pm 0.015$	$D_M(0.61)$	2323.1	$2322 \pm 25$
$A_{217}^{\text{CIB}}$	48.2	$48 \pm 7$	$D_{40}$	1232.3	$1233 \pm 22$	$H(2.33)$	236.68	$236.7 \pm 1.3$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.38	—	$D_{220}$	5708.6	$5713 \pm 41$	$D_M(2.33)$	5779.7	$5777 \pm 25$
$A_{143}^{\text{tSZ}}$	6.95	$5.0 \pm 2.0$	$D_{810}$	2537.4	$2536 \pm 14$	$f\sigma_8(0.15)$	0.4634	$0.463 \pm 0.012$
$A_{100}^{\text{PS}}$	253.8	$264 \pm 29$	$D_{1420}$	815.9	$814.3 \pm 5.4$	$\sigma_8(0.15)$	0.7487	$0.7491 \pm 0.0084$
$A_{143}^{\text{PS}}$	49.8	$49 \pm 9$	$D_{2000}$	230.27	$229.4 \pm 2.4$	$f\sigma_8(0.38)$	0.4797	$0.4796 \pm 0.0095$
$A_{143 \times 217}^{\text{PS}}$	48.3	$43 \pm 9$	$n_{s,0.002}$	0.9627	$0.963 \pm 0.011$	$\sigma_8(0.38)$	0.6627	$0.6631 \pm 0.0073$
$A_{217}^{\text{PS}}$	119.9	$115 \pm 10$	$Y_P$	0.2421	$0.246 \pm 0.021$	$f\sigma_8(0.51)$	0.4771	$0.4771 \pm 0.0081$
$A^{\text{kSZ}}$	0.05	$< 5.01$	$Y_P^{\text{BBN}}$	0.2434	$0.247 \pm 0.021$	$\sigma_8(0.51)$	0.6197	$0.6201 \pm 0.0069$
$A_{100}^{\text{dustTT}}$	8.89	$9.0 \pm 1.8$	Age/Gyr	13.835	$13.829 \pm 0.058$	$f\sigma_8(0.61)$	0.4714	$0.4714 \pm 0.0072$
$A_{143}^{\text{dustTT}}$	10.88	$10.7 \pm 1.8$	$z_*$	1090.18	$1090.33 \pm 0.65$	$\sigma_8(0.61)$	0.5894	$0.5898 \pm 0.0066$
$A_{143 \times 217}^{\text{dustTT}}$	19.45	$18.3 \pm 3.3$	$r_*$	144.486	$144.46 \pm 0.48$	$f\sigma_8(2.33)$	0.29683	$0.2970 \pm 0.0034$
$A_{217}^{\text{dustTT}}$	94.7	$93.2 \pm 7.3$	$100\theta_*$	1.04096	$1.04099 \pm 0.00050$	$\sigma_8(2.33)$	0.30562	$0.3059 \pm 0.0038$
$c_{100}$	0.99965	$0.99961 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	13.8801	$13.877 \pm 0.045$	$f_{2000}^{143}$	30.03	$31 \pm 4$
$c_{217}$	0.99823	$0.99827 \pm 0.00062$	$z_{\text{drag}}$	1059.25	$1059.4 \pm 1.2$	$f_{2000}^{143 \times 217}$	33.05	$33.7 \pm 2.9$
$H_0$	66.83	$66.9 \pm 1.1$	$r_{\text{drag}}$	147.236	$147.21 \pm 0.49$	$f_{2000}^{217}$	107.48	$108.3 \pm 2.6$
$\Omega_\Lambda$	0.6790	$0.679 \pm 0.015$	$k_D$	0.14064	$0.14051 \pm 0.00075$	$\chi_{\text{small}}^2$	395.83	$396.9 \pm 1.7$
$\Omega_m$	0.3210	$0.321 \pm 0.015$	$100\theta_D$	0.16093	$0.16111 \pm 0.00077$	$\chi_{\text{lowl}}^2$	23.69	$24.0 \pm 2.1$
$\Omega_m h^2$	0.14337	$0.1434 \pm 0.0020$	$z_{\text{eq}}$	3410.6	$3411 \pm 48$	$\chi_{\text{plik}}^2$	758.7	$772.2 \pm 5.8$
$\Omega_m h^3$	0.09582	$0.09591 \pm 0.00078$	$k_{\text{eq}}$	0.010410	$0.01041 \pm 0.00015$	$\chi_{\text{prior}}^2$	1.32	$7.3 \pm 3.7$
$\sigma_8$	0.8113	$0.8117 \pm 0.0095$	$100\theta_{\text{eq}}$	0.8109	$0.8111 \pm 0.0092$	$\chi_{\text{CMB}}^2$	1178.2	$1193.1 \pm 5.7$
$S_8$	0.8392	$0.839 \pm 0.024$	$100\theta_{s,\text{eq}}$	0.44831	$0.4484 \pm 0.0047$			

Best-fit  $\chi_{\text{eff}}^2 = 1179.56$ ;  $\bar{\chi}_{\text{eff}}^2 = 1200.43$ ;  $R - 1 = 0.00562$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.83 commander\_dx12.v3.2\_29: 23.69 plik\_rd12\_HM.v22\_TT: 758.72



## 20.2 base\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022249	$0.02227 \pm 0.00025$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6030	$0.6033 \pm 0.0084$	$H(0.38)$	83.023	$83.07 \pm 0.44$
$\Omega_{\mathrm{c}}h^2$	0.11890	$0.1190 \pm 0.0012$	$\sigma_8/h^{0.5}$	0.9827	$0.983 \pm 0.012$	$D_{\mathrm{M}}(0.38)$	1528.1	$1527 \pm 11$
$100\theta_{\mathrm{MC}}$	1.04108	$1.04125 \pm 0.00074$	$r_{\mathrm{drag}}h$	99.86	$99.87 \pm 0.98$	$H(0.51)$	89.715	$89.76 \pm 0.39$
$\tau$	0.0545	$0.0536 \pm 0.0078$	$\langle d^2 \rangle^{1/2}$	2.4251	$2.424 \pm 0.029$	$D_{\mathrm{M}}(0.51)$	1979.9	$1979 \pm 13$
$Y_{\mathrm{P}}$	0.2484	$0.253 \pm 0.018$	$z_{\mathrm{re}}$	7.73	$7.63 \pm 0.81$	$H(0.61)$	95.315	$95.37 \pm 0.35$
$\ln(10^{10}A_{\mathrm{s}})$	3.0423	$3.042 \pm 0.017$	$10^9A_{\mathrm{s}}$	2.0952	$2.095 \pm 0.036$	$D_{\mathrm{M}}(0.61)$	2304.2	$2303 \pm 14$
$n_{\mathrm{s}}$	0.9688	$0.9693 \pm 0.0082$	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8788	$1.881 \pm 0.015$	$H(2.33)$	235.73	$235.84 \pm 0.83$
$y_{\mathrm{cal}}$	1.00048	$1.0005 \pm 0.0025$	$D_{40}$	1221.0	$1221 \pm 17$	$D_{\mathrm{M}}(2.33)$	5764.1	$5761 \pm 19$
$A_{217}^{\mathrm{CIB}}$	49.2	$49 \pm 7$	$D_{220}$	5716.2	$5720 \pm 40$	$f\sigma_8(0.15)$	0.4545	$0.4547 \pm 0.0078$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.24	—	$D_{810}$	2537.3	$2537 \pm 14$	$\sigma_8(0.15)$	0.7473	$0.7477 \pm 0.0082$
$A_{143}^{\mathrm{tSZ}}$	7.03	$4.9 \pm 2.0$	$D_{1420}$	816.0	$814.5 \pm 5.3$	$f\sigma_8(0.38)$	0.4732	$0.4735 \pm 0.0068$
$A_{100}^{\mathrm{PS}}$	255.8	$267 \pm 28$	$D_{2000}$	230.00	$229.1 \pm 2.4$	$\sigma_8(0.38)$	0.6627	$0.6630 \pm 0.0072$
$A_{143}^{\mathrm{PS}}$	49.1	$50 \pm 9$	$n_{\mathrm{s},0.002}$	0.9688	$0.9693 \pm 0.0082$	$f\sigma_8(0.51)$	0.4721	$0.4723 \pm 0.0062$
$A_{143 \times 217}^{\mathrm{PS}}$	45.0	$44 \pm 9$	$Y_{\mathrm{P}}$	0.2484	$0.253 \pm 0.018$	$\sigma_8(0.51)$	0.6202	$0.6206 \pm 0.0068$
$A_{217}^{\mathrm{PS}}$	118.6	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.2498	$0.255 \pm 0.019$	$f\sigma_8(0.61)$	0.4673	$0.4675 \pm 0.0058$
$A^{\mathrm{kSZ}}$	0.02	$< 5.26$	Age/Gyr	13.8000	$13.793 \pm 0.043$	$\sigma_8(0.61)$	0.5902	$0.5906 \pm 0.0065$
$A_{100}^{\mathrm{dustTT}}$	8.93	$9.0 \pm 1.8$	$z_*$	1090.10	$1090.29 \pm 0.65$	$f\sigma_8(2.33)$	0.29769	$0.2978 \pm 0.0033$
$A_{143}^{\mathrm{dustTT}}$	10.77	$10.8 \pm 1.8$	$r_*$	144.798	$144.73 \pm 0.38$	$\sigma_8(2.33)$	0.30699	$0.3072 \pm 0.0035$
$A_{143 \times 217}^{\mathrm{dustTT}}$	19.46	$18.3 \pm 3.3$	$100\theta_*$	1.041207	$1.04123 \pm 0.00043$	$f_{2000}^{143}$	30.74	$32 \pm 4$
$A_{217}^{\mathrm{dustTT}}$	94.8	$93.1 \pm 7.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.9067	$13.900 \pm 0.038$	$f_{2000}^{143 \times 217}$	33.40	$34.2 \pm 2.8$
$c_{100}$	0.99961	$0.99961 \pm 0.00062$	$z_{\mathrm{drag}}$	1059.67	$1059.9 \pm 1.1$	$f_{2000}^{217}$	107.88	$108.7 \pm 2.6$
$c_{217}$	0.99828	$0.99827 \pm 0.00062$	$r_{\mathrm{drag}}$	147.510	$147.44 \pm 0.43$	$\chi_{\mathrm{small}}^2$	396.06	$397.0 \pm 1.8$
$H_0$	67.70	$67.74 \pm 0.62$	$k_{\mathrm{D}}$	0.14021	$0.14009 \pm 0.00058$	$\chi_{\mathrm{lowl}}^2$	22.64	$22.8 \pm 1.3$
$\Omega_{\Lambda}$	0.6906	$0.6906 \pm 0.0076$	$100\theta_{\mathrm{D}}$	0.16112	$0.16133 \pm 0.00073$	$\chi_{\mathrm{plik}}^2$	760.1	$773.3 \pm 5.7$
$\Omega_{\mathrm{m}}$	0.3094	$0.3094 \pm 0.0076$	$z_{\mathrm{eq}}$	3373.0	$3376 \pm 29$	$\chi_{6\mathrm{DF}}^2$	0.0162	$0.056 \pm 0.075$
$\Omega_{\mathrm{m}}h^2$	0.14179	$0.1419 \pm 0.0012$	$k_{\mathrm{eq}}$	0.010295	$0.010304 \pm 0.000089$	$\chi_{\mathrm{MGS}}^2$	1.34	$1.41 \pm 0.55$
$\Omega_{\mathrm{m}}h^3$	0.09599	$0.09613 \pm 0.00074$	$100\theta_{\mathrm{eq}}$	0.8183	$0.8180 \pm 0.0053$	$\chi_{\mathrm{DR12BAO}}^2$	4.05	$4.7 \pm 1.6$
$\sigma_8$	0.8085	$0.8089 \pm 0.0090$	$100\theta_{\mathrm{s,eq}}$	0.45211	$0.4519 \pm 0.0028$	$\chi_{\mathrm{prior}}^2$	1.51	$7.3 \pm 3.7$
$S_8$	0.8211	$0.822 \pm 0.015$	$H(0.15)$	72.95	$73.00 \pm 0.55$	$\chi_{\mathrm{BAO}}^2$	5.41	$6.2 \pm 1.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4497	$0.4500 \pm 0.0083$	$D_{\mathrm{M}}(0.15)$	640.5	$640.2 \pm 5.3$	$\chi_{\mathrm{CMB}}^2$	1178.8	$1193.1 \pm 5.6$

Best-fit  $\chi_{\mathrm{eff}}^2 = 1185.74$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1206.53$ ;  $R - 1 = 0.01126$

$\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.02 MGS: 1.34 DR12BAO: 4.05 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.06 commander\_dx12\_v3.2.29: 22.64 plik\_rd12\_HM\_v22.TT: 760.12



### 20.3 base\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022126	$0.02213 \pm 0.00028$	$\sigma_8 \Omega_m^{0.5}$	0.4568	$0.4572 \pm 0.0090$	$H(0.15)$	72.36	$72.37 \pm 0.77$
$\Omega_c h^2$	0.12014	$0.1203 \pm 0.0016$	$\sigma_8 \Omega_m^{0.25}$	0.6081	$0.6085 \pm 0.0077$	$D_M(0.15)$	646.5	$646.4 \pm 7.7$
$100\theta_{MC}$	1.04064	$1.04078 \pm 0.00085$	$\sigma_8/h^{0.5}$	0.9890	$0.990 \pm 0.011$	$H(0.38)$	82.57	$82.60 \pm 0.61$
$\tau$	0.0525	$0.0519 \pm 0.0079$	$r_{\text{drag}} h$	98.74	$98.7 \pm 1.4$	$D_M(0.38)$	1540.2	$1540 \pm 16$
$Y_P$	0.2394	$0.244 \pm 0.020$	$\langle d^2 \rangle^{1/2}$	2.4478	$2.448 \pm 0.029$	$H(0.51)$	89.35	$89.38 \pm 0.52$
$\ln(10^{10} A_s)$	3.0392	$3.039 \pm 0.017$	$z_{\text{re}}$	7.53	$7.47 \pm 0.82$	$D_M(0.51)$	1994.1	$1994 \pm 19$
$n_s$	0.9626	$0.9629 \pm 0.0099$	$10^9 A_s$	2.0889	$2.089 \pm 0.035$	$H(0.61)$	95.015	$95.05 \pm 0.45$
$y_{\text{cal}}$	1.00055	$1.0004 \pm 0.0025$	$10^9 A_s e^{-2\tau}$	1.8806	$1.882 \pm 0.014$	$D_M(0.61)$	2319.5	$2319 \pm 20$
$A_{217}^{\text{CIB}}$	47.8	$48 \pm 7$	$D_{40}$	1232.7	$1233 \pm 19$	$H(2.33)$	236.39	$236.48 \pm 0.95$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.46	—	$D_{220}$	5715.4	$5716 \pm 41$	$D_M(2.33)$	5778.0	$5776 \pm 23$
$A_{143}^{\text{tSZ}}$	6.93	$5.0 \pm 2.0$	$D_{810}$	2537.6	$2536 \pm 14$	$f\sigma_8(0.15)$	0.4608	$0.4612 \pm 0.0082$
$A_{100}^{\text{PS}}$	252.4	$264 \pm 29$	$D_{1420}$	816.7	$814.4 \pm 5.3$	$\sigma_8(0.15)$	0.7475	$0.7479 \pm 0.0072$
$A_{143}^{\text{PS}}$	50.2	$49 \pm 9$	$D_{2000}$	230.72	$229.6 \pm 2.4$	$f\sigma_8(0.38)$	0.4776	$0.4779 \pm 0.0063$
$A_{143 \times 217}^{\text{PS}}$	49.5	$43 \pm 9$	$n_{s,0.002}$	0.9626	$0.9629 \pm 0.0099$	$\sigma_8(0.38)$	0.6618	$0.6622 \pm 0.0067$
$A_{217}^{\text{PS}}$	119.9	$115 \pm 10$	$Y_P$	0.2394	$0.244 \pm 0.020$	$f\sigma_8(0.51)$	0.4754	$0.4756 \pm 0.0055$
$A^{\text{kSZ}}$	0.00	$< 5.00$	$Y_P^{\text{BBN}}$	0.2407	$0.246 \pm 0.020$	$\sigma_8(0.51)$	0.6191	$0.6194 \pm 0.0064$
$A_{100}^{\text{dustTT}}$	8.86	$8.9 \pm 1.9$	Age/Gyr	13.831	$13.827 \pm 0.053$	$f\sigma_8(0.61)$	0.46988	$0.4701 \pm 0.0050$
$A_{143}^{\text{dustTT}}$	10.77	$10.7 \pm 1.8$	$z_*$	1090.00	$1090.23 \pm 0.64$	$\sigma_8(0.61)$	0.5889	$0.5892 \pm 0.0063$
$A_{143 \times 217}^{\text{dustTT}}$	19.49	$18.3 \pm 3.3$	$r_*$	144.601	$144.55 \pm 0.39$	$f\sigma_8(2.33)$	0.29665	$0.2968 \pm 0.0034$
$A_{217}^{\text{dustTT}}$	94.8	$93.2 \pm 7.2$	$100\theta_*$	1.041002	$1.04101 \pm 0.00048$	$\sigma_8(2.33)$	0.30555	$0.3057 \pm 0.0037$
$c_{100}$	0.99965	$0.99961 \pm 0.00062$	$D_M(z_*)/\text{Gpc}$	13.8906	$13.886 \pm 0.037$	$f_{2000}^{143}$	29.57	$31 \pm 4$
$c_{217}$	0.99824	$0.99827 \pm 0.00063$	$z_{\text{drag}}$	1059.17	$1059.4 \pm 1.2$	$f_{2000}^{143 \times 217}$	32.63	$33.6 \pm 2.9$
$H_0$	67.01	$67.02 \pm 0.88$	$r_{\text{drag}}$	147.345	$147.30 \pm 0.42$	$f_{2000}^{217}$	107.03	$108.1 \pm 2.6$
$\Omega_\Lambda$	0.6817	$0.681 \pm 0.011$	$k_D$	0.14065	$0.14049 \pm 0.00067$	$\chi_{\text{lensing}}^2$	8.83	$9.48 \pm 0.91$
$\Omega_m$	0.3183	$0.319 \pm 0.011$	$100\theta_D$	0.16080	$0.16105 \pm 0.00076$	$\chi_{\text{small}}^2$	395.86	$396.8 \pm 1.6$
$\Omega_m h^2$	0.14291	$0.1430 \pm 0.0015$	$z_{\text{eq}}$	3399.8	$3403 \pm 36$	$\chi_{\text{lowl}}^2$	23.69	$23.9 \pm 1.8$
$\Omega_m h^3$	0.09577	$0.09585 \pm 0.00078$	$k_{\text{eq}}$	0.010376	$0.01038 \pm 0.00011$	$\chi_{\text{plik}}^2$	758.8	$771.8 \pm 5.6$
$\sigma_8$	0.8096	$0.8101 \pm 0.0076$	$100\theta_{\text{eq}}$	0.8128	$0.8125 \pm 0.0069$	$\chi_{\text{prior}}^2$	1.30	$7.3 \pm 3.7$
$S_8$	0.8339	$0.835 \pm 0.016$	$100\theta_{s,\text{eq}}$	0.44932	$0.4492 \pm 0.0035$	$\chi_{\text{CMB}}^2$	1187.2	$1202.1 \pm 5.7$

Best-fit  $\chi_{\text{eff}}^2 = 1188.45$ ;  $\bar{\chi}_{\text{eff}}^2 = 1209.39$ ;  $R - 1 = 0.00784$

$\chi_{\text{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.83 small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.86 commander\_dx12\_v3.2\_29: 23.69 plik\_rd12\_HM\_v22\_TT: 758.77



## 20.4 base\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022238	$0.02226 \pm 0.00025$	$\sigma_8/h^{0.5}$	0.9849	$0.9850 \pm 0.0096$	$H(0.51)$	89.663	$89.72 \pm 0.38$
$\Omega_{\mathrm{c}}h^2$	0.11918	$0.1191 \pm 0.0011$	$r_{\mathrm{drag}}h$	99.65	$99.74 \pm 0.90$	$D_{\mathrm{M}}(0.51)$	1982.2	$1981 \pm 13$
$100\theta_{\mathrm{MC}}$	1.04106	$1.04118 \pm 0.00074$	$\langle d^2 \rangle^{1/2}$	2.4323	$2.431 \pm 0.023$	$H(0.61)$	95.276	$95.33 \pm 0.35$
$\tau$	0.0549	$0.0548 \pm 0.0073$	$z_{\mathrm{re}}$	7.77	$7.76 \pm 0.74$	$D_{\mathrm{M}}(0.61)$	2306.6	$2305 \pm 14$
$Y_{\mathrm{P}}$	0.2480	$0.251 \pm 0.018$	$10^9 A_{\mathrm{s}}$	2.0982	$2.100 \pm 0.032$	$H(2.33)$	235.90	$235.91 \pm 0.75$
$\ln(10^{10} A_{\mathrm{s}})$	3.0437	$3.045 \pm 0.015$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8802	$1.882 \pm 0.014$	$D_{\mathrm{M}}(2.33)$	5765.6	$5763 \pm 19$
$n_{\mathrm{s}}$	0.9674	$0.9681 \pm 0.0082$	$D_{40}$	1224.6	$1224 \pm 17$	$f\sigma_8(0.15)$	0.4562	$0.4560 \pm 0.0063$
$y_{\mathrm{cal}}$	1.00054	$1.0006 \pm 0.0024$	$D_{220}$	5720.1	$5724 \pm 40$	$\sigma_8(0.15)$	0.7482	$0.7487 \pm 0.0072$
$A_{217}^{\mathrm{CIB}}$	50.2	$48 \pm 7$	$D_{810}$	2537.4	$2538 \pm 14$	$f\sigma_8(0.38)$	0.4746	$0.4746 \pm 0.0054$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.12	—	$D_{1420}$	815.7	$814.9 \pm 5.2$	$\sigma_8(0.38)$	0.6633	$0.6638 \pm 0.0065$
$A_{143}^{\mathrm{tSZ}}$	7.21	$4.9 \pm 2.0$	$D_{2000}$	229.90	$229.4 \pm 2.4$	$f\sigma_8(0.51)$	0.47324	$0.4733 \pm 0.0050$
$A_{100}^{\mathrm{PS}}$	256.4	$266 \pm 28$	$n_{\mathrm{s},0.002}$	0.9674	$0.9681 \pm 0.0082$	$\sigma_8(0.51)$	0.6207	$0.6213 \pm 0.0061$
$A_{143}^{\mathrm{PS}}$	46.8	$50 \pm 9$	$Y_{\mathrm{P}}$	0.2480	$0.251 \pm 0.018$	$f\sigma_8(0.61)$	0.46831	$0.4684 \pm 0.0047$
$A_{143 \times 217}^{\mathrm{PS}}$	41.9	$44 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.2494	$0.253 \pm 0.019$	$\sigma_8(0.61)$	0.5906	$0.5912 \pm 0.0059$
$A_{217}^{\mathrm{PS}}$	117.1	$115 \pm 10$	Age/Gyr	13.8032	$13.797 \pm 0.043$	$f\sigma_8(2.33)$	0.29783	$0.2981 \pm 0.0031$
$A^{\mathrm{kSZ}}$	0.00	$< 5.18$	$z_*$	1090.13	$1090.25 \pm 0.64$	$\sigma_8(2.33)$	0.30706	$0.3074 \pm 0.0033$
$A_{100}^{\mathrm{dust}TT}$	8.95	$9.0 \pm 1.8$	$r_*$	144.736	$144.72 \pm 0.35$	$f_{2000}^{143}$	30.76	$32 \pm 4$
$A_{143}^{\mathrm{dust}TT}$	10.80	$10.7 \pm 1.8$	$100\theta_*$	1.041187	$1.04121 \pm 0.00043$	$f_{2000}^{143 \times 217}$	33.49	$34.0 \pm 2.8$
$A_{143 \times 217}^{\mathrm{dust}TT}$	19.20	$18.3 \pm 3.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.9010	$13.899 \pm 0.035$	$f_{2000}^{217}$	107.99	$108.6 \pm 2.5$
$A_{217}^{\mathrm{dust}TT}$	94.2	$93.2 \pm 7.2$	$z_{\mathrm{drag}}$	1059.67	$1059.8 \pm 1.1$	$\chi_{\mathrm{lensing}}^2$	8.88	$9.36 \pm 0.76$
$c_{100}$	0.99965	$0.99962 \pm 0.00063$	$r_{\mathrm{drag}}$	147.448	$147.42 \pm 0.40$	$\chi_{\mathrm{simall}}^2$	396.18	$397.0 \pm 1.8$
$c_{217}$	0.99826	$0.99827 \pm 0.00062$	$k_{\mathrm{D}}$	0.14028	$0.14018 \pm 0.00057$	$\chi_{\mathrm{lowl}}^2$	22.92	$23.0 \pm 1.3$
$H_0$	67.58	$67.65 \pm 0.59$	$100\theta_{\mathrm{D}}$	0.16110	$0.16125 \pm 0.00072$	$\chi_{\mathrm{plik}}^2$	759.5	$772.7 \pm 5.6$
$\Omega_{\Lambda}$	0.6890	$0.6895 \pm 0.0070$	$z_{\mathrm{eq}}$	3379.3	$3379 \pm 26$	$\chi_{6\mathrm{DF}}^2$	0.0293	$0.057 \pm 0.073$
$\Omega_{\mathrm{m}}$	0.3110	$0.3105 \pm 0.0070$	$k_{\mathrm{eq}}$	0.010314	$0.010313 \pm 0.000080$	$\chi_{\mathrm{MGS}}^2$	1.217	$1.33 \pm 0.50$
$\Omega_{\mathrm{m}}h^2$	0.14206	$0.1421 \pm 0.0011$	$100\theta_{\mathrm{eq}}$	0.81714	$0.8174 \pm 0.0047$	$\chi_{\mathrm{DR12BAO}}^2$	4.37	$4.8 \pm 1.6$
$\Omega_{\mathrm{m}}h^3$	0.09601	$0.09610 \pm 0.00074$	$100\theta_{\mathrm{s,eq}}$	0.45149	$0.4516 \pm 0.0025$	$\chi_{\mathrm{prior}}^2$	1.54	$7.3 \pm 3.7$
$\sigma_8$	0.8096	$0.8101 \pm 0.0077$	$H(0.15)$	72.85	$72.92 \pm 0.52$	$\chi_{\mathrm{CMB}}^2$	1187.5	$1202.1 \pm 5.6$
$S_8$	0.8244	$0.824 \pm 0.012$	$D_{\mathrm{M}}(0.15)$	641.5	$640.9 \pm 5.1$	$\chi_{\mathrm{BAO}}^2$	5.62	$6.2 \pm 1.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4515	$0.4514 \pm 0.0067$	$H(0.38)$	82.954	$83.01 \pm 0.43$			
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6046	$0.6047 \pm 0.0067$	$D_{\mathrm{M}}(0.38)$	1530.1	$1529 \pm 11$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 1194.68$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1215.53$ ;  $R - 1 = 0.01408$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.03 MGS: 1.22 DR12BAO: 4.37 CMB - smicadx12\_Dec5.ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.88 simall\_100x143.offlike5\_EE\_Aplanck\_B: 396.18 comman-  
der\_dx12.v3.2.29: 22.92 plik\_rd12\_HM.v22\_TT: 759.54



## 20.5 base\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022537	$0.02257 \pm 0.00028$	$\sigma_8 \Omega_m^{0.5}$	0.4379	$0.437 \pm 0.012$	$H(0.15)$	74.00	$74.14^{+0.83}_{-0.98}$
$\Omega_c h^2$	0.11695	$0.1168^{+0.0021}_{-0.0019}$	$\sigma_8 \Omega_m^{0.25}$	0.5940	$0.594 \pm 0.011$	$D_M(0.15)$	630.5	$629.3^{+9.0}_{-8.1}$
$100\theta_{MC}$	1.04184	$1.04204 \pm 0.00081$	$\sigma_8/h^{0.5}$	0.9709	$0.970 \pm 0.016$	$H(0.38)$	83.83	$83.96^{+0.65}_{-0.75}$
$\tau$	0.0566	$0.0567^{+0.0079}_{-0.0089}$	$r_{\text{drag}} h$	101.72	$101.9^{+1.5}_{-1.9}$	$D_M(0.38)$	1507.6	$1505^{+18}_{-17}$
$Y_P$	0.2625	$0.268^{+0.020}_{-0.018}$	$\langle d^2 \rangle^{1/2}$	2.3869	$2.382^{+0.042}_{-0.038}$	$H(0.51)$	90.39	$90.50^{+0.55}_{-0.62}$
$\ln(10^{10} A_s)$	3.0460	$3.047^{+0.016}_{-0.019}$	$z_{\text{re}}$	7.91	$7.91 \pm 0.86$	$D_M(0.51)$	1955.5	$1952^{+22}_{-20}$
$n_s$	0.9787	$0.981 \pm 0.010$	$10^9 A_s$	2.1030	$2.105^{+0.033}_{-0.040}$	$H(0.61)$	95.89	$95.99 \pm 0.49$
$y_{\text{cal}}$	1.00063	$1.0004 \pm 0.0027$	$10^9 A_s e^{-2\tau}$	1.8778	$1.879^{+0.016}_{-0.014}$	$D_M(0.61)$	2277.5	$2274^{+24}_{-22}$
$A_{217}^{\text{CIB}}$	50.3	$50 \pm 7$	$D_{40}$	1203.8	$1201^{+22}_{-20}$	$H(2.33)$	234.81	$234.8 \pm 1.2$
$\xi^{\text{tSZ} \times \text{CIB}}$	0.17	—	$D_{220}$	5729.5	$5729 \pm 44$	$D_M(2.33)$	5737.2	$5733 \pm 23$
$A_{143}^{\text{tSZ}}$	6.87	$4.7 \pm 2.0$	$D_{810}$	2539.4	$2538 \pm 15$	$f\sigma_8(0.15)$	0.4437	$0.443 \pm 0.012$
$A_{100}^{\text{PS}}$	258.8	$271 \pm 28$	$D_{1420}$	816.3	$814.7 \pm 5.4$	$\sigma_8(0.15)$	0.7462	$0.7467^{+0.0079}_{-0.0095}$
$A_{143}^{\text{PS}}$	49.2	$52 \pm 9$	$D_{2000}$	229.42	$228.5 \pm 2.4$	$f\sigma_8(0.38)$	0.4656	$0.4650 \pm 0.0094$
$A_{143 \times 217}^{\text{PS}}$	43.9	$44^{+9}_{-10}$	$n_{s,0.002}$	0.9787	$0.981 \pm 0.010$	$\sigma_8(0.38)$	0.6633	$0.6638^{+0.0066}_{-0.0081}$
$A_{217}^{\text{PS}}$	117.7	$114 \pm 10$	$Y_P$	0.2625	$0.268^{+0.020}_{-0.018}$	$f\sigma_8(0.51)$	0.4661	$0.4657 \pm 0.0082$
$A^{\text{kSZ}}$	0.60	$4.4^{+1.6}_{-4.0}$	$Y_P^{\text{BBN}}$	0.2639	$0.270^{+0.020}_{-0.018}$	$\sigma_8(0.51)$	0.6215	$0.6221^{+0.0062}_{-0.0075}$
$A_{100}^{\text{dustTT}}$	8.98	$9.0 \pm 1.9$	Age/Gyr	13.740	$13.730 \pm 0.053$	$f\sigma_8(0.61)$	0.4624	$0.4622 \pm 0.0075$
$A_{143}^{\text{dustTT}}$	10.87	$10.8 \pm 1.8$	$z_*$	1090.14	$1090.34 \pm 0.64$	$\sigma_8(0.61)$	0.5918	$0.5924^{+0.0059}_{-0.0071}$
$A_{143 \times 217}^{\text{dustTT}}$	19.16	$18.3 \pm 3.3$	$r_*$	145.035	$145.03 \pm 0.47$	$f\sigma_8(2.33)$	0.29905	$0.2994^{+0.0031}_{-0.0036}$
$A_{217}^{\text{dustTT}}$	93.9	$92.4 \pm 7.2$	$100\theta_*$	1.041563	$1.04160 \pm 0.00047$	$\sigma_8(2.33)$	0.30906	$0.3095^{+0.0034}_{-0.0039}$
$c_{100}$	0.99963	$0.99963 \pm 0.00064$	$D_M(z_*)/\text{Gpc}$	13.9247	$13.924 \pm 0.045$	$f_{2000}^{143}$	31.75	$33.1 \pm 3.7$
$c_{217}$	0.99825	$0.99827 \pm 0.00060$	$z_{\text{drag}}$	1060.66	$1060.9 \pm 1.1$	$f_{2000}^{143 \times 217}$	34.33	$35.1 \pm 2.8$
$H_0$	68.88	$69.04^{+0.95}_{-1.1}$	$r_{\text{drag}}$	147.67	$147.65 \pm 0.49$	$f_{2000}^{217}$	108.73	$109.5 \pm 2.6$
$\Omega_\Lambda$	0.7047	$0.706 \pm 0.012$	$k_D$	0.13970	$0.13949 \pm 0.00072$	$\chi_{\text{small}}^2$	396.26	$397.3 \pm 2.2$
$\Omega_m$	0.2953	$0.294 \pm 0.012$	$100\theta_D$	0.16150	$0.16176 \pm 0.00075$	$\chi_{\text{lowl}}^2$	21.31	$21.4 \pm 1.1$
$\Omega_m h^2$	0.14014	$0.1400 \pm 0.0019$	$z_{\text{eq}}$	3333.4	$3331 \pm 45$	$\chi_{\text{plik}}^2$	764.1	$778.0 \pm 6.8$
$\Omega_m h^3$	0.09653	$0.09666 \pm 0.00074$	$k_{\text{eq}}$	0.010174	$0.01017 \pm 0.00014$	$\chi_{\text{H073p45}}^2$	7.56	$7.4 \pm 3.3$
$\sigma_8$	0.8058	$0.8061^{+0.0091}_{-0.011}$	$100\theta_{\text{eq}}$	0.8270	$0.8279^{+0.0081}_{-0.0097}$	$\chi_{\text{prior}}^2$	1.63	$7.5 \pm 3.9$
$S_8$	0.7995	$0.798 \pm 0.022$	$100\theta_{s,\text{eq}}$	0.45643	$0.4569^{+0.0042}_{-0.0050}$	$\chi_{\text{CMB}}^2$	1181.6	$1196.7 \pm 6.4$

Best-fit  $\chi_{\text{eff}}^2 = 1190.84$ ;  $\bar{\chi}_{\text{eff}}^2 = 1211.61$ ;  $R - 1 = 0.08259$

$\chi_{\text{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.26 commander\_dx12\_v3.2\_29: 21.31 plik\_rd12\_HM\_v22\_TT: 764.07 Hubble - H073p45: 7.57



## 20.6 base\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02213 \pm 0.00030$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.460 \pm 0.013$	$H(0.15)$	$72.33 \pm 0.95$
$\Omega_{\mathrm{c}}h^2$	$0.1205 \pm 0.0021$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.611 \pm 0.012$	$D_{\mathrm{M}}(0.15)$	$647.0 \pm 9.5$
$100\theta_{\mathrm{MC}}$	$1.04084 \pm 0.00088$	$\sigma_8/h^{0.5}$	$0.993 \pm 0.016$	$H(0.38)$	$82.58 \pm 0.72$
$\tau$	$0.0536^{+0.0046}_{-0.0083}$	$r_{\mathrm{drag}}h$	$98.6 \pm 1.8$	$D_{\mathrm{M}}(0.38)$	$1541 \pm 19$
$Y_{\mathrm{P}}$	$0.247 \pm 0.020$	$\langle d^2 \rangle^{1/2}$	$2.455 \pm 0.042$	$H(0.51)$	$89.37 \pm 0.60$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.012}_{-0.017}$	$z_{\mathrm{re}}$	$7.66^{+0.52}_{-0.84}$	$D_{\mathrm{M}}(0.51)$	$1995 \pm 23$
$n_{\mathrm{s}}$	$0.964 \pm 0.011$	$10^9 A_{\mathrm{s}}$	$2.098^{+0.026}_{-0.036}$	$H(0.61)$	$95.05 \pm 0.51$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.885 \pm 0.015$	$D_{\mathrm{M}}(0.61)$	$2320 \pm 25$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{40}$	$1233 \pm 22$	$H(2.33)$	$236.7 \pm 1.3$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{220}$	$5713 \pm 41$	$D_{\mathrm{M}}(2.33)$	$5776 \pm 25$
$A_{143}^{\mathrm{tSZ}}$	$5.0 \pm 2.0$	$D_{810}$	$2536 \pm 14$	$f\sigma_8(0.15)$	$0.464 \pm 0.012$
$A_{100}^{\mathrm{PS}}$	$264 \pm 29$	$D_{1420}$	$814.2 \pm 5.3$	$\sigma_8(0.15)$	$0.7503^{+0.0073}_{-0.0082}$
$A_{143}^{\mathrm{PS}}$	$49 \pm 9$	$D_{2000}$	$229.4 \pm 2.4$	$f\sigma_8(0.38)$	$0.4800 \pm 0.0095$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$n_{\mathrm{s},0.002}$	$0.964 \pm 0.011$	$\sigma_8(0.38)$	$0.6642^{+0.0060}_{-0.0072}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}$	$0.247 \pm 0.020$	$f\sigma_8(0.51)$	$0.4776 \pm 0.0081$
$A^{\mathrm{kSZ}}$	$< 5.01$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.248 \pm 0.020$	$\sigma_8(0.51)$	$0.6212^{+0.0056}_{-0.0067}$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	Age/Gyr	$13.825 \pm 0.058$	$f\sigma_8(0.61)$	$0.4720 \pm 0.0071$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$z_*$	$1090.34 \pm 0.65$	$\sigma_8(0.61)$	$0.5909^{+0.0053}_{-0.0065}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$r_*$	$144.47 \pm 0.48$	$f\sigma_8(2.33)$	$0.2976^{+0.0028}_{-0.0034}$
$A_{217}^{\mathrm{dust}TT}$	$93.2 \pm 7.3$	$100\theta_*$	$1.04101 \pm 0.00050$	$\sigma_8(2.33)$	$0.3065^{+0.0031}_{-0.0037}$
$c_{100}$	$0.99961 \pm 0.00062$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.878 \pm 0.045$	$f_{2000}^{143}$	$31 \pm 4$
$c_{217}$	$0.99827 \pm 0.00062$	$z_{\mathrm{drag}}$	$1059.5 \pm 1.2$	$f_{2000}^{143 \times 217}$	$33.7 \pm 2.9$
$H_0$	$67.0 \pm 1.1$	$r_{\mathrm{drag}}$	$147.22 \pm 0.50$	$f_{2000}^{217}$	$108.3 \pm 2.6$
$\Omega_{\Lambda}$	$0.680 \pm 0.015$	$k_{\mathrm{D}}$	$0.14049 \pm 0.00075$	$\chi_{\mathrm{simall}}^2$	$396.8 \pm 1.6$
$\Omega_{\mathrm{m}}$	$0.320 \pm 0.015$	$100\theta_{\mathrm{D}}$	$0.16114 \pm 0.00076$	$\chi_{\mathrm{lowl}}^2$	$23.9 \pm 2.0$
$\Omega_{\mathrm{m}}h^2$	$0.1433 \pm 0.0020$	$z_{\mathrm{eq}}$	$3409 \pm 48$	$\chi_{\mathrm{plik}}^2$	$772.1 \pm 5.8$
$\Omega_{\mathrm{m}}h^3$	$0.09594 \pm 0.00078$	$k_{\mathrm{eq}}$	$0.01040 \pm 0.00015$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8$	$0.8129 \pm 0.0090$	$100\theta_{\mathrm{eq}}$	$0.8115 \pm 0.0092$	$\chi_{\mathrm{CMB}}^2$	$1192.9 \pm 5.6$
$S_8$	$0.839 \pm 0.025$	$100\theta_{\mathrm{s,eq}}$	$0.4486 \pm 0.0047$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1200.15$ ;  $R - 1 = 0.00514$



## 20.7 base\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02228 \pm 0.00025$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6039 \pm 0.0082$	$H(0.38)$	$83.08 \pm 0.44$
$\Omega_{\mathrm{c}}h^2$	$0.1190 \pm 0.0012$	$\sigma_8/h^{0.5}$	$0.984 \pm 0.012$	$D_{\mathrm{M}}(0.38)$	$1527 \pm 11$
$100\theta_{\mathrm{MC}}$	$1.04126 \pm 0.00074$	$r_{\mathrm{drag}}h$	$99.89 \pm 0.98$	$H(0.51)$	$89.77 \pm 0.39$
$\tau$	$0.0549^{+0.0054}_{-0.0078}$	$\langle d^2 \rangle^{1/2}$	$2.426 \pm 0.028$	$D_{\mathrm{M}}(0.51)$	$1979 \pm 13$
$Y_{\mathrm{P}}$	$0.253 \pm 0.018$	$z_{\mathrm{re}}$	$7.76^{+0.58}_{-0.81}$	$H(0.61)$	$95.37 \pm 0.35$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044^{+0.013}_{-0.017}$	$10^9 A_{\mathrm{s}}$	$2.100^{+0.027}_{-0.037}$	$D_{\mathrm{M}}(0.61)$	$2303 \pm 14$
$n_{\mathrm{s}}$	$0.9695 \pm 0.0082$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.881 \pm 0.015$	$H(2.33)$	$235.83 \pm 0.84$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{40}$	$1221 \pm 17$	$D_{\mathrm{M}}(2.33)$	$5761 \pm 19$
$A_{217}^{\mathrm{CIB}}$	$49 \pm 7$	$D_{220}$	$5719 \pm 40$	$f\sigma_8(0.15)$	$0.4551 \pm 0.0077$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2537 \pm 14$	$\sigma_8(0.15)$	$0.7486^{+0.0071}_{-0.0082}$
$A_{143}^{\mathrm{tSZ}}$	$4.9 \pm 2.0$	$D_{1420}$	$814.5 \pm 5.3$	$f\sigma_8(0.38)$	$0.4739 \pm 0.0066$
$A_{100}^{\mathrm{PS}}$	$267 \pm 28$	$D_{2000}$	$229.1 \pm 2.4$	$\sigma_8(0.38)$	$0.6638^{+0.0062}_{-0.0072}$
$A_{143}^{\mathrm{PS}}$	$50 \pm 9$	$n_{\mathrm{s},0.002}$	$0.9695 \pm 0.0082$	$f\sigma_8(0.51)$	$0.4728 \pm 0.0060$
$A_{143 \times 217}^{\mathrm{PS}}$	$44 \pm 9$	$Y_{\mathrm{P}}$	$0.253 \pm 0.018$	$\sigma_8(0.51)$	$0.6213^{+0.0058}_{-0.0067}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.255 \pm 0.019$	$f\sigma_8(0.61)$	$0.4680^{+0.0053}_{-0.0059}$
$A^{\mathrm{kSZ}}$	$< 5.26$	Age/Gyr	$13.792 \pm 0.043$	$\sigma_8(0.61)$	$0.5913^{+0.0055}_{-0.0064}$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.8$	$z_*$	$1090.29 \pm 0.65$	$f\sigma_8(2.33)$	$0.2982^{+0.0028}_{-0.0033}$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.8$	$r_*$	$144.74 \pm 0.38$	$\sigma_8(2.33)$	$0.3076^{+0.0029}_{-0.0034}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04124 \pm 0.00043$	$f_{2000}^{143}$	$32 \pm 4$
$A_{217}^{\mathrm{dust}TT}$	$93.1 \pm 7.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.900 \pm 0.038$	$f_{2000}^{143 \times 217}$	$34.2 \pm 2.8$
$c_{100}$	$0.99961 \pm 0.00063$	$z_{\mathrm{drag}}$	$1059.9 \pm 1.1$	$f_{2000}^{217}$	$108.7 \pm 2.6$
$c_{217}$	$0.99827 \pm 0.00062$	$r_{\mathrm{drag}}$	$147.44 \pm 0.43$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.8$
$H_0$	$67.75 \pm 0.62$	$k_{\mathrm{D}}$	$0.14009 \pm 0.00058$	$\chi_{\mathrm{lowl}}^2$	$22.8 \pm 1.3$
$\Omega_{\Lambda}$	$0.6907 \pm 0.0076$	$100\theta_{\mathrm{D}}$	$0.16133 \pm 0.00073$	$\chi_{\mathrm{plik}}^2$	$773.2 \pm 5.7$
$\Omega_{\mathrm{m}}$	$0.3093 \pm 0.0076$	$z_{\mathrm{eq}}$	$3376 \pm 29$	$\chi_{6\mathrm{DF}}^2$	$0.055 \pm 0.074$
$\Omega_{\mathrm{m}}h^2$	$0.1419 \pm 0.0012$	$k_{\mathrm{eq}}$	$0.010303 \pm 0.000090$	$\chi_{\mathrm{MGS}}^2$	$1.43 \pm 0.55$
$\Omega_{\mathrm{m}}h^3$	$0.09614 \pm 0.00074$	$100\theta_{\mathrm{eq}}$	$0.8181 \pm 0.0053$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.6$
$\sigma_8$	$0.8099^{+0.0079}_{-0.0091}$	$100\theta_{\mathrm{s,eq}}$	$0.4520 \pm 0.0028$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$S_8$	$0.822 \pm 0.015$	$H(0.15)$	$73.01 \pm 0.55$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4504 \pm 0.0082$	$D_{\mathrm{M}}(0.15)$	$640.1 \pm 5.3$	$\chi_{\mathrm{CMB}}^2$	$1192.9 \pm 5.6$
$\bar{\chi}_{\mathrm{eff}}^2 = 1206.38; R - 1 = 0.01225$					



## 20.8 base\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02215 \pm 0.00028$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4569 \pm 0.0090$	$H(0.15)$	$72.45 \pm 0.75$
$\Omega_{\mathrm{c}}h^2$	$0.1201 \pm 0.0016$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6087 \pm 0.0077$	$D_{\mathrm{M}}(0.15)$	$645.7 \pm 7.5$
$100\theta_{\mathrm{MC}}$	$1.04083 \pm 0.00084$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.011$	$H(0.38)$	$82.65 \pm 0.59$
$\tau$	$0.0536^{+0.0048}_{-0.0079}$	$r_{\mathrm{drag}}h$	$98.9 \pm 1.3$	$D_{\mathrm{M}}(0.38)$	$1538 \pm 15$
$Y_{\mathrm{P}}$	$0.245 \pm 0.020$	$\langle d^2 \rangle^{1/2}$	$2.448 \pm 0.029$	$H(0.51)$	$89.42 \pm 0.50$
$\ln(10^{10}A_{\mathrm{s}})$	$3.042^{+0.012}_{-0.016}$	$z_{\mathrm{re}}$	$7.64^{+0.52}_{-0.82}$	$D_{\mathrm{M}}(0.51)$	$1992 \pm 18$
$n_{\mathrm{s}}$	$0.9636 \pm 0.0097$	$10^9 A_{\mathrm{s}}$	$2.095^{+0.024}_{-0.034}$	$H(0.61)$	$95.08 \pm 0.44$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.882 \pm 0.014$	$D_{\mathrm{M}}(0.61)$	$2317 \pm 20$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{40}$	$1232 \pm 19$	$H(2.33)$	$236.40 \pm 0.93$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{220}$	$5716 \pm 41$	$D_{\mathrm{M}}(2.33)$	$5775 \pm 23$
$A_{143}^{\mathrm{tSZ}}$	$5.0 \pm 2.0$	$D_{810}$	$2536 \pm 14$	$f\sigma_8(0.15)$	$0.4610 \pm 0.0082$
$A_{100}^{\mathrm{PS}}$	$264 \pm 29$	$D_{1420}$	$814.4 \pm 5.3$	$\sigma_8(0.15)$	$0.7488^{+0.0062}_{-0.0070}$
$A_{143}^{\mathrm{PS}}$	$49 \pm 9$	$D_{2000}$	$229.5 \pm 2.4$	$f\sigma_8(0.38)$	$0.4780 \pm 0.0063$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$n_{\mathrm{s},0.002}$	$0.9636 \pm 0.0097$	$\sigma_8(0.38)$	$0.6631^{+0.0057}_{-0.0065}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}$	$0.245 \pm 0.020$	$f\sigma_8(0.51)$	$0.4759 \pm 0.0054$
$A^{\mathrm{kSZ}}$	$< 4.98$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246 \pm 0.020$	$\sigma_8(0.51)$	$0.6203^{+0.0054}_{-0.0063}$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.9$	Age/Gyr	$13.823 \pm 0.052$	$f\sigma_8(0.61)$	$0.4704 \pm 0.0049$
$A_{143}^{\mathrm{dustTT}}$	$10.7 \pm 1.8$	$z_*$	$1090.23 \pm 0.64$	$\sigma_8(0.61)$	$0.5901^{+0.0052}_{-0.0061}$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.3 \pm 3.3$	$r_*$	$144.58 \pm 0.38$	$f\sigma_8(2.33)$	$0.2973^{+0.0028}_{-0.0033}$
$A_{217}^{\mathrm{dustTT}}$	$93.1 \pm 7.2$	$100\theta_*$	$1.04103 \pm 0.00047$	$\sigma_8(2.33)$	$0.3063^{+0.0031}_{-0.0036}$
$c_{100}$	$0.99961 \pm 0.00063$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.888 \pm 0.037$	$f_{2000}^{143}$	$31 \pm 4$
$c_{217}$	$0.99827 \pm 0.00062$	$z_{\mathrm{drag}}$	$1059.4 \pm 1.2$	$f_{2000}^{143 \times 217}$	$33.6 \pm 2.9$
$H_0$	$67.11 \pm 0.85$	$r_{\mathrm{drag}}$	$147.32 \pm 0.42$	$f_{2000}^{217}$	$108.1 \pm 2.6$
$\Omega_{\Lambda}$	$0.682 \pm 0.011$	$k_{\mathrm{D}}$	$0.14045 \pm 0.00066$	$\chi_{\mathrm{lensing}}^2$	$9.46 \pm 0.91$
$\Omega_{\mathrm{m}}$	$0.318 \pm 0.011$	$100\theta_{\mathrm{D}}$	$0.16107 \pm 0.00076$	$\chi_{\mathrm{simall}}^2$	$396.7 \pm 1.5$
$\Omega_{\mathrm{m}}h^2$	$0.1429 \pm 0.0015$	$z_{\mathrm{eq}}$	$3399 \pm 35$	$\chi_{\mathrm{lowl}}^2$	$23.8 \pm 1.8$
$\Omega_{\mathrm{m}}h^3$	$0.09588 \pm 0.00078$	$k_{\mathrm{eq}}$	$0.01038 \pm 0.00011$	$\chi_{\mathrm{plik}}^2$	$771.8 \pm 5.6$
$\sigma_8$	$0.8110^{+0.0068}_{-0.0076}$	$100\theta_{\mathrm{eq}}$	$0.8132 \pm 0.0067$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$S_8$	$0.834 \pm 0.016$	$100\theta_{\mathrm{s,eq}}$	$0.4495 \pm 0.0034$	$\chi_{\mathrm{CMB}}^2$	$1201.8 \pm 5.6$

$\bar{\chi}_{\mathrm{eff}}^2 = 1209.13$ ;  $R - 1 = 0.00826$



## 20.9 base\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02226 \pm 0.00025$	$\sigma_8/h^{0.5}$	$0.9854 \pm 0.0095$	$H(0.51)$	$89.73 \pm 0.38$
$\Omega_{\mathrm{c}}h^2$	$0.1191 \pm 0.0011$	$r_{\mathrm{drag}}h$	$99.76 \pm 0.89$	$D_{\mathrm{M}}(0.51)$	$1980 \pm 13$
$100\theta_{\mathrm{MC}}$	$1.04119 \pm 0.00074$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.023$	$H(0.61)$	$95.33 \pm 0.35$
$\tau$	$0.0556^{+0.0057}_{-0.0074}$	$z_{\mathrm{re}}$	$7.83^{+0.61}_{-0.75}$	$D_{\mathrm{M}}(0.61)$	$2304 \pm 14$
$Y_{\mathrm{P}}$	$0.251 \pm 0.018$	$10^9 A_{\mathrm{s}}$	$2.103^{+0.026}_{-0.033}$	$H(2.33)$	$235.89 \pm 0.75$
$\ln(10^{10} A_{\mathrm{s}})$	$3.046^{+0.013}_{-0.016}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.882 \pm 0.014$	$D_{\mathrm{M}}(2.33)$	$5763 \pm 19$
$n_{\mathrm{s}}$	$0.9683 \pm 0.0082$	$D_{40}$	$1224 \pm 17$	$f\sigma_8(0.15)$	$0.4561 \pm 0.0063$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0024$	$D_{220}$	$5723 \pm 40$	$\sigma_8(0.15)$	$0.7492 \pm 0.0069$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2537 \pm 13$	$f\sigma_8(0.38)$	$0.4748 \pm 0.0054$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$814.8 \pm 5.2$	$\sigma_8(0.38)$	$0.6642 \pm 0.0062$
$A_{143}^{\mathrm{tSZ}}$	$4.9 \pm 2.0$	$D_{2000}$	$229.4 \pm 2.4$	$f\sigma_8(0.51)$	$0.4735 \pm 0.0049$
$A_{100}^{\mathrm{PS}}$	$266 \pm 28$	$n_{\mathrm{s},0.002}$	$0.9683 \pm 0.0082$	$\sigma_8(0.51)$	$0.6217 \pm 0.0059$
$A_{143}^{\mathrm{PS}}$	$50 \pm 9$	$Y_{\mathrm{P}}$	$0.251 \pm 0.018$	$f\sigma_8(0.61)$	$0.4687 \pm 0.0046$
$A_{143 \times 217}^{\mathrm{PS}}$	$44 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.253 \pm 0.018$	$\sigma_8(0.61)$	$0.5916 \pm 0.0056$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	Age/Gyr	$13.797 \pm 0.043$	$f\sigma_8(2.33)$	$0.2983 \pm 0.0029$
$A^{\mathrm{kSZ}}$	$< 5.17$	$z_*$	$1090.24 \pm 0.64$	$\sigma_8(2.33)$	$0.3076^{+0.0029}_{-0.0033}$
$A_{100}^{\mathrm{dustTT}}$	$9.0 \pm 1.8$	$r_*$	$144.72 \pm 0.35$	$f_{2000}^{143}$	$32 \pm 4$
$A_{143}^{\mathrm{dustTT}}$	$10.7 \pm 1.8$	$100\theta_*$	$1.04121 \pm 0.00043$	$f_{2000}^{143 \times 217}$	$34.0 \pm 2.8$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.3 \pm 3.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.899 \pm 0.035$	$f_{2000}^{217}$	$108.6 \pm 2.5$
$A_{217}^{\mathrm{dustTT}}$	$93.2 \pm 7.2$	$z_{\mathrm{drag}}$	$1059.8 \pm 1.1$	$\chi_{\mathrm{lensing}}^2$	$9.32 \pm 0.71$
$c_{100}$	$0.99962 \pm 0.00063$	$r_{\mathrm{drag}}$	$147.43 \pm 0.41$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.8$
$c_{217}$	$0.99827 \pm 0.00062$	$k_{\mathrm{D}}$	$0.14017 \pm 0.00057$	$\chi_{\mathrm{lowl}}^2$	$23.0 \pm 1.3$
$H_0$	$67.67 \pm 0.58$	$100\theta_{\mathrm{D}}$	$0.16126 \pm 0.00072$	$\chi_{\mathrm{plik}}^2$	$772.6 \pm 5.6$
$\Omega_{\Lambda}$	$0.6898 \pm 0.0070$	$z_{\mathrm{eq}}$	$3378 \pm 26$	$\chi_{6\mathrm{DF}}^2$	$0.055 \pm 0.070$
$\Omega_{\mathrm{m}}$	$0.3102 \pm 0.0070$	$k_{\mathrm{eq}}$	$0.010311 \pm 0.000080$	$\chi_{\mathrm{MGS}}^2$	$1.35 \pm 0.49$
$\Omega_{\mathrm{m}}h^2$	$0.1420 \pm 0.0011$	$100\theta_{\mathrm{eq}}$	$0.8175 \pm 0.0047$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.5$
$\Omega_{\mathrm{m}}h^3$	$0.09610 \pm 0.00074$	$100\theta_{\mathrm{s,eq}}$	$0.4517 \pm 0.0024$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$\sigma_8$	$0.8106 \pm 0.0074$	$H(0.15)$	$72.94 \pm 0.52$	$\chi_{\mathrm{CMB}}^2$	$1202.0 \pm 5.6$
$S_8$	$0.824 \pm 0.012$	$D_{\mathrm{M}}(0.15)$	$640.8 \pm 5.0$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.2$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4515 \pm 0.0067$	$H(0.38)$	$83.02 \pm 0.42$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6049 \pm 0.0066$	$D_{\mathrm{M}}(0.38)$	$1529 \pm 10$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1215.38$ ;  $R - 1 = 0.01428$



20.10 base\_yhe\_plikHM\_TT\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02258 \pm 0.00028$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.437 \pm 0.012$	$H(0.15)$	$74.17^{+0.85}_{-0.97}$
$\Omega_{\mathrm{c}}h^2$	$0.1168^{+0.0021}_{-0.0019}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.594 \pm 0.011$	$D_{\mathrm{M}}(0.15)$	$629.0^{+9.0}_{-8.2}$
$100\theta_{\mathrm{MC}}$	$1.04205 \pm 0.00082$	$\sigma_8/h^{0.5}$	$0.971 \pm 0.016$	$H(0.38)$	$83.97^{+0.66}_{-0.75}$
$\tau$	$0.0576^{+0.0065}_{-0.0089}$	$r_{\mathrm{drag}}h$	$102.0^{+1.5}_{-1.9}$	$D_{\mathrm{M}}(0.38)$	$1504^{+19}_{-17}$
$Y_{\mathrm{P}}$	$0.268^{+0.020}_{-0.018}$	$\langle d^2 \rangle^{1/2}$	$2.383^{+0.043}_{-0.037}$	$H(0.51)$	$90.52 \pm 0.58$
$\ln(10^{10}A_{\mathrm{s}})$	$3.048^{+0.014}_{-0.019}$	$z_{\mathrm{re}}$	$8.00^{+0.65}_{-0.91}$	$D_{\mathrm{M}}(0.51)$	$1952^{+22}_{-20}$
$n_{\mathrm{s}}$	$0.981 \pm 0.010$	$10^9 A_{\mathrm{s}}$	$2.109^{+0.028}_{-0.040}$	$H(0.61)$	$96.00 \pm 0.50$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0027$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879^{+0.016}_{-0.014}$	$D_{\mathrm{M}}(0.61)$	$2273^{+24}_{-22}$
$A_{217}^{\mathrm{CIB}}$	$50 \pm 7$	$D_{40}$	$1201^{+22}_{-20}$	$H(2.33)$	$234.7 \pm 1.2$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{220}$	$5729 \pm 44$	$D_{\mathrm{M}}(2.33)$	$5732 \pm 23$
$A_{143}^{\mathrm{tSZ}}$	$4.7 \pm 2.0$	$D_{810}$	$2538 \pm 15$	$f\sigma_8(0.15)$	$0.443 \pm 0.012$
$A_{100}^{\mathrm{PS}}$	$271 \pm 28$	$D_{1420}$	$814.6 \pm 5.4$	$\sigma_8(0.15)$	$0.7472^{+0.0075}_{-0.0093}$
$A_{143}^{\mathrm{PS}}$	$52 \pm 9$	$D_{2000}$	$228.5 \pm 2.4$	$f\sigma_8(0.38)$	$0.4652 \pm 0.0095$
$A_{143 \times 217}^{\mathrm{PS}}$	$44^{+9}_{-10}$	$n_{\mathrm{s},0.002}$	$0.981 \pm 0.010$	$\sigma_8(0.38)$	$0.6644^{+0.0062}_{-0.0080}$
$A_{217}^{\mathrm{PS}}$	$114 \pm 10$	$Y_{\mathrm{P}}$	$0.268^{+0.020}_{-0.018}$	$f\sigma_8(0.51)$	$0.4659 \pm 0.0083$
$A^{\mathrm{kSZ}}$	$4.4^{+1.6}_{-4.0}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.270^{+0.020}_{-0.018}$	$\sigma_8(0.51)$	$0.6226^{+0.0056}_{-0.0074}$
$A_{100}^{\mathrm{dust}TT}$	$9.0 \pm 1.9$	Age/Gyr	$13.728 \pm 0.053$	$f\sigma_8(0.61)$	$0.4624 \pm 0.0074$
$A_{143}^{\mathrm{dust}TT}$	$10.8 \pm 1.8$	$z_*$	$1090.34 \pm 0.64$	$\sigma_8(0.61)$	$0.5929^{+0.0054}_{-0.0070}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.2 \pm 3.3$	$r_*$	$145.04 \pm 0.48$	$f\sigma_8(2.33)$	$0.2997^{+0.0028}_{-0.0035}$
$A_{217}^{\mathrm{dust}TT}$	$92.4 \pm 7.1$	$100\theta_*$	$1.04161 \pm 0.00047$	$\sigma_8(2.33)$	$0.3098^{+0.0031}_{-0.0038}$
$c_{100}$	$0.99963 \pm 0.00065$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.924 \pm 0.045$	$f_{2000}^{143}$	$33.1 \pm 3.7$
$c_{217}$	$0.99827 \pm 0.00060$	$z_{\mathrm{drag}}$	$1061.0 \pm 1.1$	$f_{2000}^{143 \times 217}$	$35.1 \pm 2.8$
$H_0$	$69.07^{+0.96}_{-1.1}$	$r_{\mathrm{drag}}$	$147.66 \pm 0.49$	$f_{2000}^{217}$	$109.5 \pm 2.6$
$\Omega_{\Lambda}$	$0.706 \pm 0.012$	$k_{\mathrm{D}}$	$0.13948 \pm 0.00073$	$\chi_{\mathrm{simall}}^2$	$397.3 \pm 2.2$
$\Omega_{\mathrm{m}}$	$0.294 \pm 0.012$	$100\theta_{\mathrm{D}}$	$0.16177 \pm 0.00075$	$\chi_{\mathrm{lowl}}^2$	$21.4 \pm 1.1$
$\Omega_{\mathrm{m}}h^2$	$0.1400 \pm 0.0019$	$z_{\mathrm{eq}}$	$3330 \pm 45$	$\chi_{\mathrm{plik}}^2$	$777.9 \pm 6.7$
$\Omega_{\mathrm{m}}h^3$	$0.09667 \pm 0.00074$	$k_{\mathrm{eq}}$	$0.01016 \pm 0.00014$	$\chi_{\mathrm{H073p45}}^2$	$7.3 \pm 3.2$
$\sigma_8$	$0.8067^{+0.0089}_{-0.011}$	$100\theta_{\mathrm{eq}}$	$0.8281^{+0.0082}_{-0.0098}$	$\chi_{\mathrm{prior}}^2$	$7.5 \pm 3.9$
$S_8$	$0.798 \pm 0.023$	$100\theta_{\mathrm{s,eq}}$	$0.4570^{+0.0042}_{-0.0050}$	$\chi_{\mathrm{CMB}}^2$	$1196.6 \pm 6.3$

$\bar{\chi}_{\mathrm{eff}}^2 = 1211.44$ ;  $R - 1 = 0.09941$



# 20.11 base\_yhe\_plikHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022281	$0.02229 \pm 0.00020$ (+0.6 $\sigma$ )	$\Omega_{\mathrm{m}}h^2$	0.14325	$0.1432 \pm 0.0013$ (−0.1 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8118	$0.8122 \pm 0.0058$ (+0.1 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.12033	$0.1202 \pm 0.0014$ (−0.2 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.09606	$0.09611 \pm 0.00053$ (+0.3 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.44865	$0.4489 \pm 0.0030$ (+0.1 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.04058	$1.04069 \pm 0.00055$ (−0.1 $\sigma$ )	$\sigma_8$	0.8109	$0.8105 \pm 0.0082$ (−0.1 $\sigma$ )	$H(0.15)$	72.41	$72.48 \pm 0.60$ (+0.2 $\sigma$ )
$\tau$	0.0540	$0.0538 \pm 0.0081$ (+0.2 $\sigma$ )	$S_8$	0.8357	$0.834 \pm 0.016$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	646.0	$645.4 \pm 6.0$ (−0.2 $\sigma$ )
$Y_{\mathrm{P}}$	0.2365	$0.240 \pm 0.013$ (−0.3 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4577	$0.4569 \pm 0.0088$ (−0.2 $\sigma$ )	$H(0.38)$	82.642	$82.70 \pm 0.46$ (+0.2 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0431	$3.042 \pm 0.017$ (+0.1 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6093	$0.6085 \pm 0.0083$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1539.0	$1538 \pm 12$ (−0.2 $\sigma$ )
$n_{\mathrm{s}}$	0.9621	$0.9622 \pm 0.0072$ (−0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9903	$0.989 \pm 0.012$ (−0.2 $\sigma$ )	$H(0.51)$	89.430	$89.48 \pm 0.38$ (+0.2 $\sigma$ )
$y_{\mathrm{cal}}$	1.00057	$1.0006 \pm 0.0024$ (+0.1 $\sigma$ )	$r_{\mathrm{drag}}h$	98.65	$98.8 \pm 1.1$ (+0.2 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1992.5	$1991 \pm 14$ (−0.2 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	44.3	$46 \pm 7$ (−0.2 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4544	$2.452 \pm 0.030$ (−0.0 $\sigma$ )	$H(0.61)$	95.102	$95.15 \pm 0.33$ (+0.2 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.85	—	$z_{\mathrm{re}}$	7.63	$7.61 \pm 0.82$ (+0.2 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2317.7	$2316 \pm 15$ (−0.2 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	6.95	$5.5 \pm 2.0$ (+0.2 $\sigma$ )	$10^9 A_{\mathrm{s}}$	2.0970	$2.096 \pm 0.036$ (+0.1 $\sigma$ )	$H(2.33)$	236.66	$236.62 \pm 0.81$ (−0.1 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	244.6	$257 \pm 28$ (−0.3 $\sigma$ )	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8823	$1.882 \pm 0.012$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5772.5	$5770 \pm 16$ (−0.3 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	51.3	$45 \pm 8$ (−0.5 $\sigma$ )	$D_{40}$	1236.4	$1236 \pm 16$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4617	$0.4610 \pm 0.0082$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	56.6	$42 \pm 9$ (−0.2 $\sigma$ )	$D_{220}$	5732.6	$5733 \pm 39$ (+0.5 $\sigma$ )	$\sigma_8(0.15)$	0.7487	$0.7483 \pm 0.0074$ (−0.1 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	123.5	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{810}$	2541.3	$2538 \pm 13$ (+0.1 $\sigma$ )	$f\sigma_8(0.38)$	0.4785	$0.4779 \pm 0.0067$ (−0.2 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.01	$< 4.10$ (−0.2 $\sigma$ )	$D_{1420}$	819.43	$817.5 \pm 4.7$ (+0.6 $\sigma$ )	$\sigma_8(0.38)$	0.6629	$0.6626 \pm 0.0065$ (−0.1 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.71	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$D_{2000}$	232.13	$231.2 \pm 1.8$ (+0.7 $\sigma$ )	$f\sigma_8(0.51)$	0.4763	$0.4757 \pm 0.0060$ (−0.2 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	10.88	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.9621	$0.9622 \pm 0.0072$ (−0.1 $\sigma$ )	$\sigma_8(0.51)$	0.6200	$0.6198 \pm 0.0061$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	20.13	$18.5 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}$	0.2365	$0.240 \pm 0.013$ (−0.3 $\sigma$ )	$f\sigma_8(0.61)$	0.4707	$0.4702 \pm 0.0055$ (−0.2 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	95.7	$93.7 \pm 7.3$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.2378	$0.241 \pm 0.013$ (−0.3 $\sigma$ )	$\sigma_8(0.61)$	0.5898	$0.5896 \pm 0.0058$ (−0.0 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1140	$0.114 \pm 0.038$	Age/Gyr	13.8179	$13.813 \pm 0.037$ (−0.3 $\sigma$ )	$f\sigma_8(2.33)$	0.29708	$0.2970 \pm 0.0030$ (−0.0 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1345	$0.134 \pm 0.030$	$z_*$	1089.707	$1089.81 \pm 0.42$ (−0.8 $\sigma$ )	$\sigma_8(2.33)$	0.30597	$0.3060 \pm 0.0032$ (+0.0 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.484	$0.482 \pm 0.085$	$r_*$	144.445	$144.45 \pm 0.32$ (−0.0 $\sigma$ )	$f_{2000}^{143}$	27.45	$28.9 \pm 3.1$ (−0.6 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.224	$0.224 \pm 0.053$	$100\theta_*$	1.041004	$1.04103 \pm 0.00033$ (+0.1 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.09	$31.7 \pm 2.2$ (−0.7 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.665	$0.666 \pm 0.080$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8756	$13.876 \pm 0.030$ (−0.0 $\sigma$ )	$f_{2000}^{217}$	105.68	$106.6 \pm 2.1$ (−0.6 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.089	$2.09 \pm 0.27$	$z_{\mathrm{drag}}$	1059.47	$1059.58 \pm 0.78$ (+0.1 $\sigma$ )	$\chi_{\mathrm{simall}}^2$	396.06	$397.1 \pm 2.0$ (+0.1 $\sigma$ )
$c_{100}$	0.99975	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$r_{\mathrm{drag}}$	147.129	$147.13 \pm 0.33$ (−0.2 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	23.94	$24.1 \pm 1.5$ (+0.0 $\sigma$ )
$c_{217}$	0.99815	$0.99819 \pm 0.00063$ (−0.1 $\sigma$ )	$k_{\mathrm{D}}$	0.141113	$0.14099 \pm 0.00041$ (+0.6 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2343.8	$2359.9 \pm 6.0$ (+275.2 $\sigma$ )
$H_0$	67.05	$67.13 \pm 0.69$ (+0.2 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160447	$0.16059 \pm 0.00046$ (−0.7 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.44	$11.5 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_{\Lambda}$	0.6814	$0.6821 \pm 0.0090$ (+0.2 $\sigma$ )	$z_{\mathrm{eq}}$	3407.9	$3406 \pm 31$ (−0.1 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	2763.8	$2781.1 \pm 6.0$ (+280.2 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3186	$0.3179 \pm 0.0090$ (−0.2 $\sigma$ )	$k_{\mathrm{eq}}$	0.010401	$0.010396 \pm 0.000093$ (−0.1 $\sigma$ )			

Best-fit  $\chi_{\mathrm{eff}}^2 = 2765.27$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1585.70$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2792.56$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.14$ ;  $R - 1 = 0.00867$

$\chi_{\mathrm{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.06 ( $\Delta$  0.23) commander\_dx12\_v3.2.29: 23.95 ( $\Delta$  0.26) plik\_rd12\_HM\_v22b\_TTTEEE: 2343.82



## 20.12 base\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022389	$0.02239 \pm 0.00018$ (+0.5 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.09619	$0.09623 \pm 0.00051$ (+0.1 $\sigma$ )	$H(0.15)$	72.868	$72.90 \pm 0.44$ (−0.2 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11930	$0.1193 \pm 0.0010$ (+0.2 $\sigma$ )	$\sigma_8$	0.8090	$0.8090 \pm 0.0083$ (+0.0 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	641.45	$641.1 \pm 4.3$ (+0.2 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.04082	$1.04091 \pm 0.00051$ (−0.5 $\sigma$ )	$S_8$	0.8244	$0.824 \pm 0.013$ (+0.2 $\sigma$ )	$H(0.38)$	82.984	$83.01 \pm 0.34$ (−0.1 $\sigma$ )
$\tau$	0.0553	$0.0556 \pm 0.0082$ (+0.2 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4516	$0.4514 \pm 0.0071$ (+0.2 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1529.8	$1529.1 \pm 8.8$ (+0.2 $\sigma$ )
$Y_{\mathrm{P}}$	0.2402	$0.243 \pm 0.012$ (−0.6 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6044	$0.6043 \pm 0.0074$ (+0.1 $\sigma$ )	$H(0.51)$	89.704	$89.73 \pm 0.30$ (−0.1 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0444	$3.044 \pm 0.018$ (+0.2 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9840	$0.984 \pm 0.011$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1981.7	$1981 \pm 10$ (+0.2 $\sigma$ )
$n_{\mathrm{s}}$	0.9658	$0.9658 \pm 0.0062$ (−0.4 $\sigma$ )	$r_{\mathrm{drag}}h$	99.54	$99.59 \pm 0.80$ (−0.3 $\sigma$ )	$H(0.61)$	95.325	$95.35 \pm 0.26$ (−0.1 $\sigma$ )
$y_{\mathrm{cal}}$	1.00071	$1.0006 \pm 0.0024$ (+0.1 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4372	$2.437 \pm 0.026$ (+0.4 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2305.9	$2305 \pm 11$ (+0.1 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	44.9	$47 \pm 7$ (−0.3 $\sigma$ )	$z_{\mathrm{re}}$	7.75	$7.76 \pm 0.83$ (+0.2 $\sigma$ )	$H(2.33)$	236.11	$236.10 \pm 0.65$ (+0.3 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.78	—	$10^9 A_{\mathrm{s}}$	2.0998	$2.100 \pm 0.037$ (+0.2 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5762.4	$5761 \pm 14$ (+0.0 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	6.99	$5.5_{-1.9}^{+2.2}$ (+0.3 $\sigma$ )	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8798	$1.879 \pm 0.012$ (−0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4561	$0.4560 \pm 0.0067$ (+0.2 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	245.8	$257 \pm 28$ (−0.3 $\sigma$ )	$D_{40}$	1229.6	$1229 \pm 15$ (+0.5 $\sigma$ )	$\sigma_8(0.15)$	0.7475	$0.7476 \pm 0.0076$ (−0.0 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	50.9	$45 \pm 8$ (−0.6 $\sigma$ )	$D_{220}$	5738.9	$5737 \pm 39$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.4744	$0.4743 \pm 0.0059$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	55.1	$42 \pm 9$ (−0.2 $\sigma$ )	$D_{810}$	2541.4	$2539 \pm 13$ (+0.1 $\sigma$ )	$\sigma_8(0.38)$	0.6626	$0.6627 \pm 0.0067$ (−0.0 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	122.6	$115 \pm 10$ (−0.0 $\sigma$ )	$D_{1420}$	819.78	$817.9 \pm 4.7$ (+0.6 $\sigma$ )	$f\sigma_8(0.51)$	0.4730	$0.4729 \pm 0.0055$ (+0.1 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.00	$< 4.18$ (−0.3 $\sigma$ )	$D_{2000}$	232.10	$231.3 \pm 1.8$ (+0.9 $\sigma$ )	$\sigma_8(0.51)$	0.6201	$0.6202 \pm 0.0063$ (−0.1 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.79	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.9658	$0.9658 \pm 0.0062$ (−0.4 $\sigma$ )	$f\sigma_8(0.61)$	0.4680	$0.4680 \pm 0.0052$ (+0.1 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	10.95	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}$	0.2402	$0.243 \pm 0.012$ (−0.6 $\sigma$ )	$\sigma_8(0.61)$	0.5900	$0.5902 \pm 0.0060$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	20.17	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.2415	$0.244 \pm 0.012$ (−0.6 $\sigma$ )	$f\sigma_8(2.33)$	0.29749	$0.2976 \pm 0.0031$ (−0.1 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	95.7	$93.7 \pm 7.3$ (+0.1 $\sigma$ )	Age/Gyr	13.7954	$13.793 \pm 0.031$ (−0.0 $\sigma$ )	$\sigma_8(2.33)$	0.30669	$0.3068 \pm 0.0032$ (−0.1 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1135	$0.113 \pm 0.038$	$z_*$	1089.623	$1089.73 \pm 0.41$ (−0.9 $\sigma$ )	$f_{2000}^{143}$	27.76	$29.0 \pm 3.1$ (−0.8 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1355	$0.134 \pm 0.030$	$r_*$	144.617	$144.61 \pm 0.28$ (−0.3 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.26	$31.7 \pm 2.2$ (−0.9 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.482	$0.482 \pm 0.086$	$100\theta_*$	1.041145	$1.04116 \pm 0.00030$ (−0.2 $\sigma$ )	$f_{2000}^{217}$	105.85	$106.6 \pm 2.1$ (−0.8 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.227	$0.222 \pm 0.053$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8902	$13.890 \pm 0.027$ (−0.3 $\sigma$ )	$\chi_{\mathrm{simall}}^2$	396.22	$397.4 \pm 2.2$ (+0.2 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.664	$0.665 \pm 0.079$	$z_{\mathrm{drag}}$	1059.74	$1059.84 \pm 0.73$ (−0.1 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	23.25	$23.4 \pm 1.2$ (+0.5 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.072	$2.08 \pm 0.27$	$r_{\mathrm{drag}}$	147.273	$147.27 \pm 0.30$ (−0.4 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2344.9	$2360.4 \pm 6.0$ (+277.6 $\sigma$ )
$c_{100}$	0.99974	$0.99966 \pm 0.00061$ (+0.1 $\sigma$ )	$k_{\mathrm{D}}$	0.140902	$0.14080 \pm 0.00036$ (+1.2 $\sigma$ )	$\chi_{6\mathrm{DF}}^2$	0.0379	$0.061 \pm 0.071$ (+0.1 $\sigma$ )
$c_{217}$	0.99818	$0.99819 \pm 0.00062$ (−0.1 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160519	$0.16064 \pm 0.00045$ (−0.9 $\sigma$ )	$\chi_{\mathrm{MGS}}^2$	1.156	$1.24 \pm 0.43$ (−0.3 $\sigma$ )
$H_0$	67.59	$67.62 \pm 0.50$ (−0.2 $\sigma$ )	$z_{\mathrm{eq}}$	3385.8	$3385 \pm 23$ (+0.3 $\sigma$ )	$\chi_{\mathrm{DR12BAO}}^2$	4.62	$5.0 \pm 1.5$ (+0.2 $\sigma$ )
$\Omega_{\Lambda}$	0.6884	$0.6887 \pm 0.0063$ (−0.2 $\sigma$ )	$k_{\mathrm{eq}}$	0.010334	$0.010333 \pm 0.000071$ (+0.3 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.55	$11.6 \pm 4.5$ (+1.2 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3116	$0.3113 \pm 0.0063$ (+0.2 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.81621	$0.8164 \pm 0.0043$ (−0.3 $\sigma$ )	$\chi_{\mathrm{BAO}}^2$	5.82	$6.3 \pm 1.3$ (+0.1 $\sigma$ )
$\Omega_{\mathrm{m}}h^2$	0.14233	$0.14231 \pm 0.00098$ (+0.3 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.45089	$0.4510 \pm 0.0022$ (−0.3 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	2764.3	$2781.1 \pm 6.0$ (+283.5 $\sigma$ )

Best-fit  $\chi_{\mathrm{eff}}^2 = 2771.70$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1585.96$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2798.91$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.38$ ;  $R - 1 = 0.02958$   
 $\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.04 ( $\Delta$  0.02) MGS: 1.16 ( $\Delta$  -0.19) DR12BAO: 4.62 ( $\Delta$  0.57) CMB - simall-100x143.offlike5\_EE\_Aplanck\_B: 396.22 ( $\Delta$  0.16) commander\_dx12.v3.2.29: 23.25 ( $\Delta$  0.61) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.87



### 20.13 base\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022304	$0.02230 \pm 0.00020$ (+0.6 $\sigma$ )	$\Omega_{\mathrm{m}}h^2$	0.14297	$0.1430 \pm 0.0011$ (−0.0 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8131	$0.8129 \pm 0.0051$ (+0.1 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.12002	$0.1201 \pm 0.0012$ (−0.1 $\sigma$ )	$\Omega_{\mathrm{m}}h^3$	0.09606	$0.09609 \pm 0.00053$ (+0.3 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.44931	$0.4492 \pm 0.0026$ (+0.0 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.04061	$1.04067 \pm 0.00055$ (−0.1 $\sigma$ )	$\sigma_8$	0.8097	$0.8095 \pm 0.0069$ (−0.1 $\sigma$ )	$H(0.15)$	72.52	$72.53 \pm 0.55$ (+0.2 $\sigma$ )
$\tau$	0.0541	$0.0537 \pm 0.0077$ (+0.2 $\sigma$ )	$S_8$	0.8319	$0.832 \pm 0.013$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	644.9	$644.9 \pm 5.4$ (−0.2 $\sigma$ )
$Y_{\mathrm{P}}$	0.2366	$0.239 \pm 0.013$ (−0.3 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4557	$0.4557 \pm 0.0069$ (−0.2 $\sigma$ )	$H(0.38)$	82.724	$82.73 \pm 0.42$ (+0.2 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0422	$3.042 \pm 0.016$ (+0.2 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6074	$0.6073 \pm 0.0064$ (−0.2 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1536.7	$1537 \pm 11$ (−0.2 $\sigma$ )
$n_{\mathrm{s}}$	0.9629	$0.9621 \pm 0.0070$ (−0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9878	$0.9876 \pm 0.0091$ (−0.2 $\sigma$ )	$H(0.51)$	89.492	$89.50 \pm 0.36$ (+0.2 $\sigma$ )
$y_{\mathrm{cal}}$	1.00046	$1.0005 \pm 0.0024$ (+0.1 $\sigma$ )	$r_{\mathrm{drag}}h$	98.89	$98.9 \pm 1.0$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1989.8	$1990 \pm 13$ (−0.2 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	44.7	$46 \pm 7$ (−0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4484	$2.450 \pm 0.023$ (+0.1 $\sigma$ )	$H(0.61)$	95.150	$95.16 \pm 0.31$ (+0.2 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.78	—	$z_{\mathrm{re}}$	7.64	$7.59 \pm 0.78$ (+0.1 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2314.8	$2315 \pm 14$ (−0.2 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	7.00	$5.5^{+2.1}_{-1.9}$ (+0.2 $\sigma$ )	$10^9 A_{\mathrm{s}}$	2.0951	$2.094 \pm 0.033$ (+0.2 $\sigma$ )	$H(2.33)$	236.48	$236.51 \pm 0.72$ (+0.0 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	244.9	$257 \pm 28$ (−0.2 $\sigma$ )	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8801	$1.881 \pm 0.012$ (−0.1 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5770.5	$5770 \pm 16$ (−0.3 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	50.0	$45 \pm 8$ (−0.5 $\sigma$ )	$D_{40}$	1234.0	$1236 \pm 15$ (+0.2 $\sigma$ )	$f\sigma_8(0.15)$	0.4598	$0.4598 \pm 0.0064$ (−0.2 $\sigma$ )
$A_{143 \times 217}^{\mathrm{PS}}$	54.6	$42 \pm 9$ (−0.2 $\sigma$ )	$D_{220}$	5731.3	$5735 \pm 39$ (+0.5 $\sigma$ )	$\sigma_8(0.15)$	0.7477	$0.7475 \pm 0.0064$ (−0.1 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	122.5	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{810}$	2540.0	$2538 \pm 13$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.4770	$0.4769 \pm 0.0052$ (−0.2 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.01	$< 4.10$ (−0.2 $\sigma$ )	$D_{1420}$	819.29	$817.5 \pm 4.8$ (+0.6 $\sigma$ )	$\sigma_8(0.38)$	0.6622	$0.6620 \pm 0.0058$ (−0.0 $\sigma$ )
$A_{100}^{\mathrm{dustTT}}$	8.70	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$D_{2000}$	232.10	$231.3 \pm 1.8$ (+0.7 $\sigma$ )	$f\sigma_8(0.51)$	0.47498	$0.4749 \pm 0.0047$ (−0.1 $\sigma$ )
$A_{143}^{\mathrm{dustTT}}$	10.94	$10.8 \pm 1.8$ (+0.1 $\sigma$ )	$n_{\mathrm{s},0.002}$	0.9629	$0.9621 \pm 0.0070$ (−0.1 $\sigma$ )	$\sigma_8(0.51)$	0.6195	$0.6193 \pm 0.0056$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTT}}$	20.05	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}$	0.2366	$0.239 \pm 0.013$ (−0.3 $\sigma$ )	$f\sigma_8(0.61)$	0.46959	$0.4695 \pm 0.0043$ (−0.1 $\sigma$ )
$A_{217}^{\mathrm{dustTT}}$	95.7	$93.9 \pm 7.3$ (+0.1 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.2379	$0.240 \pm 0.013$ (−0.3 $\sigma$ )	$\sigma_8(0.61)$	0.5893	$0.5891 \pm 0.0054$ (−0.0 $\sigma$ )
$A_{100}^{\mathrm{dustTE}}$	0.1152	$0.113 \pm 0.038$	Age/Gyr	13.8135	$13.812 \pm 0.036$ (−0.3 $\sigma$ )	$f\sigma_8(2.33)$	0.29694	$0.2968 \pm 0.0028$ (+0.0 $\sigma$ )
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1356	$0.134 \pm 0.030$	$z_*$	1089.656	$1089.76 \pm 0.41$ (−0.7 $\sigma$ )	$\sigma_8(2.33)$	0.30591	$0.3058 \pm 0.0031$ (+0.0 $\sigma$ )
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.482	$0.482 \pm 0.086$	$r_*$	144.508	$144.49 \pm 0.28$ (−0.2 $\sigma$ )	$f_{2000}^{143}$	27.38	$28.8 \pm 3.1$ (−0.6 $\sigma$ )
$A_{143}^{\mathrm{dustTE}}$	0.226	$0.224 \pm 0.054$	$100\theta_*$	1.041023	$1.04103 \pm 0.00032$ (+0.1 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.01	$31.6 \pm 2.2$ (−0.7 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.666	$0.667 \pm 0.080$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8813	$13.880 \pm 0.027$ (−0.2 $\sigma$ )	$f_{2000}^{217}$	105.61	$106.5 \pm 2.1$ (−0.6 $\sigma$ )
$A_{217}^{\mathrm{dustTE}}$	2.091	$2.08 \pm 0.27$	$z_{\mathrm{drag}}$	1059.51	$1059.56 \pm 0.77$ (+0.2 $\sigma$ )	$\chi_{\mathrm{lensing}}^2$	8.756	$9.18 \pm 0.69$ (−0.3 $\sigma$ )
$c_{100}$	0.99973	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$r_{\mathrm{drag}}$	147.185	$147.17 \pm 0.30$ (−0.3 $\sigma$ )	$\chi_{\mathrm{small}}^2$	396.05	$397.0 \pm 1.7$ (+0.1 $\sigma$ )
$c_{217}$	0.99818	$0.99819 \pm 0.00062$ (−0.1 $\sigma$ )	$k_{\mathrm{D}}$	0.141070	$0.14098 \pm 0.00039$ (+0.7 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	23.75	$24.0 \pm 1.4$ (+0.1 $\sigma$ )
$H_0$	67.19	$67.19 \pm 0.63$ (+0.2 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.160430	$0.16055 \pm 0.00045$ (−0.7 $\sigma$ )	$\chi_{\mathrm{plik}}^2$	2344.0	$2359.6 \pm 5.9$ (+286.0 $\sigma$ )
$\Omega_{\Lambda}$	0.6833	$0.6831 \pm 0.0081$ (+0.2 $\sigma$ )	$z_{\mathrm{eq}}$	3401.0	$3402 \pm 27$ (−0.0 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	1.51	$11.5 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3167	$0.3169 \pm 0.0081$ (−0.2 $\sigma$ )	$k_{\mathrm{eq}}$	0.010380	$0.010384 \pm 0.000082$ (−0.0 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	2772.6	$2789.9 \pm 6.0$ (+277.6 $\sigma$ )

Best-fit  $\chi_{\mathrm{eff}}^2 = 2774.06$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1585.61$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2801.34$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.95$ ;  $R - 1 = 0.01603$   
 $\chi_{\mathrm{eff}}^2$ : CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p.teb.consext8: 8.76 ( $\Delta$  -0.07) small\_100x143\_offlike5\_EE\_Aplanck\_B: 396.05 ( $\Delta$  0.19) commander\_dx12\_v3.2.29: 23.75 ( $\Delta$  0.06) plik\_rd12\_HM\_v22b\_TTTEEE: 2344.00



## 20.14 base\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022390	$0.02239 \pm 0.00018$ (+0.5 $\sigma$ )	$\sigma_8$	0.8089	$0.8095 \pm 0.0070$ (−0.1 $\sigma$ )	$H(0.38)$	82.983	$83.00 \pm 0.34$ (−0.0 $\sigma$ )
$\Omega_c h^2$	0.11926	$0.11930 \pm 0.00094$ (+0.1 $\sigma$ )	$S_8$	0.8243	$0.825 \pm 0.011$ (+0.1 $\sigma$ )	$D_M(0.38)$	1529.8	$1529.5 \pm 8.5$ (+0.1 $\sigma$ )
$100\theta_{MC}$	1.04080	$1.04088 \pm 0.00051$ (−0.4 $\sigma$ )	$\sigma_8 \Omega_m^{0.5}$	0.4515	$0.4518 \pm 0.0058$ (+0.1 $\sigma$ )	$H(0.51)$	89.702	$89.72 \pm 0.29$ (−0.0 $\sigma$ )
$\tau$	0.0559	$0.0562 \pm 0.0075$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_m^{0.25}$	0.6043	$0.6047 \pm 0.0060$ (+0.0 $\sigma$ )	$D_M(0.51)$	1981.7	$1981 \pm 10$ (+0.1 $\sigma$ )
$Y_P$	0.2395	$0.242 \pm 0.012$ (−0.5 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9840	$0.9846 \pm 0.0088$ (−0.0 $\sigma$ )	$H(0.61)$	95.321	$95.34 \pm 0.26$ (+0.0 $\sigma$ )
$\ln(10^{10} A_s)$	3.0450	$3.046 \pm 0.016$ (+0.1 $\sigma$ )	$r_{drag} h$	99.55	$99.56 \pm 0.76$ (−0.2 $\sigma$ )	$D_M(0.61)$	2305.9	$2306 \pm 11$ (+0.1 $\sigma$ )
$n_s$	0.9653	$0.9653 \pm 0.0062$ (−0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4386	$2.440 \pm 0.022$ (+0.4 $\sigma$ )	$H(2.33)$	236.08	$236.11 \pm 0.60$ (+0.3 $\sigma$ )
$y_{cal}$	1.00070	$1.0007 \pm 0.0024$ (+0.1 $\sigma$ )	$z_{re}$	7.80	$7.82 \pm 0.75$ (+0.1 $\sigma$ )	$D_M(2.33)$	5762.6	$5762 \pm 14$ (−0.1 $\sigma$ )
$A_{217}^{CIB}$	46.0	$46 \pm 7$ (−0.3 $\sigma$ )	$10^9 A_s$	2.1011	$2.103 \pm 0.033$ (+0.1 $\sigma$ )	$f\sigma_8(0.15)$	0.4561	$0.4564 \pm 0.0055$ (+0.1 $\sigma$ )
$\xi^{tSZ \times CIB}$	0.57	—	$10^9 A_s e^{-2\tau}$	1.8788	$1.879 \pm 0.011$ (−0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7475	$0.7480 \pm 0.0065$ (−0.1 $\sigma$ )
$A_{143}^{tSZ}$	7.15	$5.5_{-1.9}^{+2.2}$ (+0.3 $\sigma$ )	$D_{40}$	1230.4	$1231 \pm 14$ (+0.4 $\sigma$ )	$f\sigma_8(0.38)$	0.47437	$0.4747 \pm 0.0048$ (+0.0 $\sigma$ )
$A_{100}^{PS}$	247.5	$257 \pm 28$ (−0.3 $\sigma$ )	$D_{220}$	5739.5	$5740 \pm 38$ (+0.4 $\sigma$ )	$\sigma_8(0.38)$	0.6626	$0.6631 \pm 0.0058$ (−0.1 $\sigma$ )
$A_{143}^{PS}$	47.5	$45 \pm 8$ (−0.6 $\sigma$ )	$D_{810}$	2540.4	$2539 \pm 13$ (+0.1 $\sigma$ )	$f\sigma_8(0.51)$	0.47297	$0.4733 \pm 0.0045$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{PS}$	49.7	$42 \pm 9$ (−0.2 $\sigma$ )	$D_{1420}$	819.44	$818.2 \pm 4.7$ (+0.6 $\sigma$ )	$\sigma_8(0.51)$	0.6201	$0.6205 \pm 0.0055$ (−0.1 $\sigma$ )
$A_{217}^{PS}$	120.5	$115 \pm 10$ (−0.0 $\sigma$ )	$D_{2000}$	232.04	$231.4 \pm 1.8$ (+0.9 $\sigma$ )	$f\sigma_8(0.61)$	0.46800	$0.4683 \pm 0.0043$ (−0.0 $\sigma$ )
$A^{kSZ}$	0.00	$< 4.08$ (−0.3 $\sigma$ )	$n_{s,0.002}$	0.9653	$0.9653 \pm 0.0062$ (−0.3 $\sigma$ )	$\sigma_8(0.61)$	0.5900	$0.5904 \pm 0.0053$ (−0.1 $\sigma$ )
$A_{100}^{dustTT}$	8.80	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$Y_P$	0.2395	$0.242 \pm 0.012$ (−0.5 $\sigma$ )	$f\sigma_8(2.33)$	0.29749	$0.2977 \pm 0.0027$ (−0.1 $\sigma$ )
$A_{143}^{dustTT}$	10.92	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$Y_P^{BBN}$	0.2408	$0.243 \pm 0.012$ (−0.5 $\sigma$ )	$\sigma_8(2.33)$	0.30670	$0.3069 \pm 0.0029$ (−0.1 $\sigma$ )
$A_{143 \times 217}^{dustTT}$	19.83	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	Age/Gyr	13.7960	$13.794 \pm 0.031$ (−0.1 $\sigma$ )	$f_{2000}^{143}$	27.80	$28.8 \pm 3.1$ (−0.8 $\sigma$ )
$A_{217}^{dustTT}$	95.3	$93.8 \pm 7.3$ (+0.1 $\sigma$ )	$z_*$	1089.594	$1089.70 \pm 0.40$ (−0.9 $\sigma$ )	$f_{2000}^{143 \times 217}$	31.23	$31.6 \pm 2.2$ (−0.9 $\sigma$ )
$A_{100}^{dustTE}$	0.1140	$0.112 \pm 0.038$	$r_*$	144.627	$144.61 \pm 0.26$ (−0.3 $\sigma$ )	$f_{2000}^{217}$	105.95	$106.5 \pm 2.1$ (−0.8 $\sigma$ )
$A_{100 \times 143}^{dustTE}$	0.1339	$0.134 \pm 0.030$	$100\theta_*$	1.041135	$1.04115 \pm 0.00030$ (−0.1 $\sigma$ )	$\chi_{lensing}^2$	8.664	$9.08 \pm 0.61$ (−0.4 $\sigma$ )
$A_{100 \times 217}^{dustTE}$	0.483	$0.482 \pm 0.086$	$D_M(z_*)/\text{Gpc}$	13.8913	$13.890 \pm 0.026$ (−0.3 $\sigma$ )	$\chi_{small}^2$	396.33	$397.3 \pm 2.0$ (+0.1 $\sigma$ )
$A_{143}^{dustTE}$	0.224	$0.222 \pm 0.054$	$z_{drag}$	1059.74	$1059.81 \pm 0.73$ (−0.0 $\sigma$ )	$\chi_{lowl}^2$	23.34	$23.5 \pm 1.2$ (+0.4 $\sigma$ )
$A_{143 \times 217}^{dustTE}$	0.664	$0.666 \pm 0.079$	$r_{drag}$	147.281	$147.27 \pm 0.29$ (−0.4 $\sigma$ )	$\chi_{plik}^2$	2344.6	$2360.0 \pm 5.9$ (+285.3 $\sigma$ )
$A_{217}^{dustTE}$	2.079	$2.08 \pm 0.27$	$k_D$	0.140918	$0.14083 \pm 0.00035$ (+1.1 $\sigma$ )	$\chi_{6DF}^2$	0.0372	$0.060 \pm 0.068$ (+0.0 $\sigma$ )
$c_{100}$	0.99974	$0.99966 \pm 0.00061$ (+0.1 $\sigma$ )	$100\theta_D$	0.160488	$0.16061 \pm 0.00045$ (−0.9 $\sigma$ )	$\chi_{MGS}^2$	1.156	$1.22 \pm 0.41$ (−0.2 $\sigma$ )
$c_{217}$	0.99818	$0.99819 \pm 0.00062$ (−0.1 $\sigma$ )	$z_{eq}$	3385.1	$3386 \pm 22$ (+0.3 $\sigma$ )	$\chi_{DR12BAO}^2$	4.61	$5.0 \pm 1.5$ (+0.1 $\sigma$ )
$H_0$	67.588	$67.60 \pm 0.48$ (−0.1 $\sigma$ )	$k_{eq}$	0.010332	$0.010334 \pm 0.000066$ (+0.3 $\sigma$ )	$\chi_{prior}^2$	1.65	$11.6 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_\Lambda$	0.6885	$0.6885 \pm 0.0060$ (−0.1 $\sigma$ )	$100\theta_{eq}$	0.81633	$0.8163 \pm 0.0040$ (−0.2 $\sigma$ )	$\chi_{CMB}^2$	2773.0	$2789.8 \pm 6.0$ (+281.6 $\sigma$ )
$\Omega_m$	0.3115	$0.3115 \pm 0.0060$ (+0.1 $\sigma$ )	$100\theta_{s,eq}$	0.45095	$0.4509 \pm 0.0020$ (−0.3 $\sigma$ )	$\chi_{BAO}^2$	5.80	$6.2 \pm 1.2$ (+0.1 $\sigma$ )
$\Omega_m h^2$	0.14230	$0.14233 \pm 0.00090$ (+0.3 $\sigma$ )	$H(0.15)$	72.870	$72.88 \pm 0.42$ (−0.1 $\sigma$ )			
$\Omega_m h^3$	0.09618	$0.09621 \pm 0.00051$ (+0.2 $\sigma$ )	$D_M(0.15)$	641.42	$641.3 \pm 4.2$ (+0.1 $\sigma$ )			

Best-fit  $\chi_{\text{eff}}^2 = 2780.41$ ;  $\Delta\chi_{\text{eff}}^2 = 1585.73$ ;  $\bar{\chi}_{\text{eff}}^2 = 2807.64$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1592.11$ ;  $R - 1 = 0.02881$   
 $\chi_{\text{eff}}^2$ : BAO - 6DF: 0.04 ( $\Delta$  0.01) MGS: 1.16 ( $\Delta$  -0.06) DR12BAO: 4.61 ( $\Delta$  0.24) CMB - smicadx12\_Dec5\_ftl\_mv2\_ndclpp\_p\_teb\_consext8: 8.66 ( $\Delta$  -0.21) simall\_100x143\_offlike5\_EE\_Aplanck  
396.33 ( $\Delta$  0.15) commander\_dx12.v3.2.29: 23.34 ( $\Delta$  0.42) plik\_rd12\_HM.v22b\_TTTEEE: 2344.62



20.15 base\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_post\_Riess18

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022494	$0.02250 \pm 0.00019$ $(-0.2\sigma)$	$\Omega_{\mathrm{m}}h^2$	0.14177	$0.1417 \pm 0.0012$ $(+0.9\sigma)$	$100\theta_{\mathrm{eq}}$	0.8191	$0.8195 \pm 0.0055$ $(-0.9\sigma)$
$\Omega_{\mathrm{c}}h^2$	0.11863	$0.1186 \pm 0.0013$ $(+0.9\sigma)$	$\Omega_{\mathrm{m}}h^3$	0.09639	$0.09644 \pm 0.00052$ $(-0.3\sigma)$	$100\theta_{\mathrm{s,eq}}$	0.45232	$0.4525 \pm 0.0028$ $(-1.0\sigma)$
$100\theta_{\mathrm{MC}}$	1.04107	$1.04118 \pm 0.00054$ $(-1.1\sigma)$	$\sigma_8$	0.8080	$0.8090^{+0.0080}_{-0.0090}$ $(+0.3\sigma)$	$H(0.15)$	73.22	$73.28 \pm 0.55$ $(-1.0\sigma)$
$\tau$	0.0563	$0.0575^{+0.0074}_{-0.0088}$ $(+0.1\sigma)$	$S_8$	0.8169	$0.817 \pm 0.015$ $(+0.9\sigma)$	$D_{\mathrm{M}}(0.15)$	638.0	$637.5 \pm 5.4$ $(+1.0\sigma)$
$Y_{\mathrm{P}}$	0.2448	$0.247 \pm 0.012$ $(-1.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4475	$0.4476 \pm 0.0082$ $(+0.9\sigma)$	$H(0.38)$	83.260	$83.31 \pm 0.43$ $(-0.9\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	3.0454	$3.048^{+0.016}_{-0.019}$ $(+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6013	$0.6017 \pm 0.0081$ $(+0.7\sigma)$	$D_{\mathrm{M}}(0.38)$	1522.7	$1522 \pm 11$ $(+1.0\sigma)$
$n_{\mathrm{s}}$	0.9694	$0.9697 \pm 0.0068$ $(-1.1\sigma)$	$\sigma_8/h^{0.5}$	0.9799	$0.981 \pm 0.012$ $(+0.7\sigma)$	$H(0.51)$	89.934	$89.98 \pm 0.36$ $(-0.9\sigma)$
$y_{\mathrm{cal}}$	1.00050	$1.0007 \pm 0.0024$ $(+0.1\sigma)$	$r_{\mathrm{drag}}h$	100.16	$100.3 \pm 1.0$ $(-1.0\sigma)$	$D_{\mathrm{M}}(0.51)$	1973.2	$1972 \pm 13$ $(+1.0\sigma)$
$A_{217}^{\mathrm{CIB}}$	45.6	$47 \pm 7$ $(-0.5\sigma)$	$\langle d^2 \rangle^{1/2}$	2.4233	$2.425^{+0.027}_{-0.030}$ $(+1.1\sigma)$	$H(0.61)$	95.520	$95.56 \pm 0.31$ $(-0.9\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.70	—	$z_{\mathrm{re}}$	7.83	$7.94^{+0.76}_{-0.85}$ $(+0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	2296.8	$2295 \pm 14$ $(+1.0\sigma)$
$A_{143}^{\mathrm{tSZ}}$	7.11	$5.5 \pm 1.9$ $(+0.4\sigma)$	$10^9 A_{\mathrm{s}}$	2.1018	$2.108^{+0.034}_{-0.041}$ $(+0.1\sigma)$	$H(2.33)$	235.80	$235.78 \pm 0.78$ $(+0.9\sigma)$
$A_{100}^{\mathrm{PS}}$	247.4	$259 \pm 27$ $(-0.5\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8779	$1.878 \pm 0.012$ $(-0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	5753.1	$5751 \pm 15$ $(+0.8\sigma)$
$A_{143}^{\mathrm{PS}}$	49.9	$45 \pm 8$ $(-0.8\sigma)$	$D_{40}$	1222.2	$1223 \pm 15$ $(+1.0\sigma)$	$f\sigma_8(0.15)$	0.4524	$0.4526 \pm 0.0077$ $(+0.8\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	53.4	$42 \pm 10$ $(-0.3\sigma)$	$D_{220}$	5738.3	$5740 \pm 38$ $(+0.2\sigma)$	$\sigma_8(0.15)$	0.7471	$0.7481^{+0.0072}_{-0.0082}$ $(+0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	121.9	$115 \pm 10$ $(+0.0\sigma)$	$D_{810}$	2540.5	$2539 \pm 13$ $(+0.1\sigma)$	$f\sigma_8(0.38)$	0.4718	$0.4721 \pm 0.0066$ $(+0.8\sigma)$
$A^{\mathrm{kSZ}}$	0.00	$< 4.32$ $(-0.4\sigma)$	$D_{1420}$	819.55	$818.3 \pm 4.8$ $(+0.7\sigma)$	$\sigma_8(0.38)$	0.6628	$0.6638^{+0.0062}_{-0.0073}$ $(-0.0\sigma)$
$A_{100}^{\mathrm{dustTT}}$	8.82	$9.0 \pm 1.9$ $(-0.0\sigma)$	$D_{2000}$	231.85	$231.3 \pm 1.8$ $(+1.1\sigma)$	$f\sigma_8(0.51)$	0.4710	$0.4713 \pm 0.0060$ $(+0.7\sigma)$
$A_{143}^{\mathrm{dustTT}}$	11.09	$11.0 \pm 1.8$ $(+0.1\sigma)$	$n_{\mathrm{s},0.002}$	0.9694	$0.9697 \pm 0.0068$ $(-1.1\sigma)$	$\sigma_8(0.51)$	0.6205	$0.6214^{+0.0058}_{-0.0069}$ $(-0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	20.20	$18.6 \pm 3.2$ $(+0.1\sigma)$	$Y_{\mathrm{P}}$	0.2448	$0.247 \pm 0.012$ $(-1.1\sigma)$	$f\sigma_8(0.61)$	0.4664	$0.4668 \pm 0.0056$ $(+0.6\sigma)$
$A_{217}^{\mathrm{dustTT}}$	95.5	$93.9 \pm 7.2$ $(+0.2\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.2461	$0.249 \pm 0.012$ $(-1.1\sigma)$	$\sigma_8(0.61)$	0.5905	$0.5914^{+0.0055}_{-0.0066}$ $(-0.1\sigma)$
$A_{100}^{\mathrm{dustTE}}$	0.1135	$0.112 \pm 0.037$	Age/Gyr	13.7745	$13.770 \pm 0.035$ $(+0.8\sigma)$	$f\sigma_8(2.33)$	0.29794	$0.2984^{+0.0028}_{-0.0033}$ $(-0.3\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1350	$0.133 \pm 0.030$	$z_*$	1089.620	$1089.72 \pm 0.41$ $(-1.0\sigma)$	$\sigma_8(2.33)$	0.30738	$0.3079^{+0.0030}_{-0.0035}$ $(-0.4\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.481	$0.484 \pm 0.087$	$r_*$	144.692	$144.69 \pm 0.32$ $(-0.7\sigma)$	$f_{2000}^{143}$	27.99	$29.2 \pm 3.1$ $(-1.1\sigma)$
$A_{143}^{\mathrm{dustTE}}$	0.222	$0.221 \pm 0.053$	$100\theta_*$	1.041265	$1.04130^{+0.00031}_{-0.00035}$ $(-0.7\sigma)$	$f_{2000}^{143 \times 217}$	31.48	$32.0 \pm 2.2$ $(-1.1\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.661	$0.665 \pm 0.079$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8958	$13.895 \pm 0.030$ $(-0.6\sigma)$	$f_{2000}^{217}$	106.05	$106.8 \pm 2.1$ $(-1.0\sigma)$
$A_{217}^{\mathrm{dustTE}}$	2.071	$2.08 \pm 0.27$	$z_{\mathrm{drag}}$	1060.12	$1060.21 \pm 0.74$ $(-0.7\sigma)$	$\chi_{\mathrm{simall}}^2$	396.34	$397.7 \pm 2.6$ $(+0.2\sigma)$
$c_{100}$	0.99973	$0.99966 \pm 0.00060$ $(+0.1\sigma)$	$r_{\mathrm{drag}}$	147.315	$147.32 \pm 0.33$ $(-0.7\sigma)$	$\chi_{\mathrm{lowl}}^2$	22.65	$22.8 \pm 1.2$ $(+1.2\sigma)$
$c_{217}$	0.99817	$0.99819^{+0.00064}_{-0.00058}$ $(-0.1\sigma)$	$k_{\mathrm{D}}$	0.140749	$0.14064^{+0.00042}_{-0.00038}$ $(+1.6\sigma)$	$\chi_{\mathrm{plik}}^2$	2346.5	$2362.1 \pm 6.6$ $(+233.1\sigma)$
$H_0$	67.99	$68.06 \pm 0.63$ $(-1.0\sigma)$	$100\theta_{\mathrm{D}}$	0.160628	$0.16076 \pm 0.00045$ $(-1.3\sigma)$	$\chi_{\mathrm{H073p45}}^2$	10.82	$10.7 \pm 2.5$ $(+1.0\sigma)$
$\Omega_{\Lambda}$	0.6933	$0.6939 \pm 0.0080$ $(-1.0\sigma)$	$z_{\mathrm{eq}}$	3372.5	$3371 \pm 29$ $(+0.9\sigma)$	$\chi_{\mathrm{prior}}^2$	1.61	$11.6 \pm 4.8$ $(+1.1\sigma)$
$\Omega_{\mathrm{m}}$	0.3067	$0.3061 \pm 0.0080$ $(+1.0\sigma)$	$k_{\mathrm{eq}}$	0.010293	$0.010290 \pm 0.000089$ $(+0.9\sigma)$	$\chi_{\mathrm{CMB}}^2$	2765.5	$2782.6 \pm 6.4$ $(+249.0\sigma)$

Best-fit  $\chi_{\mathrm{eff}}^2 = 2777.94$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 1587.10$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 2804.95$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1593.34$ ;  $R - 1 = 0.08230$   
 $\chi_{\mathrm{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.34 ( $\Delta$  0.08) commander\_dx12\_v3.2.29: 22.65 ( $\Delta$  1.34) plik\_rd12\_HM\_v22b\_TTTEEE: 2346.53 Hubble - H073p45: 10.82 ( $\Delta$  3.25)



20.16 base\_yhe\_plikHM\_TTTEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02230 \pm 0.00020 \quad (+0.6\sigma)$	$\Omega_{\mathrm{m}}h^2$	$0.1432 \pm 0.0013 \quad (-0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8124 \pm 0.0058 \quad (+0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1202 \pm 0.0014 \quad (-0.1\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09613 \pm 0.00053 \quad (+0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4490 \pm 0.0030 \quad (+0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04071 \pm 0.00055 \quad (-0.2\sigma)$	$\sigma_8$	$0.8115^{+0.0070}_{-0.0079} \quad (-0.2\sigma)$	$H(0.15)$	$72.50 \pm 0.60 \quad (+0.2\sigma)$
$\tau$	$0.0552^{+0.0051}_{-0.0085} \quad (+0.2\sigma)$	$S_8$	$0.835 \pm 0.016 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$645.2 \pm 5.9 \quad (-0.2\sigma)$
$Y_{\mathrm{P}}$	$0.240 \pm 0.013 \quad (-0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4573 \pm 0.0087 \quad (-0.2\sigma)$	$H(0.38)$	$82.72 \pm 0.46 \quad (+0.2\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.013}_{-0.017} \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6091 \pm 0.0081 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.38)$	$1537 \pm 12 \quad (-0.2\sigma)$
$n_{\mathrm{s}}$	$0.9625 \pm 0.0072 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.011 \quad (-0.2\sigma)$	$H(0.51)$	$89.49 \pm 0.38 \quad (+0.2\sigma)$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0024 \quad (+0.1\sigma)$	$r_{\mathrm{drag}}h$	$98.8 \pm 1.1 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1990 \pm 14 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7 \quad (-0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.455 \pm 0.029 \quad (+0.0\sigma)$	$H(0.61)$	$95.16 \pm 0.32 \quad (+0.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$z_{\mathrm{re}}$	$7.75^{+0.56}_{-0.85} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2315 \pm 15 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5 \pm 1.9 \quad (+0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.101^{+0.026}_{-0.036} \quad (+0.1\sigma)$	$H(2.33)$	$236.61 \pm 0.81 \quad (-0.0\sigma)$
$A_{100}^{\mathrm{PS}}$	$257 \pm 28 \quad (-0.3\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.882 \pm 0.012 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5770 \pm 16 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.5\sigma)$	$D_{40}$	$1236 \pm 16 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4614 \pm 0.0081 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.2\sigma)$	$D_{220}$	$5733 \pm 38 \quad (+0.5\sigma)$	$\sigma_8(0.15)$	$0.7493^{+0.0061}_{-0.0072} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{810}$	$2538 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4783 \pm 0.0066 \quad (-0.2\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.05 \quad (-0.2\sigma)$	$D_{1420}$	$817.5 \pm 4.7 \quad (+0.6\sigma)$	$\sigma_8(0.38)$	$0.6635^{+0.0052}_{-0.0064} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$D_{2000}$	$231.3 \pm 1.8 \quad (+0.8\sigma)$	$f\sigma_8(0.51)$	$0.4762 \pm 0.0058 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.8 \pm 1.8 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9625 \pm 0.0072 \quad (-0.1\sigma)$	$\sigma_8(0.51)$	$0.6207^{+0.0048}_{-0.0061} \quad (-0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.5 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}$	$0.240 \pm 0.013 \quad (-0.3\sigma)$	$f\sigma_8(0.61)$	$0.4708 \pm 0.0053 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.7 \pm 7.3 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.241 \pm 0.013 \quad (-0.3\sigma)$	$\sigma_8(0.61)$	$0.5904^{+0.0046}_{-0.0058} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.114 \pm 0.038$	Age/Gyr	$13.812 \pm 0.037 \quad (-0.2\sigma)$	$f\sigma_8(2.33)$	$0.2975^{+0.0023}_{-0.0030} \quad (-0.1\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.134 \pm 0.030$	$z_*$	$1089.81 \pm 0.42 \quad (-0.8\sigma)$	$\sigma_8(2.33)$	$0.3064^{+0.0025}_{-0.0032} \quad (-0.0\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.481 \pm 0.085$	$r_*$	$144.45 \pm 0.32 \quad (-0.0\sigma)$	$f_{2000}^{143}$	$28.9 \pm 3.1 \quad (-0.7\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.224 \pm 0.053$	$100\theta_*$	$1.04103 \pm 0.00033 \quad (+0.1\sigma)$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.2 \quad (-0.7\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.666 \pm 0.080$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.876 \pm 0.030 \quad (-0.1\sigma)$	$f_{2000}^{217}$	$106.6 \pm 2.1 \quad (-0.7\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.09 \pm 0.27$	$z_{\mathrm{drag}}$	$1059.61 \pm 0.78 \quad (+0.1\sigma)$	$\chi_{\mathrm{small}}^2$	$397.1 \pm 2.0 \quad (+0.2\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$r_{\mathrm{drag}}$	$147.13 \pm 0.33 \quad (-0.2\sigma)$	$\chi_{\mathrm{lowl}}^2$	$24.1 \pm 1.5 \quad (+0.1\sigma)$
$c_{217}$	$0.99819 \pm 0.00063 \quad (-0.1\sigma)$	$k_{\mathrm{D}}$	$0.14099 \pm 0.00041 \quad (+0.7\sigma)$	$\chi_{\mathrm{plik}}^2$	$2359.7 \pm 6.0 \quad (+274.6\sigma)$
$H_0$	$67.15 \pm 0.69 \quad (+0.2\sigma)$	$100\theta_{\mathrm{D}}$	$0.16059 \pm 0.00046 \quad (-0.7\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.5 \quad (+1.1\sigma)$
$\Omega_{\Lambda}$	$0.6824 \pm 0.0090 \quad (+0.2\sigma)$	$z_{\mathrm{eq}}$	$3406 \pm 31 \quad (-0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2780.8 \pm 5.9 \quad (+284.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.3176 \pm 0.0090 \quad (-0.2\sigma)$	$k_{\mathrm{eq}}$	$0.010394 \pm 0.000093 \quad (-0.1\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2792.32; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.17; R - 1 = 0.01241$$



20.17 base\_yhe\_plikHM\_TTTEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02239 \pm 0.00018 \quad (+0.5\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09624 \pm 0.00051 \quad (+0.1\sigma)$	$H(0.15)$	$72.91 \pm 0.44 \quad (-0.2\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1193 \pm 0.0010 \quad (+0.2\sigma)$	$\sigma_8$	$0.8099^{+0.0071}_{-0.0083} \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.15)$	$641.0 \pm 4.3 \quad (+0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04092 \pm 0.00051 \quad (-0.5\sigma)$	$S_8$	$0.825 \pm 0.013 \quad (+0.2\sigma)$	$H(0.38)$	$83.02 \pm 0.34 \quad (-0.1\sigma)$
$\tau$	$0.0566^{+0.0058}_{-0.0083} \quad (+0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4517 \pm 0.0070 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.38)$	$1528.9 \pm 8.8 \quad (+0.2\sigma)$
$Y_{\mathrm{P}}$	$0.243 \pm 0.012 \quad (-0.6\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6048 \pm 0.0071 \quad (+0.1\sigma)$	$H(0.51)$	$89.74 \pm 0.29 \quad (-0.1\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.047^{+0.014}_{-0.018} \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.985 \pm 0.010 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1981 \pm 10 \quad (+0.2\sigma)$
$n_{\mathrm{s}}$	$0.9660 \pm 0.0062 \quad (-0.4\sigma)$	$r_{\mathrm{drag}}h$	$99.60 \pm 0.80 \quad (-0.3\sigma)$	$H(0.61)$	$95.36 \pm 0.26 \quad (-0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0024 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.439 \pm 0.025 \quad (+0.4\sigma)$	$D_{\mathrm{M}}(0.61)$	$2305 \pm 11 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.3\sigma)$	$z_{\mathrm{re}}$	$7.87^{+0.62}_{-0.84} \quad (+0.2\sigma)$	$H(2.33)$	$236.10 \pm 0.65 \quad (+0.3\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}}$	$2.104^{+0.028}_{-0.038} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5761 \pm 14 \quad (+0.0\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5 \pm 2.0 \quad (+0.3\sigma)$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.879 \pm 0.012 \quad (-0.2\sigma)$	$f\sigma_8(0.15)$	$0.4563 \pm 0.0066 \quad (+0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$257 \pm 28 \quad (-0.3\sigma)$	$D_{40}$	$1229 \pm 15 \quad (+0.5\sigma)$	$\sigma_8(0.15)$	$0.7484^{+0.0064}_{-0.0076} \quad (-0.0\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.6\sigma)$	$D_{220}$	$5736 \pm 39 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4747 \pm 0.0058 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.2\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.6634^{+0.0055}_{-0.0067} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (-0.0\sigma)$	$D_{1420}$	$817.9 \pm 4.7 \quad (+0.7\sigma)$	$f\sigma_8(0.51)$	$0.4734 \pm 0.0053 \quad (+0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.14 \quad (-0.3\sigma)$	$D_{2000}$	$231.3 \pm 1.8 \quad (+0.9\sigma)$	$\sigma_8(0.51)$	$0.6209^{+0.0052}_{-0.0063} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$n_{\mathrm{s},0.002}$	$0.9660 \pm 0.0062 \quad (-0.4\sigma)$	$f\sigma_8(0.61)$	$0.4684 \pm 0.0050 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}$	$0.243 \pm 0.012 \quad (-0.6\sigma)$	$\sigma_8(0.61)$	$0.5908^{+0.0049}_{-0.0060} \quad (-0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.244 \pm 0.012 \quad (-0.6\sigma)$	$f\sigma_8(2.33)$	$0.2979^{+0.0025}_{-0.0031} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.8 \pm 7.3 \quad (+0.1\sigma)$	Age/Gyr	$13.792 \pm 0.031 \quad (-0.0\sigma)$	$\sigma_8(2.33)$	$0.3071^{+0.0026}_{-0.0032} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.113 \pm 0.038$	$z_*$	$1089.73 \pm 0.41 \quad (-0.9\sigma)$	$f_{2000}^{143}$	$28.9 \pm 3.1 \quad (-0.8\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.134 \pm 0.030$	$r_*$	$144.61 \pm 0.28 \quad (-0.3\sigma)$	$f_{2000}^{143 \times 217}$	$31.7 \pm 2.2 \quad (-0.9\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.482 \pm 0.086$	$100\theta_*$	$1.04117 \pm 0.00030 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$106.6 \pm 2.1 \quad (-0.8\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.222 \pm 0.053$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.889 \pm 0.027 \quad (-0.3\sigma)$	$\chi_{\mathrm{simall}}^2$	$397.3 \pm 2.3 \quad (+0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.665 \pm 0.079$	$z_{\mathrm{drag}}$	$1059.86 \pm 0.73 \quad (-0.1\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.4 \pm 1.2 \quad (+0.4\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.27$	$r_{\mathrm{drag}}$	$147.27 \pm 0.31 \quad (-0.4\sigma)$	$\chi_{\mathrm{plik}}^2$	$2360.2 \pm 6.0 \quad (+277.8\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.14080 \pm 0.00036 \quad (+1.2\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.060 \pm 0.070 \quad (+0.1\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16065 \pm 0.00045 \quad (-0.9\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.25 \pm 0.43 \quad (-0.3\sigma)$
$H_0$	$67.63 \pm 0.50 \quad (-0.2\sigma)$	$z_{\mathrm{eq}}$	$3385 \pm 23 \quad (+0.3\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 \pm 1.5 \quad (+0.2\sigma)$
$\Omega_{\Lambda}$	$0.6888 \pm 0.0063 \quad (-0.2\sigma)$	$k_{\mathrm{eq}}$	$0.010332 \pm 0.000071 \quad (+0.3\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.6 \pm 4.5 \quad (+1.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3112 \pm 0.0063 \quad (+0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8164 \pm 0.0043 \quad (-0.3\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.2 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14230 \pm 0.00098 \quad (+0.3\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4510 \pm 0.0022 \quad (-0.3\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2780.9 \pm 5.9 \quad (+285.8\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 2798.67; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.30; R - 1 = 0.03223$$



20.18 base\_yhe\_plikHM\_TTTEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02231 \pm 0.00020 \quad (+0.6\sigma)$	$\Omega_{\mathrm{m}}h^2$	$0.1430 \pm 0.0011 \quad (+0.0\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8133 \pm 0.0050 \quad (+0.0\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1200 \pm 0.0012 \quad (-0.1\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09610 \pm 0.00052 \quad (+0.3\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4494 \pm 0.0026 \quad (-0.0\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04070 \pm 0.00054 \quad (-0.2\sigma)$	$\sigma_8$	$0.8103^{+0.0059}_{-0.0067} \quad (-0.1\sigma)$	$H(0.15)$	$72.56 \pm 0.54 \quad (+0.2\sigma)$
$\tau$	$0.0549^{+0.0052}_{-0.0080} \quad (+0.2\sigma)$	$S_8$	$0.832 \pm 0.013 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$644.5 \pm 5.3 \quad (-0.2\sigma)$
$Y_{\mathrm{P}}$	$0.239 \pm 0.013 \quad (-0.3\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4557 \pm 0.0069 \quad (-0.1\sigma)$	$H(0.38)$	$82.76 \pm 0.42 \quad (+0.2\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044^{+0.012}_{-0.016} \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6077 \pm 0.0063 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1536 \pm 11 \quad (-0.2\sigma)$
$n_{\mathrm{s}}$	$0.9625 \pm 0.0069 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9882 \pm 0.0089 \quad (-0.2\sigma)$	$H(0.51)$	$89.52 \pm 0.35 \quad (+0.2\sigma)$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0024 \quad (+0.1\sigma)$	$r_{\mathrm{drag}}h$	$98.95 \pm 0.98 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1989 \pm 13 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7 \quad (-0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.451 \pm 0.023 \quad (+0.1\sigma)$	$H(0.61)$	$95.18 \pm 0.31 \quad (+0.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$z_{\mathrm{re}}$	$7.71^{+0.56}_{-0.81} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2314 \pm 14 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.099^{+0.025}_{-0.033} \quad (+0.1\sigma)$	$H(2.33)$	$236.48 \pm 0.71 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$257 \pm 28 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.880 \pm 0.012 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5769 \pm 15 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.5\sigma)$	$D_{40}$	$1236 \pm 15 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4599 \pm 0.0064 \quad (-0.1\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.2\sigma)$	$D_{220}$	$5735 \pm 39 \quad (+0.5\sigma)$	$\sigma_8(0.15)$	$0.7483^{+0.0054}_{-0.0063} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{810}$	$2538 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4771 \pm 0.0052 \quad (-0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.08 \quad (-0.2\sigma)$	$D_{1420}$	$817.5 \pm 4.8 \quad (+0.6\sigma)$	$\sigma_8(0.38)$	$0.6628^{+0.0048}_{-0.0058} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$D_{2000}$	$231.3 \pm 1.8 \quad (+0.7\sigma)$	$f\sigma_8(0.51)$	$0.4752 \pm 0.0046 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.8 \pm 1.8 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9625 \pm 0.0069 \quad (-0.1\sigma)$	$\sigma_8(0.51)$	$0.6200^{+0.0045}_{-0.0055} \quad (-0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}$	$0.239 \pm 0.013 \quad (-0.3\sigma)$	$f\sigma_8(0.61)$	$0.4698 \pm 0.0042 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.8 \pm 7.3 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.240 \pm 0.013 \quad (-0.3\sigma)$	$\sigma_8(0.61)$	$0.5898^{+0.0043}_{-0.0053} \quad (-0.0\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.113 \pm 0.038$	Age/Gyr	$13.810 \pm 0.036 \quad (-0.2\sigma)$	$f\sigma_8(2.33)$	$0.2972^{+0.0023}_{-0.0028} \quad (-0.0\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.134 \pm 0.030$	$z_*$	$1089.76 \pm 0.41 \quad (-0.7\sigma)$	$\sigma_8(2.33)$	$0.3062^{+0.0025}_{-0.0031} \quad (-0.0\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.482 \pm 0.086$	$r_*$	$144.50 \pm 0.28 \quad (-0.2\sigma)$	$f_{2000}^{143}$	$28.8 \pm 3.1 \quad (-0.6\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.224 \pm 0.054$	$100\theta_*$	$1.04104 \pm 0.00032 \quad (+0.0\sigma)$	$f_{2000}^{143 \times 217}$	$31.6 \pm 2.2 \quad (-0.7\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.667 \pm 0.080$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.880 \pm 0.027 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$106.5 \pm 2.1 \quad (-0.6\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.27$	$z_{\mathrm{drag}}$	$1059.59 \pm 0.77 \quad (+0.1\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.17 \pm 0.69 \quad (-0.3\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$r_{\mathrm{drag}}$	$147.18 \pm 0.30 \quad (-0.3\sigma)$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.8 \quad (+0.1\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$k_{\mathrm{D}}$	$0.14097 \pm 0.00039 \quad (+0.8\sigma)$	$\chi_{\mathrm{lowl}}^2$	$24.0 \pm 1.4 \quad (+0.1\sigma)$
$H_0$	$67.23 \pm 0.61 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16056 \pm 0.00045 \quad (-0.7\sigma)$	$\chi_{\mathrm{plik}}^2$	$2359.5 \pm 5.8 \quad (+285.9\sigma)$
$\Omega_{\Lambda}$	$0.6836 \pm 0.0079 \quad (+0.1\sigma)$	$z_{\mathrm{eq}}$	$3401 \pm 26 \quad (+0.0\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.5 \quad (+1.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3164 \pm 0.0079 \quad (-0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010379 \pm 0.000081 \quad (+0.0\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2789.6 \pm 5.9 \quad (+282.0\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 2801.11; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1591.98; R - 1 = 0.01737$$



20.19 base\_yhe\_plikHM\_TTTEE\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02239 \pm 0.00018 \quad (+0.5\sigma)$	$\sigma_8$	$0.8099^{+0.0062}_{-0.0070} \quad (-0.1\sigma)$	$H(0.38)$	$83.01 \pm 0.33 \quad (-0.0\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.11927 \pm 0.00093 \quad (+0.1\sigma)$	$S_8$	$0.825 \pm 0.011 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1529.3 \pm 8.4 \quad (+0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04089 \pm 0.00050 \quad (-0.4\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4519 \pm 0.0058 \quad (+0.1\sigma)$	$H(0.51)$	$89.72 \pm 0.29 \quad (-0.0\sigma)$
$\tau$	$0.0568^{+0.0059}_{-0.0076} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6050 \pm 0.0059 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1981 \pm 10 \quad (+0.1\sigma)$
$Y_{\mathrm{P}}$	$0.242 \pm 0.012 \quad (-0.5\sigma)$	$\sigma_8/h^{0.5}$	$0.9850 \pm 0.0086 \quad (-0.0\sigma)$	$H(0.61)$	$95.34 \pm 0.26 \quad (+0.0\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.047^{+0.013}_{-0.016} \quad (+0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.58 \pm 0.75 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.61)$	$2305 \pm 11 \quad (+0.1\sigma)$
$n_{\mathrm{s}}$	$0.9655 \pm 0.0062 \quad (-0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.441 \pm 0.021 \quad (+0.4\sigma)$	$H(2.33)$	$236.10 \pm 0.60 \quad (+0.3\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0024 \quad (+0.1\sigma)$	$z_{\mathrm{re}}$	$7.89^{+0.63}_{-0.76} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5762 \pm 13 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7 \quad (-0.3\sigma)$	$10^9 A_{\mathrm{s}}$	$2.106^{+0.027}_{-0.033} \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4565 \pm 0.0055 \quad (+0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.879 \pm 0.011 \quad (-0.2\sigma)$	$\sigma_8(0.15)$	$0.7484^{+0.0057}_{-0.0065} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5 \pm 2.0 \quad (+0.3\sigma)$	$D_{40}$	$1231 \pm 14 \quad (+0.4\sigma)$	$f\sigma_8(0.38)$	$0.4749 \pm 0.0047 \quad (+0.0\sigma)$
$A_{100}^{\mathrm{PS}}$	$257 \pm 28 \quad (-0.3\sigma)$	$D_{220}$	$5740 \pm 38 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6635^{+0.0050}_{-0.0059} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.6\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.51)$	$0.4735 \pm 0.0044 \quad (-0.0\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.2\sigma)$	$D_{1420}$	$818.2 \pm 4.7 \quad (+0.6\sigma)$	$\sigma_8(0.51)$	$0.6209^{+0.0048}_{-0.0056} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (-0.0\sigma)$	$D_{2000}$	$231.4 \pm 1.8 \quad (+0.9\sigma)$	$f\sigma_8(0.61)$	$0.4685 \pm 0.0041 \quad (-0.0\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.06 \quad (-0.3\sigma)$	$n_{\mathrm{s},0.002}$	$0.9655 \pm 0.0062 \quad (-0.3\sigma)$	$\sigma_8(0.61)$	$0.5908^{+0.0046}_{-0.0054} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.242 \pm 0.012 \quad (-0.5\sigma)$	$f\sigma_8(2.33)$	$0.2979^{+0.0024}_{-0.0028} \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.243 \pm 0.012 \quad (-0.5\sigma)$	$\sigma_8(2.33)$	$0.3071^{+0.0025}_{-0.0030} \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	Age/Gyr	$13.793 \pm 0.031 \quad (-0.1\sigma)$	$f_{2000}^{143}$	$28.8 \pm 3.1 \quad (-0.8\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.8 \pm 7.3 \quad (+0.1\sigma)$	$z_*$	$1089.70 \pm 0.40 \quad (-0.8\sigma)$	$f_{2000}^{143 \times 217}$	$31.6 \pm 2.2 \quad (-0.9\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.112 \pm 0.038$	$r_*$	$144.62 \pm 0.26 \quad (-0.3\sigma)$	$f_{2000}^{217}$	$106.5 \pm 2.1 \quad (-0.8\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.134 \pm 0.030$	$100\theta_*$	$1.04115 \pm 0.00030 \quad (-0.1\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.05 \pm 0.57 \quad (-0.4\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.482 \pm 0.086$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.890 \pm 0.026 \quad (-0.3\sigma)$	$\chi_{\mathrm{small}}^2$	$397.3 \pm 2.1 \quad (+0.2\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.222 \pm 0.054$	$z_{\mathrm{drag}}$	$1059.82 \pm 0.73 \quad (-0.0\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.5 \pm 1.2 \quad (+0.4\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.665 \pm 0.079$	$r_{\mathrm{drag}}$	$147.27 \pm 0.29 \quad (-0.4\sigma)$	$\chi_{\mathrm{plik}}^2$	$2359.9 \pm 5.9 \quad (+285.5\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.27$	$k_{\mathrm{D}}$	$0.14082 \pm 0.00035 \quad (+1.1\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.058 \pm 0.065 \quad (+0.0\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16061 \pm 0.00045 \quad (-0.9\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.23 \pm 0.41 \quad (-0.2\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3385 \pm 21 \quad (+0.3\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 \pm 1.4 \quad (+0.1\sigma)$
$H_0$	$67.62 \pm 0.48 \quad (-0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010332 \pm 0.000065 \quad (+0.3\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.6 \pm 4.5 \quad (+1.1\sigma)$
$\Omega_{\Lambda}$	$0.6887 \pm 0.0059 \quad (-0.2\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8164 \pm 0.0040 \quad (-0.2\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2789.7 \pm 5.9 \quad (+283.6\sigma)$
$\Omega_{\mathrm{m}}$	$0.3113 \pm 0.0059 \quad (+0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4510 \pm 0.0020 \quad (-0.3\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.1 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14231 \pm 0.00090 \quad (+0.3\sigma)$	$H(0.15)$	$72.90 \pm 0.42 \quad (-0.1\sigma)$		
$\Omega_{\mathrm{m}}h^3$	$0.09622 \pm 0.00051 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$641.2 \pm 4.1 \quad (+0.1\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2807.47; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.10; R - 1 = 0.03003$$



20.20 base\_yhe\_plikHM\_TTTEE\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02251 \pm 0.00019 \quad (-0.3\sigma)$	$\Omega_{\mathrm{m}}h^2$	$0.1417 \pm 0.0012 \quad (+0.9\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8196 \pm 0.0056 \quad (-1.0\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1186 \pm 0.0013 \quad (+0.9\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09645 \pm 0.00052 \quad (-0.3\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4526 \pm 0.0028 \quad (-1.0\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04119 \pm 0.00054 \quad (-1.1\sigma)$	$\sigma_8$	$0.8096^{+0.0074}_{-0.0089} \quad (+0.3\sigma)$	$H(0.15)$	$73.30 \pm 0.55 \quad (-1.0\sigma)$
$\tau$	$0.0583^{+0.0061}_{-0.0088} \quad (+0.1\sigma)$	$S_8$	$0.818 \pm 0.015 \quad (+0.9\sigma)$	$D_{\mathrm{M}}(0.15)$	$637.3 \pm 5.4 \quad (+1.0\sigma)$
$Y_{\mathrm{P}}$	$0.248 \pm 0.012 \quad (-1.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4478 \pm 0.0082 \quad (+0.9\sigma)$	$H(0.38)$	$83.32 \pm 0.43 \quad (-0.9\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.050^{+0.014}_{-0.019} \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6021 \pm 0.0080 \quad (+0.7\sigma)$	$D_{\mathrm{M}}(0.38)$	$1521 \pm 11 \quad (+1.0\sigma)$
$n_{\mathrm{s}}$	$0.9699 \pm 0.0068 \quad (-1.1\sigma)$	$\sigma_8/h^{0.5}$	$0.981 \pm 0.011 \quad (+0.7\sigma)$	$H(0.51)$	$89.99 \pm 0.36 \quad (-0.9\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0024 \quad (+0.1\sigma)$	$r_{\mathrm{drag}}h$	$100.3 \pm 1.0 \quad (-1.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1972 \pm 13 \quad (+1.0\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.5\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.426^{+0.027}_{-0.030} \quad (+1.1\sigma)$	$H(0.61)$	$95.57 \pm 0.31 \quad (-0.9\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$z_{\mathrm{re}}$	$8.02^{+0.63}_{-0.88} \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2295 \pm 14 \quad (+1.0\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5 \pm 1.9 \quad (+0.4\sigma)$	$10^9 A_{\mathrm{s}}$	$2.111^{+0.029}_{-0.040} \quad (+0.1\sigma)$	$H(2.33)$	$235.77 \pm 0.78 \quad (+0.9\sigma)$
$A_{100}^{\mathrm{PS}}$	$259 \pm 27 \quad (-0.4\sigma)$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878 \pm 0.012 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	$5751 \pm 15 \quad (+0.8\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.8\sigma)$	$D_{40}$	$1223 \pm 15 \quad (+1.0\sigma)$	$f\sigma_8(0.15)$	$0.4528 \pm 0.0077 \quad (+0.8\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 10 \quad (-0.3\sigma)$	$D_{220}$	$5740 \pm 38 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7487^{+0.0066}_{-0.0081} \quad (+0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4723 \pm 0.0065 \quad (+0.8\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.31 \quad (-0.4\sigma)$	$D_{1420}$	$818.3 \pm 4.7 \quad (+0.7\sigma)$	$\sigma_8(0.38)$	$0.6643^{+0.0056}_{-0.0072} \quad (-0.0\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$9.0 \pm 1.9 \quad (-0.0\sigma)$	$D_{2000}$	$231.3 \pm 1.8 \quad (+1.1\sigma)$	$f\sigma_8(0.51)$	$0.4716 \pm 0.0058 \quad (+0.7\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$11.0 \pm 1.8 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9699 \pm 0.0068 \quad (-1.1\sigma)$	$\sigma_8(0.51)$	$0.6219^{+0.0052}_{-0.0068} \quad (-0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.6 \pm 3.2 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}$	$0.248 \pm 0.012 \quad (-1.1\sigma)$	$f\sigma_8(0.61)$	$0.4671 \pm 0.0054 \quad (+0.6\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.9 \pm 7.2 \quad (+0.2\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.249 \pm 0.012 \quad (-1.1\sigma)$	$\sigma_8(0.61)$	$0.5919^{+0.0049}_{-0.0065} \quad (-0.2\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.111 \pm 0.037$	Age/Gyr	$13.769 \pm 0.035 \quad (+0.8\sigma)$	$f\sigma_8(2.33)$	$0.2987^{+0.0025}_{-0.0033} \quad (-0.3\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.133 \pm 0.030$	$z_*$	$1089.72 \pm 0.41 \quad (-1.0\sigma)$	$\sigma_8(2.33)$	$0.3082^{+0.0026}_{-0.0035} \quad (-0.5\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.484 \pm 0.087$	$r_*$	$144.69 \pm 0.32 \quad (-0.7\sigma)$	$f_{2000}^{143}$	$29.2 \pm 3.1 \quad (-1.1\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.222 \pm 0.053$	$100\theta_*$	$1.04130^{+0.00031}_{-0.00035} \quad (-0.7\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.2 \quad (-1.1\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.666 \pm 0.079$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.896 \pm 0.030 \quad (-0.6\sigma)$	$f_{2000}^{217}$	$106.8 \pm 2.1 \quad (-1.0\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.27$	$z_{\mathrm{drag}}$	$1060.22 \pm 0.74 \quad (-0.7\sigma)$	$\chi_{\mathrm{small}}^2$	$397.7 \pm 2.7 \quad (+0.2\sigma)$
$c_{100}$	$0.99966 \pm 0.00060 \quad (+0.0\sigma)$	$r_{\mathrm{drag}}$	$147.32 \pm 0.34 \quad (-0.7\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.8 \pm 1.2 \quad (+1.2\sigma)$
$c_{217}$	$0.99819 \pm 0.00061 \quad (-0.1\sigma)$	$k_{\mathrm{D}}$	$0.14064 \pm 0.00041 \quad (+1.6\sigma)$	$\chi_{\mathrm{plik}}^2$	$2362.0 \pm 6.6 \quad (+234.8\sigma)$
$H_0$	$68.07 \pm 0.63 \quad (-1.0\sigma)$	$100\theta_{\mathrm{D}}$	$0.16076 \pm 0.00045 \quad (-1.3\sigma)$	$\chi_{\mathrm{H073p45}}^2$	$10.6 \pm 2.5 \quad (+1.0\sigma)$
$\Omega_{\Lambda}$	$0.6941 \pm 0.0080 \quad (-1.0\sigma)$	$z_{\mathrm{eq}}$	$3371 \pm 29 \quad (+0.9\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.6 \pm 4.8 \quad (+1.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3059 \pm 0.0080 \quad (+1.0\sigma)$	$k_{\mathrm{eq}}$	$0.010288 \pm 0.000089 \quad (+0.9\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2782.5 \pm 6.4 \quad (+252.2\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 2804.74; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1593.31; R - 1 = 0.08577$$



## 20.21 base\_yhe\_CamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022134	$0.02211 \pm 0.00030$	$S_8$	0.8367	$0.838 \pm 0.025$	$100\theta_{s,eq}$	0.44880	$0.4486 \pm 0.0049$
$\Omega_c h^2$	0.12043	$0.1205 \pm 0.0022$	$\sigma_8 \Omega_m^{0.5}$	0.4583	$0.459 \pm 0.014$	$H(0.15)$	72.37	$72.27 \pm 0.99$
$100\theta_{MC}$	1.04094	$1.04075 \pm 0.00089$	$\sigma_8 \Omega_m^{0.25}$	0.6099	$0.610 \pm 0.012$	$D_M(0.15)$	646.4	$647.5 \pm 9.9$
$\tau$	0.0525	$0.0522 \pm 0.0082$	$\sigma_8/h^{0.5}$	0.9914	$0.991 \pm 0.016$	$H(0.38)$	82.61	$82.53 \pm 0.74$
$Y_P$	0.2478	$0.242 \pm 0.021$	$r_{drag}h$	98.67	$98.5 \pm 1.9$	$D_M(0.38)$	1539.8	$1542 \pm 20$
$\ln(10^{10} A_s)$	3.0397	$3.038 \pm 0.018$	$\langle d^2 \rangle^{1/2}$	2.4470	$2.451 \pm 0.044$	$H(0.51)$	89.39	$89.33 \pm 0.61$
$n_s$	0.9644	$0.963 \pm 0.011$	$z_{re}$	7.57	$7.50 \pm 0.85$	$D_M(0.51)$	1993.5	$1996 \pm 24$
$y_{cal}$	1.00033	$1.0004 \pm 0.0025$	$10^9 A_s$	2.0899	$2.088 \pm 0.037$	$H(0.61)$	95.07	$95.01 \pm 0.52$
$A_{100}^{PS}$	246.8	$242 \pm 26$	$10^9 A_s e^{-2\tau}$	1.8815	$1.880 \pm 0.015$	$D_M(0.61)$	2318.8	$2322 \pm 26$
$A_{143}^{PS}$	38.4	$40 \pm 10$	$D_{40}$	1228.0	$1232 \pm 22$	$H(2.33)$	236.61	$236.6 \pm 1.3$
$A_{217}^{PS}$	99.1	$101 \pm 10$	$D_{220}$	5701.1	$5703 \pm 42$	$D_M(2.33)$	5774.6	$5778 \pm 26$
$A_{217}^{CIB}$	43.2	$41_{-8}^{+7}$	$D_{810}$	2532.9	$2534 \pm 14$	$f\sigma_8(0.15)$	0.4623	$0.463 \pm 0.013$
$A_{143}^{tSZ}$	3.96	$3.7_{-2.6}^{+1.8}$	$D_{1420}$	813.2	$814.4 \pm 5.4$	$\sigma_8(0.15)$	0.7492	$0.7482 \pm 0.0086$
$r_{143 \times 217}^{PS}$	0.554	$0.65 \pm 0.13$	$D_{2000}$	229.03	$229.8 \pm 2.5$	$f\sigma_8(0.38)$	0.4790	$0.4790 \pm 0.0099$
$r_{143 \times 217}^{CIB}$	0.631	$0.57_{-0.13}^{+0.42}$	$n_{s,0.002}$	0.9644	$0.963 \pm 0.011$	$\sigma_8(0.38)$	0.6633	$0.6623 \pm 0.0074$
$\xi^{tSZ \times CIB}$	0.00	—	$Y_P$	0.2478	$0.242 \pm 0.021$	$f\sigma_8(0.51)$	0.4767	$0.4765 \pm 0.0084$
$A^{kSZ}$	4.3	—	$Y_P^{BBN}$	0.2491	$0.244 \pm 0.021$	$\sigma_8(0.51)$	0.6204	$0.6194 \pm 0.0070$
$A_{100}^{dust}$	1.008	$1.01 \pm 0.20$	Age/Gyr	13.823	$13.831 \pm 0.058$	$f\sigma_8(0.61)$	0.4711	$0.4708 \pm 0.0075$
$A_{143}^{dust}$	0.979	$0.97 \pm 0.17$	$z_*$	1090.36	$1090.20 \pm 0.68$	$\sigma_8(0.61)$	0.5901	$0.5892 \pm 0.0067$
$A_{217}^{dust}$	0.962	$0.97 \pm 0.10$	$r_*$	144.492	$144.50 \pm 0.49$	$f\sigma_8(2.33)$	0.29726	$0.2967 \pm 0.0035$
$A_{143 \times 217}^{dust}$	1.011	$1.03 \pm 0.16$	$100\theta_*$	1.041077	$1.04103 \pm 0.00050$	$\sigma_8(2.33)$	0.30615	$0.3056 \pm 0.0038$
$c_{100}$	0.99736	$0.9975 \pm 0.0011$	$D_M(z_*)/\text{Gpc}$	13.8791	$13.881 \pm 0.046$	$f_{2000}^{143}$	31.72	$30 \pm 4$
$c_{217}$	1.00131	$1.0012 \pm 0.0016$	$z_{drag}$	1059.51	$1059.3 \pm 1.2$	$f_{2000}^{217}$	108.13	$107.3 \pm 2.8$
$H_0$	67.01	$66.9 \pm 1.1$	$r_{drag}$	147.233	$147.25 \pm 0.50$	$f_{2000}^{143 \times 217}$	33.48	$32.7 \pm 3.1$
$\Omega_\Lambda$	0.6811	$0.679_{-0.014}^{+0.016}$	$k_D$	0.14043	$0.14060 \pm 0.00078$	$\chi_{small}^2$	395.89	$397.0 \pm 1.7$
$\Omega_m$	0.3189	$0.321 \pm 0.015$	$100\theta_D$	0.16118	$0.16097 \pm 0.00080$	$\chi_{lowl}^2$	23.34	$23.9 \pm 2.1$
$\Omega_m h^2$	0.14321	$0.1433 \pm 0.0021$	$z_{eq}$	3406.8	$3409 \pm 50$	$\chi_{CamSpec}^2$	7050.2	$7063.9 \pm 5.6$
$\Omega_m h^3$	0.09597	$0.09585 \pm 0.00076$	$k_{eq}$	0.010398	$0.01040 \pm 0.00015$	$\chi_{prior}^2$	2.38	$7.6 \pm 3.4$
$\sigma_8$	0.8116	$0.8107 \pm 0.0098$	$100\theta_{eq}$	0.8118	$0.8114 \pm 0.0096$	$\chi_{CMB}^2$	7469.4	$7484.8 \pm 5.7$

Best-fit  $\chi_{eff}^2 = 7471.80$ ;  $\bar{\chi}_{eff}^2 = 7492.39$ ;  $R - 1 = 0.00648$

$\chi_{eff}^2$ : CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.89 commander\_dx12\_v3.2\_29: 23.34 CamSpec like\_10.7HM: 7050.19



## 20.22 base\_yhe\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02226 \pm 0.00024$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6025 \pm 0.0085$	$D_{\mathrm{M}}(0.38)$	$1527 \pm 11$
$\Omega_{\mathrm{c}}h^2$	$0.1189 \pm 0.0012$	$\sigma_8/h^{0.5}$	$0.982 \pm 0.012$	$H(0.51)$	$89.75 \pm 0.38$
$100\theta_{\mathrm{MC}}$	$1.04119 \pm 0.00074$	$r_{\mathrm{drag}}h$	$99.91 \pm 0.98$	$D_{\mathrm{M}}(0.51)$	$1979 \pm 13$
$\tau$	$0.0541 \pm 0.0079$	$\langle d^2 \rangle^{1/2}$	$2.422 \pm 0.029$	$H(0.61)$	$95.35 \pm 0.35$
$Y_{\mathrm{P}}$	$0.250 \pm 0.019$	$z_{\mathrm{re}}$	$7.67 \pm 0.81$	$D_{\mathrm{M}}(0.61)$	$2303 \pm 14$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041 \pm 0.018$	$10^9 A_{\mathrm{s}}$	$2.092 \pm 0.037$	$H(2.33)$	$235.76 \pm 0.82$
$n_{\mathrm{s}}$	$0.9691 \pm 0.0083$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.015$	$D_{\mathrm{M}}(2.33)$	$5762 \pm 18$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{40}$	$1219 \pm 17$	$f\sigma_8(0.15)$	$0.4540 \pm 0.0078$
$A_{100}^{\mathrm{PS}}$	$244 \pm 26$	$D_{220}$	$5709 \pm 41$	$\sigma_8(0.15)$	$0.7469 \pm 0.0084$
$A_{143}^{\mathrm{PS}}$	$41 \pm 9$	$D_{810}$	$2534 \pm 14$	$f\sigma_8(0.38)$	$0.4728 \pm 0.0068$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{1420}$	$814.6 \pm 5.3$	$\sigma_8(0.38)$	$0.6623 \pm 0.0074$
$A_{217}^{\mathrm{CIB}}$	$41_{-8}^{+7}$	$D_{2000}$	$229.5 \pm 2.5$	$f\sigma_8(0.51)$	$0.4717 \pm 0.0063$
$A_{143}^{\mathrm{tSZ}}$	$3.7_{-2.7}^{+1.7}$	$n_{\mathrm{s},0.002}$	$0.9691 \pm 0.0083$	$\sigma_8(0.51)$	$0.6199 \pm 0.0069$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	$0.250 \pm 0.019$	$f\sigma_8(0.61)$	$0.4669 \pm 0.0059$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.463$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.251 \pm 0.019$	$\sigma_8(0.61)$	$0.5899 \pm 0.0066$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	Age/Gyr	$13.796 \pm 0.043$	$f\sigma_8(2.33)$	$0.2976 \pm 0.0034$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.16 \pm 0.68$	$\sigma_8(2.33)$	$0.3069 \pm 0.0035$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$r_*$	$144.78 \pm 0.37$	$f_{2000}^{143}$	$31 \pm 4$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.17$	$100\theta_*$	$1.04127 \pm 0.00042$	$f_{2000}^{217}$	$107.8 \pm 2.7$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.904 \pm 0.037$	$f_{2000}^{143 \times 217}$	$33.2 \pm 3.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$z_{\mathrm{drag}}$	$1059.8 \pm 1.1$	$\chi_{\mathrm{small}}^2$	$397.1 \pm 1.8$
$c_{100}$	$0.9975_{-0.00099}^{+0.0011}$	$r_{\mathrm{drag}}$	$147.49 \pm 0.42$	$\chi_{\mathrm{lowl}}^2$	$22.7 \pm 1.3$
$c_{217}$	$1.0012 \pm 0.0016$	$k_{\mathrm{D}}$	$0.14018 \pm 0.00061$	$\chi_{\mathrm{CamSpec}}^2$	$7064.8 \pm 5.6$
$H_0$	$67.74 \pm 0.62$	$100\theta_{\mathrm{D}}$	$0.16119 \pm 0.00076$	$\chi_{6\mathrm{DF}}^2$	$0.054 \pm 0.074$
$\Omega_{\Lambda}$	$0.6908 \pm 0.0076$	$z_{\mathrm{eq}}$	$3374 \pm 29$	$\chi_{\mathrm{MGS}}^2$	$1.43 \pm 0.56$
$\Omega_{\mathrm{m}}$	$0.3092 \pm 0.0076$	$k_{\mathrm{eq}}$	$0.010297 \pm 0.000089$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.6$
$\Omega_{\mathrm{m}}h^2$	$0.1418 \pm 0.0012$	$100\theta_{\mathrm{eq}}$	$0.8184 \pm 0.0053$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.5$
$\Omega_{\mathrm{m}}h^3$	$0.09606 \pm 0.00072$	$100\theta_{\mathrm{s,eq}}$	$0.4521 \pm 0.0027$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.3$
$\sigma_8$	$0.8080 \pm 0.0092$	$H(0.15)$	$72.99 \pm 0.55$	$\chi_{\mathrm{CMB}}^2$	$7484.5 \pm 5.5$
$S_8$	$0.820 \pm 0.015$	$D_{\mathrm{M}}(0.15)$	$640.2 \pm 5.3$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4493 \pm 0.0083$	$H(0.38)$	$83.06 \pm 0.44$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7498.32$ ;  $R - 1 = 0.01513$



## 20.23 base\_yhe\_CamSpecHM\_TT\_lowl\_lowE\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02211 \pm 0.00028$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4574 \pm 0.0091$	$D_{\mathrm{M}}(0.15)$	$646.9 \pm 7.8$
$\Omega_{\mathrm{c}}h^2$	$0.1203 \pm 0.0016$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6086 \pm 0.0078$	$H(0.38)$	$82.56 \pm 0.61$
$100\theta_{\mathrm{MC}}$	$1.04071 \pm 0.00085$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.011$	$D_{\mathrm{M}}(0.38)$	$1541 \pm 16$
$\tau$	$0.0526 \pm 0.0081$	$r_{\mathrm{drag}}h$	$98.7 \pm 1.4$	$H(0.51)$	$89.35 \pm 0.52$
$Y_{\mathrm{P}}$	$0.241 \pm 0.021$	$\langle d^2 \rangle^{1/2}$	$2.449 \pm 0.029$	$D_{\mathrm{M}}(0.51)$	$1995 \pm 19$
$\ln(10^{10}A_{\mathrm{s}})$	$3.038 \pm 0.017$	$z_{\mathrm{re}}$	$7.52 \pm 0.83$	$H(0.61)$	$95.02 \pm 0.45$
$n_{\mathrm{s}}$	$0.962 \pm 0.010$	$10^9 A_{\mathrm{s}}$	$2.087 \pm 0.036$	$D_{\mathrm{M}}(0.61)$	$2320 \pm 21$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879 \pm 0.014$	$H(2.33)$	$236.48 \pm 0.97$
$A_{100}^{\mathrm{PS}}$	$241 \pm 26$	$D_{40}$	$1232 \pm 19$	$D_{\mathrm{M}}(2.33)$	$5778 \pm 23$
$A_{143}^{\mathrm{PS}}$	$40 \pm 9$	$D_{220}$	$5707 \pm 41$	$f\sigma_8(0.15)$	$0.4613 \pm 0.0083$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{810}$	$2533 \pm 14$	$\sigma_8(0.15)$	$0.7475 \pm 0.0073$
$A_{217}^{\mathrm{CIB}}$	$40_{-8}^{+7}$	$D_{1420}$	$814.7 \pm 5.3$	$f\sigma_8(0.38)$	$0.4779 \pm 0.0064$
$A_{143}^{\mathrm{tSZ}}$	$3.8_{-2.6}^{+1.8}$	$D_{2000}$	$230.0 \pm 2.5$	$\sigma_8(0.38)$	$0.6618 \pm 0.0068$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.962 \pm 0.010$	$f\sigma_8(0.51)$	$0.4756 \pm 0.0055$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.57_{-0.14}^{+0.42}$	$Y_{\mathrm{P}}$	$0.241 \pm 0.021$	$\sigma_8(0.51)$	$0.6190 \pm 0.0066$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.242 \pm 0.021$	$f\sigma_8(0.61)$	$0.4701 \pm 0.0050$
$A^{\mathrm{kSZ}}$	—	Age/Gyr	$13.831 \pm 0.053$	$\sigma_8(0.61)$	$0.5888 \pm 0.0064$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$z_*$	$1090.10 \pm 0.67$	$f\sigma_8(2.33)$	$0.2966 \pm 0.0035$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	$r_*$	$144.57 \pm 0.39$	$\sigma_8(2.33)$	$0.3055 \pm 0.0039$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04103 \pm 0.00047$	$f_{2000}^{143}$	$30 \pm 4$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.887 \pm 0.037$	$f_{2000}^{217}$	$107.1 \pm 2.8$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.2 \pm 1.2$	$f_{2000}^{143 \times 217}$	$32.5 \pm 3.1$
$c_{217}$	$1.0011 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.31 \pm 0.41$	$\chi_{\mathrm{lensing}}^2$	$9.50 \pm 0.91$
$H_0$	$66.97 \pm 0.90$	$k_{\mathrm{D}}$	$0.14061 \pm 0.00069$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.7$
$\Omega_{\Lambda}$	$0.681 \pm 0.011$	$100\theta_{\mathrm{D}}$	$0.16089 \pm 0.00079$	$\chi_{\mathrm{lowl}}^2$	$23.9 \pm 1.8$
$\Omega_{\mathrm{m}}$	$0.319 \pm 0.011$	$z_{\mathrm{eq}}$	$3403 \pm 36$	$\chi_{\mathrm{CamSpec}}^2$	$7063.4 \pm 5.4$
$\Omega_{\mathrm{m}}h^2$	$0.1431 \pm 0.0015$	$k_{\mathrm{eq}}$	$0.01039 \pm 0.00011$	$\chi_{\mathrm{prior}}^2$	$7.5 \pm 3.4$
$\Omega_{\mathrm{m}}h^3$	$0.09580 \pm 0.00076$	$100\theta_{\mathrm{eq}}$	$0.8123 \pm 0.0070$	$\chi_{\mathrm{CMB}}^2$	$7493.8 \pm 5.6$
$\sigma_8$	$0.8098 \pm 0.0078$	$100\theta_{\mathrm{s,eq}}$	$0.4491 \pm 0.0036$		
$S_8$	$0.835 \pm 0.017$	$H(0.15)$	$72.33 \pm 0.79$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7501.32; R - 1 = 0.00730$$



## 20.24 base\_yhe\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02225 \pm 0.00024$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6046 \pm 0.0067$	$D_{\mathrm{M}}(0.38)$	$1529 \pm 10$
$\Omega_{\mathrm{c}}h^2$	$0.1191 \pm 0.0011$	$\sigma_8/h^{0.5}$	$0.9849 \pm 0.0096$	$H(0.51)$	$89.70 \pm 0.37$
$100\theta_{\mathrm{MC}}$	$1.04112 \pm 0.00073$	$r_{\mathrm{drag}}h$	$99.73 \pm 0.89$	$D_{\mathrm{M}}(0.51)$	$1981 \pm 13$
$\tau$	$0.0558 \pm 0.0074$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.024$	$H(0.61)$	$95.31 \pm 0.34$
$Y_{\mathrm{P}}$	$0.248 \pm 0.019$	$z_{\mathrm{re}}$	$7.84 \pm 0.74$	$D_{\mathrm{M}}(0.61)$	$2305 \pm 14$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045 \pm 0.016$	$10^9 A_{\mathrm{s}}$	$2.101 \pm 0.033$	$H(2.33)$	$235.88 \pm 0.73$
$n_{\mathrm{s}}$	$0.9678 \pm 0.0082$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878 \pm 0.014$	$D_{\mathrm{M}}(2.33)$	$5764 \pm 18$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0024$	$D_{40}$	$1223 \pm 17$	$f\sigma_8(0.15)$	$0.4560 \pm 0.0062$
$A_{100}^{\mathrm{PS}}$	$243 \pm 26$	$D_{220}$	$5715 \pm 40$	$\sigma_8(0.15)$	$0.7485 \pm 0.0072$
$A_{143}^{\mathrm{PS}}$	$41 \pm 9$	$D_{810}$	$2535 \pm 14$	$f\sigma_8(0.38)$	$0.4745 \pm 0.0054$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{1420}$	$815.1 \pm 5.2$	$\sigma_8(0.38)$	$0.6636 \pm 0.0066$
$A_{217}^{\mathrm{CIB}}$	$41_{-8}^{+7}$	$D_{2000}$	$229.8 \pm 2.5$	$f\sigma_8(0.51)$	$0.4732 \pm 0.0050$
$A_{143}^{\mathrm{tSZ}}$	$3.7_{-2.7}^{+1.7}$	$n_{\mathrm{s},0.002}$	$0.9678 \pm 0.0082$	$\sigma_8(0.51)$	$0.6211 \pm 0.0062$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	$0.248 \pm 0.019$	$f\sigma_8(0.61)$	$0.4683 \pm 0.0047$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.461$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.249 \pm 0.019$	$\sigma_8(0.61)$	$0.5910 \pm 0.0060$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	Age/Gyr	$13.800 \pm 0.042$	$f\sigma_8(2.33)$	$0.2980 \pm 0.0031$
$A^{\mathrm{kSZ}}$	—	$z_{*}$	$1090.12 \pm 0.66$	$\sigma_8(2.33)$	$0.3073 \pm 0.0033$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$r_{*}$	$144.74 \pm 0.34$	$f_{2000}^{143}$	$31 \pm 4$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	$100\theta_{*}$	$1.04124 \pm 0.00042$	$f_{2000}^{217}$	$107.6 \pm 2.7$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.901 \pm 0.034$	$f_{2000}^{143 \times 217}$	$33.0 \pm 3.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$z_{\mathrm{drag}}$	$1059.7 \pm 1.1$	$\chi_{\mathrm{lensing}}^2$	$9.42 \pm 0.83$
$c_{100}$	$0.9975_{-0.00098}^{+0.0011}$	$r_{\mathrm{drag}}$	$147.45 \pm 0.39$	$\chi_{\mathrm{simall}}^2$	$397.2 \pm 1.9$
$c_{217}$	$1.0012 \pm 0.0016$	$k_{\mathrm{D}}$	$0.14028 \pm 0.00059$	$\chi_{\mathrm{lowl}}^2$	$23.0 \pm 1.3$
$H_0$	$67.64 \pm 0.58$	$100\theta_{\mathrm{D}}$	$0.16111 \pm 0.00075$	$\chi_{\mathrm{CamSpec}}^2$	$7064.1 \pm 5.4$
$\Omega_{\Lambda}$	$0.6895 \pm 0.0070$	$z_{\mathrm{eq}}$	$3378 \pm 26$	$\chi_{6\mathrm{DF}}^2$	$0.057 \pm 0.074$
$\Omega_{\mathrm{m}}$	$0.3105 \pm 0.0070$	$k_{\mathrm{eq}}$	$0.010311 \pm 0.000078$	$\chi_{\mathrm{MGS}}^2$	$1.33 \pm 0.49$
$\Omega_{\mathrm{m}}h^2$	$0.1420 \pm 0.0011$	$100\theta_{\mathrm{eq}}$	$0.8175 \pm 0.0047$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.6$
$\Omega_{\mathrm{m}}h^3$	$0.09605 \pm 0.00071$	$100\theta_{\mathrm{s,eq}}$	$0.4516 \pm 0.0024$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.5$
$\sigma_8$	$0.8100 \pm 0.0078$	$H(0.15)$	$72.90 \pm 0.52$	$\chi_{\mathrm{CMB}}^2$	$7493.7 \pm 5.6$
$S_8$	$0.824 \pm 0.012$	$D_{\mathrm{M}}(0.15)$	$641.1 \pm 5.1$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4513 \pm 0.0066$	$H(0.38)$	$83.00 \pm 0.42$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7507.45$ ;  $R - 1 = 0.01905$



## 20.25 base\_yhe\_CamSpecHM\_TT\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02213 \pm 0.00029$	$S_8$	$0.838 \pm 0.025$	$100\theta_{\mathrm{s,eq}}$	$0.4488 \pm 0.0049$
$\Omega_{\mathrm{c}}h^2$	$0.1204 \pm 0.0022$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.459 \pm 0.014$	$H(0.15)$	$72.33 \pm 0.98$
$100\theta_{\mathrm{MC}}$	$1.04079 \pm 0.00088$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.610 \pm 0.012$	$D_{\mathrm{M}}(0.15)$	$646.9 \pm 9.8$
$\tau$	$0.0540^{+0.0047}_{-0.0084}$	$\sigma_8/h^{0.5}$	$0.992 \pm 0.016$	$H(0.38)$	$82.57 \pm 0.74$
$Y_{\mathrm{P}}$	$0.243 \pm 0.021$	$r_{\mathrm{drag}}h$	$98.6 \pm 1.8$	$D_{\mathrm{M}}(0.38)$	$1541 \pm 20$
$\ln(10^{10}A_{\mathrm{s}})$	$3.042^{+0.013}_{-0.017}$	$\langle d^2 \rangle^{1/2}$	$2.453 \pm 0.044$	$H(0.51)$	$89.36 \pm 0.61$
$n_{\mathrm{s}}$	$0.963 \pm 0.011$	$z_{\mathrm{re}}$	$7.69^{+0.52}_{-0.86}$	$D_{\mathrm{M}}(0.51)$	$1995 \pm 23$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$10^9 A_{\mathrm{s}}$	$2.095^{+0.027}_{-0.036}$	$H(0.61)$	$95.04 \pm 0.51$
$A_{100}^{\mathrm{PS}}$	$242 \pm 26$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.880 \pm 0.015$	$D_{\mathrm{M}}(0.61)$	$2320 \pm 25$
$A_{143}^{\mathrm{PS}}$	$40 \pm 10$	$D_{40}$	$1231 \pm 22$	$H(2.33)$	$236.6 \pm 1.3$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{220}$	$5704 \pm 42$	$D_{\mathrm{M}}(2.33)$	$5777 \pm 25$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 8$	$D_{810}$	$2534 \pm 14$	$f\sigma_8(0.15)$	$0.463 \pm 0.013$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$D_{1420}$	$814.3 \pm 5.4$	$\sigma_8(0.15)$	$0.7494 \pm 0.0080$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$D_{2000}$	$229.8 \pm 2.5$	$f\sigma_8(0.38)$	$0.4793 \pm 0.0099$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.450$	$n_{\mathrm{s},0.002}$	$0.963 \pm 0.011$	$\sigma_8(0.38)$	$0.6635^{+0.0062}_{-0.0072}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.243 \pm 0.021$	$f\sigma_8(0.51)$	$0.4770 \pm 0.0084$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.244 \pm 0.021$	$\sigma_8(0.51)$	$0.6205^{+0.0057}_{-0.0068}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	Age/Gyr	$13.828 \pm 0.058$	$f\sigma_8(0.61)$	$0.4714 \pm 0.0074$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	$z_*$	$1090.20 \pm 0.68$	$\sigma_8(0.61)$	$0.5902^{+0.0055}_{-0.0065}$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$r_*$	$144.52 \pm 0.49$	$f\sigma_8(2.33)$	$0.2973^{+0.0028}_{-0.0034}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04104 \pm 0.00050$	$\sigma_8(2.33)$	$0.3062^{+0.0032}_{-0.0037}$
$c_{100}$	$0.9975 \pm 0.0010$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.882 \pm 0.046$	$f_{2000}^{143}$	$30 \pm 4$
$c_{217}$	$1.0012 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.3 \pm 1.2$	$f_{2000}^{217}$	$107.4 \pm 2.8$
$H_0$	$67.0 \pm 1.1$	$r_{\mathrm{drag}}$	$147.26 \pm 0.50$	$f_{2000}^{143 \times 217}$	$32.7 \pm 3.1$
$\Omega_{\Lambda}$	$0.680^{+0.015}_{-0.014}$	$k_{\mathrm{D}}$	$0.14057 \pm 0.00077$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.7$
$\Omega_{\mathrm{m}}$	$0.320 \pm 0.015$	$100\theta_{\mathrm{D}}$	$0.16100 \pm 0.00079$	$\chi_{\mathrm{lowl}}^2$	$23.8 \pm 2.1$
$\Omega_{\mathrm{m}}h^2$	$0.1432 \pm 0.0021$	$z_{\mathrm{eq}}$	$3407 \pm 50$	$\chi_{\mathrm{CamSpec}}^2$	$7063.8 \pm 5.6$
$\Omega_{\mathrm{m}}h^3$	$0.09588 \pm 0.00076$	$k_{\mathrm{eq}}$	$0.01040 \pm 0.00015$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.4$
$\sigma_8$	$0.8119 \pm 0.0093$	$100\theta_{\mathrm{eq}}$	$0.8119 \pm 0.0095$	$\chi_{\mathrm{CMB}}^2$	$7484.5 \pm 5.6$

$\bar{\chi}_{\mathrm{eff}}^2 = 7492.12$ ;  $R - 1 = 0.00634$



## 20.26 base\_yhe\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02227 \pm 0.00024$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6031 \pm 0.0082$	$D_{\mathrm{M}}(0.38)$	$1527 \pm 11$
$\Omega_{\mathrm{c}}h^2$	$0.1189 \pm 0.0012$	$\sigma_8/h^{0.5}$	$0.983 \pm 0.012$	$H(0.51)$	$89.76 \pm 0.38$
$100\theta_{\mathrm{MC}}$	$1.04121 \pm 0.00073$	$r_{\mathrm{drag}}h$	$99.93 \pm 0.98$	$D_{\mathrm{M}}(0.51)$	$1979 \pm 13$
$\tau$	$0.0553^{+0.0055}_{-0.0080}$	$\langle d^2 \rangle^{1/2}$	$2.425 \pm 0.028$	$H(0.61)$	$95.36 \pm 0.35$
$Y_{\mathrm{P}}$	$0.250 \pm 0.019$	$z_{\mathrm{re}}$	$7.80^{+0.60}_{-0.82}$	$D_{\mathrm{M}}(0.61)$	$2303 \pm 14$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.014}_{-0.017}$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.029}_{-0.037}$	$H(2.33)$	$235.76 \pm 0.82$
$n_{\mathrm{s}}$	$0.9692 \pm 0.0082$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877^{+0.014}_{-0.016}$	$D_{\mathrm{M}}(2.33)$	$5762 \pm 18$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$D_{40}$	$1219 \pm 17$	$f\sigma_8(0.15)$	$0.4545 \pm 0.0077$
$A_{100}^{\mathrm{PS}}$	$244 \pm 26$	$D_{220}$	$5710 \pm 41$	$\sigma_8(0.15)$	$0.7478^{+0.0074}_{-0.0083}$
$A_{143}^{\mathrm{PS}}$	$41 \pm 9$	$D_{810}$	$2534 \pm 14$	$f\sigma_8(0.38)$	$0.4733 \pm 0.0066$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{1420}$	$814.6 \pm 5.3$	$\sigma_8(0.38)$	$0.6631^{+0.0065}_{-0.0072}$
$A_{217}^{\mathrm{CIB}}$	$41^{+7}_{-8}$	$D_{2000}$	$229.5 \pm 2.5$	$f\sigma_8(0.51)$	$0.4722 \pm 0.0061$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.7}$	$n_{\mathrm{s},0.002}$	$0.9692 \pm 0.0082$	$\sigma_8(0.51)$	$0.6207^{+0.0061}_{-0.0068}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	$0.250 \pm 0.019$	$f\sigma_8(0.61)$	$0.4674 \pm 0.0057$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.464$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.251 \pm 0.019$	$\sigma_8(0.61)$	$0.5907^{+0.0058}_{-0.0064}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	Age/Gyr	$13.795 \pm 0.042$	$f\sigma_8(2.33)$	$0.2979 \pm 0.0031$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.16 \pm 0.67$	$\sigma_8(2.33)$	$0.3073 \pm 0.0033$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$r_*$	$144.78 \pm 0.37$	$f_{2000}^{143}$	$31 \pm 4$
$A_{143}^{\mathrm{dust}}$	$0.98 \pm 0.17$	$100\theta_*$	$1.04127 \pm 0.00042$	$f_{2000}^{217}$	$107.8 \pm 2.7$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.904 \pm 0.037$	$f_{2000}^{143 \times 217}$	$33.2 \pm 3.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$z_{\mathrm{drag}}$	$1059.8 \pm 1.1$	$\chi_{\mathrm{small}}^2$	$397.0 \pm 1.8$
$c_{100}$	$0.9975^{+0.0011}_{-0.00099}$	$r_{\mathrm{drag}}$	$147.49 \pm 0.42$	$\chi_{\mathrm{lowl}}^2$	$22.7 \pm 1.3$
$c_{217}$	$1.0012 \pm 0.0016$	$k_{\mathrm{D}}$	$0.14018 \pm 0.00060$	$\chi_{\mathrm{CamSpec}}^2$	$7064.7 \pm 5.6$
$H_0$	$67.76 \pm 0.62$	$100\theta_{\mathrm{D}}$	$0.16119 \pm 0.00075$	$\chi_{6\mathrm{DF}}^2$	$0.053 \pm 0.072$
$\Omega_{\Lambda}$	$0.6910 \pm 0.0076$	$z_{\mathrm{eq}}$	$3373 \pm 29$	$\chi_{\mathrm{MGS}}^2$	$1.45 \pm 0.56$
$\Omega_{\mathrm{m}}$	$0.3090 \pm 0.0076$	$k_{\mathrm{eq}}$	$0.010296 \pm 0.000089$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.5$
$\Omega_{\mathrm{m}}h^2$	$0.1418 \pm 0.0012$	$100\theta_{\mathrm{eq}}$	$0.8184 \pm 0.0053$	$\chi_{\mathrm{prior}}^2$	$7.7 \pm 3.5$
$\Omega_{\mathrm{m}}h^3$	$0.09608 \pm 0.00072$	$100\theta_{\mathrm{s,eq}}$	$0.4522 \pm 0.0027$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.3$
$\sigma_8$	$0.8090 \pm 0.0087$	$H(0.15)$	$73.01 \pm 0.55$	$\chi_{\mathrm{CMB}}^2$	$7484.4 \pm 5.5$
$S_8$	$0.821 \pm 0.015$	$D_{\mathrm{M}}(0.15)$	$640.1 \pm 5.3$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4497 \pm 0.0082$	$H(0.38)$	$83.07 \pm 0.44$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7498.14$ ;  $R - 1 = 0.01531$



## 20.27 base\_yhe\_CamSpecHM\_TT\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02213 \pm 0.00028$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4571 \pm 0.0091$	$D_{\mathrm{M}}(0.15)$	$646.1 \pm 7.5$
$\Omega_{\mathrm{c}}h^2$	$0.1201 \pm 0.0016$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6087 \pm 0.0078$	$H(0.38)$	$82.62 \pm 0.59$
$100\theta_{\mathrm{MC}}$	$1.04076 \pm 0.00084$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.011$	$D_{\mathrm{M}}(0.38)$	$1539 \pm 15$
$\tau$	$0.0542^{+0.0048}_{-0.0084}$	$r_{\mathrm{drag}}h$	$98.8 \pm 1.4$	$H(0.51)$	$89.39 \pm 0.50$
$Y_{\mathrm{P}}$	$0.242 \pm 0.021$	$\langle d^2 \rangle^{1/2}$	$2.449 \pm 0.029$	$D_{\mathrm{M}}(0.51)$	$1993 \pm 18$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.013}_{-0.017}$	$z_{\mathrm{re}}$	$7.69^{+0.53}_{-0.86}$	$H(0.61)$	$95.06 \pm 0.44$
$n_{\mathrm{s}}$	$0.9632 \pm 0.0097$	$10^9 A_{\mathrm{s}}$	$2.094^{+0.026}_{-0.035}$	$D_{\mathrm{M}}(0.61)$	$2318 \pm 20$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879 \pm 0.014$	$H(2.33)$	$236.40 \pm 0.94$
$A_{100}^{\mathrm{PS}}$	$241 \pm 26$	$D_{40}$	$1231 \pm 19$	$D_{\mathrm{M}}(2.33)$	$5776 \pm 23$
$A_{143}^{\mathrm{PS}}$	$40 \pm 9$	$D_{220}$	$5707 \pm 41$	$f\sigma_8(0.15)$	$0.4611 \pm 0.0083$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{810}$	$2533 \pm 14$	$\sigma_8(0.15)$	$0.7485 \pm 0.0069$
$A_{217}^{\mathrm{CIB}}$	$41^{+7}_{-8}$	$D_{1420}$	$814.7 \pm 5.3$	$f\sigma_8(0.38)$	$0.4780 \pm 0.0064$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.6}$	$D_{2000}$	$230.0 \pm 2.5$	$\sigma_8(0.38)$	$0.6628^{+0.0058}_{-0.0066}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9632 \pm 0.0097$	$f\sigma_8(0.51)$	$0.4758 \pm 0.0055$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.444$	$Y_{\mathrm{P}}$	$0.242 \pm 0.021$	$\sigma_8(0.51)$	$0.6200^{+0.0056}_{-0.0064}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.243 \pm 0.021$	$f\sigma_8(0.61)$	$0.4704 \pm 0.0050$
$A^{\mathrm{kSZ}}$	—	Age/Gyr	$13.827 \pm 0.052$	$\sigma_8(0.61)$	$0.5898^{+0.0054}_{-0.0062}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$z_*$	$1090.10 \pm 0.67$	$f\sigma_8(2.33)$	$0.2971^{+0.0029}_{-0.0034}$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	$r_*$	$144.59 \pm 0.38$	$\sigma_8(2.33)$	$0.3061^{+0.0032}_{-0.0037}$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04106 \pm 0.00047$	$f_{2000}^{143}$	$30 \pm 4$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.889 \pm 0.037$	$f_{2000}^{217}$	$107.2 \pm 2.8$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.3 \pm 1.2$	$f_{2000}^{143 \times 217}$	$32.5 \pm 3.1$
$c_{217}$	$1.0012 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.33 \pm 0.41$	$\chi_{\mathrm{lensing}}^2$	$9.48 \pm 0.91$
$H_0$	$67.06 \pm 0.86$	$k_{\mathrm{D}}$	$0.14057 \pm 0.00068$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.7$
$\Omega_{\Lambda}$	$0.682 \pm 0.011$	$100\theta_{\mathrm{D}}$	$0.16092 \pm 0.00079$	$\chi_{\mathrm{lowl}}^2$	$23.8 \pm 1.7$
$\Omega_{\mathrm{m}}$	$0.318 \pm 0.011$	$z_{\mathrm{eq}}$	$3400 \pm 35$	$\chi_{\mathrm{CamSpec}}^2$	$7063.4 \pm 5.4$
$\Omega_{\mathrm{m}}h^2$	$0.1429 \pm 0.0015$	$k_{\mathrm{eq}}$	$0.01038 \pm 0.00011$	$\chi_{\mathrm{prior}}^2$	$7.5 \pm 3.4$
$\Omega_{\mathrm{m}}h^3$	$0.09584 \pm 0.00076$	$100\theta_{\mathrm{eq}}$	$0.8130 \pm 0.0068$	$\chi_{\mathrm{CMB}}^2$	$7493.5 \pm 5.6$
$\sigma_8$	$0.8107 \pm 0.0074$	$100\theta_{\mathrm{s,eq}}$	$0.4494 \pm 0.0035$		
$S_8$	$0.835 \pm 0.017$	$H(0.15)$	$72.41 \pm 0.76$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 7501.05; R - 1 = 0.00841$$



## 20.28 base\_yhe\_CamSpecHM\_TT\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02226 \pm 0.00024$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6048 \pm 0.0066$	$D_{\mathrm{M}}(0.38)$	$1529 \pm 10$
$\Omega_{\mathrm{c}}h^2$	$0.1191 \pm 0.0011$	$\sigma_8/h^{0.5}$	$0.9852 \pm 0.0095$	$H(0.51)$	$89.71 \pm 0.37$
$100\theta_{\mathrm{MC}}$	$1.04113 \pm 0.00073$	$r_{\mathrm{drag}}h$	$99.76 \pm 0.88$	$D_{\mathrm{M}}(0.51)$	$1981 \pm 12$
$\tau$	$0.0564^{+0.0059}_{-0.0077}$	$\langle d^2 \rangle^{1/2}$	$2.433 \pm 0.023$	$H(0.61)$	$95.32 \pm 0.34$
$Y_{\mathrm{P}}$	$0.248 \pm 0.019$	$z_{\mathrm{re}}$	$7.91^{+0.63}_{-0.75}$	$D_{\mathrm{M}}(0.61)$	$2305 \pm 14$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046^{+0.014}_{-0.016}$	$10^9 A_{\mathrm{s}}$	$2.103^{+0.028}_{-0.033}$	$H(2.33)$	$235.87 \pm 0.73$
$n_{\mathrm{s}}$	$0.9680 \pm 0.0082$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878^{+0.013}_{-0.015}$	$D_{\mathrm{M}}(2.33)$	$5764 \pm 18$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0024$	$D_{40}$	$1223 \pm 17$	$f\sigma_8(0.15)$	$0.4561 \pm 0.0062$
$A_{100}^{\mathrm{PS}}$	$244 \pm 26$	$D_{220}$	$5715 \pm 40$	$\sigma_8(0.15)$	$0.7489 \pm 0.0070$
$A_{143}^{\mathrm{PS}}$	$41 \pm 9$	$D_{810}$	$2535 \pm 14$	$f\sigma_8(0.38)$	$0.4747 \pm 0.0053$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{1420}$	$815.1 \pm 5.2$	$\sigma_8(0.38)$	$0.6640 \pm 0.0063$
$A_{217}^{\mathrm{CIB}}$	$41^{+7}_{-8}$	$D_{2000}$	$229.8 \pm 2.4$	$f\sigma_8(0.51)$	$0.4734 \pm 0.0049$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.7}_{-2.7}$	$n_{\mathrm{s},0.002}$	$0.9680 \pm 0.0082$	$\sigma_8(0.51)$	$0.6215 \pm 0.0060$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13$	$Y_{\mathrm{P}}$	$0.248 \pm 0.019$	$f\sigma_8(0.61)$	$0.4685 \pm 0.0046$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.462$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.249 \pm 0.019$	$\sigma_8(0.61)$	$0.5914 \pm 0.0057$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	Age/Gyr	$13.799 \pm 0.042$	$f\sigma_8(2.33)$	$0.2982 \pm 0.0030$
$A^{\mathrm{kSZ}}$	—	$z_*$	$1090.12 \pm 0.66$	$\sigma_8(2.33)$	$0.3075 \pm 0.0032$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$r_*$	$144.74 \pm 0.34$	$f_{2000}^{143}$	$31 \pm 4$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	$100\theta_*$	$1.04125 \pm 0.00042$	$f_{2000}^{217}$	$107.6 \pm 2.7$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.901 \pm 0.034$	$f_{2000}^{143 \times 217}$	$33.0 \pm 3.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$z_{\mathrm{drag}}$	$1059.7 \pm 1.1$	$\chi_{\mathrm{lensing}}^2$	$9.38 \pm 0.78$
$c_{100}$	$0.9975^{+0.0011}_{-0.00098}$	$r_{\mathrm{drag}}$	$147.45 \pm 0.39$	$\chi_{\mathrm{simall}}^2$	$397.2 \pm 1.9$
$c_{217}$	$1.0012 \pm 0.0016$	$k_{\mathrm{D}}$	$0.14027 \pm 0.00059$	$\chi_{\mathrm{lowl}}^2$	$22.9 \pm 1.3$
$H_0$	$67.65 \pm 0.58$	$100\theta_{\mathrm{D}}$	$0.16111 \pm 0.00075$	$\chi_{\mathrm{CamSpec}}^2$	$7064.1 \pm 5.4$
$\Omega_{\Lambda}$	$0.6897 \pm 0.0069$	$z_{\mathrm{eq}}$	$3378 \pm 26$	$\chi_{6\mathrm{DF}}^2$	$0.055 \pm 0.071$
$\Omega_{\mathrm{m}}$	$0.3103 \pm 0.0069$	$k_{\mathrm{eq}}$	$0.010309 \pm 0.000078$	$\chi_{\mathrm{MGS}}^2$	$1.34 \pm 0.49$
$\Omega_{\mathrm{m}}h^2$	$0.1420 \pm 0.0011$	$100\theta_{\mathrm{eq}}$	$0.8176 \pm 0.0046$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.5$
$\Omega_{\mathrm{m}}h^3$	$0.09606 \pm 0.00071$	$100\theta_{\mathrm{s,eq}}$	$0.4517 \pm 0.0024$	$\chi_{\mathrm{prior}}^2$	$7.6 \pm 3.5$
$\sigma_8$	$0.8104 \pm 0.0075$	$H(0.15)$	$72.92 \pm 0.52$	$\chi_{\mathrm{CMB}}^2$	$7493.6 \pm 5.5$
$S_8$	$0.824 \pm 0.012$	$D_{\mathrm{M}}(0.15)$	$640.9 \pm 5.0$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.2$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4514 \pm 0.0066$	$H(0.38)$	$83.01 \pm 0.42$		

$\bar{\chi}_{\mathrm{eff}}^2 = 7507.34$ ;  $R - 1 = 0.01969$



## 20.29 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022312	$0.02230 \pm 0.00021$ (+0.6 $\sigma$ )	$\sigma_8$	0.8081	$0.8081 \pm 0.0084$ (−0.3 $\sigma$ )	$100\theta_{\mathrm{s,eq}}$	0.45072	$0.4504 \pm 0.0031$ (+0.4 $\sigma$ )
$\Omega_{\mathrm{c}}h^2$	0.11944	$0.1196 \pm 0.0014$ (−0.4 $\sigma$ )	$S_8$	0.8248	$0.826 \pm 0.017$ (−0.5 $\sigma$ )	$H(0.15)$	72.79	$72.74 \pm 0.67$ (+0.5 $\sigma$ )
$100\theta_{\mathrm{MC}}$	1.04093	$1.04090 \pm 0.00071$ (+0.2 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4517	$0.4524 \pm 0.0091$ (−0.5 $\sigma$ )	$D_{\mathrm{M}}(0.15)$	642.2	$642.7 \pm 6.6$ (−0.5 $\sigma$ )
$\tau$	0.0532	$0.0527 \pm 0.0080$ (+0.1 $\sigma$ )	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6042	$0.6046 \pm 0.0085$ (−0.4 $\sigma$ )	$H(0.38)$	82.92	$82.89 \pm 0.52$ (+0.5 $\sigma$ )
$Y_{\mathrm{P}}$	0.2463	$0.246 \pm 0.018$ (+0.2 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9835	$0.984 \pm 0.012$ (−0.4 $\sigma$ )	$D_{\mathrm{M}}(0.38)$	1531.3	$1532 \pm 13$ (−0.5 $\sigma$ )
$\ln(10^{10}A_{\mathrm{s}})$	3.0389	$3.039 \pm 0.017$ (+0.0 $\sigma$ )	$r_{\mathrm{drag}}h$	99.43	$99.3 \pm 1.2$ (+0.4 $\sigma$ )	$H(0.51)$	89.651	$89.62 \pm 0.44$ (+0.5 $\sigma$ )
$n_{\mathrm{s}}$	0.9671	$0.9662 \pm 0.0085$ (+0.3 $\sigma$ )	$\langle d^2 \rangle^{1/2}$	2.4297	$2.433 \pm 0.032$ (−0.4 $\sigma$ )	$D_{\mathrm{M}}(0.51)$	1983.5	$1985 \pm 16$ (−0.5 $\sigma$ )
$y_{\mathrm{cal}}$	1.00025	$1.0004 \pm 0.0025$ (−0.0 $\sigma$ )	$z_{\mathrm{re}}$	7.57	$7.51 \pm 0.82$ (+0.0 $\sigma$ )	$H(0.61)$	95.277	$95.26 \pm 0.38$ (+0.5 $\sigma$ )
$A_{100}^{\mathrm{PS}}$	232.1	$240 \pm 26$ (−0.0 $\sigma$ )	$10^9A_{\mathrm{s}}$	2.0883	$2.088 \pm 0.036$ (+0.0 $\sigma$ )	$D_{\mathrm{M}}(0.61)$	2307.9	$2309 \pm 17$ (−0.5 $\sigma$ )
$A_{143}^{\mathrm{PS}}$	41.4	$40 \pm 9$ (−0.1 $\sigma$ )	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8777	$1.879 \pm 0.013$ (−0.1 $\sigma$ )	$H(2.33)$	236.14	$236.21 \pm 0.84$ (−0.3 $\sigma$ )
$A_{217}^{\mathrm{PS}}$	102.7	$102 \pm 10$ (+0.0 $\sigma$ )	$D_{40}$	1223.0	$1226 \pm 17$ (−0.3 $\sigma$ )	$D_{\mathrm{M}}(2.33)$	5764.8	$5766 \pm 19$ (−0.5 $\sigma$ )
$A_{217}^{\mathrm{CIB}}$	44.1	$40 \pm 7$ (−0.1 $\sigma$ )	$D_{220}$	5714.1	$5718 \pm 39$ (+0.3 $\sigma$ )	$f\sigma_8(0.15)$	0.4562	$0.4568 \pm 0.0085$ (−0.5 $\sigma$ )
$A_{143}^{\mathrm{tSZ}}$	6.67	$3.8_{-2.5}^{+1.8}$ (+0.0 $\sigma$ )	$D_{810}$	2534.5	$2535 \pm 14$ (+0.1 $\sigma$ )	$\sigma_8(0.15)$	0.7466	$0.7465 \pm 0.0077$ (−0.2 $\sigma$ )
$r_{143 \times 217}^{\mathrm{PS}}$	0.625	$0.66 \pm 0.13$ (+0.0 $\sigma$ )	$D_{1420}$	815.7	$815.5 \pm 5.1$ (+0.2 $\sigma$ )	$f\sigma_8(0.38)$	0.4743	$0.4747 \pm 0.0069$ (−0.4 $\sigma$ )
$r_{143 \times 217}^{\mathrm{CIB}}$	0.797	$0.57_{-0.16}^{+0.41}$ (−0.0 $\sigma$ )	$D_{2000}$	230.22	$230.1 \pm 2.3$ (+0.1 $\sigma$ )	$\sigma_8(0.38)$	0.6617	$0.6615 \pm 0.0068$ (−0.1 $\sigma$ )
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.21	—	$n_{\mathrm{s},0.002}$	0.9671	$0.9662 \pm 0.0085$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.4728	$0.4730 \pm 0.0062$ (−0.4 $\sigma$ )
$A^{\mathrm{kSZ}}$	0.02	$4.8_{-3.9}^{+2.3}$ (−0.1 $\sigma$ )	$Y_{\mathrm{P}}$	0.2463	$0.246 \pm 0.018$ (+0.2 $\sigma$ )	$\sigma_8(0.51)$	0.6192	$0.6190 \pm 0.0064$ (−0.1 $\sigma$ )
$A_{100}^{\mathrm{dust}}$	1.008	$1.01 \pm 0.20$ (−0.0 $\sigma$ )	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.2477	$0.247 \pm 0.018$ (+0.2 $\sigma$ )	$f\sigma_8(0.61)$	0.4677	$0.4679 \pm 0.0057$ (−0.4 $\sigma$ )
$A_{143}^{\mathrm{dust}}$	0.979	$0.96 \pm 0.17$ (−0.1 $\sigma$ )	Age/Gyr	13.8009	$13.803 \pm 0.043$ (−0.5 $\sigma$ )	$\sigma_8(0.61)$	0.5891	$0.5889 \pm 0.0061$ (−0.0 $\sigma$ )
$A_{217}^{\mathrm{dust}}$	0.973	$0.97 \pm 0.10$ (+0.0 $\sigma$ )	$z_*$	1089.98	$1090.01 \pm 0.58$ (−0.3 $\sigma$ )	$f\sigma_8(2.33)$	0.29701	$0.2969 \pm 0.0032$ (+0.0 $\sigma$ )
$A_{143 \times 217}^{\mathrm{dust}}$	1.008	$1.03 \pm 0.16$ (−0.0 $\sigma$ )	$r_*$	144.616	$144.59 \pm 0.33$ (+0.2 $\sigma$ )	$\sigma_8(2.33)$	0.30616	$0.3060 \pm 0.0034$ (+0.1 $\sigma$ )
$c_{100}$	0.99764	$0.9975 \pm 0.0011$ (+0.0 $\sigma$ )	$100\theta_*$	1.041090	$1.04107 \pm 0.00035$ (+0.1 $\sigma$ )	$f_{2000}^{143}$	30.02	$30 \pm 4$ (−0.1 $\sigma$ )
$c_{217}$	1.00130	$1.0012 \pm 0.0016$ (−0.0 $\sigma$ )	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8908	$13.889 \pm 0.031$ (+0.2 $\sigma$ )	$f_{2000}^{217}$	106.81	$107.0 \pm 2.6$ (−0.1 $\sigma$ )
$c_{TE}$	0.9968	$0.9969 \pm 0.0054$	$z_{\mathrm{drag}}$	1059.78	$1059.77 \pm 0.96$ (+0.4 $\sigma$ )	$f_{2000}^{143 \times 217}$	32.21	$32.3 \pm 2.8$ (−0.1 $\sigma$ )
$c_{EE}$	0.9923	$0.9925 \pm 0.0066$	$r_{\mathrm{drag}}$	147.302	$147.28 \pm 0.34$ (+0.1 $\sigma$ )	$\chi_{\mathrm{simall}}^2$	395.88	$396.9 \pm 1.7$ (−0.0 $\sigma$ )
$H_0$	67.50	$67.44 \pm 0.77$ (+0.5 $\sigma$ )	$k_{\mathrm{D}}$	0.14056	$0.14058 \pm 0.00058$ (−0.0 $\sigma$ )	$\chi_{\mathrm{lowl}}^2$	22.85	$23.2 \pm 1.4$ (−0.4 $\sigma$ )
$\Omega_{\Lambda}$	0.6875	$0.6865 \pm 0.0097$ (+0.5 $\sigma$ )	$100\theta_{\mathrm{D}}$	0.16090	$0.16090 \pm 0.00069$ (−0.1 $\sigma$ )	$\chi_{\mathrm{CamSpec}}^2$	11499.8	$11515.4 \pm 5.8$ (+789.7 $\sigma$ )
$\Omega_{\mathrm{m}}$	0.3125	$0.3135 \pm 0.0097$ (−0.5 $\sigma$ )	$z_{\mathrm{eq}}$	3387.5	$3391 \pm 32$ (−0.4 $\sigma$ )	$\chi_{\mathrm{prior}}^2$	2.19	$7.9 \pm 3.5$ (+0.1 $\sigma$ )
$\Omega_{\mathrm{m}}h^2$	0.14240	$0.1425 \pm 0.0013$ (−0.4 $\sigma$ )	$k_{\mathrm{eq}}$	0.010339	$0.010348 \pm 0.000097$ (−0.4 $\sigma$ )	$\chi_{\mathrm{CMB}}^2$	11918.5	$11935.5 \pm 5.9$ (+782.7 $\sigma$ )
$\Omega_{\mathrm{m}}h^3$	0.09612	$0.09612 \pm 0.00060$ (+0.4 $\sigma$ )	$100\theta_{\mathrm{eq}}$	0.8158	$0.8152 \pm 0.0062$ (+0.4 $\sigma$ )			

Best-fit  $\chi_{\mathrm{eff}}^2 = 11920.73$ ;  $\Delta\chi_{\mathrm{eff}}^2 = 4448.93$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 11943.34$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.95$ ;  $R - 1 = 0.01242$

$\chi_{\mathrm{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.88 ( $\Delta$  -0.01) commander\_dx12\_v3.2.29: 22.85 ( $\Delta$  -0.49) CamSpec like\_10.7HM\_1400\_unified: 11499.82



### 20.30 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02237 \pm 0.00019 \quad (+0.4\sigma)$	$S_8$	$0.819 \pm 0.013 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$639.7 \pm 4.7 \quad (-0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1189 \pm 0.0010 \quad (+0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4487 \pm 0.0071 \quad (-0.1\sigma)$	$H(0.38)$	$83.12 \pm 0.38 \quad (+0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04112 \pm 0.00064 \quad (-0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6018 \pm 0.0075 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1526.2 \pm 9.6 \quad (-0.1\sigma)$
$\tau$	$0.0536 \pm 0.0081 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.980 \pm 0.011 \quad (-0.1\sigma)$	$H(0.51)$	$89.81 \pm 0.33 \quad (+0.2\sigma)$
$Y_{\mathrm{P}}$	$0.250 \pm 0.017 \quad (+0.0\sigma)$	$r_{\mathrm{drag}}h$	$99.91 \pm 0.85 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1977 \pm 11 \quad (-0.1\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.040 \pm 0.018 \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.421 \pm 0.027 \quad (-0.0\sigma)$	$H(0.61)$	$95.41 \pm 0.30 \quad (+0.2\sigma)$
$n_{\mathrm{s}}$	$0.9691 \pm 0.0073 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.59 \pm 0.83 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2301 \pm 12 \quad (-0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.091 \pm 0.037 \quad (-0.0\sigma)$	$H(2.33)$	$235.87 \pm 0.66 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878 \pm 0.013 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5759 \pm 15 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$40 \pm 9 \quad (-0.1\sigma)$	$D_{40}$	$1220 \pm 16 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4534 \pm 0.0068 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{220}$	$5721 \pm 39 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7462 \pm 0.0078 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7 \quad (-0.1\sigma)$	$D_{810}$	$2535 \pm 14 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4723 \pm 0.0060 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.8_{-2.6}^{+1.8} \quad (+0.0\sigma)$	$D_{1420}$	$815.5 \pm 5.1 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6618 \pm 0.0069 \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.13 \quad (+0.0\sigma)$	$D_{2000}$	$229.9 \pm 2.3 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4712 \pm 0.0056 \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.440 \quad (-0.0\sigma)$	$n_{\mathrm{s},0.002}$	$0.9691 \pm 0.0073 \quad (+0.0\sigma)$	$\sigma_8(0.51)$	$0.6194 \pm 0.0065 \quad (-0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.250 \pm 0.017 \quad (+0.0\sigma)$	$f\sigma_8(0.61)$	$0.4664 \pm 0.0053 \quad (-0.1\sigma)$
$A^{\mathrm{kSZ}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.251 \pm 0.017 \quad (+0.0\sigma)$	$\sigma_8(0.61)$	$0.5895 \pm 0.0062 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	Age/Gyr	$13.787 \pm 0.036 \quad (-0.2\sigma)$	$f\sigma_8(2.33)$	$0.2973 \pm 0.0032 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17 \quad (-0.1\sigma)$	$z_*$	$1090.02 \pm 0.58 \quad (-0.2\sigma)$	$\sigma_8(2.33)$	$0.3067 \pm 0.0033 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10 \quad (+0.1\sigma)$	$r_*$	$144.69 \pm 0.29 \quad (-0.2\sigma)$	$f_{2000}^{143}$	$30 \pm 4 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_*$	$1.04118 \pm 0.00032 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$107.3 \pm 2.6 \quad (-0.2\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.897 \pm 0.028 \quad (-0.2\sigma)$	$f_{2000}^{143 \times 217}$	$32.6 \pm 2.8 \quad (-0.2\sigma)$
$c_{217}$	$1.0012 \pm 0.0016 \quad (-0.0\sigma)$	$z_{\mathrm{drag}}$	$1060.01 \pm 0.88 \quad (+0.2\sigma)$	$\chi_{\mathrm{small}}^2$	$397.0 \pm 1.8 \quad (-0.0\sigma)$
$c_{TE}$	$0.9975 \pm 0.0053$	$r_{\mathrm{drag}}$	$147.36 \pm 0.32 \quad (-0.3\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.7 \pm 1.1 \quad (-0.0\sigma)$
$c_{EE}$	$0.9936 \pm 0.0063$	$k_{\mathrm{D}}$	$0.14039 \pm 0.00051 \quad (+0.3\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11515.5 \pm 5.7 \quad (+801.6\sigma)$
$H_0$	$67.80 \pm 0.54 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16103 \pm 0.00067 \quad (-0.2\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.044 \pm 0.057 \quad (-0.1\sigma)$
$\Omega_{\Lambda}$	$0.6911 \pm 0.0066 \quad (+0.0\sigma)$	$z_{\mathrm{eq}}$	$3377 \pm 24 \quad (+0.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.42 \pm 0.49 \quad (-0.0\sigma)$
$\Omega_{\mathrm{m}}$	$0.3089 \pm 0.0066 \quad (-0.0\sigma)$	$k_{\mathrm{eq}}$	$0.010306 \pm 0.000072 \quad (+0.1\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.5 \pm 1.3 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14194 \pm 0.00099 \quad (+0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8181 \pm 0.0044 \quad (-0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.9 \pm 3.5 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09623 \pm 0.00058 \quad (+0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4519 \pm 0.0023 \quad (-0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.0 \quad (-0.1\sigma)$
$\sigma_8$	$0.8073 \pm 0.0085 \quad (-0.1\sigma)$	$H(0.15)$	$73.05 \pm 0.48 \quad (+0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11935.2 \pm 5.7 \quad (+804.8\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 11949.00; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.67; R - 1 = 0.01838$$



### 20.31 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02228 \pm 0.00021 \quad (+0.6\sigma)$	$\sigma_8$	$0.8089 \pm 0.0072 \quad (-0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4501 \pm 0.0027 \quad (+0.3\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1197 \pm 0.0012 \quad (-0.4\sigma)$	$S_8$	$0.828 \pm 0.013 \quad (-0.4\sigma)$	$H(0.15)$	$72.67 \pm 0.60 \quad (+0.4\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04082 \pm 0.00070 \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4536 \pm 0.0072 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.15)$	$643.5 \pm 5.9 \quad (-0.4\sigma)$
$\tau$	$0.0536 \pm 0.0075 \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6058 \pm 0.0066 \quad (-0.4\sigma)$	$H(0.38)$	$82.83 \pm 0.47 \quad (+0.4\sigma)$
$Y_{\mathrm{P}}$	$0.244 \pm 0.017 \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.9857 \pm 0.0093 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.38)$	$1534 \pm 12 \quad (-0.4\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041 \pm 0.016 \quad (+0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.2 \pm 1.1 \quad (+0.4\sigma)$	$H(0.51)$	$89.57 \pm 0.40 \quad (+0.4\sigma)$
$n_{\mathrm{s}}$	$0.9651 \pm 0.0081 \quad (+0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.439 \pm 0.025 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.51)$	$1987 \pm 14 \quad (-0.4\sigma)$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.60 \pm 0.77 \quad (+0.1\sigma)$	$H(0.61)$	$95.21 \pm 0.35 \quad (+0.4\sigma)$
$A_{100}^{\mathrm{PS}}$	$240 \pm 26 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.092 \pm 0.033 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2311 \pm 16 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 9 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.879 \pm 0.013 \quad (+0.0\sigma)$	$H(2.33)$	$236.27 \pm 0.73 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{40}$	$1229 \pm 16 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5768 \pm 18 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7 \quad (-0.1\sigma)$	$D_{220}$	$5721 \pm 39 \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4579 \pm 0.0066 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5} \quad (+0.0\sigma)$	$D_{810}$	$2535 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7472 \pm 0.0067 \quad (-0.0\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.0\sigma)$	$D_{1420}$	$815.9 \pm 5.0 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4756 \pm 0.0053 \quad (-0.4\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.42}_{-0.15} \quad (-0.0\sigma)$	$D_{2000}$	$230.4 \pm 2.2 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6620 \pm 0.0062 \quad (+0.0\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.9651 \pm 0.0081 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4738 \pm 0.0048 \quad (-0.3\sigma)$
$A^{\mathrm{kSZ}}$	$4.7^{+1.9}_{-4.3} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.244 \pm 0.017 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6194 \pm 0.0059 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.245 \pm 0.018 \quad (+0.2\sigma)$	$f\sigma_8(0.61)$	$0.4686 \pm 0.0044 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.17 \quad (-0.1\sigma)$	Age/Gyr	$13.808 \pm 0.041 \quad (-0.4\sigma)$	$\sigma_8(0.61)$	$0.5893 \pm 0.0057 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$z_*$	$1089.96 \pm 0.57 \quad (-0.2\sigma)$	$f\sigma_8(2.33)$	$0.2970 \pm 0.0030 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16 \quad (-0.0\sigma)$	$r_*$	$144.58 \pm 0.30 \quad (+0.0\sigma)$	$\sigma_8(2.33)$	$0.3061 \pm 0.0033 \quad (+0.2\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$100\theta_*$	$1.04104 \pm 0.00034 \quad (+0.0\sigma)$	$f_{2000}^{143}$	$30 \pm 4 \quad (-0.1\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.888 \pm 0.029 \quad (+0.0\sigma)$	$f_{2000}^{217}$	$106.8 \pm 2.6 \quad (-0.1\sigma)$
$c_{TE}$	$0.9965 \pm 0.0054$	$z_{\mathrm{drag}}$	$1059.68 \pm 0.94 \quad (+0.4\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.8 \quad (-0.1\sigma)$
$c_{EE}$	$0.9919 \pm 0.0065$	$r_{\mathrm{drag}}$	$147.27 \pm 0.31 \quad (-0.1\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.29 \pm 0.74 \quad (-0.2\sigma)$
$H_0$	$67.36 \pm 0.69 \quad (+0.4\sigma)$	$k_{\mathrm{D}}$	$0.14066 \pm 0.00056 \quad (+0.1\sigma)$	$\chi_{\mathrm{small}}^2$	$396.9 \pm 1.7 \quad (-0.0\sigma)$
$\Omega_{\Lambda}$	$0.6855 \pm 0.0086 \quad (+0.4\sigma)$	$100\theta_{\mathrm{D}}$	$0.16082 \pm 0.00068 \quad (-0.1\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.4 \pm 1.4 \quad (-0.3\sigma)$
$\Omega_{\mathrm{m}}$	$0.3145 \pm 0.0086 \quad (-0.4\sigma)$	$z_{\mathrm{eq}}$	$3393 \pm 28 \quad (-0.3\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11514.7 \pm 5.6 \quad (+828.4\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1426 \pm 0.0012 \quad (-0.3\sigma)$	$k_{\mathrm{eq}}$	$0.010356 \pm 0.000084 \quad (-0.3\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09607 \pm 0.00060 \quad (+0.4\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8147 \pm 0.0054 \quad (+0.3\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11944.3 \pm 5.8 \quad (+788.2\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 11952.12; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.81; R - 1 = 0.01489$$



### 20.32 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02236 \pm 0.00018 \quad (+0.4\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4505 \pm 0.0059 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1527.7 \pm 9.2 \quad (-0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.11908 \pm 0.00095 \quad (-0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6037 \pm 0.0060 \quad (-0.1\sigma)$	$H(0.51)$	$89.76 \pm 0.32 \quad (+0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04105 \pm 0.00064 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9834 \pm 0.0089 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1979 \pm 11 \quad (-0.1\sigma)$
$\tau$	$0.0554 \pm 0.0074 \quad (-0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.76 \pm 0.79 \quad (+0.0\sigma)$	$H(0.61)$	$95.37 \pm 0.29 \quad (+0.2\sigma)$
$Y_{\mathrm{P}}$	$0.248 \pm 0.016 \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.430 \pm 0.022 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2303 \pm 12 \quad (-0.1\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044 \pm 0.015 \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.78 \pm 0.74 \quad (-0.1\sigma)$	$H(2.33)$	$235.95 \pm 0.61 \quad (+0.1\sigma)$
$n_{\mathrm{s}}$	$0.9681 \pm 0.0072 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.099 \pm 0.032 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	$5760 \pm 15 \quad (-0.2\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879 \pm 0.013 \quad (+0.0\sigma)$	$f\sigma_8(0.15)$	$0.4552 \pm 0.0055 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$241 \pm 26 \quad (-0.1\sigma)$	$D_{40}$	$1224 \pm 15 \quad (+0.0\sigma)$	$\sigma_8(0.15)$	$0.7479 \pm 0.0067 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$40 \pm 9 \quad (-0.1\sigma)$	$D_{220}$	$5725 \pm 39 \quad (+0.3\sigma)$	$f\sigma_8(0.38)$	$0.4738 \pm 0.0048 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2536 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.6631 \pm 0.0061 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7 \quad (-0.1\sigma)$	$D_{1420}$	$816.0 \pm 5.0 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4726 \pm 0.0045 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.8_{-2.5}^{+1.8} \quad (+0.0\sigma)$	$D_{2000}$	$230.2 \pm 2.2 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6206 \pm 0.0058 \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9681 \pm 0.0072 \quad (+0.0\sigma)$	$f\sigma_8(0.61)$	$0.4678 \pm 0.0043 \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.433 \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.248 \pm 0.016 \quad (+0.0\sigma)$	$\sigma_8(0.61)$	$0.5906 \pm 0.0056 \quad (-0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.250 \pm 0.016 \quad (+0.0\sigma)$	$f\sigma_8(2.33)$	$0.2978 \pm 0.0029 \quad (-0.1\sigma)$
$A^{\mathrm{kSZ}}$	$4.8_{-3.9}^{+2.3} \quad (-0.1\sigma)$	Age/Gyr	$13.791 \pm 0.035 \quad (-0.2\sigma)$	$\sigma_8(2.33)$	$0.3071 \pm 0.0031 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$z_*$	$1089.99 \pm 0.57 \quad (-0.2\sigma)$	$f_{2000}^{143}$	$30 \pm 4 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.17 \quad (-0.1\sigma)$	$r_*$	$144.67 \pm 0.27 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$107.1 \pm 2.5 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10 \quad (+0.1\sigma)$	$100\theta_*$	$1.04115 \pm 0.00032 \quad (-0.2\sigma)$	$f_{2000}^{143 \times 217}$	$32.4 \pm 2.8 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.895 \pm 0.027 \quad (-0.2\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.33 \pm 0.78 \quad (-0.1\sigma)$
$c_{100}$	$0.9976 \pm 0.0011 \quad (+0.0\sigma)$	$z_{\mathrm{drag}}$	$1059.94 \pm 0.87 \quad (+0.2\sigma)$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.8 \quad (-0.1\sigma)$
$c_{217}$	$1.0012 \pm 0.0016 \quad (-0.0\sigma)$	$r_{\mathrm{drag}}$	$147.34 \pm 0.30 \quad (-0.3\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.9 \pm 1.2 \quad (-0.0\sigma)$
$c_{TE}$	$0.9970 \pm 0.0053$	$k_{\mathrm{D}}$	$0.14047 \pm 0.00050 \quad (+0.3\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11514.8 \pm 5.6 \quad (+824.8\sigma)$
$c_{EE}$	$0.9932 \pm 0.0063$	$100\theta_{\mathrm{D}}$	$0.16096 \pm 0.00066 \quad (-0.2\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.048 \pm 0.059 \quad (-0.1\sigma)$
$H_0$	$67.71 \pm 0.52 \quad (+0.1\sigma)$	$z_{\mathrm{eq}}$	$3380 \pm 22 \quad (+0.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.34 \pm 0.44 \quad (+0.0\sigma)$
$\Omega_{\Lambda}$	$0.6900 \pm 0.0062 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010316 \pm 0.000067 \quad (+0.1\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.3 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3100 \pm 0.0062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8174 \pm 0.0041 \quad (-0.0\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.5 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14209 \pm 0.00091 \quad (+0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4515 \pm 0.0021 \quad (-0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11944.2 \pm 5.8 \quad (+801.4\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09620 \pm 0.00057 \quad (+0.2\sigma)$	$H(0.15)$	$72.98 \pm 0.46 \quad (+0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.0 \quad (-0.1\sigma)$
$\sigma_8$	$0.8091 \pm 0.0072 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$640.4 \pm 4.4 \quad (-0.1\sigma)$		
$S_8$	$0.822 \pm 0.011 \quad (-0.1\sigma)$	$H(0.38)$	$83.06 \pm 0.37 \quad (+0.2\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11958.04; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.58; R - 1 = 0.02077$$



### 20.33 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Riess18

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02255 \pm 0.00021$	$\sigma_8$	$0.8068 \pm 0.0087$	$100\theta_{\mathrm{s,eq}}$	$0.4545 \pm 0.0030$
$\Omega_{\mathrm{c}} h^2$	$0.1178 \pm 0.0013$	$S_8$	$0.807 \pm 0.016$	$H(0.15)$	$73.71 \pm 0.63$
$100\theta_{\mathrm{MC}}$	$1.04164 \pm 0.00067$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.4420 \pm 0.0086$	$D_{\mathrm{M}}(0.15)$	$633.3 \pm 6.0$
$\tau$	$0.0555 \pm 0.0084$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.5972 \pm 0.0084$	$H(0.38)$	$83.63 \pm 0.49$
$Y_{\mathrm{P}}$	$0.261^{+0.018}_{-0.016}$	$\sigma_8/h^{0.5}$	$0.975 \pm 0.012$	$D_{\mathrm{M}}(0.38)$	$1513 \pm 12$
$\ln(10^{10} A_{\mathrm{s}})$	$3.044 \pm 0.018$	$r_{\mathrm{drag}} h$	$101.1 \pm 1.1$	$H(0.51)$	$90.24 \pm 0.42$
$n_{\mathrm{s}}$	$0.9762 \pm 0.0082$	$\langle d^2 \rangle^{1/2}$	$2.398 \pm 0.030$	$D_{\mathrm{M}}(0.51)$	$1962 \pm 15$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0024$	$z_{\mathrm{re}}$	$7.78 \pm 0.85$	$H(0.61)$	$95.78 \pm 0.36$
$A_{100}^{\mathrm{PS}}$	$244 \pm 25$	$10^9 A_{\mathrm{s}}$	$2.099 \pm 0.037$	$D_{\mathrm{M}}(0.61)$	$2285 \pm 16$
$A_{143}^{\mathrm{PS}}$	$42 \pm 9$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.879 \pm 0.013$	$H(2.33)$	$235.33 \pm 0.79$
$A_{217}^{\mathrm{PS}}$	$101 \pm 10$	$D_{40}$	$1208 \pm 17$	$D_{\mathrm{M}}(2.33)$	$5741 \pm 18$
$A_{217}^{\mathrm{CIB}}$	$41 \pm 7$	$D_{220}$	$5727 \pm 37$	$f\sigma_8(0.15)$	$0.4474 \pm 0.0081$
$A_{143}^{\mathrm{tSZ}}$	$3.7^{+1.7}_{-2.6}$	$D_{810}$	$2537 \pm 13$	$\sigma_8(0.15)$	$0.7467 \pm 0.0079$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.65 \pm 0.12$	$D_{1420}$	$815.5 \pm 5.1$	$f\sigma_8(0.38)$	$0.4682 \pm 0.0069$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.442$	$D_{2000}$	$229.3 \pm 2.2$	$\sigma_8(0.38)$	$0.6632 \pm 0.0070$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.9762 \pm 0.0082$	$f\sigma_8(0.51)$	$0.4682 \pm 0.0062$
$A^{\mathrm{kSZ}}$	$5.2^{+3.7}_{-2.4}$	$Y_{\mathrm{P}}$	$0.261^{+0.018}_{-0.016}$	$\sigma_8(0.51)$	$0.6211 \pm 0.0066$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.262^{+0.018}_{-0.016}$	$f\sigma_8(0.61)$	$0.4641 \pm 0.0058$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17$	Age/Gyr	$13.748 \pm 0.041$	$\sigma_8(0.61)$	$0.5913 \pm 0.0063$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$z_*$	$1090.14 \pm 0.57$	$f\sigma_8(2.33)$	$0.2986 \pm 0.0032$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.04 \pm 0.16$	$r_*$	$144.82 \pm 0.32$	$\sigma_8(2.33)$	$0.3084 \pm 0.0035$
$c_{100}$	$0.9975 \pm 0.0011$	$100\theta_*$	$1.04140 \pm 0.00033$	$f_{2000}^{143}$	$31 \pm 4$
$c_{217}$	$1.0013 \pm 0.0016$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.907 \pm 0.031$	$f_{2000}^{217}$	$108.1 \pm 2.6$
$c_{TE}$	$0.9990 \pm 0.0053$	$z_{\mathrm{drag}}$	$1060.71 \pm 0.93$	$f_{2000}^{143 \times 217}$	$33.5 \pm 2.7$
$c_{EE}$	$0.9964 \pm 0.0064$	$r_{\mathrm{drag}}$	$147.44 \pm 0.34$	$\chi_{\mathrm{small}}^2$	$397.2 \pm 2.0$
$H_0$	$68.54 \pm 0.71$	$k_{\mathrm{D}}$	$0.14000^{+0.00051}_{-0.00060}$	$\chi_{\mathrm{lowl}}^2$	$21.8 \pm 1.1$
$\Omega_{\Lambda}$	$0.6999^{+0.0091}_{-0.0082}$	$100\theta_{\mathrm{D}}$	$0.16137^{+0.00071}_{-0.00063}$	$\chi_{\mathrm{CamSpec}}^2$	$11518.2 \pm 6.4$
$\Omega_{\mathrm{m}}$	$0.3001^{+0.0082}_{-0.0091}$	$z_{\mathrm{eq}}$	$3353 \pm 30$	$\chi_{\mathrm{H073p45}}^2$	$8.9 \pm 2.6$
$\Omega_{\mathrm{m}} h^2$	$0.1409 \pm 0.0012$	$k_{\mathrm{eq}}$	$0.010233 \pm 0.000091$	$\chi_{\mathrm{prior}}^2$	$7.9 \pm 3.5$
$\Omega_{\mathrm{m}} h^3$	$0.09660 \pm 0.00059$	$100\theta_{\mathrm{eq}}$	$0.8233 \pm 0.0058$	$\chi_{\mathrm{CMB}}^2$	$11937.2 \pm 6.2$
$\bar{\chi}_{\mathrm{eff}}^2 = 11954.03; R - 1 = 0.04865$					



### 20.34 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02231 \pm 0.00021 \quad (+0.6\sigma)$	$\sigma_8$	$0.8093^{+0.0072}_{-0.0081} \quad (-0.3\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4505 \pm 0.0031 \quad (+0.4\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1195 \pm 0.0014 \quad (-0.4\sigma)$	$S_8$	$0.827 \pm 0.016 \quad (-0.4\sigma)$	$H(0.15)$	$72.77 \pm 0.67 \quad (+0.4\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04092 \pm 0.00071 \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4529 \pm 0.0090 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.15)$	$642.5 \pm 6.6 \quad (-0.5\sigma)$
$\tau$	$0.0543^{+0.0047}_{-0.0082} \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6054 \pm 0.0082 \quad (-0.4\sigma)$	$H(0.38)$	$82.91 \pm 0.52 \quad (+0.5\sigma)$
$Y_{\mathrm{P}}$	$0.246 \pm 0.018 \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.985 \pm 0.012 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.38)$	$1532 \pm 13 \quad (-0.5\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.042^{+0.013}_{-0.017} \quad (-0.0\sigma)$	$r_{\mathrm{drag}}h$	$99.4 \pm 1.2 \quad (+0.4\sigma)$	$H(0.51)$	$89.64 \pm 0.43 \quad (+0.5\sigma)$
$n_{\mathrm{s}}$	$0.9666 \pm 0.0084 \quad (+0.3\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.435 \pm 0.031 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.51)$	$1984 \pm 16 \quad (-0.5\sigma)$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.68^{+0.53}_{-0.82} \quad (-0.0\sigma)$	$H(0.61)$	$95.27 \pm 0.38 \quad (+0.5\sigma)$
$A_{100}^{\mathrm{PS}}$	$240 \pm 26 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}}$	$2.094^{+0.026}_{-0.035} \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.61)$	$2309 \pm 17 \quad (-0.5\sigma)$
$A_{143}^{\mathrm{PS}}$	$40 \pm 9 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879 \pm 0.013 \quad (-0.1\sigma)$	$H(2.33)$	$236.20 \pm 0.83 \quad (-0.3\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.0\sigma)$	$D_{40}$	$1225 \pm 17 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(2.33)$	$5765 \pm 19 \quad (-0.5\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7 \quad (-0.1\sigma)$	$D_{220}$	$5717 \pm 39 \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4573 \pm 0.0083 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.5} \quad (+0.0\sigma)$	$D_{810}$	$2535 \pm 14 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7477^{+0.0064}_{-0.0073} \quad (-0.2\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.0\sigma)$	$D_{1420}$	$815.5 \pm 5.1 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4752 \pm 0.0067 \quad (-0.4\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.41}_{-0.16} \quad (-0.0\sigma)$	$D_{2000}$	$230.1 \pm 2.3 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6626^{+0.0056}_{-0.0065} \quad (-0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.9666 \pm 0.0084 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4736 \pm 0.0059 \quad (-0.4\sigma)$
$A^{\mathrm{kSZ}}$	$4.8^{+2.4}_{-3.9} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.246 \pm 0.018 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6200^{+0.0052}_{-0.0061} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.248 \pm 0.018 \quad (+0.2\sigma)$	$f\sigma_8(0.61)$	$0.4685 \pm 0.0054 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.17 \quad (-0.1\sigma)$	Age/Gyr	$13.801 \pm 0.043 \quad (-0.5\sigma)$	$\sigma_8(0.61)$	$0.5899^{+0.0050}_{-0.0059} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10 \quad (+0.0\sigma)$	$z_*$	$1090.01 \pm 0.57 \quad (-0.3\sigma)$	$f\sigma_8(2.33)$	$0.2974^{+0.0026}_{-0.0031} \quad (+0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (+0.0\sigma)$	$r_*$	$144.59 \pm 0.32 \quad (+0.2\sigma)$	$\sigma_8(2.33)$	$0.3065^{+0.0028}_{-0.0033} \quad (+0.1\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$100\theta_*$	$1.04108 \pm 0.00035 \quad (+0.1\sigma)$	$f_{2000}^{143}$	$30 \pm 4 \quad (-0.1\sigma)$
$c_{217}$	$1.0012 \pm 0.0016 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.889 \pm 0.031 \quad (+0.2\sigma)$	$f_{2000}^{217}$	$107.0 \pm 2.6 \quad (-0.1\sigma)$
$c_{TE}$	$0.9968 \pm 0.0054$	$z_{\mathrm{drag}}$	$1059.80 \pm 0.95 \quad (+0.4\sigma)$	$f_{2000}^{143 \times 217}$	$32.3 \pm 2.8 \quad (-0.1\sigma)$
$c_{EE}$	$0.9925 \pm 0.0066$	$r_{\mathrm{drag}}$	$147.28 \pm 0.34 \quad (+0.0\sigma)$	$\chi_{\mathrm{small}}^2$	$396.8 \pm 1.7 \quad (-0.0\sigma)$
$H_0$	$67.47 \pm 0.76 \quad (+0.4\sigma)$	$k_{\mathrm{D}}$	$0.14057 \pm 0.00058 \quad (-0.0\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.2 \pm 1.4 \quad (-0.3\sigma)$
$\Omega_{\Lambda}$	$0.6868 \pm 0.0096 \quad (+0.4\sigma)$	$100\theta_{\mathrm{D}}$	$0.16091 \pm 0.00068 \quad (-0.1\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11515.2 \pm 5.8 \quad (+788.5\sigma)$
$\Omega_{\mathrm{m}}$	$0.3132 \pm 0.0096 \quad (-0.4\sigma)$	$z_{\mathrm{eq}}$	$3390 \pm 32 \quad (-0.3\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.9 \pm 3.5 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1425 \pm 0.0013 \quad (-0.3\sigma)$	$k_{\mathrm{eq}}$	$0.010346 \pm 0.000096 \quad (-0.3\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11935.1 \pm 5.8 \quad (+792.0\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09613 \pm 0.00060 \quad (+0.3\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8154 \pm 0.0061 \quad (+0.4\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11943.03; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.91; R - 1 = 0.01121$$



20.35 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02237 \pm 0.00019 \quad (+0.4\sigma)$	$S_8$	$0.820 \pm 0.013 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$639.6 \pm 4.6 \quad (-0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1189 \pm 0.0010 \quad (+0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4492 \pm 0.0069 \quad (-0.1\sigma)$	$H(0.38)$	$83.13 \pm 0.38 \quad (+0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04113 \pm 0.00064 \quad (-0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6026 \pm 0.0070 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1526.0 \pm 9.5 \quad (-0.1\sigma)$
$\tau$	$0.0550^{+0.0052}_{-0.0080} \quad (-0.0\sigma)$	$\sigma_8/h^{0.5}$	$0.982 \pm 0.010 \quad (-0.1\sigma)$	$H(0.51)$	$89.82 \pm 0.33 \quad (+0.2\sigma)$
$Y_{\mathrm{P}}$	$0.250 \pm 0.016 \quad (+0.0\sigma)$	$r_{\mathrm{drag}}h$	$99.93 \pm 0.85 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(0.51)$	$1977 \pm 11 \quad (-0.1\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.013}_{-0.017} \quad (-0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.424 \pm 0.025 \quad (-0.0\sigma)$	$H(0.61)$	$95.42 \pm 0.30 \quad (+0.2\sigma)$
$n_{\mathrm{s}}$	$0.9693 \pm 0.0073 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.75^{+0.57}_{-0.81} \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2301 \pm 12 \quad (-0.1\sigma)$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.027}_{-0.036} \quad (-0.0\sigma)$	$H(2.33)$	$235.87 \pm 0.66 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$242 \pm 25 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878 \pm 0.013 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	$5758 \pm 15 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$40 \pm 9 \quad (-0.1\sigma)$	$D_{40}$	$1220 \pm 16 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4540 \pm 0.0066 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{220}$	$5720 \pm 39 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7473^{+0.0064}_{-0.0076} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7 \quad (-0.1\sigma)$	$D_{810}$	$2535 \pm 14 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4729 \pm 0.0057 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.5} \quad (+0.0\sigma)$	$D_{1420}$	$815.5 \pm 5.1 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6628^{+0.0056}_{-0.0068} \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.0\sigma)$	$D_{2000}$	$229.9 \pm 2.3 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4718 \pm 0.0052 \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.436 \quad (-0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9693 \pm 0.0073 \quad (+0.0\sigma)$	$\sigma_8(0.51)$	$0.6204^{+0.0053}_{-0.0063} \quad (-0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.250 \pm 0.016 \quad (+0.0\sigma)$	$f\sigma_8(0.61)$	$0.4671 \pm 0.0049 \quad (-0.1\sigma)$
$A^{\mathrm{kSZ}}$	$4.9^{+2.8}_{-3.5} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.251 \pm 0.017 \quad (+0.0\sigma)$	$\sigma_8(0.61)$	$0.5904^{+0.0050}_{-0.0061} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20 \quad (+0.0\sigma)$	Age/Gyr	$13.786 \pm 0.036 \quad (-0.2\sigma)$	$f\sigma_8(2.33)$	$0.2978^{+0.0026}_{-0.0031} \quad (-0.0\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.17 \quad (-0.1\sigma)$	$z_*$	$1090.02 \pm 0.57 \quad (-0.2\sigma)$	$\sigma_8(2.33)$	$0.3071^{+0.0027}_{-0.0033} \quad (-0.0\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10 \quad (+0.1\sigma)$	$r_*$	$144.69 \pm 0.29 \quad (-0.2\sigma)$	$f_{2000}^{143}$	$30 \pm 4 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16 \quad (-0.0\sigma)$	$100\theta_*$	$1.04118 \pm 0.00032 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$107.3 \pm 2.5 \quad (-0.2\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.897 \pm 0.028 \quad (-0.2\sigma)$	$f_{2000}^{143 \times 217}$	$32.6 \pm 2.8 \quad (-0.2\sigma)$
$c_{217}$	$1.0012 \pm 0.0016 \quad (-0.0\sigma)$	$z_{\mathrm{drag}}$	$1060.03 \pm 0.87 \quad (+0.2\sigma)$	$\chi_{\mathrm{small}}^2$	$396.9 \pm 1.8 \quad (-0.0\sigma)$
$c_{TE}$	$0.9974 \pm 0.0053$	$r_{\mathrm{drag}}$	$147.36 \pm 0.31 \quad (-0.3\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.7 \pm 1.1 \quad (-0.0\sigma)$
$c_{EE}$	$0.9936 \pm 0.0063$	$k_{\mathrm{D}}$	$0.14039 \pm 0.00051 \quad (+0.3\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11515.3 \pm 5.7 \quad (+800.6\sigma)$
$H_0$	$67.81 \pm 0.54 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16103 \pm 0.00066 \quad (-0.2\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.043 \pm 0.056 \quad (-0.1\sigma)$
$\Omega_{\Lambda}$	$0.6912 \pm 0.0066 \quad (+0.0\sigma)$	$z_{\mathrm{eq}}$	$3376 \pm 24 \quad (+0.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.43 \pm 0.49 \quad (-0.0\sigma)$
$\Omega_{\mathrm{m}}$	$0.3088 \pm 0.0066 \quad (-0.0\sigma)$	$k_{\mathrm{eq}}$	$0.010305 \pm 0.000072 \quad (+0.1\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.5 \pm 1.3 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14193 \pm 0.00099 \quad (+0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8181 \pm 0.0044 \quad (-0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.9 \pm 3.4 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09624 \pm 0.00058 \quad (+0.2\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4519 \pm 0.0023 \quad (-0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$5.95 \pm 0.98 \quad (-0.1\sigma)$
$\sigma_8$	$0.8084^{+0.0071}_{-0.0083} \quad (-0.1\sigma)$	$H(0.15)$	$73.06 \pm 0.48 \quad (+0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11934.9 \pm 5.7 \quad (+809.1\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 11948.72; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.58; R - 1 = 0.01724$$



### 20.36 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02229 \pm 0.00020 \quad (+0.6\sigma)$	$\sigma_8$	$0.8097 \pm 0.0067 \quad (-0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4503 \pm 0.0027 \quad (+0.3\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1196 \pm 0.0012 \quad (-0.3\sigma)$	$S_8$	$0.828 \pm 0.013 \quad (-0.4\sigma)$	$H(0.15)$	$72.70 \pm 0.59 \quad (+0.4\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04084 \pm 0.00069 \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4537 \pm 0.0071 \quad (-0.4\sigma)$	$D_{\mathrm{M}}(0.15)$	$643.1 \pm 5.8 \quad (-0.4\sigma)$
$\tau$	$0.0547^{+0.0050}_{-0.0078} \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6061 \pm 0.0065 \quad (-0.3\sigma)$	$H(0.38)$	$82.86 \pm 0.46 \quad (+0.4\sigma)$
$Y_{\mathrm{P}}$	$0.244 \pm 0.017 \quad (+0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9863 \pm 0.0091 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.38)$	$1533 \pm 12 \quad (-0.4\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.012}_{-0.016} \quad (+0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.3 \pm 1.1 \quad (+0.3\sigma)$	$H(0.51)$	$89.60 \pm 0.40 \quad (+0.4\sigma)$
$n_{\mathrm{s}}$	$0.9655^{+0.0075}_{-0.0083} \quad (+0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.440 \pm 0.024 \quad (-0.3\sigma)$	$D_{\mathrm{M}}(0.51)$	$1986 \pm 14 \quad (-0.4\sigma)$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.72^{+0.55}_{-0.79} \quad (+0.0\sigma)$	$H(0.61)$	$95.23 \pm 0.35 \quad (+0.4\sigma)$
$A_{100}^{\mathrm{PS}}$	$240 \pm 26 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.096^{+0.025}_{-0.033} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2310 \pm 15 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{PS}}$	$39 \pm 9 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879 \pm 0.013 \quad (+0.0\sigma)$	$H(2.33)$	$236.23 \pm 0.72 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{40}$	$1228 \pm 16 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(2.33)$	$5767 \pm 18 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7 \quad (-0.1\sigma)$	$D_{220}$	$5721 \pm 39 \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4580 \pm 0.0066 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.5} \quad (+0.0\sigma)$	$D_{810}$	$2535 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.15)$	$0.7479^{+0.0059}_{-0.0066} \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.0\sigma)$	$D_{1420}$	$815.8 \pm 5.0 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4758 \pm 0.0053 \quad (-0.3\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.43}_{-0.14} \quad (-0.0\sigma)$	$D_{2000}$	$230.4 \pm 2.2 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6627^{+0.0053}_{-0.0061} \quad (-0.0\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.9655^{+0.0075}_{-0.0083} \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4741 \pm 0.0047 \quad (-0.3\sigma)$
$A^{\mathrm{kSZ}}$	$4.7^{+1.9}_{-4.3} \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.244 \pm 0.017 \quad (+0.1\sigma)$	$\sigma_8(0.51)$	$0.6201^{+0.0051}_{-0.0059} \quad (+0.0\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.246 \pm 0.017 \quad (+0.1\sigma)$	$f\sigma_8(0.61)$	$0.4689 \pm 0.0043 \quad (-0.3\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.17 \quad (-0.1\sigma)$	Age/Gyr	$13.806 \pm 0.041 \quad (-0.4\sigma)$	$\sigma_8(0.61)$	$0.5900^{+0.0049}_{-0.0057} \quad (+0.0\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10 \quad (+0.1\sigma)$	$z_*$	$1089.96 \pm 0.57 \quad (-0.2\sigma)$	$f\sigma_8(2.33)$	$0.2974^{+0.0026}_{-0.0030} \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16 \quad (-0.0\sigma)$	$r_*$	$144.59 \pm 0.29 \quad (-0.0\sigma)$	$\sigma_8(2.33)$	$0.3065^{+0.0028}_{-0.0033} \quad (+0.1\sigma)$
$c_{100}$	$0.9975 \pm 0.0011 \quad (+0.0\sigma)$	$100\theta_*$	$1.04105 \pm 0.00034 \quad (-0.0\sigma)$	$f_{2000}^{143}$	$30 \pm 4 \quad (-0.1\sigma)$
$c_{217}$	$1.0011 \pm 0.0016 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.889 \pm 0.028 \quad (-0.0\sigma)$	$f_{2000}^{217}$	$106.8 \pm 2.6 \quad (-0.1\sigma)$
$c_{TE}$	$0.9964 \pm 0.0054$	$z_{\mathrm{drag}}$	$1059.71 \pm 0.93 \quad (+0.4\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 2.8 \quad (-0.1\sigma)$
$c_{EE}$	$0.9920 \pm 0.0065$	$r_{\mathrm{drag}}$	$147.28 \pm 0.31 \quad (-0.1\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.26 \pm 0.69 \quad (-0.2\sigma)$
$H_0$	$67.40 \pm 0.67 \quad (+0.4\sigma)$	$k_{\mathrm{D}}$	$0.14064 \pm 0.00055 \quad (+0.1\sigma)$	$\chi_{\mathrm{small}}^2$	$396.9 \pm 1.7 \quad (+0.0\sigma)$
$\Omega_{\Lambda}$	$0.6860 \pm 0.0084 \quad (+0.4\sigma)$	$100\theta_{\mathrm{D}}$	$0.16084 \pm 0.00068 \quad (-0.1\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.4 \pm 1.4 \quad (-0.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.3140 \pm 0.0084 \quad (-0.4\sigma)$	$z_{\mathrm{eq}}$	$3392 \pm 27 \quad (-0.2\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11514.6 \pm 5.6 \quad (+826.3\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.1426 \pm 0.0011 \quad (-0.2\sigma)$	$k_{\mathrm{eq}}$	$0.010351 \pm 0.000083 \quad (-0.2\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09608 \pm 0.00059 \quad (+0.3\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8150 \pm 0.0053 \quad (+0.3\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11944.1 \pm 5.8 \quad (+800.0\sigma)$

$$\bar{\chi}_{\mathrm{eff}}^2 = 11951.89; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.84; R - 1 = 0.01571$$



20.37 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02236 \pm 0.00018 \quad (+0.4\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4506 \pm 0.0058 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1527.5 \pm 9.1 \quad (-0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.11906 \pm 0.00094 \quad (-0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6040 \pm 0.0059 \quad (-0.1\sigma)$	$H(0.51)$	$89.77 \pm 0.32 \quad (+0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04105 \pm 0.00064 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9838 \pm 0.0086 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1979 \pm 11 \quad (-0.1\sigma)$
$\tau$	$0.0561^{+0.0056}_{-0.0076} \quad (-0.1\sigma)$	$r_{\mathrm{drag}}h$	$99.79^{+0.74}_{-0.83} \quad (+0.0\sigma)$	$H(0.61)$	$95.38 \pm 0.29 \quad (+0.2\sigma)$
$Y_{\mathrm{P}}$	$0.248 \pm 0.016 \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.431 \pm 0.022 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2303 \pm 12 \quad (-0.1\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.045^{+0.013}_{-0.016} \quad (-0.0\sigma)$	$z_{\mathrm{re}}$	$7.85^{+0.61}_{-0.74} \quad (-0.1\sigma)$	$H(2.33)$	$235.94 \pm 0.61 \quad (+0.1\sigma)$
$n_{\mathrm{s}}$	$0.9682 \pm 0.0072 \quad (+0.0\sigma)$	$10^9 A_{\mathrm{s}}$	$2.102^{+0.027}_{-0.033} \quad (-0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	$5760 \pm 15 \quad (-0.2\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (-0.0\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.879 \pm 0.013 \quad (+0.0\sigma)$	$f\sigma_8(0.15)$	$0.4553 \pm 0.0055 \quad (-0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$241 \pm 26 \quad (-0.1\sigma)$	$D_{40}$	$1224 \pm 15 \quad (+0.0\sigma)$	$\sigma_8(0.15)$	$0.7483 \pm 0.0064 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$40 \pm 9 \quad (-0.1\sigma)$	$D_{220}$	$5725 \pm 38 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4740 \pm 0.0048 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10 \quad (+0.1\sigma)$	$D_{810}$	$2536 \pm 13 \quad (+0.1\sigma)$	$\sigma_8(0.38)$	$0.6635^{+0.0054}_{-0.0062} \quad (-0.1\sigma)$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7 \quad (-0.1\sigma)$	$D_{1420}$	$815.9 \pm 5.0 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4728 \pm 0.0044 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$3.8^{+1.8}_{-2.5} \quad (+0.0\sigma)$	$D_{2000}$	$230.2 \pm 2.2 \quad (+0.2\sigma)$	$\sigma_8(0.51)$	$0.6210^{+0.0051}_{-0.0059} \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9682 \pm 0.0072 \quad (+0.0\sigma)$	$f\sigma_8(0.61)$	$0.4680 \pm 0.0042 \quad (-0.1\sigma)$
$r_{143 \times 217}^{\mathrm{CIB}}$	$> 0.433 \quad (-0.1\sigma)$	$Y_{\mathrm{P}}$	$0.248 \pm 0.016 \quad (+0.0\sigma)$	$\sigma_8(0.61)$	$0.5909^{+0.0049}_{-0.0056} \quad (-0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.250 \pm 0.016 \quad (+0.0\sigma)$	$f\sigma_8(2.33)$	$0.2980^{+0.0026}_{-0.0029} \quad (-0.1\sigma)$
$A^{\mathrm{kSZ}}$	$4.8^{+2.3}_{-3.9} \quad (-0.1\sigma)$	Age/Gyr	$13.790 \pm 0.035 \quad (-0.2\sigma)$	$\sigma_8(2.33)$	$0.3073^{+0.0027}_{-0.0031} \quad (-0.1\sigma)$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.20 \quad (-0.0\sigma)$	$z_*$	$1089.98 \pm 0.57 \quad (-0.2\sigma)$	$f_{2000}^{143}$	$30 \pm 4 \quad (-0.2\sigma)$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.17 \quad (-0.1\sigma)$	$r_*$	$144.67 \pm 0.27 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$107.1 \pm 2.5 \quad (-0.2\sigma)$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10 \quad (+0.1\sigma)$	$100\theta_*$	$1.04116 \pm 0.00031 \quad (-0.2\sigma)$	$f_{2000}^{143 \times 217}$	$32.4 \pm 2.8 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.02 \pm 0.16 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.895 \pm 0.027 \quad (-0.2\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.28 \pm 0.71 \quad (-0.1\sigma)$
$c_{100}$	$0.9976 \pm 0.0011 \quad (+0.0\sigma)$	$z_{\mathrm{drag}}$	$1059.95 \pm 0.86 \quad (+0.2\sigma)$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.9 \quad (-0.1\sigma)$
$c_{217}$	$1.0012 \pm 0.0016 \quad (-0.0\sigma)$	$r_{\mathrm{drag}}$	$147.34 \pm 0.30 \quad (-0.3\sigma)$	$\chi_{\mathrm{lowl}}^2$	$22.9 \pm 1.2 \quad (-0.0\sigma)$
$c_{TE}$	$0.9970 \pm 0.0053$	$k_{\mathrm{D}}$	$0.14046 \pm 0.00050 \quad (+0.3\sigma)$	$\chi_{\mathrm{CamSpec}}^2$	$11514.8 \pm 5.6 \quad (+823.8\sigma)$
$c_{EE}$	$0.9932 \pm 0.0063$	$100\theta_{\mathrm{D}}$	$0.16096 \pm 0.00066 \quad (-0.2\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.046 \pm 0.057 \quad (-0.1\sigma)$
$H_0$	$67.72^{+0.48}_{-0.53} \quad (+0.1\sigma)$	$z_{\mathrm{eq}}$	$3379 \pm 22 \quad (+0.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.35 \pm 0.44 \quad (+0.0\sigma)$
$\Omega_{\Lambda}$	$0.6902 \pm 0.0061 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010314 \pm 0.000066 \quad (+0.1\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.3 \quad (-0.1\sigma)$
$\Omega_{\mathrm{m}}$	$0.3098 \pm 0.0061 \quad (-0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8175 \pm 0.0040 \quad (-0.0\sigma)$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.5 \quad (+0.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14206 \pm 0.00091 \quad (+0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4516 \pm 0.0021 \quad (-0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$11944.0 \pm 5.7 \quad (+804.4\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09621 \pm 0.00057 \quad (+0.2\sigma)$	$H(0.15)$	$72.99^{+0.43}_{-0.47} \quad (+0.1\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.00 \pm 0.98 \quad (-0.1\sigma)$
$\sigma_8$	$0.8096 \pm 0.0069 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$640.3 \pm 4.4 \quad (-0.1\sigma)$		
$S_8$	$0.823 \pm 0.011 \quad (-0.1\sigma)$	$H(0.38)$	$83.07 \pm 0.37 \quad (+0.2\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11957.86; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 4450.52; R - 1 = 0.02091$$



20.38    base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_post\_Riess18\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02256 \pm 0.00021$	$\sigma_8$	$0.8077^{+0.0077}_{-0.0086}$	$100\theta_{\text{s,eq}}$	$0.4546 \pm 0.0030$
$\Omega_{\text{c}}h^2$	$0.1177 \pm 0.0013$	$S_8$	$0.808 \pm 0.016$	$H(0.15)$	$73.73 \pm 0.62$
$100\theta_{\text{MC}}$	$1.04165 \pm 0.00067$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4423 \pm 0.0085$	$D_{\text{M}}(0.15)$	$633.2 \pm 6.0$
$\tau$	$0.0567^{+0.0060}_{-0.0084}$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.5977 \pm 0.0081$	$H(0.38)$	$83.65 \pm 0.49$
$Y_{\text{P}}$	$0.261^{+0.018}_{-0.016}$	$\sigma_8/h^{0.5}$	$0.975 \pm 0.012$	$D_{\text{M}}(0.38)$	$1513 \pm 12$
$\ln(10^{10}A_{\text{s}})$	$3.046^{+0.014}_{-0.017}$	$r_{\text{drag}}h$	$101.1 \pm 1.1$	$H(0.51)$	$90.25 \pm 0.41$
$n_{\text{s}}$	$0.9764 \pm 0.0082$	$\langle d^2 \rangle^{1/2}$	$2.400 \pm 0.030$	$D_{\text{M}}(0.51)$	$1962 \pm 15$
$y_{\text{cal}}$	$1.0006 \pm 0.0024$	$z_{\text{re}}$	$7.90^{+0.64}_{-0.84}$	$H(0.61)$	$95.79 \pm 0.36$
$A_{100}^{\text{PS}}$	$244 \pm 25$	$10^9 A_{\text{s}}$	$2.104^{+0.030}_{-0.037}$	$D_{\text{M}}(0.61)$	$2284 \pm 16$
$A_{143}^{\text{PS}}$	$42 \pm 9$	$10^9 A_{\text{s}}e^{-2\tau}$	$1.878 \pm 0.013$	$H(2.33)$	$235.32 \pm 0.79$
$A_{217}^{\text{PS}}$	$101 \pm 10$	$D_{40}$	$1208 \pm 16$	$D_{\text{M}}(2.33)$	$5741 \pm 18$
$A_{217}^{\text{CIB}}$	$41 \pm 7$	$D_{220}$	$5727 \pm 37$	$f\sigma_8(0.15)$	$0.4478 \pm 0.0080$
$A_{143}^{\text{tSZ}}$	$3.7^{+1.7}_{-2.6}$	$D_{810}$	$2537 \pm 13$	$\sigma_8(0.15)$	$0.7475^{+0.0069}_{-0.0079}$
$r_{143 \times 217}^{\text{PS}}$	$0.65 \pm 0.12$	$D_{1420}$	$815.4 \pm 5.1$	$f\sigma_8(0.38)$	$0.4686 \pm 0.0067$
$r_{143 \times 217}^{\text{CIB}}$	$> 0.442$	$D_{2000}$	$229.3 \pm 2.2$	$\sigma_8(0.38)$	$0.6639^{+0.0060}_{-0.0070}$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$n_{\text{s},0.002}$	$0.9764 \pm 0.0082$	$f\sigma_8(0.51)$	$0.4686 \pm 0.0060$
$A^{\text{kSZ}}$	$5.3^{+3.8}_{-2.4}$	$Y_{\text{P}}$	$0.261^{+0.018}_{-0.016}$	$\sigma_8(0.51)$	$0.6218^{+0.0056}_{-0.0066}$
$A_{100}^{\text{dust}}$	$1.01 \pm 0.19$	$Y_{\text{P}}^{\text{BBN}}$	$0.262^{+0.018}_{-0.016}$	$f\sigma_8(0.61)$	$0.4646 \pm 0.0055$
$A_{143}^{\text{dust}}$	$0.97 \pm 0.17$	Age/Gyr	$13.747 \pm 0.041$	$\sigma_8(0.61)$	$0.5920^{+0.0054}_{-0.0063}$
$A_{217}^{\text{dust}}$	$0.97 \pm 0.10$	$z_*$	$1090.14 \pm 0.57$	$f\sigma_8(2.33)$	$0.2990^{+0.0028}_{-0.0033}$
$A_{143 \times 217}^{\text{dust}}$	$1.04 \pm 0.16$	$r_*$	$144.82 \pm 0.32$	$\sigma_8(2.33)$	$0.3088^{+0.0030}_{-0.0035}$
$c_{100}$	$0.9975 \pm 0.0011$	$100\theta_*$	$1.04140 \pm 0.00033$	$f_{2000}^{143}$	$31 \pm 4$
$c_{217}$	$1.0013 \pm 0.0016$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.907 \pm 0.031$	$f_{2000}^{217}$	$108.1 \pm 2.6$
$c_{TE}$	$0.9990 \pm 0.0053$	$z_{\text{drag}}$	$1060.73 \pm 0.93$	$f_{2000}^{143 \times 217}$	$33.5 \pm 2.7$
$c_{EE}$	$0.9964 \pm 0.0064$	$r_{\text{drag}}$	$147.44 \pm 0.34$	$\chi_{\text{simall}}^2$	$397.1 \pm 2.0$
$H_0$	$68.56 \pm 0.71$	$k_{\text{D}}$	$0.13999^{+0.00051}_{-0.00060}$	$\chi_{\text{lowl}}^2$	$21.8 \pm 1.1$
$\Omega_{\Lambda}$	$0.7001^{+0.0091}_{-0.0081}$	$100\theta_{\text{D}}$	$0.16138^{+0.00071}_{-0.00063}$	$\chi_{\text{CamSpec}}^2$	$11518.1 \pm 6.4$
$\Omega_{\text{m}}$	$0.2999^{+0.0081}_{-0.0091}$	$z_{\text{eq}}$	$3352 \pm 30$	$\chi_{\text{H073p45}}^2$	$8.9 \pm 2.5$
$\Omega_{\text{m}}h^2$	$0.1409 \pm 0.0012$	$k_{\text{eq}}$	$0.010232 \pm 0.000090$	$\chi_{\text{prior}}^2$	$7.9 \pm 3.5$
$\Omega_{\text{m}}h^3$	$0.09662 \pm 0.00059$	$100\theta_{\text{eq}}$	$0.8235 \pm 0.0058$	$\chi_{\text{CMB}}^2$	$11937.0 \pm 6.1$

$\bar{\chi}_{\text{eff}}^2 = 11953.75$ ;  $R - 1 = 0.05858$



## 20.39 base\_yhe\_plikHM\_TE\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022177	$0.02222^{+0.00033}_{-0.00038}$	$r_{\mathrm{drag}}h$	99.37	$99.6^{+2.0}_{-2.3}$	$H(0.15)$	72.47	$72.6^{+1.1}_{-1.4}$
$\Omega_{\mathrm{c}}h^2$	0.11849	$0.1184 \pm 0.0021$	$\langle d^2 \rangle^{1/2}$	2.434	$2.426^{+0.064}_{-0.057}$	$D_{\mathrm{M}}(0.15)$	645.1	$644^{+13}_{-11}$
$100\theta_{\mathrm{MC}}$	1.03933	$1.0396^{+0.0014}_{-0.0022}$	$z_{\mathrm{re}}$	7.00	$6.89^{+0.88}_{-0.75}$	$H(0.38)$	82.57	$82.70^{+0.85}_{-1.1}$
$\tau$	0.0498	$0.0488 \pm 0.0083$	$10^9 A_{\mathrm{s}}$	2.0448	$2.042 \pm 0.040$	$D_{\mathrm{M}}(0.38)$	1538.1	$1535^{+27}_{-23}$
$Y_{\mathrm{P}}$	0.186	$0.191^{+0.045}_{-0.063}$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	1.8509	$1.852 \pm 0.018$	$H(0.51)$	89.27	$89.39^{+0.72}_{-1.0}$
$\ln(10^{10}A_{\mathrm{s}})$	3.0179	$3.016 \pm 0.020$	$D_{40}$	1251.4	$1247^{+46}_{-41}$	$D_{\mathrm{M}}(0.51)$	1992.2	$1989^{+33}_{-27}$
$n_{\mathrm{s}}$	0.9500	$0.952^{+0.017}_{-0.020}$	$D_{220}$	5746	$5741 \pm 73$	$H(0.61)$	94.88	$94.99^{+0.62}_{-0.90}$
$A_{100}^{\mathrm{dustTE}}$	0.1142	$0.114 \pm 0.038$	$D_{810}$	2531.9	$2530^{+34}_{-30}$	$D_{\mathrm{M}}(0.61)$	2318.1	$2314^{+36}_{-30}$
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1365	$0.135 \pm 0.030$	$D_{1420}$	826.4	$825^{+22}_{-18}$	$H(2.33)$	235.22	$235.2 \pm 1.2$
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.477	$0.479 \pm 0.084$	$D_{2000}$	237.6	$237^{+11}_{-8.5}$	$D_{\mathrm{M}}(2.33)$	5788.9	$5783^{+46}_{-33}$
$A_{143}^{\mathrm{dustTE}}$	0.223	$0.222 \pm 0.054$	$n_{\mathrm{s},0.002}$	0.9500	$0.952^{+0.017}_{-0.020}$	$f\sigma_8(0.15)$	0.4465	$0.445 \pm 0.013$
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.658	$0.657 \pm 0.080$	$Y_{\mathrm{P}}$	0.186	$0.191^{+0.045}_{-0.061}$	$\sigma_8(0.15)$	0.7302	$0.730 \pm 0.010$
$A_{217}^{\mathrm{dustTE}}$	2.046	$2.04 \pm 0.27$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.187	$0.192^{+0.046}_{-0.062}$	$f\sigma_8(0.38)$	0.4641	$0.463 \pm 0.010$
$c_{100}$	1.00016	$1.00016 \pm 0.00070$	Age/Gyr	13.858	$13.85^{+0.11}_{-0.076}$	$\sigma_8(0.38)$	0.6471	$0.6471 \pm 0.0090$
$c_{217}$	0.99798	$0.99800 \pm 0.00065$	$z_*$	1087.79	$1088.0^{+1.2}_{-1.9}$	$f\sigma_8(0.51)$	0.4625	$0.4618 \pm 0.0090$
$y_{\mathrm{cal}}$	0.99999	$1.0001 \pm 0.0025$	$r_*$	145.17	$145.14 \pm 0.50$	$\sigma_8(0.51)$	0.6055	$0.6056 \pm 0.0085$
$H_0$	67.19	$67.4^{+1.3}_{-1.5}$	$100\theta_*$	1.04097	$1.04103^{+0.00066}_{-0.00078}$	$f\sigma_8(0.61)$	0.4576	$0.4570 \pm 0.0081$
$\Omega_{\Lambda}$	0.6870	$0.688 \pm 0.016$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.945	$13.942 \pm 0.050$	$\sigma_8(0.61)$	0.5761	$0.5762 \pm 0.0082$
$\Omega_{\mathrm{m}}$	0.3130	$0.312 \pm 0.016$	$z_{\mathrm{drag}}$	1057.53	$1057.9^{+1.7}_{-2.6}$	$f\sigma_8(2.33)$	0.29044	$0.2905^{+0.0040}_{-0.0045}$
$\Omega_{\mathrm{m}}h^2$	0.14131	$0.1413 \pm 0.0020$	$r_{\mathrm{drag}}$	147.88	$147.83 \pm 0.54$	$\sigma_8(2.33)$	0.29936	$0.2996^{+0.0043}_{-0.0051}$
$\Omega_{\mathrm{m}}h^3$	0.09495	$0.0951^{+0.0010}_{-0.0015}$	$k_{\mathrm{D}}$	0.14219	$0.1420^{+0.0019}_{-0.0014}$	$\chi_{\mathrm{small}}^2$	395.56	$396.7 \pm 1.5$
$\sigma_8$	0.7904	$0.790 \pm 0.011$	$100\theta_{\mathrm{D}}$	0.15843	$0.1587^{+0.0015}_{-0.0024}$	$\chi_{\mathrm{plikTE}}^2$	851.83	$859.4 \pm 3.8$
$S_8$	0.8073	$0.805 \pm 0.026$	$z_{\mathrm{eq}}$	3361.4	$3360 \pm 47$	$\chi_{\mathrm{prior}}^2$	0.44	$7.4 \pm 3.7$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4422	$0.441 \pm 0.014$	$k_{\mathrm{eq}}$	0.010259	$0.01026 \pm 0.00014$	$\chi_{\mathrm{CMB}}^2$	1247.39	$1256.1 \pm 4.1$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.5912	$0.590 \pm 0.013$	$100\theta_{\mathrm{eq}}$	0.8189	$0.8195 \pm 0.0097$			
$\sigma_8/h^{0.5}$	0.9642	$0.963 \pm 0.018$	$100\theta_{\mathrm{s,eq}}$	0.45241	$0.4527 \pm 0.0050$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 1247.84$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1263.54$ ;  $R - 1 = 0.00777$

$\chi_{\mathrm{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.56 plik\_rd12\_HM\_v22\_TE: 851.83



## 20.40 base\_yhe\_plikHM\_TE\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022249	$0.02230 \pm 0.00028$	$\langle d^2 \rangle^{1/2}$	2.4156	$2.409 \pm 0.038$	$H(0.38)$	82.87	$82.98^{+0.53}_{-0.60}$
$\Omega_{\mathrm{c}}h^2$	0.11773	$0.1178 \pm 0.0013$	$z_{\mathrm{re}}$	7.01	$6.95^{+0.88}_{-0.74}$	$D_{\mathrm{M}}(0.38)$	1530.0	$1528 \pm 13$
$100\theta_{\mathrm{MC}}$	1.03971	$1.0400^{+0.0014}_{-0.0016}$	$10^9 A_{\mathrm{s}}$	2.0425	$2.041 \pm 0.040$	$H(0.51)$	89.52	$89.62^{+0.49}_{-0.56}$
$\tau$	0.0498	$0.0493^{+0.0084}_{-0.0076}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8489	$1.850 \pm 0.017$	$D_{\mathrm{M}}(0.51)$	1982.7	$1980 \pm 16$
$Y_{\mathrm{P}}$	0.1954	$0.201 \pm 0.044$	$D_{40}$	1242.6	$1237 \pm 33$	$H(0.61)$	95.09	$95.19^{+0.47}_{-0.53}$
$\ln(10^{10} A_{\mathrm{s}})$	3.0168	$3.016 \pm 0.020$	$D_{220}$	5742	$5733 \pm 69$	$D_{\mathrm{M}}(0.61)$	2307.7	$2305 \pm 18$
$n_{\mathrm{s}}$	0.9539	$0.956 \pm 0.014$	$D_{810}$	2528.3	$2526 \pm 30$	$H(2.33)$	234.82	$234.92 \pm 0.96$
$y_{\mathrm{cal}}$	1.00013	$1.0001 \pm 0.0025$	$D_{1420}$	823.9	$822 \pm 19$	$D_{\mathrm{M}}(2.33)$	5778.9	$5774 \pm 27$
$A_{100}^{\mathrm{dustTE}}$	0.1137	$0.114 \pm 0.038$	$D_{2000}$	236.2	$235.3 \pm 8.9$	$f\sigma_8(0.15)$	0.4419	$0.4418 \pm 0.0083$
$A_{100 \times 143}^{\mathrm{dustTE}}$	0.1361	$0.135 \pm 0.029$	$n_{\mathrm{s},0.002}$	0.9539	$0.956 \pm 0.014$	$\sigma_8(0.15)$	0.7291	$0.730 \pm 0.010$
$A_{100 \times 217}^{\mathrm{dustTE}}$	0.478	$0.479 \pm 0.084$	$Y_{\mathrm{P}}$	0.1954	$0.201 \pm 0.044$	$f\sigma_8(0.38)$	0.4607	$0.4607 \pm 0.0075$
$A_{143}^{\mathrm{dustTE}}$	0.222	$0.220 \pm 0.055$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.1966	$0.203 \pm 0.045$	$\sigma_8(0.38)$	0.6468	$0.6475 \pm 0.0091$
$A_{143 \times 217}^{\mathrm{dustTE}}$	0.658	$0.655 \pm 0.079$	Age/Gyr	13.836	$13.824^{+0.068}_{-0.061}$	$f\sigma_8(0.51)$	0.4598	$0.4599 \pm 0.0071$
$A_{217}^{\mathrm{dustTE}}$	2.034	$2.03 \pm 0.27$	$z_*$	1087.98	$1088.2^{+1.4}_{-1.7}$	$\sigma_8(0.51)$	0.6055	$0.6062 \pm 0.0086$
$c_{100}$	1.00018	$1.00016 \pm 0.00069$	$r_*$	145.281	$145.21 \pm 0.49$	$f\sigma_8(0.61)$	0.4553	$0.4555 \pm 0.0068$
$c_{217}$	0.99799	$0.99799 \pm 0.00065$	$100\theta_*$	1.04113	$1.04119 \pm 0.00057$	$\sigma_8(0.61)$	0.5762	$0.5769 \pm 0.0082$
$H_0$	67.65	$67.77 \pm 0.72$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.954	$13.947 \pm 0.051$	$f\sigma_8(2.33)$	0.29071	$0.2911 \pm 0.0042$
$\Omega_{\Lambda}$	0.6928	$0.6935 \pm 0.0078$	$z_{\mathrm{drag}}$	1057.95	$1058.3^{+1.7}_{-2.0}$	$\sigma_8(2.33)$	0.29989	$0.3003 \pm 0.0044$
$\Omega_{\mathrm{m}}$	0.3072	$0.3065 \pm 0.0078$	$r_{\mathrm{drag}}$	147.97	$147.89 \pm 0.55$	$\chi_{\mathrm{small}}^2$	395.61	$396.7 \pm 1.5$
$\Omega_{\mathrm{m}}h^2$	0.14062	$0.1407 \pm 0.0013$	$k_{\mathrm{D}}$	0.14179	$0.1416 \pm 0.0013$	$\chi_{\mathrm{plikTE}}^2$	852.01	$859.0 \pm 3.7$
$\Omega_{\mathrm{m}}h^3$	0.09514	$0.0954^{+0.0011}_{-0.0012}$	$100\theta_{\mathrm{D}}$	0.15878	$0.1591^{+0.0016}_{-0.0019}$	$\chi_{6\mathrm{DF}}^2$	0.0060	$0.047 \pm 0.065$
$\sigma_8$	0.7886	$0.789 \pm 0.011$	$z_{\mathrm{eq}}$	3345.0	$3347 \pm 31$	$\chi_{\mathrm{MGS}}^2$	1.47	$1.62 \pm 0.61$
$S_8$	0.7981	$0.798 \pm 0.016$	$k_{\mathrm{eq}}$	0.010209	$0.010215 \pm 0.000096$	$\chi_{\mathrm{DR12BAO}}^2$	3.79	$4.4 \pm 1.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4371	$0.4369 \pm 0.0087$	$100\theta_{\mathrm{eq}}$	0.8224	$0.8224 \pm 0.0054$	$\chi_{\mathrm{prior}}^2$	0.43	$7.4 \pm 3.7$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.5871	$0.5872 \pm 0.0094$	$100\theta_{\mathrm{s,eq}}$	0.45419	$0.4542 \pm 0.0028$	$\chi_{\mathrm{BAO}}^2$	5.26	$6.0 \pm 1.2$
$\sigma_8/h^{0.5}$	0.9588	$0.959 \pm 0.014$	$H(0.15)$	72.87	$72.98 \pm 0.66$	$\chi_{\mathrm{CMB}}^2$	1247.62	$1255.7 \pm 4.0$
$r_{\mathrm{drag}}h$	100.11	$100.2 \pm 1.0$	$D_{\mathrm{M}}(0.15)$	641.1	$640.1 \pm 6.3$			

Best-fit  $\chi_{\mathrm{eff}}^2 = 1253.32$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 1269.20$ ;  $R - 1 = 0.01067$

$\chi_{\mathrm{eff}}^2$ : BAO - 6DF: 0.01 MGS: 1.47 DR12BAO: 3.79 CMB - small\_100x143\_offlike5\_EE\_Aplanck\_B: 395.61 plik\_rd12\_HM\_v22\_TE: 852.01



# 20.41 base\_yhe\_plikHM\_TE\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02226^{+0.00033}_{-0.00039}$	$r_{\mathrm{drag}} h$	$99.8^{+2.0}_{-2.3}$	$H(0.15)$	$72.7^{+1.1}_{-1.4}$
$\Omega_{\mathrm{c}} h^2$	$0.1182 \pm 0.0021$	$\langle d^2 \rangle^{1/2}$	$2.429^{+0.064}_{-0.057}$	$D_{\mathrm{M}}(0.15)$	$643^{+13}_{-11}$
$100\theta_{\mathrm{MC}}$	$1.0397^{+0.0015}_{-0.0022}$	$z_{\mathrm{re}}$	$< 7.53$	$H(0.38)$	$82.80^{+0.86}_{-1.1}$
$\tau$	$0.0529^{+0.0034}_{-0.0070}$	$10^9 A_{\mathrm{s}}$	$2.059^{+0.026}_{-0.035}$	$D_{\mathrm{M}}(0.38)$	$1533^{+27}_{-23}$
$Y_{\mathrm{P}}$	$0.196^{+0.048}_{-0.062}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.852 \pm 0.018$	$H(0.51)$	$89.48^{+0.73}_{-1.0}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.025^{+0.013}_{-0.017}$	$D_{40}$	$1243 \pm 43$	$D_{\mathrm{M}}(0.51)$	$1986^{+33}_{-27}$
$n_{\mathrm{s}}$	$0.955^{+0.017}_{-0.020}$	$D_{220}$	$5736 \pm 73$	$H(0.61)$	$95.07^{+0.64}_{-0.90}$
$A_{100}^{\mathrm{dustTE}}$	$0.114 \pm 0.038$	$D_{810}$	$2529^{+35}_{-30}$	$D_{\mathrm{M}}(0.61)$	$2311^{+36}_{-30}$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.029$	$D_{1420}$	$824^{+22}_{-19}$	$H(2.33)$	$235.2 \pm 1.2$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.479 \pm 0.084$	$D_{2000}$	$236^{+11}_{-8.7}$	$D_{\mathrm{M}}(2.33)$	$5779^{+46}_{-34}$
$A_{143}^{\mathrm{dustTE}}$	$0.221 \pm 0.054$	$n_{\mathrm{s},0.002}$	$0.955^{+0.017}_{-0.020}$	$f\sigma_8(0.15)$	$0.446 \pm 0.013$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.657 \pm 0.080$	$Y_{\mathrm{P}}$	$0.196^{+0.047}_{-0.061}$	$\sigma_8(0.15)$	$0.7333^{+0.0080}_{-0.0094}$
$A_{217}^{\mathrm{dustTE}}$	$2.04 \pm 0.27$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.197^{+0.047}_{-0.061}$	$f\sigma_8(0.38)$	$0.465 \pm 0.010$
$c_{100}$	$1.00017 \pm 0.00070$	Age/Gyr	$13.84^{+0.11}_{-0.078}$	$\sigma_8(0.38)$	$0.6502^{+0.0067}_{-0.0085}$
$c_{217}$	$0.99800 \pm 0.00065$	$z_*$	$1088.1^{+1.3}_{-1.9}$	$f\sigma_8(0.51)$	$0.4633 \pm 0.0087$
$y_{\mathrm{cal}}$	$1.0001 \pm 0.0025$	$r_*$	$145.14 \pm 0.51$	$\sigma_8(0.51)$	$0.6085^{+0.0063}_{-0.0081}$
$H_0$	$67.5^{+1.3}_{-1.5}$	$100\theta_*$	$1.04108^{+0.00067}_{-0.00078}$	$f\sigma_8(0.61)$	$0.4586 \pm 0.0077$
$\Omega_{\Lambda}$	$0.690 \pm 0.016$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.941 \pm 0.050$	$\sigma_8(0.61)$	$0.5791^{+0.0060}_{-0.0078}$
$\Omega_{\mathrm{m}}$	$0.310 \pm 0.016$	$z_{\mathrm{drag}}$	$1058.1^{+1.8}_{-2.6}$	$f\sigma_8(2.33)$	$0.2920^{+0.0032}_{-0.0042}$
$\Omega_{\mathrm{m}} h^2$	$0.1411 \pm 0.0020$	$r_{\mathrm{drag}}$	$147.82 \pm 0.54$	$\sigma_8(2.33)$	$0.3012^{+0.0035}_{-0.0048}$
$\Omega_{\mathrm{m}} h^3$	$0.0952^{+0.0011}_{-0.0015}$	$k_{\mathrm{D}}$	$0.1419^{+0.0019}_{-0.0014}$	$\chi_{\mathrm{simall}}^2$	$396.4 \pm 1.2$
$\sigma_8$	$0.7934^{+0.0093}_{-0.010}$	$100\theta_{\mathrm{D}}$	$0.1589^{+0.0016}_{-0.0024}$	$\chi_{\mathrm{plikTE}}^2$	$859.5 \pm 3.9$
$S_8$	$0.807 \pm 0.026$	$z_{\mathrm{eq}}$	$3357 \pm 47$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.7$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.442 \pm 0.014$	$k_{\mathrm{eq}}$	$0.01025 \pm 0.00014$	$\chi_{\mathrm{CMB}}^2$	$1255.9 \pm 4.1$
$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.592 \pm 0.012$	$100\theta_{\mathrm{eq}}$	$0.8203^{+0.0092}_{-0.010}$		
$\sigma_8/h^{0.5}$	$0.966 \pm 0.017$	$100\theta_{\mathrm{s,eq}}$	$0.4531^{+0.0047}_{-0.0052}$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1263.26$ ;  $R - 1 = 0.00933$



## 20.42 base\_yhe\_plikHM\_TE\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02231 \pm 0.00028$	$\langle d^2 \rangle^{1/2}$	$2.417 \pm 0.036$	$H(0.38)$	$83.01^{+0.52}_{-0.60}$
$\Omega_{\mathrm{c}}h^2$	$0.1178 \pm 0.0013$	$z_{\mathrm{re}}$	$7.35^{+0.23}_{-0.83}$	$D_{\mathrm{M}}(0.38)$	$1527 \pm 13$
$100\theta_{\mathrm{MC}}$	$1.0400^{+0.0013}_{-0.0016}$	$10^9 A_{\mathrm{s}}$	$2.058^{+0.026}_{-0.035}$	$H(0.51)$	$89.65^{+0.48}_{-0.56}$
$\tau$	$0.0531^{+0.0037}_{-0.0069}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.851 \pm 0.018$	$D_{\mathrm{M}}(0.51)$	$1979 \pm 16$
$Y_{\mathrm{P}}$	$0.203 \pm 0.044$	$D_{40}$	$1236 \pm 33$	$H(0.61)$	$95.21^{+0.46}_{-0.53}$
$\ln(10^{10} A_{\mathrm{s}})$	$3.024^{+0.013}_{-0.017}$	$D_{220}$	$5731 \pm 69$	$D_{\mathrm{M}}(0.61)$	$2304^{+18}_{-17}$
$n_{\mathrm{s}}$	$0.958 \pm 0.014$	$D_{810}$	$2527 \pm 30$	$H(2.33)$	$234.93 \pm 0.97$
$y_{\mathrm{cal}}$	$1.0001 \pm 0.0025$	$D_{1420}$	$822 \pm 19$	$D_{\mathrm{M}}(2.33)$	$5772^{+29}_{-26}$
$A_{100}^{\mathrm{dustTE}}$	$0.114 \pm 0.038$	$D_{2000}$	$235.4 \pm 8.8$	$f\sigma_8(0.15)$	$0.4436 \pm 0.0079$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.029$	$n_{\mathrm{s},0.002}$	$0.958 \pm 0.014$	$\sigma_8(0.15)$	$0.7331^{+0.0081}_{-0.0097}$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.478 \pm 0.084$	$Y_{\mathrm{P}}$	$0.203 \pm 0.044$	$f\sigma_8(0.38)$	$0.4627 \pm 0.0070$
$A_{143}^{\mathrm{dustTE}}$	$0.221 \pm 0.055$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.204 \pm 0.044$	$\sigma_8(0.38)$	$0.6504^{+0.0072}_{-0.0086}$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.656 \pm 0.079$	Age/Gyr	$13.820^{+0.068}_{-0.060}$	$f\sigma_8(0.51)$	$0.4619 \pm 0.0065$
$A_{217}^{\mathrm{dustTE}}$	$2.03 \pm 0.27$	$z_*$	$1088.3^{+1.4}_{-1.6}$	$\sigma_8(0.51)$	$0.6089^{+0.0067}_{-0.0081}$
$c_{100}$	$1.00015 \pm 0.00068$	$r_*$	$145.20 \pm 0.49$	$f\sigma_8(0.61)$	$0.4575 \pm 0.0062$
$c_{217}$	$0.99799 \pm 0.00066$	$100\theta_*$	$1.04121 \pm 0.00057$	$\sigma_8(0.61)$	$0.5796^{+0.0065}_{-0.0077}$
$H_0$	$67.81 \pm 0.71$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.945 \pm 0.051$	$f\sigma_8(2.33)$	$0.2924^{+0.0033}_{-0.0039}$
$\Omega_{\Lambda}$	$0.6938 \pm 0.0078$	$z_{\mathrm{drag}}$	$1058.4^{+1.7}_{-1.9}$	$\sigma_8(2.33)$	$0.3017^{+0.0035}_{-0.0042}$
$\Omega_{\mathrm{m}}$	$0.3062 \pm 0.0078$	$r_{\mathrm{drag}}$	$147.87 \pm 0.55$	$\chi_{\mathrm{small}}^2$	$396.4 \pm 1.2$
$\Omega_{\mathrm{m}}h^2$	$0.1407 \pm 0.0013$	$k_{\mathrm{D}}$	$0.1416 \pm 0.0012$	$\chi_{\mathrm{plikTE}}^2$	$859.1 \pm 3.8$
$\Omega_{\mathrm{m}}h^3$	$0.0954^{+0.0011}_{-0.0012}$	$100\theta_{\mathrm{D}}$	$0.1591^{+0.0016}_{-0.0019}$	$\chi_{6\mathrm{DF}}^2$	$0.046 \pm 0.064$
$\sigma_8$	$0.7928^{+0.0089}_{-0.010}$	$z_{\mathrm{eq}}$	$3347 \pm 31$	$\chi_{\mathrm{MGS}}^2$	$1.64 \pm 0.61$
$S_8$	$0.801 \pm 0.015$	$k_{\mathrm{eq}}$	$0.010216 \pm 0.000096$	$\chi_{\mathrm{DR12BAO}}^2$	$4.3 \pm 1.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4387 \pm 0.0083$	$100\theta_{\mathrm{eq}}$	$0.8225 \pm 0.0054$	$\chi_{\mathrm{prior}}^2$	$7.4 \pm 3.7$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.5897 \pm 0.0086$	$100\theta_{\mathrm{s,eq}}$	$0.4542 \pm 0.0028$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.1$
$\sigma_8/h^{0.5}$	$0.963 \pm 0.012$	$H(0.15)$	$73.02 \pm 0.65$	$\chi_{\mathrm{CMB}}^2$	$1255.4 \pm 4.0$
$r_{\mathrm{drag}}h$	$100.3 \pm 1.0$	$D_{\mathrm{M}}(0.15)$	$639.8 \pm 6.2$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1268.83$ ;  $R - 1 = 0.01490$



## 20.43 base\_yhe\_plikHM\_EE\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02336	$0.0235 \pm 0.0014$	$D_{40}$	1259	$1254^{+57}_{-45}$	$H(0.38)$	83.65	$84.0^{+2.2}_{-2.5}$
$\Omega_c h^2$	0.11607	$0.1160 \pm 0.0047$	$D_{220}$	5977	$5981 \pm 200$	$D_M(0.38)$	1511	$1506 \pm 56$
$100\theta_{MC}$	1.03825	$1.0386^{+0.0019}_{-0.0030}$	$D_{810}$	2611.6	$2606^{+50}_{-45}$	$H(0.51)$	90.22	$90.6^{+1.8}_{-2.2}$
$\tau$	0.0521	$0.0520 \pm 0.0088$	$D_{1420}$	859.4	$856^{+30}_{-25}$	$D_M(0.51)$	1960	$1954 \pm 67$
$Y_P$	0.196	$0.204^{+0.034}_{-0.098}$	$D_{2000}$	249.1	$247^{+14}_{-11}$	$H(0.61)$	95.73	$96.0^{+1.6}_{-2.0}$
$\ln(10^{10} A_s)$	3.0493	$3.050 \pm 0.022$	$n_{s,0.002}$	0.9659	$0.969^{+0.020}_{-0.027}$	$D_M(0.61)$	2283	$2275 \pm 74$
$n_s$	0.9659	$0.969^{+0.020}_{-0.027}$	$Y_P$	0.196	$0.204^{+0.041}_{-0.090}$	$H(2.33)$	234.70	$234.9 \pm 2.2$
$y_{cal}$	1.00009	$1.0001 \pm 0.0025$	$Y_P^{BBN}$	0.197	$0.205^{+0.041}_{-0.090}$	$D_M(2.33)$	5746	$5732^{+98}_{-86}$
$H_0$	68.67	$69.0 \pm 3.2$	Age/Gyr	13.760	$13.73^{+0.22}_{-0.20}$	$f\sigma_8(0.15)$	0.4379	$0.437 \pm 0.030$
$\Omega_\Lambda$	0.7030	$0.703^{+0.037}_{-0.028}$	$z_*$	1086.58	$1086.9^{+1.9}_{-2.5}$	$\sigma_8(0.15)$	0.7344	$0.734 \pm 0.015$
$\Omega_m$	0.2970	$0.297^{+0.028}_{-0.037}$	$r_*$	144.85	$144.70^{+0.98}_{-0.82}$	$f\sigma_8(0.38)$	0.4590	$0.458 \pm 0.023$
$\Omega_m h^2$	0.14008	$0.1402 \pm 0.0037$	$100\theta_*$	1.03950	$1.0396^{+0.0010}_{-0.0012}$	$\sigma_8(0.38)$	0.6526	$0.652 \pm 0.012$
$\Omega_m h^3$	0.09620	$0.0967^{+0.0025}_{-0.0033}$	$D_M(z_*)/\text{Gpc}$	13.935	$13.92^{+0.10}_{-0.081}$	$f\sigma_8(0.51)$	0.4594	$0.458 \pm 0.020$
$\sigma_8$	0.7933	$0.793 \pm 0.019$	$z_{drag}$	1060.39	$1061.1^{+3.9}_{-4.8}$	$\sigma_8(0.51)$	0.6114	$0.6113^{+0.0097}_{-0.011}$
$S_8$	0.789	$0.787^{+0.054}_{-0.062}$	$r_{drag}$	147.18	$147.0^{+1.2}_{-0.95}$	$f\sigma_8(0.61)$	0.4556	$0.454^{+0.018}_{-0.016}$
$\sigma_8 \Omega_m^{0.5}$	0.4323	$0.431^{+0.030}_{-0.034}$	$k_D$	0.14341	$0.1433^{+0.0018}_{-0.0016}$	$\sigma_8(0.61)$	0.5822	$0.5822^{+0.0089}_{-0.011}$
$\sigma_8 \Omega_m^{0.25}$	0.5856	$0.584 \pm 0.028$	$100\theta_D$	0.15721	$0.1576^{+0.0019}_{-0.0028}$	$f\sigma_8(2.33)$	0.2941	$0.2942^{+0.0044}_{-0.0058}$
$\sigma_8/h^{0.5}$	0.9572	$0.955 \pm 0.040$	$z_{eq}$	3332	$3334 \pm 89$	$\sigma_8(2.33)$	0.3039	$0.3042^{+0.0050}_{-0.0066}$
$r_{drag} h$	101.07	$101.5 \pm 4.4$	$k_{eq}$	0.010170	$0.01018 \pm 0.00027$	$\chi^2_{simall}$	395.57	$396.7 \pm 1.5$
$\langle d^2 \rangle^{1/2}$	2.411	$2.403 \pm 0.091$	$100\theta_{eq}$	0.8267	$0.828 \pm 0.020$	$\chi^2_{plikEE}$	738.53	$744.0 \pm 3.4$
$z_{re}$	6.99	$6.97 \pm 0.87$	$100\theta_{s,eq}$	0.4556	$0.4558 \pm 0.0094$	$\chi^2_{prior}$	0.001	$0.99 \pm 1.4$
$10^9 A_s$	2.1100	$2.111 \pm 0.047$	$H(0.15)$	73.80	$74.2 \pm 2.9$	$\chi^2_{CMB}$	1134.10	$1140.7 \pm 3.7$
$10^9 A_s e^{-2\tau}$	1.9013	$1.902 \pm 0.024$	$D_M(0.15)$	632.3	$630 \pm 27$			

Best-fit  $\chi^2_{eff} = 1134.10$ ;  $\bar{\chi}^2_{eff} = 1141.72$ ;  $R - 1 = 0.00767$   
 $\chi^2_{eff}$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.57 plik\_rd12\_HM\_v22\_EE: 738.53



20.44    base\_yhe\_plikHM\_EE\_lowE\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\text{b}}h^2$	0.02321	$0.02326 \pm 0.00070$	$D_{220}$	5981	$5957 \pm 160$	$H(0.51)$	89.97	$90.10^{+0.73}_{-0.88}$
$\Omega_{\text{c}}h^2$	0.11641	$0.1167^{+0.0018}_{-0.0020}$	$D_{810}$	2610.2	$2605^{+51}_{-40}$	$D_{\text{M}}(0.51)$	1968.3	$1966 \pm 22$
$100\theta_{\text{MC}}$	1.03789	$1.0384^{+0.0016}_{-0.0025}$	$D_{1420}$	858.9	$855^{+30}_{-22}$	$H(0.61)$	95.50	$95.63^{+0.71}_{-0.88}$
$\tau$	0.0512	$0.0518 \pm 0.0082$	$D_{2000}$	249.3	$248^{+14}_{-10}$	$D_{\text{M}}(0.61)$	2291.8	$2289 \pm 25$
$Y_{\text{P}}$	0.188	$0.198^{+0.035}_{-0.088}$	$n_{\text{s},0.002}$	0.9608	$0.965^{+0.014}_{-0.019}$	$H(2.33)$	234.74	$235.0^{+1.4}_{-1.8}$
$\ln(10^{10}A_{\text{s}})$	3.0468	$3.049 \pm 0.021$	$Y_{\text{P}}$	0.188	$0.198^{+0.040}_{-0.079}$	$D_{\text{M}}(2.33)$	5757.8	$5750^{+50}_{-40}$
$n_{\text{s}}$	0.9608	$0.965^{+0.014}_{-0.019}$	$Y_{\text{P}}^{\text{BBN}}$	0.189	$0.199^{+0.041}_{-0.080}$	$f\sigma_8(0.15)$	0.4397	$0.442 \pm 0.011$
$y_{\text{cal}}$	0.99994	$1.0001 \pm 0.0025$	Age/Gyr	13.787	$13.77^{+0.12}_{-0.095}$	$\sigma_8(0.15)$	0.7332	$0.736^{+0.011}_{-0.014}$
$H_0$	68.31	$68.41 \pm 0.96$	$z_*$	1086.49	$1087.0^{+1.4}_{-2.5}$	$f\sigma_8(0.38)$	0.4600	$0.4620^{+0.0090}_{-0.010}$
$\Omega_{\Lambda}$	0.6994	$0.6994 \pm 0.0089$	$r_*$	144.90	$144.7^{+1.0}_{-0.77}$	$\sigma_8(0.38)$	0.6511	$0.6540^{+0.0095}_{-0.012}$
$\Omega_{\text{m}}$	0.3006	$0.3006 \pm 0.0089$	$100\theta_*$	1.03934	$1.03951^{+0.00091}_{-0.0010}$	$f\sigma_8(0.51)$	0.4599	$0.4619^{+0.0084}_{-0.0095}$
$\Omega_{\text{m}}h^2$	0.14026	$0.1406^{+0.0018}_{-0.0023}$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.942	$13.92^{+0.11}_{-0.079}$	$\sigma_8(0.51)$	0.6098	$0.6125^{+0.0088}_{-0.011}$
$\Omega_{\text{m}}h^3$	0.09581	$0.0962^{+0.0017}_{-0.0024}$	$z_{\text{drag}}$	1059.86	$1060.4^{+2.3}_{-3.5}$	$f\sigma_8(0.61)$	0.4559	$0.4579^{+0.0079}_{-0.0092}$
$\sigma_8$	0.7923	$0.796^{+0.012}_{-0.015}$	$r_{\text{drag}}$	147.27	$147.1^{+1.2}_{-0.95}$	$\sigma_8(0.61)$	0.5805	$0.5832^{+0.0084}_{-0.011}$
$S_8$	0.7931	$0.797 \pm 0.020$	$k_{\text{D}}$	0.14351	$0.1432^{+0.0018}_{-0.0015}$	$f\sigma_8(2.33)$	0.29315	$0.2945^{+0.0042}_{-0.0055}$
$\sigma_8\Omega_{\text{m}}^{0.5}$	0.4344	$0.436 \pm 0.011$	$100\theta_{\text{D}}$	0.15702	$0.1576^{+0.0017}_{-0.0029}$	$\sigma_8(2.33)$	0.3027	$0.3041^{+0.0044}_{-0.0057}$
$\sigma_8\Omega_{\text{m}}^{0.25}$	0.5866	$0.589^{+0.011}_{-0.013}$	$z_{\text{eq}}$	3336.4	$3345^{+44}_{-54}$	$\chi^2_{\text{simall}}$	395.52	$396.7 \pm 1.5$
$\sigma_8/h^{0.5}$	0.9586	$0.962 \pm 0.017$	$k_{\text{eq}}$	0.010183	$0.01021^{+0.00013}_{-0.00017}$	$\chi^2_{\text{plikEE}}$	738.52	$743.1 \pm 3.1$
$r_{\text{drag}}h$	100.60	$100.6 \pm 1.1$	$100\theta_{\text{eq}}$	0.8252	$0.8242 \pm 0.0074$	$\chi^2_{6\text{DF}}$	0.0003	$0.054 \pm 0.077$
$\langle d^2 \rangle^{1/2}$	2.4234	$2.419 \pm 0.040$	$100\theta_{\text{s,eq}}$	0.45489	$0.4544 \pm 0.0039$	$\chi^2_{\text{MGS}}$	1.75	$1.84 \pm 0.70$
$z_{\text{re}}$	6.91	$6.99 \pm 0.85$	$H(0.15)$	73.47	$73.58 \pm 0.90$	$\chi^2_{\text{DR12BAO}}$	3.72	$4.5 \pm 1.3$
$10^9 A_{\text{s}}$	2.1049	$2.109 \pm 0.044$	$D_{\text{M}}(0.15)$	635.4	$634.6 \pm 8.3$	$\chi^2_{\text{prior}}$	0.001	$0.98 \pm 1.4$
$10^9 A_{\text{s}}e^{-2\tau}$	1.8998	$1.902 \pm 0.024$	$H(0.38)$	83.37	$83.50^{+0.76}_{-0.89}$	$\chi^2_{\text{BAO}}$	5.47	$6.4 \pm 1.3$
$D_{40}$	1269.1	$1259^{+51}_{-42}$	$D_{\text{M}}(0.38)$	1518.1	$1516 \pm 18$	$\chi^2_{\text{CMB}}$	1134.05	$1139.8 \pm 3.5$

Best-fit  $\chi^2_{\text{eff}} = 1139.52$ ;  $\bar{\chi}^2_{\text{eff}} = 1147.22$ ;  $R - 1 = 0.01379$   
 $\chi^2_{\text{eff}}$ : BAO - 6DF: 0.00 MGS: 1.75 DR12BAO: 3.72 CMB - simall\_100x143.offlike5\_EE\_Aplanck\_B: 395.52 plik\_rd12\_HM\_v22\_EE: 738.52



# 20.45 base\_yhe\_plikHM\_EE\_lowE\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.0236 \pm 0.0014$	$D_{40}$	$1249^{+57}_{-46}$	$H(0.38)$	$84.1^{+2.2}_{-2.5}$
$\Omega_{\mathrm{c}}h^2$	$0.1160 \pm 0.0047$	$D_{220}$	$5966 \pm 200$	$D_{\mathrm{M}}(0.38)$	$1505 \pm 56$
$100\theta_{\mathrm{MC}}$	$1.0389^{+0.0020}_{-0.0030}$	$D_{810}$	$2602^{+51}_{-45}$	$H(0.51)$	$90.6^{+1.9}_{-2.2}$
$\tau$	$0.0558^{+0.0048}_{-0.0077}$	$D_{1420}$	$853^{+30}_{-25}$	$D_{\mathrm{M}}(0.51)$	$1952 \pm 67$
$Y_{\mathrm{P}}$	$0.211^{+0.047}_{-0.091}$	$D_{2000}$	$246^{+14}_{-11}$	$H(0.61)$	$96.1^{+1.7}_{-2.1}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.057^{+0.017}_{-0.020}$	$n_{\mathrm{s},0.002}$	$0.971^{+0.021}_{-0.027}$	$D_{\mathrm{M}}(0.61)$	$2273 \pm 74$
$n_{\mathrm{s}}$	$0.971^{+0.021}_{-0.027}$	$Y_{\mathrm{P}}$	$0.211^{+0.048}_{-0.087}$	$H(2.33)$	$235.0 \pm 2.2$
$y_{\mathrm{cal}}$	$1.0001 \pm 0.0025$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.212^{+0.049}_{-0.088}$	$D_{\mathrm{M}}(2.33)$	$5728^{+99}_{-87}$
$H_0$	$69.1 \pm 3.2$	Age/Gyr	$13.72^{+0.22}_{-0.20}$	$f\sigma_8(0.15)$	$0.438 \pm 0.030$
$\Omega_{\Lambda}$	$0.704^{+0.037}_{-0.028}$	$z_*$	$1087.1^{+1.9}_{-2.5}$	$\sigma_8(0.15)$	$0.738 \pm 0.014$
$\Omega_{\mathrm{m}}$	$0.296^{+0.028}_{-0.037}$	$r_*$	$144.65^{+0.99}_{-0.83}$	$f\sigma_8(0.38)$	$0.460 \pm 0.023$
$\Omega_{\mathrm{m}}h^2$	$0.1403 \pm 0.0037$	$100\theta_*$	$1.0397^{+0.0010}_{-0.0012}$	$\sigma_8(0.38)$	$0.6557^{+0.0098}_{-0.012}$
$\Omega_{\mathrm{m}}h^3$	$0.0969^{+0.0026}_{-0.0034}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.91^{+0.10}_{-0.083}$	$f\sigma_8(0.51)$	$0.460 \pm 0.020$
$\sigma_8$	$0.797 \pm 0.018$	$z_{\mathrm{drag}}$	$1061.4^{+4.0}_{-4.9}$	$\sigma_8(0.51)$	$0.6144^{+0.0084}_{-0.011}$
$S_8$	$0.791 \pm 0.059$	$r_{\mathrm{drag}}$	$146.9^{+1.2}_{-0.97}$	$f\sigma_8(0.61)$	$0.457^{+0.018}_{-0.016}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.433 \pm 0.032$	$k_{\mathrm{D}}$	$0.1431^{+0.0018}_{-0.0016}$	$\sigma_8(0.61)$	$0.5852^{+0.0076}_{-0.010}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.587 \pm 0.028$	$100\theta_{\mathrm{D}}$	$0.1579^{+0.0020}_{-0.0028}$	$f\sigma_8(2.33)$	$0.2958^{+0.0038}_{-0.0055}$
$\sigma_8/h^{0.5}$	$0.959 \pm 0.039$	$z_{\mathrm{eq}}$	$3336 \pm 89$	$\sigma_8(2.33)$	$0.3058^{+0.0046}_{-0.0062}$
$r_{\mathrm{drag}}h$	$101.6 \pm 4.4$	$k_{\mathrm{eq}}$	$0.01018 \pm 0.00027$	$\chi_{\mathrm{small}}^2$	$396.5 \pm 1.4$
$\langle d^2 \rangle^{1/2}$	$2.407 \pm 0.092$	$100\theta_{\mathrm{eq}}$	$0.828 \pm 0.020$	$\chi_{\mathrm{plikEE}}^2$	$744.0 \pm 3.4$
$z_{\mathrm{re}}$	$< 7.58$	$100\theta_{\mathrm{s,eq}}$	$0.4558 \pm 0.0094$	$\chi_{\mathrm{prior}}^2$	$1.0 \pm 1.4$
$10^9 A_{\mathrm{s}}$	$2.127^{+0.036}_{-0.043}$	$H(0.15)$	$74.2 \pm 2.9$	$\chi_{\mathrm{CMB}}^2$	$1140.4 \pm 3.7$
$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.902 \pm 0.024$	$D_{\mathrm{M}}(0.15)$	$629 \pm 27$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1141.45$ ;  $R - 1 = 0.00566$



## 20.46 base\_yhe\_plikHM\_EE\_lowE\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02325 \pm 0.00070$	$D_{220}$	$5943 \pm 160$	$H(0.51)$	$90.13^{+0.74}_{-0.89}$
$\Omega_{\mathrm{c}}h^2$	$0.1168^{+0.0018}_{-0.0020}$	$D_{810}$	$2601^{+51}_{-42}$	$D_{\mathrm{M}}(0.51)$	$1965 \pm 22$
$100\theta_{\mathrm{MC}}$	$1.0386^{+0.0016}_{-0.0026}$	$D_{1420}$	$853^{+31}_{-23}$	$H(0.61)$	$95.67^{+0.72}_{-0.89}$
$\tau$	$0.0554^{+0.0041}_{-0.0071}$	$D_{2000}$	$246^{+14}_{-11}$	$D_{\mathrm{M}}(0.61)$	$2288 \pm 25$
$Y_{\mathrm{P}}$	$0.204^{+0.042}_{-0.084}$	$n_{\mathrm{s},0.002}$	$0.967^{+0.014}_{-0.019}$	$H(2.33)$	$235.1^{+1.4}_{-1.9}$
$\ln(10^{10}A_{\mathrm{s}})$	$3.056^{+0.016}_{-0.019}$	$Y_{\mathrm{P}}$	$0.204^{+0.047}_{-0.076}$	$D_{\mathrm{M}}(2.33)$	$5748^{+51}_{-41}$
$n_{\mathrm{s}}$	$0.967^{+0.014}_{-0.019}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.205^{+0.047}_{-0.076}$	$f\sigma_8(0.15)$	$0.444 \pm 0.010$
$y_{\mathrm{cal}}$	$1.0001 \pm 0.0025$	Age/Gyr	$13.76^{+0.12}_{-0.097}$	$\sigma_8(0.15)$	$0.7399^{+0.0096}_{-0.013}$
$H_0$	$68.43 \pm 0.96$	$z_*$	$1087.2^{+1.5}_{-2.5}$	$f\sigma_8(0.38)$	$0.4642^{+0.0084}_{-0.0098}$
$\Omega_{\Lambda}$	$0.6993 \pm 0.0089$	$r_*$	$144.7^{+1.0}_{-0.80}$	$\sigma_8(0.38)$	$0.6570^{+0.0083}_{-0.012}$
$\Omega_{\mathrm{m}}$	$0.3007 \pm 0.0089$	$100\theta_*$	$1.03958^{+0.00092}_{-0.0010}$	$f\sigma_8(0.51)$	$0.4641^{+0.0077}_{-0.0093}$
$\Omega_{\mathrm{m}}h^2$	$0.1407^{+0.0019}_{-0.0023}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.92^{+0.11}_{-0.081}$	$\sigma_8(0.51)$	$0.6154^{+0.0078}_{-0.011}$
$\Omega_{\mathrm{m}}h^3$	$0.0963^{+0.0018}_{-0.0024}$	$z_{\mathrm{drag}}$	$1060.5^{+2.4}_{-3.5}$	$f\sigma_8(0.61)$	$0.4601^{+0.0072}_{-0.0090}$
$\sigma_8$	$0.800^{+0.011}_{-0.015}$	$r_{\mathrm{drag}}$	$147.1^{+1.2}_{-0.97}$	$\sigma_8(0.61)$	$0.5859^{+0.0074}_{-0.011}$
$S_8$	$0.800 \pm 0.020$	$k_{\mathrm{D}}$	$0.1431^{+0.0018}_{-0.0015}$	$f\sigma_8(2.33)$	$0.2958^{+0.0037}_{-0.0053}$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.438 \pm 0.011$	$100\theta_{\mathrm{D}}$	$0.1578^{+0.0018}_{-0.0029}$	$\sigma_8(2.33)$	$0.3055^{+0.0039}_{-0.0056}$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.592^{+0.010}_{-0.012}$	$z_{\mathrm{eq}}$	$3348^{+44}_{-55}$	$\chi_{\mathrm{simall}}^2$	$396.5 \pm 1.4$
$\sigma_8/h^{0.5}$	$0.967^{+0.014}_{-0.017}$	$k_{\mathrm{eq}}$	$0.01022^{+0.00014}_{-0.00017}$	$\chi_{\mathrm{plikEE}}^2$	$743.1 \pm 3.1$
$r_{\mathrm{drag}}h$	$100.6 \pm 1.1$	$100\theta_{\mathrm{eq}}$	$0.8239 \pm 0.0074$	$\chi_{6\mathrm{DF}}^2$	$0.054 \pm 0.076$
$\langle d^2 \rangle^{1/2}$	$2.425 \pm 0.039$	$100\theta_{\mathrm{s,eq}}$	$0.4542 \pm 0.0040$	$\chi_{\mathrm{MGS}}^2$	$1.85 \pm 0.70$
$z_{\mathrm{re}}$	$< 7.57$	$H(0.15)$	$73.60 \pm 0.91$	$\chi_{\mathrm{DR12BAO}}^2$	$4.5 \pm 1.3$
$10^9 A_{\mathrm{s}}$	$2.124^{+0.034}_{-0.041}$	$D_{\mathrm{M}}(0.15)$	$634.4 \pm 8.3$	$\chi_{\mathrm{prior}}^2$	$1.0 \pm 1.4$
$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.901 \pm 0.025$	$H(0.38)$	$83.52^{+0.77}_{-0.90}$	$\chi_{\mathrm{BAO}}^2$	$6.4 \pm 1.3$
$D_{40}$	$1256^{+51}_{-43}$	$D_{\mathrm{M}}(0.38)$	$1516 \pm 18$	$\chi_{\mathrm{CMB}}^2$	$1139.6 \pm 3.4$
$\bar{\chi}_{\mathrm{eff}}^2 = 1146.96; R - 1 = 0.01420$					



# 20.47 base\_yhe\_plikHM\_TT\_lowl\_lowE\_Aver15

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}} h^2$	$0.02209 \pm 0.00022$	$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	$0.460 \pm 0.013$	$H(0.15)$	$72.21 \pm 0.78$
$\Omega_{\mathrm{c}} h^2$	$0.1207 \pm 0.0021$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	$0.611 \pm 0.012$	$D_{\mathrm{M}}(0.15)$	$648.1 \pm 7.9$
$100\theta_{\mathrm{MC}}$	$1.04074 \pm 0.00049$	$\sigma_8/h^{0.5}$	$0.993 \pm 0.016$	$H(0.38)$	$82.49 \pm 0.56$
$\tau$	$0.0519 \pm 0.0081$	$r_{\mathrm{drag}} h$	$98.4 \pm 1.6$	$D_{\mathrm{M}}(0.38)$	$1543 \pm 16$
$Y_{\mathrm{P}}$	$0.2437 \pm 0.0040$	$\langle d^2 \rangle^{1/2}$	$2.455 \pm 0.037$	$H(0.51)$	$89.29 \pm 0.44$
$\ln(10^{10} A_{\mathrm{s}})$	$3.040 \pm 0.016$	$z_{\mathrm{re}}$	$7.48 \pm 0.84$	$D_{\mathrm{M}}(0.51)$	$1997 \pm 18$
$n_{\mathrm{s}}$	$0.9621 \pm 0.0059$	$10^9 A_{\mathrm{s}}$	$2.091 \pm 0.034$	$H(0.61)$	$94.98 \pm 0.35$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.884 \pm 0.014$	$D_{\mathrm{M}}(0.61)$	$2323 \pm 20$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{40}$	$1235 \pm 15$	$H(2.33)$	$236.7 \pm 1.3$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{220}$	$5712 \pm 41$	$D_{\mathrm{M}}(2.33)$	$5779 \pm 16$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{810}$	$2536 \pm 14$	$f\sigma_8(0.15)$	$0.464 \pm 0.012$
$A_{100}^{\mathrm{PS}}$	$263 \pm 28$	$D_{1420}$	$814.7 \pm 5.0$	$\sigma_8(0.15)$	$0.7490 \pm 0.0075$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$D_{2000}$	$229.7 \pm 1.8$	$f\sigma_8(0.38)$	$0.4799 \pm 0.0094$
$A_{143 \times 217}^{\mathrm{PS}}$	$44 \pm 9$	$n_{\mathrm{s},0.002}$	$0.9621 \pm 0.0059$	$\sigma_8(0.38)$	$0.6629 \pm 0.0060$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}$	$0.2437 \pm 0.0040$	$f\sigma_8(0.51)$	$0.4773 \pm 0.0080$
$A^{\mathrm{kSZ}}$	$< 4.72$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2450 \pm 0.0040$	$\sigma_8(0.51)$	$0.6199 \pm 0.0055$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	Age/Gyr	$13.833 \pm 0.037$	$f\sigma_8(0.61)$	$0.4716 \pm 0.0071$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$z_*$	$1090.27 \pm 0.41$	$\sigma_8(0.61)$	$0.5896 \pm 0.0052$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$r_*$	$144.47 \pm 0.48$	$f\sigma_8(2.33)$	$0.2969 \pm 0.0026$
$A_{217}^{\mathrm{dust}TT}$	$93.5 \pm 7.4$	$100\theta_*$	$1.04099 \pm 0.00046$	$\sigma_8(2.33)$	$0.3057 \pm 0.0027$
$c_{100}$	$0.99960 \pm 0.00061$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.879 \pm 0.045$	$f_{2000}^{143}$	$31.0 \pm 2.9$
$c_{217}$	$0.99826 \pm 0.00062$	$z_{\mathrm{drag}}$	$1059.29 \pm 0.49$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.1$
$H_0$	$66.84 \pm 0.91$	$r_{\mathrm{drag}}$	$147.23 \pm 0.49$	$f_{2000}^{217}$	$108.0 \pm 1.9$
$\Omega_{\Lambda}$	$0.679_{-0.012}^{+0.014}$	$k_{\mathrm{D}}$	$0.14057 \pm 0.00054$	$\chi_{\mathrm{simall}}^2$	$397.0 \pm 1.7$
$\Omega_{\mathrm{m}}$	$0.321 \pm 0.013$	$100\theta_{\mathrm{D}}$	$0.16103 \pm 0.00030$	$\chi_{\mathrm{lowl}}^2$	$24.0 \pm 1.3$
$\Omega_{\mathrm{m}} h^2$	$0.1434 \pm 0.0020$	$z_{\mathrm{eq}}$	$3412 \pm 48$	$\chi_{\mathrm{plik}}^2$	$771.3 \pm 5.5$
$\Omega_{\mathrm{m}} h^3$	$0.09584 \pm 0.00047$	$k_{\mathrm{eq}}$	$0.01041 \pm 0.00015$	$\chi_{\mathrm{Aver15}}^2$	$0.98 \pm 1.4$
$\sigma_8$	$0.8116 \pm 0.0088$	$100\theta_{\mathrm{eq}}$	$0.8108 \pm 0.0089$	$\chi_{\mathrm{prior}}^2$	$7.3 \pm 3.7$
$S_8$	$0.840 \pm 0.024$	$100\theta_{\mathrm{s,eq}}$	$0.4483 \pm 0.0046$	$\chi_{\mathrm{CMB}}^2$	$1192.2 \pm 5.6$

$\bar{\chi}_{\mathrm{eff}}^2 = 1200.47$ ;  $R - 1 = 0.00717$



20.48    base\_yhe\_plikHM\_TT\_lowl\_lowE\_Aver15\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02219 \pm 0.00019$	$\sigma_8/h^{0.5}$	$0.982 \pm 0.012$	$H(0.51)$	$89.63 \pm 0.29$
$\Omega_{\text{c}}h^2$	$0.1190 \pm 0.0012$	$r_{\text{drag}}h$	$99.74 \pm 0.93$	$D_{\text{M}}(0.51)$	$1982 \pm 11$
$100\theta_{\text{MC}}$	$1.04097 \pm 0.00043$	$\langle d^2 \rangle^{1/2}$	$2.429 \pm 0.028$	$H(0.61)$	$95.24 \pm 0.25$
$\tau$	$0.0540 \pm 0.0079$	$z_{\text{re}}$	$7.64 \pm 0.81$	$D_{\text{M}}(0.61)$	$2307 \pm 12$
$Y_{\text{P}}$	$0.2440 \pm 0.0039$	$10^9 A_{\text{s}}$	$2.091 \pm 0.034$	$H(2.33)$	$235.71 \pm 0.79$
$\ln(10^{10} A_{\text{s}})$	$3.040 \pm 0.016$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.877 \pm 0.012$	$D_{\text{M}}(2.33)$	$5768 \pm 12$
$n_{\text{s}}$	$0.9660 \pm 0.0044$	$D_{40}$	$1226 \pm 13$	$f\sigma_8(0.15)$	$0.4544 \pm 0.0077$
$y_{\text{cal}}$	$1.0005 \pm 0.0024$	$D_{220}$	$5719 \pm 39$	$\sigma_8(0.15)$	$0.7460 \pm 0.0069$
$A_{217}^{\text{CIB}}$	$48 \pm 7$	$D_{810}$	$2535 \pm 13$	$f\sigma_8(0.38)$	$0.4729 \pm 0.0065$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$D_{1420}$	$815.5 \pm 4.8$	$\sigma_8(0.38)$	$0.6613 \pm 0.0059$
$A_{143}^{\text{tSZ}}$	$5.1 \pm 2.0$	$D_{2000}$	$230.0 \pm 1.7$	$f\sigma_8(0.51)$	$0.4716 \pm 0.0059$
$A_{100}^{\text{PS}}$	$262 \pm 28$	$n_{\text{s},0.002}$	$0.9660 \pm 0.0044$	$\sigma_8(0.51)$	$0.6190 \pm 0.0055$
$A_{143}^{\text{PS}}$	$48 \pm 8$	$Y_{\text{P}}$	$0.2440 \pm 0.0039$	$f\sigma_8(0.61)$	$0.4667 \pm 0.0054$
$A_{143 \times 217}^{\text{PS}}$	$43 \pm 9$	$Y_{\text{P}}^{\text{BBN}}$	$0.2454 \pm 0.0039$	$\sigma_8(0.61)$	$0.5890 \pm 0.0052$
$A_{217}^{\text{PS}}$	$115 \pm 10$	Age/Gyr	$13.810 \pm 0.028$	$f\sigma_8(2.33)$	$0.2970 \pm 0.0026$
$A^{\text{kSZ}}$	$< 4.73$	$z_*$	$1090.01 \pm 0.31$	$\sigma_8(2.33)$	$0.3063 \pm 0.0027$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8$	$r_*$	$144.84 \pm 0.32$	$f_{2000}^{143}$	$30.8 \pm 2.9$
$A_{143}^{\text{dustTT}}$	$10.7 \pm 1.8$	$100\theta_*$	$1.04121 \pm 0.00041$	$f_{2000}^{143 \times 217}$	$33.2 \pm 2.0$
$A_{143 \times 217}^{\text{dustTT}}$	$18.3 \pm 3.3$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.911 \pm 0.032$	$f_{2000}^{217}$	$107.8 \pm 1.9$
$A_{217}^{\text{dustTT}}$	$93.3 \pm 7.4$	$z_{\text{drag}}$	$1059.40 \pm 0.48$	$\chi_{\text{simall}}^2$	$397.1 \pm 1.9$
$c_{100}$	$0.99961 \pm 0.00061$	$r_{\text{drag}}$	$147.57 \pm 0.35$	$\chi_{\text{lowl}}^2$	$23.15 \pm 0.93$
$c_{217}$	$0.99824 \pm 0.00062$	$k_{\text{D}}$	$0.14027 \pm 0.00046$	$\chi_{\text{plik}}^2$	$772.1 \pm 5.4$
$H_0$	$67.59 \pm 0.54$	$100\theta_{\text{D}}$	$0.16100 \pm 0.00029$	$\chi_{\text{Aver15}}^2$	$0.98 \pm 1.4$
$\Omega_{\Lambda}$	$0.6895 \pm 0.0073$	$z_{\text{eq}}$	$3373 \pm 29$	$\chi_{6\text{DF}}^2$	$0.060 \pm 0.077$
$\Omega_{\text{m}}$	$0.3105 \pm 0.0073$	$k_{\text{eq}}$	$0.010296 \pm 0.000087$	$\chi_{\text{MGS}}^2$	$1.34 \pm 0.52$
$\Omega_{\text{m}}h^2$	$0.1418 \pm 0.0012$	$100\theta_{\text{eq}}$	$0.8181 \pm 0.0053$	$\chi_{\text{DR12BAO}}^2$	$4.8 \pm 1.6$
$\Omega_{\text{m}}h^3$	$0.09584 \pm 0.00047$	$100\theta_{\text{s,eq}}$	$0.4520 \pm 0.0027$	$\chi_{\text{prior}}^2$	$7.2 \pm 3.6$
$\sigma_8$	$0.8072 \pm 0.0078$	$H(0.15)$	$72.85 \pm 0.47$	$\chi_{\text{BAO}}^2$	$6.2 \pm 1.3$
$S_8$	$0.821 \pm 0.015$	$D_{\text{M}}(0.15)$	$641.5 \pm 4.6$	$\chi_{\text{CMB}}^2$	$1192.3 \pm 5.4$
$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4498 \pm 0.0082$	$H(0.38)$	$82.94 \pm 0.35$		
$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6025 \pm 0.0080$	$D_{\text{M}}(0.38)$	$1530.3 \pm 9.3$		

$\bar{\chi}_{\text{eff}}^2 = 1206.67; R - 1 = 0.01453$



# 20.49 base\_yhe\_plikHM\_TT\_lowl\_lowE\_Aver15\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02212 \pm 0.00021$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6087 \pm 0.0076$	$H(0.38)$	$82.59 \pm 0.45$
$\Omega_{\mathrm{c}}h^2$	$0.1202 \pm 0.0016$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.010$	$D_{\mathrm{M}}(0.38)$	$1540 \pm 12$
$100\theta_{\mathrm{MC}}$	$1.04078 \pm 0.00046$	$r_{\mathrm{drag}}h$	$98.7 \pm 1.2$	$H(0.51)$	$89.37 \pm 0.36$
$\tau$	$0.0522 \pm 0.0079$	$\langle d^2 \rangle^{1/2}$	$2.448 \pm 0.025$	$D_{\mathrm{M}}(0.51)$	$1994 \pm 14$
$Y_{\mathrm{P}}$	$0.2437 \pm 0.0039$	$z_{\mathrm{re}}$	$7.49 \pm 0.81$	$H(0.61)$	$95.04 \pm 0.30$
$\ln(10^{10}A_{\mathrm{s}})$	$3.039 \pm 0.015$	$10^9 A_{\mathrm{s}}$	$2.090 \pm 0.031$	$D_{\mathrm{M}}(0.61)$	$2319 \pm 16$
$n_{\mathrm{s}}$	$0.9628 \pm 0.0050$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.882 \pm 0.012$	$H(2.33)$	$236.46 \pm 0.96$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0024$	$D_{40}$	$1233 \pm 13$	$D_{\mathrm{M}}(2.33)$	$5777 \pm 14$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{220}$	$5715 \pm 40$	$f\sigma_8(0.15)$	$0.4613 \pm 0.0081$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2536 \pm 13$	$\sigma_8(0.15)$	$0.7480 \pm 0.0056$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{1420}$	$814.8 \pm 5.0$	$f\sigma_8(0.38)$	$0.4780 \pm 0.0062$
$A_{100}^{\mathrm{PS}}$	$263 \pm 28$	$D_{2000}$	$229.8 \pm 1.8$	$\sigma_8(0.38)$	$0.6623 \pm 0.0049$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$n_{\mathrm{s},0.002}$	$0.9628 \pm 0.0050$	$f\sigma_8(0.51)$	$0.4758 \pm 0.0053$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}$	$0.2437 \pm 0.0039$	$\sigma_8(0.51)$	$0.6195 \pm 0.0046$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2450 \pm 0.0039$	$f\sigma_8(0.61)$	$0.4702 \pm 0.0047$
$A^{\mathrm{kSZ}}$	$< 4.76$	Age/Gyr	$13.828 \pm 0.033$	$\sigma_8(0.61)$	$0.5893 \pm 0.0044$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$z_*$	$1090.20 \pm 0.36$	$f\sigma_8(2.33)$	$0.2968 \pm 0.0024$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$r_*$	$144.57 \pm 0.37$	$\sigma_8(2.33)$	$0.3057 \pm 0.0026$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04103 \pm 0.00044$	$f_{2000}^{143}$	$31.0 \pm 3.0$
$A_{217}^{\mathrm{dust}TT}$	$93.5 \pm 7.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.887 \pm 0.035$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.1$
$c_{100}$	$0.99961 \pm 0.00061$	$z_{\mathrm{drag}}$	$1059.31 \pm 0.49$	$f_{2000}^{217}$	$108.0 \pm 1.9$
$c_{217}$	$0.99825 \pm 0.00062$	$r_{\mathrm{drag}}$	$147.31 \pm 0.39$	$\chi_{\mathrm{lensing}}^2$	$9.45 \pm 0.89$
$H_0$	$67.01 \pm 0.71$	$k_{\mathrm{D}}$	$0.14050 \pm 0.00048$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.6$
$\Omega_{\Lambda}$	$0.6814 \pm 0.0098$	$100\theta_{\mathrm{D}}$	$0.16102 \pm 0.00030$	$\chi_{\mathrm{lowl}}^2$	$23.8 \pm 1.1$
$\Omega_{\mathrm{m}}$	$0.3186 \pm 0.0098$	$z_{\mathrm{eq}}$	$3402 \pm 36$	$\chi_{\mathrm{plik}}^2$	$771.1 \pm 5.3$
$\Omega_{\mathrm{m}}h^2$	$0.1430 \pm 0.0015$	$k_{\mathrm{eq}}$	$0.01038 \pm 0.00011$	$\chi_{\mathrm{Aver15}}^2$	$0.97 \pm 1.4$
$\Omega_{\mathrm{m}}h^3$	$0.09583 \pm 0.00047$	$100\theta_{\mathrm{eq}}$	$0.8126 \pm 0.0067$	$\chi_{\mathrm{prior}}^2$	$7.2 \pm 3.6$
$\sigma_8$	$0.8102 \pm 0.0063$	$100\theta_{\mathrm{s,eq}}$	$0.4492 \pm 0.0034$	$\chi_{\mathrm{CMB}}^2$	$1201.2 \pm 5.5$
$S_8$	$0.835 \pm 0.016$	$H(0.15)$	$72.36 \pm 0.61$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4573 \pm 0.0088$	$D_{\mathrm{M}}(0.15)$	$646.5 \pm 6.1$		
$\bar{\chi}_{\mathrm{eff}}^2 = 1209.34$ ; $R - 1 = 0.01600$					



20.50 base\_yhe\_plikHM\_TT\_lowl\_lowE\_Aver15\_post\_BAO\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00019$	$\sigma_8/h^{0.5}$	$0.9842 \pm 0.0089$	$H(0.51)$	$89.61 \pm 0.27$
$\Omega_{\mathrm{c}}h^2$	$0.1191 \pm 0.0011$	$r_{\mathrm{drag}}h$	$99.63 \pm 0.84$	$D_{\mathrm{M}}(0.51)$	$1984 \pm 10$
$100\theta_{\mathrm{MC}}$	$1.04095 \pm 0.00043$	$\langle d^2 \rangle^{1/2}$	$2.436 \pm 0.021$	$H(0.61)$	$95.22 \pm 0.24$
$\tau$	$0.0552 \pm 0.0073$	$z_{\mathrm{re}}$	$7.77 \pm 0.74$	$D_{\mathrm{M}}(0.61)$	$2308 \pm 11$
$Y_{\mathrm{P}}$	$0.2440 \pm 0.0039$	$10^9 A_{\mathrm{s}}$	$2.098 \pm 0.030$	$H(2.33)$	$235.80 \pm 0.71$
$\ln(10^{10} A_{\mathrm{s}})$	$3.043 \pm 0.014$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878^{+0.011}_{-0.010}$	$D_{\mathrm{M}}(2.33)$	$5769 \pm 12$
$n_{\mathrm{s}}$	$0.9655 \pm 0.0042$	$D_{40}$	$1228 \pm 12$	$f\sigma_8(0.15)$	$0.4559 \pm 0.0061$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0024$	$D_{220}$	$5723 \pm 39$	$\sigma_8(0.15)$	$0.7474 \pm 0.0056$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$D_{810}$	$2537 \pm 13$	$f\sigma_8(0.38)$	$0.4742 \pm 0.0050$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815.7 \pm 4.8$	$\sigma_8(0.38)$	$0.6625 \pm 0.0049$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{2000}$	$230.1 \pm 1.7$	$f\sigma_8(0.51)$	$0.4728 \pm 0.0045$
$A_{100}^{\mathrm{PS}}$	$262 \pm 28$	$n_{\mathrm{s},0.002}$	$0.9655 \pm 0.0042$	$\sigma_8(0.51)$	$0.6200 \pm 0.0046$
$A_{143}^{\mathrm{PS}}$	$48 \pm 8$	$Y_{\mathrm{P}}$	$0.2440 \pm 0.0039$	$f\sigma_8(0.61)$	$0.4679 \pm 0.0042$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2453 \pm 0.0039$	$\sigma_8(0.61)$	$0.5900 \pm 0.0044$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	Age/Gyr	$13.811 \pm 0.028$	$f\sigma_8(2.33)$	$0.2975 \pm 0.0023$
$A^{\mathrm{kSZ}}$	$< 4.68$	$z_*$	$1090.02 \pm 0.30$	$\sigma_8(2.33)$	$0.3067 \pm 0.0024$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$r_*$	$144.80 \pm 0.29$	$f_{2000}^{143}$	$30.7 \pm 2.9$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$100\theta_*$	$1.04119 \pm 0.00041$	$f_{2000}^{143 \times 217}$	$33.1 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.907 \pm 0.029$	$f_{2000}^{217}$	$107.8 \pm 1.9$
$A_{217}^{\mathrm{dust}TT}$	$93.4 \pm 7.4$	$z_{\mathrm{drag}}$	$1059.41 \pm 0.48$	$\chi_{\mathrm{lensing}}^2$	$9.25 \pm 0.72$
$c_{100}$	$0.99961 \pm 0.00061$	$r_{\mathrm{drag}}$	$147.53 \pm 0.33$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.9$
$c_{217}$	$0.99824 \pm 0.00062$	$k_{\mathrm{D}}$	$0.14032 \pm 0.00044$	$\chi_{\mathrm{lowl}}^2$	$23.30 \pm 0.88$
$H_0$	$67.53 \pm 0.49$	$100\theta_{\mathrm{D}}$	$0.16099 \pm 0.00029$	$\chi_{\mathrm{plik}}^2$	$771.5 \pm 5.2$
$\Omega_{\Lambda}$	$0.6886 \pm 0.0065$	$z_{\mathrm{eq}}$	$3377 \pm 26$	$\chi_{\mathrm{Aver15}}^2$	$0.98 \pm 1.4$
$\Omega_{\mathrm{m}}$	$0.3114 \pm 0.0065$	$k_{\mathrm{eq}}$	$0.010306 \pm 0.000078$	$\chi_{6\mathrm{DF}}^2$	$0.060 \pm 0.072$
$\Omega_{\mathrm{m}}h^2$	$0.1420 \pm 0.0011$	$100\theta_{\mathrm{eq}}$	$0.8174 \pm 0.0047$	$\chi_{\mathrm{MGS}}^2$	$1.27 \pm 0.46$
$\Omega_{\mathrm{m}}h^3$	$0.09586 \pm 0.00047$	$100\theta_{\mathrm{s,eq}}$	$0.4517 \pm 0.0024$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 \pm 1.5$
$\sigma_8$	$0.8088 \pm 0.0062$	$H(0.15)$	$72.80 \pm 0.43$	$\chi_{\mathrm{prior}}^2$	$7.2 \pm 3.6$
$S_8$	$0.824 \pm 0.012$	$D_{\mathrm{M}}(0.15)$	$642.0 \pm 4.2$	$\chi_{\mathrm{CMB}}^2$	$1201.2 \pm 5.4$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4513 \pm 0.0065$	$H(0.38)$	$82.90 \pm 0.33$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6041 \pm 0.0062$	$D_{\mathrm{M}}(0.38)$	$1531.2 \pm 8.6$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1215.53$ ;  $R - 1 = 0.02107$



20.51 base\_yhe\_plikHM\_TT\_lowl\_lowE\_Aver15\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02210 \pm 0.00022$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.460 \pm 0.013$	$H(0.15)$	$72.26 \pm 0.77$
$\Omega_{\mathrm{c}}h^2$	$0.1206 \pm 0.0021$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.611 \pm 0.011$	$D_{\mathrm{M}}(0.15)$	$647.6 \pm 7.8$
$100\theta_{\mathrm{MC}}$	$1.04075 \pm 0.00049$	$\sigma_8/h^{0.5}$	$0.994 \pm 0.016$	$H(0.38)$	$82.51 \pm 0.56$
$\tau$	$0.0537^{+0.0045}_{-0.0084}$	$r_{\mathrm{drag}}h$	$98.5 \pm 1.6$	$D_{\mathrm{M}}(0.38)$	$1542 \pm 16$
$Y_{\mathrm{P}}$	$0.2437 \pm 0.0039$	$\langle d^2 \rangle^{1/2}$	$2.457 \pm 0.037$	$H(0.51)$	$89.32 \pm 0.44$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043^{+0.012}_{-0.016}$	$z_{\mathrm{re}}$	$7.66^{+0.50}_{-0.85}$	$D_{\mathrm{M}}(0.51)$	$1996 \pm 18$
$n_{\mathrm{s}}$	$0.9624 \pm 0.0058$	$10^9 A_{\mathrm{s}}$	$2.097^{+0.024}_{-0.034}$	$H(0.61)$	$95.00 \pm 0.35$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0024$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.883 \pm 0.013$	$D_{\mathrm{M}}(0.61)$	$2322 \pm 20$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{40}$	$1234 \pm 15$	$H(2.33)$	$236.7 \pm 1.3$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{220}$	$5712 \pm 40$	$D_{\mathrm{M}}(2.33)$	$5778 \pm 16$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{810}$	$2536 \pm 13$	$f\sigma_8(0.15)$	$0.464 \pm 0.012$
$A_{100}^{\mathrm{PS}}$	$262 \pm 28$	$D_{1420}$	$814.7 \pm 5.0$	$\sigma_8(0.15)$	$0.7500 \pm 0.0070$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$D_{2000}$	$229.8 \pm 1.8$	$f\sigma_8(0.38)$	$0.4802 \pm 0.0094$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$n_{\mathrm{s},0.002}$	$0.9624 \pm 0.0058$	$\sigma_8(0.38)$	$0.6638^{+0.0050}_{-0.0058}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}$	$0.2437 \pm 0.0039$	$f\sigma_8(0.51)$	$0.4777 \pm 0.0080$
$A^{\mathrm{kSZ}}$	$< 4.68$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2451 \pm 0.0040$	$\sigma_8(0.51)$	$0.6208^{+0.0044}_{-0.0053}$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8$	Age/Gyr	$13.832 \pm 0.036$	$f\sigma_8(0.61)$	$0.4720 \pm 0.0070$
$A_{143}^{\mathrm{dustTT}}$	$10.7 \pm 1.8$	$z_*$	$1090.25 \pm 0.41$	$\sigma_8(0.61)$	$0.5905^{+0.0040}_{-0.0050}$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.3 \pm 3.3$	$r_*$	$144.50 \pm 0.48$	$f\sigma_8(2.33)$	$0.2974^{+0.0019}_{-0.0025}$
$A_{217}^{\mathrm{dustTT}}$	$93.5 \pm 7.4$	$100\theta_*$	$1.04100 \pm 0.00046$	$\sigma_8(2.33)$	$0.3062^{+0.0019}_{-0.0027}$
$c_{100}$	$0.99960 \pm 0.00061$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.880 \pm 0.044$	$f_{2000}^{143}$	$30.9 \pm 2.9$
$c_{217}$	$0.99826 \pm 0.00063$	$z_{\mathrm{drag}}$	$1059.30 \pm 0.49$	$f_{2000}^{143 \times 217}$	$33.4 \pm 2.1$
$H_0$	$66.88 \pm 0.90$	$r_{\mathrm{drag}}$	$147.25 \pm 0.48$	$f_{2000}^{217}$	$108.0 \pm 1.9$
$\Omega_{\Lambda}$	$0.679 \pm 0.013$	$k_{\mathrm{D}}$	$0.14056 \pm 0.00054$	$\chi_{\mathrm{simall}}^2$	$396.8 \pm 1.7$
$\Omega_{\mathrm{m}}$	$0.321 \pm 0.013$	$100\theta_{\mathrm{D}}$	$0.16103 \pm 0.00030$	$\chi_{\mathrm{lowl}}^2$	$24.0 \pm 1.3$
$\Omega_{\mathrm{m}}h^2$	$0.1433 \pm 0.0020$	$z_{\mathrm{eq}}$	$3410 \pm 47$	$\chi_{\mathrm{plik}}^2$	$771.1 \pm 5.4$
$\Omega_{\mathrm{m}}h^3$	$0.09584 \pm 0.00047$	$k_{\mathrm{eq}}$	$0.01041 \pm 0.00014$	$\chi_{\mathrm{Aver15}}^2$	$0.98 \pm 1.4$
$\sigma_8$	$0.8126 \pm 0.0084$	$100\theta_{\mathrm{eq}}$	$0.8112 \pm 0.0088$	$\chi_{\mathrm{prior}}^2$	$7.2 \pm 3.7$
$S_8$	$0.840 \pm 0.024$	$100\theta_{\mathrm{s,eq}}$	$0.4485 \pm 0.0045$	$\chi_{\mathrm{CMB}}^2$	$1191.9 \pm 5.4$

$\bar{\chi}_{\mathrm{eff}}^2 = 1200.15$ ;  $R - 1 = 0.00690$



20.52 base\_yhe\_plikHM\_TT\_lowl\_lowE\_Aver15\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00020$	$\sigma_8/h^{0.5}$	$0.983 \pm 0.011$	$H(0.51)$	$89.64 \pm 0.29$
$\Omega_{\mathrm{c}}h^2$	$0.1189 \pm 0.0012$	$r_{\mathrm{drag}}h$	$99.77 \pm 0.93$	$D_{\mathrm{M}}(0.51)$	$1982 \pm 11$
$100\theta_{\mathrm{MC}}$	$1.04098 \pm 0.00043$	$\langle d^2 \rangle^{1/2}$	$2.431 \pm 0.027$	$H(0.61)$	$95.25 \pm 0.25$
$\tau$	$0.0550^{+0.0054}_{-0.0081}$	$z_{\mathrm{re}}$	$7.76^{+0.58}_{-0.83}$	$D_{\mathrm{M}}(0.61)$	$2307 \pm 12$
$Y_{\mathrm{P}}$	$0.2441 \pm 0.0039$	$10^9 A_{\mathrm{s}}$	$2.095^{+0.026}_{-0.034}$	$H(2.33)$	$235.69 \pm 0.79$
$\ln(10^{10} A_{\mathrm{s}})$	$3.042^{+0.013}_{-0.016}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.877 \pm 0.012$	$D_{\mathrm{M}}(2.33)$	$5768 \pm 12$
$n_{\mathrm{s}}$	$0.9662 \pm 0.0044$	$D_{40}$	$1226 \pm 13$	$f\sigma_8(0.15)$	$0.4547 \pm 0.0076$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0024$	$D_{220}$	$5719 \pm 39$	$\sigma_8(0.15)$	$0.7467^{+0.0059}_{-0.0068}$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{810}$	$2535 \pm 13$	$f\sigma_8(0.38)$	$0.4733 \pm 0.0064$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815.5 \pm 4.8$	$\sigma_8(0.38)$	$0.6620^{+0.0049}_{-0.0058}$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{2000}$	$230.0 \pm 1.7$	$f\sigma_8(0.51)$	$0.4720 \pm 0.0057$
$A_{100}^{\mathrm{PS}}$	$262 \pm 28$	$n_{\mathrm{s},0.002}$	$0.9662 \pm 0.0044$	$\sigma_8(0.51)$	$0.6196^{+0.0044}_{-0.0054}$
$A_{143}^{\mathrm{PS}}$	$48 \pm 8$	$Y_{\mathrm{P}}$	$0.2441 \pm 0.0039$	$f\sigma_8(0.61)$	$0.4671 \pm 0.0052$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2454 \pm 0.0039$	$\sigma_8(0.61)$	$0.5896^{+0.0041}_{-0.0051}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	Age/Gyr	$13.809 \pm 0.028$	$f\sigma_8(2.33)$	$0.2973^{+0.0020}_{-0.0026}$
$A^{\mathrm{kSZ}}$	$< 4.72$	$z_{*}$	$1090.00 \pm 0.31$	$\sigma_8(2.33)$	$0.3066^{+0.0021}_{-0.0027}$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8$	$r_{*}$	$144.85 \pm 0.32$	$f_{2000}^{143}$	$30.7 \pm 2.9$
$A_{143}^{\mathrm{dustTT}}$	$10.7 \pm 1.8$	$100\theta_{*}$	$1.04121 \pm 0.00041$	$f_{2000}^{143 \times 217}$	$33.2 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.3 \pm 3.3$	$D_{\mathrm{M}}(z_{*})/\mathrm{Gpc}$	$13.911 \pm 0.032$	$f_{2000}^{217}$	$107.8 \pm 1.9$
$A_{217}^{\mathrm{dustTT}}$	$93.4 \pm 7.4$	$z_{\mathrm{drag}}$	$1059.41 \pm 0.48$	$\chi_{\mathrm{small}}^2$	$397.0 \pm 1.9$
$c_{100}$	$0.99960 \pm 0.00061$	$r_{\mathrm{drag}}$	$147.57 \pm 0.35$	$\chi_{\mathrm{lowl}}^2$	$23.16 \pm 0.93$
$c_{217}$	$0.99824 \pm 0.00062$	$k_{\mathrm{D}}$	$0.14027 \pm 0.00046$	$\chi_{\mathrm{plik}}^2$	$771.9 \pm 5.3$
$H_0$	$67.60 \pm 0.54$	$100\theta_{\mathrm{D}}$	$0.16100 \pm 0.00029$	$\chi_{\mathrm{Aver15}}^2$	$0.97 \pm 1.4$
$\Omega_{\Lambda}$	$0.6897 \pm 0.0072$	$z_{\mathrm{eq}}$	$3373 \pm 29$	$\chi_{6\mathrm{DF}}^2$	$0.058 \pm 0.075$
$\Omega_{\mathrm{m}}$	$0.3103 \pm 0.0072$	$k_{\mathrm{eq}}$	$0.010294 \pm 0.000087$	$\chi_{\mathrm{MGS}}^2$	$1.35 \pm 0.52$
$\Omega_{\mathrm{m}}h^2$	$0.1418 \pm 0.0012$	$100\theta_{\mathrm{eq}}$	$0.8182 \pm 0.0053$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.6$
$\Omega_{\mathrm{m}}h^3$	$0.09584 \pm 0.00047$	$100\theta_{\mathrm{s,eq}}$	$0.4521 \pm 0.0027$	$\chi_{\mathrm{prior}}^2$	$7.2 \pm 3.6$
$\sigma_8$	$0.8079^{+0.0068}_{-0.0077}$	$H(0.15)$	$72.87 \pm 0.46$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.3$
$S_8$	$0.822 \pm 0.015$	$D_{\mathrm{M}}(0.15)$	$641.4 \pm 4.6$	$\chi_{\mathrm{CMB}}^2$	$1192.1 \pm 5.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4501 \pm 0.0081$	$H(0.38)$	$82.95 \pm 0.35$		
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6030 \pm 0.0078$	$D_{\mathrm{M}}(0.38)$	$1530.0 \pm 9.3$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1206.42$ ;  $R - 1 = 0.01542$



# 20.53 base\_yhe\_plikHM\_TT\_lowl\_lowE\_Aver15\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02213 \pm 0.00021$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6088 \pm 0.0077$	$H(0.38)$	$82.63 \pm 0.44$
$\Omega_{\mathrm{c}}h^2$	$0.1201 \pm 0.0015$	$\sigma_8/h^{0.5}$	$0.990 \pm 0.010$	$D_{\mathrm{M}}(0.38)$	$1539 \pm 12$
$100\theta_{\mathrm{MC}}$	$1.04079 \pm 0.00046$	$r_{\mathrm{drag}}h$	$98.8 \pm 1.2$	$H(0.51)$	$89.40 \pm 0.35$
$\tau$	$0.0537^{+0.0048}_{-0.0081}$	$\langle d^2 \rangle^{1/2}$	$2.449 \pm 0.025$	$D_{\mathrm{M}}(0.51)$	$1993 \pm 14$
$Y_{\mathrm{P}}$	$0.2437 \pm 0.0039$	$z_{\mathrm{re}}$	$7.66^{+0.52}_{-0.82}$	$H(0.61)$	$95.06 \pm 0.29$
$\ln(10^{10}A_{\mathrm{s}})$	$3.042^{+0.011}_{-0.015}$	$10^9 A_{\mathrm{s}}$	$2.095^{+0.022}_{-0.031}$	$D_{\mathrm{M}}(0.61)$	$2318 \pm 15$
$n_{\mathrm{s}}$	$0.9632 \pm 0.0049$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.881 \pm 0.011$	$H(2.33)$	$236.38 \pm 0.94$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0024$	$D_{40}$	$1232 \pm 13$	$D_{\mathrm{M}}(2.33)$	$5776 \pm 14$
$A_{217}^{\mathrm{CIB}}$	$48 \pm 7$	$D_{220}$	$5715 \pm 40$	$f\sigma_8(0.15)$	$0.4611 \pm 0.0081$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{810}$	$2536 \pm 13$	$\sigma_8(0.15)$	$0.7487 \pm 0.0052$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{1420}$	$814.8 \pm 4.9$	$f\sigma_8(0.38)$	$0.4780 \pm 0.0063$
$A_{100}^{\mathrm{PS}}$	$263 \pm 28$	$D_{2000}$	$229.8 \pm 1.8$	$\sigma_8(0.38)$	$0.6630^{+0.0040}_{-0.0047}$
$A_{143}^{\mathrm{PS}}$	$49 \pm 8$	$n_{\mathrm{s},0.002}$	$0.9632 \pm 0.0049$	$f\sigma_8(0.51)$	$0.4759 \pm 0.0053$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}$	$0.2437 \pm 0.0039$	$\sigma_8(0.51)$	$0.6202^{+0.0037}_{-0.0045}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2450 \pm 0.0039$	$f\sigma_8(0.61)$	$0.4704 \pm 0.0047$
$A^{\mathrm{kSZ}}$	$< 4.71$	Age/Gyr	$13.826 \pm 0.032$	$\sigma_8(0.61)$	$0.5900^{+0.0035}_{-0.0043}$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8$	$z_*$	$1090.18 \pm 0.35$	$f\sigma_8(2.33)$	$0.2972^{+0.0018}_{-0.0023}$
$A_{143}^{\mathrm{dust}TT}$	$10.7 \pm 1.8$	$r_*$	$144.60 \pm 0.37$	$\sigma_8(2.33)$	$0.3062^{+0.0019}_{-0.0026}$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.3 \pm 3.3$	$100\theta_*$	$1.04104 \pm 0.00043$	$f_{2000}^{143}$	$30.9 \pm 3.0$
$A_{217}^{\mathrm{dust}TT}$	$93.5 \pm 7.4$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.890 \pm 0.035$	$f_{2000}^{143 \times 217}$	$33.3 \pm 2.0$
$c_{100}$	$0.99961 \pm 0.00061$	$z_{\mathrm{drag}}$	$1059.32 \pm 0.49$	$f_{2000}^{217}$	$107.9 \pm 1.9$
$c_{217}$	$0.99825 \pm 0.00062$	$r_{\mathrm{drag}}$	$147.34 \pm 0.38$	$\chi_{\mathrm{lensing}}^2$	$9.43 \pm 0.89$
$H_0$	$67.08 \pm 0.69$	$k_{\mathrm{D}}$	$0.14048 \pm 0.00047$	$\chi_{\mathrm{simall}}^2$	$396.8 \pm 1.6$
$\Omega_{\Lambda}$	$0.6823 \pm 0.0095$	$100\theta_{\mathrm{D}}$	$0.16101 \pm 0.00030$	$\chi_{\mathrm{lowl}}^2$	$23.7 \pm 1.0$
$\Omega_{\mathrm{m}}$	$0.3177 \pm 0.0095$	$z_{\mathrm{eq}}$	$3399 \pm 35$	$\chi_{\mathrm{plik}}^2$	$770.9 \pm 5.3$
$\Omega_{\mathrm{m}}h^2$	$0.1429 \pm 0.0015$	$k_{\mathrm{eq}}$	$0.01037 \pm 0.00011$	$\chi_{\mathrm{Aver15}}^2$	$0.97 \pm 1.4$
$\Omega_{\mathrm{m}}h^3$	$0.09583 \pm 0.00047$	$100\theta_{\mathrm{eq}}$	$0.8132 \pm 0.0065$	$\chi_{\mathrm{prior}}^2$	$7.2 \pm 3.6$
$\sigma_8$	$0.8109 \pm 0.0060$	$100\theta_{\mathrm{s,eq}}$	$0.4495 \pm 0.0033$	$\chi_{\mathrm{CMB}}^2$	$1200.9 \pm 5.5$
$S_8$	$0.834 \pm 0.016$	$H(0.15)$	$72.42 \pm 0.59$		
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4570 \pm 0.0088$	$D_{\mathrm{M}}(0.15)$	$645.9 \pm 6.0$		
$\bar{\chi}_{\mathrm{eff}}^2 = 1209.04$ ; $R - 1 = 0.01844$					



20.54 base\_yhe\_plikHM\_TT\_lowl\_lowE\_Aver15\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02219 \pm 0.00019$	$\sigma_8/h^{0.5}$	$0.9845 \pm 0.0088$	$H(0.51)$	$89.62 \pm 0.27$
$\Omega_{\mathrm{c}}h^2$	$0.1191 \pm 0.0011$	$r_{\mathrm{drag}}h$	$99.66 \pm 0.83$	$D_{\mathrm{M}}(0.51)$	$1983 \pm 10$
$100\theta_{\mathrm{MC}}$	$1.04096 \pm 0.00043$	$\langle d^2 \rangle^{1/2}$	$2.436 \pm 0.021$	$H(0.61)$	$95.23 \pm 0.24$
$\tau$	$0.0558^{+0.0058}_{-0.0075}$	$z_{\mathrm{re}}$	$7.84^{+0.61}_{-0.75}$	$D_{\mathrm{M}}(0.61)$	$2308 \pm 11$
$Y_{\mathrm{P}}$	$0.2440 \pm 0.0039$	$10^9 A_{\mathrm{s}}$	$2.100^{+0.025}_{-0.030}$	$H(2.33)$	$235.78 \pm 0.70$
$\ln(10^{10} A_{\mathrm{s}})$	$3.044^{+0.012}_{-0.014}$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.878^{+0.011}_{-0.010}$	$D_{\mathrm{M}}(2.33)$	$5769 \pm 12$
$n_{\mathrm{s}}$	$0.9656 \pm 0.0042$	$D_{40}$	$1228 \pm 12$	$f\sigma_8(0.15)$	$0.4559 \pm 0.0061$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0024$	$D_{220}$	$5722 \pm 39$	$\sigma_8(0.15)$	$0.7477 \pm 0.0054$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7$	$D_{810}$	$2536 \pm 13$	$f\sigma_8(0.38)$	$0.4743 \pm 0.0050$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$D_{1420}$	$815.7 \pm 4.8$	$\sigma_8(0.38)$	$0.6628^{+0.0043}_{-0.0049}$
$A_{143}^{\mathrm{tSZ}}$	$5.1 \pm 2.0$	$D_{2000}$	$230.1 \pm 1.7$	$f\sigma_8(0.51)$	$0.4730 \pm 0.0045$
$A_{100}^{\mathrm{PS}}$	$262 \pm 28$	$n_{\mathrm{s},0.002}$	$0.9656 \pm 0.0042$	$\sigma_8(0.51)$	$0.6203^{+0.0040}_{-0.0046}$
$A_{143}^{\mathrm{PS}}$	$48 \pm 8$	$Y_{\mathrm{P}}$	$0.2440 \pm 0.0039$	$f\sigma_8(0.61)$	$0.4680 \pm 0.0041$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2453 \pm 0.0039$	$\sigma_8(0.61)$	$0.5903^{+0.0038}_{-0.0044}$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10$	Age/Gyr	$13.810 \pm 0.028$	$f\sigma_8(2.33)$	$0.2976^{+0.0019}_{-0.0023}$
$A^{\mathrm{kSZ}}$	$< 4.68$	$z_*$	$1090.01 \pm 0.30$	$\sigma_8(2.33)$	$0.3069^{+0.0021}_{-0.0024}$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8$	$r_*$	$144.81 \pm 0.29$	$f_{2000}^{143}$	$30.7 \pm 2.9$
$A_{143}^{\mathrm{dustTT}}$	$10.7 \pm 1.8$	$100\theta_*$	$1.04120 \pm 0.00041$	$f_{2000}^{143 \times 217}$	$33.1 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.3 \pm 3.3$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.908 \pm 0.029$	$f_{2000}^{217}$	$107.8 \pm 1.9$
$A_{217}^{\mathrm{dustTT}}$	$93.4 \pm 7.4$	$z_{\mathrm{drag}}$	$1059.41 \pm 0.48$	$\chi_{\mathrm{lensing}}^2$	$9.22 \pm 0.68$
$c_{100}$	$0.99961 \pm 0.00061$	$r_{\mathrm{drag}}$	$147.54 \pm 0.33$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.9$
$c_{217}$	$0.99824 \pm 0.00062$	$k_{\mathrm{D}}$	$0.14031 \pm 0.00044$	$\chi_{\mathrm{lowl}}^2$	$23.30 \pm 0.88$
$H_0$	$67.55 \pm 0.49$	$100\theta_{\mathrm{D}}$	$0.16099 \pm 0.00029$	$\chi_{\mathrm{plik}}^2$	$771.4 \pm 5.2$
$\Omega_{\Lambda}$	$0.6889 \pm 0.0064$	$z_{\mathrm{eq}}$	$3376 \pm 25$	$\chi_{\mathrm{Aver15}}^2$	$0.97 \pm 1.4$
$\Omega_{\mathrm{m}}$	$0.3111 \pm 0.0064$	$k_{\mathrm{eq}}$	$0.010304 \pm 0.000077$	$\chi_{6\mathrm{DF}}^2$	$0.057 \pm 0.069$
$\Omega_{\mathrm{m}}h^2$	$0.1419 \pm 0.0011$	$100\theta_{\mathrm{eq}}$	$0.8176 \pm 0.0046$	$\chi_{\mathrm{MGS}}^2$	$1.28 \pm 0.45$
$\Omega_{\mathrm{m}}h^3$	$0.09586 \pm 0.00047$	$100\theta_{\mathrm{s,eq}}$	$0.4517 \pm 0.0024$	$\chi_{\mathrm{DR12BAO}}^2$	$4.8 \pm 1.5$
$\sigma_8$	$0.8091 \pm 0.0060$	$H(0.15)$	$72.82 \pm 0.42$	$\chi_{\mathrm{prior}}^2$	$7.2 \pm 3.5$
$S_8$	$0.824 \pm 0.012$	$D_{\mathrm{M}}(0.15)$	$641.9 \pm 4.2$	$\chi_{\mathrm{CMB}}^2$	$1201.0 \pm 5.3$
$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4513 \pm 0.0065$	$H(0.38)$	$82.91 \pm 0.32$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.2$
$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6043 \pm 0.0062$	$D_{\mathrm{M}}(0.38)$	$1530.9 \pm 8.5$		

$\bar{\chi}_{\mathrm{eff}}^2 = 1215.36$ ;  $R - 1 = 0.02251$



20.55 base\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022339	$0.02233 \pm 0.00015$ (+1.1 $\sigma$ )	$\Omega_m$	0.3175	$0.3172 \pm 0.0085$ (−0.3 $\sigma$ )	$z_{\text{eq}}$	3408.9	$3407 \pm 31$ (−0.1 $\sigma$ )
$\Omega_c h^2$	0.12031	$0.1202 \pm 0.0014$ (−0.2 $\sigma$ )	$\Omega_m h^2$	0.14330	$0.1432 \pm 0.0013$ (−0.1 $\sigma$ )	$k_{\text{eq}}$	0.010404	$0.010399 \pm 0.000094$ (−0.1 $\sigma$ )
$100\theta_{\text{MC}}$	1.040806	$1.04083 \pm 0.00034$ (+0.2 $\sigma$ )	$\Omega_m h^3$	0.096267	$0.09625 \pm 0.00032$ (+0.9 $\sigma$ )	$100\theta_{\text{eq}}$	0.8119	$0.8123 \pm 0.0058$ (+0.2 $\sigma$ )
$\tau$	0.0542	$0.0541 \pm 0.0079$ (+0.3 $\sigma$ )	$\sigma_8$	0.8123	$0.8115 \pm 0.0075$ (−0.0 $\sigma$ )	$100\theta_{\text{s,eq}}$	0.44869	$0.4489 \pm 0.0030$ (+0.1 $\sigma$ )
$Y_{\text{P}}$	0.24306	$0.2433 \pm 0.0038$ (−0.1 $\sigma$ )	$S_8$	0.8356	$0.834 \pm 0.016$ (−0.2 $\sigma$ )	$H(0.15)$	72.53	$72.55 \pm 0.52$ (+0.4 $\sigma$ )
$\ln(10^{10} A_{\text{s}})$	3.0445	$3.044 \pm 0.016$ (+0.2 $\sigma$ )	$\sigma_8 \Omega_{\text{m}}^{0.5}$	0.4577	$0.4570 \pm 0.0088$ (−0.2 $\sigma$ )	$D_{\text{M}}(0.15)$	644.9	$644.7 \pm 5.3$ (−0.4 $\sigma$ )
$n_{\text{s}}$	0.96472	$0.9638 \pm 0.0046$ (+0.3 $\sigma$ )	$\sigma_8 \Omega_{\text{m}}^{0.25}$	0.6097	$0.6090 \pm 0.0083$ (−0.2 $\sigma$ )	$H(0.38)$	82.749	$82.77 \pm 0.38$ (+0.5 $\sigma$ )
$y_{\text{cal}}$	1.00055	$1.0006 \pm 0.0025$ (+0.1 $\sigma$ )	$\sigma_8/h^{0.5}$	0.9910	$0.990 \pm 0.012$ (−0.2 $\sigma$ )	$D_{\text{M}}(0.38)$	1536.6	$1536 \pm 11$ (−0.4 $\sigma$ )
$A_{217}^{\text{CIB}}$	45.9	$47 \pm 7$ (−0.2 $\sigma$ )	$r_{\text{drag}} h$	98.79	$98.9 \pm 1.1$ (+0.3 $\sigma$ )	$H(0.51)$	89.531	$89.54 \pm 0.30$ (+0.6 $\sigma$ )
$\xi^{\text{tSZ} \times \text{CIB}}$	0.60	—	$\langle d^2 \rangle^{1/2}$	2.4499	$2.450 \pm 0.028$ (−0.1 $\sigma$ )	$D_{\text{M}}(0.51)$	1989.5	$1989 \pm 12$ (−0.5 $\sigma$ )
$A_{143}^{\text{tSZ}}$	7.09	$5.5_{-1.9}^{+2.1}$ (+0.2 $\sigma$ )	$z_{\text{re}}$	7.67	$7.64 \pm 0.80$ (+0.2 $\sigma$ )	$H(0.61)$	95.199	$95.21 \pm 0.24$ (+0.6 $\sigma$ )
$A_{100}^{\text{PS}}$	248.1	$257 \pm 28$ (−0.2 $\sigma$ )	$10^9 A_{\text{s}}$	2.1000	$2.099 \pm 0.034$ (+0.2 $\sigma$ )	$D_{\text{M}}(0.61)$	2314.3	$2314 \pm 13$ (−0.5 $\sigma$ )
$A_{143}^{\text{PS}}$	49.4	$46 \pm 8$ (−0.4 $\sigma$ )	$10^9 A_{\text{s}} e^{-2\tau}$	1.8844	$1.884 \pm 0.012$ (−0.0 $\sigma$ )	$H(2.33)$	236.73	$236.67 \pm 0.82$ (−0.0 $\sigma$ )
$A_{143 \times 217}^{\text{PS}}$	51.7	$43 \pm 9$ (−0.1 $\sigma$ )	$D_{40}$	1231.4	$1234 \pm 13$ (−0.1 $\sigma$ )	$D_{\text{M}}(2.33)$	5767.2	$5767 \pm 11$ (−0.7 $\sigma$ )
$A_{217}^{\text{PS}}$	121.7	$115 \pm 10$ (+0.0 $\sigma$ )	$D_{220}$	5729.1	$5732 \pm 38$ (+0.5 $\sigma$ )	$f\sigma_8(0.15)$	0.4618	$0.4611 \pm 0.0082$ (−0.2 $\sigma$ )
$A^{\text{kSZ}}$	0.00	$< 4.08$ (−0.2 $\sigma$ )	$D_{810}$	2541.3	$2540 \pm 14$ (+0.2 $\sigma$ )	$\sigma_8(0.15)$	0.7500	$0.7493 \pm 0.0066$ (+0.0 $\sigma$ )
$A_{100}^{\text{dustTT}}$	8.78	$8.9 \pm 1.8$ (−0.0 $\sigma$ )	$D_{1420}$	818.59	$817.5 \pm 4.8$ (+0.6 $\sigma$ )	$f\sigma_8(0.38)$	0.4788	$0.4782 \pm 0.0067$ (−0.2 $\sigma$ )
$A_{143}^{\text{dustTT}}$	11.01	$10.9 \pm 1.8$ (+0.1 $\sigma$ )	$D_{2000}$	231.49	$231.1 \pm 1.6$ (+0.7 $\sigma$ )	$\sigma_8(0.38)$	0.6641	$0.6636 \pm 0.0057$ (+0.1 $\sigma$ )
$A_{143 \times 217}^{\text{dustTT}}$	19.94	$18.6 \pm 3.3$ (+0.1 $\sigma$ )	$n_{\text{s},0.002}$	0.96472	$0.9638 \pm 0.0046$ (+0.3 $\sigma$ )	$f\sigma_8(0.51)$	0.4767	$0.4761 \pm 0.0059$ (−0.2 $\sigma$ )
$A_{217}^{\text{dustTT}}$	95.4	$93.7 \pm 7.3$ (+0.0 $\sigma$ )	$Y_{\text{P}}$	0.24306	$0.2433 \pm 0.0038$ (−0.1 $\sigma$ )	$\sigma_8(0.51)$	0.6213	$0.6208 \pm 0.0052$ (+0.2 $\sigma$ )
$A_{100}^{\text{dustTE}}$	0.1149	$0.115 \pm 0.038$	$Y_{\text{P}}^{\text{BBN}}$	0.24437	$0.2446 \pm 0.0038$ (−0.1 $\sigma$ )	$f\sigma_8(0.61)$	0.4712	$0.4707 \pm 0.0054$ (−0.1 $\sigma$ )
$A_{100 \times 143}^{\text{dustTE}}$	0.1346	$0.135 \pm 0.029$	Age/Gyr	13.8053	$13.805 \pm 0.026$ (−0.8 $\sigma$ )	$\sigma_8(0.61)$	0.59097	$0.5905 \pm 0.0050$ (+0.2 $\sigma$ )
$A_{100 \times 217}^{\text{dustTE}}$	0.482	$0.484 \pm 0.084$	$z_*$	1089.894	$1089.91 \pm 0.29$ (−0.9 $\sigma$ )	$f\sigma_8(2.33)$	0.29774	$0.2975 \pm 0.0025$ (+0.2 $\sigma$ )
$A_{143}^{\text{dustTE}}$	0.224	$0.225 \pm 0.054$	$r_*$	144.382	$144.41 \pm 0.31$ (−0.1 $\sigma$ )	$\sigma_8(2.33)$	0.30669	$0.3065 \pm 0.0026$ (+0.3 $\sigma$ )
$A_{143 \times 217}^{\text{dustTE}}$	0.666	$0.668 \pm 0.080$	$100\theta_*$	1.041051	$1.04107 \pm 0.00031$ (+0.2 $\sigma$ )	$\chi_{\text{small}}^2$	396.06	$397.1 \pm 1.8$ (+0.1 $\sigma$ )
$A_{217}^{\text{dustTE}}$	2.087	$2.09 \pm 0.27$	$D_{\text{M}}(z_*)/\text{Gpc}$	13.8689	$13.871 \pm 0.029$ (−0.2 $\sigma$ )	$\chi_{\text{lowl}}^2$	23.48	$23.7 \pm 1.0$ (−0.2 $\sigma$ )
$c_{100}$	0.99972	$0.99967 \pm 0.00061$ (+0.1 $\sigma$ )	$z_{\text{drag}}$	1059.818	$1059.79 \pm 0.37$ (+1.0 $\sigma$ )	$\chi_{\text{plik}}^2$	2344.4	$2359.5 \pm 5.9$ (+290.0 $\sigma$ )
$c_{217}$	0.99816	$0.99818 \pm 0.00062$ (−0.1 $\sigma$ )	$r_{\text{drag}}$	147.050	$147.08 \pm 0.30$ (−0.3 $\sigma$ )	$\chi_{\text{Aver15}}^2$	0.017	$0.9 \pm 1.2$ (−0.1 $\sigma$ )
$H_0$	67.18	$67.21 \pm 0.61$ (+0.4 $\sigma$ )	$k_{\text{D}}$	0.140981	$0.14093 \pm 0.00033$ (+0.7 $\sigma$ )	$\chi_{\text{prior}}^2$	1.60	$11.5 \pm 4.5$ (+1.1 $\sigma$ )
$\Omega_{\Lambda}$	0.6825	$0.6828 \pm 0.0085$ (+0.3 $\sigma$ )	$100\theta_{\text{D}}$	0.160674	$0.16071 \pm 0.00022$ (−1.1 $\sigma$ )	$\chi_{\text{CMB}}^2$	2764.0	$2780.3 \pm 5.9$ (+285.5 $\sigma$ )

Best-fit  $\chi_{\text{eff}}^2 = 2765.57$ ;  $\bar{\chi}_{\text{eff}}^2 = 2792.71$ ;  $\Delta\bar{\chi}_{\text{eff}}^2 = 1592.24$ ;  $R - 1 = 0.01459$

$\chi_{\text{eff}}^2$ : Abund - Yp\_Aver2015: 0.02 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 396.06 commander\_dx12\_v3.2\_29: 23.48 plik\_rd12\_HM\_v22b\_TTTEEE: 2344.42



20.56 base\_yhe\_plikHM\_TTTEE\_lowl\_lowE\_Aver15\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02239 \pm 0.00014 \quad (+1.0\sigma)$	$\sigma_8$	$0.8092 \pm 0.0072 \quad (+0.3\sigma)$	$H(0.38)$	$83.02 \pm 0.29 \quad (+0.2\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1193 \pm 0.0010 \quad (+0.3\sigma)$	$S_8$	$0.824 \pm 0.012 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.38)$	$1529.0 \pm 7.7 \quad (-0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04095 \pm 0.00031 \quad (-0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4515 \pm 0.0068 \quad (+0.2\sigma)$	$H(0.51)$	$89.74 \pm 0.23 \quad (+0.4\sigma)$
$\tau$	$0.0554 \pm 0.0079 \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6045 \pm 0.0069 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1980.7 \pm 9.1 \quad (-0.2\sigma)$
$Y_{\mathrm{P}}$	$0.2435 \pm 0.0037 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.984 \pm 0.010 \quad (+0.2\sigma)$	$H(0.61)$	$95.36 \pm 0.19 \quad (+0.5\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044 \pm 0.016 \quad (+0.3\sigma)$	$r_{\mathrm{drag}}h$	$99.59 \pm 0.77 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.61)$	$2304.8 \pm 9.8 \quad (-0.2\sigma)$
$n_{\mathrm{s}}$	$0.9661 \pm 0.0040 \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.437 \pm 0.025 \quad (+0.3\sigma)$	$H(2.33)$	$236.13 \pm 0.62 \quad (+0.5\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$z_{\mathrm{re}}$	$7.75 \pm 0.80 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5760.6 \pm 9.4 \quad (-0.6\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.100 \pm 0.034 \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4561 \pm 0.0065 \quad (+0.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.880 \pm 0.011 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7478 \pm 0.0065 \quad (+0.3\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5_{-1.8}^{+2.1} \quad (+0.2\sigma)$	$D_{40}$	$1229 \pm 12 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4744 \pm 0.0056 \quad (+0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$257 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5737 \pm 38 \quad (+0.5\sigma)$	$\sigma_8(0.38)$	$0.6629 \pm 0.0057 \quad (+0.3\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4731 \pm 0.0051 \quad (+0.2\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$818.0 \pm 4.8 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.6204 \pm 0.0053 \quad (+0.3\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$231.3 \pm 1.6 \quad (+0.7\sigma)$	$f\sigma_8(0.61)$	$0.4681 \pm 0.0048 \quad (+0.3\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.09 \quad (-0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.9661 \pm 0.0040 \quad (+0.0\sigma)$	$\sigma_8(0.61)$	$0.5903 \pm 0.0050 \quad (+0.3\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.2435 \pm 0.0037 \quad (-0.1\sigma)$	$f\sigma_8(2.33)$	$0.2976 \pm 0.0025 \quad (+0.2\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2448 \pm 0.0037 \quad (-0.1\sigma)$	$\sigma_8(2.33)$	$0.3069 \pm 0.0026 \quad (+0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	Age/Gyr	$13.791 \pm 0.021 \quad (-0.7\sigma)$	$f_{2000}^{143}$	$29.1 \pm 2.8 \quad (-0.6\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.8 \pm 7.3 \quad (+0.1\sigma)$	$z_*$	$1089.76 \pm 0.25 \quad (-0.8\sigma)$	$f_{2000}^{143 \times 217}$	$31.9 \pm 1.9 \quad (-0.6\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.115 \pm 0.037$	$r_*$	$144.60 \pm 0.24 \quad (-0.8\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.8 \quad (-0.5\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.134 \pm 0.029$	$100\theta_*$	$1.04118 \pm 0.00029 \quad (-0.1\sigma)$	$\chi_{\mathrm{simall}}^2$	$397.3 \pm 2.0 \quad (+0.1\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.482 \pm 0.087$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.888 \pm 0.023 \quad (-0.7\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.26 \pm 0.86 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.224 \pm 0.053$	$z_{\mathrm{drag}}$	$1059.88 \pm 0.36 \quad (+1.0\sigma)$	$\chi_{\mathrm{plik}}^2$	$2359.8 \pm 6.0 \quad (+295.1\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.664 \pm 0.081$	$r_{\mathrm{drag}}$	$147.25 \pm 0.25 \quad (-0.9\sigma)$	$\chi_{\mathrm{Aver15}}^2$	$0.9 \pm 1.2 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.27$	$k_{\mathrm{D}}$	$0.14079 \pm 0.00030 \quad (+1.1\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.059 \pm 0.068 \quad (-0.0\sigma)$
$c_{100}$	$0.99967 \pm 0.00062 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16067 \pm 0.00021 \quad (-1.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.24 \pm 0.42 \quad (-0.2\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3386 \pm 23 \quad (+0.5\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 \pm 1.5 \quad (+0.1\sigma)$
$H_0$	$67.63 \pm 0.45 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010335 \pm 0.000070 \quad (+0.5\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\Lambda}$	$0.6887 \pm 0.0061 \quad (-0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8163 \pm 0.0043 \quad (-0.3\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.2 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}$	$0.3113 \pm 0.0061 \quad (+0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4509 \pm 0.0022 \quad (-0.4\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2780.4 \pm 5.9 \quad (+295.1\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14235 \pm 0.00096 \quad (+0.5\sigma)$	$H(0.15)$	$72.91 \pm 0.39 \quad (+0.1\sigma)$		
$\Omega_{\mathrm{m}}h^3$	$0.09627 \pm 0.00032 \quad (+0.9\sigma)$	$D_{\mathrm{M}}(0.15)$	$641.1 \pm 3.8 \quad (-0.1\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2799.01; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.33; R - 1 = 0.02003$$



20.57 base\_yhe\_plikHM\_TTTEE\_lowl\_lowE\_Aver15\_post\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02234 \pm 0.00015 \quad (+1.1\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09624 \pm 0.00032 \quad (+0.9\sigma)$	$H(0.15)$	$72.63 \pm 0.47 \quad (+0.4\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1200 \pm 0.0012 \quad (-0.1\sigma)$	$\sigma_8$	$0.8106 \pm 0.0060 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.15)$	$643.9 \pm 4.7 \quad (-0.4\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04084 \pm 0.00033 \quad (+0.1\sigma)$	$S_8$	$0.832 \pm 0.013 \quad (-0.2\sigma)$	$H(0.38)$	$82.82 \pm 0.35 \quad (+0.5\sigma)$
$\tau$	$0.0540 \pm 0.0075 \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4555 \pm 0.0070 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.38)$	$1534.6 \pm 9.4 \quad (-0.4\sigma)$
$Y_{\mathrm{P}}$	$0.2432 \pm 0.0038 \quad (-0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6077 \pm 0.0063 \quad (-0.1\sigma)$	$H(0.51)$	$89.58 \pm 0.28 \quad (+0.6\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.043 \pm 0.014 \quad (+0.3\sigma)$	$\sigma_8/h^{0.5}$	$0.9881 \pm 0.0090 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1987 \pm 11 \quad (-0.5\sigma)$
$n_{\mathrm{s}}$	$0.9641 \pm 0.0044 \quad (+0.3\sigma)$	$r_{\mathrm{drag}}h$	$99.01 \pm 0.93 \quad (+0.2\sigma)$	$H(0.61)$	$95.24 \pm 0.23 \quad (+0.7\sigma)$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.447 \pm 0.022 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2312 \pm 12 \quad (-0.5\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$z_{\mathrm{re}}$	$7.63 \pm 0.75 \quad (+0.2\sigma)$	$H(2.33)$	$236.55 \pm 0.72 \quad (+0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}}$	$2.097 \pm 0.030 \quad (+0.3\sigma)$	$D_{\mathrm{M}}(2.33)$	$5766 \pm 11 \quad (-0.8\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5_{-1.9}^{+2.2} \quad (+0.2\sigma)$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.883 \pm 0.011 \quad (+0.0\sigma)$	$f\sigma_8(0.15)$	$0.4598 \pm 0.0064 \quad (-0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$258 \pm 28 \quad (-0.2\sigma)$	$D_{40}$	$1233 \pm 12 \quad (-0.0\sigma)$	$\sigma_8(0.15)$	$0.7486 \pm 0.0054 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{220}$	$5734 \pm 38 \quad (+0.5\sigma)$	$f\sigma_8(0.38)$	$0.4771 \pm 0.0052 \quad (-0.1\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6631 \pm 0.0048 \quad (+0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{1420}$	$817.5 \pm 4.8 \quad (+0.5\sigma)$	$f\sigma_8(0.51)$	$0.4752 \pm 0.0045 \quad (-0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.20 \quad (-0.2\sigma)$	$D_{2000}$	$231.0 \pm 1.6 \quad (+0.7\sigma)$	$\sigma_8(0.51)$	$0.6204 \pm 0.0045 \quad (+0.2\sigma)$
$A_{100}^{\mathrm{dust}TT}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$n_{\mathrm{s},0.002}$	$0.9641 \pm 0.0044 \quad (+0.3\sigma)$	$f\sigma_8(0.61)$	$0.4699 \pm 0.0041 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dust}TT}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}$	$0.2432 \pm 0.0038 \quad (-0.1\sigma)$	$\sigma_8(0.61)$	$0.5902 \pm 0.0043 \quad (+0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TT}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2445 \pm 0.0038 \quad (-0.1\sigma)$	$f\sigma_8(2.33)$	$0.2974 \pm 0.0023 \quad (+0.2\sigma)$
$A_{217}^{\mathrm{dust}TT}$	$93.8 \pm 7.4 \quad (+0.0\sigma)$	Age/Gyr	$13.802 \pm 0.024 \quad (-0.8\sigma)$	$\sigma_8(2.33)$	$0.3064 \pm 0.0024 \quad (+0.3\sigma)$
$A_{100}^{\mathrm{dust}TE}$	$0.115 \pm 0.037$	$z_*$	$1089.87 \pm 0.27 \quad (-0.9\sigma)$	$f_{2000}^{143}$	$29.3 \pm 2.8 \quad (-0.6\sigma)$
$A_{100 \times 143}^{\mathrm{dust}TE}$	$0.135 \pm 0.029$	$r_*$	$144.45 \pm 0.27 \quad (-0.3\sigma)$	$f_{2000}^{143 \times 217}$	$32.1 \pm 1.9 \quad (-0.6\sigma)$
$A_{100 \times 217}^{\mathrm{dust}TE}$	$0.483 \pm 0.085$	$100\theta_*$	$1.04109 \pm 0.00031 \quad (+0.1\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.8 \quad (-0.6\sigma)$
$A_{143}^{\mathrm{dust}TE}$	$0.225 \pm 0.053$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.875 \pm 0.025 \quad (-0.3\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.21 \pm 0.67 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\mathrm{dust}TE}$	$0.666 \pm 0.080$	$z_{\mathrm{drag}}$	$1059.80 \pm 0.37 \quad (+1.0\sigma)$	$\chi_{\mathrm{small}}^2$	$397.0 \pm 1.7 \quad (+0.1\sigma)$
$A_{217}^{\mathrm{dust}TE}$	$2.09 \pm 0.27$	$r_{\mathrm{drag}}$	$147.12 \pm 0.27 \quad (-0.5\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.64 \pm 0.93 \quad (-0.1\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\mathrm{D}}$	$0.14090 \pm 0.00031 \quad (+0.8\sigma)$	$\chi_{\mathrm{plik}}^2$	$2359.3 \pm 5.7 \quad (+301.9\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16069 \pm 0.00021 \quad (-1.1\sigma)$	$\chi_{\mathrm{Aver15}}^2$	$0.9 \pm 1.2 \quad (-0.1\sigma)$
$H_0$	$67.30 \pm 0.55 \quad (+0.4\sigma)$	$z_{\mathrm{eq}}$	$3402 \pm 27 \quad (+0.0\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\Lambda}$	$0.6841 \pm 0.0075 \quad (+0.3\sigma)$	$k_{\mathrm{eq}}$	$0.010384 \pm 0.000082 \quad (+0.0\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2789.1 \pm 5.9 \quad (+287.0\sigma)$
$\Omega_{\mathrm{m}}$	$0.3159 \pm 0.0075 \quad (-0.3\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8132 \pm 0.0051 \quad (+0.1\sigma)$		
$\Omega_{\mathrm{m}}h^2$	$0.1430 \pm 0.0011 \quad (+0.0\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4493 \pm 0.0026 \quad (+0.0\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2801.50; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.16; R - 1 = 0.01555$$



20.58 base\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_BAO\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02240 \pm 0.00014 \quad (+1.1\sigma)$	$\sigma_8$	$0.8098 \pm 0.0060 \quad (+0.2\sigma)$	$H(0.38)$	$83.02 \pm 0.27 \quad (+0.4\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.11932 \pm 0.00093 \quad (+0.2\sigma)$	$S_8$	$0.825 \pm 0.010 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1529.0 \pm 7.3 \quad (-0.3\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04095 \pm 0.00031 \quad (-0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4518 \pm 0.0057 \quad (+0.1\sigma)$	$H(0.51)$	$89.74 \pm 0.22 \quad (+0.5\sigma)$
$\tau$	$0.0560 \pm 0.0073 \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6049 \pm 0.0056 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1980.8 \pm 8.6 \quad (-0.3\sigma)$
$Y_{\mathrm{P}}$	$0.2434 \pm 0.0037 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9847 \pm 0.0083 \quad (+0.1\sigma)$	$H(0.61)$	$95.36 \pm 0.19 \quad (+0.6\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046 \pm 0.014 \quad (+0.2\sigma)$	$r_{\mathrm{drag}}h$	$99.58 \pm 0.72 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2304.9 \pm 9.3 \quad (-0.3\sigma)$
$n_{\mathrm{s}}$	$0.9659 \pm 0.0039 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.439 \pm 0.020 \quad (+0.1\sigma)$	$H(2.33)$	$236.14 \pm 0.57 \quad (+0.5\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0024 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.81 \pm 0.73 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5760.6 \pm 9.2 \quad (-0.7\sigma)$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}}$	$2.103 \pm 0.030 \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4564 \pm 0.0054 \quad (+0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.880 \pm 0.010 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.7483 \pm 0.0055 \quad (+0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5_{-1.9}^{+2.1} \quad (+0.2\sigma)$	$D_{40}$	$1230 \pm 11 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4748 \pm 0.0046 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$257 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5739 \pm 37 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6633 \pm 0.0048 \quad (+0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4734 \pm 0.0041 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$818.1 \pm 4.8 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.6208 \pm 0.0046 \quad (+0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$231.3 \pm 1.6 \quad (+0.7\sigma)$	$f\sigma_8(0.61)$	$0.4684 \pm 0.0039 \quad (+0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.10 \quad (-0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.9659 \pm 0.0039 \quad (+0.1\sigma)$	$\sigma_8(0.61)$	$0.5907 \pm 0.0044 \quad (+0.2\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.2434 \pm 0.0037 \quad (-0.1\sigma)$	$f\sigma_8(2.33)$	$0.2978 \pm 0.0022 \quad (+0.2\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2448 \pm 0.0038 \quad (-0.1\sigma)$	$\sigma_8(2.33)$	$0.3071 \pm 0.0024 \quad (+0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	Age/Gyr	$13.791 \pm 0.021 \quad (-0.7\sigma)$	$f_{2000}^{143}$	$29.1 \pm 2.8 \quad (-0.5\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.8 \pm 7.3 \quad (+0.1\sigma)$	$z_*$	$1089.75 \pm 0.24 \quad (-0.9\sigma)$	$f_{2000}^{143 \times 217}$	$31.9 \pm 1.9 \quad (-0.6\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.116 \pm 0.037$	$r_*$	$144.59 \pm 0.23 \quad (-0.7\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.8 \quad (-0.5\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.134 \pm 0.029$	$100\theta_*$	$1.04118 \pm 0.00029 \quad (-0.0\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.08 \pm 0.56 \quad (-0.2\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.482 \pm 0.086$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.888 \pm 0.022 \quad (-0.7\sigma)$	$\chi_{\mathrm{small}}^2$	$397.2 \pm 1.9 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.224 \pm 0.053$	$z_{\mathrm{drag}}$	$1059.88 \pm 0.36 \quad (+1.0\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.32 \pm 0.82 \quad (+0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.665 \pm 0.081$	$r_{\mathrm{drag}}$	$147.25 \pm 0.24 \quad (-0.9\sigma)$	$\chi_{\mathrm{plik}}^2$	$2359.4 \pm 5.8 \quad (+305.2\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.27$	$k_{\mathrm{D}}$	$0.14080 \pm 0.00029 \quad (+1.1\sigma)$	$\chi_{\mathrm{Aver15}}^2$	$0.9 \pm 1.2 \quad (-0.1\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16067 \pm 0.00021 \quad (-1.1\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.056 \pm 0.062 \quad (-0.0\sigma)$
$c_{217}$	$0.99818 \pm 0.00062 \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3387 \pm 21 \quad (+0.4\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.23 \pm 0.39 \quad (-0.1\sigma)$
$H_0$	$67.62 \pm 0.42 \quad (+0.2\sigma)$	$k_{\mathrm{eq}}$	$0.010336 \pm 0.000065 \quad (+0.4\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 \pm 1.4 \quad (+0.0\sigma)$
$\Omega_{\Lambda}$	$0.6886 \pm 0.0057 \quad (+0.0\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8162 \pm 0.0040 \quad (-0.3\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.3114 \pm 0.0057 \quad (-0.0\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4509 \pm 0.0020 \quad (-0.3\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2789.1 \pm 5.9 \quad (+294.9\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14236 \pm 0.00089 \quad (+0.4\sigma)$	$H(0.15)$	$72.91 \pm 0.37 \quad (+0.2\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.1 \quad (-0.0\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09627 \pm 0.00032 \quad (+0.9\sigma)$	$D_{\mathrm{M}}(0.15)$	$641.1 \pm 3.6 \quad (-0.2\sigma)$		

$\bar{\chi}_{\mathrm{eff}}^2 = 2807.65$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.11$ ;  $R - 1 = 0.02242$



20.59 base\_yhe\_plikHM\_TTTEE\_lowl\_lowE\_Aver15\_post\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02233 \pm 0.00015 \quad (+1.1\sigma)$	$\Omega_{\mathrm{m}}h^2$	$0.1432 \pm 0.0013 \quad (-0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8125 \pm 0.0058 \quad (+0.1\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1202 \pm 0.0014 \quad (-0.2\sigma)$	$\Omega_{\mathrm{m}}h^3$	$0.09625 \pm 0.00032 \quad (+0.9\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4490 \pm 0.0030 \quad (+0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04084 \pm 0.00034 \quad (+0.2\sigma)$	$\sigma_8$	$0.8123 \pm 0.0070 \quad (-0.0\sigma)$	$H(0.15)$	$72.57 \pm 0.52 \quad (+0.4\sigma)$
$\tau$	$0.0553^{+0.0054}_{-0.0081} \quad (+0.2\sigma)$	$S_8$	$0.835 \pm 0.016 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.15)$	$644.5 \pm 5.3 \quad (-0.4\sigma)$
$Y_{\mathrm{P}}$	$0.2433 \pm 0.0038 \quad (-0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4573 \pm 0.0088 \quad (-0.2\sigma)$	$H(0.38)$	$82.78 \pm 0.38 \quad (+0.5\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046^{+0.012}_{-0.016} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6095 \pm 0.0081 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.38)$	$1536 \pm 11 \quad (-0.4\sigma)$
$n_{\mathrm{s}}$	$0.9640 \pm 0.0046 \quad (+0.3\sigma)$	$\sigma_8/h^{0.5}$	$0.991 \pm 0.011 \quad (-0.2\sigma)$	$H(0.51)$	$89.55 \pm 0.30 \quad (+0.5\sigma)$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025 \quad (+0.1\sigma)$	$r_{\mathrm{drag}}h$	$98.9 \pm 1.1 \quad (+0.3\sigma)$	$D_{\mathrm{M}}(0.51)$	$1989 \pm 12 \quad (-0.4\sigma)$
$A_{217}^{\mathrm{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.452 \pm 0.028 \quad (-0.1\sigma)$	$H(0.61)$	$95.22 \pm 0.24 \quad (+0.6\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$z_{\mathrm{re}}$	$7.77^{+0.59}_{-0.80} \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.61)$	$2313 \pm 13 \quad (-0.4\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.104^{+0.025}_{-0.034} \quad (+0.2\sigma)$	$H(2.33)$	$236.65 \pm 0.82 \quad (-0.0\sigma)$
$A_{100}^{\mathrm{PS}}$	$257 \pm 28 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.883 \pm 0.012 \quad (-0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	$5767 \pm 11 \quad (-0.7\sigma)$
$A_{143}^{\mathrm{PS}}$	$46 \pm 8 \quad (-0.4\sigma)$	$D_{40}$	$1234 \pm 13 \quad (-0.0\sigma)$	$f\sigma_8(0.15)$	$0.4614 \pm 0.0082 \quad (-0.2\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$43 \pm 9 \quad (-0.1\sigma)$	$D_{220}$	$5732 \pm 38 \quad (+0.5\sigma)$	$\sigma_8(0.15)$	$0.7501^{+0.0057}_{-0.0064} \quad (+0.0\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4786 \pm 0.0066 \quad (-0.2\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.05 \quad (-0.2\sigma)$	$D_{1420}$	$817.5 \pm 4.8 \quad (+0.6\sigma)$	$\sigma_8(0.38)$	$0.6643^{+0.0046}_{-0.0055} \quad (+0.1\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$D_{2000}$	$231.1 \pm 1.6 \quad (+0.7\sigma)$	$f\sigma_8(0.51)$	$0.4765 \pm 0.0058 \quad (-0.1\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.8 \pm 1.8 \quad (+0.1\sigma)$	$n_{\mathrm{s},0.002}$	$0.9640 \pm 0.0046 \quad (+0.3\sigma)$	$\sigma_8(0.51)$	$0.6215^{+0.0042}_{-0.0051} \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.5 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}$	$0.2433 \pm 0.0038 \quad (-0.1\sigma)$	$f\sigma_8(0.61)$	$0.4711 \pm 0.0052 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.7 \pm 7.3 \quad (+0.0\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2446 \pm 0.0038 \quad (-0.1\sigma)$	$\sigma_8(0.61)$	$0.5912^{+0.0039}_{-0.0049} \quad (+0.2\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.115 \pm 0.038$	Age/Gyr	$13.804 \pm 0.026 \quad (-0.8\sigma)$	$f\sigma_8(2.33)$	$0.2979^{+0.0019}_{-0.0025} \quad (+0.2\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.135 \pm 0.029$	$z_*$	$1089.90 \pm 0.29 \quad (-0.9\sigma)$	$\sigma_8(2.33)$	$0.3069^{+0.0020}_{-0.0026} \quad (+0.3\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.484 \pm 0.084$	$r_*$	$144.42 \pm 0.30 \quad (-0.2\sigma)$	$f_{2000}^{143}$	$29.2 \pm 2.8 \quad (-0.6\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.225 \pm 0.053$	$100\theta_*$	$1.04108 \pm 0.00032 \quad (+0.2\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 1.9 \quad (-0.7\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.668 \pm 0.080$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.872 \pm 0.028 \quad (-0.2\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.8 \quad (-0.6\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.27$	$z_{\mathrm{drag}}$	$1059.80 \pm 0.37 \quad (+1.0\sigma)$	$\chi_{\mathrm{small}}^2$	$397.1 \pm 1.9 \quad (+0.1\sigma)$
$c_{100}$	$0.99967 \pm 0.00061 \quad (+0.1\sigma)$	$r_{\mathrm{drag}}$	$147.09 \pm 0.30 \quad (-0.3\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.7 \pm 1.0 \quad (-0.2\sigma)$
$c_{217}$	$0.99818 \pm 0.00062 \quad (-0.1\sigma)$	$k_{\mathrm{D}}$	$0.14093 \pm 0.00033 \quad (+0.7\sigma)$	$\chi_{\mathrm{plik}}^2$	$2359.3 \pm 5.8 \quad (+291.5\sigma)$
$H_0$	$67.23 \pm 0.61 \quad (+0.4\sigma)$	$100\theta_{\mathrm{D}}$	$0.16070 \pm 0.00022 \quad (-1.1\sigma)$	$\chi_{\mathrm{Aver15}}^2$	$0.9 \pm 1.2 \quad (-0.1\sigma)$
$\Omega_{\Lambda}$	$0.6831 \pm 0.0085 \quad (+0.3\sigma)$	$z_{\mathrm{eq}}$	$3406 \pm 31 \quad (-0.1\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.3169 \pm 0.0085 \quad (-0.3\sigma)$	$k_{\mathrm{eq}}$	$0.010396 \pm 0.000094 \quad (-0.1\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2780.1 \pm 5.8 \quad (+291.4\sigma)$

$\bar{\chi}_{\mathrm{eff}}^2 = 2792.46$ ;  $\Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.31$ ;  $R - 1 = 0.01390$



20.60 base\_yhe\_plikHM\_TTTEE\_lowl\_lowE\_Aver15\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02240 \pm 0.00014 \quad (+1.0\sigma)$	$\sigma_8$	$0.8099^{+0.0062}_{-0.0072} \quad (+0.3\sigma)$	$H(0.38)$	$83.03 \pm 0.29 \quad (+0.2\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.1193 \pm 0.0010 \quad (+0.3\sigma)$	$S_8$	$0.825 \pm 0.012 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.38)$	$1528.8 \pm 7.7 \quad (-0.1\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04096 \pm 0.00031 \quad (-0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4518 \pm 0.0068 \quad (+0.2\sigma)$	$H(0.51)$	$89.74 \pm 0.23 \quad (+0.4\sigma)$
$\tau$	$0.0563^{+0.0057}_{-0.0081} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6049 \pm 0.0067 \quad (+0.2\sigma)$	$D_{\mathrm{M}}(0.51)$	$1980.5 \pm 9.1 \quad (-0.2\sigma)$
$Y_{\mathrm{P}}$	$0.2436 \pm 0.0037 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9848 \pm 0.0097 \quad (+0.2\sigma)$	$H(0.61)$	$95.36 \pm 0.19 \quad (+0.5\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.046^{+0.013}_{-0.016} \quad (+0.3\sigma)$	$r_{\mathrm{drag}}h$	$99.60 \pm 0.77 \quad (-0.2\sigma)$	$D_{\mathrm{M}}(0.61)$	$2304.6 \pm 9.8 \quad (-0.2\sigma)$
$n_{\mathrm{s}}$	$0.9662 \pm 0.0040 \quad (+0.0\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.438 \pm 0.024 \quad (+0.3\sigma)$	$H(2.33)$	$236.12 \pm 0.62 \quad (+0.5\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0025 \quad (+0.1\sigma)$	$z_{\mathrm{re}}$	$7.85^{+0.62}_{-0.81} \quad (+0.1\sigma)$	$D_{\mathrm{M}}(2.33)$	$5760.4 \pm 9.4 \quad (-0.6\sigma)$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7 \quad (-0.2\sigma)$	$10^9 A_{\mathrm{s}}$	$2.104^{+0.026}_{-0.035} \quad (+0.3\sigma)$	$f\sigma_8(0.15)$	$0.4564 \pm 0.0064 \quad (+0.2\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.880 \pm 0.011 \quad (+0.3\sigma)$	$\sigma_8(0.15)$	$0.7485^{+0.0055}_{-0.0065} \quad (+0.3\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.1}_{-1.8} \quad (+0.2\sigma)$	$D_{40}$	$1229 \pm 12 \quad (+0.2\sigma)$	$f\sigma_8(0.38)$	$0.4748 \pm 0.0054 \quad (+0.2\sigma)$
$A_{100}^{\mathrm{PS}}$	$257 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5737 \pm 38 \quad (+0.5\sigma)$	$\sigma_8(0.38)$	$0.6635^{+0.0046}_{-0.0057} \quad (+0.3\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.3\sigma)$	$f\sigma_8(0.51)$	$0.4734 \pm 0.0049 \quad (+0.3\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$818.0 \pm 4.8 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.6209^{+0.0043}_{-0.0053} \quad (+0.3\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$231.3 \pm 1.6 \quad (+0.7\sigma)$	$f\sigma_8(0.61)$	$0.4685 \pm 0.0046 \quad (+0.3\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.08 \quad (-0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.9662 \pm 0.0040 \quad (+0.0\sigma)$	$\sigma_8(0.61)$	$0.5908^{+0.0040}_{-0.0050} \quad (+0.3\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.2436 \pm 0.0037 \quad (-0.1\sigma)$	$f\sigma_8(2.33)$	$0.2979^{+0.0020}_{-0.0026} \quad (+0.3\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2449 \pm 0.0037 \quad (-0.1\sigma)$	$\sigma_8(2.33)$	$0.3072^{+0.0021}_{-0.0027} \quad (+0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	Age/Gyr	$13.791 \pm 0.021 \quad (-0.6\sigma)$	$f_{2000}^{143}$	$29.1 \pm 2.8 \quad (-0.6\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.8 \pm 7.4 \quad (+0.1\sigma)$	$z_*$	$1089.75 \pm 0.25 \quad (-0.8\sigma)$	$f_{2000}^{143 \times 217}$	$31.9 \pm 1.9 \quad (-0.6\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.116 \pm 0.037$	$r_*$	$144.60 \pm 0.24 \quad (-0.8\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.8 \quad (-0.5\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.134 \pm 0.029$	$100\theta_*$	$1.04119 \pm 0.00029 \quad (-0.1\sigma)$	$\chi_{\mathrm{small}}^2$	$397.2 \pm 2.1 \quad (+0.1\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.483 \pm 0.087$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.888 \pm 0.023 \quad (-0.7\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.27 \pm 0.87 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.224 \pm 0.054$	$z_{\mathrm{drag}}$	$1059.88 \pm 0.36 \quad (+1.0\sigma)$	$\chi_{\mathrm{plik}}^2$	$2359.7 \pm 6.0 \quad (+296.9\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.664 \pm 0.081$	$r_{\mathrm{drag}}$	$147.26 \pm 0.25 \quad (-0.9\sigma)$	$\chi_{\mathrm{Aver15}}^2$	$0.9 \pm 1.2 \quad (-0.1\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.07 \pm 0.27$	$k_{\mathrm{D}}$	$0.14079 \pm 0.00030 \quad (+1.1\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.058 \pm 0.067 \quad (+0.0\sigma)$
$c_{100}$	$0.99966 \pm 0.00062 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16067 \pm 0.00021 \quad (-1.1\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.25 \pm 0.42 \quad (-0.2\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3386 \pm 23 \quad (+0.5\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 \pm 1.5 \quad (+0.1\sigma)$
$H_0$	$67.64 \pm 0.45 \quad (+0.1\sigma)$	$k_{\mathrm{eq}}$	$0.010334 \pm 0.000070 \quad (+0.5\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\Lambda}$	$0.6888 \pm 0.0061 \quad (-0.1\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8163 \pm 0.0043 \quad (-0.4\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.2 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}$	$0.3112 \pm 0.0061 \quad (+0.1\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4510 \pm 0.0022 \quad (-0.4\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2780.2 \pm 5.9 \quad (+298.7\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14233 \pm 0.00096 \quad (+0.5\sigma)$	$H(0.15)$	$72.92 \pm 0.39 \quad (+0.1\sigma)$		
$\Omega_{\mathrm{m}}h^3$	$0.09627 \pm 0.00032 \quad (+0.9\sigma)$	$D_{\mathrm{M}}(0.15)$	$641.0 \pm 3.8 \quad (-0.1\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2798.81; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.39; R - 1 = 0.02120$$



20.61 base\_yhe\_plikHM\_TTTEE\_lowl\_lowE\_Aver15\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\text{b}}h^2$	$0.02235 \pm 0.00015 \quad (+1.1\sigma)$	$\Omega_{\text{m}}h^3$	$0.09625 \pm 0.00032 \quad (+0.9\sigma)$	$H(0.15)$	$72.65 \pm 0.46 \quad (+0.4\sigma)$
$\Omega_{\text{c}}h^2$	$0.1200 \pm 0.0012 \quad (-0.1\sigma)$	$\sigma_8$	$0.8111 \pm 0.0057 \quad (+0.0\sigma)$	$D_{\text{M}}(0.15)$	$643.7 \pm 4.6 \quad (-0.4\sigma)$
$100\theta_{\text{MC}}$	$1.04085 \pm 0.00033 \quad (+0.1\sigma)$	$S_8$	$0.832 \pm 0.013 \quad (-0.2\sigma)$	$H(0.38)$	$82.84 \pm 0.34 \quad (+0.5\sigma)$
$\tau$	$0.0550^{+0.0055}_{-0.0076} \quad (+0.2\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.5}$	$0.4556 \pm 0.0070 \quad (-0.2\sigma)$	$D_{\text{M}}(0.38)$	$1534.1 \pm 9.2 \quad (-0.4\sigma)$
$Y_{\text{P}}$	$0.2433 \pm 0.0038 \quad (-0.1\sigma)$	$\sigma_8\Omega_{\text{m}}^{0.25}$	$0.6079 \pm 0.0063 \quad (-0.1\sigma)$	$H(0.51)$	$89.60 \pm 0.27 \quad (+0.6\sigma)$
$\ln(10^{10}A_{\text{s}})$	$3.045^{+0.011}_{-0.014} \quad (+0.2\sigma)$	$\sigma_8/h^{0.5}$	$0.9886 \pm 0.0088 \quad (-0.2\sigma)$	$D_{\text{M}}(0.51)$	$1987 \pm 11 \quad (-0.4\sigma)$
$n_{\text{s}}$	$0.9643 \pm 0.0043 \quad (+0.2\sigma)$	$r_{\text{drag}}h$	$99.06 \pm 0.92 \quad (+0.2\sigma)$	$H(0.61)$	$95.25 \pm 0.22 \quad (+0.6\sigma)$
$y_{\text{cal}}$	$1.0006 \pm 0.0025 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.448 \pm 0.021 \quad (-0.1\sigma)$	$D_{\text{M}}(0.61)$	$2311 \pm 12 \quad (-0.4\sigma)$
$A_{217}^{\text{CIB}}$	$47 \pm 7 \quad (-0.2\sigma)$	$z_{\text{re}}$	$7.73^{+0.59}_{-0.76} \quad (+0.1\sigma)$	$H(2.33)$	$236.51 \pm 0.70 \quad (+0.1\sigma)$
$\xi^{\text{tSZ} \times \text{CIB}}$	—	$10^9 A_{\text{s}}$	$2.101^{+0.023}_{-0.031} \quad (+0.2\sigma)$	$D_{\text{M}}(2.33)$	$5765 \pm 11 \quad (-0.7\sigma)$
$A_{143}^{\text{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$10^9 A_{\text{s}} e^{-2\tau}$	$1.882 \pm 0.011 \quad (+0.1\sigma)$	$f\sigma_8(0.15)$	$0.4598 \pm 0.0064 \quad (-0.2\sigma)$
$A_{100}^{\text{PS}}$	$257 \pm 28 \quad (-0.2\sigma)$	$D_{40}$	$1233 \pm 12 \quad (+0.0\sigma)$	$\sigma_8(0.15)$	$0.7492 \pm 0.0050 \quad (+0.1\sigma)$
$A_{143}^{\text{PS}}$	$45 \pm 8 \quad (-0.4\sigma)$	$D_{220}$	$5734 \pm 38 \quad (+0.5\sigma)$	$f\sigma_8(0.38)$	$0.4773 \pm 0.0051 \quad (-0.1\sigma)$
$A_{143 \times 217}^{\text{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.2\sigma)$	$\sigma_8(0.38)$	$0.6636^{+0.0041}_{-0.0047} \quad (+0.1\sigma)$
$A_{217}^{\text{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{1420}$	$817.4 \pm 4.8 \quad (+0.5\sigma)$	$f\sigma_8(0.51)$	$0.4754 \pm 0.0045 \quad (-0.1\sigma)$
$A^{\text{kSZ}}$	$< 4.20 \quad (-0.2\sigma)$	$D_{2000}$	$231.1 \pm 1.6 \quad (+0.7\sigma)$	$\sigma_8(0.51)$	$0.6209^{+0.0038}_{-0.0045} \quad (+0.2\sigma)$
$A_{100}^{\text{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$n_{\text{s},0.002}$	$0.9643 \pm 0.0043 \quad (+0.2\sigma)$	$f\sigma_8(0.61)$	$0.4701 \pm 0.0041 \quad (-0.1\sigma)$
$A_{143}^{\text{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\text{P}}$	$0.2433 \pm 0.0038 \quad (-0.1\sigma)$	$\sigma_8(0.61)$	$0.5907^{+0.0036}_{-0.0043} \quad (+0.2\sigma)$
$A_{143 \times 217}^{\text{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	$Y_{\text{P}}^{\text{BBN}}$	$0.2446 \pm 0.0038 \quad (-0.1\sigma)$	$f\sigma_8(2.33)$	$0.2977^{+0.0018}_{-0.0023} \quad (+0.2\sigma)$
$A_{217}^{\text{dustTT}}$	$93.8 \pm 7.4 \quad (+0.0\sigma)$	Age/Gyr	$13.801 \pm 0.024 \quad (-0.8\sigma)$	$\sigma_8(2.33)$	$0.3067^{+0.0020}_{-0.0024} \quad (+0.2\sigma)$
$A_{100}^{\text{dustTE}}$	$0.116 \pm 0.037$	$z_*$	$1089.86 \pm 0.27 \quad (-0.9\sigma)$	$f_{2000}^{143}$	$29.3 \pm 2.8 \quad (-0.6\sigma)$
$A_{100 \times 143}^{\text{dustTE}}$	$0.135 \pm 0.029$	$r_*$	$144.47 \pm 0.26 \quad (-0.4\sigma)$	$f_{2000}^{143 \times 217}$	$32.0 \pm 1.9 \quad (-0.6\sigma)$
$A_{100 \times 217}^{\text{dustTE}}$	$0.484 \pm 0.085$	$100\theta_*$	$1.04109 \pm 0.00031 \quad (+0.1\sigma)$	$f_{2000}^{217}$	$106.9 \pm 1.8 \quad (-0.6\sigma)$
$A_{143}^{\text{dustTE}}$	$0.225 \pm 0.053$	$D_{\text{M}}(z_*)/\text{Gpc}$	$13.876 \pm 0.025 \quad (-0.4\sigma)$	$\chi_{\text{lensing}}^2$	$9.20 \pm 0.67 \quad (-0.3\sigma)$
$A_{143 \times 217}^{\text{dustTE}}$	$0.666 \pm 0.080$	$z_{\text{drag}}$	$1059.81 \pm 0.37 \quad (+1.0\sigma)$	$\chi_{\text{small}}^2$	$396.9 \pm 1.7 \quad (+0.1\sigma)$
$A_{217}^{\text{dustTE}}$	$2.08 \pm 0.27$	$r_{\text{drag}}$	$147.13 \pm 0.27 \quad (-0.5\sigma)$	$\chi_{\text{lowl}}^2$	$23.62 \pm 0.93 \quad (-0.1\sigma)$
$c_{100}$	$0.99965 \pm 0.00061 \quad (+0.1\sigma)$	$k_{\text{D}}$	$0.14089 \pm 0.00031 \quad (+0.9\sigma)$	$\chi_{\text{plik}}^2$	$2359.1 \pm 5.7 \quad (+302.0\sigma)$
$c_{217}$	$0.99819 \pm 0.00062 \quad (-0.1\sigma)$	$100\theta_{\text{D}}$	$0.16069 \pm 0.00021 \quad (-1.1\sigma)$	$\chi_{\text{Aver15}}^2$	$0.9 \pm 1.3 \quad (-0.1\sigma)$
$H_0$	$67.33 \pm 0.54 \quad (+0.4\sigma)$	$z_{\text{eq}}$	$3401 \pm 26 \quad (+0.1\sigma)$	$\chi_{\text{prior}}^2$	$11.5 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\Lambda}$	$0.6845 \pm 0.0073 \quad (+0.2\sigma)$	$k_{\text{eq}}$	$0.010380 \pm 0.000081 \quad (+0.1\sigma)$	$\chi_{\text{CMB}}^2$	$2788.9 \pm 5.8 \quad (+290.9\sigma)$
$\Omega_{\text{m}}$	$0.3155 \pm 0.0073 \quad (-0.2\sigma)$	$100\theta_{\text{eq}}$	$0.8135 \pm 0.0050 \quad (+0.0\sigma)$		
$\Omega_{\text{m}}h^2$	$0.1430 \pm 0.0011 \quad (+0.1\sigma)$	$100\theta_{\text{s,eq}}$	$0.4495 \pm 0.0025 \quad (-0.0\sigma)$		

$$\bar{\chi}_{\text{eff}}^2 = 2801.26; \Delta\bar{\chi}_{\text{eff}}^2 = 1592.22; R - 1 = 0.01556$$



20.62 base\_yhe\_plikHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_BAO\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02240 \pm 0.00014 \quad (+1.1\sigma)$	$\sigma_8$	$0.8101 \pm 0.0057 \quad (+0.2\sigma)$	$H(0.38)$	$83.03 \pm 0.27 \quad (+0.4\sigma)$
$\Omega_{\mathrm{c}}h^2$	$0.11929 \pm 0.00093 \quad (+0.2\sigma)$	$S_8$	$0.825 \pm 0.010 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.38)$	$1528.8 \pm 7.3 \quad (-0.2\sigma)$
$100\theta_{\mathrm{MC}}$	$1.04095 \pm 0.00031 \quad (-0.0\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4519 \pm 0.0057 \quad (+0.1\sigma)$	$H(0.51)$	$89.74 \pm 0.22 \quad (+0.5\sigma)$
$\tau$	$0.0566^{+0.0058}_{-0.0076} \quad (+0.1\sigma)$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6051 \pm 0.0056 \quad (+0.1\sigma)$	$D_{\mathrm{M}}(0.51)$	$1980.5 \pm 8.5 \quad (-0.3\sigma)$
$Y_{\mathrm{P}}$	$0.2435 \pm 0.0037 \quad (-0.1\sigma)$	$\sigma_8/h^{0.5}$	$0.9851 \pm 0.0081 \quad (+0.1\sigma)$	$H(0.61)$	$95.36 \pm 0.19 \quad (+0.6\sigma)$
$\ln(10^{10}A_{\mathrm{s}})$	$3.047^{+0.012}_{-0.015} \quad (+0.2\sigma)$	$r_{\mathrm{drag}}h$	$99.60 \pm 0.72 \quad (-0.1\sigma)$	$D_{\mathrm{M}}(0.61)$	$2304.7 \pm 9.2 \quad (-0.3\sigma)$
$n_{\mathrm{s}}$	$0.9660 \pm 0.0039 \quad (+0.1\sigma)$	$\langle d^2 \rangle^{1/2}$	$2.439 \pm 0.020 \quad (+0.1\sigma)$	$H(2.33)$	$236.13 \pm 0.57 \quad (+0.5\sigma)$
$y_{\mathrm{cal}}$	$1.0007 \pm 0.0024 \quad (+0.0\sigma)$	$z_{\mathrm{re}}$	$7.87^{+0.62}_{-0.74} \quad (+0.0\sigma)$	$D_{\mathrm{M}}(2.33)$	$5760.4 \pm 9.2 \quad (-0.7\sigma)$
$A_{217}^{\mathrm{CIB}}$	$46 \pm 7 \quad (-0.1\sigma)$	$10^9 A_{\mathrm{s}}$	$2.105^{+0.025}_{-0.031} \quad (+0.2\sigma)$	$f\sigma_8(0.15)$	$0.4565 \pm 0.0054 \quad (+0.1\sigma)$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$10^9 A_{\mathrm{s}} e^{-2\tau}$	$1.880 \pm 0.010 \quad (+0.2\sigma)$	$\sigma_8(0.15)$	$0.7486 \pm 0.0052 \quad (+0.2\sigma)$
$A_{143}^{\mathrm{tSZ}}$	$5.5^{+2.1}_{-1.9} \quad (+0.2\sigma)$	$D_{40}$	$1230 \pm 11 \quad (+0.1\sigma)$	$f\sigma_8(0.38)$	$0.4749 \pm 0.0045 \quad (+0.1\sigma)$
$A_{100}^{\mathrm{PS}}$	$257 \pm 28 \quad (-0.2\sigma)$	$D_{220}$	$5739 \pm 37 \quad (+0.4\sigma)$	$\sigma_8(0.38)$	$0.6636^{+0.0043}_{-0.0049} \quad (+0.2\sigma)$
$A_{143}^{\mathrm{PS}}$	$45 \pm 8 \quad (-0.4\sigma)$	$D_{810}$	$2539 \pm 13 \quad (+0.2\sigma)$	$f\sigma_8(0.51)$	$0.4736 \pm 0.0041 \quad (+0.1\sigma)$
$A_{143 \times 217}^{\mathrm{PS}}$	$42 \pm 9 \quad (-0.1\sigma)$	$D_{1420}$	$818.1 \pm 4.8 \quad (+0.5\sigma)$	$\sigma_8(0.51)$	$0.6211^{+0.0040}_{-0.0046} \quad (+0.2\sigma)$
$A_{217}^{\mathrm{PS}}$	$115 \pm 10 \quad (+0.0\sigma)$	$D_{2000}$	$231.3 \pm 1.6 \quad (+0.7\sigma)$	$f\sigma_8(0.61)$	$0.4686 \pm 0.0038 \quad (+0.1\sigma)$
$A^{\mathrm{kSZ}}$	$< 4.10 \quad (-0.2\sigma)$	$n_{\mathrm{s},0.002}$	$0.9660 \pm 0.0039 \quad (+0.1\sigma)$	$\sigma_8(0.61)$	$0.5910^{+0.0038}_{-0.0044} \quad (+0.2\sigma)$
$A_{100}^{\mathrm{dustTT}}$	$8.9 \pm 1.8 \quad (-0.0\sigma)$	$Y_{\mathrm{P}}$	$0.2435 \pm 0.0037 \quad (-0.1\sigma)$	$f\sigma_8(2.33)$	$0.2980^{+0.0019}_{-0.0023} \quad (+0.2\sigma)$
$A_{143}^{\mathrm{dustTT}}$	$10.9 \pm 1.8 \quad (+0.1\sigma)$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2448 \pm 0.0038 \quad (-0.1\sigma)$	$\sigma_8(2.33)$	$0.3072^{+0.0020}_{-0.0024} \quad (+0.2\sigma)$
$A_{143 \times 217}^{\mathrm{dustTT}}$	$18.6 \pm 3.3 \quad (+0.1\sigma)$	Age/Gyr	$13.791 \pm 0.021 \quad (-0.7\sigma)$	$f_{2000}^{143}$	$29.1 \pm 2.8 \quad (-0.5\sigma)$
$A_{217}^{\mathrm{dustTT}}$	$93.8 \pm 7.4 \quad (+0.1\sigma)$	$z_*$	$1089.75 \pm 0.24 \quad (-0.9\sigma)$	$f_{2000}^{143 \times 217}$	$31.8 \pm 1.9 \quad (-0.6\sigma)$
$A_{100}^{\mathrm{dustTE}}$	$0.116 \pm 0.037$	$r_*$	$144.60 \pm 0.22 \quad (-0.7\sigma)$	$f_{2000}^{217}$	$106.8 \pm 1.8 \quad (-0.5\sigma)$
$A_{100 \times 143}^{\mathrm{dustTE}}$	$0.134 \pm 0.029$	$100\theta_*$	$1.04118 \pm 0.00029 \quad (-0.0\sigma)$	$\chi_{\mathrm{lensing}}^2$	$9.05 \pm 0.52 \quad (-0.3\sigma)$
$A_{100 \times 217}^{\mathrm{dustTE}}$	$0.483 \pm 0.086$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.888 \pm 0.022 \quad (-0.7\sigma)$	$\chi_{\mathrm{small}}^2$	$397.2 \pm 1.9 \quad (+0.1\sigma)$
$A_{143}^{\mathrm{dustTE}}$	$0.224 \pm 0.053$	$z_{\mathrm{drag}}$	$1059.89 \pm 0.36 \quad (+1.0\sigma)$	$\chi_{\mathrm{lowl}}^2$	$23.32 \pm 0.82 \quad (+0.0\sigma)$
$A_{143 \times 217}^{\mathrm{dustTE}}$	$0.664 \pm 0.081$	$r_{\mathrm{drag}}$	$147.25 \pm 0.24 \quad (-0.9\sigma)$	$\chi_{\mathrm{plik}}^2$	$2359.4 \pm 5.8 \quad (+306.2\sigma)$
$A_{217}^{\mathrm{dustTE}}$	$2.08 \pm 0.27$	$k_{\mathrm{D}}$	$0.14080 \pm 0.00029 \quad (+1.1\sigma)$	$\chi_{\mathrm{Aver15}}^2$	$0.9 \pm 1.2 \quad (-0.1\sigma)$
$c_{100}$	$0.99966 \pm 0.00061 \quad (+0.1\sigma)$	$100\theta_{\mathrm{D}}$	$0.16066 \pm 0.00021 \quad (-1.1\sigma)$	$\chi_{6\mathrm{DF}}^2$	$0.055 \pm 0.061 \quad (-0.0\sigma)$
$c_{217}$	$0.99818 \pm 0.00062 \quad (-0.1\sigma)$	$z_{\mathrm{eq}}$	$3386 \pm 21 \quad (+0.4\sigma)$	$\chi_{\mathrm{MGS}}^2$	$1.24 \pm 0.39 \quad (-0.1\sigma)$
$H_0$	$67.64 \pm 0.42 \quad (+0.2\sigma)$	$k_{\mathrm{eq}}$	$0.010335 \pm 0.000064 \quad (+0.4\sigma)$	$\chi_{\mathrm{DR12BAO}}^2$	$4.9 \pm 1.3 \quad (+0.0\sigma)$
$\Omega_{\Lambda}$	$0.6888 \pm 0.0056 \quad (-0.0\sigma)$	$100\theta_{\mathrm{eq}}$	$0.8163 \pm 0.0039 \quad (-0.3\sigma)$	$\chi_{\mathrm{prior}}^2$	$11.5 \pm 4.5 \quad (+1.2\sigma)$
$\Omega_{\mathrm{m}}$	$0.3112 \pm 0.0056 \quad (+0.0\sigma)$	$100\theta_{\mathrm{s,eq}}$	$0.4509 \pm 0.0020 \quad (-0.3\sigma)$	$\chi_{\mathrm{CMB}}^2$	$2789.0 \pm 5.9 \quad (+297.3\sigma)$
$\Omega_{\mathrm{m}}h^2$	$0.14234 \pm 0.00088 \quad (+0.4\sigma)$	$H(0.15)$	$72.92 \pm 0.36 \quad (+0.2\sigma)$	$\chi_{\mathrm{BAO}}^2$	$6.2 \pm 1.1 \quad (+0.0\sigma)$
$\Omega_{\mathrm{m}}h^3$	$0.09627 \pm 0.00032 \quad (+0.9\sigma)$	$D_{\mathrm{M}}(0.15)$	$641.0 \pm 3.6 \quad (-0.2\sigma)$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 2807.50; \Delta\bar{\chi}_{\mathrm{eff}}^2 = 1592.14; R - 1 = 0.02309$$



# 20.63 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}}h^2$	0.022378	$0.02228 \pm 0.00016$	$\sigma_8$	0.8229	$0.8075 \pm 0.0076$	$100\theta_{\mathrm{s,eq}}$	0.45159	$0.4503 \pm 0.0031$
$\Omega_{\mathrm{c}}h^2$	0.11902	$0.1196 \pm 0.0014$	$S_8$	0.8360	$0.826 \pm 0.016$	$H(0.15)$	72.99	$72.68 \pm 0.54$
$100\theta_{\mathrm{MC}}$	1.040990	$1.04081 \pm 0.00035$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	0.4579	$0.4526 \pm 0.0090$	$D_{\mathrm{M}}(0.15)$	640.2	$643.3 \pm 5.4$
$\tau$	0.0706	$0.0526 \pm 0.0079$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	0.6138	$0.6045 \pm 0.0084$	$H(0.38)$	83.071	$82.84 \pm 0.39$
$Y_{\mathrm{P}}$	0.24470	$0.2438 \pm 0.0038$	$\sigma_8/h^{0.5}$	0.9999	$0.984 \pm 0.012$	$D_{\mathrm{M}}(0.38)$	1527.4	$1534 \pm 11$
$\ln(10^{10}A_{\mathrm{s}})$	3.0785	$3.038 \pm 0.016$	$r_{\mathrm{drag}}h$	99.79	$99.2 \pm 1.1$	$H(0.51)$	89.771	$89.58 \pm 0.31$
$n_{\mathrm{s}}$	0.96812	$0.9651 \pm 0.0048$	$\langle d^2 \rangle^{1/2}$	2.4714	$2.434 \pm 0.029$	$D_{\mathrm{M}}(0.51)$	1978.9	$1986 \pm 13$
$y_{\mathrm{cal}}$	1.00295	$1.0004 \pm 0.0025$	$z_{\mathrm{re}}$	9.24	$7.49 \pm 0.82$	$H(0.61)$	95.377	$95.21 \pm 0.25$
$A_{100}^{\mathrm{PS}}$	234.5	$240 \pm 25$	$10^9A_{\mathrm{s}}$	2.1726	$2.086 \pm 0.034$	$D_{\mathrm{M}}(0.61)$	2302.9	$2311 \pm 14$
$A_{143}^{\mathrm{PS}}$	42.8	$39 \pm 8$	$10^9A_{\mathrm{s}}e^{-2\tau}$	1.8866	$1.877 \pm 0.012$	$H(2.33)$	235.93	$236.21 \pm 0.85$
$A_{217}^{\mathrm{PS}}$	105.0	$102 \pm 10$	$D_{40}$	1234.2	$1227 \pm 13$	$D_{\mathrm{M}}(2.33)$	5760.1	$5768 \pm 12$
$A_{217}^{\mathrm{CIB}}$	40.7	$40 \pm 7$	$D_{220}$	5752.7	$5717 \pm 39$	$f\sigma_8(0.15)$	0.4627	$0.4569 \pm 0.0084$
$A_{143}^{\mathrm{tSZ}}$	5.24	$3.9_{-2.6}^{+1.8}$	$D_{810}$	2548.6	$2534 \pm 13$	$\sigma_8(0.15)$	0.7605	$0.7459 \pm 0.0067$
$r_{143 \times 217}^{\mathrm{PS}}$	0.674	$0.66 \pm 0.13$	$D_{1420}$	821.00	$815.5 \pm 4.8$	$f\sigma_8(0.38)$	0.4818	$0.4746 \pm 0.0069$
$r_{143 \times 217}^{\mathrm{CIB}}$	0.730	$0.56_{-0.17}^{+0.40}$	$D_{2000}$	232.37	$230.3 \pm 1.6$	$\sigma_8(0.38)$	0.6744	$0.6609 \pm 0.0057$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	0.54	—	$n_{\mathrm{s},0.002}$	0.96812	$0.9651 \pm 0.0048$	$f\sigma_8(0.51)$	0.4806	$0.4729 \pm 0.0061$
$A^{\mathrm{kSZ}}$	1.73	$4.7_{-3.9}^{+2.4}$	$Y_{\mathrm{P}}$	0.24470	$0.2438 \pm 0.0038$	$\sigma_8(0.51)$	0.6312	$0.6184 \pm 0.0053$
$A_{100}^{\mathrm{dust}}$	1.009	$1.01 \pm 0.20$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.24602	$0.2451 \pm 0.0039$	$f\sigma_8(0.61)$	0.4756	$0.4677 \pm 0.0055$
$A_{143}^{\mathrm{dust}}$	0.953	$0.96 \pm 0.18$	Age/Gyr	13.7905	$13.808 \pm 0.026$	$\sigma_8(0.61)$	0.60063	$0.5884 \pm 0.0050$
$A_{217}^{\mathrm{dust}}$	0.981	$0.97 \pm 0.10$	$z_*$	1089.795	$1089.94 \pm 0.31$	$f\sigma_8(2.33)$	0.30292	$0.2966 \pm 0.0025$
$A_{143 \times 217}^{\mathrm{dust}}$	0.997	$1.03 \pm 0.16$	$r_*$	144.681	$144.61 \pm 0.32$	$\sigma_8(2.33)$	0.31238	$0.3056 \pm 0.0026$
$c_{100}$	0.99773	$0.9975 \pm 0.0011$	$100\theta_*$	1.041190	$1.04105 \pm 0.00031$	$f_{2000}^{143}$	28.79	$29.6 \pm 2.9$
$c_{217}$	1.00116	$1.0011 \pm 0.0016$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8957	$13.890 \pm 0.030$	$f_{2000}^{217}$	106.37	$106.8 \pm 1.9$
$c_{TE}$	0.99506	$0.9965 \pm 0.0049$	$z_{\mathrm{drag}}$	1059.856	$1059.64 \pm 0.39$	$f_{2000}^{143 \times 217}$	31.21	$32.1 \pm 2.1$
$c_{EE}$	0.99156	$0.9918 \pm 0.0050$	$r_{\mathrm{drag}}$	147.344	$147.30 \pm 0.32$	$\chi_{\mathrm{small}}^2$	402.51	$396.9 \pm 1.7$
$H_0$	67.73	$67.38 \pm 0.63$	$k_{\mathrm{D}}$	0.140635	$0.14064 \pm 0.00037$	$\chi_{\mathrm{lowl}}^2$	23.31	$23.3 \pm 1.0$
$\Omega_{\Lambda}$	0.6903	$0.6859 \pm 0.0087$	$100\theta_{\mathrm{D}}$	0.160759	$0.16082 \pm 0.00024$	$\chi_{\mathrm{CamSpec}}^2$	11498.1	$11514.6 \pm 5.6$
$\Omega_{\mathrm{m}}$	0.3097	$0.3141 \pm 0.0087$	$z_{\mathrm{eq}}$	3379.0	$3391 \pm 32$	$\chi_{\mathrm{Aver15}}^2$	0.079	$0.9 \pm 1.3$
$\Omega_{\mathrm{m}}h^2$	0.14204	$0.1425 \pm 0.0013$	$k_{\mathrm{eq}}$	0.010313	$0.010350 \pm 0.000097$	$\chi_{\mathrm{prior}}^2$	3.37	$7.8 \pm 3.4$
$\Omega_{\mathrm{m}}h^3$	0.096203	$0.09604 \pm 0.00034$	$100\theta_{\mathrm{eq}}$	0.8175	$0.8150 \pm 0.0060$	$\chi_{\mathrm{CMB}}^2$	11923.9	$11934.8 \pm 5.7$

Best-fit  $\chi_{\mathrm{eff}}^2 = 11927.35$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 11943.52$ ;  $R - 1 = 0.01118$

$\chi_{\mathrm{eff}}^2$ : Abund - Yp\_Aver2015: 0.08 CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 402.51 commander\_dx12\_v3.2\_29: 23.31 CamSpec like\_10.7HM\_1400\_unified: 11498.08



# 20.64 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_BAO

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02232 \pm 0.00015$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4484 \pm 0.0070$	$D_{\mathrm{M}}(0.38)$	$1528.2 \pm 7.9$
$\Omega_{\mathrm{c}}h^2$	$0.1189 \pm 0.0010$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6011 \pm 0.0070$	$H(0.51)$	$89.73 \pm 0.24$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00033$	$\sigma_8/h^{0.5}$	$0.979 \pm 0.010$	$D_{\mathrm{M}}(0.51)$	$1979.9 \pm 9.3$
$\tau$	$0.0535 \pm 0.0079$	$r_{\mathrm{drag}}h$	$99.81 \pm 0.79$	$H(0.61)$	$95.33 \pm 0.20$
$Y_{\mathrm{P}}$	$0.2439 \pm 0.0038$	$\langle d^2 \rangle^{1/2}$	$2.424 \pm 0.025$	$D_{\mathrm{M}}(0.61)$	$2304 \pm 10$
$\ln(10^{10}A_{\mathrm{s}})$	$3.038 \pm 0.016$	$z_{\mathrm{re}}$	$7.56 \pm 0.80$	$H(2.33)$	$235.80 \pm 0.64$
$n_{\mathrm{s}}$	$0.9668 \pm 0.0042$	$10^9 A_{\mathrm{s}}$	$2.087 \pm 0.034$	$D_{\mathrm{M}}(2.33)$	$5763.2 \pm 9.8$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.875 \pm 0.011$	$f\sigma_8(0.15)$	$0.4531 \pm 0.0066$
$A_{100}^{\mathrm{PS}}$	$239 \pm 25$	$D_{40}$	$1224 \pm 12$	$\sigma_8(0.15)$	$0.7447 \pm 0.0065$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8$	$D_{220}$	$5721 \pm 39$	$f\sigma_8(0.38)$	$0.4717 \pm 0.0057$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{810}$	$2534 \pm 13$	$\sigma_8(0.38)$	$0.6604 \pm 0.0057$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7$	$D_{1420}$	$816.0 \pm 4.7$	$f\sigma_8(0.51)$	$0.4705 \pm 0.0052$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.6}$	$D_{2000}$	$230.4 \pm 1.6$	$\sigma_8(0.51)$	$0.6181 \pm 0.0053$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9668 \pm 0.0042$	$f\sigma_8(0.61)$	$0.4657 \pm 0.0048$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.38}_{-0.19}$	$Y_{\mathrm{P}}$	$0.2439 \pm 0.0038$	$\sigma_8(0.61)$	$0.5882 \pm 0.0050$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2453 \pm 0.0038$	$f\sigma_8(2.33)$	$0.2966 \pm 0.0025$
$A^{\mathrm{kSZ}}$	$4.7^{+2.1}_{-4.1}$	Age/Gyr	$13.798 \pm 0.022$	$\sigma_8(2.33)$	$0.3059 \pm 0.0026$
$A_{100}^{\mathrm{dust}}$	$1.00 \pm 0.20$	$z_*$	$1089.83 \pm 0.26$	$f_{2000}^{143}$	$29.5 \pm 2.9$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.18$	$r_*$	$144.75 \pm 0.25$	$f_{2000}^{217}$	$106.6 \pm 2.0$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04113 \pm 0.00029$	$f_{2000}^{143 \times 217}$	$31.9 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.903 \pm 0.024$	$\chi_{\mathrm{small}}^2$	$397.0 \pm 1.7$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.70 \pm 0.38$	$\chi_{\mathrm{lowl}}^2$	$22.93 \pm 0.86$
$c_{217}$	$1.0011 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.44 \pm 0.27$	$\chi_{\mathrm{CamSpec}}^2$	$11514.7 \pm 5.6$
$c_{TE}$	$0.9966 \pm 0.0049$	$k_{\mathrm{D}}$	$0.14053 \pm 0.00034$	$\chi_{\mathrm{Aver15}}^2$	$0.9 \pm 1.3$
$c_{EE}$	$0.9922 \pm 0.0050$	$100\theta_{\mathrm{D}}$	$0.16080 \pm 0.00024$	$\chi_{6\mathrm{DF}}^2$	$0.046 \pm 0.058$
$H_0$	$67.69 \pm 0.46$	$z_{\mathrm{eq}}$	$3375 \pm 24$	$\chi_{\mathrm{MGS}}^2$	$1.36 \pm 0.45$
$\Omega_{\Lambda}$	$0.6903 \pm 0.0062$	$k_{\mathrm{eq}}$	$0.010301 \pm 0.000072$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.3$
$\Omega_{\mathrm{m}}$	$0.3097 \pm 0.0062$	$100\theta_{\mathrm{eq}}$	$0.8180 \pm 0.0044$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4$
$\Omega_{\mathrm{m}}h^2$	$0.14188 \pm 0.00098$	$100\theta_{\mathrm{s,eq}}$	$0.4519 \pm 0.0023$	$\chi_{\mathrm{BAO}}^2$	$6.0 \pm 1.0$
$\Omega_{\mathrm{m}}h^3$	$0.09604 \pm 0.00034$	$H(0.15)$	$72.95 \pm 0.40$	$\chi_{\mathrm{CMB}}^2$	$11934.6 \pm 5.6$
$\sigma_8$	$0.8057 \pm 0.0073$	$D_{\mathrm{M}}(0.15)$	$640.6 \pm 3.9$		
$S_8$	$0.819 \pm 0.013$	$H(0.38)$	$83.03 \pm 0.30$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11949.33; R - 1 = 0.01547$$



**20.65**    **base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_lensing**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02228 \pm 0.00016$	$S_8$	$0.828 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$643.6 \pm 4.8$
$\Omega_{\mathrm{c}}h^2$	$0.1197 \pm 0.0012$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4536 \pm 0.0071$	$H(0.38)$	$82.81 \pm 0.36$
$100\theta_{\mathrm{MC}}$	$1.04080 \pm 0.00034$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6057 \pm 0.0065$	$D_{\mathrm{M}}(0.38)$	$1534.3 \pm 9.7$
$\tau$	$0.0535 \pm 0.0076$	$\sigma_8/h^{0.5}$	$0.9855 \pm 0.0092$	$H(0.51)$	$89.56 \pm 0.29$
$Y_{\mathrm{P}}$	$0.2437 \pm 0.0038$	$r_{\mathrm{drag}}h$	$99.17 \pm 0.96$	$D_{\mathrm{M}}(0.51)$	$1987 \pm 11$
$\ln(10^{10}A_{\mathrm{s}})$	$3.040 \pm 0.015$	$\langle d^2 \rangle^{1/2}$	$2.439 \pm 0.022$	$H(0.61)$	$95.20 \pm 0.23$
$n_{\mathrm{s}}$	$0.9646 \pm 0.0046$	$z_{\mathrm{re}}$	$7.59 \pm 0.77$	$D_{\mathrm{M}}(0.61)$	$2312 \pm 12$
$y_{\mathrm{cal}}$	$1.0005 \pm 0.0025$	$10^9 A_{\mathrm{s}}$	$2.091 \pm 0.031$	$H(2.33)$	$236.27 \pm 0.74$
$A_{100}^{\mathrm{PS}}$	$240 \pm 25$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878 \pm 0.011$	$D_{\mathrm{M}}(2.33)$	$5769 \pm 11$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8$	$D_{40}$	$1229 \pm 12$	$f\sigma_8(0.15)$	$0.4579 \pm 0.0066$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{220}$	$5720 \pm 40$	$\sigma_8(0.15)$	$0.7470 \pm 0.0055$
$A_{217}^{\mathrm{CIB}}$	$40_{-7}^{+7}$	$D_{810}$	$2535 \pm 13$	$f\sigma_8(0.38)$	$0.4755 \pm 0.0053$
$A_{143}^{\mathrm{tSZ}}$	$3.9_{-2.6}^{+1.8}$	$D_{1420}$	$815.6 \pm 4.8$	$\sigma_8(0.38)$	$0.6618 \pm 0.0049$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$D_{2000}$	$230.3 \pm 1.6$	$f\sigma_8(0.51)$	$0.4737 \pm 0.0047$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56_{-0.16}^{+0.42}$	$n_{\mathrm{s},0.002}$	$0.9646 \pm 0.0046$	$\sigma_8(0.51)$	$0.6192 \pm 0.0046$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.2437 \pm 0.0038$	$f\sigma_8(0.61)$	$0.4685 \pm 0.0042$
$A^{\mathrm{kSZ}}$	$4.7_{-4.3}^{+1.9}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2450 \pm 0.0038$	$\sigma_8(0.61)$	$0.5891 \pm 0.0044$
$A_{100}^{\mathrm{dust}}$	$1.00 \pm 0.20$	Age/Gyr	$13.809 \pm 0.025$	$f\sigma_8(2.33)$	$0.2969 \pm 0.0023$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$z_*$	$1089.95 \pm 0.29$	$\sigma_8(2.33)$	$0.3059 \pm 0.0025$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$r_*$	$144.58 \pm 0.28$	$f_{2000}^{143}$	$29.6 \pm 2.9$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04103 \pm 0.00031$	$f_{2000}^{217}$	$106.8 \pm 2.0$
$c_{100}$	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.888 \pm 0.026$	$f_{2000}^{143 \times 217}$	$32.1 \pm 2.1$
$c_{217}$	$1.0011 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.64 \pm 0.39$	$\chi_{\mathrm{lensing}}^2$	$9.28 \pm 0.70$
$c_{TE}$	$0.9964 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.27 \pm 0.29$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.6$
$c_{EE}$	$0.9918 \pm 0.0050$	$k_{\mathrm{D}}$	$0.14067 \pm 0.00034$	$\chi_{\mathrm{lowl}}^2$	$23.40 \pm 0.94$
$H_0$	$67.34 \pm 0.56$	$100\theta_{\mathrm{D}}$	$0.16081 \pm 0.00024$	$\chi_{\mathrm{CamSpec}}^2$	$11514.0 \pm 5.4$
$\Omega_{\Lambda}$	$0.6853 \pm 0.0077$	$z_{\mathrm{eq}}$	$3393 \pm 28$	$\chi_{\mathrm{Aver15}}^2$	$0.9 \pm 1.3$
$\Omega_{\mathrm{m}}$	$0.3147 \pm 0.0077$	$k_{\mathrm{eq}}$	$0.010357 \pm 0.000085$	$\chi_{\mathrm{prior}}^2$	$7.9 \pm 3.4$
$\Omega_{\mathrm{m}}h^2$	$0.1426 \pm 0.0012$	$100\theta_{\mathrm{eq}}$	$0.8146 \pm 0.0052$	$\chi_{\mathrm{CMB}}^2$	$11943.6 \pm 5.7$
$\Omega_{\mathrm{m}}h^3$	$0.09605 \pm 0.00034$	$100\theta_{\mathrm{s,eq}}$	$0.4501 \pm 0.0027$		
$\sigma_8$	$0.8087 \pm 0.0061$	$H(0.15)$	$72.65 \pm 0.48$		

$\bar{\chi}_{\mathrm{eff}}^2 = 11952.40$ ;  $R - 1 = 0.01479$



20.66 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_BAO\_lensing

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02232 \pm 0.00015$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4502 \pm 0.0059$	$D_{\mathrm{M}}(0.38)$	$1529.1 \pm 7.5$
$\Omega_{\mathrm{c}}h^2$	$0.11907 \pm 0.00095$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6031 \pm 0.0058$	$H(0.51)$	$89.70 \pm 0.23$
$100\theta_{\mathrm{MC}}$	$1.04089 \pm 0.00033$	$\sigma_8/h^{0.5}$	$0.9824 \pm 0.0085$	$D_{\mathrm{M}}(0.51)$	$1981.0 \pm 8.9$
$\tau$	$0.0553 \pm 0.0073$	$r_{\mathrm{drag}}h$	$99.69 \pm 0.74$	$H(0.61)$	$95.31 \pm 0.20$
$Y_{\mathrm{P}}$	$0.2439 \pm 0.0038$	$\langle d^2 \rangle^{1/2}$	$2.432 \pm 0.021$	$D_{\mathrm{M}}(0.61)$	$2305.3 \pm 9.6$
$\ln(10^{10}A_{\mathrm{s}})$	$3.042 \pm 0.015$	$z_{\mathrm{re}}$	$7.75 \pm 0.73$	$H(2.33)$	$235.90 \pm 0.59$
$n_{\mathrm{s}}$	$0.9663 \pm 0.0041$	$10^9 A_{\mathrm{s}}$	$2.096 \pm 0.030$	$D_{\mathrm{M}}(2.33)$	$5763.8 \pm 9.7$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.876 \pm 0.011$	$f\sigma_8(0.15)$	$0.4548 \pm 0.0055$
$A_{100}^{\mathrm{PS}}$	$239^{+26}_{-23}$	$D_{40}$	$1226 \pm 12$	$\sigma_8(0.15)$	$0.7466 \pm 0.0055$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8$	$D_{220}$	$5725 \pm 39$	$f\sigma_8(0.38)$	$0.4733 \pm 0.0047$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{810}$	$2535 \pm 13$	$\sigma_8(0.38)$	$0.6619 \pm 0.0049$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7$	$D_{1420}$	$816.2 \pm 4.7$	$f\sigma_8(0.51)$	$0.4720 \pm 0.0043$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.8}_{-2.6}$	$D_{2000}$	$230.5 \pm 1.6$	$\sigma_8(0.51)$	$0.6195 \pm 0.0046$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9663 \pm 0.0041$	$f\sigma_8(0.61)$	$0.4672 \pm 0.0040$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.39}_{-0.19}$	$Y_{\mathrm{P}}$	$0.2439 \pm 0.0038$	$\sigma_8(0.61)$	$0.5895 \pm 0.0044$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2452 \pm 0.0038$	$f\sigma_8(2.33)$	$0.2973 \pm 0.0023$
$A^{\mathrm{kSZ}}$	$< 6.13$	Age/Gyr	$13.799 \pm 0.022$	$\sigma_8(2.33)$	$0.3065 \pm 0.0024$
$A_{100}^{\mathrm{dust}}$	$1.00 \pm 0.20$	$z_*$	$1089.84 \pm 0.25$	$f_{2000}^{143}$	$29.4 \pm 2.8$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$r_*$	$144.71 \pm 0.24$	$f_{2000}^{217}$	$106.6 \pm 1.9$
$A_{217}^{\mathrm{dust}}$	$0.98 \pm 0.10$	$100\theta_*$	$1.04112 \pm 0.00029$	$f_{2000}^{143 \times 217}$	$31.8 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.900 \pm 0.023$	$\chi_{\mathrm{lensing}}^2$	$9.29 \pm 0.77$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.71 \pm 0.38$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.8$
$c_{217}$	$1.0011 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.40 \pm 0.25$	$\chi_{\mathrm{lowl}}^2$	$23.11 \pm 0.83$
$c_{TE}$	$0.9965 \pm 0.0048$	$k_{\mathrm{D}}$	$0.14057 \pm 0.00032$	$\chi_{\mathrm{CamSpec}}^2$	$11514.1 \pm 5.5$
$c_{EE}$	$0.9921 \pm 0.0050$	$100\theta_{\mathrm{D}}$	$0.16079 \pm 0.00023$	$\chi_{\mathrm{Aver15}}^2$	$0.9 \pm 1.3$
$H_0$	$67.63 \pm 0.44$	$z_{\mathrm{eq}}$	$3379 \pm 22$	$\chi_{6\mathrm{DF}}^2$	$0.050 \pm 0.059$
$\Omega_{\Lambda}$	$0.6894 \pm 0.0058$	$k_{\mathrm{eq}}$	$0.010312 \pm 0.000067$	$\chi_{\mathrm{MGS}}^2$	$1.29 \pm 0.41$
$\Omega_{\mathrm{m}}$	$0.3106 \pm 0.0058$	$100\theta_{\mathrm{eq}}$	$0.8174 \pm 0.0041$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.3$
$\Omega_{\mathrm{m}}h^2$	$0.14204 \pm 0.00091$	$100\theta_{\mathrm{s,eq}}$	$0.4515 \pm 0.0021$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4$
$\Omega_{\mathrm{m}}h^3$	$0.09606 \pm 0.00034$	$H(0.15)$	$72.90 \pm 0.38$	$\chi_{\mathrm{CMB}}^2$	$11943.5 \pm 5.6$
$\sigma_8$	$0.8079 \pm 0.0061$	$D_{\mathrm{M}}(0.15)$	$641.1 \pm 3.7$	$\chi_{\mathrm{BAO}}^2$	$6.1 \pm 1.0$
$S_8$	$0.822 \pm 0.011$	$H(0.38)$	$83.00 \pm 0.28$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11958.34; R - 1 = 0.01579$$



**20.67**    **base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02228 \pm 0.00016$	$\sigma_8$	$0.8086 \pm 0.0070$	$100\theta_{\mathrm{s,eq}}$	$0.4505 \pm 0.0031$
$\Omega_{\mathrm{c}}h^2$	$0.1196 \pm 0.0014$	$S_8$	$0.827 \pm 0.016$	$H(0.15)$	$72.71 \pm 0.54$
$100\theta_{\mathrm{MC}}$	$1.04082 \pm 0.00035$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4529 \pm 0.0090$	$D_{\mathrm{M}}(0.15)$	$643.1 \pm 5.4$
$\tau$	$0.0542^{+0.0047}_{-0.0081}$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6052 \pm 0.0083$	$H(0.38)$	$82.85 \pm 0.39$
$Y_{\mathrm{P}}$	$0.2438 \pm 0.0038$	$\sigma_8/h^{0.5}$	$0.985 \pm 0.012$	$D_{\mathrm{M}}(0.38)$	$1533 \pm 11$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.012}_{-0.016}$	$r_{\mathrm{drag}}h$	$99.3 \pm 1.1$	$H(0.51)$	$89.59 \pm 0.31$
$n_{\mathrm{s}}$	$0.9653 \pm 0.0048$	$\langle d^2 \rangle^{1/2}$	$2.437 \pm 0.028$	$D_{\mathrm{M}}(0.51)$	$1986 \pm 13$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$z_{\mathrm{re}}$	$7.66^{+0.52}_{-0.82}$	$H(0.61)$	$95.23 \pm 0.25$
$A_{100}^{\mathrm{PS}}$	$240 \pm 25$	$10^9 A_{\mathrm{s}}$	$2.092^{+0.024}_{-0.034}$	$D_{\mathrm{M}}(0.61)$	$2310 \pm 14$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.877 \pm 0.012$	$H(2.33)$	$236.18 \pm 0.84$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{40}$	$1227 \pm 13$	$D_{\mathrm{M}}(2.33)$	$5768 \pm 12$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7$	$D_{220}$	$5717 \pm 40$	$f\sigma_8(0.15)$	$0.4573 \pm 0.0084$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.8}_{-2.6}$	$D_{810}$	$2534 \pm 13$	$\sigma_8(0.15)$	$0.7470 \pm 0.0061$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$D_{1420}$	$815.5 \pm 4.8$	$f\sigma_8(0.38)$	$0.4751 \pm 0.0068$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.39}_{-0.18}$	$D_{2000}$	$230.3 \pm 1.6$	$\sigma_8(0.38)$	$0.6619^{+0.0046}_{-0.0055}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$n_{\mathrm{s},0.002}$	$0.9653 \pm 0.0048$	$f\sigma_8(0.51)$	$0.4734 \pm 0.0059$
$A^{\mathrm{kSZ}}$	$4.7^{+2.3}_{-3.9}$	$Y_{\mathrm{P}}$	$0.2438 \pm 0.0038$	$\sigma_8(0.51)$	$0.6194^{+0.0041}_{-0.0051}$
$A_{100}^{\mathrm{dust}}$	$1.01 \pm 0.19$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2451 \pm 0.0038$	$f\sigma_8(0.61)$	$0.4683 \pm 0.0053$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	Age/Gyr	$13.807 \pm 0.026$	$\sigma_8(0.61)$	$0.5893^{+0.0038}_{-0.0048}$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$z_*$	$1089.93 \pm 0.30$	$f\sigma_8(2.33)$	$0.2970^{+0.0018}_{-0.0024}$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$r_*$	$144.62 \pm 0.32$	$\sigma_8(2.33)$	$0.3061^{+0.0019}_{-0.0026}$
$c_{100}$	$0.9975 \pm 0.0011$	$100\theta_*$	$1.04105 \pm 0.00031$	$f_{2000}^{143}$	$29.6 \pm 2.9$
$c_{217}$	$1.0011 \pm 0.0016$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.891 \pm 0.030$	$f_{2000}^{217}$	$106.7 \pm 1.9$
$c_{TE}$	$0.9964 \pm 0.0049$	$z_{\mathrm{drag}}$	$1059.65 \pm 0.39$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.0$
$c_{EE}$	$0.9918 \pm 0.0050$	$r_{\mathrm{drag}}$	$147.31 \pm 0.32$	$\chi_{\mathrm{small}}^2$	$396.8 \pm 1.7$
$H_0$	$67.40 \pm 0.63$	$k_{\mathrm{D}}$	$0.14063 \pm 0.00037$	$\chi_{\mathrm{lowl}}^2$	$23.3 \pm 1.0$
$\Omega_{\Lambda}$	$0.6862 \pm 0.0086$	$100\theta_{\mathrm{D}}$	$0.16081 \pm 0.00024$	$\chi_{\mathrm{CamSpec}}^2$	$11514.4 \pm 5.6$
$\Omega_{\mathrm{m}}$	$0.3138 \pm 0.0086$	$z_{\mathrm{eq}}$	$3390 \pm 32$	$\chi_{\mathrm{Aver15}}^2$	$0.9 \pm 1.3$
$\Omega_{\mathrm{m}}h^2$	$0.1425 \pm 0.0013$	$k_{\mathrm{eq}}$	$0.010346 \pm 0.000097$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4$
$\Omega_{\mathrm{m}}h^3$	$0.09604 \pm 0.00034$	$100\theta_{\mathrm{eq}}$	$0.8153 \pm 0.0060$	$\chi_{\mathrm{CMB}}^2$	$11934.5 \pm 5.6$

$$\bar{\chi}_{\mathrm{eff}}^2 = 11943.23; R - 1 = 0.01041$$



20.68 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_BAO\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02233 \pm 0.00015$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4488 \pm 0.0069$	$D_{\mathrm{M}}(0.38)$	$1527.9 \pm 7.9$
$\Omega_{\mathrm{c}}h^2$	$0.1189 \pm 0.0010$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6017 \pm 0.0068$	$H(0.51)$	$89.73 \pm 0.24$
$100\theta_{\mathrm{MC}}$	$1.04091 \pm 0.00033$	$\sigma_8/h^{0.5}$	$0.9804 \pm 0.0099$	$D_{\mathrm{M}}(0.51)$	$1979.6 \pm 9.3$
$\tau$	$0.0549^{+0.0050}_{-0.0082}$	$r_{\mathrm{drag}}h$	$99.83 \pm 0.79$	$H(0.61)$	$95.33 \pm 0.20$
$Y_{\mathrm{P}}$	$0.2440 \pm 0.0038$	$\langle d^2 \rangle^{1/2}$	$2.427 \pm 0.024$	$D_{\mathrm{M}}(0.61)$	$2304 \pm 10$
$\ln(10^{10}A_{\mathrm{s}})$	$3.041^{+0.012}_{-0.016}$	$z_{\mathrm{re}}$	$7.71^{+0.55}_{-0.83}$	$H(2.33)$	$235.78 \pm 0.64$
$n_{\mathrm{s}}$	$0.9670 \pm 0.0042$	$10^9 A_{\mathrm{s}}$	$2.092^{+0.024}_{-0.035}$	$D_{\mathrm{M}}(2.33)$	$5763.0 \pm 9.8$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.874 \pm 0.011$	$f\sigma_8(0.15)$	$0.4535 \pm 0.0065$
$A_{100}^{\mathrm{PS}}$	$239 \pm 25$	$D_{40}$	$1224 \pm 12$	$\sigma_8(0.15)$	$0.7457^{+0.0054}_{-0.0065}$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8$	$D_{220}$	$5721 \pm 39$	$f\sigma_8(0.38)$	$0.4722 \pm 0.0055$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{810}$	$2534 \pm 13$	$\sigma_8(0.38)$	$0.6612^{+0.0045}_{-0.0056}$
$A_{217}^{\mathrm{CIB}}$	$40 \pm 7$	$D_{1420}$	$815.9 \pm 4.7$	$f\sigma_8(0.51)$	$0.4711 \pm 0.0050$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.6}$	$D_{2000}$	$230.4 \pm 1.6$	$\sigma_8(0.51)$	$0.6189^{+0.0041}_{-0.0052}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9670 \pm 0.0042$	$f\sigma_8(0.61)$	$0.4663 \pm 0.0046$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.39}_{-0.19}$	$Y_{\mathrm{P}}$	$0.2440 \pm 0.0038$	$\sigma_8(0.61)$	$0.5889^{+0.0039}_{-0.0050}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2453 \pm 0.0038$	$f\sigma_8(2.33)$	$0.2970^{+0.0019}_{-0.0025}$
$A^{\mathrm{kSZ}}$	$4.7^{+1.9}_{-4.2}$	Age/Gyr	$13.797 \pm 0.022$	$\sigma_8(2.33)$	$0.3063^{+0.0020}_{-0.0026}$
$A_{100}^{\mathrm{dust}}$	$1.00 \pm 0.19$	$z_*$	$1089.82 \pm 0.26$	$f_{2000}^{143}$	$29.4 \pm 2.9$
$A_{143}^{\mathrm{dust}}$	$0.97 \pm 0.18$	$r_*$	$144.76 \pm 0.25$	$f_{2000}^{217}$	$106.6 \pm 1.9$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04113 \pm 0.00030$	$f_{2000}^{143 \times 217}$	$31.9 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.904 \pm 0.024$	$\chi_{\mathrm{small}}^2$	$396.9 \pm 1.8$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.71 \pm 0.38$	$\chi_{\mathrm{lowl}}^2$	$22.95 \pm 0.86$
$c_{217}$	$1.0011 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.44 \pm 0.27$	$\chi_{\mathrm{CamSpec}}^2$	$11514.5 \pm 5.6$
$c_{TE}$	$0.9965 \pm 0.0049$	$k_{\mathrm{D}}$	$0.14052 \pm 0.00034$	$\chi_{\mathrm{Aver15}}^2$	$0.9 \pm 1.3$
$c_{EE}$	$0.9922 \pm 0.0050$	$100\theta_{\mathrm{D}}$	$0.16079 \pm 0.00024$	$\chi_{6\mathrm{DF}}^2$	$0.044 \pm 0.057$
$H_0$	$67.71 \pm 0.46$	$z_{\mathrm{eq}}$	$3375 \pm 24$	$\chi_{\mathrm{MGS}}^2$	$1.37 \pm 0.45$
$\Omega_{\Lambda}$	$0.6905 \pm 0.0062$	$k_{\mathrm{eq}}$	$0.010300 \pm 0.000072$	$\chi_{\mathrm{DR12BAO}}^2$	$4.6 \pm 1.3$
$\Omega_{\mathrm{m}}$	$0.3095 \pm 0.0062$	$100\theta_{\mathrm{eq}}$	$0.8182 \pm 0.0044$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4$
$\Omega_{\mathrm{m}}h^2$	$0.14186 \pm 0.00099$	$100\theta_{\mathrm{s,eq}}$	$0.4520 \pm 0.0023$	$\chi_{\mathrm{BAO}}^2$	$5.97 \pm 0.99$
$\Omega_{\mathrm{m}}h^3$	$0.09605 \pm 0.00034$	$H(0.15)$	$72.97 \pm 0.40$	$\chi_{\mathrm{CMB}}^2$	$11934.4 \pm 5.6$
$\sigma_8$	$0.8067^{+0.0061}_{-0.0072}$	$D_{\mathrm{M}}(0.15)$	$640.5 \pm 3.9$		
$S_8$	$0.819 \pm 0.013$	$H(0.38)$	$83.04 \pm 0.30$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11949.07; R - 1 = 0.01536$$



# 20.69 base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_lensing\_zre6p5

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02228 \pm 0.00016$	$S_8$	$0.828 \pm 0.013$	$D_{\mathrm{M}}(0.15)$	$643.3 \pm 4.7$
$\Omega_{\mathrm{c}}h^2$	$0.1196 \pm 0.0012$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4537 \pm 0.0071$	$H(0.38)$	$82.83 \pm 0.35$
$100\theta_{\mathrm{MC}}$	$1.04081 \pm 0.00034$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6059 \pm 0.0064$	$D_{\mathrm{M}}(0.38)$	$1533.6 \pm 9.4$
$\tau$	$0.0547^{+0.0051}_{-0.0078}$	$\sigma_8/h^{0.5}$	$0.9861 \pm 0.0090$	$H(0.51)$	$89.58 \pm 0.28$
$Y_{\mathrm{P}}$	$0.2437 \pm 0.0038$	$r_{\mathrm{drag}}h$	$99.23 \pm 0.94$	$D_{\mathrm{M}}(0.51)$	$1986 \pm 11$
$\ln(10^{10}A_{\mathrm{s}})$	$3.042^{+0.011}_{-0.015}$	$\langle d^2 \rangle^{1/2}$	$2.441 \pm 0.022$	$H(0.61)$	$95.21^{+0.22}_{-0.24}$
$n_{\mathrm{s}}$	$0.9649 \pm 0.0045$	$z_{\mathrm{re}}$	$7.71^{+0.55}_{-0.78}$	$D_{\mathrm{M}}(0.61)$	$2311 \pm 12$
$y_{\mathrm{cal}}$	$1.0004 \pm 0.0025$	$10^9 A_{\mathrm{s}}$	$2.095^{+0.023}_{-0.031}$	$H(2.33)$	$236.23 \pm 0.73$
$A_{100}^{\mathrm{PS}}$	$240 \pm 25$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.878 \pm 0.011$	$D_{\mathrm{M}}(2.33)$	$5768 \pm 11$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8$	$D_{40}$	$1229 \pm 12$	$f\sigma_8(0.15)$	$0.4580 \pm 0.0066$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{220}$	$5720 \pm 40$	$\sigma_8(0.15)$	$0.7476 \pm 0.0051$
$A_{217}^{\mathrm{CIB}}$	$40^{+7}_{-7}$	$D_{810}$	$2534 \pm 13$	$f\sigma_8(0.38)$	$0.4757 \pm 0.0053$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.8}_{-2.7}$	$D_{1420}$	$815.6 \pm 4.8$	$\sigma_8(0.38)$	$0.6624^{+0.0041}_{-0.0047}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$D_{2000}$	$230.3 \pm 1.6$	$f\sigma_8(0.51)$	$0.4740 \pm 0.0046$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.56^{+0.41}_{-0.17}$	$n_{\mathrm{s},0.002}$	$0.9649 \pm 0.0045$	$\sigma_8(0.51)$	$0.6198^{+0.0038}_{-0.0045}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}$	$0.2437 \pm 0.0038$	$f\sigma_8(0.61)$	$0.4688 \pm 0.0041$
$A^{\mathrm{kSZ}}$	$4.7^{+1.8}_{-4.4}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2450 \pm 0.0038$	$\sigma_8(0.61)$	$0.5897^{+0.0036}_{-0.0043}$
$A_{100}^{\mathrm{dust}}$	$1.00 \pm 0.20$	Age/Gyr	$13.808 \pm 0.025$	$f\sigma_8(2.33)$	$0.2972^{+0.0018}_{-0.0023}$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$z_*$	$1089.93 \pm 0.28$	$\sigma_8(2.33)$	$0.3063^{+0.0019}_{-0.0024}$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$r_*$	$144.60 \pm 0.28$	$f_{2000}^{143}$	$29.6 \pm 2.9$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$100\theta_*$	$1.04104 \pm 0.00031$	$f_{2000}^{217}$	$106.7 \pm 1.9$
$c_{100}$	$0.9975 \pm 0.0011$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.890 \pm 0.026$	$f_{2000}^{143 \times 217}$	$32.0 \pm 2.0$
$c_{217}$	$1.0011 \pm 0.0016$	$z_{\mathrm{drag}}$	$1059.65 \pm 0.39$	$\chi_{\mathrm{lensing}}^2$	$9.23 \pm 0.66$
$c_{TE}$	$0.9964 \pm 0.0049$	$r_{\mathrm{drag}}$	$147.29 \pm 0.28$	$\chi_{\mathrm{simall}}^2$	$396.9 \pm 1.6$
$c_{EE}$	$0.9918 \pm 0.0049$	$k_{\mathrm{D}}$	$0.14066 \pm 0.00034$	$\chi_{\mathrm{lowl}}^2$	$23.38 \pm 0.93$
$H_0$	$67.37 \pm 0.55$	$100\theta_{\mathrm{D}}$	$0.16081 \pm 0.00024$	$\chi_{\mathrm{CamSpec}}^2$	$11513.9 \pm 5.4$
$\Omega_{\Lambda}$	$0.6858 \pm 0.0074$	$z_{\mathrm{eq}}$	$3392 \pm 27$	$\chi_{\mathrm{Aver15}}^2$	$0.9 \pm 1.3$
$\Omega_{\mathrm{m}}$	$0.3142 \pm 0.0074$	$k_{\mathrm{eq}}$	$0.010352 \pm 0.000083$	$\chi_{\mathrm{prior}}^2$	$7.9 \pm 3.4$
$\Omega_{\mathrm{m}}h^2$	$0.1426 \pm 0.0011$	$100\theta_{\mathrm{eq}}$	$0.8149 \pm 0.0051$	$\chi_{\mathrm{CMB}}^2$	$11943.4 \pm 5.6$
$\Omega_{\mathrm{m}}h^3$	$0.09605 \pm 0.00034$	$100\theta_{\mathrm{s,eq}}$	$0.4503 \pm 0.0026$		
$\sigma_8$	$0.8094 \pm 0.0057$	$H(0.15)$	$72.68 \pm 0.47$		

$\bar{\chi}_{\mathrm{eff}}^2 = 11952.14$ ;  $R - 1 = 0.01491$



**20.70**    **base\_yhe\_CamSpecHM\_TTTEEE\_lowl\_lowE\_Aver15\_post\_BAO\_lensing\_zre6p5**

Parameter	68% limits	Parameter	68% limits	Parameter	68% limits
$\Omega_{\mathrm{b}}h^2$	$0.02233 \pm 0.00015$	$\sigma_8\Omega_{\mathrm{m}}^{0.5}$	$0.4503 \pm 0.0059$	$D_{\mathrm{M}}(0.38)$	$1528.9 \pm 7.5$
$\Omega_{\mathrm{c}}h^2$	$0.11904 \pm 0.00095$	$\sigma_8\Omega_{\mathrm{m}}^{0.25}$	$0.6033 \pm 0.0057$	$H(0.51)$	$89.71 \pm 0.23$
$100\theta_{\mathrm{MC}}$	$1.04089 \pm 0.00033$	$\sigma_8/h^{0.5}$	$0.9828 \pm 0.0082$	$D_{\mathrm{M}}(0.51)$	$1980.8 \pm 8.8$
$\tau$	$0.0560^{+0.0055}_{-0.0077}$	$r_{\mathrm{drag}}h$	$99.71 \pm 0.74$	$H(0.61)$	$95.32 \pm 0.20$
$Y_{\mathrm{P}}$	$0.2439 \pm 0.0038$	$\langle d^2 \rangle^{1/2}$	$2.433 \pm 0.020$	$D_{\mathrm{M}}(0.61)$	$2305.0 \pm 9.5$
$\ln(10^{10}A_{\mathrm{s}})$	$3.044^{+0.012}_{-0.015}$	$z_{\mathrm{re}}$	$7.82^{+0.59}_{-0.76}$	$H(2.33)$	$235.88 \pm 0.59$
$n_{\mathrm{s}}$	$0.9664 \pm 0.0040$	$10^9 A_{\mathrm{s}}$	$2.099^{+0.025}_{-0.031}$	$D_{\mathrm{M}}(2.33)$	$5763.6 \pm 9.7$
$y_{\mathrm{cal}}$	$1.0006 \pm 0.0025$	$10^9 A_{\mathrm{s}}e^{-2\tau}$	$1.876 \pm 0.011$	$f\sigma_8(0.15)$	$0.4550 \pm 0.0055$
$A_{100}^{\mathrm{PS}}$	$239 \pm 25$	$D_{40}$	$1226 \pm 12$	$\sigma_8(0.15)$	$0.7471 \pm 0.0052$
$A_{143}^{\mathrm{PS}}$	$39 \pm 8$	$D_{220}$	$5725 \pm 39$	$f\sigma_8(0.38)$	$0.4735 \pm 0.0046$
$A_{217}^{\mathrm{PS}}$	$102 \pm 10$	$D_{810}$	$2535 \pm 13$	$\sigma_8(0.38)$	$0.6623^{+0.0043}_{-0.0049}$
$A_{217}^{\mathrm{CIB}}$	$39 \pm 7$	$D_{1420}$	$816.2 \pm 4.7$	$f\sigma_8(0.51)$	$0.4723 \pm 0.0042$
$A_{143}^{\mathrm{tSZ}}$	$3.9^{+1.9}_{-2.6}$	$D_{2000}$	$230.5 \pm 1.6$	$\sigma_8(0.51)$	$0.6199^{+0.0040}_{-0.0046}$
$r_{143 \times 217}^{\mathrm{PS}}$	$0.66 \pm 0.13$	$n_{\mathrm{s},0.002}$	$0.9664 \pm 0.0040$	$f\sigma_8(0.61)$	$0.4674 \pm 0.0039$
$r_{143 \times 217}^{\mathrm{CIB}}$	$0.55^{+0.39}_{-0.19}$	$Y_{\mathrm{P}}$	$0.2439 \pm 0.0038$	$\sigma_8(0.61)$	$0.5899^{+0.0038}_{-0.0044}$
$\xi^{\mathrm{tSZ} \times \mathrm{CIB}}$	—	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	$0.2452 \pm 0.0038$	$f\sigma_8(2.33)$	$0.2975^{+0.0019}_{-0.0023}$
$A^{\mathrm{kSZ}}$	$< 6.11$	Age/Gyr	$13.799 \pm 0.022$	$\sigma_8(2.33)$	$0.3067^{+0.0020}_{-0.0024}$
$A_{100}^{\mathrm{dust}}$	$1.00 \pm 0.20$	$z_*$	$1089.84 \pm 0.25$	$f_{2000}^{143}$	$29.4 \pm 2.8$
$A_{143}^{\mathrm{dust}}$	$0.96 \pm 0.18$	$r_*$	$144.72 \pm 0.24$	$f_{2000}^{217}$	$106.6 \pm 1.9$
$A_{217}^{\mathrm{dust}}$	$0.97 \pm 0.10$	$100\theta_*$	$1.04112 \pm 0.00029$	$f_{2000}^{143 \times 217}$	$31.8 \pm 2.0$
$A_{143 \times 217}^{\mathrm{dust}}$	$1.03 \pm 0.16$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	$13.900 \pm 0.023$	$\chi_{\mathrm{lensing}}^2$	$9.23 \pm 0.70$
$c_{100}$	$0.9975 \pm 0.0011$	$z_{\mathrm{drag}}$	$1059.71 \pm 0.38$	$\chi_{\mathrm{simall}}^2$	$397.1 \pm 1.8$
$c_{217}$	$1.0011 \pm 0.0016$	$r_{\mathrm{drag}}$	$147.40 \pm 0.25$	$\chi_{\mathrm{lowl}}^2$	$23.11 \pm 0.84$
$c_{TE}$	$0.9964 \pm 0.0048$	$k_{\mathrm{D}}$	$0.14056 \pm 0.00032$	$\chi_{\mathrm{CamSpec}}^2$	$11514.0 \pm 5.5$
$c_{EE}$	$0.9921 \pm 0.0049$	$100\theta_{\mathrm{D}}$	$0.16079 \pm 0.00023$	$\chi_{\mathrm{Aver15}}^2$	$0.9 \pm 1.3$
$H_0$	$67.65 \pm 0.43$	$z_{\mathrm{eq}}$	$3378 \pm 22$	$\chi_{6\mathrm{DF}}^2$	$0.048 \pm 0.057$
$\Omega_{\Lambda}$	$0.6896 \pm 0.0058$	$k_{\mathrm{eq}}$	$0.010311 \pm 0.000066$	$\chi_{\mathrm{MGS}}^2$	$1.30 \pm 0.41$
$\Omega_{\mathrm{m}}$	$0.3104 \pm 0.0058$	$100\theta_{\mathrm{eq}}$	$0.8175 \pm 0.0041$	$\chi_{\mathrm{DR12BAO}}^2$	$4.7 \pm 1.3$
$\Omega_{\mathrm{m}}h^2$	$0.14201 \pm 0.00091$	$100\theta_{\mathrm{s,eq}}$	$0.4516 \pm 0.0021$	$\chi_{\mathrm{prior}}^2$	$7.8 \pm 3.4$
$\Omega_{\mathrm{m}}h^3$	$0.09606 \pm 0.00034$	$H(0.15)$	$72.91 \pm 0.38$	$\chi_{\mathrm{CMB}}^2$	$11943.4 \pm 5.6$
$\sigma_8$	$0.8083 \pm 0.0058$	$D_{\mathrm{M}}(0.15)$	$641.0 \pm 3.7$	$\chi_{\mathrm{BAO}}^2$	$6.02 \pm 0.99$
$S_8$	$0.822 \pm 0.011$	$H(0.38)$	$83.00 \pm 0.28$		

$$\bar{\chi}_{\mathrm{eff}}^2 = 11958.15; R - 1 = 0.01663$$



# 20.71 base\_yhe\_CleanedCamSpecHM\_TT\_lowl\_lowE

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_{\mathrm{b}} h^2$	0.022137	$0.02212 \pm 0.00030$	$\sigma_8 \Omega_{\mathrm{m}}^{0.25}$	0.6098	$0.608 \pm 0.012$	$H(0.15)$	72.42	$72.38 \pm 0.98$
$\Omega_{\mathrm{c}} h^2$	0.12037	$0.1203 \pm 0.0022$	$\sigma_8/h^{0.5}$	0.9914	$0.989 \pm 0.016$	$D_{\mathrm{M}}(0.15)$	645.9	$646.5 \pm 9.9$
$100\theta_{\mathrm{MC}}$	1.04103	$1.04084 \pm 0.00091$	$r_{\mathrm{drag}} h$	98.75	$98.7 \pm 1.8$	$H(0.38)$	82.64	$82.60 \pm 0.75$
$\tau$	0.0524	$0.0520 \pm 0.0081$	$\langle d^2 \rangle^{1/2}$	2.4465	$2.447 \pm 0.044$	$D_{\mathrm{M}}(0.38)$	1538.8	$1540 \pm 20$
$Y_{\mathrm{P}}$	0.2526	$0.246 \pm 0.022$	$z_{\mathrm{re}}$	7.57	$7.49 \pm 0.84$	$H(0.51)$	89.43	$89.39 \pm 0.62$
$\ln(10^{10} A_{\mathrm{s}})$	3.0406	$3.038 \pm 0.018$	$10^9 A_{\mathrm{s}}$	2.0917	$2.087 \pm 0.037$	$D_{\mathrm{M}}(0.51)$	1992.4	$1994 \pm 24$
$n_{\mathrm{s}}$	0.9647	$0.963 \pm 0.011$	$10^9 A_{\mathrm{s}} e^{-2\tau}$	1.8836	$1.880 \pm 0.016$	$H(0.61)$	95.10	$95.05 \pm 0.53$
$y_{\mathrm{cal}}$	1.00040	$1.0004 \pm 0.0025$	$D_{40}$	1228.5	$1231 \pm 22$	$D_{\mathrm{M}}(0.61)$	2317.5	$2319 \pm 26$
$A_{100}^{\mathrm{PS}}$	259.7	$257 \pm 30$	$D_{220}$	5706.4	$5707 \pm 41$	$H(2.33)$	236.58	$236.5 \pm 1.3$
$A_{143}^{\mathrm{tSZ}}$	6.00	$3.8_{-2.8}^{+1.7}$	$D_{810}$	2532.5	$2531 \pm 14$	$D_{\mathrm{M}}(2.33)$	5773.1	$5776 \pm 26$
$A^{\mathrm{kSZ}}$	0.6	—	$D_{1420}$	811.5	$812.4 \pm 5.6$	$f\sigma_8(0.15)$	0.4621	$0.461 \pm 0.013$
$A_{100}^{\mathrm{dust}}$	1.001	$1.01 \pm 0.19$	$D_{2000}$	228.06	$228.8 \pm 2.6$	$\sigma_8(0.15)$	0.7496	$0.7476 \pm 0.0086$
$A_{143}^{\mathrm{power}}$	13.42	$10.7_{-3.2}^{+2.5}$	$n_{\mathrm{s},0.002}$	0.9647	$0.963 \pm 0.011$	$f\sigma_8(0.38)$	0.4789	$0.4777 \pm 0.0098$
$A_{217}^{\mathrm{power}}$	12.85	$8.5_{-3.5}^{+1.7}$	$Y_{\mathrm{P}}$	0.2526	$0.246 \pm 0.022$	$\sigma_8(0.38)$	0.6637	$0.6619 \pm 0.0074$
$A_{143 \times 217}^{\mathrm{power}}$	9.04	$4.6_{-3.5}^{+1.7}$	$Y_{\mathrm{P}}^{\mathrm{BBN}}$	0.2540	$0.247 \pm 0.022$	$f\sigma_8(0.51)$	0.4767	$0.4755 \pm 0.0083$
$\gamma_{143}^{\mathrm{power}}$	1.266	$1.32_{-0.54}^{+0.41}$	Age/Gyr	13.819	$13.827 \pm 0.060$	$\sigma_8(0.51)$	0.6208	$0.6191 \pm 0.0070$
$\gamma_{217}^{\mathrm{power}}$	1.06	$1.34_{-0.64}^{+0.73}$	$z_*$	1090.55	$1090.31 \pm 0.69$	$f\sigma_8(0.61)$	0.4712	$0.4699 \pm 0.0074$
$\gamma_{143 \times 217}^{\mathrm{power}}$	1.04	$1.30 \pm 0.59$	$r_*$	144.488	$144.55 \pm 0.48$	$\sigma_8(0.61)$	0.5905	$0.5889 \pm 0.0067$
$c_{100}$	0.99799	$0.9978 \pm 0.0011$	$100\theta_*$	1.04104	$1.04102 \pm 0.00050$	$f\sigma_8(2.33)$	0.29749	$0.2967 \pm 0.0035$
$c_{217}$	0.99944	$0.9994_{-0.0017}^{+0.0013}$	$D_{\mathrm{M}}(z_*)/\mathrm{Gpc}$	13.8792	$13.885 \pm 0.045$	$\sigma_8(2.33)$	0.30641	$0.3056 \pm 0.0038$
$H_0$	67.07	$67.0 \pm 1.1$	$z_{\mathrm{drag}}$	1059.67	$1059.4 \pm 1.2$	$f_{2000}^{143}$	25.17	$24 \pm 4$
$\Omega_{\Lambda}$	0.6818	$0.681_{-0.014}^{+0.016}$	$r_{\mathrm{drag}}$	147.232	$147.30 \pm 0.50$	$f_{2000}^{217}$	18.03	$17.1 \pm 2.9$
$\Omega_{\mathrm{m}}$	0.3182	$0.319_{-0.016}^{+0.014}$	$k_{\mathrm{D}}$	0.14024	$0.14042 \pm 0.00076$	$f_{2000}^{143 \times 217}$	12.76	$11.4_{-3.3}^{+3.0}$
$\Omega_{\mathrm{m}} h^2$	0.14315	$0.1431 \pm 0.0020$	$100\theta_{\mathrm{D}}$	0.16140	$0.16113 \pm 0.00081$	$\chi_{\mathrm{small}}^2$	395.88	$396.9 \pm 1.7$
$\Omega_{\mathrm{m}} h^3$	0.09601	$0.09586 \pm 0.00079$	$z_{\mathrm{eq}}$	3405.4	$3403 \pm 49$	$\chi_{\mathrm{lowl}}^2$	23.34	$23.9 \pm 2.1$
$\sigma_8$	0.8119	$0.8098 \pm 0.0098$	$k_{\mathrm{eq}}$	0.010394	$0.01039 \pm 0.00015$	$\chi_{\mathrm{CamSpec}}^2$	6704.6	$6717.0 \pm 5.5$
$S_8$	0.8362	$0.835 \pm 0.025$	$100\theta_{\mathrm{eq}}$	0.8122	$0.8125 \pm 0.0094$	$\chi_{\mathrm{prior}}^2$	1.18	$5.3 \pm 2.9$
$\sigma_8 \Omega_{\mathrm{m}}^{0.5}$	0.4580	$0.457 \pm 0.014$	$100\theta_{\mathrm{s,eq}}$	0.44896	$0.4491 \pm 0.0048$	$\chi_{\mathrm{CMB}}^2$	7123.8	$7137.8 \pm 5.5$

Best-fit  $\chi_{\mathrm{eff}}^2 = 7125.00$ ;  $\bar{\chi}_{\mathrm{eff}}^2 = 7143.10$ ;  $R - 1 = 0.00767$

$\chi_{\mathrm{eff}}^2$ : CMB - simall\_100x143\_offlike5\_EE\_Aplanck\_B: 395.88 commander\_dx12\_v3.2\_29: 23.34 CamSpec like\_10.7cleaned: 6704.60